

# Socio-Economic Impact Assessment of Investments in Seaports - An Empirical Analysis of Sustainable Livelihoods using Simultaneous Equations Methods

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**Abstract:** The wheel, a circular device capable of rotating on its axis facilitating movement or transportation or performing labour in machines. No other invention has affected human civilization for so long ever since it has been invented; the wheel has been associated with various facets of life improvement from a socio-economic perspective. On the same hand, there is yet another wheel that has emerged as the icon of progress “private investments in the building of maritime ports”. It takes only a Lion’s heart and monumental passion to aspire for a better world on one hand and create a commercial enterprise at the same time. This research theme is portrayed and emphasized by way of a 360 degrees taxonomy study of the genesis of a Large Port M/s KPCL in the Sunrise State of Andhra Pradesh is presented. M/s KPCL has invited almost everyone to suspend their disbelief, including the researchers. This manuscript focuses on the tangible impact from a socio-economic perspective and focuses on the Sustainable development in terms of (a) good health and wellbeing, (b) quality education (c) clean water (d) decent work and economic growth, (e) industry, innovation and infrastructure, and (f) reduced inequalities. The research concludes that port based Special Economic Zones, rail-freight, cold chains, ICD’s, Warehouses and associated infrastructure can generate employment in a sustainable manner for the generations to come in an exponential manner.

**Keywords:** Poverty, Ports, Employment, Exploitation, Hunger, Income Equation Question, Livelihoods.

## 1. Introduction

Un-sustained livelihoods are here to stay, and of all worldly perceptions it is not a vanishing aspect from the human social fabric especially in India. Also for more than just socio-economic reasons, the sub-continent has been constitutionally and systematically segregated under the aegis of all the 12 planning commissions (Since 1950 to 2017), and despite these tepid measures rolled-out in the form of tangible establishments of institutions of the poor, unemployment, inequality and no food security are here to stay and the ugly truth lurks in all corners and main-roads of our Nation. This study seeks to emphasize on the limited creation of livelihoods as a social evil and its impact on poor lives, how maritime ports have been able

to address this problem and the focus they had on the enabling sustainable livelihoods. Maritime ports have been the cradles of civilization. The social factors of sustainable livelihoods are addressed by investment in maritime ports which this study attempts to lean about. Sustainable livelihoods are important in lieu of dependency, ignorance, landlessness, forced labour, exploitation, untreated illness, superstitions, prolonged and communicable diseases as a brief list. The identified variables and their associated factors over a longer tenor tend to convert to secondary factors viz., poor governance, bad infrastructure, lack of skills and capital etc., when people are denied employment, lack of job security and income that does not meet the basic requirements. Lack of employment will affect a household depending on who the earning member is, education can also be a major variable in this sector.

This study seeks to emphasize that, India needs to create a structured mechanism for seamless forward and backward market integration of people and industries. This study analysed the effectiveness of M/s Krishnapatnam Port as an Indian Institution of development, from the key factors designed as variables (themed above) from a Socio-Economic Perspective with an intent to design and execute better livelihoods. Global trade facilitation has helped mankind establish themselves as resilient human beings. It encourages them to innovate and realize their potential. Trade provides jobs and access to new technology. It can help in price reduction, including on food essential for the extreme poor to emerge out of abject poverty. Sustainable growth has a positive social impact. This research attempts to demonstrate that “Port led development”, can be the very foundation for happier and healthier lives. Ports create jobs and economic growth in many diverse ways. Ports are essentially a conglomeration of multiple people led functions in that they own and operate shipping terminals, marinas and docks, airports, industrial sites, railroads, parks and recreational facilities. M/s KPCL has pursued an aggressive program of socio-economic development that includes infrastructure and industrial development. This research demonstrates that the

