Scope of Vizhinjam Transhipment Hub-with Focus on Employment

Vidya G Mohan
Assistant Professor, Department of Civil Engineering
ACE College of Engineering, TVM

Sheeja K.P
Associate Professor, Department of Architecture
College of Engineering, TVM

Abstract

Ports have been considered to be engines of economic development for the cities and regions where they are located .According to Campbell, "Ports have traditionally been centers of economic and cultural activities in cities, if not the raison d'être of the city's initial development." India has a long coast line of 7517km. Effort has been made here to study the employment effect that will take place due to the proposed port. Ports generate enormous jobs and will require additional facilities in terms of housing.The port not only creates direct employment, it creates indirect, induced, related employment which ultimately will change the phase of the hinterland [3]. This paper mainly focus on the employment scope that will be generated .A comparison has been made with similar ports around the globe for the different type of jobs that will be created in the near future. An effort has been made here to assess the job generated in terms of direct ,induced, indirect and related jobs .The study focus on direct, indirect and induced job and related have been omitted

1. Introduction

The development of the Vizhinjam deep water trans-shipment port will enable Kerala to attain the
status of a highly developed State and for Trivandrum to attain a global city status.The study has been made phase wise Firstly, the relation between port and port cities to emphasise that, city and port act hand in hand for each of its

growth and both are equally important. Secondly, Study of various aspects of the port like the port hinterland and employment generated in the port are discussed. Literature case studies of foreign ports have been done in detail to understand the employment generated and analysis has been done for projections**.**

2. Port and the city

Verlaque (1979) was the first to ask whether the port develops the city and its economic activities, or whether the city was the engine of port expansion. Goss (1990) summed up this classic chicken and egg situation by answering this question saying that 'it served no useful purpose to ask which function came first, or are more important; they go together'. Valega (1983) further proposed the theory on interaction between port growth and local economic diversification even though port and urban dynamics remain of a different nature. Jean-Paul Rodrigue(2006) explained that the different phases of port city growth, progressing from the initial setting of small port city with general cargo to the regional setting with bulk and container cargo equipped with freight distribution and logistics services**.** He showed how the small lateral quays of a small town port progresses to the improvisation stage whereby the docks are built further away from the CBD to accommodate large demands for space for cargo handling.

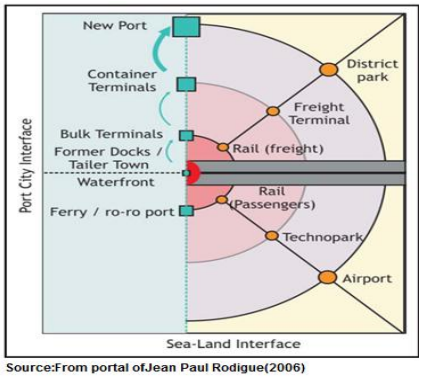

Fig 1 Relation of sea-land interface

3.Types of Job Created Due to Ports

3.1 Direct Jobs

Direct employment includes the jobs local firms provide to support services to the seaport. Typical direct jobs include dock workers, ship agents,warehouse operators, terminal

operators and stevedores, railroad, barging and trucking companies.

3.2 Indirect jobs

Ports also generate indirect jobs as the result of local purchases by the port-related companies directly dependent upon seaport activity. The indirect jobs include jobs in local office supply firms, equipment suppliers, maintenance and repair services, insurance.

3.3 Induced jobs

The employees of port-related companies spend part of their wages and salaries. Induced jobs are jobs created locally and throughout the wider national or supranational economy due to purchases of goods and services by those directly employed.

3.4 Related/catalytic jobs

The last group of employment effects consists of related jobs. Manufacturing and distribution firms in and outside the port partly rely on efficient cargo handling operations in seaports.The construction industry moves construction materials via deepwater ports.

4. Methodologies for Measuring Employment Effects of Ports

The appropriate technique for analyzing the economic impact of a particular port activity is determined by the characteristics of the activity and the region being analyzed, and by the purpose of the analysis. The availability of data is also an important factor. Measuring the employment impacts of ports is not an easy task. There are several methodological problems when evaluating port impacts (Accario, 2008; Musso et al., 2000):

The identification of activities that are dependent on the port and the evaluation of their degree of dependency The measurement of the degree of dependency is potentially exposed to the risk of subjectivity. A lack of exact data can lead to an over estimation of the degree of dependency and thus an overestimation of the employment effects

The intensity of the employment impact of the port, i.e. how much of the consumption activities and multiplier effects can be attributed to the existence of the port. Also here an estimation bias can occur when no exact figures are available Various analytical techniques can be used to calculate the economic and employment effects of port activity are explained below.

4.1 Multiplier Analysis

A multiplier is an index (ratio) that indicates the overall change in the level of activity that results from an initial change in activity. The main Disadvantage is that it cannot be used commonly for all ports, an increase in employment over years cannot be traced back and no resource limitation.

