

Vulnerability and Risk Assessment of 1st Wave Lockdown of COVID-19 Pandemic on the Mass Development and Marginal Livelihood of DSDA Tourism Landscape over Bengal Coast

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Abstract - COVID is the distinguished catchword throughout the world for more than one and half years. All the global socio-economic facets have been in front of a twisted crisis display of mass emerging difficulties and challenges now. Popular costal *landscape reflecting* Digha, Sankarpur, Tajpur and Mandermoni *under* Digha-Sankarpur Development Authority (DSDA) is one of the finest coastal stretches in India having the great experience of Bengal tourism cum rural journey with Khadalgobra Census Town. Whereas, April- June is the vigorous periods for this tourism landscape, this time of 2020 has been struck by COVID-19 Pandemic mining the base of regional life earning and livelihood and drawbacking the advanced journey of this tourism platform. The drifting and directionless tourism industry has converted into a *state of economic shock and misbelieves* because of 10 weeks of lockdown lip locked situation here. Tourist infrastructure and atmosphere reflect a wasteland or desert look as pandemic upshot. Consequently, the industry and associates have been faced on the *massive economic loss* of more than 2000 crore rupees hacking the joy of journey and development. The study enlightens the jeopardy of *loosening job* shaking and decelerating the livelihood of more than lakh of bread earners and about 50000 of households directly and indirectly associated with tourism and allied sectors here. Hence, this industry and circumstances directly need *life sustain and liquidity* to stay alive from *COVID crisis*. Therefore, this study tries to explain to the ground truth of the socio-economic costs along with the livelihood *vulnerability and risk assessment of the study area and find out the optimistic pathways to rescue it from the rim of disruption*.

Keywords: COVID-19 first waves, lockdown, loosening jobs, life sustain and liquidity, vulnerability and risk assessment and rim of disruption.

I. INTRODUCTION

The outbreak of COVID-19 has impacted nations in an enormous way, especially the nationwide lockdowns which have brought social and economic life to a standstill. A world which forever buzzed with activities has fallen silent and all the resources have been diverted to meeting the never-experienced-before crisis. There is a multi-sectoral impact of the virus as the economic activities of nations have slowed down. This COVID-19 pandemic affected the manufacturing and the services sector—hospitality, tours and travels, healthcare, retail, banks, hotels, real estate, education, health, IT, recreation, media and others. The economic stress has started and will grow rapidly. While lockdown and social distancing result in productivity loss on the one hand, they cause a sharp decline in demand for goods and services by the consumers in the market on the other, thus leading to a collapse in economic activity. However, lockdown and social distancing are the only cost-effective tools available to prevent the spread of COVID-19 [3].

Tourism is a backbone of economy for many countries of the world. Tourism is a big source and always helpful in generating revenue and a mean of foreign exchange [14]. In general, Tourism is interlinked with various supportive services, like, transport network to tourist destination, affordable hotels, catering facilities, reliable tour operators, transportation for local sightseeing, entertainment facilities, consumer goods at reasonable prices, souvenir shops, etc. Positive actions on part of all those tourism enterprises promote tourism leading to high degree of employment and income generation through multiplier effect. In case of Digha- Shankarpur area, fishing is found to be a very significant additional source of employment generation.

It is estimated that about 15000 persons are employed in tourism and its related services. There will be a steady growth of employment opportunity because of the remarkable trend of growth of tourist inflow in the study area.

Tourism is becoming the backbone of economy for many countries of the world. Tourism is a big and favourable source in generating revenue by means of foreign exchange [8]. Tourism is such flourishing sector of a country that not only triggers economic growth but also generates more employment opportunities and opens up multi-dimensional avenues of socio-economic and cultural development. This scenario is not much different in our country also. Tourism contributes 10-12% to total GDP of our country (10-12%) which is really a big proportion. COVID-19 is spreading rapidly at an unprecedented scale across continents and has emerged as the single biggest life threatening health risk in the world which has never faced in modern times. The tourism industry is the worst affected due to the COVID crisis, internationally. The World Tourism Organization (UNWTO, 2020) estimations depict a fall of 20–30 per cent in international tourist arrivals. These Millions of people associated with industry are likely to lose their jobs [24]. In India, the travel and tourism industry is flourishing and is contributing sizably to the economy. The FICCI-Yes Bank report titled ‘India Inbound Tourism: Unlocking the Opportunities’ described India as a tourism powerhouse and the largest market in South Asia. Tourism in India accounted for 9.2 per cent of GDP and had generated US\$247.3 billion in 2018, with the creation of 26.7 million jobs. Currently, it is the 8th largest country in terms of contribution to GDP [12]. According to the report, by 2029, the sector is expected to provide employment to nearly 53 million people. Foreign Tourist Arrivals (FTAs) crossed 10 million in 2017. However, the COVID pandemic has restricted international mobility and the revenues generated by this sector will take a major toll on the GDP growth rate. It may bring a downfall of 0.45 per cent in the growth rate of GDP [3]. Apex sectoral body Federation of Associations in Indian Tourism & Hospitality (FAITH) on doubled the loss guidance for India’s tourism sector to Rs. 10 lakh crore on account of impact of COVID-19 pandemic. The earlier forecast, which was shared with the government in March 2020, had put tourism’s economic value at risk at around Rs 5 lakh crore [19].

Digha-Shankarpur-Tajpur-Mndermoni area reflects the well-liked seashore destinations of research, recreation and resorting in terms of travel and tourism over Rasulpur-Pichhabani Basin in South Bengal. The region has been paying attention over 50 lakh tourists on an annual average scale which is screening a tremendous budding drift with time. It is 187 km from Kolkata and described as the Brighton of the East [1]. Digha has a low gradient with a shallow sand beach and gentle waves [11]. The beach extends 7 kms in length. The charming scenic beauty of this beach is complemented with casuarinas plantations along the coast. The sea at Digha is calm and shallow for about a mile from the beach making it ideal for swimming [9]. Digha as the primate tourist hot spot successfully inspires the satellite destinations like Sankarpur, Tajpur and Mandermoni over Midnapore coast. This sector is no way related to tourism, but truth relics that this industry incorporates plenty employment prospect to not only the home people of the Digha-Shankarpur-Mandarmoni area, but also the outsiders excluding the region. Nevertheless, sea fish is an added attraction of Digha tourism [7]. There are two important sites with two different activities-Shankarpur have two jetties with loading and unloading facilities of trawlers and fishing boats and Mohana at Digha operates wholesale auction activities. Digha is a beautiful beach resort reflecting a potential coast line of about 12 km. of its own (Udaypur to Digha mohana) [1]. Originally, Digha is known as Beerkul, means ‘Brighton of the East’ (National Informatics Centre Archived, 17th Feb, 2006, Retrived 2nd April, 2006) in one of Warren Hasting’s letter (1780AD) to his wife. English tourist John Frank Smith came Digha in 1923 and charmed with its beauty. He lived here and after independence he proposed to Dr. Bidhan Chandra Roy, first Chief Minister of West Bengal to make it a tourist resort [6]. Small Digha town is crowded with hotel and it is the main business at Digha. Throughout the year it is crowded with tourists. Mainly in January & December and any other holiday huge tourists come at Digha. Recently, Digha is not popular only as one of the finest beach sections of the world, but it is equally important and fashionable for its natural beauty having the potentiality from tourism background. Since ninety’s decade it has been emerged as an important tourist destination of Bengal which has been dignified at its peak point of tourism journey currently. The study area is now realized and well valued that advance in tourism industry is the creator, operator and controller of employ and earnings not only for tourism enterprises, but to the entire region with high multiplier effect on the general economy of state.

This research paper has focused on the COVID-19 issue in the study area and its impact on the regional economy and society. This paper is very significant to draw the attention of the policy makers and thinkers because the tourism and allied sectors are worst affected by the COVID-19 crisis. Since, the region is rich with various tourism resources and lakhs of tourists arrive annually, contributes to a large proportion to the regional and national GDP. Now, due to the COVID 1st wave lockdown, there is no visibility of cash inflows found in this regional tourism industry due to a large scale bankruptcies, business closures which will lead to job losses across the tourism townscape and its buffer with hinterlands. The industry in the region has gone anesthetized from a lack of any umbrella direction from the government or without any fiscal and monetary support. According to local industrial body, the tourism industry is now going through a state of economic shock and disbelief as there were no effective announcements to give the life support of this industry as well as the livelihood of the people dependent on it. More than 10 weeks of constant discussions come to a naught and industry has gone directionless [25]. Hotels, restaurants and

resorts have a deserted look due to the pandemic. The hoteliers, who have already incurred huge losses, don't expect that the industry will revive soon. Hence, this study is very much pertinent to make clear to estimate livelihood and journey impacts of COVID-19 outburst on tourism and related economy of Digha-Sankarpur-Tajpur-Mandermoni tourist pockets on Midnapore coastal landscape.

II. RESEARCH QUESTION

The aim of this research is to investigate and analyse the socio-economic impacts of COVID-19 outbreak on the livelihood and development of the study area. We are accepted the target of risk and vulnerability assessment of this pandemic on the livelihood and development of the tourism rurbanscape focusing on the following research questions:

- Q1. How does the economy and livelihood of the study area have been decelerated through COVID-19?
- Q2. What would be the aftermath effects here in the coming periods?
- Q3. How this pandemic will impact the development related to local tourism and rurbanization?
- Q4. On this regional as well as micro-level, how does tourism related characters react to the immediate emergency of COVID- 19?
- Q5. How human resources foresee the survival of the regional livelihood and development journey during such calamities?
- Q6. On this regional scale, how will the govt. and local administration support the tourism industry to tackle COVID- 19?

1. Specific Objectives:

- a) To investigate the COVID-19 lockdown special effects on the tourism and allied sectors in Digha-Sankarpur-Tajpur-Mandermoni tourism and rurban landscape affecting its development and livelihood;
- b) To assess the vulnerability and risk of livelihood of this tourism influenced coastal landscape tremendously affected by COVID-19 outbreak;
- c) To look over the institutional roles and responsibility for recovering the state of socio-economic shock to Digha tourism industry;
- d) To find out the new pathway for life sustain and liquidity in livelihood and new mass momentum on the track of journey of this region.

2. Location of the Study Area:

The study area is actually an expression of coastal tourism rurban landscape over South Bengal Coast. It has been featured by the twin processes of tourism and newer urbanization. Environmentally, this region is the reflection of fabricated ecosystem and environment driven by coastal rurban tourism. Geomorphologically, it is the western most trips of Midnapore as well as Bengal Coast which includes the Rasulpur-Pichhabani Sub-basin over South Bengal Basin with the finest sedimentological character of beach formation. Geologically, it is the recent Quarternary formation having coastal sediments and alluvium (6000-8000 BP) [4] [5]. Administratively, Digha is included of one census town (CT/ 2011) and about 18 populated rural mouzas under Padima-I and II Gram Panchayats whereas Sankarpur having 5-6 mouza and Tajpur including 3-4 mouzas are existed in Talgachhari-II GP of Ramnagar-I CD Blocks and Mandermoni with 7-mouzas is located at Kalindi GP of Ramnagar-II CD Block under Ramnagar P.S. of Contai Sub-division of Purba Medinipur district in West Bengal, India. In self of smooth research discussion, we have divided the study area into 3- tourism sectors as per 3-coastal sub-stretches. These sectors are Digha, Sankarpur-Tajpur and Dadanpatrabad-Mandemoni geomorphologically separated by Champa River and extended Pichhabani River (Jaldha Khal/ Inlet) respectively.