transportation sector is a strong factor in terms of social, economic and regional development by way of its influence on the nation’s integration to the world economic market. It can be said that, the unemployment rate has reduced considerably over a period of time in India [17]. While caste and creed does play a major role, championing the port goes beyond mere classification and impacts the lives of the residents of Krishnapatnam Gramam, Gopalapuram, Arcketpalem, Ramnagar, Thaminapatnam, Gumaladibba, Lingavaram, Varagali, Momidi, Pantapalem, Chalivendram, Balijapalem, Subbareddy Palem, Epuru, Venkannapalem, Royalapalem. Human lives are subjected to the same conditions irrespective of regions, districts, villages, households, caste, creed and gender etc. The institutionalization and commencement of Krishnapatnam Port has taken residents these villages beyond the folds of caste and creed where basic human lives were stagnated in static poverty as a recorded fact. The Port has launched a five-fold programs or perspectives. (a) Skills, Welfare and Team-Building (b) Security Training Academy (c) Academy for Professional Studies (d) Drivers Training Academy (KDTA) and (e) Technical School (KWS)

An exclusive unit for facilitation of skilled employment generation, and NGO administered. M/s Navyatha Training cum Production Unit (NTPU) has been commissioned. Under this initiative more than 1,44,540 participants have been rendered with direct and indirect jobs within and outside the vicinity of the Port. Knowledge attained through this informal education has helped open doors to a lot of opportunities for better prospects in terms of career growth. Development of Indian Ports have strictly been commercial and this has shown limited advancement in the past 20 years, if any development is registered it is limited to only a few pockets in limited segments and short-ranges. In the context of the development of Maritime Ports, the rate of progression is supposedly higher in Kerala, Gujarat and Tamil Nadu as compared to other Indian States [6], [14], [8]. In these port facilitated geographies, the impact of lack of educational facilities; a heinous phenomenon has affected millions of children across India who are deprived of the primary and secondary school system. Effected rural areas have not seen proper roof over their heads or sanitation system. Sometimes, these villagers are forced to walk for hours just to get two pots of water [13].

As a contrast, the studied KPCL specific to a 20 Kilometer radius, has provided 37,247 new vocations and livelihoods with 5718 micro-small semi-automatic industries have been enabled. The port has extended clean drinking water, residential homes, places of worship, educational institutions and hospitals along with other basic infrastructure for people to leverage upon in their journey to make a livelihood, making this study both important and vital as a unique chapter of Indian Socio-Economic Literature. As a focussed intervention to the rehabilitation and resettlement colony formal education to children was given a special place has now expanded to a major educational life cycle intervention amongst the beneficiary

population. This initiative provides high quality education alongside with the building of strong values while focusing on over all development of the child. This facility nurtured students through high standards of education & values. Over the last two decades, many of the children have become leaders with distinction, have committed to the spirit of excellence and have tangibly contributing to society. If one were to ask, ‘what is the root cause of diminishing employment rates?’ The plausible response can be – lack of skill & education. Livelihoods that are characterized by KPCL are presented as table-1 below.

Table 1  
Livelihoods Enabled by Krishnapatnam Port

Fish and other fishing livelihoods	Marine and port finance
Blue revolution products	Marine insurance
Aquaculture	Seabed exploitation of hydrocarbons
Seaweed culture	Ocean renewable energy
Seafood processing	Coastal Hotel and Restaurant
Shipbuilding and repairs	Yacht services marine leisure-big game fishing
Bunkering and energy trading	Telemarketing services for cruise lines
Freeport zone	Water bottling
Sea transport	Marine pharmaceuticals
Deep water application	Vocational and tertiary education in maritime

India rationally estimates socio-economic development centred on the variables of consumption and income factors of a household. Consumption is always measured on the account of the money that a household spends on the essential goods as defined about six years ago. (Tendulkar’s Committee Report, 2011) [2]. Income on the other hand is calculated with respect to the earnings of a single household [10].

#### A. Statement of the problem

To assess the real impact of Port activities in terms of economic growth of the region, State and local people - there is every need to make an impact assessment study of the port. This study helps policy makers and investors to assess the prospects and formulate suitable policies for the development of similar ports in future.

