

LEARNING OUTCOMES!

Candidates should be able to:

- describe the fishing methods used in both marine and inland waters, including fish farms
- give examples of the fish caught in both marine and inland waters, and of the fish reared on fish farms
- give examples of the fishing ports on both the Balochistan and Sindh coasts
- describe the uses of the fish caught
- explain improvements in fishing methods and processing techniques
- understand the problems facing the fishing industry and evaluate the possibilities for its further development and sustainability.

FISH FOOD

- ✓ Fish feed on planktons
- ✓ Planktons are minute plant and animal organisms that float in sea or are deposited on the sea bed
- ✓ Carbon dioxide and oxygen dissolves in surface water by sun rays from atmosphere
- ✓ Phosphates, nitrates and other plant nutrients are added to the surface water by rivers
- ✓ They together help the growth of planktons

USES OF FISH

- ✓ Fish waste is used to make fertilizer and poultry feed
- ✓ Low cholesterol diet
- ✓ Fulfils need of calcium, phosphorous and iron
- ✓ Oil is extracted from fish which provides a source of vitamin A & D

IMPORTANCE OF FISHING INDUSTRY

- ✓ Increases GDP
- ✓ Export of fish can earn foreign exchange
- ✓ Source of income
- ✓ Source of direct and indirect employment
- ✓ Promotes the growth of other industries e.g. boat makers
- ✓ Waste useful for fertilizer industry
- ✓ Development of coastal areas
- ✓ Waterlogged and saline areas can be used for fish farming

MARINE FISHING

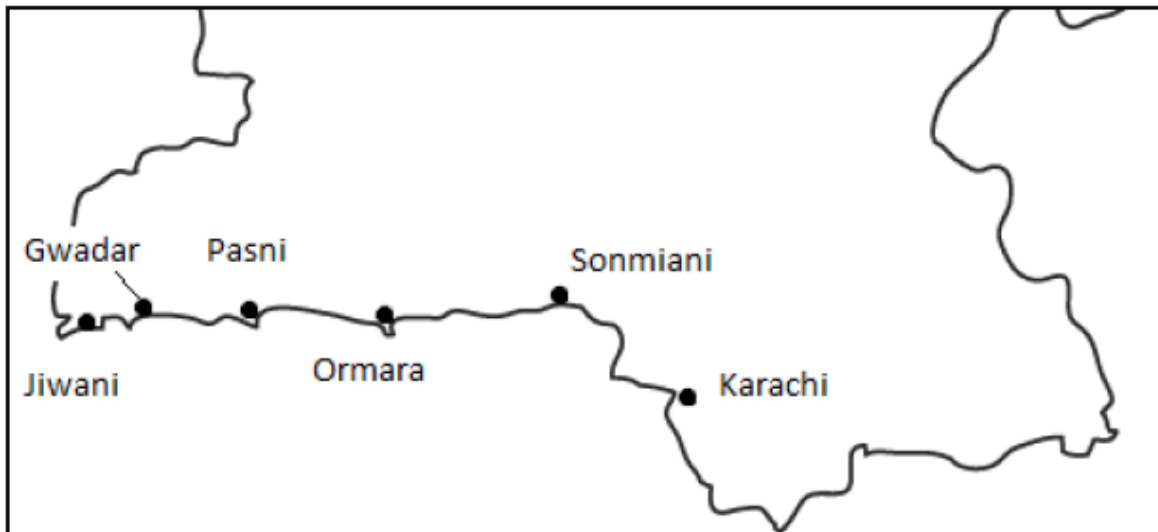
- ✓ Carried out along with coastal water of Sindh and Baluchistan
- ✓ Sindh Coast is 30% of the coastline and Makran Coast is 70%

TYPES OF MARINE FISH SPECIES

- ✓ Pelagic, lives on the surface of sea water
- ✓ Demersal, lives at the sea bed of shallow water upto depth where effective sunrays penetrate and make planktons available to them

FISHING PORTS

- ✓ Sindh: Karachi, Thatta
- ✓ Baluchistan: Jiwani, Gwadar, Pasni, Ormara, Sonmiani



SUBSISTENCE FISHING

- ✓ When fishermen and his family consume the fish, they catch
- ✓ Traditional nets, hand nets
- ✓ Small wooden boats under 20m long
- ✓ Owner and its crewmen
- ✓ Upto 5 km off the shore due to limited fuel and refrigeration and perils of the weather
- ✓ Covers at most 1 or 2 hect of sea
- ✓ Dried fish
- ✓ Salted fish
- ✓ Gutting

- ✓ Basket of ice
- ✓ One day operation
- ✓ Nominal catch

COMMERCIAL FISHING

- ✓ Fish is sold in the market
- ✓ Boat size upto 100 m long
- ✓ As many as 100 people employed by a company
- ✓ Away from port upto 50-60 Km from the coast in the deep-sea water
- ✓ Radar and Sonar to find fish
- ✓ Away from port for weeks
- ✓ Satellites for navigator and weather
- ✓ Nets at least 1km wide
- ✓ Board with engines
- ✓ Cold storage on boats
- ✓ Mechanized equipments
- ✓ Stronger bigger nylon nets and ropes
- ✓ Gill netters
- ✓ Gutted
- ✓ Canned
- ✓ Dried
- ✓ Frozen
- ✓ Salted
- ✓ Fish oil

TYPES OF MARINE FISH CATCH

- ✓ Sharks
- ✓ Croakers
- ✓ Drums
- ✓ Cat fish
- ✓ Skates
- ✓ Rays

PRACTICE QUESTIONS 1.2

Question 1

N2016/P2/Q5/C/i

(c) (i) Name a fishing port on the Sindh coast.

.....[1]

Question 2

J2016/P2/Q4/C

(c) (i) Name **two** fishing ports on the Makran Coast.

1

2[2]

(ii) Describe the methods used in commercial marine fishing.

.....

[3]

Question 3

J2013/P42/Q2/A

Study Fig. 2, which shows a map of the coast of Pakistan.