Table 1: Locational Details of Different Tourism Sector and Pockets in the Study Area

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Name of Coastal Stretch	Name of Tourism Sectors/ Pockets		Location of the Study Area					
			Geographical Location		Geographical Area (sq. km)	Administrative Location		
			Latitude	Longitude		GP	CD Block	Others
Digha Coastal Stretch	Digha Tourism Sector (Udaypur-New Digha-Old Digha-Mohana)		21°36'40" N - 21°38'20" N	87°29'10" N - 87°32'40" N	9.6342	Padima-I & II	Ramnagar-I	Ramnagar P.S., Contai Sub-division, Purba Medinipur District, West Bengal
Sankarpur-Tajpur Coastal Stretch	Sankarpur-Tajpur Tourism Sector	Shankarpur - Chandpur	21°37'47" N - 21°39'19" N	87°33'02" N - 87°36'12" N	6.4207	Talgachhari-II	Ramnagar-I	
		Tajpur-Jaldha	21°39'15" N - 21°40'14" N	87°36'50" N - 87°38'37" N	4.7638		Ramnagar-I	
Mandermoni Stretch	Mandermoni Tourism Sector (Dadanpatrabad-Sonamuhi-Silampur-Mandermoni)		21°38'46" N - 21°40'40" N	87°38'17" N - 87°43'12" N	8.0439	Kalindi	Ramnagar-II	
Source: GIS Software Analysis and Administrative and Institutional Report								

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LOCATION MAP OF DIFFERENT TOURISM SECTORS AND POCKETS UNDER DSDA

[Ramnagar- I & Ramnagar- II CD Blocks, Purba Medinipur, West Bengal- 2021]

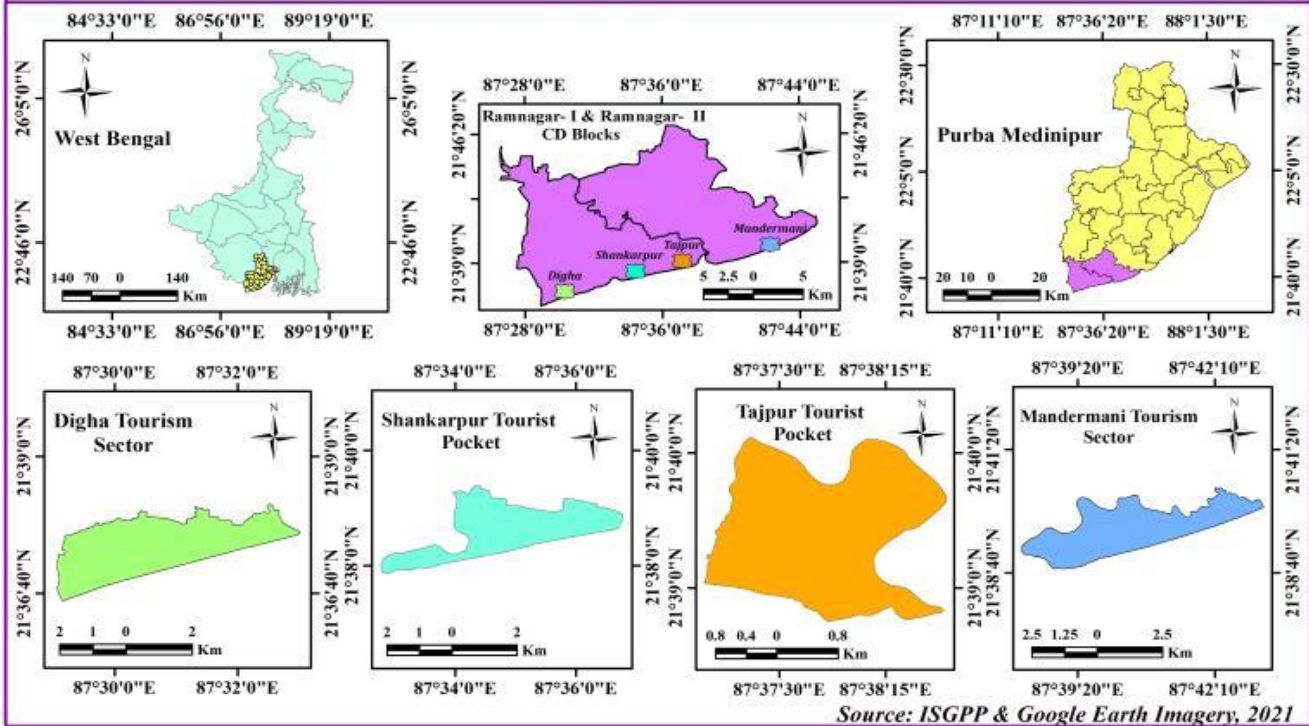


Figure 1: State Level and Regional Location of the Tourism Sectors and Pockets in the Study Area

LOCATION MAP OF DIFFERENT TOURISM SECTORS AND POCKETS UNDER DSDA

[Ramnagar- I & Ramnagar- II CD Blocks, Purba Medinipur, West Bengal- 2021]

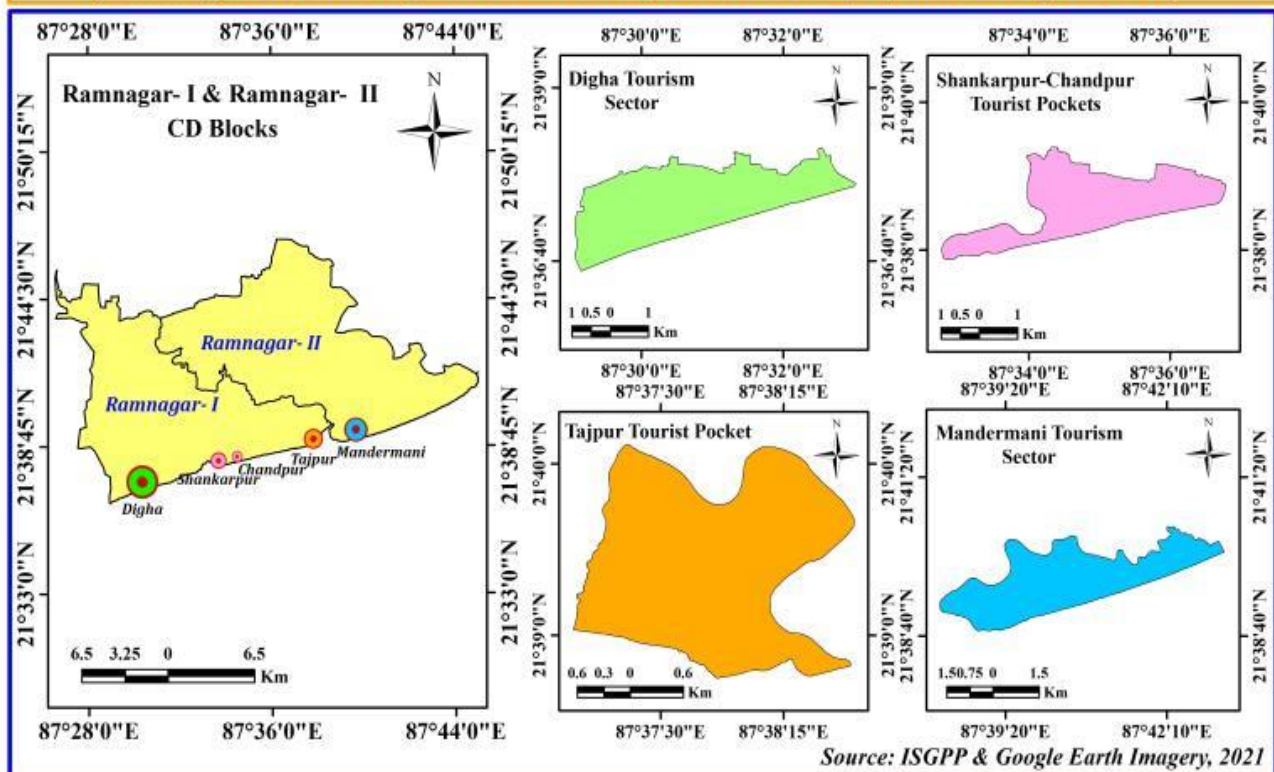


Figure 2: Block Level Location of the Tourism Sectors and Pockets in the Study Area

III. MATERIALS, METHODS AND METHODOLOGY

The fundamental methods and methodologies taken for the survey and analyses are given below:

Major Stages	Methods		Tools & Techniques	Remarks
Pre-field Stage	Study Area Selection		Discussion with Expertise/ Resource Persons/ Academicians/ Others Taking Help from Previous Papers of the Authors	1. Primary thinking, literature review, problem selection, objectives formulation, work planning and preparation for field survey and research work have been considered from critical point of view. 2. Thinking about alternatives and its selection in case of failure of any specific methods or techniques in data collection or getting the absurd/ unexpected result/ outcome during study.
	Problem Selection			
	Formulation of Problems			
	Statement of the Problem			
	Literature Review		Offline/ Library Research	
			Online Literature Review	
	Research Designing		Cultivation of Research Problem and Literature Review	
	Objectives Formulation			
	Preparation of Data Collection Tools & Techniques		Sampling Techniques Fixation	
Survey Schedule/ Questionnaire, Field Book and Note Book Preparation				
Mouza Maps, Corresponding Toposheets, Google Earth, LANDSAT Images and other Base Maps from relevant sources				
Field Stage	Data Collection	Primary	Different Kinds of Socio-economic and Traffic Survey, Resort Survey, Market Survey, Tourist Survey, Vegetation Survey, Landscape Survey, Beach Survey, Photo Documentation, etc.	1. Systematic and Stratified Random Sampling and Purposive and Chunk Sampling Techniques have been applied to collect primary data. 2. Offline and online library research, e-source analysis and Manual and digital literature platform survey have been emphasized to collect the secondary data.
		Secondary	Historical Records, Books, Reports, Articles, Journals, Media Reports, Documents from Various Field Sources and e-sources	
Post Field Stage	Data Processing & Analysis	Data Organization	Different Laws/ Formulae and Use of MS Excel, SPSS Software, etc.	<ul style="list-style-type: none">Data Organization, Compilation and Processing, Mapping Analysis, Result Discussion, Interpretation Recommendations FixationMaking the Final Draft of Report/ Paper
		Data Compilation		
		Data Calculation & Presentation		
	Mapping Analysis		Google Earth, IRS LISS-III, LANDSAT Images & Arc GIS	
	Photographic Analysis		Photo Selection, Photo Editing, Photo Arrangement (Microsoft Word, Paint, Photo Maker & Photoshop Software)	
	Result & Discussion		Vivid Analysis and Draw Outcomes	

Sl. No.	Extract	Database	Source of Database	Tools & Techniques	Applied Method
01.	Location Map (On the Basis of District & CD Blocks)	ISGPP & Google Earth Imagery- 2021	ISGPP- II (Panchayats & Rural Development Department, Govt. of West Bengal) & SIO, NOAA, U.S. Navy, NGA, GEBCO Image Landsat/ Copernicus	ArcMap (v.10.4.1), Google Earth Pro (v. 7.0) & Mapping Analysis	GIS Software Analysis
02.	Magnitude/ Flow/ Influence Maps	IGISMAP, ISGPP, GPS Survey & Google Earth Imagery- 2021	IGISMAP, ISGPP- II (Panchayats & Rural Development Department, Govt. of West Bengal) & SIO, NOAA, U.S. Navy, NGA, GEBCO Image Landsat/ Copernicus	GPS (GARMIN Montana- 680 & Garmin Oregon- 650), TCX Converter (v. 2.0.30), Google Earth Pro (v. 7.0), SPSS (v. 18.1) & Statistical and Mapping Analysis	Statistical Analysis & GIS Software Analysis
03.	Land Use Land Cover (LULC) Map	IGISMAP, ISGPP & Google Earth Imagery- 2021	IGISMAP, ISGPP- II (Panchayats & Rural Development Department, Govt. of West Bengal) and SIO, NOAA, U.S. Navy, NGA, GEBCO Image Landsat/ Copernicus	GPS (GARMIN Montana- 680 & Garmin Oregon- 650), TCX Converter (v. 2.0.30) and Google Earth Pro (v. 7.0) & Mapping Analysis	GIS Software Analysis
04.	Vulnerability and Risk Index Assessment	Primary and Secondary Databases	Purposive Field Survey, 2018-'20 for Quantitative and Qualitative Data Collection & Institutional and Literature Survey	Target based Questionnaire, Survey Schedule, Field and Issue based Literatures, etc. & Systematic, Stratified and Purposive Sampling, Target and Focused Group Survey, Database Experiment, Theoretical Analysis, Data Compilation, Data Synthesization and Analysis	Qualitative and Quantitative Data Analysis, Dimension Specific and Comprehensive Index Computation

