PILOT PROJECT FOR INLAND WATER WAYS NAVIGATION SYSTEM IN THE REACH BETWEEN NOWSHERA AND DAUD KHEL

By

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Inland Water Transportation Systems, (IWTS) have been developed, (Box-1), simultaneously with the extensive road and rail networks in many countries of the World. These countries still feel the need to continue investing in their inland water ways.

B0X-1
COUNTRIES WITH NAVIGATION SYSTEMS

Sr. No.	Country	Area (Sq. Km)	Total Length of Navigation Channels (Km)
1	USSR	6,59,2812	143,000
2	USA	3,618,770	72,500
3	UK	244,046	6,800
4	FRANCE	547,026	10,500
5	BELGIUM	30,513	2,000
6	GERMANY	356,975	5,900
7	INDIA	3,287,590	14,544
8	NETHERLANDS	40,884	6,000
9	BANGLADESH	143,998	12,882

The small country, Netherlands, has over 6000 Km of Navigable canals which is about 48 times the width of this country. Pakistan, which has an area of about 796,095 sq. Km, does not have a commercial IWTS, although it has fairly comprehensive network of Rivers and Canals, which can be developed for an efficient IWTS in the Country.

ADVANTAGES OF IWTS

i) Energy Conservation.

IWT is one mode which offers maximum saving of energy (Box-2).

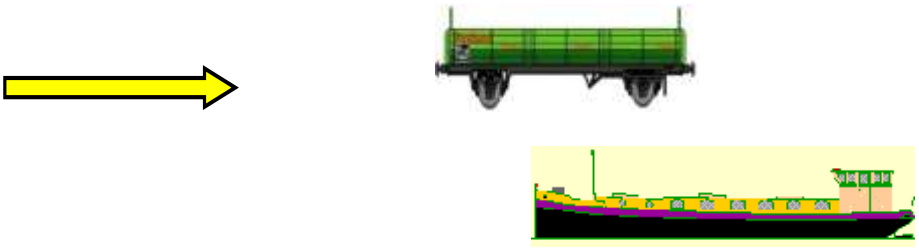
BOX-2
COMPARISION BETWEEN THE 3 MODES OF TRANSPORT

Distance, 1 ton of freight moved by 1 liter of fuel:

- Road 21 km

*: Adviser (NWRDP), WAPDA, LAHORE

- Rail 71 K



- IWT 182 Km

- Source: US Department of Transport

The operating cost of IWT (barges and boats) is very low. Water transport is a very cost effective alternative to road transportation as the transport network already exists naturally and often requires no or little improvement to be functional. Many industries such as construction, mining, and forestry rely on low cost transportation through inland water way systems to reach the market. For Rural Water Transport in particular, landing facilities are often not required for small vessels and, if required, may be relatively low-cost. Investing in small improvement of the water transport system along with the promoting of improvement of existing means of transport may be a very low-cost and low maintenance opportunity,

ii) Reduce Isolation of Under Developed Communities:
Investment in rural waterways technologies, infrastructure, and services has the potential to reduce the isolation of the very poor. Inland waterways provide the only viable means of transport to access vital services such as schools, health centres, markets, government services, and clean water for many remote underprivileged communities who would be inaccessible or too costly to service by other means, particularly in the Asia Pacific Region. Vietnam provides an innovative example, where boat ambulances have been established to bring health services to people, and boats that take children to and from school.

iii) Economically and Ecologically Sustainable Transport Solution:
IWT is considered an environmentally friendly, energy-efficient and low-emission transport mode – that enables in particular bulk transport at a lower emission discharge than road transport and can play a key role in establishing sustainable transport systems. A shift from road transport to IWT for both cargo and passengers usually contributes to more efficient use of resources and energy.

iv) Enhancing Economic
Opportunities / Employment: Water transport is important for direct employment, such as boat building and fishing livelihoods, as well indirectly, allowing the poor to access employment in the cities while living in less expensive locations. Increased mobility also plays a key role in supporting livelihoods by providing rural producers, such as farmers and fisherman, a means to access their end markets. For example, in Bangladesh some four million people are thought to earn their living by transporting foods and passengers along the country waterways, providing an estimated 60% of all employment in the transport sector.

v) Reduced/Minimal Cost
It does not require heavy maintenance like roads and railways.

vi) No additional valuable agriculture land is required as is the case for additional carriageways for roads and railways. Inter-regional traffic will result in further harmony and integration between the people of various regions of Pakistan.

vii) Farmers can own and operate small boats / barges for transportation of their products to various markets.

viii) Assistance to Railways and Road Transport Network

Operation of IWTS will take off a chunk of load from railways and road transport network, thus minimizing the traffic on these modes of transport.