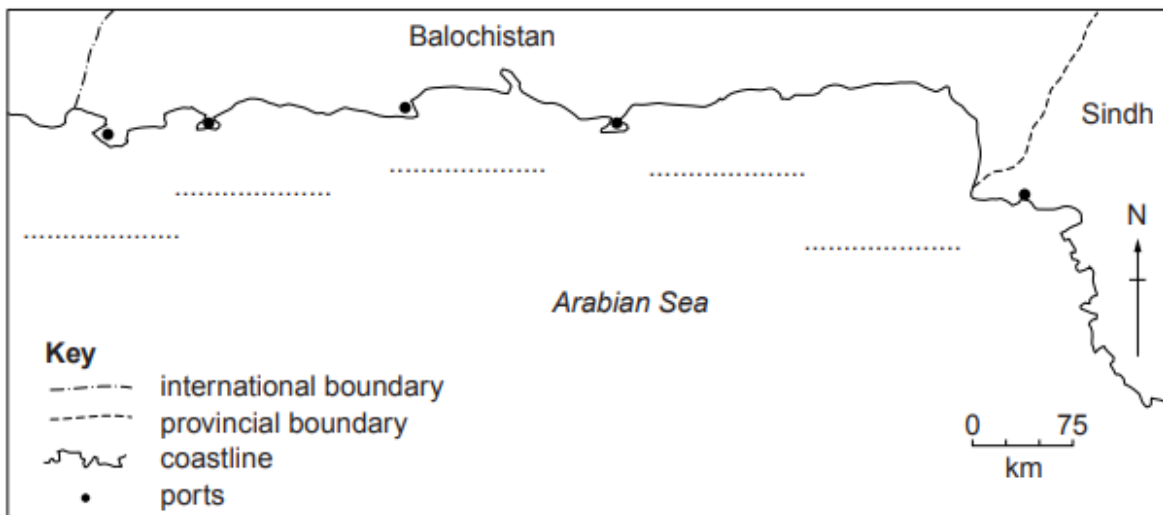


Fig. 2

WHY SINDH COAST IS IMPORTANT FISHING CENTRE?

- ✓ Large market
- ✓ More interest from investors
- ✓ Good roads
- ✓ Reliable electricity
- ✓ Clean water
- ✓ Modern infrastructure
- ✓ Skilled labour
- ✓ Foreign investments
- ✓ Better port facilities
- ✓ Better cold storage
- ✓ More mechanized fishing fleet
- ✓ Numerous creeks
- ✓ Sheltered harbours
- ✓ Wide Shallow sea
- ✓ Wider continental shelf
- ✓ More area under mangroves
- ✓ Indus Delta is rich in fish food

FISH MARKET IN KARACHI

- ✓ Karachi had domestic and international market
- ✓ At domestic level fish is supplied to local markets through wholesale dealers
- ✓ Street hawkers also buy some of fish catch and provide a door-to-door service
- ✓ Frozen processed fish is supplied to large department stores
- ✓ About 30% of total fish catch is exported to 30 countries of the world
- ✓ Japan is main market for fish and shrimps
- ✓ UK, USA and France are other important market

FISH MARKETING IN GAWADAR

- ✓ Fish catch is packed in ice for transportation to Karachi
- ✓ From Karachi it is further exported
- ✓ Some businessmen from Karachi or foreign country buy fish in open sea to avoid paying port charges
- ✓ Fish is exported directly to middle East Countries
- ✓ Some of fish is marketed locally

PRACTICE QUESTIONS 1.3

Question 1

N2011/P2/Q1/D/ii

(ii) At the present time, most of the fish catch is processed in Karachi. The ports of Balochistan such as Gwadar and Pasni have the potential for development.

What are the advantages and disadvantages of developing fish processing industries in the ports of Balochistan?

Advantages

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Disadvantages

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[6]

Question 2

J2008/P2/Q4/B/iii

(iii) How does the poor infrastructure of Balochistan make development of the fishing industry difficult? [4]

FISHING PERIODS

- ✓ November to January for fish
- ✓ October and November for shrimps
- ✓ June and July is breeding time
- ✓ Fishing in big boats is done throughout the year
- ✓ Part time fishermen who use small boats do not fish from May to September because of South-West monsoon

IMPROVEMENTS IN MARINE FISHING INDUSTRY

- ✓ Training facilities are being provided
- ✓ Establishing on-shore facilities
- ✓ Better marketing and processing facilities
- ✓ Increasing the efficiency of existing boats
- ✓ Research surveys of deep off-shore waters are being conducted to promote deep sea fishing
- ✓ 16 ice factories are developed in Baluchistan
- ✓ Improved loading and unloading facilities
- ✓ Guidance and weather information for fishermen
- ✓ Monitoring of deep-sea fishing vessels

INLAND FISHING

- ✓ Practiced is almost all the rivers, lakes, reservoirs, irrigation channels and fish farms

TYPES OF INLAND FISH CATCH

- ✓ Manaseer
- ✓ Palla
- ✓ Thalla
- ✓ Rahu
- ✓ Trout
- ✓ Grass
- ✓ Silver

MAIN FISHING CENTERS

- ✓ Manchar Lake in Dadu District Sindh
- ✓ Keenjhar Lake North of Thatta
- ✓ Haleji Lake West of Thatta
- ✓ Reservoirs of Mangla and Tarbela Dam
- ✓ River Indus at Sukkur, Kotri, Thatta

FISH FARMING

- ✓ Flat land of plains easy to use machinery
- ✓ Large and cheap land is available to build the farms
- ✓ Unconsolidated rocks and alluvial deposits make easy to dig out ponds
- ✓ Impervious Alluvium, it retains water
- ✓ Higher water table which can use to fill the ponds
- ✓ Large irrigational schemes
- ✓ Govt. Incentives
- ✓ Many hatcheries which provide baby fish
- ✓ Good road networks for supply of fish
- ✓ Large domestic market
- ✓ Large rectangular man-made ponds
- ✓ Concrete or cemented impervious base and sides to prevent water loss
- ✓ Sides of farms and edged with solidified mud to prevent contamination
- ✓ Linear plantation around fish farms to provide oxygen, shade to minimize water loss by evaporation and to keep water body cool