### 2. Discussion

#### A. Impact of employment on general population:

This research has worked out an elaborate data capturing instrument on a multitude of factors to understand the effect of Private Capital in the Port Sector: Port as a Catalyst for accelerated Socio-Economic Development. The output was that a profound change in quality of life can be witnessed as per table 2.

#### B. Marginalization of resources – unbalanced growth

In spite of suppressing realities by way of measurement dynamics, one cannot deny and hide the fact that the socio-economy is in a state of imbalance [19]. Mere play with numbers and misuse of authority will not change the fundamental fact that a serious issue like unemployment will

resolve by itself. It is neither ethical nor socially tolerable. India needs to promote social equality and support schemes that helps address the development of Socio-Economic Variables. This research portrays impact of Port led development as table 3.

Table 2  
Data of Basic Necessities by KPCL

Variable Description	Mean	Std. Dev	t-test	sig
WATER	-1.79	1.166	34.314	.000*
FOOD	-1.626	1.107	32.856	.000*
CLOTHING	-1.578	1.391	25.361	.000*
HOUSING	-2.128	1.277	37.26	.000*
EDUCATION	1.282	1.395	20.548	.000*
HEALTH	0.296	1.311	5.047	.000*
TRANSPORT FACILITIES	-1.578	1.391	25.361	.000*

\* Significance at 1 per cent level

Table 3

Paired Sample t-test Development in basic necessities, socio- economic issues of people in KPCL port area

Description	Mean	Std. Dev	t	df
Basic necessities in past <b>Vs</b> basic necessities in present	-1.352	0.566	53.381	499
Social development in past <b>Vs</b> Social development in present	-0.85	0.537	35.412	499
Economic development in present <b>Vs</b> Economic development in present	0.562	0.572	21.982	499

\* Significance at 1 per cent level

### 3. Literature review

- *Part – I:* Infrastructure and the functional aspects of Maritime Ports.
- *Part – II:* Agricultural Supply Chain enablement by Maritime Ports.

#### A. Part – I

##### 1) Infrastructure and the functional aspects of Maritime Ports

According to the International Economist Ragnar Nurske, “A country needs to address measures for a sustainable livelihood” where he is pointing towards the unfortunate heinous reality that negative socio-economic development is a trap that is hard to escape [15]. Unemployment as a variable has always been present across the globe in rich as well as poorer countries. In countries across the world today discrimination and unfairness keep the skilled away from their pockets of unemployment. Worldwide, unemployment is influenced subjected to various factors that might sound vague but is actually the hard truth. Factors like war, forces of the nature, and diseases. The impact of lower levels of socio-economic development is intense [18]. A majority of these factors have been addressed by KPCL and its sustained focus on people’s lives. Ports and their business results in geographic territory of Andhra Pradesh are presented below. Almost all ports have powered the concept of “Livelihood Creation”, the spectacular results was possible because of the social fabric that weaves the fundamental pillars

of port operations.

- Andhra Pradesh has a 974-km long coastline & was the 4th biggest port in terms of traffic handled in 2016-17. Ports in Andhra Pradesh collectively handled 130.6 million tonnes of cargo during 2016-17, out of which 61.02 million tonnes was handled by the Visakhapatnam port. Traffic handled by Visakhapatnam port reached 63.54 million tonnes in FY18. [16]
- During 2016-17, the average pre-berthing detention, turnaround time & output per ship berth per day, were recorded at 2 hours, 3.75 days & 13,069 million tonnes respectively at Vishakhapatnam port. [9]
- The state government undertook a plan to construct a deep sea port at Machilipatnam. Construction of the port was put on high priority by the state government in September 2015. As of January 2018, land acquisition for the project is underway. [21]
- The state government had invited bids for development of Bhavanapadu port in 2016. In January 2018, the state government finalized Adani Ports and SEZ Ltd as the developer of the Greenfield project. The port is expected to have a capacity of 30.57 million tonnes and will be constructed over 2,050 acres of land. The project is expected to be completed by 2023 to 2024. [16]

Further, the Visakhapatnam multi-modal logistics park (MMLP) is ready for operation. The government has also announced its plans to set up 2 more MMLPs at M/s Krishnapatnam Port and Kakinada. These MMLP’s can create sustainable livelihoods for more than 2000 families for a start.