It would also connect remote areas to road and rail network. While being fuel efficient it would reduce the cost of transport of goods and raw materials.

In the longer frame of time there will be resulted saving of oil and fuel and would reduce the oil and fuel import bill. This will improve the economic condition of the country.

- **MAJOR COMMODITIES AVAILABLE FOR TRANSPORTATION THROUGH IWTS IN PAKISTAN**

i) Wheat, rice, sugar, cotton, coal, cement, iron, steel, petroleum, fertilizers, etc.

ii) Iron ore from Kalabagh mines to Port Qasim for Karachi Steel Mill.

iii) Cargo to and from Afghanistan, China, and Central Asian Republics.

At present there are only two major modes of transportation in the Pakistan. “Railways” and “Roads”. The role of railways as an effective mode of transportation is declining for some time due to several reasons and consequently, road transportation system has been under increasingly great pressure.

Freight traffic in Pakistan is growing for several years (Box-3) at a rate which reflects positive development of economic activities in the Country.

BOX-3
FREIGHT MOVEMENTS

SR. NO.	YEAR	FREIGHT MOVEMENTS* IN BILLION TON - KILOMETERS (BT- KM)		
		RAILWAY 1/	ROAD 2/	TOTAL
1	2008-09	6.2	148.8	155.0
2	2009-10	8.4	201.6	210.0
3	2010-11	10.7	256.8	267.5
4	2014-15	22.5	602.5	625.0
5	2019-20	56.0	1365.8	1422.5

ASSUMPTION

* Down Country 30 % of freight
* Up Country 70 % of freight

Agricultural products which form a substantial proportion of freight traffic have increased. Wheat, Rice, Sugar, Sugarcane and Cotton are the main products which are transported within the country and to Karachi for export. Apart from agricultural products, commodities like cement, fertilizer etc., are transported in north-south direction.

- **THE LOOMING CRISIS**

  - Gas reserves of Pakistan are depleting.
  - Very little developed oil resources.
  - Oil import bill $ 12 billion annually, and rising.
  - Current cargo movement - 267.5 billion Ton-km daily.
  - After 4 years about 625 billion Ton-km cargo.
  - After 9 years about 1422 billion Ton-km cargo.

- In order to keep pace with the development and progress, the country relies heavily on imported crude oil. Such a rate of energy consumption can not be sustained indefinitely for a developing country like Pakistan. Like other developing countries some measures will have to be taken to conserve energy at a large scale. From the available statistics it is apparent that most of the imported high speed diesel (HSD) is consumed in road transportation. Hence a determined programme is needed to conserve energy in this sector by adopting a cheaper mode of transport.

IF NOTHING IS DONE THERE WILL BE PROHIBITIVE INCREASE IN

(I) IMPORTED FUEL BILL.

(II) NUMBER OF TRUCKS.

(III) ROAD NETWORK EXPANSION.

- River Indus, along with other rivers and canals, can serve as navigation routes, connecting almost all the major towns of the country, and is ideally suited to our needs.

- **STUDIES CARRIED OUT FOR IWTS IN PAKISTAN**

The Central Engineering Authority (CEA), Government of Pakistan, had a navigation directorate after the creation of Pakistan. It mostly dealt with the then East Pakistan (Now Bangladesh) and carried out some preliminary desk studies on the Indus. In 1959, the President of Pakistan issued a directive that a study should be carried out to make river Indus navigable from Sea to Kalabagh and also to study the feasibility of converting existing canals into navigation canals. As a result of this a study was carried out by foreign Consultants of WAPDA for making the Indus Basin Inter river Link Canals navigable in 1961. As the Federal Government was not prepared to pay the extra cost required for making these link canals navigable, the proposal was given up.