- ✓ Separation of ponds by embankments for different ages and species of the fish
- ✓ Roads and ponds lined to prevent contamination



HOW FISHES ARE REARED ON A FISH FARM

- ✓ Farmers bring baby fish from the hatcheries
- ✓ Regular feed for proper growth and healthier fish
- ✓ Regular checking
- ✓ Disinfectants to avoid diseases
- ✓ Regular check of water level
- ✓ Regular change of fresh water
- ✓ Different ages of fish are transferred between ponds
- ✓ When fish is mature and meet the need of market, they are caught by nets

ADVANTAGES OF FISH FARMING

- ✓ Provides income
- ✓ Raw material for fertilizer industry
- ✓ Provided employment
- ✓ Reduces burden on crops and livestock
- ✓ Foreign exchange earnings by export

DISADVANTAGES OF FISH FARMING

- ✓ Occupies more space
- ✓ Lower water table
- ✓ Deforestation
- ✓ Skills needed

- ✓ Capital needed
- ✓ Continuous supply of fresh water
- ✓ Good network of roads

PRACTICE QUESTIONS 1.4

Question 1

N2017/P2/Q3/A-B

(a) (i) A Name a species of fish reared on a fish farm.

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B Give **two** uses for the products of fish farms.

1

2[3]

(ii) Describe the methods used to rear fish on fish farms.

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.....[3]

(b) Study Fig. 4, which shows changes in farm size in Pakistan between 1980 and 2010.

Farm size hectares (ha)	Percentage of farms			
	1980	1990	2000	2010
Under 5	74	81	86	89
5–20	24	17	13	10
21 and over	2	2	1	1

Fig. 4

(i) In which year was the percentage of farms under 5 hectares (ha) the smallest?

.....[1]

(ii) Identify the **two** main changes in farm size over the whole period 1980–2010.

1

.....

2

.....[2]

(iii) Suggest a reason for **one** of the changes you have identified in (b)(ii).

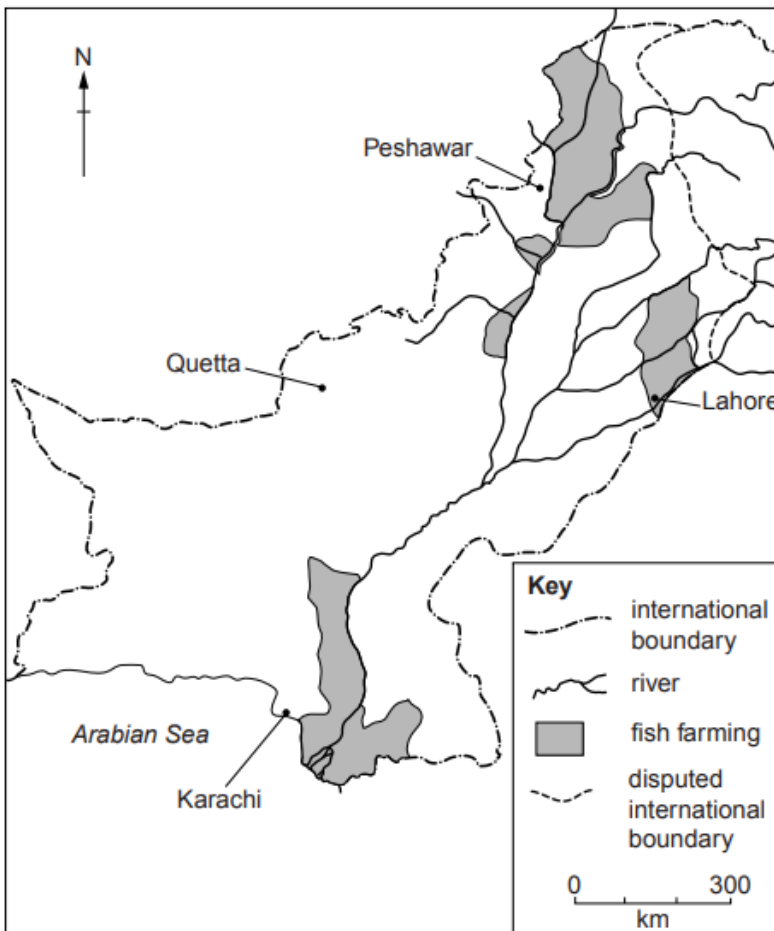
.....
.....[1]

(iv) Explain how farm size can affect production on farms in Pakistan. You should develop your answer.

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.....[4]

Question 2 **J2013/P42/Q2/C**

(c) Study Fig. 4, which shows the main districts for fish farming in Pakistan.



(i) Describe the distribution of fish farming in Pakistan.

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..... [3]

(ii) Describe how fish are reared on a fish farm.

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..... [4]

Question 3 **N2011/P2/Q1/A**

(a) Study Photograph A (Insert).



Question 4

J2008/P2/Q4/C/ii

(c) Study Fig. 3, a graph comparing the production of marine and inland fisheries in Pakistan.

