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IMPACT OF THE PROVINCIAL GOVERNMENT POLICIES ON AGRO-FISHERIES BASED COMMUNITIES OF CENTRAL INDUS WETLANDS COMPLEX

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Homo Sapiens are highly inclined by their surroundings covered by social and physical environments. Social environment develops human personalities, behaviors, and social interactions while physical environment (including air, water, soil, flora, fauna, and energy) provides the necessities and luxuries of life. Globally, societies (rural, urban, modern, and traditional) are highly dependent on the ecological resources to fulfill their socio-economic needs. Wetlands are considered as a significant component of environment that provide tangible and intangible benefits to fisherman communities regarding eco-resources and eco-services. Indus, the largest river of Pakistan, has most ancient civilizations, cultures, unique ecologies, and biodiversity from the alpine lakes of the Himalayas to the deltaic regions of Sind. Current study focuses on the Central Indus Wetlands Complex comprising Chashma, Taunsa, Guddu, Sukkur barrages and Indus basin crossing nine districts of the Punjab and Sindh provinces. The study examines the role of the Punjab and Sindh governments policies on agro-fisheries based communities of Central Indus Wetlands Complex to measure the influence of freshwater bodies on socio-economic status of dependent fishermen communities. Using purposive sampling technique, a sample of 608 fishermen (Punjab=373 and Sindh=235) having fishing as major occupation was carefully chosen. Non-Probability purposive sampling was used because the population was unknown and very difficult to approach in and along the Indus River. Analysis based on statistical models to study the extent of Indus River on socio-economic status of dependent fisherfolks. Results show that Indus River fisherfolks are highly deprived due to current provincial policies for fishing; bivariate analysis indicates that provincial policies have high association with income (0.000), expenditure (0.000) and remaining debt (0.132) of fishermen and a unanimous policy is required for the preservation of the rights of fishermen as well as natural capital (wetlands).
Keywords: Wetlands, fishermen, contractual and permit system, feudalism, Central Indus Wetlands Complex.

INTRODUCTION

Historically natural resources have been sustaining the basic human needs from the beginning. Previously they were directly involved in the cultures, however, after the post industrialization era final goods are now indirectly showing the presence of nature (Adesina, 2005). Globally, rural communities are especially contingent upon biological resources to fulfill their livelihoods. Scientific studies show that these resources play a key role in fiscal growth of a country. Dissimilar experiences of development during nineteenth and first half of twentieth century show that eco-resources are mechanism of socio-economic development of a state. Natural capital can lift the economic progress and hasten the economy of a nation (Behbudi *et.al.*, 2010).

Pakistan's wetlands have a lot of economic importance for its local communities (Nazir *et al.,* 2016). Especially Punjab and Sindh cover a vast area with watersheds. As flyway to Central Asia and South Asia, these wetlands are also the habitat for migratory birds. Fisherman communities of Pakistan are directly dependent on these wetlands due to immediate neighborhood (Pradhan *et al.,* 2018). This dependency is in the form of fishing, flora, fauna, cultivation, livestock, domestic use of water-based products (IUCN, 2007). Central Indus Wetland Complex consists of four major wetlands including Chashma, Taunsa, Guddu and Sukkur barrages. In Punjab, fishermen communities are working under contractual system, however, Sindh government has lifted this restriction and now fishermen are free to take benefit by only containing annual permits. Mostly fishermen communities belong to Sindhi casts because the Indus River and these fishermen communities have long historical association in Sindh. Indus River has these people along all banks of different districts in Punjab and Sindh. Some people are professional fishermen; however, some people do this activity

for recreational purpose only (World Wide Fund for Nature Pakistan, 2014).