4.2 Input-Output Analysis

I-O analysis is based on a set of tables that quantify the linkages and transactions between different sectors of the economy. The quantities of inputs and outputs for a given period are entered in an I-O matrix/ table in order to analyze what happens across various sectors of an economy. The main disadvantage is the input data should be new and constant survey required, else will get boosted result . If shift in employment occurs no change is reflected

4.3 Computable General Equilibrium (CGE) Modelling:

It is an integrated modelling technique available to measure the economic impact of ports. These approaches combine input-output analysis and econometric techniques to analyze the economy's response over time to external shocks. A very advanced technique is the (CGE) modelling, which estimates the optimal mix of economic variables in response to an external shock. Integrated modelling and CGE modelling are more sophisticated than multiplier analysis, but the data requirements of these methods are very high, so are the costs to perform the analysis.

5. Exhaustive Study of Foreign Ports to Understand Trend in Employment

To find the employment potential in the Vizhinjam port in order to get the migrant population, an exhaustive analysis had to be done since no common technique for port employment was available. Only the direct employment of 2674 in the Vizhinjam port was projected in the master plan of L&T Ramboll,2007.Hence to find the ratio of direct:indirect:induced job an exhaustive analysis had to be done.

Different ports in different continents were studied to understand the direct, indirect, induced, related jobs of ports. No generalization for a particular port or any method could be found. Hence a ratio was adopted for direct: induced: indirect jobs after an extensive data collection and analysis of different port across different continents which used I-O Analysis Method . A trend could be seen in all continents when the cargo handling capacity of any port increase, the jobs also increases. The ports chosen where from America, Europe and Asia Since the population density of Australia was too low and for Africa it was too high the ports in these region was neglected. Besides this ,Australian and African ports are far behind in terms of cargo handled when compared to Asian, American and European The Related jobs were neglected since no industrial projects are there on anvil in case of Vizhinjam port. The Expert opinion was sought in this regard to understand the characteristics of employment

5.1Expert Opinions of Port Employment

Director of Scientific Research in AAPA said "It is difficult to assess the indirect and induced employment since it varies and each port is unique in its respect and for ports and only a ratio can be obtained" Economic Consultant to Latin American port Association quoted ratio for ports(especially American ports) where dock workers are not included in direct jobs where as reverse occur in Asian port. It depends on the shipping partner and level of mechanization of each port and no such projection occurs (Source:google mail).Study conducted by Eastern European Ports (studies by ESPO and Report prepared by Dr. Theo Notteboom ,University of Anterwerp, Published in 2010 describes "There exists however no unique standard methodology on the definition of the types of impacts, which makes port comparisons difficult"

Hence an analysis was done to find the ratio between direct: indirect: induced jobs since the throughout put or other variables of port performance cannot be related to jobs. An exhaustive analysis of various port was done. The ports chosen for the analysis from all the continents was among the top 75 top world ports which are mainly container ports and carry almost equal or more than the cargo projected in Vizhinjam port during the year 2009-10.

5.2 American Ports

The studies carried forward by American ports association has projected the employment of various deep water ports and the ports in American continent was chosen in such a way that these port forecast in the top 75 ports in the world and is having a positive increase in the port through output.(source: World Port Association)

Table 1: Employment ratio in American Ports

American Ports in general showed a ratio of direct: indirect:induced as-**1:0.80:1.66**

5.3 European Ports

The study of the eastern European ports in general was carried by European Sea Ports Organization (2011).This was compared with other ports in Europe which outshine in through output of the port and tops among top 75 ports in terms of cargo handled.

Table 2: Employment ratio in European Ports

Port	Direct	Indirect	Induced	Indirect :Induced	
London	6900	4082	4286	1.69	1.61
Felixtowe	5800	3315	3815	1.75	1.52
Le harve	16374	9631	10045	1.7	1.63
Flemish	175084	108818	69755	1.68	1.56
Dutch	162866	101793	102431	1.71	1.59
European				**1.73**	**1.57**

The European ports in general showed a ratio -1: 0.73: 1.57

5.4 Asian Ports

Asian ports are different from American ports and European ports and have a higher direct employment statistics since dock workers which are a part of the indirect jobs elsewhere is included in direct employment in the case of Asian ports. The indirect and induced jobs are also high since when direct employment increase, indirect and induced will rise according to studies mentioned above(Source: data collected from various ports across the continent)

Table 3: Employment ratio in Asian Ports

Port	Direct	Indirect	Induced	Indirect: induced	
Singapore	175084	106111	90717	1.65	1.93
Shanghai	108818	58820	52569	1.85	2.47
Hongkong	111317	55107	52508	2.02	2.12
Tokyo	115835	64350	55425	2.84	2.59
Colombo	62128	31697	27612	1.96	2.25
Asian ports				**2.02**	**2.43**