A number of desk studies and pre-feasibility investigation on IWT have been already carried out by some agencies during the last 45 years. These studies were undertaken by Government Departments & Semi-government agencies. A brief account of some of these studies is given in Box-4.

Box-4 STUDIES CARRIED OUT	
STUDY PREPARED BY	**NATURE OF STUDY**
1. IRRIGATION AND POWER DEPARTMENT (1967-1969)	Six Conceptual Studies considering Indus River and various canals as navigational routes between Kotri and Sukkur and further upstream to Guddu Barrage.
2. NESPAK FOR PLANNING COMMISSION, GOP, ISLAMABAD (1976)	Reconnaissance Report dealing with Navigational plans connecting Port Qasim to Sukkur.
3. DAMS MONITORING ORGANIZATION,WAPDA (1976)	Conceptual Report dealing with Navigational possibilities in Indus River from Jinnah Barrage to Sukkur.
4. IRRIGATION, DRAINAGE AND FLOOD CONTROL RESEARCH COUNCIL (1984)	Conceptual Report for Linking Karachi to Jinnah Barrage and Lahore using the River Channels for navigation. US Army Corps of Engineers.
5. U.S Army of Engineers and Maritime Administration (1987)	Appraisal Report warranting feasibility study, for IWTS in Pakistan.
6. LOUIS BERGER INTERNATIONAL, INC FOR MINISTRY OF COMMUNICATIONS GOP (May 1993)	Indus River Navigation Study, focusing on Port Qasim to Sukkur segment.

GENERAL CONCLUSIONS OF PREVIOUS STUDIES

- No detailed study, for IWTS on technical, economical, financial and institutional aspects is available.
- Due to lack of field investigations and limited data availability, mostly concept identification of the routes has been undertaken in previous reports.
    - **All studies have pointed out the importance of developing an Inland Water Transportation System in Pakistan, in order to reduce the costs of freight transportation.** No follow up was done on any study.

APPREHENSIONS

- Rivers get dry. Not enough water.
- Barrages obstruct traffic.
- Canals shut for several months.
- Bridges are low.

THE FACTS

- Between Nowshera and Daud Khel 210 kms (PLATE-I) no barrage no obstruction. Enough water.
- On Indus all barrages except Sukkur have locks.
- There are Canals as big as Rivers.
    - Nara Canal + 100 meters wide, 11-20 feet deep.
    - Link Canals. 100 meters wide 9 feet deep.
- Kachi Canal 300 km + 200 km – Between Punjab / Balochistan & Sindh Province.
    - Obstructions and obstacles can be easily overcome.
    - 10 / 11 month operations are acceptable.
- For normal 1-million tons Urea or Wheat presently transported from Karachi to Central Punjab.
    - Trucks use 45 million litres at a cost of about Rs 4.50 billion.
    - Trains use 12.5 million litres at a cost of Rs 1.25 billion.
    - It is estimated that Barges use 5 million litres at a cost of Rs. 0.50 billion.

THE IMPORTANT POINT TO BE KEPT IN MIND IS THAT WATER TRANSPORT IS THE CHEAPEST METHOD OF TRANSPORT IN PAKISTAN AS COMPARED WITH RAILWAY AND ROAD.

PILOT PROJECT IN THE REACH BETWEEN NOWSHERA AND DAUD KHEL

In this reach,

- The British introduced steam powered craft in 1823. They operated the Indus and Punjab flotillas between Kotri to Sukkur and Sukkur to Kalabagh, respectively. Extension of this carrier service was provided by sail boats above Kalabagh to Attock for cargoes destined for Peshawar. Operation of the flotillas was discontinued in 1871 when through railway service was introduced.

- Ferries were operated at several points to cross the rivers and country boats under sail or oar were seen playing on the Indus River. Attock Khushalgarh, Makhad, Kalabagh and Mari Indus are old river ports of the area.

- Some ferries were maintained under district administration as an essential transport service for the public. These were usually operated on contract and charge nominal fares from the travelers. The system was helpful for people to approach centres of administration, education, health services, courts, commerce transport etc.