Pakistan is the sixth most populous country on globe with the population of 220 million people and it will reach 310 million in 2050 (Population Matters, 2017; Govt. of Pakistan, 2018; Govt. of Pakistan, 2019;), having per capita income of 1,622 US Dollars. The poverty rate (1.90 US Dollars per day or less) of population in 2007 has decreased from 13.2 % to 4.9 % in 2017-18. However, the human progress indicators (education and health) remain low as compared to other countries, especially in South Asia. This degradation is mostly due to the rural population which is directly involved in agriculture and fishing and other natural resources as livelihood (Tarar *et al.,* 2019). The fisheries sector (both fresh and marine water) barely contributes in domestic and national economic growth as less than the 0.4 % of total GDP is comprised of fisheries. According to World Bank statistics in 2015, 360,000 tons of marine water and 132,500 to151,000 tons of freshwater fisheries have been subsidized in the country's economy. The marine fisheries are only practice in the coastal areas of Sindh and Baluchistan while freshwater fishing is done all over Pakistan. Total 360,000 people are directly while 900,000 to 1800,000 people are indirectly attached with the fisheries-related industries in the country (ILO, 2016).

Natural and Social resources are the basic elements of fish industry, as all the industries directly or indirectly rely on these two systems. The industrialization process (selection of labor, extraction of raw material, transportation of goods, completion of final products, promotion and finally consumption of goods) must obey the basic human rights and avoid the rights abuses at each level. Like other industries, fishing is also exposed to severe violation of human rights both on land and water (Jardine and Sanchirico, 2015). This shows that there is a room to make strategies to control the power, politics and policy nexus and ensure the implementation of laws. This can be done with public-private collaborations with sincere attentions and monitoring of joint efforts (Lewis *et.al.,* 2017)**.** Fishermen communities belonging to different countries like Indonesia, India, Somalia and Bangladesh also are deprived, poor and victim of power-politics and policy nexus (Basavakumar *et al.,* 2011; Cahaya, 2015; Das *et al.,* 2015; Gilmer, 2016).

Human Rights has gained a primary role in recent international development policies. The "rights-based approach" has become prominent for the human prosperity (Sen, 2001; Fukuda-Parr, 2003). In its application to natural resource management, it is essentially based on a human right-based framework which contains institutions and power structures to assess resource allocation and their access to ensure their contributions to livelihoods and wellbeing, sometimes termed as environmental entitlements (Leach *et.al*., 1999; Nakamura *et al.,* 2018). Human Rights application in natural resource management gains devotion of organizations and institutions worldwide. It has vital contributions in livelihood and wellbeing of local communities which often formed the environmental entitlements, especially the United Nations (UN) and US Department of State (UNDOS) passed many resolutions to highlight the modern slavery in fish industry (United Nations, 1948; United Nations, 2001; United Nations Inter-Agency Project on Human Trafficking, 2009; US Department of State, 2010; United Nations, 2011; US Department of State, 2013).

The fisherfolks of Pakistan have immense need of improving livelihood through reviewing and re-adjusting the policies of Punjab and Sindh governments, by breaking the power-political nexus of feudal and contractors and provision of basic human facilities like education. Rights of land, health and free environment to work are essentially required. There are numerous policy drawbacks in governance framework that increase the miserable conditions of fishermen due to many factors such as annual contractual systems, influence of feudal, low budgeting, repeated allocation of contracts from 30 years to a single person/family, illegal fishing, corruption in fisheries department of Punjab and Sindh, among others (Shah *et al.,* 2018). During 2007 the National Policy and Strategy for Fisheries and Aquaculture Development of Pakistan was initiated but it could not be fully implemented due to lack of political will. Although this and other many policies are directly or indirectly benefitting the economy and production of fish instead of uplifting the socio-economic status of fishermen, a national Policy Framework is needed to directly strengthen the fisherfolks and to upgrade their livelihood and free them from exploitation (International Institute of Sustainable Development, 1999). This study examines the impact of provincial administrative policies of Punjab (Contract) and Sindh (Permit) on socio-economic status of Agro-fisheries based communities and highlights the significant difference between the socio-economic indicators of the fisherman communities of both the provinces (Noman *et al.,* 2017; Hanif *et al.,* 2019).