#### B. Part – II

##### 1) Supply Chain enablement by maritime ports – agricultural & food security paradigm

Table 4  
Variables and Major research work

Key Variables	Author
Food Supply	(Deepayan Debnath,2017) (Suresh Babu, 2017) (Michael Helmar, 2017) (Abdullah, 2017)
Food Loss	Rob Liddiard, Baboo (Lesh) (Gowreesunker, 2017) (Catalina Spataru, 2017) (Anastasia, 2017), (Gesche Huebner,2017)
Cold Storages	(Samir Gokarn, 2017) (Thyagaraj S., 2017) (Kuthambalayan,2017)
Packaging	(Magdalena Hules, 2017), (Simron Jit Singh, 2017) (Anderzej, 2017)
Supply Chain Network	(Aditya Parmar, 2017), (Elin Roos, 2017), (D J Mogale, 2017)
Technology Impetus	(D.G. Mogale,2017), (Alexandre Dolgui, 2017), (Fiona, 2017), (Sri Krishna Kumar, 2017), ( Manoj Kumar Tiwari,2017)
Manpower Challenges	(Ximena Rueda,2017), (Rachael D. Garrett, 2017), (Eric F. Lambin, 2017)
Farmer Know-How	(Kannan Govindan, 2017), (Milosz Kadzinski,2017) (R. Sivakumar, 2017)

The broken agrarian supply chains need to be plugged into independent systems and dependent processes for value addition all within the complete supply chain in the smooth transition of raw material and inter-linkages with the primary and secondary agricultural markets. Economic and Regulatory support needs to be augmented to establish segregation centers at coordinated pooling stations at the back-end to facilitate seamless transport to transnational centers for better price support. Table 4 provides the variables which this study considers for analysis.

Limited regulations with unclear actionable(s) in the Indian agrarian sector contribute to the unsystematic mechanism of forward linkage and to the disassociated and fragmented agrarian supply chain mechanism. From production to consumption of farm goods, India registered in 2016-17 an immense 52.16 per cent agriculture input to the domestic economy and at the Global level is one of the major exporters of rice, fruits and vegetables. After the independence of India, Indian Gross Domestic Product was subjected to be dependent on the agricultural food sector or imports till 1965-66. The yield of Green Revolution has transformed India from a nation that imports food to a nation which now is self-reliant. India being one of the world's largest producers of food products (fruits, grains and vegetables) results to a wastage worth 440 billion dollars each year due to the lack of facilities such as cold storages and transport (F. Yeni 2017). Without any improvement to the supply chain India's food problems would remain the same and rather grow (Magdalena Hules 2017). Food wastage is common and it is obvious that significant percentage of the population goes hungry everyday or survives on just one meal. "India State Hunger Index" estimates that 200 million go hungry every-day (Grazia D. Santangelo 2018-Accepted) (Jean-Paul Chavas 2017).

That is in the ratio of one is to six people (Piero Conforti 2017). The other stiff challenge for the Indian Government is to rationally distribute and channel the earmarked food produce meant for alleviating food scarcity related poverty. The huge volumes of food grain spoilage in the supply chains are appealing when one looks at India's position in the Global Hunger Index. Out of 76 countries, India reaches at 55 below Nepal, Uganda, Sri Lanka and Mali. With 22% of Indian population below poverty line and barely surviving, even a portion of spoiled food grains could have fed millions (Mohua Banerjee 2017). With rising population and diminishing farmlands the demand for scientific management of the available resources in terms of agricultural products has become critical. A prudent management structure would ensure the supply of food grains grown from farmers to seamlessly reach consumers. Scientific and modern warehousing along with an efficient eco system of agricultural products is a necessity to ensure food security. This study asserts that, by the development of innovative, scientific warehousing practices, India can play a leading role in ensuring food security in the agricultural supply chain, internally and externally.