IV. ANALYSIS AND INTERPRETATION

2.1 General Statement about the Study Area:

6.1.1 General Demography and Economy of the Study Area:

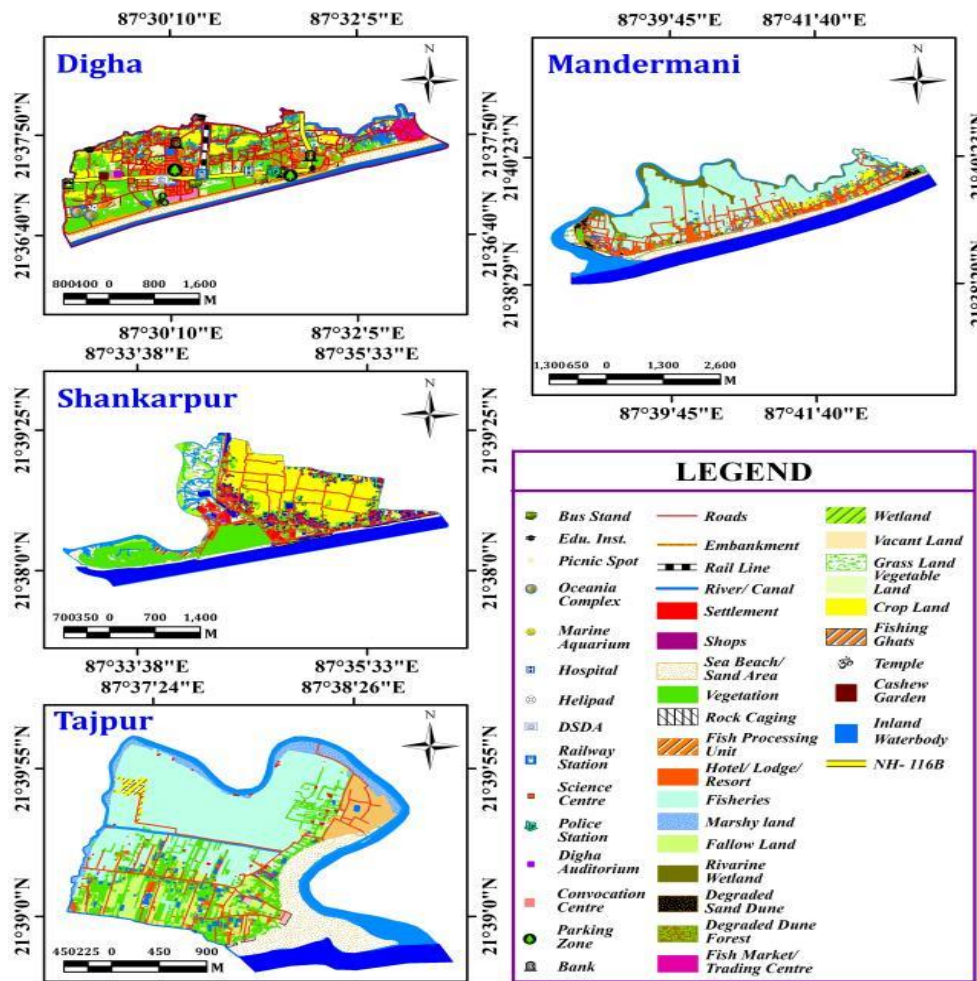
Table 4: Basics of Demography and Economy								
Name of Tourism Sectors/ Pockets	Influenced Total Population (2011)	Influenced Total Population (2021)*	Decadal Population Growth (%)	Geographical Area (sq. km)	Population Density/ sq. km (Recent)	Number of Directly Influenced Mouza	Major Economies	Dominated Process
Digha Tourism Sector	22285	33670	51.09	9.6342	3495	1-Census Town & 18-populated mozas	Travel and Tourism, Fishing, Fish Manufacturi	Tourism- Urbanization and Fishing
Sankarpur-Chandpur Tourism Pocket	4568	6265	37.15	6.4207	976	5-6 mouzas	ng & Marketing, Hotel	Tourism- and Fishing
Tajpur Tourism Pocket	2718	3810	40.18	4.7638	780	1-2 mouzas	Business, Service Sector, Cashew nut processing, local handicrafts, etc.	Tourism- and Fishing
Mandermoni Tourism Sector	4290	6135	43.01	8.0439	763	6-7 mouzas		Tourism- Urbanization and Fishing
Total	33861	49880	47.31	28.8626	1728	1-CT, 30-33 Mouzas	Tourism, Fishing and Rurbanization	
*indicates projected population based on the compilation of provisional data from concerned authorities and institution								
Source: Census of India-2011, GPs and Block Level Census and Provisional Data-2011 and 2020, Report of DSDA, 2012, 2014, 2018 and 2020 (Project Final, Draft and Provisional Report)								

The table-4 shows the basic scenario of demography and economy of the study area under DSDA. This scenario indicates the blooming scenario of the tourism cum rurban journey and its potentiality over time. The population has been increased over time as the tourism development is the prime initiative to accelerate this population growth. Immigration of interior rural people for drawing the opportunity of residence and employment and invasion of outsiders in terms of business and commercial activities, both are reflected as the driving causes for this population growth over time. Interestingly, after 2011, the population of this tourist cum rurban hotspot over Bengal coast has been increased drastically due to the initiatives and opportunities from the newly formed Government mainly. The database reflects the more population concentration and economic accumulation in Digha tourism sector than that of others. In case of Mandermoni, Tajpur and Sankarpur sector and pockets, population is lower in intensity and magnitude due to its late emergence as tourist spot, less tourism service and facilities, intense impacts of coastal hazards and disasters, lower development and management of the areas, etc.

6.1.2 LULC Scenario influenced by Tourism in the Study Area:

The figure 3 shows the LULC scenario of all the tourism sector and pockets of study area in 2021. The generated data reflects the different anthropogenic features and land uses have been dominated over physical features breaking the monotony of natural set up. Consequently, the vegetation cover including forest, dune tract, wetland and inward agricultural and vegetable lands have been dramatically squeezed over time whereas hotels and resorts, market, transport and institutional entities have been increased in fabulous way. This scenario indicates the development of tourism and urbanization in the study area throughout the time.

LAND USE LAND COVER (LULC) MAP OF THE DIFFERENT TOURIST DESTINATIONS OVER MIDNAPORE COASTAL STRETCH



Source: IGISMAP, ISGPP and Google Earth Imagery, 2021

Figure 3: LULC Map of the Target Tourism Sectors and Pockets

6.1.3 Tourist Flow and Magnitude at the Different Tourism Sectors in the Study Area:

Table 5: Amount and Magnitude of Tourist Flow at the Different Sectors in the Study Area

Table 5: Amount and Magnitude of Tourist Flow at the Different Sectors in the Study Area								
Sl. No.	Name of Coastal Stretch	Name of Tourism Sectors	Name of Tourism Pockets	Average Number of Tourists (Yearly, Monthly, Daily and During Peak Season)				
				Yearly	Peak Season (April-June)	Monthly	Daily	Daily in Peak Season
1.	Digha Coastal Stretch	Digha Tourism Sector (Udaypur-New Digha-Old Digha-Mohana)		3245000	1974600	270417	8890	21940
2.	Sankarpur-Tajpur Coastal Stretch	Sankarpur-Tajpur Tourism Sector	Shankarpur - Chandpur	546350	345100	45529	1497	3834
			Tajpur-Jaldha	519550	328360	43296	1423	3648
3.	Mandermoni Stretch	Mandermoni Tourism Sector (Dadanpatrabad-Sonamuih-Silampur-Mandermoni)		1094730	673850	91228	2999	7487
Total				5405630	3321910	450470	14809	36909
Source: DSDA Report, 2017-18, 2018-19 & 2019-20 and Field Survey, 2018, 2019 & 2020								

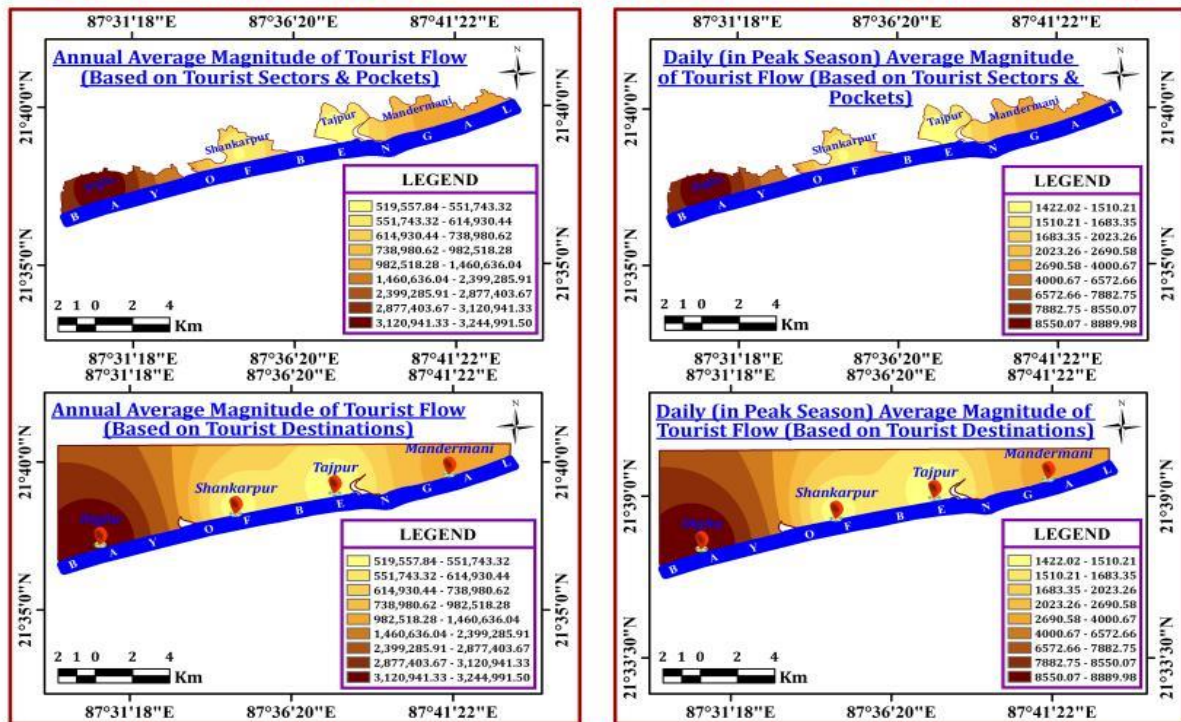
Source: DSDA Report, 2017-18, 2018-19 & 2019-20 and Field Survey, 2018, 2019 & 2020

Table 5 and figure 4 show the temporal figure and flow of tourists in the study area. The data reveals the average magnitude of tourist flow here based on last 4-years database which significantly reflects the upgrowing importance of this tourism cum urban landscape over time. The tourist flow at the different sectors and pockets shows that the magnitude and flow of tourists are usually higher in Digha followed by Mandermoni, Sankarpur and Tajpur. At least 21 tourist destinations have been selected for assessing the tourist flow at those sectors and pockets. All of the bathing ghats along with marine aquarium, science city,

Amravati Park, Biswa Bangla Udyan, Kaju Garden, etc. have been considered to estimate the magnitude of tourist flow in the study area.

MAGNITUDE OF TOURIST FLOW ON ANNUAL AVERAGE AND PEAK SEASON SCALE

[Digha, Shankarpur - Tajpur and Mandermani Tourism Sectors, Purba Medinipur, W.B.]



Source: IGISMAP, ISGPP, GPS Survey and Google Earth Imagery, 2021

Figure 4: Annual Average Magnitude of Tourist Flow per day in the Study Area

2.2 Economy and Employment Opportunities created by Tourism and Allied Industry at Different Sectors in the Study Area:

Digha is the townscape cum coastal tourism landscape whereas other sector and pockets having the tourism cum rural experience provide the huge scope for income generation and life earning. A large number of people earn their livelihood in different segments associated with tourism and hospitality. Not only local or regional people are engaged in different dimensions of employment background, but also a remarkable figure of outsiders is visible here. Employment in hotels/ guest houses/ holiday homes, transport sectors, street/ opened informal sectors including vendors, hawkers, etc., licensed shops, fishing industry, etc. creates the ample scope to stimulate the tourism journey in the study area. Table 6 shows the gigantic number of hotels and resort in Digha sector followed by Mandermoni, Tajpur and Sankarpur which indicates the intensity and increasing concentration of hotel infrastructure and livelihood dependency of the region over time.

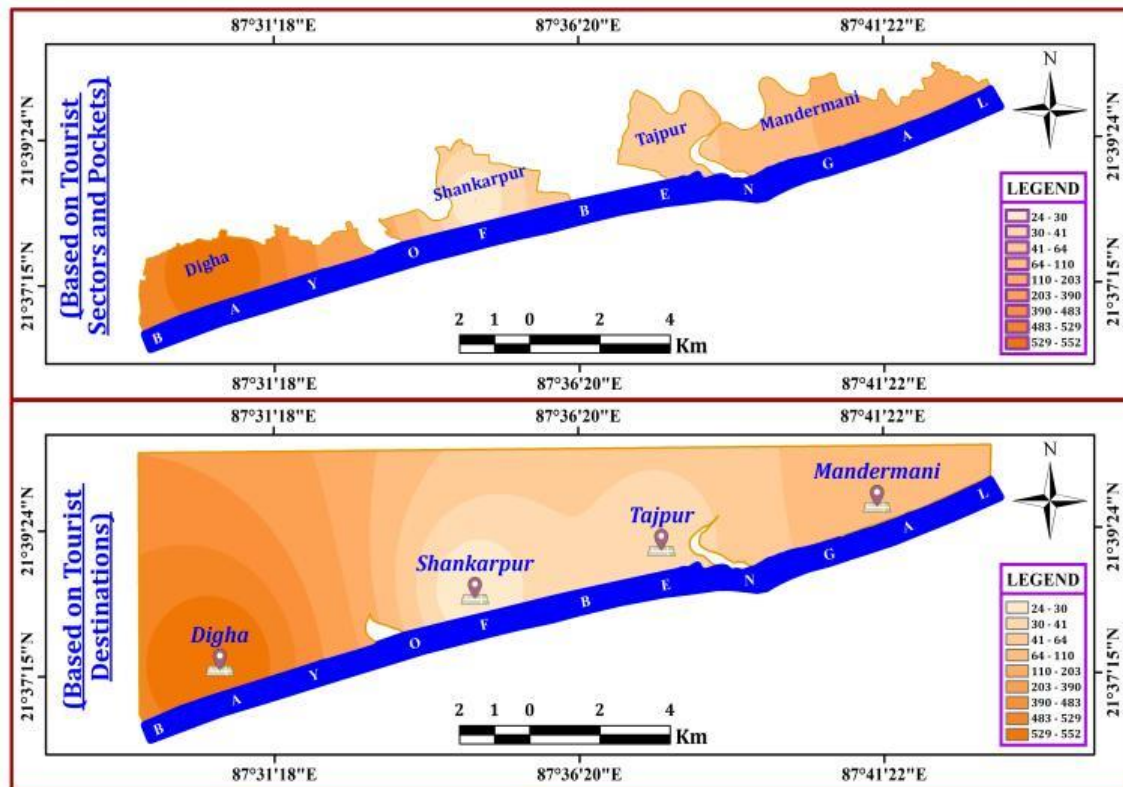
Table 6: Number of Hotel in the Different Tourism Sectors of the Study Area

Table 6: Number of Hotel in the Different Tourism Sectors of the Study Area								
Sl. No.	Name of Coastal Stretch	Name of Tourism Sectors	Name of Tourism Pockets	Number of Hotels and Resorts				
				Government Sector	Private Sector	Unauthorized Uses	Total	%
1.	Digha Coastal Stretch	Digha Tourism Sector		39	307	206	552	73.80
2.	Sankarpur-Tajpur Coastal Stretch	Sankarpur-Tajpur Tourism Sector	Shankarpur Chandpur	1	15	8	24	3.21
			Tajpur	-	37	16	53	7.08
3.	Mandermoni Stretch	Mandermoni Tourism Sector		-	77	42	119	15.91
Total				40	437	271	748	
Total (%)				5.35	58.42	36.23	100	100
Source: DSDA and Hotel Owner's Association Report & Field Survey. 2018, 2019, 2020 & 2021								

Source: DSDA and Hotel Owner's Association Report & Field Survey, 2018, 2019, 2020 & 2021

MAGNITUDE OF HOTEL INFRASTRUCTURE

[Digha, Shankarpur - Tajpur and Mandermani Tourism Sectors, Purba Medinipur, W.B.]