Thematically Vandana Shiva discusses the power and politics nexus used by the exploiters due to occupying the natural resources (Shiva, 2015). Vandana Shiva here describes that all the modern economic development is based on the exploitation of the natural resources and nearby dependent communities. The economic and cultural security of the deprived, poor and suppressed people is at risk due to massive exploitation for profit and maximization of consumption. In current study the middleman in the shape of contractor in Punjab and feudal in Sindh are exploiting fishermen to maximize profit and having occupied the Indus River resources to generate high rates of consumable goods. The lives of the fishermen communities of both the provinces are highly miserable due to barriers against sustenance economy. The greedy behavior of the contractors and feudal not only pushes the life of the fisherfolks in darkness but their future generations are also at risk due to absence of basic needs in the form of freedom, respect, food, education, and health. The

only way to restore the lives of these deprived communities is by making their access to direct benefits from the nature's economy and fixes the sustainable development of the river-based resources by using tools of appropriate policies and environmental education.

This study argues that Central Indus Wetlands Complex (CIWC) in Pakistan can serve as a catalyst for enhancing the socio-economic status of the dependent communities if the role of middlemen is minimized and interventions are designed/strengthened for the sustainability of the natural capital.

MATERIALS AND METHODS

Present research was carried out at the central part of the Indus River named as Central Indus Wetlands Complex (CIWC) starting from the Jinnah Barrage and ending at Sukkur Barrage. This length is across the two provinces of Pakistan, the Punjab and Sindh, stretched over approximately 468.75 Miles (Atiq-ur-Rehman, 2012a). The overview of the study area starts from the most upstream of the Indus River and gradually in sequence goes towards the most downstream of the study area. The sample size against each site is presented in the Table 1. The first barrage at the most upstream of Indus River is Jinnah Barrage situated in Mianwali District, Punjab. A few numbers of fishermen (only 07 families) were found in village Jalal Pur because limited fishing practices are performed there. Second barrage at downstream is Chashma in the same district having a large community of fisherfolks there. Total three villages including Basti Ghandi, Sindhian Wala Ban and Haider Colony were there for the residence of dependent fishermen having 238 households. The next location of the Indus dependent fishermen is Taunsa Barrage, having 92 families of fisherfolks. Taunsa Barrage upstream and downstream have different contractors based on the winning of annual auction conducted by fisheries department Punjab. Here one can find the Indus River boat residents' fishermen communities as a unique populace of water. Allah Wali Basti and Basti Sheikhan were rest of the two communities there for data collection. Forth site for data collection was Indus Basin Rajan Pur which is on the right side downstream towards Sindh.

Here only a single village Basti Manchari Merani was found having a very few numbers (14 households) of fishermen. Parallel on the opposite side (left bank of Indus River) two villages Basti Dost Muhammad and Asghar Abad of Chacharan, District Rahim Yar Khan were selected with total population of 22 households. Native feudal are the contractors and they also use the river land for their private cultivation. Being highly cultivated land, they grow wheat in winter while during summer no cultivation is possible due to inundation of river water. The premises of Sindh started from the Kashmor and first site is Guddu Barrage having a single village Sher Alam Merani (n=35). Here the permit system is used for the fishing practices and annual permit is issued by the Sindh Fisheries Department. The community was very large but due to security issues the data collection team had to leave the area before time. Local villagers are also affected by the feudal residents along the bank of the Indus River. Mostly, feudal use to keep the half of all the collected fish and use different exploitation methods. Although permit system is little better than the contractual system, the true benefits can be gained

Table 1. Distribution of respondents according their study area profile.