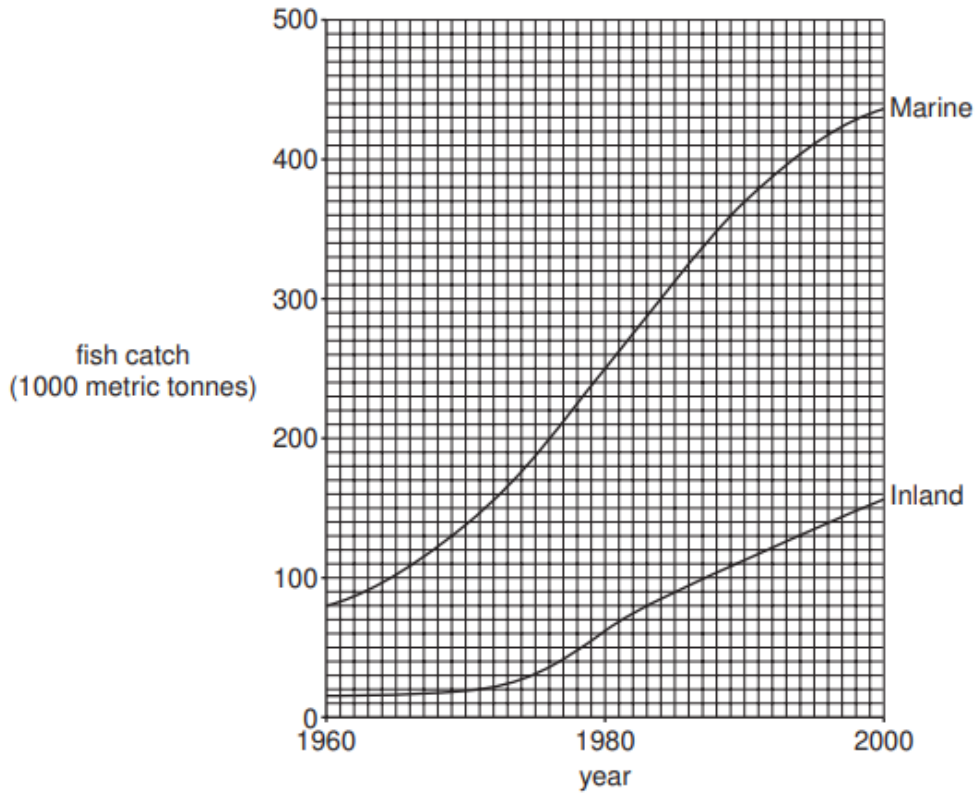


Fig. 3

- (i) Compare the changes shown in the graph. [3]
- (ii) Explain why more people are employed in inland fisheries than marine fishing. [3]

PROBLEMS OF FISHING INDUSTRY

WATER POLLUTION

- ✓ Toxic chemicals can also accumulate in fish tissues, making fish too dangerous for human to eat
- ✓ Eutrophication: When phosphorous and nitrogen get into water causes growth of algae. Algae uses large amount of oxygen. Fish suffocate in oxygen depleted water
- ✓ Thermal Pollution: Cool water from river or lake is circulated around engines to cool it and then warm water is then returned to river or lake. It can cause massive fish kills when discharged water is too warm. Warm water hold less oxygen and fish may suffocate
- ✓ No proper dumping of domestic and industrial waste sea animals may eat plastic and die of suffocation or maybe they get strangled

OVERFISHING

- ✓ Fishing in breeding season
- ✓ Catching baby fishes

THREAT TO MANGROVES

- ✓ Mangroves act as barrier and protect coastline from high and low tides
- ✓ Mangroves are breeding ground for fish
- ✓ Mangroves cannot thrive in polluted water

GOVERNMENT MEASURES TO PROMOTE FISHERIES

- ✓ Establishment of fish hatcheries, nurseries and seed forms for large scale production of quality seed
- ✓ Improved management system
- ✓ Development of lakes, rivers
- ✓ Proper advisory services to private farmers
- ✓ Irrigation facilities and reduced rates
- ✓ Provision of bulldozers on reduced rates
- ✓ Supply of fish seed at nominal rates
- ✓ Free training
- ✓ Improvements of Karachi Harbour
- ✓ Construction of Korangi Fish Harbour, Pasni Fish Harbour
- ✓ Construction of Cold Storage

- ✓ Established shrimp packing and freezing plants in Karachi

HOW TO DEVELOP FISHERIES ON SUSTAINABLE LINES

- ✓ Not allow foreign hawkers to avoid overfishing
- ✓ Banning the use of illegal nets
- ✓ Enforcement of laws against cutting the mangrove forests and water pollution
- ✓ Annual limits should be set for amount and type of fish that can be caught

.....
.....
.....[6]

Question 3 **J2013/P42/Q2/B/iii**

(iii) What is meant by 'over-fishing'? Why does it occur?

Over-fishing

.....

Why it occurs

.....

.....

.....

.....

.....[3]

TYPES OF NET FISHING

TRAWLING

- ✓ Makes use of a trawl net
- ✓ Both sides of trawl net are attached to one or more fishing vessels which drag it through deep water
- ✓ This method is used primarily to catch fish what live near bottom of sea

PURSE SEINING

- ✓ Uses a large net
- ✓ The boat surrounds school of fish with a curtain of netting and then close the bottom of net
- ✓ This is used to catch fish in the middle or at the surface of sea

DRIFT NETTING

- ✓ Makes use of a long net set vertically across the path of migrating fish
- ✓ When the fish try to make their way through net, they became entangled in it

PRIMARY SECTOR IN FISHING

- ✓ Breeding fish
- ✓ Fish farming

SECONDARY SECTOR IN FISHING

- ✓ Processing
- ✓ Ice factory
- ✓ Packing
- ✓ Canning

TERTIARY SECTOR IN FISHING

- ✓ Exporting
- ✓ Weather information
- ✓ Loading and unloading facilities

REVIEW EXERCISE

Question 1

J2013/P42/Q2/E

(e) What are the benefits and problems of developing **either** marine fishing **or** inland fish farming in Pakistan?

Choice

Benefits

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.....

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Problems

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[6]

Question 2

N2011/P2/Q1/D/i

(d) (i) State **three** ways in which fish can be stored and processed before sale.

1

2

3 [3]

RECENT PAST PAPER QUESTIONS

Question 1

J2019/P2/Q2

(a) (i) Study Fig. 2.1, which is a map of the southern coastline of Pakistan.