Source: IGISMAP, ISGPP, GPS Survey and Google Earth Imagery, 2021

Figure 5: Magnitude of Hotel Infrastructure in the Study Area

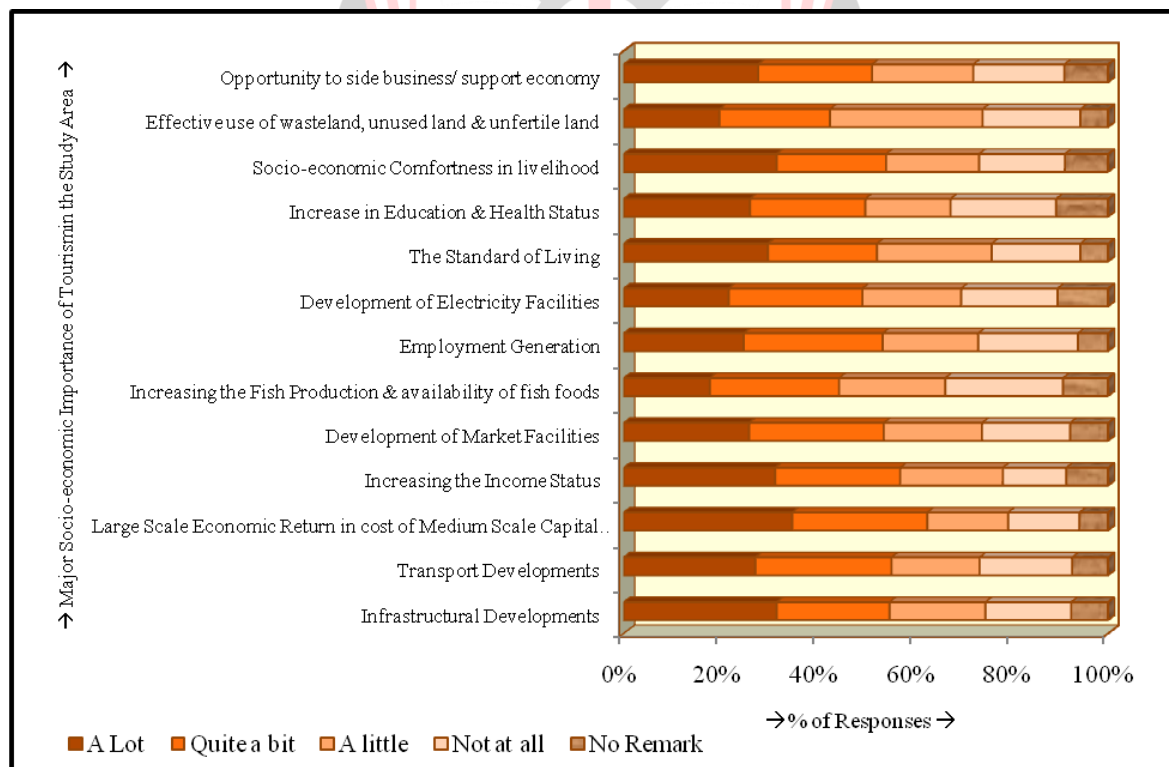


Figure 6: Importance of Tourism Development in the Study Area

Source: Field Survey and Perception Study, 2018-2020

Table 7: Sector wise Number of Employees & Workers in Tourism & Allied Sectors throughout the Study Area

Sl. No.	Name of Coastal Stretch	Name of Tourism Sector/ Pockets	Number of Employees & Workers in Tourism & Allied Sectors								Total
			Hotel, Resort, Lodge, Restaurant, etc.	Vendor, Hawker, Street & Market Shop, Mall, etc.	Transport including Rickshaw, Auto, Toto, Tracker, Private Car, Bus, etc.	Tourist Institution/ Organization & Related Service Sectors	Fishing, Fish Processing, Manufacturing, Marketing, Transporting, Exporting, etc.	Govt. and Non-govt. Formal/ Service Sectors including Administration, Health & Education	Forestry, Livestock, Agriculture, Small Scale Manufacturer, Handicraft, Work Man, Mechanics & Others	Labour Force in Carious including construction, renovation, repairing, transporting & others	
1.	Digha Coastal Stretch	Digha Tourism Sector (Udaypur-New Digha-Old Digha-Mohana)	15500	8715	5155	1119	47794	646	668	2574	82171
2.	Sankarpur-Tajpur Coastal Stretch	Sankarpur-Tajpur Tourism Sector	456	297	114	44	8445	108	93	231	9788
		Tajpur-Jaldha	955	174	76	38	10786	89	86	187	12391
3.	Mandermoni Stretch	Mandermoni Tourism Sector (Dadanpatrabad-Sonamuhi-Silampur-Mandermoni)	2349	625	446	168	9269	158	169	679	13863
Total			19260	9811	5791	1369	76294	1001	1016	3671	
Grand Total			118213								

Source: DSDA Report & Field Survey, 2018, 2019, 2020 & 2021

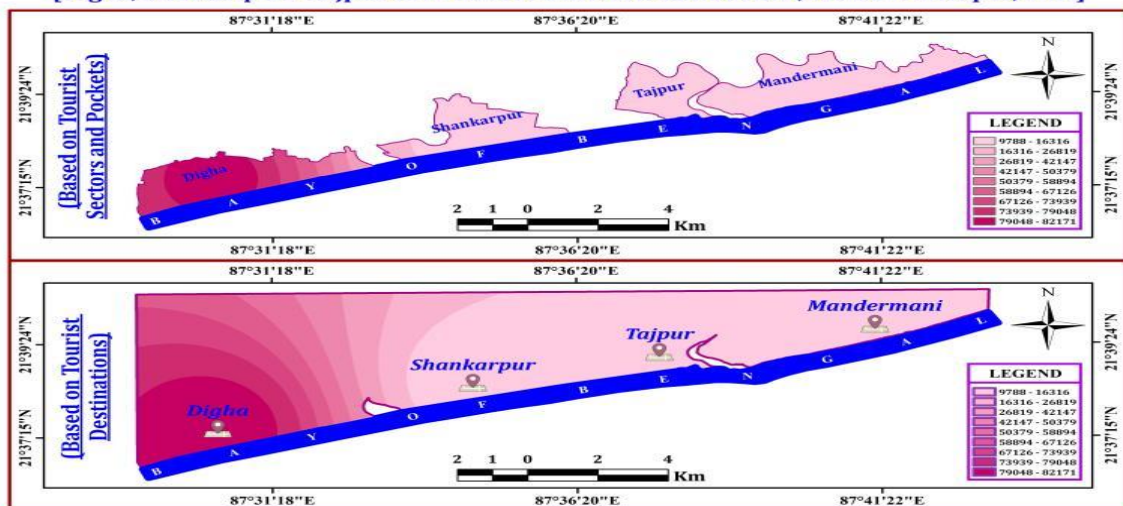
Table 8: Sector and Residence wise Number of Employees and Workers in Tourism & Allied Sectors of the Study Area

Sl. No.	Name of Coastal Stretch	Name of Tourism Sector/ Pockets	Number of Employees & Workers as per Residence				
			Local (Within Ramnagar-I & II CD Blocks)	Regional (Outside Ramnagar-I & II CD Blocks, but within Purba Medinipur District)	State Level	National Level	Total
1.	Digha Coastal Stretch	Digha Tourism Sector (Udaypur-New Digha-Old Digha-Mohana)	48.3	19.3	30.8	1.6	81831
2.	Sankarpur-Tajpur Coastal Stretch	Sankarpur-Tajpur Tourism Sector	59.8	21.3	18.2	0.7	9768
		Tajpur-Jaldha	57.6	23.7	18.1	0.6	12371
3.	Mandermoni Stretch	Mandermoni Tourism Sector (Dadanpatrabad-Sonamuhi-Silampur-Mandermoni)	51.4	24.6	22.9	1.1	13813
Average			54.275	22.225	22.5	1	
Grand Total			117783				

Source: DSDA Report & Field Survey, 2018, 2019, 2020 & 2021

MAGNITUDE OF EMPLOYEES & WORKERS ENGAGED IN TOURISM AND ALLIED SECTORS

[Digha, Shankarpur - Tajpur and Mandermoni Tourism Sectors, Purba Medinipur, W.B.]



Source: IGISMAP, ISGPP, GPS Survey and Google Earth Imagery, 2021

Figure 7: Magnitude of Employees and Workers engaged in Tourism and Allied Sectors in the Study Area

Table 6 and 7 detect the employee and employment scenario of tourism and allied sectors in different segments of the study area. The generated database shows the higher intensity and concentration of employees and workers engaged in tourism and related economies in Digha sector whereas Mandermoni is the second leading sector here. Due to higher scope and opportunity in tourism and different formal and informal sectors in Digha, the employment graph and magnitude are higher there. Table 8 reflects the residential variation of employees and workers in the study area. In all of the designated sectors of tourism industry, on an average, 54.3% of the employees is local in nature where outside the blocks, regional workers are 22.2% and remarkably, 23.5 belongs to outside working force involved in the study area. This figure indicates, not only local or regional livelihood, but also the outsiders is influenced by the tourism and allied economies of the study area. Interestingly, due to higher opportunity of employment and socio-economic convergence, Digha is featured by more outside working force than others.

6.3 1st Wave Lockdown Schedule for COVID Outbreak in the Study Area:

The corona virus infection or COVID-19 outbreak is one of the biggest medical challenges to humankind in recent times. "Lockdown" is an emergency protocol, which basically means preventing public from moving from one area to the other. In this scenario, all educational institutions, shopping arcades, factories, offices, local markets, transport vehicles, airports, railways, metros, buses, etc., are completely shut down, except hospitals, police stations, emergency services such as fire station and petrol pumps, and groceries [22]. Lockdown can be a significant and effective strategy of social distancing to tackle the increasing spread of the highly infectious COVID-19 virus. At the same time, it must have elevated degree of socio-economic impact on the life and livelihood throughout a nation [2].

The lockdown scenario influenced the study area is given in the Table No.-2.

Table 9: Lockdown Schedule for COVID Outbreak in the Study Area		
Phases of Lockdown	Duration	State of Lockdown in the Study Area
1 st Phase	23 rd March-14 th April, 2020	Completely lockdown along with the state
2 nd Phase	15 th April – 30 th April, 2020	
3 rd Phase	1 st May – 31 st May, 2020	The zones is categorically under 'A' affected zones and fallen into sensitive lockdown region.
4 th Phase	1 st June – 30 th June, 2020	
5 th Phase	1 st July – 31 st July, 2020	Conditional lockdown to avoid the pandemic outbreak due to huge gathering and interaction in tourist place.
6 th Phase: Extended Phase having selected days	2, 5, 8, 9, 20, 21, 27, 28 & 31 August, 2020	West Bengal government announced the extension of the weekend lockdown in the state wherein only essential services would be allowed to operate. All public and private transport is banned.
	Lockdown is extended in containment zones in West Bengal till September 30 and 7 th , 11 th and 12 th complete lockdown in the state	Indirectly lockdown due to shutdown of source regions, feeding zone and hinterland of the region.
Source: Govt. Officials, Daily News Papers, Media Sites & Regional Notification, March-September, 2020		

Once the seaside villages along the Bay of Bengal coast are now becoming as one of the most important tourism hotspots with all the major urban facilities in the state of West Bengal. The rural scenario has been changed dramatically. All tourism centric developmental activities have been done to make this place into an economic giant also. But, now the COVID-19 outbreak is now just shutting down the economy of this region. It looks like a desert [22]. It is one of the worst crises ever to hit the tourism industry of this region impacting all its geographical segments - inbound, outbound and domestic, almost all tourism verticals - leisure, adventure, heritage. Table 9 depicts the 1st wave COVID pandemic lockdown scenario in the study area alongwith the state and central lockdown schedule.