- At present there are not a great many boats on the Indus between Attock -Daud Khel, and what there are, are small. These boats are wooden craft, 15-30 ft. long and 4-6 ft. wide. They are propelled by oars and sail or in a few cases by a gasoline engine gunwale and driving a propeller

on a long shaft. Cargoes taken downstream consist of charcoal, firewood, dung, food stuffs (principle grain) and livestock. The general use of the two rivers i.e., Kabul and Indus for navigation in future would depend on the requirements of cargo transfer between the main towns / villages which the water way would connect.

- This project is expected to serve the town/villages as given in Box-5.

BOX-5
TOWN AND VILLAGES TO BE SERVED BY INLAND NAVIGATION PROJECT

SR. NO.	SETTLEMENT*	BANK*	RIVER MILES FROM NOWSHERA	ELEVATION Ft. (AMSL)	Population (1991)
a)	**KABUL RIVER**				
1.	Nowshera City	L	0	940-960	54177
2.	Nawa Kill	L	0.4	945-955	2613
3.	Nowshera Cantt	R	0.8	940-980	43227
4.	Pir Sabak	I	4.4	940.950	14588
5.	Zara Miana	I	6.4	94.950	7563
6.	Turlandi	L	8.4	960.980	2508
7.	Misri Banda	R	9.9	940.950	10063
8.	Akora Khatak	L	10.4	930.960	19494
9.	Ali Mohammad	L	11.4	940.950	1105
10.	Mushak	L	11.7	940-950	1487
11.	Mughai Kai	L	13.2	950-970	5980
12.	Nandrak	L	13.7	960-980	4316
13.	Mian Isa	L	14.9	940-960	5396
14.	Shaidu	L	15.05	950-980	19554
15.	Janangira	R	16.6	940-960	6208
16.	Deobandi	L	16.7	943-951	3484
17.	Dheri	R	16.8	950-960	4288
18.	Nadua Naral	R	17.6	950-960	2961
19.	Nawan Killi	R	18.2	940-950	2543
20.	Nihlpur	R	18.7	950-970	1394
21.	Kund	R	19.4	940-980	592
b)	INDUS GORGE UPPER				
1.	Khora Khel	L	16.4	940-960	2050
2.	Mansar	L	16.9	950	390
3.	Jabbar	L	18.4	940	460
4.	Mullah Mansoor	L	18.9	920	2870
5.	Matiahi	L	21	940-960	650
6.	Attock	L	21.4	930-980	1560
7.	Khairabad	R	21.4	920-1000	4930
8.	Darwazai	R	25.5	910-950	2530
9.	Jaba	L	26.2	945-955	453
10.	Manderi	R	27.2	950	1780
11.	Ghariala	L	26.4	940	2050
12.	Jabbi	R	27.9	950	112
13.	Dher	L	27.9	930-950	987
14.	Barotha	L	29.4	940-960	697

SR. NO.	SETTLEMENT*	BANK*	RIVER MILES FROM NOWSHERA	ELEVATION Ft. (AMSL)	Population (1991)
15.	Amanpura	R	32	920	565
16.	Gharibpura	R	33.9	945-970	280
17.	Bagh	L	34	950-970	651
18.	Thoa	R	34.2	935-960	565
19.	Shaqai	R	41.4	940-1000	95
20.	Sar Toi	R	47.2	950-1000	660
21.	Pari/Shah Ziarat	L	52.4	930-970	1830
22.	Shadipur	R	53.4	900	480
23.	Pasta Chanda	R	54.9	940	956
24.	Dandi Jaswal	L	56.4	925	800
25.	Chorlakki	R	60.2	910-950	3680
26.	Kamar (Qamar)	R	63.8	940	5900
27.	Dhok Na	R	67.9	940	56
c)	INDUS GORGE LOWER				
1.	Kushalgarh, West	R	68.4	920	2180
2.	Kushalgarh East	L	68.4	920	125
3.	Mankur	L	69.1	910	500
4.	Tallah Kadha	R	69.9	950	39
5.	Chausar	L	70.9	920	375
6.	Kassaba (Qasaba)	R	72.5	920	190
7.	Ziarat	L	73.4	940	590
8.	Pesi	R	74	850	520
9.	Bela	L	74.2	930	1600
10.	Awan Banda	R	79.9	930	39
11.	Ratti Kheri	L	80.4	925	100
12.	Unnamed Village	R	83.4	880	130
13.	Aiya Khan Banda	R	85.2	900	195
14.	Sharqi	R	92.5	800-820	430
15.	Tora Bhera	L	93.8	780	1000
16.	Bergai	R	94.4	780	39
17.	Narai	R	95.4	780	39
18.	Kanjka	R	101.6	840	390
19.	Makhad	L	102.9	850-900	13193
20.	Dhok Nalhad	L	105.4	860	75
21.	Dhok Nandure	L	105.9	875	175
22.	Rakwan, West	R	106.7	725	540
23.	Rakwan, East	L	106.7	820	3790
24.	Dhok Bute	L	108.4	820	424
25.	Mullawali	R	108.4	725-750	390
26.	Dubokki	R	109.4	840	117
27.	Mallah Kach	L	110.9	750	175