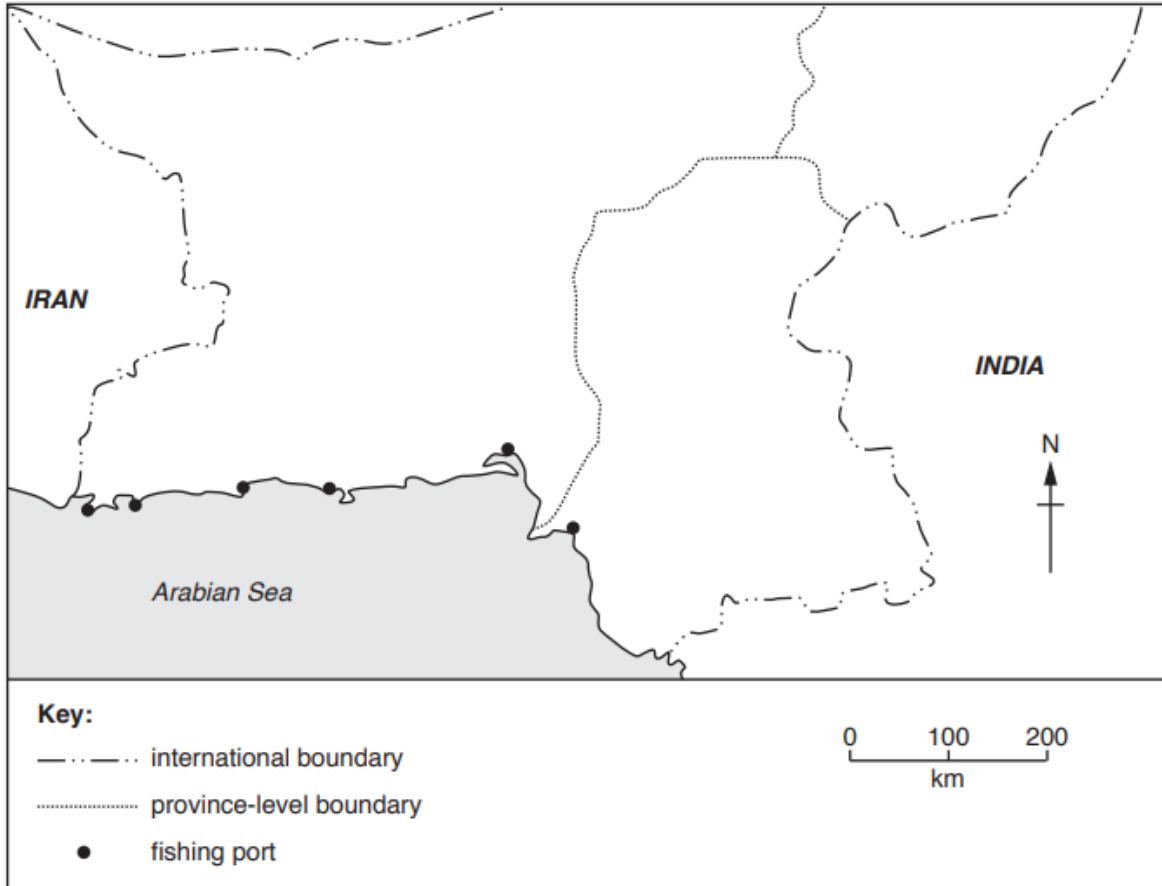


Fig. 2.1

Name **two** fishing ports on this coastline.

1

2

[2]

(ii) State **two** uses of fish.

1

2

[2]

(iii) **Classify** the following fish into the correct category in the table below. **An example has been done for you.**

Marine fish	Inland or freshwater fish
<i>shark</i>	<i>manaseer</i>

Choose from:

- drum rahu croaker catfish skate
 palla trout ray thalla grass carp

[3]

(c) Explain **two** problems caused by the fishing industry on the natural environment. You should develop your answer.

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[4]

(d) Fishing is an important and growing economic activity in Pakistan. Read the following two views about ways to develop the fishing industry in Pakistan sustainably:

A

Developing inland fish farming has greater benefits for the people and economy and is more sustainable.

B

Developing marine fishing has greater benefits for the people and economy and is more sustainable.

Which view do you agree with more? Give reasons to support your answer and refer to examples you have studied. You should consider View A **and** View B in your answer.

ANSWER KEY

Practice Questions 1.1

Question 1 **N2011/P2/Q1/C**

(c) Explain why fishing and fish farming are important industries in Pakistan. [4]

- Nutritious food / good quality / healthy
- Content of food including fish oil, e.g. protein, white meat, low in cholesterol, vitamins (max 1)
- Bones for fertiliser / other waste product and use
- Source of income
- Source of employment
- Export / earns foreign exchange – of named type of fish / shellfish / product or to a named country or area

Practice Questions 1.2

Question 1 **N2016/P2/Q5/C/i**

(c) (i) Name a fishing port on the Sindh coast. [1]

Karachi / Korangi

Question 2 **J2016/P2/Q4/C**

(c) (i) Name two fishing ports on the Makran Coast. [2]

Any two of Jiwani, Gwadar, Pasni, Ormara, Sonmiani

(ii) Describe the methods used in commercial marine fishing. [3]

- Trawl/gill nets
- Mechanised boats/trawlers/gill-netters
- Satellite navigation/use of radio for weather conditions/sonar/'fish finders'
- Storage/refrigeration facilities on boat
- Up to 60km from the coast
- Remain at sea 5–15 days/'weeks'
- Throughout the year/10 months or more per year

Question 3 **J2013/P42/Q2/A**

Study Fig.2

(a) (i) Any 2 correctly located from Jiwani, Gwadar, Pasni, Ormara, Karachi (or Port Qasim) – from west to east [2]

(ii) shark, croaker, skate, drum, cat fish, rays, sardine (must be marine fish) [2]

Question 4 **N2010/P2/Q1/C**

(c) Describe how marine fishing methods can be improved. [5]

- Boats with engines
- Can go further offshore
- Can stay at sea for several days
- Cold storage on boat
- Mechanised equipment / winches

- Nylon / bigger / stronger/ nets or ropes
- Weather forecasts
- Sonar to locate fish
- Satellite navigation
- Training / education

Question 5

J2008/P2/Q4/A

(a) (i) **Name two fishing ports on the coast of Balochistan.**
Jiwani, Gwadar, Pasni, Ormara, Sonmiani

