ISDA Journal 30 (2) 2020, pp. 87-422

TRANSFIGURING OF COOPERATIVE FEDERALISM TO ORGANIC FEDERALISM: CALL FOR REINFORCING THE MACRO ECONOMIC SUSTAINABILITY IN INDIAN FISCAL SYSTEM.

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Abstract

Today the concept of federalism clenches a paramount position in holding the democratic aura of any nation. The concept is regarded as a zestful operation which is primed to adapt to the revamping parameters of societal needs accordingly. The existing dogmatic concerns on the conception persist on the indispensable facets of coordination and independence whereas ongoing discussion reinstates the aspects as cooperation and interdependence among the constituents of governance. Contemporary world persuades a new practice of federation to cope up with the changing horde of democratic action which lies in an affair of joint measures not in a matter of licit status. It is high time the ongoing structure of cooperative federalism need to be experimentally rearranged in order to stand with the sustainable demands of the society. This paper sheds light on the question through a theoretical observation of the institutional mechanism of federation envisioned in the Constitution of India and an operational analysis of the fiscal institution and a suggestive inclusion of different financial set up.

***Keywords**:* Cooperative Federalism, Economic Sustainability, Fiscal System.

Contemporary world order is often straining the basic concept of federalism. The constitutional mechanism which is oriented for dividing power between various levels of government is primarily

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concentrating on a combinational aspect of partial self government and partial shared government. These federal mechanisms are usually connected with culturally diverse or territorially large nations with varying formations like federal system or quasi federal system. In countries like Argentina, Belgium, Brazil, Canada, Germany, India, Malaysia, Nigeria, Pakistan, Spain, South Africa and the United States this concept of federation do spread out different notions of service delivery and democratic resilience.

The ongoing mechanism thereby ensure policies are often made at the most appropriate level, which provide a shield against the over concentration of power and resources. As per the theoretical application of the concept this sort of institutionalisation will ensure the creation of more opportunities for the mechanism of democratic participation. If we analyse the journey of federalism in most of the democratic countries do pave the glimpse of both improved governance structure and also some of the deteriorated state policies due to the failure of this federalist culture (Reddy, 2018). Thus it gives the explanation that concept of federalism itself is a complicated one which can be directly connected with the legalistic format of governance which got hold of more rules and power comparatively. The outcome of the event can be at times more expensive thereby hindering the coherent development and application of any policies in these federal nations.

The quasi federal system would be required to be shaken from a grass root transparent administrative set up which no where holds a space in the existing cooperative federation. The concept backing the paper can be drawn through an instance unnoticed but wide spread. The assurances made by the fourteenth finance commission to the federal structure and the transformational steps by the new planning structure stay aloof from what the sovereign population once relied on the post FRBM provisions (Sarma & Gupta, 2019). This might

be needed to be called as the modern perspective of the cooperative federation which lives in a pro active strategic society. The authentic solution to overcome the existing financial institutional uncertainties needs to be further analysed from different perspective.

Theoretical Conception of Federalism- An Overview

The institution of federalism can be figured as a mechanism of government which establishes specified division of powers under constitutional references between various levels of government. This usually are categorised in two levels, i) national, federal or central ii) a state, provincial, or regional levels. In addition of federalism in certain countries like Belgium and South Africa their lies a three tier within the concept of federal culture. A threefold power distribution exist which provide local government as in South Africa and overlapping territorial linguistic formation into this culture as in Belgium under recognizable constitutional powers. Thus the concept of federalism is being engaged through the framework of shared powers and responsibilities.

Today the concept of this federalism often attempts to reconcile desire for unity and communality along with a desire for diversity and autonomy. When these set of actions get overlapped the transfiguring of the original concept of federalism is getting enhanced in a more macroeconomic level. The ongoing situation give an awakening call on whether the federal mechanism is suitable on the region of such happenings (Rao, 2017). Therefore strengthening of concept of federalism highly depends on the power to balance between the common interests or identities and also among the divergent interests or identities of the current society.

Theoretically the concept of federalism is regarded as an institutional solutions to the problems concerning with all forms of scale and diversity. This allows for pragmatic variations in the

actual distribution of functions and powers between various levels of government. In India this mechanism is followed through three list procedure based on Schedule 7 as a Union List (List I), a State List (List II) and Concurrent List (List III). Being in the status of both a process and as well as a constitutional form it is getting passed through a wide variety of applications. This wide range of applications gave a new and varying format of understanding in the minds of people about the concept of federation.

Theoretically the idea of federalism stands for contributing the strength of authority by applying different mechanism of coordination and division of powers. Thus the concept of federation strengthens the basic concept of unity in diversity with regard to the Indian land. This ideology is meant to strengthen and clear the forces and trends in achieving the national goals that are common throughout the regional and central domain. If we flip the pages of history text book of Bible discuss the problem and cases of federal polity in detail for the first time. Ancient Israel through its basic example of Union of Constituent politics tried to draw the basic understanding and reel of applicability of the concept of federalism (Anderson, 2008).These federalist ideologies can be linked with a visualization of linkage of people and institutions through base mutual consent evolving the society into a more coordinative type.