Site	District	Barrage/Basin	Sample size	
	Punjab Province		***f***	**%**
Basti Manchari Mirani	Rajanpur	Indus Basin	14	03.8
Asghar Abad	Rahim Yar Khan	Indus Basin	11	02.9
Basti Dost Muhammad	Rahim Yar Khan	Indus Basin	11	02.9
Basti Sheikhan	Muzaffargarh	Taunsa Barrage	62	16.6
Boat Residents	Muzaffargarh	Taunsa Barrage	16	04.3
Allah Wali Basti	Muzaffargarh	Taunsa Barrage	14	03.8
Haider Colony	Mianwali	Chashma Barrage	57	15.3
Sindhian Wala Ban	Mianwali	Chashma Barrage	83	22.3
Basti Ghandi	Mianwali	Chashma Barrage	98	26.3
Jalal Pur	Mianwali	Jinnah Barrage	07	01.9
	Total		373	100
	Sindh Province		***f***	**%**
Sharfa Abad	Sukkur	Sukkur Barrage	42	17.9
Sher Dil Mahar	Gothki	Indus Basin	12	5.1
Chattal Mirani	Gothki	Indus Basin	146	62.1
Sher Alam Mirani	Kashmor	Guddu Barrage	35	14.9
	Total		235	100
	CIWC		***f***	**%**
	Total		608	100

through the end of political influence and feudalism. The second last site of CIWC in Sindh province was the Ghotki situated at the left bank of river towards downstream. Here a large community Chattal Mirani with 146 families of fisherfolks and Sher Dil Mahar having low numbers of fisherfolks i.e. 12 households were surveyed. The last site of CIWC was Sukkur Barrage situated in the Sukkur District, Sindh. Here Sharfa Abad with total 42 households of Indus fishermen were surveyed.

Non-probability method (purposive sampling technique) was chosen for the selection of respondents due to various barriers, including unidentified population size, scattered population, high security risks for enumerators, rapid movements, and seasonal migration of fisherfolk and no vital source of data. The respondents of this study included only Indus based fishermen who were household head and were engaged in fishing as primary occupation, under contractual or permit System,

The study was quantitative in nature and due to non-probability sampling the non-parametric tests were applied to cope the abnormality of the data. Chi-Square test was used to check the association between the variables while Cramer V test was pragmatic to pattern the strength of association. A structured interview schedule was used as a tool to measure the socioeconomic status of the fishermen communities dependent on CIWC. To check the reliability of the tool the Cronbach's Alpha test (Table 2) was run on most of the questions (243 out of 304). Only the irrelevant questions (61) were skipped and result was found on the merit as 0.709. Statistical Package for the Social Sciences software was used for data analysis (Akpara and Pouget, 2017).

Table 2. Reliability statistics of research tool.

Cronbach's Alpha	No of Items
0.709	243

RESULTS AND DISCUSSION

Socio-economic status (SES) can be the combination of resources, finance, material goods, health and educational facilities, power, social capital and leisure time (Oakes & Rossi, 2003).SES indicators are many in list but most important are income, occupation, health and education. These indicators are also dependent on each other as income is dependent on occupation and education while health is directly related to the education (Winkleby*et al*., 1992). SES usually defines the individuals' social and financial level in the community (Foley, 2007; Mukherjee, 1999). SES must include the financial, cultural, human social and capitals. There is no single measure for the true judgement of SES as it is the combination of list of indicators. The main points of the existing policy of the Punjab province for Agro-fisheries (Government of the Punjab, 2015) of the Indus barrages and basin areas following:

- the concerned body to implement the law is Department of Fisheries, Government of the Punjab.
- auction of agro-fisheries (biological resource) is conducted at each basin and barrage to catch and market fish by contractor for contract period.
- fishermen are further hired by the contractor who employs them under labor laws.

The Sindh Government amended its laws (Government of Sindh, 2015) and shifted from contractual to permit and license for the fishermen and recreational fishing under the supervision of the Livestock and Fisheries Department, Government of Sindh. The rules of the Punjab and Sindh governments assure the rights of the fishermen but the actual execution on the ground is feeble due to the political influence of the contractors in the Punjab and feudal in Southern Punjab and Sindh provinces. The majority Indus fishermen belongs to Sindhi castes and in the Punjab, they are bonded labor of contractor from generations resulting in their exploitation. Contractors are also political leaders, feudal and have been occupying the contract for more than two decades. They impose fake debts and violate the laws of state which ensure the basic rights of labor. Sindhi fishermen are comparatively better but local feudalism also make them victim of exploitation.