6.4 Socio-economic Impact of COVID-19 Outbreak on the Study Area:

The above discussion clearly depicts the number of people dependent on tourism industry at Digha. This pandemic actually brings the curse in the present and future lives of that number of huge population. The most vulnerable groups are those who are engaged in unorganized sectors and daily bread earnings. One thing should always keep in mind that the economic crises are visible but the social and psychological crises are not always visible. These invisible crises are actually destroying the life of mankind. In the following sections the authors are trying to estimate these immitigable losses as much as possible because of the limitation of short survey period and prevailing lockdown situation which is going on even now in West Bengal.

6.4.1 Perceptions from Different Sectors of Region regarding the Socio-economic Cost of COVID-19 Outbreak and Its Lockdown Situation:

Table 10: Perceptions from Different Sectors of Region regarding the Socio-economic Cost of COVID-19 Outbreak and Its Lockdown Situation

Major Socio-economic Costs	Perceptions/ Responses from Different Regional Sectors in the Study Area												Average	Average (%)
	Hotel & Resort Sector	Travel & Transport Sector	Vendor/ Hawker Sector	Tourist Worker Sector	Market Sector	Handicrafts & Manufacturing Sector	Fish Farming & Agriculture Sector	Trade, Commerce & Service Sector	Fishing Sector	Household Sector	Construction & Labour Force Sector	Tourists & Others		
Job Loss & Uncertainty	46	42	50	50	43	44	41	44	45	42	45	42	44.5	89.0
Economic Uncertainty & Insecurity	47	47	48	48	46	46	44	45	47	46	45	44	46.1	92.2
Increasing Poverty & Marginalization	39	48	49	46	41	45	41	39	43	44	46	39	43.3	86.6
Collapsing Market, Economy & Tourism Systems	49	44	48	47	50	45	43	50	47	41	41	42	45.6	91.2
Turndown Growth & Development	50	48	47	46	50	47	46	50	49	45	44	45	47.3	94.6
Healthcare Crisis & Insecurity	39	47	48	43	40	41	42	41	42	43	45	40	42.6	85.2
Socio-Psychological Stress	42	48	48	47	43	45	45	45	46	46	45	43	45.3	90.6
Socio-cultural Disruption & Stress	39	42	46	42	37	41	40	39	42	43	44	42	41.4	82.8
Social Inequalities & Segregation	36	35	40	41	36	34	36	38	43	39	45	38	38.4	76.8
Change in Lifestyle	44	45	45	44	46	47	46	45	45	46	45	44	45.2	90.4
Socio-economic Insecurity & Unsafe Livelihood	43	41	43	42	42	45	43	43	45	44	46	42	43.3	86.6
Diluting Tourist Flow & Potentiality	48	48	46	47	46	45	42	44	43	43	41	47	45.0	90.0
Average	43.5	44.6	46.5	45.3	43.3	43.8	42.4	43.6	44.8	43.5	44.3	42.3	44.0	88.0
Average (%)	87.0	89.2	93.0	90.6	86.6	87.6	84.8	87.2	89.6	87.0	88.6	84.6	88.0	
N=600	N _{HR} = 50	N _{TT} = 50	N _{VH} = 50	N _{TW} = 50	N _M = 50	N _{HM} = 50	N _{FA} = 50	N _{TS} = 50	N _F = 50	N _H = 50	N _{CLF} = 50	N _{TO} = 50	N = 600	N% = 100

Source: Telephonic Interview during Lockdown and Field Survey after Lockdown, 2020

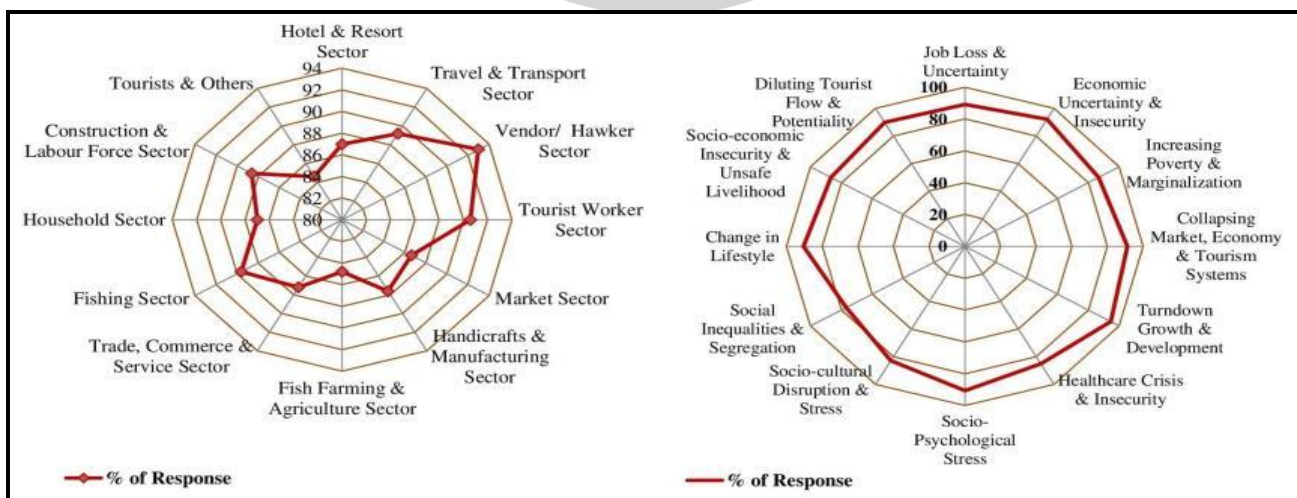


Figure 8: Perceptions from Different Sectors of Region regarding the Socio-economic Cost of COVID-19 Outbreak and Its Lockdown Situation

Table 10 and Figure 8 show the perception on different socioeconomic costs as per various sectors relating tourism in the study area. In most of the cases of sectors and socio-economic costs, the magnitude of perception is at higher scale (> 80%) whereas total 600-respondents taking 50 from each sector have put their suffering perceptions in the field.

6.4.2 Estimation and Assessment of the Employment and Job Crisis due to the Impacts of COVID-19 Outbreak in the Study Area:

Table 11: Estimated Number of Employees faced on Job Crisis

Sl. No.	Name of Different Sectors Related to Tourism and Allied Industries	Estimated Number of Employees faced on Job Crisis
1.	Hotel Sector	18490
2.	Travel, Tourism & Hospitality (Agency & Organization)	150
3.	Vendors, Hawkers and Market Shops	8190
4.	Transport: Trackers, Auto, Toto, Rickshaw, Motor Van, Small Car, Local Bus, Long drive Bus, etc.	6360
5.	Coast Guards, Nulia, Photographers, Tourist Guiders, etc. (employed as per casual basis through organization, institution and agency)	620
6.	Small Scale Manufacturing, Art Crafts and so on	370
7.	Cashew Nut Processing and Food Processing	240
8.	Fishing and Selling, Fish Processing and Manufacturing, Fish Marketing, Transporting and Trading	61700
9.	Distributors/ Suppliers, Service Man, Manufacturer, etc.	1880
10.	Others	3080
Total		101080

54780 (54.2%) employees (within the Ramnagar-I and II CD Block) are local and residual is regional (23450 within the Purba Medinipur District showing 23.2%) and outsiders (22850 outside the District showing 22.6%)

Source: Compilation of Secondary Data (DSDA, Digha Hotel Owners' Association, Fish Owners' Association, Fisheries Development Corporation, Various Labour's and Workers' Union, Market Unions, Different Tourism and Institutions, BDO, GPs, etc.) and Primary Data (Field Survey, 2018-2021)

Table 12: Affected Employees/ People from Job/ Professional Background engaged in Tourism and Allied Sectors

Regional Existence of the Employees/ People engaged in Tourism and Allied Sectors	Estimated Employees faced on Job Crisis (%)	Estimated Number of Employees faced on Job Loss (%)	Estimated Number of Employees faced on Job Uncertainty (%)	Estimated Number of Employees faced on Less Job Loss/ Uncertainty due to Formal Base or Other Economic Support (%)	% of Employees with respect to Grand Total	% of Employees faced on Job Crisis with respect to Its Total	% of Employees faced on Job Crisis with respect to Grand Total
Local Employees (within the Ramnagar-I and II CD Block)	43.58	14.89	28.69	2.69	46.28	94.18	51.99
Regional Employees (within the Purba Medinipur District)	15.08	5.50	9.58	4.26	19.33	77.98	17.99
Outsider Employees (outside the district and state)	25.16	9.85	15.31	9.23	34.39	73.17	30.02
Total	83.82	30.24	53.58	16.18	100	81.78 (Average)	100

Source: Compilation of Secondary Data (DSDA, Digha Hotel Owners' Association, Fish Owners' Association, Fisheries Development Corporation, Various Labour's and Workers' Union, Market Unions, Different Tourism and Institutions, BDO, GPs, etc.) and Primary Data (Field Survey, 2018-2021)

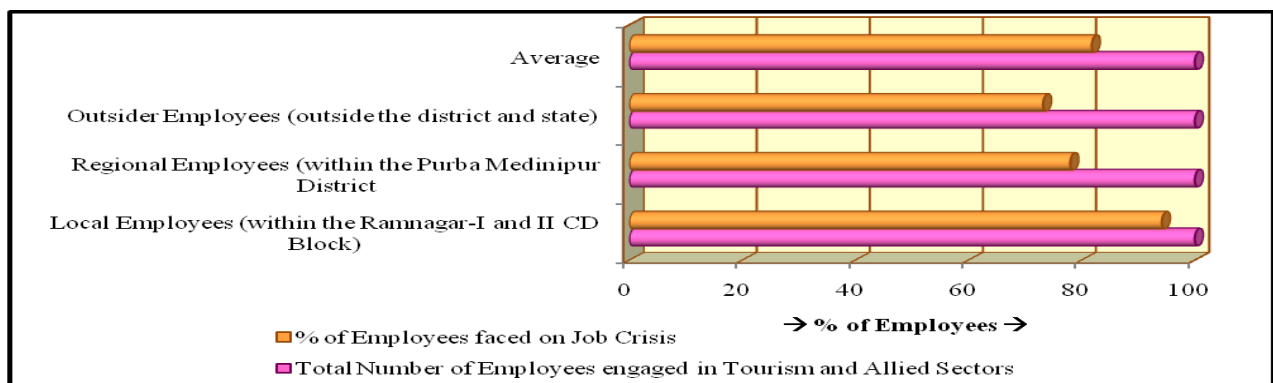


Figure 9: Shared Employees faced on Job Crisis (w. r. t. Grand Total) in Tourism and Allied Industries

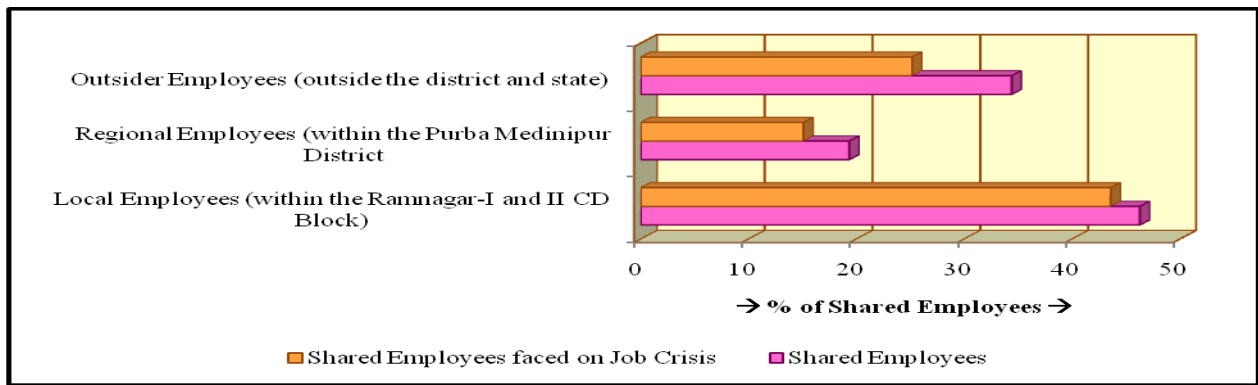


Figure 10: Shared Employees engaged and faced on Job Crisis in Tourism and Allied Industries at Study Area