Source: 1:50000 maps of SOP.

At several points along the river such as Makhad, boats are available to ferry people across the river.

- One of the major concerns expressed in the past by various agencies is that since the water in the Indus River and its tributaries is primarily diverted for irrigation through an extensive network of barrages and canals, there is not sufficient water flow in the river during extended periods of time to be able to maintain commercial navigation. These concerns are based on the premise that in a country like Pakistan, the dominant consumer of water is, and will continue to be, irrigation for agricultural production.

- Kabul & Indus Rivers meet at about 4 miles upstream of Attock bridge or about 20 miles downstream of Nowshera Town. Immediately below Attock-Indus enters a gore (approx. 5 miles long) and remains confined in a narrow river valley for about 100 miles until it emerges into the Punjab plain above Jinnah Barrage.

- Average monthly flows of Kabul & Indus are provided in Box-6.

BOX-6
AVERAGE RIVER FLOWS*
1000 Cusecs

MONTH	KABUL RIVER AT NOWSHERA (1976-2010)	INDUS AT KHAIRABAD (1982-2010)
JAN	10.7	29.00
FEB	10.0	45.97
MAR	16.9	47.01
APR	33.5	64.03
MAY	49.1	149.30
JUN	61.4	193.40
JUL	65.9	256.40
AUG	48.5	245.40
SEP	22.0	139.90
OCT	11.8	68.41
NOV	9.3	54.59
DEC	9.1	40.51

*: H&WM (WAPDA)

Based on the review and analysis of Kabul and Indus Rivers flow and other data from hydrological records and the Historic River Discharge Data reports published by WAPDA, the following conclusions are reached:

- Kabul River below Nowshera has a slope of about 2 feet/mile. Kabul and Indus Rivers meet about 20 miles downstream of Nowshera or about 4 miles upstream of Attock Bridge. Above Attock Bridge Indus has a bed slope of about 12 feet / mile. Below Attock Bridge to Kushalgarh, a distance of about 43 miles the bed slope is about 3.5 ft / mile. Bed slope of the Indus channel below it upto Kalabagh town is about six inches/miles. It is believed that both rivers can be easily navigated in both upstream and downstream direction.

- **Nowshera to Attock**: Kabul River flows are probably adequate to support navigation upto Attock for 12 months of the year. Detailed hydraulic and morphologic analyses including river surveys are required to answer questions of navigability and channel stability within the reach.

  Attock to Daud Khel: Preliminary analysis of available Indus River flow data, indicates that navigation may be possible on the river for upto 12 months without significant dredging. Again,

detailed surveys and hydraulic analysis are required to develop firm estimates of season length and to answer questions about navigability.

- **Aims and Objectives:** Recent transportation studies in Pakistan have pointed out the importance of developing an inland water transportation system in order to reduce the costs of freight transportation. Water transportation is the least expensive mode for moving freight. It is particularly used in other countries to move bulky and heavy commodities, such as raw materials for industrial production and agricultural production and agricultural products. Water transportation is typically the best mode to handle freight that is not as time-sensitive and is moving between locations along or near a waterway.

- Published estimate of the present volume of river traffic or even the number of boats between Nowshera to Daud Khel, has not been found.