(ii) **Name two types of marine fish caught by fishermen.**

- | | |
|----------|----------|
| Shark | Herring |
| Drum | Mackerel |
| Croaker | Sardine |
| Cat fish | Pomfret |
| Skate | |
| Ray | |

[2]

(iii) **Describe subsistence fishing methods.**

- Small/wooden boats
- Sailing/rowing boats
- Traditional/hand made nets
- Coastal only
- Lack of machines/simple engines
- Rod and line method
- Fish kept in baskets of ice

[3]

(iv) **Explain how these methods can be improved to make fishing commercial.**

- Engines
- Gill netters/nylon nets/stronger nets
- Can go further offshore
- Radios
- Chilled storage on boat
- Trawlers
- Loans for ---
- Education/training for-----

[4]

Practice Questions 1.3

Question 1

N2011/P2/Q1/D/ii

(ii) **At the present time, most of the fish catch is processed in Karachi. The ports of Balochistan such as Gwadar and Pasni have the potential for development.**

What are the advantages and disadvantages of developing fish processing industries in the ports of Balochistan? [6]

Advantages (res 2)

- Stimulates development of fishing industry / port facilities (other than processing)
- Gwadar Port
- Reduced cost of transport (than to Karachi)
- More fresh / no delay / no need for storage
- Infrastructure development, e.g. roads, power, telecommunications
- Adds value to fish

Also credit the following ideas with reference to Balochistan
Income – higher living standards, better housing, jobs linked to income or economy
Trade with named country or area – more visitors, contact with other areas etc., e.g. Middle East
Economic development, e.g. investment, entrepreneurs (with some detail)

Disadvantages (res. 2)

- Undeveloped infrastructure
- Lack of infrastructure, e.g. roads, power, water, ports, etc.
- Small market / population
- Long way from major centres of population, e.g. Karachi
- Uneducated / unskilled population
- Lack of interest from investors or government / high cost of any development
- Inhospitable climate / relief
- Named pollution linked to processing (max 1)
- Effects of increase in urban population (max 1)
- Poor quality product / canned fish banned in some countries

If not related to Balochistan max 2

Question 2

J2008/P2/Q4/B/iii

(iii) **How does the poor infrastructure of Balochistan make development of the fishing industry difficult?**

- Poor roads/no railway for transport
- Lack of electricity/power for processing
- Poor telecommunications to markets
- Lack of fresh/clean water for processing
- Illiteracy/lack of training/lack of education

[4]

Practice Questions 1.4

Question 1

N2017/P2/Q3/A-B

A

- Trout: brown / rainbow / Palla / Thalla / Catfish;
- Carp: Mahseer (Mahasher) / rahu / grass / silver / catla / mrigal.

1 @ 1 mark

B

- Animal / poultry feed;
- Local consumption / sold in local markets / fulfil requirements / food supply;
- Source of protein;
- Fish oil extracted / used in medicine;
- Fish fertiliser / manure;
- Export;
- Breeding / saving species from extinction.

2 @ 1 mark

-
- Rectangular / man-made ponds;
 - Lined / concrete base / cemented endings;
 - Fill pond with water;
 - Add fish or stock / nursery/ different fry, juveniles, etc.;
 - Selective breeding programme;
 - Trees planted on farms [to prevent losses from evaporation / for shade];

- Water enriched with nutrients / fertilised with manure / from poultry droppings [for growth of plankton];
- Feed added to water / food provided;
- Water filtered / changed / refilled / health and hygiene checked or maintained / chemicals or medicine to prevent disease.

3 @ 1 mark

1980

1 @ 1 mark

Changes
Under 5 / (74 to 89) increases
5–20 / (24 to 10) decreases
21 and over / (2 to 1) decreases/halved

2 @ 1 mark

Reasons	
Under 5 / (74 to 89)	Increasing sub-division of family plots because of inheritance laws Increasing population causing pressure on land
5–20 / (24 to 10)	Redistribution of landlord holdings / land reform reducing landlord holdings / consolidation of holdings
21 and over / (2 to 1)	Continues to represent a minority of farms in Pakistan / agriculture in Pakistan primarily subsistence

1 @ 1 mark

For smaller farms: accept converse for larger farms:

- Higher proportion wastage / longer time to harvest (since less able to use machinery / difficult to manoeuvre machinery);
- Shorter / restricted / reduced harvest time (as more likely to / can only afford to rent rather than buy machinery / tractors);
- Less able to grow crops for sale / less able to produce quality crops (as large land needed for monocultures / efficient / economic production);
- Less able to invest in development of farm (as less likely to be able to obtain loans);
- Crops less well irrigated and lower yields (as cannot afford / do not have modern irrigation / tubewells);
- Higher yields / output per ha (since farming is intensive / intensive use of labour);
- Small farms – smaller amount of crop produced than larger farms (mainly subsistence, so less for sale).

For larger farms:

- Farming inefficient or not all of land cultivated (Zamindari system provides less incentive as large landlords are absent / workers are landless);
- Larger farms – larger amount of crop can be produced than smaller farms. ETC.

Note: One mark for identification of appropriate idea and a further mark for development (in parentheses).

Note: Max. 2 marks if no development.

2 @ 2 marks

Question 2

J2013/P42/Q2/C

- (c) (i) KPK(NWFP) by rivers from mountains / in foothills
Swat, Chitral, Dir, Malakand, Manshera, FATA
also Dera Ismael Khan, Kohat, Mardan, Swabi, Abbottabad
Punjab – in irrigated areas or where rainfall is sufficient
Sheikhpura, Gujranwala, Attock
Sindh – on the Indus foodplain
Thatta, Badin, Dadu [2]
- (ii) clean water
fed
health care
separated according to size etc.
removed when big enough to sell [4]

Question 3

N2011/P2/Q1/A

(a) Study Photograph A (Insert).