***Socio-economic status (SES) of the fishermen of Punjab*:** Data in Table 3 were recorded against different socio-economic variables to examine the SES of fishermen communities of Indus River and to unpack the effect of wetland on SES of said communities. The most important data in this regard are income, expenditure, savings, and remaining debt as these variables in a straight line depict the actual existence of an individual or community in the social and economic status. The data of these SES variables were noted in contrast to all sites in CIWC and analyzed further to take the profound picture. All the variables (income, expenditure, savings, and remaining debt) were divided in equal interval-based categories of Pakistani Rupees. The data of income and expenditure are per month while savings and loan are compared to the total lifespan of fishermen. Data in Table 3 explain that the income in the Punjab gives the highly surprising figure that in the 21st century when the global economy is enhancing, at local and communal level these miserable peoples are existing far below the poverty line. Total 64.6% of the total population of fishermen in the Punjab were found in the category of below 10,000 rupees with group mean of 7724.89 rupees (73.35$). During the year of data collection (2017), the average rate of US dollar for whole year was recorded 105.3175 US Dollars (X-Rates, 2019). The second most prominent category was 10001-15000 rupees, where 27.3% of the total fishermen of the Punjab were recorded. Here it can be mentioned that almost all (91.9%) population surveyed in the Punjab has income less than 15000 rupees (142.43$) per month. Only 8.0% were found with the income more than 15000 rupees. Almost similar data were

Table 3. Income, expenditure, savings and remaining debt of the Punjab province.

Categories in Pakistani Rupees	*f*	*%*	Group Mean	Group S.D
Income				
Below 10000	241	64.6	7724.89	1637.768
10001-15000	102	27.3	12197.62	1347.390
15001-20000	19	05.10	16770.37	1427.281
20001-25000	05	01.30	22000.00	1414.214
>25000	06	01.60	34166.67	8010.410
Total	373	100.00	10025.45	4645.356
Mean Income	10025.45	**Standard Deviation**	4645.356	
Median	9000.00	**Skewness**	03.261	
Expenditure				
Below 10000	133	35.7	8294.17	1343.618
10001-15000	157	42.1	12208.80	1409.486
15001-20000	67	18.0	17195.46	1441.568
20001-25000	08	02.10	21632.88	1047.421
>25000	08	02.10	30892.25	4023.733
Total	373	100.00	12311.54	4640.209
Mean Expenditure	12311.54	**Standard Deviation**	4640.209	
Median	11300.00	**Skewness**	01.687	
Savings				
Below 10000	348	93.30	295.98	1467.235
10001-15000	01	00.30	15000.00	0.000
15001-20000	00	00	00	0.000
20001-25000	06	01.60	25000	0.000
>25000	18	04.80	74166.67	72360.413
Total	373	100.00	4297.59	22353.975
Mean savings	4297.59	**Standard Deviation**	22353.975	
Median	00.00	**Skewness**	09.228	
Remaining Debt				
Below 10000	117	31.40	976.50	2830.450
10001-15000	06	01.60	13000.00	1549.193
15001-20000	18	04.80	19166.67	1465.285
20001-25000	07	01.90	24428.57	1511.858
>25000	225	60.30	105355.56	93141.203
Total	373	100.00	65451.07	87617.057
Mean Debt	65451.07	**Standard Deviation**	87617.057	
Median	40000.00	**Skewness**	02.658	

noted against the expenditure per month of Indus fishermen of the Punjab province. More than third fourth ($3/4^{th}$) (77.8%) fishermen of the Punjab were found with the expenditure below 10000 rupees per month having 8294.17 rupees (78.75$) of group mean.