In fact empires of Persian, Roman, Hellenistic, Magadha, Mauryan all got flourished in their time based on their concepts of federalism as they got united the idea of federal by a sense of common need or crisis but failed to inculcate the very sense of nationhood as seen through modern lens. The base of modern federalist thought can be connected to the rise of the principles of sovereignty and nationalism. It was Johannes Althusis who tried to connect the idea of federalism with the cases of national unity thereby made it stay away from the ancient connection with monarchies and confederations.

Theorists like Montesquieu and Adam Smith through their modern imperialistic concept gave the entire consideration of federalism into its connection to 'coordinative' principles.

The base for the concept can be drawn as an institutional form as a solution to solve the particular kind of political organisation related problems where federal features are at its ease. This ease of federal system lies in the amount and scope of distribution of powers among the core and constituent units of government. In India the distribution of subjects which demand the border of distribution is based upon the constitution which maintains a proper balance of the jurisdiction of federalism(Krokoszyski, 2012).

Concept of Fiscal Federalism

The basic idea of fiscal federalism lies in the concept of relating the division of governmental functions and the financial relationship between different levels of government. Richard Musgrave through the theoretical framework tried to relate a well laid institutional set up in providing abilities to the federal government in solving issues put forward by local governments by applying the tools of balance and stability. The entire concept of fiscal federalism lies in the flow of money from top to bottom and in the relation between all tiers of government in balancing the flow of the money optimize.

Fiscal federalism constitute a set of guiding principles, it often acts as a guiding concept which institutionalise the financial relationship between nation and regional levels in a more federal manner (Tillin, 2019). This principle can be applied to all government forms that economically follow 'fiscal decentralization'. If then provides a normative framework in carrying out different function through different levels of government. These operations are done through appropriate fiscal tools which are in tune with the society where it is applied.

The concept clearly demarcates the division of responsibilities with regard to public expenditure and clearly showcases the mechanism of taxation between the different levels of administration.

Fiscal Federalism in Operation: Recent Trends

The real meaning of fiscal federalism can be affected only through a reliable system of intergovernmental fiscal policy. This can be regarded as the primary facet to a viable and reliable stable federal polity system. Post independence era of Indian Federalism was deeply rooted in the policies which got framed as a planning intervention by the Planning Commission. Post 2014, after the abolition of Planning Commission the critical role in the transfer system of Indian economy got transferred into the institution of Union Finance Commission (UFC).

Article 246 of the Constitution of India provides the provision on the list of subjects. The subject matter of taxation has been included as per these three lists. It is through this tax federalism the deco of operation between State government and Central government had been maintained flawlessly (Singh, 2015). For any nation to operate successfully adequacy in financial resources are the pre requisite of this condition. Our nation through this fiscal federal mechanism was able to equilibrate the balance between autonomy and dependence in financial matters of state and centre.

A rethinking in the flow of current mechanism got initiated in the long run of this post independent era. A lot of lacunas got formed which need to be filled in urgency but could were not able to patch up within the time frame. These repeated instances did result in lot of debates on the integrity of the fiscal federal mechanism of the land. It has been widely argued that much acclaimed Indian fiscal federal set up losing its fiscal discipline. These arguments and the events which took place in the gone years led to some notable

changes in the approach towards fiscal related policies of the land. Land mark changes took place even in the framework of the fiscal relations between centre and state. Some of the throwback changes which took place are:-

i) Planning Commission got abolished in January 2015
ii) NITI Aayog created post this abolition
iii) Implementation of higher tax devolution to states from 2015-16 Fiscal year
iv) Constitutionalisation of Goods and Service Taxes and establishment of GST Council

Changes are essential in a developing country like India but at the same time the rate of changes should ensure a compatible rate of sustainable development in the economy. Especially, for a country like India, fiscal federalism concept should bring in fiscal equalisation across the regions instead of ongoing wider gap creation. The ongoing debates argue the assurance of a need for redefining India's fiscal federalism. A more decentralised regime needs to be sorted out to cope up with the trending challenges of the nation's fiscal federalism. This can be further strengthened with a more prudent sustainable unique cooperative federalism model.

Concept of Cooperative Federalism

The concept also gets a nick name as Marble cake federalism. This idea can be further explained as a system in which federal, state and local governments interact cooperatively and more collectively with the aim of solving problems that are common with the land. In this mechanism both centre and state are carrying out a horizontal relationship in which "cooperate is the major element of trusteeship. Through this strategy centre ensures maximum form of participation in the decision making mechanism by the states. In India all the

function with relate to the principle are laid down based on the schedule VII of the Constitution.