The ratio of direct:indirect:induced **Asian Ports- 1:2.02:2.43** this can be due to the dense population and other factors like mechanization dealt with in the port

6.Analysis and Result

From the study of the foreign port ,a direct :indirect :induced employment for the port has been studied in detail and has been arrived .The projected employment in the proposed port according to the analysis is given in table 4

Port	Direct	Indirect	Induced	Indirect: Induced	
Free port	8090	9589	4903	0.84	1.65
Houston	54730	70165	34980	0.79	1.56
Los Angels	47325	62093	27675	0.76	1.71
Victoria	2896	3654	1713	0.79	1.69
Corpus Christi	11859	14462	7231	0.82	1.64
US deep water ports				**0.8**	**1.66**

Table 4 :The employment ratio of ports across the continent.

Port	Direct: Indirect: Induced
American	1:0.8:1.65
European	1:0.73:157
Asian	1:2.02:2.48

Source: Ananlysis,Author

From this analysis , some similarity is being shown by American and European port can be seen this is due to the

fact that Dock workers are a part of direct employment in Asian ports but in Europe and America its not so.The ratio of Direct: Indirect: Induced ratio of the Asian port can be adopted foz the Vizhinjam port.Hence ratio adopted is 1:2.02:2.48.The direct employment projected according to the studies is 2764(L&T Ramboll feasibility report, May 2007).Hence by adopting the ratio of Asian port the projected employment in the Vizhinjam port will be 15201 and as shown in Table 5

Table 5: Total employment projected in operational phase of the port

	Direct	Indirect	Induced	Total
Vizhinjam Port	2764	5583	6855	15201

Hence a projected total employment coming newly to the port will be 15201.This is the expected employment in the operational stage of the port ie by 2025.The direct employment projected in Vizhinjam port is low since it is proposed in line with top ports like Singapore and Dubai. Employment projected will increase when catalytic /related jobs, which will come after operational stage of the port.With 15201 jobs the estimated population coming to the area will be

Projected population= Projected total employment*HHS=15,201*4.44==67,495

(HHS (House Hold Size)=4.44 Derived from primary survey and from Census 2002)

If related employment is considered after 20 years of the operational phase of the port

The projected population will be

Related employment=4*the total employment=4*15,201=60,804.(source: comparison study with port of Rotterdam and Indian ports)

Total population=60804*HHS=2,69,967

Considering the population in the operational phase ie by 2025 ie. 67,495 and after operational phase additional population of 2,69,967 is estimated in the hinterland of VITH.

6.1 Demographic Impact

The projected employment will add to the current population of the Hinterland(explained in Ref3) and change by considering the additional population due to port jobs the density will be 5728 p/sq.km and if related jobs are included by the full phase of the project ie by 2031,the area will have a density of 9507p/sq.km. The projections are included in the table 6

Table 6: Projection of Population and density by 2041 in the study area

Hinterland	2001	2011	2021	2025	2031
Population	112369	125713	139057	269967	327465
Additional port popln	------	-------	60869		
Related Jobs					90867
Population density(p/sq.km)	3218	3601	5728	7664	9507

Source: Urbanization report, Thiruvananthapuram, 2010 & Analysis, Author

According to Census (*I*ndia)if an area have more than 5000 population and if the density is >than 400sq.km the area is Urban. The facilities should be provided according to that of a small town. The projection shows a decadal increase in 52% of the Vizhinjam port population.

6.2 Findings

From this we can infer that the additional port jobs will induce a SMALL TOWN characteristics in the hinterland (0-2km from port) by the operational phase of the port according to UDPFI guidelines Hence planning of the area is required to cater to the needs of the projected population becomes essential .The additional requirement are to be assessed

7.Conclusion

The employability due to the inception of port has been detailed out in this paper.Tthe influence and the change in social,demographic,economical and landuse change has been studied in the ref3.The additional requirement due to the port has to be found out and zoning and planning guidelines has to be formulated so as to avoid a haphazard growth.The master plan of Thiruvannathapuram has to incorporate the induced change that will occur in the near future of the port expansion.

References

[1] Toh, R; Phang, Sock-Yong; and Khan, Habibullah, "Port Multipliers for Singapore: Impact on Income, Output, and Employment"(1995). Research Collection School of Economics. Paper 463

[2]JeanPaulRodrigueaTheoNotteboom(2006)"Challenges in the Maritime-Land Interface: Port Hinterlands and Regionalization

[3] Vidya G Mohan and Prof.Sheeja K.P(2013)," Impact Assesment - Vizhinjam International Trans-Shipment Hub" , International Journal of Urban planning and Transportation, Recent Science Publication Vol.1 , Issue2 Aug 2013 , Mandrid 1001-1004