Obviously, this is due to existence of individuals in same income category. Rest of the respondents (22.2%) were having the expenditure against the group mean was 23240.19 rupees (220.68$) per month. No doubt this is more than the income of these individuals which impulse them for more exploitation of contractors. This more expenditure roots the increase in their loan, and it may cause the days of their life under bonded labor/oppression. Almost all (93.30%) respondents were having nothing in saving because of the economic picture discussed above. Only 4.8% were found with savings more than of 25000 rupees with same group mean. The overall mean of the Punjab was 4297.59 rupees (40.80$) contrary to total savings of life. However, the debt in Punjab is high because of more expenditure and less income. Higher figures of debt refer to the manipulation of local contractor as they frequently execute fake debt and record it contrary to the individual even, he has a very minute violation as even took a single fish from collection. Majority (60.3%) of the respondents in the Punjab were found in category of >25000 with group mean of 105355.56 rupees (1000.43$) total loan. This high amount in comparison with the income of poor fishermen results the slavery for life.

Table 4. Income, expenditure, savings, and remaining debt of the Sindh province.

Categories in Pakistani Rupees	*f*	%	Group Mean	Group S.D
Income				
Below 10000	53	22.60	8364.15	1387.180
10001-15000	107	45.50	12365.42	1286.732
15001-20000	45	19.10	17377.78	1235.808
20001-25000	18	07.70	23083.33	1664.950
>25000	12	05.10	37333.33	16427.988
Total	235	100.00	14518.72	7678.507
Mean Income	14518.72	**Standard Deviation**	7678.507	
Median	12600.00	**Skewness**	03.976	
Expenditure				
Below 10000	13	05.50	8403.85	1588.823
10001-15000	89	37.90	12576.97	1314.324
15001-20000	78	33.20	17665.26	1407.263
20001-25000	30	12.80	22423.33	1268.976
>25000	25	10.60	35188.00	18361.289
Total	235	100.00	17697.40	9301.965
Mean Expenditure	17697.40	**Standard Deviation**	9301.965	
Median	16100.00	**Skewness**	04.729	
Savings				
Below 10000	215	91.50	182.33	1210.339
10001-15000	00	00.00	00	00
15001-20000	00	00.00	00	00
20001-25000	01	00.40	21000.00	00
>25000	19	08.10	78736.84	41650.453
Total	235	100.00	6622.13	24413.836
Mean savings	6622.13	**Standard Deviation**	24413.836	
Median	00	**Skewness**	04.362	
Remaining Debt				
Below 10000	50	21.3	560.00	2251.167
10001-15000	02	00.90	15000.00	0.00
15001-20000	07	03.00	20000.00	0.00
20001-25000	05	02.10	24080.00	1063.955
>25000	171	72.80	158742.69	221800.237
Total	235	100.00	116865.53	201162.985
Mean Debt	116865.53	**Standard Deviation**	201162.985	
Median	55000.00	**Skewness**	03.793	

***Socio-economic status (SES) of the fishermen of Sindh*:** Data in Table 4 also indicates that the economic status of the fishermen of Sindh is also not appreciable, but little better than the fishermen of the Punjab. The residents of the Punjab are under contractual system of provincial government while the Sindhi fishermen are free from this obligation and enjoying the facility of annual permit.

Fishermen communities of Sindh are browbeaten by the feudal sitting along the banks of the river and occupied the government lands. They took 50 % of the total catch of fish and did not allow them to take any other goods within or along the Indus River. The area within and along the Indus River is called *Kacha* and is considered a good protection for dacoits. The security situation of the Punjab *Kacha* is even worse than that in Sindh. Although government performed many operations, it could not clear the area. These criminals also use fishermen for the transportation (of people, luggage, and weapons), fishing and spy activities. The third part of exploitation of the fishermen involves the workers of government departments (Fisheries, Canal and Wildlife and Forest) in cost of taking fish as bribery in both provinces, especially in Sindh because in the Punjab the annual contract lemmatizes the intervening of government. These all-important influences do not make the Sindhi fishermen able to take the tangible paybacks from the annual permit system in its real sense. Therefore, they also fall very near to the Punjabi fishermen in economic and social status. Table 4 showcases that the majority (87.20%) of the Sindhi