2) *Traditional Measures of livelihoods – How KPCL has improved the Socio-Economic index*

Measurement of the quantum of citizens who are poor is termed as headcount index. While it is easy to compute it does not yield the measure of how poor is this set of population. This is measured by the Livelihood Gap Index (PG1). A summation renders the minimum expenses of enabling livelihoods, if designed projects were to yield desired results. The squared livelihood gap ("poverty severity") measure (P2) derives the squared mean of the livelihood gaps associated to the poverty line. The Foster-Greer-Thorbecke (FGT) computes as

$$P_{\lambda} = \frac{1}{N_s} \sum_{i=1}^N \left( \frac{G_g}{p_l} \right)^{\lambda} \quad (1)$$

Where  $N_s$  is the size of the sample,  $p_l$  is the livelihood-poverty line,  $G_g$  is the livelihood gap and  $\lambda$  is a parameter;

when  $\lambda$  is larger the index puts more weight on the position of the poorest. Livelihood enablement is a common phenomenon that has been a constant even before the British invaded India. But the force was much simpler and under control. Then, abject livelihoods were confined only to certain region, tribes and casts [21]. The magnitude of the impact that was thrown left right and centre across the width of India is unimaginable. Millions of people after the British decided to imprison India and deprive its own people the very basic right to utilise its resources and wealth for their own needs. Instead, they were forced into slavery in their own home and help the rich get richer and push their people into the brim of poverty [21]. The poor were left behind to die of starvation and were deprived of the very basic requirements.

In the identified villages around the maritime port, M/s KPCL was able to

- 50 per cent of the villagers have been enabled with decent shelters.
- 70 per cent of the 20 Villages around Krishnapatnam now have decent sanitation.
- 35 per cent of the families are now enabled with security of food and sources.
- 85 per cent of the village students have access to high-grade schooling inside the Port.
- 100 per cent of the unconnected rural areas have now been enabled with robust infrastructure in terms of proper transportation and road connections.

**4. Analysis**

Part – I: Mathematical Model derivation for Agrarian Supply Chains.

Part – II: Econometric Methods for Analysis of Livelihood Enablement.

**A. Mathematical Model derivation for Agrarian Supply Chains**

Although India is a prime nation that exports agricultural produce, in lieu of the above assertions it can be deduced that the initial challenge is with the management of the broken Supply Chain network [46]. This section attempts to develop an empirical Structured Equation Model with constructs of six parameters, including sharing of information, interconnected and tenured business associations, shared resources, quality orientation, dynamic systems, and associated 3rd and 4th party logistics delivery. Structural Equation Modeling, identifies and qualifies that there is would be a significant positive impact when the entire chain is integrated using technology of multi agent systems [3] and [44]. The model derived below, addresses an evaluative approach involving current mechanisms for establishing both analytical and profitability based methodology to enable multimodal logistics. The primary constructs that are modeled using SEM can be depicted as below.

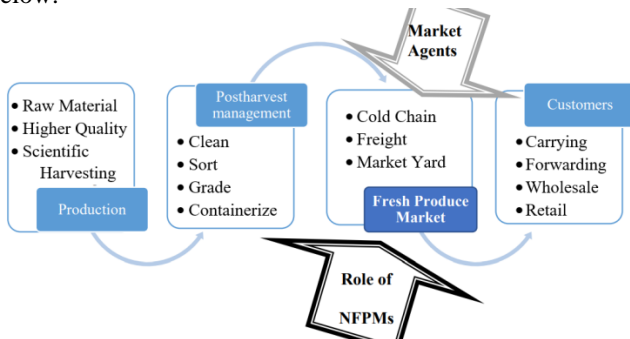


Fig. 1. Interconnectedness of variables that are modelled using SEM

For the auto regressive evaluation [33], [35] derived an analytical method based on the non-spatial simultaneous approach. This method was later modified by [54]. At North Carolina simultaneous equations were used with dependent variables of variances in employment growth, variances in income growth, and population. All the structural questions were identified together as a set by a system of equations.