- (i) State three ways in which the owner has improved the site for fish farming. [3]
- Rectangular / man-made ponds for better management etc.
Separation of ponds/embankment for different ages / species
Roads / ponds lined to prevent contamination / mud / dust / leakage etc.
Brick / stone / Pucca road for vehicles / for easy access
Trees for shade / shelter / beauty
Ponds full of water for healthy fish / good conditions
- (ii) Name two species of fish reared on fish farms. [2]
- Any two of
Manaseer, Rahu, Palla, Thalla, Trout, Carp, shrimp, catfish, croaker, perch (Damral)
- (iii) Describe the fishing methods used on a fish farm. [4]
- Prepare ponds / half fill for insects
Hatch eggs / buy smelt (small fishes) / breeding
Of single species / improved type of stock
(Regular) feeding (with poultry waste)
Health care / regular checks
Top up ponds / check water levels clean water
Transfer between ponds by size
Catch fully grown fish / fish of market size etc.
By net

Question 4**J2008/P2/Q4/C/ii**

(ii) Explain why more people are employed in inland fisheries than marine fishing.

- More people live near rivers, lakes etc.
- Maintenance of ponds
- Hatcheries
- Feeding
- Harvesting (catching)
- Transport
- Government encouragement/loans etc.

[3]

Practice Questions 1.5**Question 1****N2016/P2/Q5/D**

(d) To what extent is it possible to develop the fish processing industry further in Pakistan? Give reasons to support your answer and refer to places or examples you have studied. [6]

L3	5–6 marks	<p>6 – <i>Developed points explaining both views (possible and not possible). Evaluation gives clear support to one view. At least one reference to an appropriate place or example</i></p> <p>5 – <i>Developed points explaining both views. Evaluation gives clear support to one view</i></p>
L2	3–4 marks	<p>4 – <i>Developed point(s) explaining both views. No evaluation</i></p> <p>3 – <i>Developed point(s) explaining one view</i></p>
L1	1–2 marks	<p>2 – <i>Simple point(s) addressing both views</i></p> <p>1 – <i>Simple point(s) addressing one view</i></p> <p>0 – <i>No valid response</i></p>

Indicative content (development of points or examples in parentheses)**Possible**

- Long undeveloped coastline (1050 km / Makran Coast 750 km)
- Gwadar being developed as a new port / fish harbour with modern facilities / EPZ (providing base for linkage to central Asian states)
- Potential at Pasni / Jiwani / Sur Bandar / Ormara (allowing more fish to be refrigerated / preserved for transport to Karachi)
- Government support (provides essential facilities for a fishing port to allow sustainability)
- Compliance with EU / international quality standards (to remove import bans / embargoes)
- Increase local ice factories / refrigerated storage / packing / canning facilities (to reduce need to transport to Karachi)
- Training / education (could provide employment of local educated youth)
- Value added products made for export (make more foreign exchange)

Not possible

- Limited private sector and/or government investment / expensive to expand / contributes little to exports / focus on other industries (meaning technology and skills are not upgraded)
- Many processing plants under capacity / out of operation (showing that the future development is uncertain)

Few skilled workers
 Coastline remote / poor transport links (e.g. no railway / small airports / delayed new road links)
 Canning factories have been unhygienic and a cause for import bans (to EU / Saudi Arabia)
 Unreliable export market (about 30% worldwide)
 Low profits (6% of foreign exchange)
 Foreign competition
 Urban centres prefer fresh fish (so processed fish only to a few large department stores)
 Per capita consumption is low (1.6 kg p.a.)

Question 2 **J2016/P2/Q4/D**

(d) To what extent is it possible for marine fishing to be developed sustainably in Pakistan? Give reasons to support your answer. [6]

L3	5–6 marks	6 – <i>At least one developed statement about each aspect (possible AND not possible) with evaluation</i> 5 – <i>At least one developed statement about each aspect (possible AND not possible)</i>
L2	3–4 marks	4 – <i>Two developed statements about either aspect (possible AND/OR not possible). No evaluation</i> 3 – <i>One developed statement about one aspect (possible OR Not possible)</i>
L1	1–2 marks	2 – <i>Two simple statements about either aspect (possible AND/OR Not possible)</i> 1 – <i>One simple statement about one aspect (possible OR not possible)</i> 0 – <i>No valid response</i>

Indicative content (developed points in parentheses)

Possible

By avoiding overfishing
 By having quotas/government licences
 Secure fishing grounds from foreign fishing boats/fines/policing
 Limit number of months in year able to fish (to allow breeding)
 Only catch adult fish (by using nets with larger mesh)
 Laws to protect of mangrove forests
 Laws/fines to prevent marine pollution/oil spills
 Education in sustainable methods

Not possible

Mangrove forests are being cleared (reducing breeding/feeding areas for fish/shrimps)
 Sea pollution (oil from ships/industrial/domestic waste from Karachi)(poisoning fish and spreading into food chain)
 Not enough capital/investment
 Lack of skills/training in sustainable methods
 Lack of political interest/will (fishing only makes up about 0.5% of GDP)

Question 3 **J2013/P42/Q2/B/iii**

- (iii) overfishing is when more fish are caught than replaced naturally
too many fish caught
small fish caught
too young to breed
caught in breeding season [4]

Practice Questions 1.6

Question 1 **N2016/P2/Q5/C/ii**

- (ii) Describe activities that are involved in the secondary sector of the fishing industry. [4]

Gutting / washing / cleaning (initial preparation of fish for other processes / ensure hygiene)
Freezing (preserve (freshness) / for export)
Canning (preserve / for export)
Converting to fishmeal (for domestic poultry feed)
Salting (so that the fish is preserved)
Curing (dehydrates the fish so it can last longer / preserve)
Smoking (preserves the fish and gives it a unique taste)
Storage (of fish in refrigerators allows maximum storage time) / refrigerating (keeps the fish in its original state for eating)
Packaging (preparing for transport / preparation for sale / protects the fish from contamination / prevents spoilage)

Question 2 **J2013/P42/Q2/D**

- (d) fisherman / worker on a fish farm
factory worker / canner / freezer
lorry driver / office worker [3]

Review Exercise

Question 1 **J2013/P42/Q2/E**

- (e) Candidates must choose either marine fishing or fish farming

Advantages

more food
more work
higher incomes
more infrastructure
more exports (named)
reasons for sustainability