households falls <20000 rupees per month of income categories with the average of 12702.45 rupees (120.61$). The expenditure of Sindh is little better than the Punjab as in <10,000 category only 5.5% fishermen fall while in the same category there are 35.7% fishermen from the Punjab. Therefore, more than 3/4thpopulation (76.6%) of fishermen from Sindh has expenditure up to 20000 per month with the average of 12882.02 rupees (122.32$). This is almost equal to the income per month of same category for same respondents. Obviously, the low income, same expenditure and more debt do not make the local community capable of savings, therefore, almost equal to the Punjab (91.5%) the maximum respondents fall in the category of <10,000 total savings of life with the group mean of 182.33 rupees (1.73$) which is almost nonentity. Only 21.3% fishermen of Sindh have loan less than average 560.00 (5.31$) while majority (72.8%), like that of the Punjab, have average loan of 158742.69 rupees (1507.30$). The main reasons behind this economic

Table 5. Cross percentages and test statistics (Chi-Square Test, Cramer V Test and Mann Whitney U Test) between categorical variables & continuous variables of socioeconomic status and provincial policies.

Contract and Permit System									
Socioeconomic Status & Policies		**<10000** ***f (%)***	**10001-15000** ***f (%)***	**150001-20000** ***f (%)***	**20001-25000** ***f (%)***	**>25000** ***f (%)***	**Total** ***f (%)***	**Chi-Square Value (Sig*)**	**Cramer V Value (Sig*)**
Income	Contract Policy	241 (64.60)	102 (27.30)	19 (05.10)	5 (01.30)	6 (01.60)	373 (100.00)	114.842 (0.000)	0.435 (0.000)
	Permit Policy	53 (22.60)	107 (45.50)	45 (19.10)	18 (07.90)	12 (05.10)	235 (100.00)		
Expenditure	Contract Policy	133 (35.70)	157 (42.10)	67 (18.00)	08 (02.10)	08 (02.10)	373 (100.00)	114.323 (0.000)	0.434 (0.000)
	Permit Policy	13 (05.50)	89 (37.90)	78 (33.20)	30 (12.80)	25 (10.60)	235 (100.00)		
Savings	Contract Policy	348 (93.30)	01 (00.30)	00 (00.00)	06 (01.60)	18 (04.80)	373 (100.00)	4.950 (0.175)	0.090 (0.175)
	Permit Policy	215 (91.50)	00 (00.00)	00 (00.00)	01 (00.40)	19 (08.10)	235 (100.00)		
Remaining Debt	Contract Policy	117 (31.40)	6 (01.60)	18 (04.80)	07 (01.90)	225 (60.30)	373 (100.00)	10.643 (0.031)	0.132 (0.031)
	Permit Policy	50 (21.30)	02 (00.90)	07 (03.00)	05 (02.10)	171 (72.80)	235 (100.00)		

Continuous Variables	Mann Witney U Test; Value (Significance)
Income	21099.500 (0.000)
Expenditure	20942.500 (0.000)
Savings	43665.000 (0.756)
Remaining Debt	36865.000 (0.001)

Socioeconomic Status & Policies	**Description**	**Contract Policy** ***f (%)***	**Permit Policy** ***f (%)***	**Chi-Square Value (Sig*)**	**Cramer V Value (Sig*)**
Health	Healthy	335 (89.80)	204 (86.80)	1.293 (0.256)	0.046 (0.256)
	Diseased	38 (10.20)	31 (13.20)		
	Total	373 (100.00)	235 (100.00)		
Education	Educated	37 (09.90)	23 (09.80)	0.003 (0.958)	0.002 (0.958)
	Uneducated	336 (90.10)	212 (90.20)		
	Total	373 (100.00)	235 (100.00)		
House Status	Paved	03 (00.80)	00 (00.00)	1.899 (0.168)	0.056 (0.168)
	Unpaved	370 (99.20)	235 (100.0)		
	Total	373 (100.00)	235 (100.00)		
Residential Land Ownership	Own Land	42 (11.30)	139 (59.10)	158.141 (0.000)	0.510 (0.000)
	Disown Land	331 (88.70)	96 (40.90)		
	Total	373 (100.00)	235 (100.00)		

withdrawal are deliberated previously. The combination of both economic signs gives the overall fiscal picture of Indus River fishermen communities as 11762.16 (111.69$), 14393.25 (136.67$), 5196.05 (49.34$) and 85323.44 (810.21$) rupees average income, expenditure, savings, and debt, respectively.