Comprehensive estimations were given based on the interactions among the interdependent variables. A small asymptotic variance was the most important advantage of this method. It leads to an efficient estimation and simultaneously helps in overcoming FIVE inconsistencies and bias. The analysis was followed by the estimation of three stage least square (3SLS). [42]

County level data was used for all the dependent factors of changes in income, changes in agricultural employment, change in population, factors of social and behavioral aspects for empirical analysis [27]. Equilibrium levels of income are represented by variables returns\*, Agricultural services\*, and populace\*. The initial conditions that forecast measure civic features, social and characteristic features which are linked to the employment difference are been described by a set of variables which are  $\hat{h}^A$ ,  $\hat{h}^F$ , and  $\hat{h}^Q$ . Hence the equation is:

$$\text{Earnings}^* = f(\text{Employment}^*, \text{Populace}^*, \hat{h}^A) \quad (2)$$

$$\text{Vocation}^* = g(\text{Earnings}^*, \text{Populace}^*, \hat{h}^F) \quad (3)$$

$$\text{Populace}^* = h(\text{Earnings}^*, \text{Vocation}^*, \hat{h}^Q) \quad (4)$$

Based on the above model, a liner relationship can be represented as

$$A^* = M_{0A} + N_{1A}F^* + N_{2A}Q + \sum \chi_A \hat{h}^A \quad (5)$$

$$F^* = M_{0F} + N_{1F}A^* + N_{2F}Q + \sum \chi_F \hat{h}^F \quad (6)$$

$$Q^* = M_{0Q} + N_{1Q}A^* + N_{2Q}F + \sum \chi_Q \hat{h}^Q \quad (7)$$

Where the intercepts of each equation are indicated by the  $N$  values, coefficient evaluations of each inter-reliant variables are represented by  $M$  values along with variables which explain fundamental mandates are represented by  $\chi$  values.

The income variables and agricultural parameters act as initial conditions and the set of equilibrium equations are:

$$A_t = A_{t-1} + \phi_A (A^* - A_{t-1}) \quad (8)$$

$$F_t = F_{t-1} + \phi_F (F^* - F_{t-1}) \quad (9)$$

$$Q_t = Q_{t-1} + \phi_Q (Q^* - Q_{t-1}) \quad (10)$$

Levels of Income, job prospects within the agricultural paradigm (Farm & Non-Farm), and competition as parameters of time “t”, with prefect conditions and aspects of causality amongst equilibrium and conditionality’s inherent with adjustment factors.

Where population, income and employment are the adjustment flexibilities coefficient associated to maximize employment, income and profitability [22]. The initial equations and their adjustment values are  $A_{t-1}$ ,  $F_{t-1}$ ,  $Q_{t-1}$ . The speed of adjustment

co-efficient are  $\phi_A$ ,  $\phi_F$ ,  $\phi_Q$ . Equations Seven and Nine are substituted and hence the model is

$$\Delta A = M_{0A} + \beta_{1A}A_{t-1} + N_{2A}Q_{t-1} + N_{3A}Q_{t-1} + r_{1A}\Delta E + r_{2A}\Delta Q + \sum \chi_A \hat{h}^A \quad (11)$$

$$\Delta F = M_{0F} + N_{1F}I_{t-1} + N_{2F}Q_{t-1} + N_{3F}Q_{t-1} + r_{1F}\Delta I + r_{2F}\Delta Q + \sum \chi_F \hat{h}^F \quad (12)$$

$$\Delta Q = M_{0Q} + N_{1Q}I_{t-1} + N_{2Q}Q_{t-1} + N_{3Q}Q_{t-1} + r_{1Q}\Delta I + r_{2Q}\Delta E + \sum \chi_Q \hat{h}^Q \quad (13)$$

Where,  $\Delta A$ ,  $\Delta F$ ,  $\Delta Q$  and are the differences in income, agricultural services, and populace, respectively. The rate of modified coefficients now amalgamate in the dynamic variables  $M$ ,  $N$ ,  $r$ ,  $\chi$ . This model [32], [58] signifies the association while simultaneously isolates the influence of services on earnings.