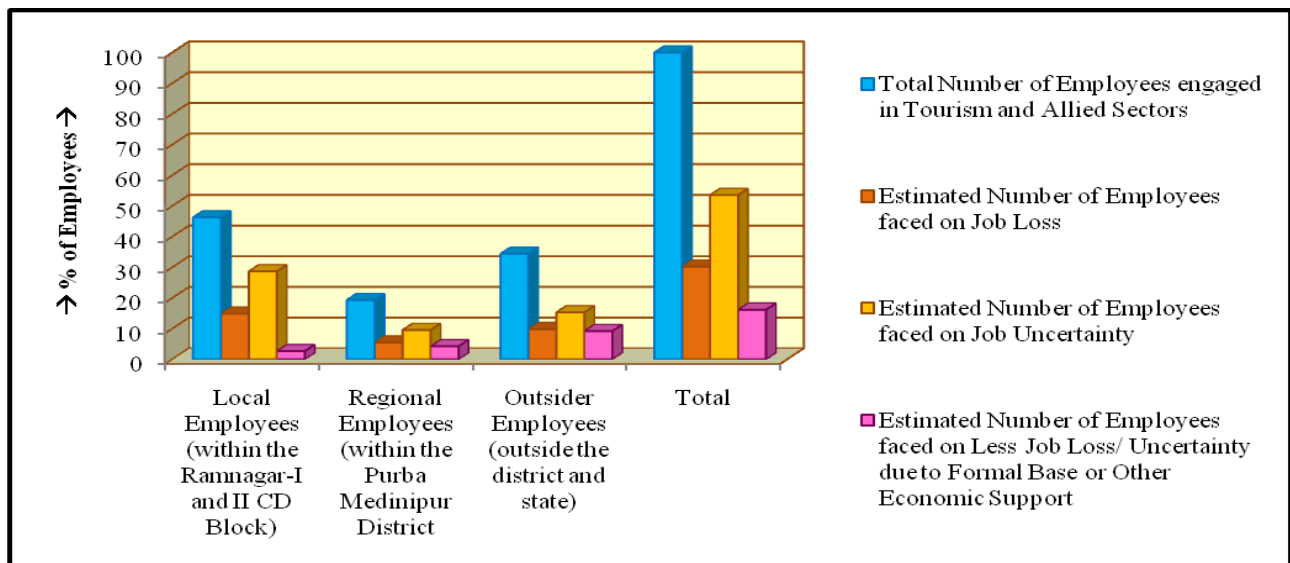


Figure 11: Estimated Employees faced on Various Job Crisis in Tourism and Allied Industries at Study Area

The above data and prepared diagrams based on survey and institutional report reveals that more than 50,000 employees in tourism industry and above 50000 of allied industry have faced the acute crisis of employment and life earning. The designated authorities also don't know when this situation will become normal.

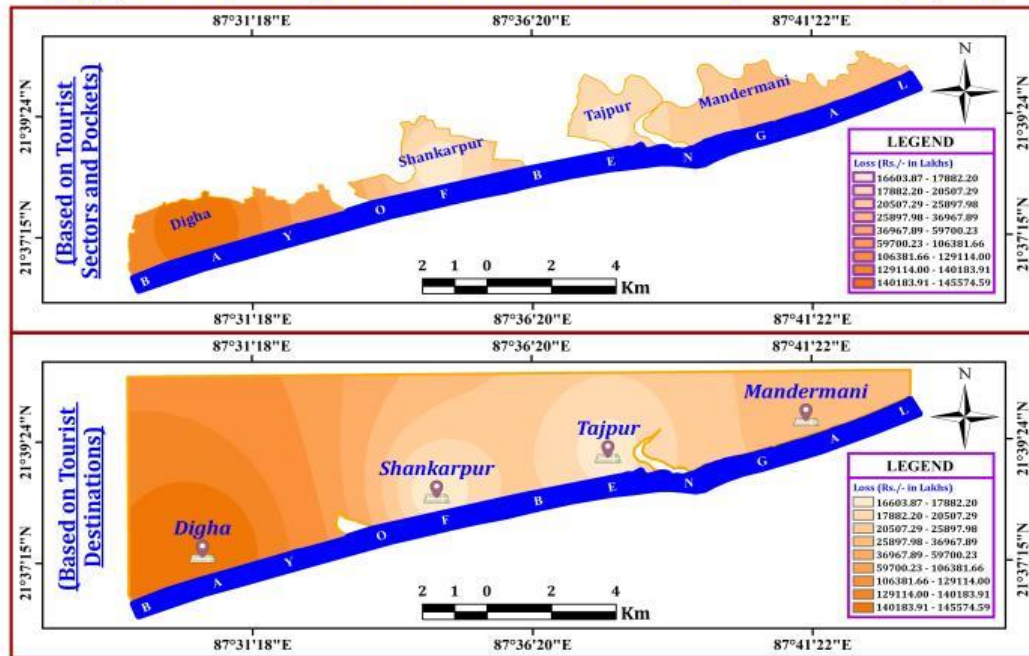
6.4.3 Estimation and Assessment of the Economic Shock due to the COVID-19 Outbreak in Study Area:

Table 13: Estimated Economic Loss at the Tourism and Allied Industry in the Study Area

Sl. No.	Name of Different Sectors related to Tourism and Allied Industries	Income Loss (Rs./- in lakh) for 3-months of lock down and unopened situation				
		Digha Sector	Sankarpur Pocket	Tajpur Pocket	Mandermoni Sector	Total
1.	Hotel Sector	53365	2027	5123	11527	72042
2.	Travel, Tourism & Hospitality (Agency & Organization)	7909	300.0	759.1	1708.2	10676.3
3.	Vendors, Hawkers and Market Shops	3552	105.3	161.6	617.4	4436.3
4.	Transport: Trackers, Auto, Toto, Rickshaw, Motor Van, Small Car, Local Bus, Long drive Bus, etc.	1118	28.5	67.3	221.5	1435.3
5.	Coast Guards, Nulia, Photographers, Tourist Guiders, etc. (employed as per casual basis through organization and agency)	288.8	8.0	12.7	52.4	361.9
6.	Small Scale Manufacturing, Art Crafts and so on	101.8	1.9	1.8	17.8	123.3
7.	Cashew Nut Processing and Food Processing	62.5	0.2	0.3	11.6	74.6
8.	Fishing, Selling, Processing, Manufacturing, Transporting and Trading	64500	13577	10416.5	9513	98006.5
9.	Others (Distributors/ Suppliers, Service Man, etc.)	178	4.8	6.9	38.4	228.1
10.	Govt. Loss from Different Tourism & Allied Industry related Sectors	14500	551	892	3132	19075

	Total	145575.1	16603.7	17441.2	26839.3	
	Grand Total	= 206459.3 Lakh = 2064.59 Crore				
54780 (54.2%) employees (within the Ramnagar-I and II CD Block) are local and residual is regional (23450 within the Purba Medinipur District showing 23.2%) and outsiders (22850 outside the District showing 22.6%)						
Source: Compilation of Secondary Data (DSDA, Digha Hotel Owners' Association, Fish Owners' Association, Fisheries Development Corporation, Various Labour's and Workers' Union, Market Unions, Different Tourism and Institutions, BDO, GPs, etc.) and Primary Data (Field Survey, 2018-2020)						

ESTIMATED ECONOMIC LOSS AT THE TOURISM & ALLIED INDUSTRY DURING LOCKDOWN & UNOPENED SITUATION [Digha, Shankarpur - Tajpur and Mandermani Tourism Sectors, Purba Medinipur, W.B.]



Source: IGISMAP, ISGPP, GPS Survey and Google Earth Imagery, 2021

Figure 12: Estimated Economic Loss in the Tourism and Allied Sectors in the Study Area

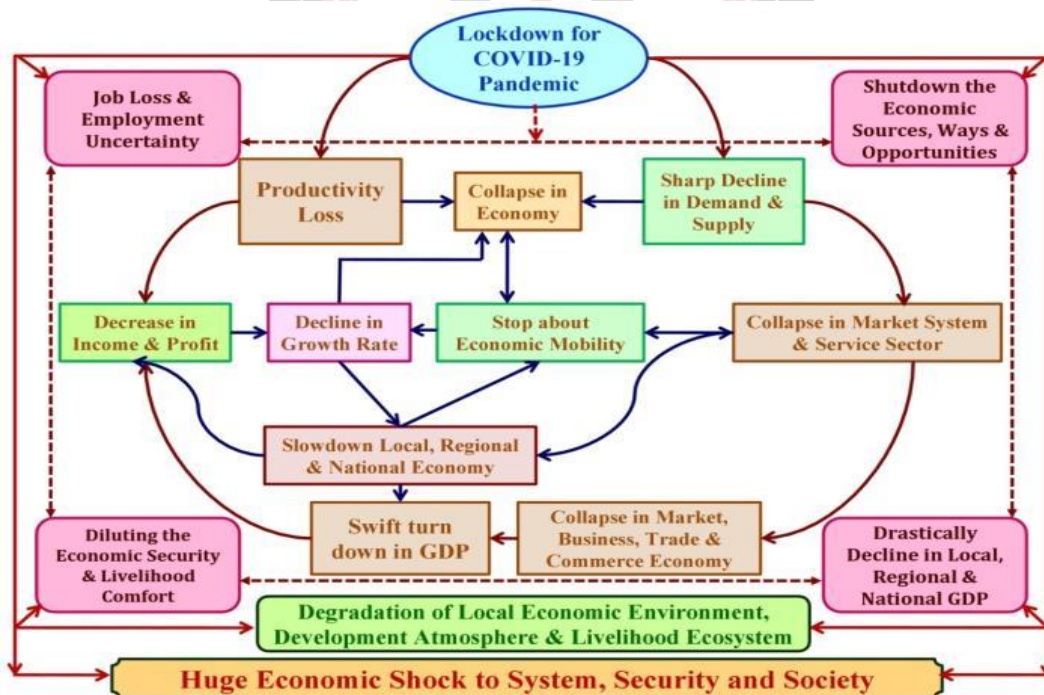


Figure 13: Huge Economic Shock to the System, Security and Society in the Study Area

The above Table No.-12 has been prepared from field survey, telephonic interview, face to face interview maintaining the social distance and institutional report reflects the state of economic shock in different sectors like hotel, market, transport, hospitality, manufacturing, art and crafts, tourism services, etc. of tourism industry and also in allied industry like fishing and fish food manufacturing. Estimation and assessment of income loss shows severe drowning situation of about all sectors. But,

hotel, transport, fishing and market are the mostly affected segment of this industry in the study area. Not only that about 5600 of local households and 2150 households of surrounding regions have been suffered from their livelihood due to this heightened scenario of COVID-19 outbreak. The economy of this region has totally been shuttered.

6.4.4 Social impact:

The poor and marginalized sections of the society are the main victims of this deadly virus attack. The fear of unemployment, poverty, incapability to maintain the social distancing, fear of disease, no such hope from administrative levels etc. make their lives disastrous.

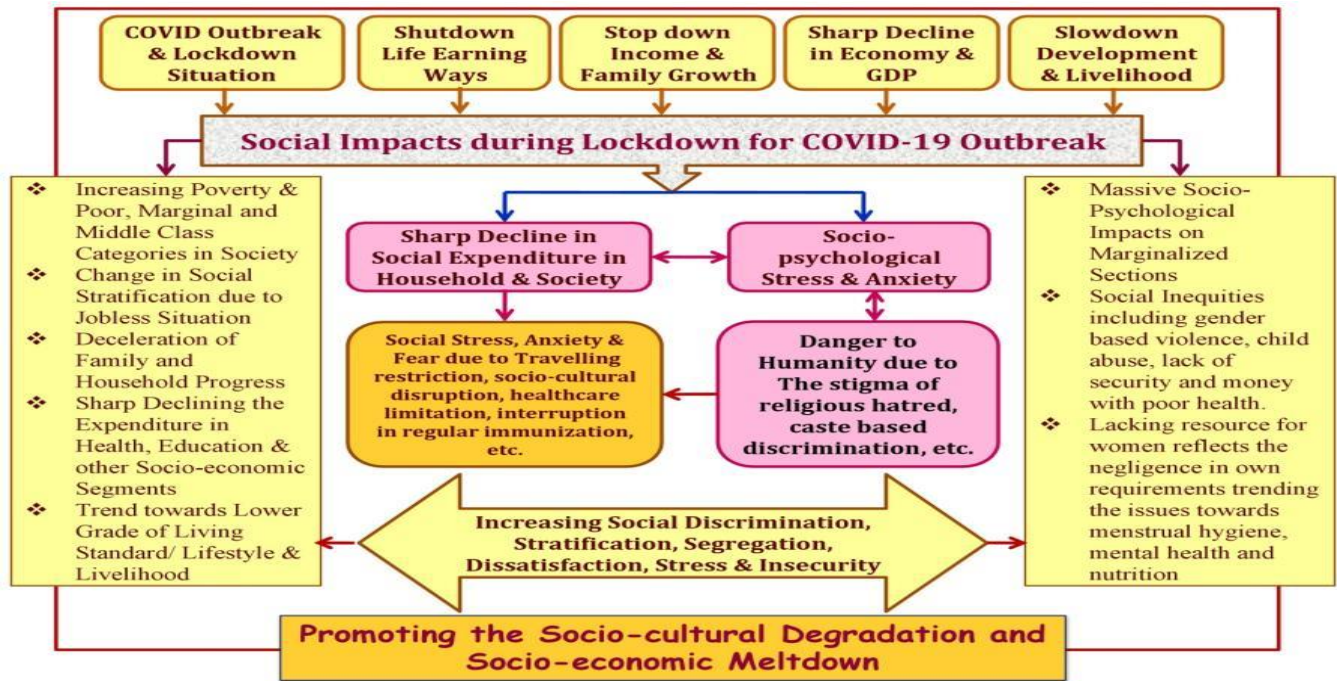


Figure 14: Socio-cultural Degradation and Socio-economic Meltdown in terms of Social Impacts of COVID-19 Pandemic in the Study Area

