

LAND RECLAMATION AND REHABILITATION

MARKING SCHEME

1990 QUESTION 3 (a, b & c)

(a) State five methods which are used in reclaiming land in Kenya

- Draining of swamps and flood prone areas
- Irrigation
- Introduction of drought resistant crops
- Control of pests e.g. the tsetse fly Improvement of soil through the use of manures/fertilizers
- Afforestation/re-afforestation/agro-forestry
- Control of soil erosion/any method of controlling erosion

(b) Explain five factors, which should be considered in selecting a wasteland to be reclaimed for agricultural use.

- The size of the area. This must be big enough to justify reclamation
- Soils should be fertile to minimize the costs in improving them
- The environmental problems e.g. pests/ diseases should be minimal or controllable.
- The climate should be suitable for the intended agricultural activities.
- Availability of capital to initiate the project/ cost-effectiveness.
- Skilled man-power/management should be available to make the reclamation and development viable.
- The land should be flat/gentle/undulating for mechanization or irrigation.
- Accessibility, hence roads for easy transportation.

(c) Describe the steps, which are followed in reclamation and preparing, land for agriculture use in the Netherlands.

- Construction of the ring dykes and ring canals
- Construction of ditches within each polder which lead water to a pumping station.
- Water is pumped out into the canals.
- Land is allowed to dry.
- Improvement of soil through desalination, e.g. flushing with fresh water planting of hardy plants on additional soil
- Dividing of the polder land into economic units
- Infrastructure is laid out
- People are settled in villages
- Farming activities begun
- Spreading of soils to improve fertility
- Additional of fertilizers to the soil

1995 QUESTIONS (2)

State four benefits that have resulted from the reclamation through Yala Swamp

- It has led to the introduction of farming through irrigation/growing of crops
- It has led to the control of floods in the area
- It has increased the amount of agricultural land/ reclamation
- Development of transport system
- It has created employment opportunities/raised living standard

1997 Q 7

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|---|-----------|----------|------------------|--------|
| ▪ | Ahero | Perkera | Galole/Hola/Bura | |
| ▪ | West Kamu | Mitunguu | Kibwezi | |
| ▪ | Daua | Katila | Bunyala | Taveta |
- The area was sparsely populated thus making it easy and cheap to resettle the people
 - Presence of river Thiba Nyamindi, which would provide water for irrigation.
 - The black cotton soil in the area which was suitable for irrigation because they retain water.
 - The fertile soil in the area which was suitable for crop production
 - Extensive land for future expansion
 - The gentle land would allow water to reach the farm through gravity
 - The unreliable/ inadequate rainfall received in the area made it necessary for irrigation to be practiced.

 - The people who live in the area were originally nomads but now they lead settled lives
 - Initially the people in the area had no regular sources of income, but nowadays, this is earned from sale of cotton and other crops
 - The establishment of the scheme led to the provision of social amenities .
 - Infrastructure which has improved people's standard of living
 - Tenants are able to grow food crops besides cotton. This has improved their self-sufficiency in food/has improved their diet.
 - The establishment of the scheme has created employment opportunities for the people in the area.
 - A forestation has provided firewood/building materials
 - Dairy farming has been introduced.

 - The stagnant water in the scheme encourages breeding of snails and mosquitoes which spread diseases silting of canals/weeds growing in the canals reduce the flow of water into the fields. The farmers spend extra time and money dredging the canal
 - Delayed low payment discourages the farmers
 - Fluctuation of cotton prices in the world market
 - Competition from synthetic fibers discourages/demoralizes the farmers
 - Diseases and pests that attack the crops lead to low yields
 - Weeds called seed compete with cotton for nutrients lowering crop yields
 - Salination lowers quality of soils hence lower yields
 - Shortage of labour leading to use of hired labour which is very expensive

2000 Q 7

- Protective dykes/ sea walls are constructed enclosing the part of the sea to be reclaimed
- Ring canals are constructed
- Pumping stations are installed to pump out sea water from the area enclosed by the dyke
- Water is pumped out of the area enclosed by the dyke
- Reeds are sown to help out the soil

- Drainage ditches and more pumping stations are made on the land being reclaimed
- Drainage pipes are laid below the soil
- The area is divided into regular portions using inner dykes and ring canals
- Soils treated with chemical to lower salinity
- The drained land is flushed with fresh water to remove salt from the soil
- Pumping out water from the polders is a continuous process to prevent water from accumulating
- Sequence must be followed

- Reclamation creates more land for agriculture / settlement
- Reclaimed land has improved agricultural output hence more food
- More raw materials for industries
- Land reclamation has resulted in improved fresh water/ supply for domestic and industrial use/ irrigation
- Construction of dykes/ walls around the polders has helped control floods/ sea invasion
- Construction of dykes and canals has improved road transport network
- Reclamation has created sceneries that have become tourists attractions
- Improved social amenities
- Reclamation and associated activities have created more employment opportunities and improved the standard of living of citizens