Disadvantages

Old methods / lack of investment
Poor infrastructure
Lack of education / skills
Overfishing
Reasons for unsustainability
Named pollution
Danger of marine fishing [6]

Question 2

N2011/P2/Q1/D/i

(d) (i) State three ways in which fish can be stored and processed before sale. [3]

- Chilled / refrigerated
- Frozen / in freezer
- Gutted
- Filletted / de-boned
- Dried
- Salted
- Canned

Question 3

N2010/P2/Q1/D

(d) Study Fig.3. With reference to Fig. 3, explain the advantages and disadvantages of developing the fishing industry in Pakistan. [6]

NB: This can include fish farming / freshwater fishing

Advantages (res. 2)

- More food
- Healthier food / more protein etc.
- More employment / more income/ less unemployment
- Exports to – or of – (e.g. shrimps to Japan, dried fish to Middle East, to Sri Lanka)
- Better communications with – (e.g. better roads, telecommunications in Balochistan)
- More education by teaching skills
- More technology – introduction of engines, machines, radar, satellite navigation
- Growth of other industries e.g. Processing, boat building
- Sustainability as fish are 'free', should not 'run out'

Disadvantages (res. 2)

- Education – lack of skilled labour
- Technology – costs money, imported
- Water pollution – kills, damages fish, Pakistan's rivers are polluted, mangroves polluted
- Restrictions – marine fishing banned in June and July
- controls on net size
- Quality – some products banned by western countries
- can be poisonous / makes them unsuitable to eat
- Income – not large, delayed profit
- Sustainability – issues of over-fishing

Question 4

J2008/P2/Q4/B/i,ii

(b) (i) How can fish be stored and processed onshore?

- In ice/cold storage/refridgerated
- Gutted
- Canned
- Dried
- Frozen
- Salted
- Fish-fingers/other product
- Fish oil

[3]

(ii) Why is fish processing called 'value-added'?

- Can be sold for more money/more profit

[1]

Recent Past Paper Questions

Question 1

J2019/P2/Q2

- Jiwani;
- Gwadar;
- Pasni;
- Ormara;
- Sonmiani;
- Karachi / Keamari.

2 @ 1 mark

- Fish waste for fertiliser;
- Money / income / export / selling;
- Fish waste for poultry feed / livestock fodder;
- Oil / oil extracted (to provide a source of nutrition – vitamins A & D) / medicines;
- Food supply / white meat / consumption / eating / healthy food.

2 @ 1 mark

Fish that is caught and sold for profit is known as commercial fishing. Many families depend on this type of fishing as their sole source of income. Fish that is caught by the family for their own consumption is known as subsistence fishing. Many people who live near the coast rely on fish as the main component of their diet.

3 or 4 @ 2 marks
1 or 2 @ 1 mark

- Traditional sailboats / wooden sailboats / small sailboats;
- Traditional small (rope / hand crafted) fishing nets used cannot go deep / surface fishing only catch small amount of fish;
- Fishing rods / lines (with hooks) / fishing poles;
- Trawlers / gill netters / mechanised boats / boats with engines;
- Modern boats can go further out up to 50–60 kms from the coast;
- Stay at sea for 5–15 days / one to three weeks;
- Traditional sailboats do not go far from coast;
- Radar system / sonar / radios / navigation equipment / fish finders;
- Large (nylon / rope) nets which go deep into the sea and catch a large amount of fish / gill nets;
- Dynamite / bombs / explosives.

3 @ 1 mark

A fish farm is a (rectangular) artificial pool / pond made for breeding / growing fish.

1 @ 1 mark

- Rectangular / square / circular ponds;
- Man-made / made by humans;
- Concrete or cemented impervious base;
- Side is edged with solidified mud / edged with concrete;
- Trees planted around the fish farm.

2 @ 1 mark

Marine fish	Inland or freshwater fish
Drum	Rahu
Croaker	Palla
Catfish	Trout
Skate	Thalla
Ray	Grass carp

5 or 6 @ 3 marks
 3 or 4 @ 2 marks
 1 or 2 @ 1 mark

- Water pollution; from spillage of oil from the fishing boats (dev);
 - Overfishing; removes young fish and causes a reduction in species (dev);
 - Threat to mangroves; die in polluted water so breeding grounds for many fish are lost / habitats lost (dev);
 - Damage to ecosystem / ecology; food chains disrupted / species become endangered / extinct (dev);
 - Air pollution; from trawlers releasing fumes / named fumes, e.g. carbon dioxide into air (dev);
 - Nets / anchors / dynamite fishing; damage / erode sea bed / corals (dev);
 - Using illegal nets; removes young fish (dev);
 - Fish farming; chemicals run off into soils / water leading to eutrophication (dev);
 - Propeller blades; damage / kill fish (near surface) (dev);
- Etc.

Note: One mark for identification of appropriate idea and a further mark for development (in parentheses).

Note: Max. 2 marks if no development.

2 @ 2 marks

Levels marking

No valid response	0
Level 1	1–2
Simple point referring to any view (1)	
Simple points referring to any view (2)	
Level 2	3–4
Developed point referring to one view only (3)	
Developed points referring to both views (4)	

Level 3

5–6

Developed points referring to both views with evaluation or relevant example (5)

Developed points referring to both views with evaluation and relevant example (6)

Content Guide

Answers are likely to refer to:

Developing inland fish farming

- Greater return to fishermen / fishing industry;
 - Increased employment;
 - Use of technology and upgrading of skills will ensure increased fish production;
 - Favourable impact on foreign exchange earnings;
 - Reduces burden on crop and livestock;
- Etc.

Developing the marine fishing industry

- Improved facilities are being developed along the coast for preservation and storage;
 - Almost all communities along the coast of Balochistan depend on fishing for their livelihood;
 - Infrastructure facilities provided at Gwadar, Ormara and Pasni;
 - Ice factories and cold storage developed at Gwadar;
 - One fish harbour has been constructed at Pasni;
 - Could set up fish processing for further employment opportunities / potential to catch a lot of fish;
- Etc.