The various visible social impacts resulted from the survey cum investigation are listed below:

- Massive Psycho-social Impacts on Poor and Marginalized Sectors:** The crisis in terms of economic costs leads to massive psycho-social impacts on marginalized sections, women and children has been huge in this area.
- Higher Physical and Mental Health Risk of Women Community:** Women are at greater risk from both the physical and mental health perspectives due to loosening of job and uncertainty of family income and declining expenditure in household health purpose. Lacking resource for women reflects the negligence in own requirements trending the issues towards menstrual hygiene, mental health and nutrition in the list of livelihood priority.
- Social Inequalities and Unsafe Livelihood:** Poor and substandard families of unsafe scenario draws the social inequalities including gender based violence, child abuse, lack of security and money with poor health.
- Social Stress in Communal Life and Livelihood:** Travelling restriction, socio-cultural disruption, healthcare limitation, interruption in regular immunization, shutting down occupational sources, etc. results the anxiety and fear in terms of social stress among the people by lock down.
- Incapacitated hospitals and distressed primary healthcare:** There are significant reasons behind so much distress among the people for a disease which could be prevented with a little care and precaution.
- The stigma of religious hatred, caste based discrimination affecting humanity:** In appearance of this situation, the less informed and biased media as well as people with vested interests tried to damage the social fabric of the area and left a big social impact in the fight against corona virus.
- Multi-dimensional Socio-economic Issues trapping single to society and Bottlenecked Livelihood:** The issues of health, the rapid decline of economy, shortage of medicines, sanitizers, masks, and other essentials, poverty, unemployment has undoubtedly taken centre stage and each has left a mark on the lives of people.

- h) **Daily Wage Earners, Social Distancing and Reality of Socio-economic Security in Livelihood:** While upper class and upper caste people are able to create a safety net around them, the daily wage earners are victimized by the harsh social distancing provisions in the absence of adequate social safeguards. Social locations of the marginalized classes results in more oppression and exploitation without intersecting endeavours and understanding of the nature of continuous process of social segregation. Therefore, the deep seated apathy towards the marginal sections hit hard by the widespread Covid-19 outbreak and will reproduce otherness among haves and have not.
- i) **Inadequate Investment, Poor Infrastructure and Insufficient care lacking to Socio-economic Reconstruction and Rejuvenation:** Large investment, vigorous infrastructure and sufficient care towards local livelihood, tourism and allied sectors and development stability are not enforced from govt. and policy makers for the strengthening turnaround livelihood, economy and development.

3. Vulnerability and Risk Assessment for estimating the Impacts of COVID-19 Pandemic on Livelihood and Development of the Study Area:

7.1 Pandemic Exposure/ Cost Index to the Employees and Workers, People and Households and Livelihood in the Study Area:

Table 14: Pandemic Socio-economic Exposure/ Cost Index (SeEI/ SeCI) to the Employees and Workers, People and Households and Livelihood in Study Area				
Dimension	Indicators	Weightage on 5-Point Scale	Dimension Specific Exposure Indices	Pandemic Exposure Index (PSeEI/ PSeCI)
Economic Exposure/ Cost	Trends to Job Loss and Uncertainty	4.5	EEI = 0.87	PSeEI/ PSeCI = 0.805 (80. 5%)
	Top to bottom reduction in income and Increase in Poverty	4		
	Disruption in monthly small scale deposits or running the life insurance policy	4.5		
	Loosening the pocket money for essential expenditure	4.5		
	Economic Dependency on Family/ others	4.5		
	Loosening the Economic Empowerment in the Site and Society	4		
Socio-cultural Exposure/ Cost	Reducing the Health and Education Expenditure in the Family	4	ScEI = 0.77	
	Decrease in Self-sufficiency and Reliability in Family	3.5		
	Decrease in Demands and Standard of Living	4		
	Decreasing Trend to consume Modern Amenities and Services	4		
	Decreasing Trend towards Child-Women-Older Care in Family	3.5		
	Domestic Violence and De-empowering the Women Employees and Workers in the Family and Outside	4		
	Decrease in Socio-cultural Participation and Activities	4		
Physico-Psychological Exposure/ Cost	Increasing stress, anxiety, depression and thinking disorder	5	PpEI = 0.85	
	Increasing headache, fatigue and physical disorder	4		
	Concentration breaking in domestic works/ others	4		
	Feeling loneliness and boring at all	4		
Family/ Relation based Exposure/ Cost	Relational Conflict in Inside and Outside Circles	3.5	FEI = 0.73	
	Ignorance in the Family/ Household and Frequent Family Conflict, Chaos and Quarrel	4		
	Trend towards Bad Habits/ Practices creating Unhealthy Atmosphere	3.5		
Source: Perception (Qualitative) Survey, 2020 - 2021				

Source: Perception (Qualitative) Survey, 2020 - 2021

The above table (table 14) based on data compilation and synthesization shows the average Socio-economic Exposure/ Cost Index as 0.805 which is higher in magnitude and indicates the intensive cost from the view point livelihood and development. The table 15 reflects the COVID vulnerability to the employees and workers, people and households and livelihood in the study area. This assessment shows also the higher value of index (PVAI=0.7514) indicating the higher livelihood vulnerability by COVID wave hitting.

Table 15: Pandemic Vulnerability Assessment Index (PVAI) to the Employees and Workers, People and Households and Livelihood in the Study Area				
Vulnerable Dimension	Vulnerable Indicators	Weightage on 5-Point Scale	Dimension Specific Vulnerability Indices	Pandemic Vulnerability Assessment Index (PVAI)
Demographic	Vulnerable Population in the Family	4	DVI = 0.68	PVI = 0.7514 (75.14%)
	Family Size & Population Density	3.5		
	Sex Ratio	3.5		
	Literacy Rate	3.5		
	Birth Control/ Family Planning	2.5		
Economic	Assets including all the Infrastructure and Property	4	EVI = 0.76	
	Savings	4		
	Access to Credit	4		
	Marketing Facility and Capability for Goods and Services	4		
	Poverty Alleviation Schemes/ Programmes	3		
Livelihood	Assured Employment	4	LVI = 0.80	
	Earning Loss during Pandemic	4		

	Insurance/ Deposits Facility/ Scope	4		
	Alternative Employment	4		
	Family Status (Rich/ Higher Middle Class/ Lower Middle Class/ Marginal/ Deprived)	4		
Social	Social Overhead Capital	4	SVI = 0.76	
	Education and Awareness	4		
	Health Infrastructure and Facility	4		
	Land and Household Ownership	3		
	Socio-cultural Participation and Empowerment	4		
Physical & Psychological	Domestic Violence, Stress, Depression and Anxiety	3.5	PhPsVI = 0.70	
	Relational Violence, Stress, Depression and Anxiety	3.5		
	Individual Stress, Depression and Anxiety	4		
	Psycho-physical/ Physico-psychological Illness	3.5		
	Existing Health Problems of Family Member (s)	3		
Safety & Infrastructure	Vulnerability from Communication Tools	3.5	SIVI = 0.78	
	Vulnerability from Household Safety	4		
	Vulnerability from Rights to women in family	4		
	Vulnerability from Socio-economic Safety	4		
	Vulnerability from Empowerment in family and society	4		
Institutional	Lack of Disaster Management Plan and Efforts	3.5	IVI = 0.78	
	Lack of Advance Warning, Education and Awareness System	3.5		
	Lack of Institutional Responsiveness	3.5		
	Lack of Research and NGO Activities	4.5		
	Lack of Prevention, Mitigation and Preparedness and Zoning	4.5		
Source: Perception (Qualitative) Survey, 2020 - 2021				

Table 16: Vulnerability Progression Causal Index to the Employees and Workers, People and Households & Livelihood in Study Area					
Dimension	Indicators		Weightage on 5-Point Scale	Dimension Specific Causal Indices	Vulnerability Progression Causal Index (VPCI)
Root Causes	Limited Access:	Limited Access to Power	4	RCI = 0.80	VPCI = 0.8133 (81.33%)
		Limited Access to Resources and Rights	4		
		Limited Access to Structure and Services	4		
	Ideologies:	Backwardness from Socio-Political System	4		
		Backwardness from Economic System	4		
Dynamic Pressure	Lacking:	Role of Local Institution, Organization and Administration	4	DPI = 0.84	
		Appropriate Skills, Training, Education and Awareness	4		
		Local Market	3.5		
		Ethical Standards	4		
	Marco Forces:	Rapid Population Change	4.5		
		Rapid Lifestyle and Livelihood Changes	4.5		
		Arms Expenditure	4.5		
		Debt Repayment	4		
Unsafe Conditions	Physical:	Unprotected Infrastructure	4	UCI = 0.80	
		Low/ Marginal Income	4		
	Socio-economic:	Special Group at Risk (Risky Livelihood)	4		
		Vulnerable Input and Production	4		
	Institutional:	Lack of Public Preparedness	4		
	Physico-psychological:	Week and unsafe physiological and psychological conditions	4		
	Overall Safety and Security:	Lack of domestic and background safety and security	4		
Source: Perception (Qualitative) Survey, 2020 - 2021					

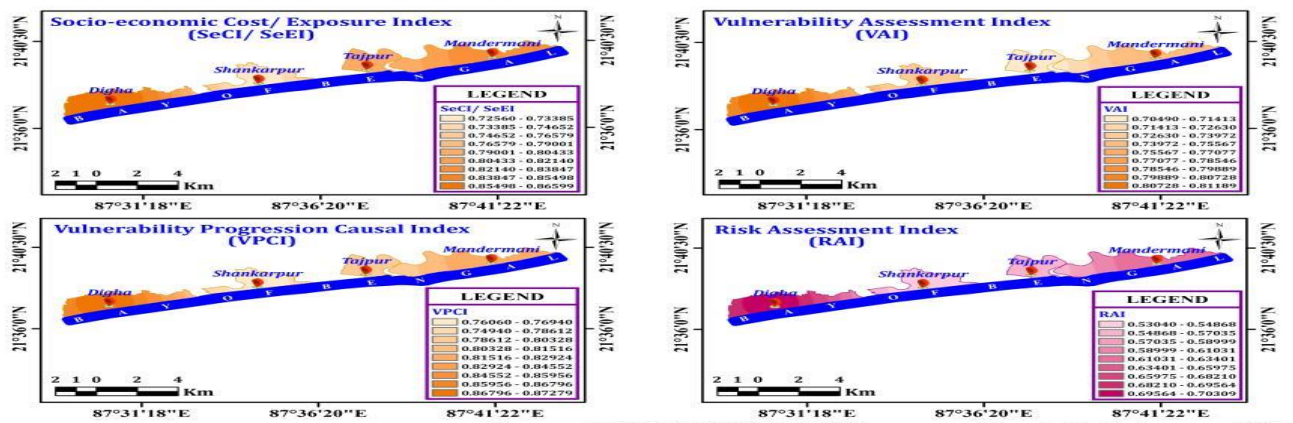
The data table 16 reflects the Vulnerability Progression Causal Index to the employees and workers, people and households & livelihood in study area. The estimated value shows the higher value of index (VPCI = 0.8133) belonging to the very high vulnerability progression causal possibility here.

Table 17: Risk Assessment Index (RAI) to the Employees and Workers, People and Households and Livelihood in the Study Area						
Risk	=	Hazard	x	Exposure	x	Vulnerability
Risk Assessment Index (RAI)	=	Hazard Index Value (HVI)*	x	Pandemic Exposure Index to Employees & Workers (PEI _{E/W})	x	Pandemic Vulnerability Index to Employees & Workers (PVI _{E/W})
RAI	=	1.00	x	0.805	x	0.7514
RAI	=	⇒ 0.6049 (60.5%) ⇒ **Higher risk of the COVID-19 Pandemic to the employees and workers engaged in tourism and allied sectors in the study area				
* indicates the absolute numerical figure for its pandemic nature and deadly impacts to whole of the anthroscape and its livelihood. ** indicates the remarks on risk assessment on the hazard, exposure and vulnerability whereas 0 – 20% ⇒ Lower Risk, 20-40% ⇒ Moderate Risk, 40-60% ⇒ Moderate to Higher Risk, 60-80% ⇒ High to Very High Risk and > 80% ⇒ Very High to Acute Risk						
Source: Compilation of Exposure and Vulnerability Assessment Data Analysis						

The table 17 reflects the Risk Assessment Index (RAI) to the employees and workers, people and households and livelihood in the study area. The enumerated value of RAI on an average scale is higher (RAI = 0.6049) which indicates the higher risk of the COVID-19 Pandemic to the employees and workers engaged in tourism and allied sectors in the study area.