The Tenth and Eleventh describe the outlay from a 6-11 month window alterations in earnings, agricultural services, with populace ( $\Delta A$ ,  $\Delta F$  and  $\Delta Q$ ) to their long-term equilibrium \

( $A^*$ ,  $F^*$  and  $Q^*$ ) [53].

### 5. Summary & findings

- It is a recorded fact that 17.54 percent of India's population resides in the 68 coastal districts that comprise 13.17 percent of India's mainland. The development of coastal communities through port sector association like fishing, technically skilled employment, offline jobs, technical deployment, machine operators, loaders, security personnel, fire and safety personnel, customs agents, etcetera to name a few vocations. Development is always an essential objective of almost all new maritime ports. M/s KPCL has been the crown of all new private ports in India from a holistic perspective not only from an economic standpoint but also from a socio-economic perspective..
- Post to the success of M/s KPCL, pan India, 39 Public Private Partnership (PPP) projects are now operational at a cost of around USD2219.4 Million & capacity of 240.72 Million Tonnes Per Annum (MTPA). 32 PPP projects at an estimated cost of around USD3917.6 Million & capacity 264.77 Million Tonnes Per Annum (MTPA) awarded & are under implementation.
- The positive impact demonstrated by M/s KPCL has paved the road to the National Green Tribunal which has given a nod in 2017 for the construction of multi-crore 'Vizhinjam International Seaport Ltd. (VISL)'. The port is being developed by M/s Adani Group in collaboration with Kerala Government.

#### A. Skill development

- An integrated approach is being adopted by M/s KPCL for the improvement in quality of life with focus on skill building and training, upgrading of technology in traditional professions, specific and time bound action plan for improving physical and social infrastructure in collaboration with the local population.
- On the skill development parameter, the skill gap study of 21 additional villages which have been identified to groom the technical domain staff & concerned administrative leaders have been advised to implement the district action plans. To address skill gap in ports and maritime sector in these 21 adjacent villages, Ministry of Shipping will also be funding skill development under DDU-GKY to train a larger quantum per annum for next 3 years from M/s KPCL.
- M/s KPCL has also funding the fire safety training project for workers within the vicinity of the Port. Since Feb 2017, 6474 workers have been freshly trained and 8640 workers have been given refresher training. According to national policy, it has been made mandatory for a worker to undergo a 12 day skills training program before he can begin work in

any Maritime or Shipyard. Effectively, anyone who works in M/s KPCL today undergoes the basic safety training. The Port Management has further ensured third party certification of this training programme to ensure quality of training.

### 6. Conclusion

Private Ports in India have traditionally played a passive role in industrial attraction and retention. Until recently most ports were not engaged with their local and regional economic development efforts. They took very little if any development efforts or to sustain the livelihoods which get disturbed owing to the enablement of large industrial activities associated to the building of mega ports. Their principal concern was moving cargo, so they worked closely with the carriers and existing shippers logistics departments. Influenced by a state-wide asset-based development strategy and structural forces, M/s Krishnapatnam Port has evolved into a cargo-moving economic development organizations, but face challenges in this transition discussed in this research. More research is needed to examine how the extensive literature on port regionalization, strategic coupling, and directional drives can be applied to the US inland waterway system. This systems is dominated by bulk inter-industry cargo rather than global containerization through sea ports. The situational context of the operational challenges discussed in this research should be better understood.

#### A. Relevance to a Developing Country Context

Rural US ports operate in a different organizational context than ports in developing countries, but compete for the business of the same multi-national industrial and agricultural organizations. Site location decisions are made on a global scale so developing country rural communities are competing against rural US communities to market their ports as an industrial attraction asset. For example, the Brazilian silicon company that chose to locate in Mississippi, initially considered locating in Paraguay or Uruguay (Seid, 2015). To compete all rural ports will need to address governance issues, market themselves, conduct planning, and collaborate more with development organization.

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