THE MAIN AIM / OBJECTIVE OF THIS PILOT PROJECT FOR INLAND WATER WAYS NAVIGATION SYSTEM IN THE REACH BETWEEN NOWSHERA AND DAUD KHEL IS TO CARRY OUT A DECISION-ORIENTED STUDY TO PROVIDE SUFFICIENT INFORMATION TO THE GOVERNMENT OF PAKISTAN REGARDING THE PROJECT COST AND ITS BENEFITS. THIS STUDY WILL LOOK AT VARIOUS INLAND TRANSPORTATION SYSTEM ALTERNATIVES AND CONSIDER ALL THE FACTORS THAT AFFECT THEIR ECONOMIC VIABILITY AS WELL AS OTHER ISSUES INVOLVED.

SURVEYS, INVESTIGATION AND STUDIES TO BE CARRIED OUT

- In order to implement the proposed IWT system from **NOWSHERA TO DAUD KHEL**, it is imperative that detailed technical and economic feasibility be carried out under proper expertise. Certain parameters must be drawn before the feasibility study be undertaken. A brief list of these parameters is given as under,-

i) DATA COLLECTION

- Location of the main centres of production and consumption of commodities suitable for IWT.

- Existing traffic volumes of these commodities between various centres.

- Existing freight capacities of railway and road.

- Anticipated cargo which may be shifted to IWT.

- Freight costs of rail and road transportation systems.

- Existing number of boats operating in the area and number of people depend on this work for living.

- Design details of existing inland cargo crafts used in various waterways of the world. This should include shape, size, construction material, and prolusion methods.

- Information on the design and details of inland ports and cargo handling facilities.

- Data and criteria for navigation structures (such as locks), bed and bank protection methods etc.
- Collection of river discharge data.

- Any other data required by Consultants for the feasibility study of the project.

ii) COMMODITY AND FREIGHT MOVEMENT SURVEY (This will include determination of cargo type and load to be transported)

- This study will conduct a field survey and an in-depth analysis of commodity and freight movements that could use this inland water transportation system.

  a) Water transportation is typically the least expensive mode to move large volumes of bulky and heavy commodities over long distances, such as raw materials for industrial and agricultural production, moving between locations along or near a waterway. However, when the cargo origin and /or destination sites are not next to the waterway, use of the water transportation system requires a transfer to another mode at one or both ends, involving additional transfer and handling costs. The costs of getting cargo to and from the inland waterways and on and off the barge may cancel out the "line-haul" savings from barge transport, if the portion of the cargo movement that can go on the waterway is relatively short.

  b) The first step in developing freight demand projections on the alternative waterway systems would be to identify the cargo volume that inland water transportation could compete for, based on the origin, destination, volume and other commodity characteristics. This commodity-by commodity analysis initially looked at the potential for each commodity to move by barge, and if the characteristics of the commodity movements made them suitable for inland water transportation, estimates would be developed of the total volumes moving in 2012-13 as well as projections of future volumes to the year 2020, based on available information or estimates of the future volume of production and consumption of major commodities in Pakistan. This projected volume will then allocated to the rail or barge mode based on a least cost-route or modal split analysis.

iii) FIELD SURVEYS*

- The use of rivers for navigation would depend on the requirements of cargo transfer between the main towns, such as Nowshera, Akora Khattak, Attock Town (Campbelpor) Khushalgarh, Makhad Kalalabgh etc. which the project would connect are close to the periphery of the reservoir. Transfer of non perishable cargoes is cheaper on the water and would be studied in detail for this purpose.

- Setting up of stations on the route of navigation.

- Detailed survey to locate suitable sites for the ferries (which would be in areas where sedimentation is not accumulating). Pedestrian traffic would be given a stepped approach to water line.

- Levelling between these stations with respect to the national bench-mark preferably S.O.Ps datum.

- Plane Tabling of the area showing the topography around the stations.

iv) GEOLOGICAL INVESTIGATIONS.

Geological investigations will be carried out at locations where water ways will need widening & deepening and at sites of heavy structures.

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*The Consultants will review all the available survey data and then will prepare additional survey requirements accordingly.

v) HYDROGRAPHIC SURVEY* (Scope of work consists of the survey of rivers bed (Nowshera to Daud Khel) using echo sounding method by conducting cross-sectional observations at close intervals as well as longitudinal profile)

Over all length is about 210 Km. It has variety of terrain and nature of river bed, different depths, and variations of water level and velocity of flow. The area has high & low hills/mountains and both rocky and sandy areas along the water line. There are rocks and boulders at the river bed. This area is most dangerous for boats.