VULNERABILITY & RISK ASSESSMENT INDEX ANALYSIS TO ESTIMATE THE COVID-19 IMPACT ON REGIONAL LIVELIHOOD & DEVELOPMENT

[Digha, Shankarpur - Tajpur and Mandermani Tourism Sectors, Purba Medinipur, W.B.]



Source: IGISMAR, ISGPP, GPS Survey and Google Earth Imagery, 2021

Figure 15: Vulnerability and Risk Assessment to estimate the COVID-19 1st Wave Lockdown Impact on the Regional Livelihood and Development in the Study Area

V. RECOMMENDATIONS

West Bengal as well as India is now fighting at the level best against this fatal disease. No such pathways have yet been discovered by the so called decision makers in the society. This is the period to call for everyone to act socially more responsible and adhere to our duties to our society. Here, few suggestions to lower down the pain of particularly weaker sections of the society are cited below:

1. Government and professional NGOs should provide some kind of job or cash in hand to relief depended people (More than 30% people) for their nourishment of livelihood.
2. In COVID crisis situation, the informal sectors have become more vulnerable. Government should provide them immediate relief because they found themselves literally jobless overnight whereas they contribute significantly to the economy in both output and employment.
3. Each and every political party should mobilize its volunteers for distributing relief to the COVID victims without considering any political colour.
4. Since social distancing has become a global catchphrase in the wake of COVID pandemic, the advantaged specific rich and upper middle class communities are behaving to fit flawlessly while many marginalized sections are vulnerable to impending damage. Govt. as the safeguard should consider the fact to strengthen the deprived in self of social sustainability.
5. In the reality of a long late and a little bit of Govt.'s economic relief package armed with short-sighted planning and no innovative ideas, Govt. must have the honest responsibility to defend the social vulnerabilities frightening out of the social distance measures and meet with large scale hunger in the study area along with the state and nation.
6. As the voice throughout the nation, "If we don't die of the corona virus, we will die of hunger" has already raised from the track of the poor and unstable contract workers amidst safe distancing policies, the whole idea of social distance should be considered with adequately addressing the livelihood of the region.
7. Needy people should be prioritized as the focus on the social setbacks for a healthy start which is extremely important.
8. Policy is the need of the hour as the essential response to the pandemic as well as health and contracted economy.
9. Improvement of strategies to deal with the circumstances is vital to trim down the psychological and social suffering among communities.
10. Policy makers should give emphasis to the outsized investment, strong infrastructure and plenty think about towards other patients for the strengthening of public healthcare considering health issue.
11. Long term planning and collective efforts of individuals, communities, governments, national and international organizations to fight against this invisible deadly virus are required.
12. While the unparalleled circumstances has emerged a huge break and smash up to the economy during phases of lockdown, the state will have to attempt its way through it, by foreword of economic measures and actions. As the national government envisions, defense and fortification of both lives and livelihood are needed.
13. The fiscal doings must start on steadily after viewing of the employment power related to this sector. Stringent defensive procedures should be implemented by the tourism industry in order to defend the strength of this economy.

14. Whereas plan, policy, rules, strategy and reforms should be well thought-out by the responsible government sufficiently to rescue and recover this economy relating tourism industry, the depended societies and influenced communities have an equivalent and identical responsibility in drawing the balance and stability.
15. The norms of social distancing, avoiding or cancelling gatherings, and use of masks and sanitizers should be the means of living till we are able to wipe out the virus. During this moment, the economy is placed with social manners of human race, so the liability of bringing back fiscal battle is not of administration single-handedly.
16. **A roadmap to transform tourism needs to address five priority areas:**
 - ❖ **Manage the crisis and mitigate the socio-economic impacts on livelihoods, particularly on women's employment and economic security** to protect livelihoods, jobs, income and enterprises, to build confidence through safety and security in all tourism operations and to strengthen partnerships and solidarity for socio-economic recovery by placing a priority on inclusiveness and reducing inequalities.
 - ❖ **Boost competitiveness and build resilience** to support the development of tourism infrastructure and quality services across the entire tourism value chain, facilitate investments and build a conducive business environment for local MSMEs, diversify products and markets, and promote domestic and regional tourism where possible.
 - ❖ **Advance innovation and the digitalization of the tourism ecosystem** to create innovative solutions and invest in digital skills, particularly for workers temporarily without an occupation and for job seekers.
 - ❖ **Foster sustainability and inclusive green growth** to shift towards a resilient, competitive, resource efficient and carbon neutral sector, in line with the objectives and principles of the Paris Agreement on Climate Change and the 2030 Agenda for Sustainable Development.
 - ❖ **Coordination and partnerships to transform tourism and achieve the SDGs** to formulate a sector-wide response to the unprecedented challenge of the COVID-19 pandemic.9 Effective coordination for reopening and recovery plans and policies could consider putting people first, involving government, development partners and international finance institutions for a significant impact on economies and livelihoods. [24]

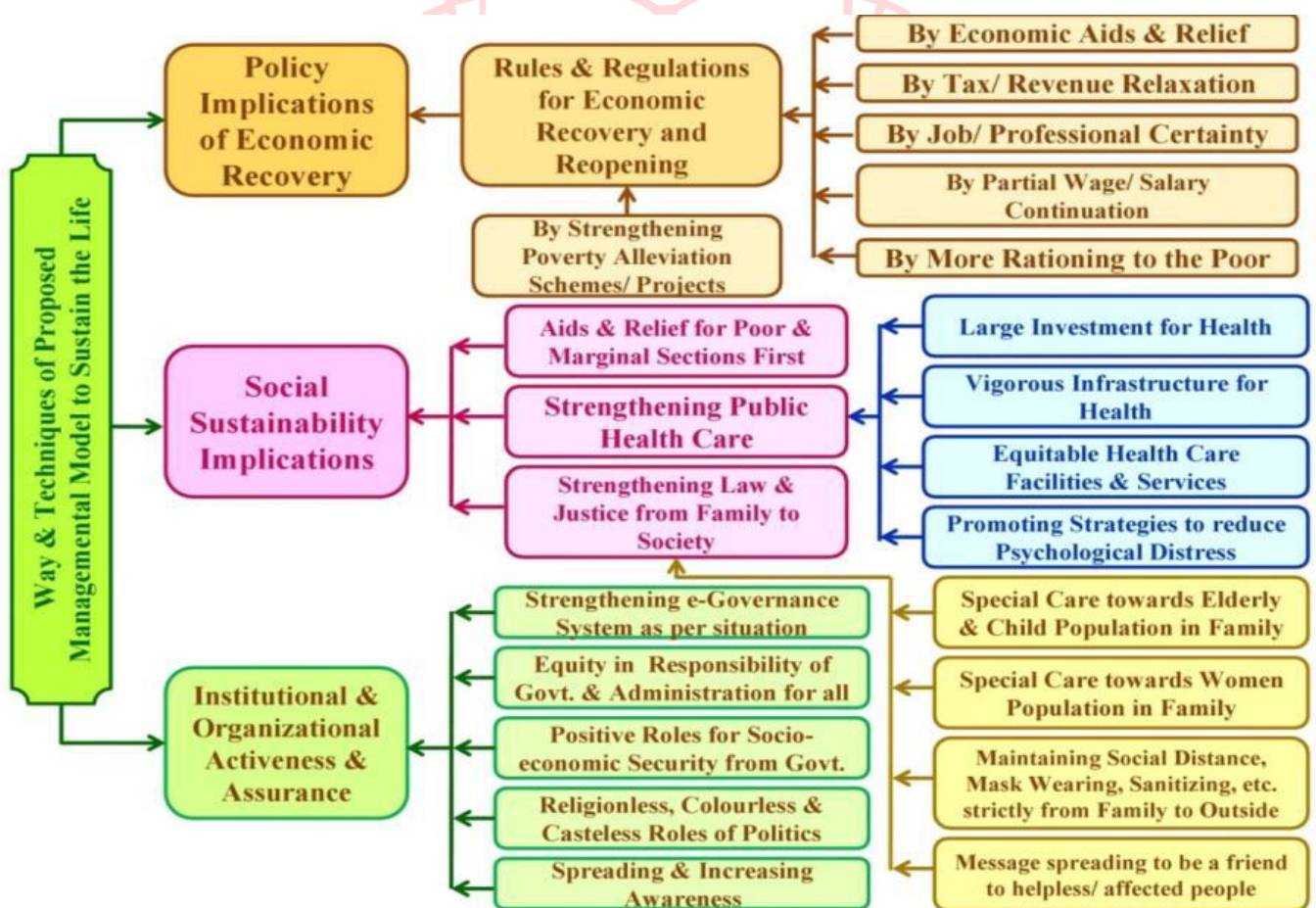


Figure-11: Proposed Model for Sustaining the Life, Livelihood and Development from the Devastating Socio-economic Impacts of COVID Pandemic in the Study Area

VI. CONCLUSION

Tourism is a major driver of jobs and growth. But COVID-19 has dramatically changed this. The impact on tourism enterprises and workers is unprecedented. Timely, large-scale and, in particular, coordinated policy efforts both at international and national levels are needed in consultation with governments, employers' and workers' representatives, taking into consideration relevant ILO international labour standards [26]. India is the 7th largest country of the world and rich with various tourism resources and millions of tourists arrive annually, which contributes to the country's GDP. The need of the hour is to take early steps to overcome the present slowdown in tourism industry by analyzing its long term impacts at the earliest [14]. The message is loud and clear that this industry that contributed at least 10 per cent of GDP, employs more than 10 per cent of our people - this industry is going to be on its own and needs to take care of it. We need an approval to start functioning. For the tourism industry which is built on the ability to help people be out and about it is a cataclysmic event and for the next many quarters we are going to be locked in a battle for survival. Hence, India's tourism needs life support, liquidity to survive Covid crisis [13]. Whereas all of the nations carry on to be aware of the extent of the virulent disease, it is unquestionably the want of the time to get ready for an outlook and opportunity which are sustainable, structurally more feasible for livelihood and functioning in terms of life and its way. Philosophically, each catastrophe draws a distinctive chance to move around on the pathway undertaken for the progress of an individual, society and community. Timely, large-scale and coordinated policy efforts should be taken and mechanisms put in place to mitigate the impact of COVID-19 on the tourism sector in the study area. Short, medium and long-term policy responses should be developed on the basis of the ILO framework for responding to the COVID-19 pandemic, which is comprised of the four abovementioned interconnected pillars like stimulating the economy and employment, supporting enterprises, jobs and incomes, protecting workers in the workplace and relying on social dialogue for solutions in Digha-Sankarpur-Tajpur-Mandermoni tourism cum rural landscape. The strengthening and enveloping COVID-19 pandemic has distorted the booming economy of this region in erratic and uncertain. But it drastically indicated that the recent recession seems mainly dissimilar from downturns of the previous which had shuddered the regional cost-effective life earning and economic base and order here. This deadly disease reflects a lucid memo for the regional financial system to accept sustainable developmental models, which are based on self-reliance, inclusive frameworks and are environment friendly. In final word, tourism industry in this tourism cum rural region is going to face a big disaster and this disastrous situation will continue till the COVID-19 situation normalizes. Short term pain to this industry in the study area may create the bigger challenges in its face. All cash inflows, job and bread earning opportunities of the industry have completely frozen and the situation looks unlikely to improve anytime soon. Officials and heads of travel and tourism sectors tell a uniformly dismal story of cancelled bookings from March, 2020 leading to "complete paralysis" by lockdown. The industry has come to a standstill as the crisis has hit its nerve centers -the airlines, roadways and railways whereas all the segments like inbound, outbound, domestic, leisure, cruise, adventure, conference, corporate meetings, etc. have been hit resulting one of the worst crises here. To overcome this situation, the tourism sector and the policy makers for this region should go through proper management and planning to restart their activities and the industry urgently needs life support and liquidity to survive COVID crisis by the kind hands cape of government and institutions. Hence, we, all should have to act with proper responsibility supporting and co-operating each other to put off the fall down of socio-economic happiness cum wellbeing in the study area, potential Digha-Sankarpur-Tajpur-Mandermoni coastal tourism cum rural landscape.

VII. ACKNOWLEDGEMENT

Firstly, the authors would like to convey the gratitude to the PG Dept. of Geography and Environment of Bajkul Milani Mahavidyalaya for conducting the surveys and investigation in the field. We are grateful different authorities like Digha Police Station, Digha-Sankarpur Development Authority, Digha Hotel Owners' Association, Digha Fishermen and Fish Traders' Association, Market Unions and Association, Trade Unions, Labour Union, Fisheries Development Corporation, etc. for cooperation with us to conduct the surveys and collect the data during the long term period, 2018-2020 including lockdown and post lockdown sessions. Finally, we are gratified to all of the target groups, focus groups, local people and our co-workers who were the unique and essential parts of our survey contributing various roles from their ends.

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