- Gently sloping land which permits flow of water by gravity hence reducing the costs of pumping water to the fields
- Presence of clay soil/ black cotton soils which retain water for longer use by crops
- Presence of river/ reservoirs/ lake which provide regular water supply/ permanent/ constant making it possible to irrigate land throughout the year
- High temperatures throughout the year which allows multiple cropping continuous farming activities throughout the year
- Availability of large tracts of land makes the project viable
- Sparsely populated land reduces cost of resettlement / Provides land for large scale farming

- Siltation of canals/ pipes/ reservoirs
- High rate of evaporation
- Salinisation of the soil
- Presence of pests
- Clogging up of canals by water weeds
- Presence of waterborne diseases/ bilharzias
- Fluctuating regimes of rivers/ water for irrigation
- Poor marketing strategies
- Land tenure problems
- Low pricing for the crops
- Delayed payments
- Mismanagement
- Expensive farm in pure/ inadequate capital
- Delayed payments

- Expensive farm inputs

2001 Q 3

- Incidences of water- borne diseases, bilharzias
- Pest infestation which lowers production, quelea birds
- Water weeds which compete with the rice for nutrients rhizomes
- Silting in the canals reduces the amount of water
- Low water levels in the rivers during the dry season
- Planting of trees/ afforestation/ deforestation
- Planting to cover crops/ grass
- Building dams/ reservoirs
- Filling up gullies with brushwood
- Introduction of modern methods of farming- Terracing/ contour ploughing/ use of fertilizer/ crop protection/ crop rotation/ strip cropping

2003 Q 2

- Through irrigation
- Through controlling pests
- By introducing drought resistant crops
- By using fertilizer/ manure
- By a forestation
- Floods were controlled
- Pests waterborne diseases were controlled
- There was an increase in the land for agriculture/ more land was made available for agriculture.
- Better farming methods were introduced
- There was increase in the employment opportunities.

2006 Q 2

- Irrigating dry land
- Draining of swamps
- Adding manure to the infertile soils
- Introducing drought resistant crops
- Planting of trees (any 2 x 1 = 2 marks)
- Part of the low lying land covered by sea water is enclosed using strong walls/dykes
- Ditches are constructed to lead water to pumping station
- The water is pumped out using windmills
- Canals are then dug to drain the excess water from the enclosed land
- Chemicals are added to the soil to reduce salinity/ fresh water is pumped into the enclosed land to reduce salinity
- Oats, rye and sugar beets are planted to improve the PH of the soil and reduce the water further

- The land is dry and ready for use (any 3 x1 = 3 marks)

2008 Q 3

- **Land reclamation** is the process of converting less productive land into a more productive state for agricultural or settlement purposes while **land rehabilitation** is the process of restoring degraded/impooverished/damaged land back to a useful state. (2 marks)

Low prices of rice.

- Diversifying the crops produced in the scheme.
- Improving the quality of the rice produced through research.
- The government should restrict the importation of rice to reduce competition.
- Improve the marketing strategies to enable farmers to source for market outside Kenya. (Any 2x1=2 marks)

Fluctuating water levels in the irrigation canals.

- Continuous dredging of canals/deepening of canals.
- Construction of dams to store water for use during dry seasons.
- Government to enforce laws on proper land use in the catchment areas of the rivers that supply water to the scheme. (Any 2x1=2 marks)

2010 Q 7

- Irrigation
- tsetse lfy control
- planting of trees/afforestation
- flood control (any 2 x 1 = 2 marks)
- constructing drainage pipes
- digging open ditches/canals
- pumping out the water (any 2 x 1 = 2 marks)
- Thiba river
- Nyamindi river
- Murubara (any 2 x 1 = 2 marks)

Topography

- The gently sloping land makes it possible for water to flow by gravity into/out of the irrigated fields.
- The gently sloping land allows for mechanization which allows large areas to be put under cultivation. (Any 1 x 2 = 2 marks)

Soils

- Presence of black cotton soils which is suitable for cultivation of rice/which retains water for a long time. (2 marks)

Population

- The area was originally sparsely populated which enabled large areas to be put under cultivation/very few people were displaced it was cheap to start the scheme.

Government policy

- There was need to keep political detainees busy/This made the colonial government to set up the scheme at Mwea where there was a large detention.

(2 marks)

- Markerwaard
- South Flevoland
- East Flevoland
- North-Eastern Polder
- Wieringer Meer Polder

(Any 3 x 1 = 3 marks)