- River Kabul and River Indus are to be adopted for navigation routes.
- Detailed cross-sections of the two rivers (Taking soundings at various sections of the River Kabul).
- Measurement of discharge.
- Measurement of water velocity with depth.
- Observations of sediment flow in the rivers.
- Observations and measurements of the existing structures built on the alignment of navigation routes such as bridges, etc.

vi) MODEL STUDIES*

- Determine appropriate design parameters of the navigation vessel/craft most suited to the project.
- Study the effect of water disturbance, caused by propelling craft, on the bed and bank of channels and to evolve an effective method to protect the bed and side slopes.

JUSTIFICATION FOR UNDER-TAKING THE SURVEY / FEASIBILITY STUDY

- The concept of Inland Navigation System as a mode of transport in Pakistan through river Indus, its rivers and canals has been discussed for the last two decades. Various Government and Semi-Government agencies have carried-out desk studies on the prospects of Inland Water Transport System in Pakistan. For one reason or the other this aspect of transportation could not be considered seriously and no practical steps have been taken so far to ascertain the viability or otherwise of the project.
- All previous comprehensive transportation studies in Pakistan have pointed-out the importance of developing an inland water transportation system in order to reduce the costs of freight transportation. Water transportation is the least expensive mode for moving freight. It is particularly used in other countries to move bulky and heavy commodities, such as raw materials for industrial production and agricultural products. Water transportation is typically the best mode to handle freight that is not as time-sensitive and is moving between locations along or near a waterway.
- A pilot project of IWT from Nowshera to Daud Khel covering a distance of about 210 Km (130 Mile) be investigated. This section of the route is not likely to involve any major technical problem and implementation will be easy.

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*Deferred (will be carried out under the PP=.C-I of the Project)

- Water transportation is also the most energy efficient mode to handle freight. It has been estimated that water transportation consumes only 8% of the energy required by highway transportation and about 25% that required by rail.

In a country like Pakistan, with significant population centers, a major agricultural producing region and manufacturing areas near major rivers and canal systems, an opportunity exists to develop a commercial navigation network. An inland water transportation system along the Indus river, its tributaries and canals can not only reduce transportation costs to improve the competitiveness of existing products, but can also help the Government of Pakistan promote the area to attract additional development, in accordance with an overall long-term development strategy.

IMPLEMENTATION PERIOD

- The project study period is 9-months.

- It is proposed to establish a "Pilot Project Cell" (PPC) by appointing officers, Sailors and Technicians from Pakistan Navy, (who are experts in their fields and most suitable for the job) for:-

  - Supervise the Feasibility Study.

  - (The study will look at the IWTS comprehensively including technical, economic, financial and institutional aspects for providing a commercial navigation route between Nowshera and Daudkhel).

  - Prepare Rules & Regulations for Effective use of River Channels for Cargo Movement.

  - Prepare Charts for Safe River Navigation.

  - Prepare Rules for Regulating Water Borne Traffic.

  - Providing Security.

Prepare PC-I for the construction & running of the Pilot Project.

- The estimated cost of the study is about Rs. 56.987 million, as summarized in Box-7.

BOX-7
ESTIMATED COST (Rs. Million)

Sr. No.	MONTHS	F. EX*	LOCAL	TOTAL
1	3	-	19.500	19.500
2	6	9.850	27.637	37.487
Total	9	9.850	47.137	56.987

* : 1 U. S. $ = Rs. 90.

The objective of this project is to provide sufficient information to the Government of Pakistan as to the project costs and benefits. This study will look at various inland transportation system alternatives and consider all the factors that affect economic viability and other issues involved, for which extensive work will have to be carried out.

Funds for the study are to be arranged by Ministry of Water & Power, Government of Pakistan, Islamabad.

EXPECTED OUTCOME OF THE STUDY

Based on the surveys and study a detailed technical and comprehensive economic analysis of Inland Water Transportation System option in Pakistan would be carried out. On completion of these technical and economic studies, the project of Inland Water Transport will emerge in its real perspective and the Government of Pakistan will be in a better position to search for a financing agency.