Atiq-ur-Rehman, (2012b) reported in his research entitled "improving livelihoods of fisher communities in Central Indus, Pakistan" by assessing the socioeconomic baseline mentioned that location of Chashma Barrage is 25 Kilometers South-West of District Mianwali, Punjab. For this study, three villages were selected namely Ghandi, Sindhian Wala Bun and Haider Colony. Total population of 350 households was recorded including fisher and non-fisher households. The findings of baseline survey of GPAF project, which was obviously without any intervention, revealed that average income of the households of the study area is 232 US dollars which was almost one fifth of the country's per capita income in 2011. At the time of survey, the National Per Capita Income was 1194 US Dollars. Majority population (83 %) was falling below the poverty line category of Pakistan. The adult literacy rate in the study area was 14 % while the literacy rate of Pakistan in 2012 was 56 %. The youth literacy rate in the study area was 21 % while in 2012 the country's youth literacy rate was 71 %. The national Child Enrolment in 2012 was 94 % in the country while study area was having the only 13 %. The study also showed 35 % of the total students enrolled could complete 5 year of education in schools. This lack of education and high rate of dropout is because of absence of higher formal education setup in whole study area. Only community-based efforts were made at local level for boys and girls to have their basic informal education. Health condition of fishermen families was also very poor due to non-availability of health facility in the area.

***Categorical variables & continuous variables of socioeconomic status and provincial policies*:**

To observe the effect of provincial policies, contractual system in the Punjab and permit system in Sindh the required data was collected. The Chi-Square, Cramer V and Mann Whitney U tests has been applied on this data to examine the association between socioeconomic status and provincial policies of the fisherfolks. Data in Table 5 show that provincial policies have high association with income (0.000), expenditure (0.000) and remaining debt (0.132) of fishermen. The Cramer V values of income (0.435) and expenditure (0.434) show very strong strength of association between variables. The contractual system in the Punjab suppressed the fisherfolks and caused the low-income status, however, in Sindh due to freedom from contractor the fisherfolks do more expenditure to mitigate the fishing practices. In the Punjab, the contractor imposes the fake heavy loans on the fishermen which results more loans in the Punjab. However, the policy has no effect on the savings in both provinces. The categorical data of income, expenditure, savings and remaining debt have been used for the Chi-Square and Cramer V tests to fulfill the assumptions of the tests however to validate the results the Mann Whitney U test was also used for the same socioeconomic variables and categorical for policy which is requirement of the test.

The results in Table 5 show the very strong association between income (0.000), expenditure (0.000) and remaining debt (0.001) and provincial policies and savings here also remain insignificant. Only the residential land status remains highly significant (0.000) with high value of Cramer V (0.510) because the fishermen originally belong to Sindh and majority of the respondents have own land for houses while in the Punjab only 11.30% fishermen own land for residence. The remaining variables of socioeconomic status health, education and house status are insignificant and show the independency between policy and theses socioeconomic status indicators.

***Conclusion*:** Pakistan is full of natural resources, and its wetlands can contribute significantly to strengthen the dependent communities and national economy. However, the fishermen of Indus River are deprived and marginalized because provincial policies make them unable to take the true benefits from the natural capital. Unfortunately, benefits are going in a single pocket at each wetland of the study area in the form of contractor or feudal. It is highly recommended that policies of both provinces (Punjab and Sindh) must be revised, and a unanimous policy may be introduced for the whole region of Indus River. All the stakeholders must be entitled to benefit from the natural resources, and exploitation of fishermen communities must be stopped. They should be mainstreamed and have access to basic rights like other citizens. It is equally important that the exploitation of natural resources must be controlled. To preserve the natural resources, in addition to policies, it is imperative that environmental education should be part of the national curriculum and practically awareness seminar should be conducted and engaged the community in training to preserve natural resources as well as new innovations & technologies should be adopted to safe the natural resources.

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