All round inclusive development is a concept which ensures the sustainable development of Indian land in all its spheres. In maintaining financial sustainability an all round fiscal mechanism that is embedded in cooperative federal feature along with the adaptability is very essential (Sarma & Gupta, 2019). In further explaining this concept we need to understand the fact why India followed the institution of cooperative federalism.

In our country the very notion of federalism is regarded as an indestructible union of destructible states. It was under this perception the need for strong union got dominated and a federalist principle got shaped. History clearly showcased the significance of Simon Commission and how it affected in our cooperative federalism concepts. This was further strengthened with the Government of India act 1935. In India spirit of cooperative federalism is assured through distribution of powers, supremacy of the Constitution, a written Constitution, and rigidity and through the authority of courts.

Our federalism is unique in its own sense. We practice the mechanism of cooperative federalism through different norms. Some notable ones are the existence of Zonal Councils which in turn take care of centre-state and inter-state cooperation. Central councils are set by various ministries to enhance the cooperative mechanism. Our country consists of a well established cooperative federalism which had been strengthened with a well framed Constitution as well as through effective administrative machinery (Rao, 2017). All these system can be well applied only through proper and time bound implementation methodologies which is apt to the situation and time. It only could effectively address the challenges of the period and save the fiscal stability of our nation.

Contemporary Perspective of Cooperative Federalism

Any mechanism to bring into more strength needs timely review and maintenance. It is from this purview many thinkers argue that practice of cooperative federalism need to be laid down for introspection in accordance with the changes that are happening around. India being a functional democratic country for the efficient implementation of the policies whether it be agricultural reforms, education related. Tourism promotion or investment attraction related a combined effort from both centre and state is the prerequisite for its long term success. This could be reassured only through greater transparency and more participation of stakeholders involved in the decision making process of both centre as well as state.

Institutionalised mechanism need to be evolved for assuring this two way cooperation for a better India. Electoral reforms should aim at change in mindset of the political party members as it should be above their electoral mindsets (Reddy, 2018). This change of representatives should be in favour of the nation's greater good so that the real essence of cooperative federalism can be laid down. This is the prime shortage of the current federalism of India.

As previously mentioned in this paper the mechanism of cooperative federalism is practical in our country under various norms like Inter State Council mechanism (Article 263 of Constitution), Zonal Council framework, National Development Council, Niti Aayog and through various Conference of State chiefs. The ongoing measures to strengthen the institution of cooperative federalism need to be put under effective scanner these days as many changes which got initiated in the federal polity of our nation got out run and it is high time for periodic updating. When it was the era of Coalition politics many disputes arisen were triggered as starters

for the developmental need but today when the mechanism of riding government took to single party mode the format of conflict making got changed into a new format. Strong base institutions for strengthening the cooperatives in our federal mechanism should be thought of. As Duvvuri Subbarao, a former Governor of Reserve Bank of India commented through one of his article, the need for a fiscal council should be strengthened for demanding the updating on the ongoing federation mode of our nation (Sarma & Gupta, 2019). This change need to be fostered so that the real rays of federation will become more cooperative and organic with the changes happening.

Structural- Functional Analysis

The root base of federalism is resting upon the principle of division of powers between national and state governments based on democratic rules and institutions. Thus the structural functional aspect of cooperative federalism lies in the federal approach towards sovereignty. The operation of this form of federal type of government is carried out in a democratic land through three branches of administration- Executive, Legislative and Judiciary- their powers are accordingly granted by the Constitution of land (Rao, 2017). While dealing the operational dimensions of cooperative federalism any officer should bear in mind the prime concept that any form of federalism is not a static concept, instead it is under a state of flux.

Especially an analysis of cooperative federalism in this period of time do give a clear picture that the entire process of federation is a complex one which contains no consistency in the path of development. Therefore operation of federation needs to be seen as a process of federalising a political community according to the form of government which it is following. Here in our country whatever operations are being carried out under the title of cooperative federalism need to be brought under the democratic values and

sovereign functionality for the population (Tillin, 2019). The recent instances of fiscal deficit target achievement itself show the weal balancing of the cooperative federalist culture.

Rigidity of many instruments within the cooperative federalism is not suitable with the very base feature of federalism. As more money is getting to the people's hands if a proper equilibrium of federal culture is not maintained then government will have to struggle hard to meet fiscal deficit target each year' This will ultimately lead to a crisis situation which is unfair with the pre set regulation bounded cooperative federalism mechanism. This is where a change of the federalist culture more to an organic tone can be seen. If it is under this vision then the rigidity of many instruments can be laid down to a more loose but adaptable nature. Though federal in principle but the real need of Indian mechanism need to be more state focused as implementation of decisions taken place more at the state level. The local self government which are termed as schools of democracy that are the base of state mechanism need to be well connected to the ongoing format of federal culture of our land.

Organic Federalism: Concept

The real concept of this form of federation is a virtual stage which can be reoriented towards a more inclusive package where space for decision making is open for all strata of government. This would really open up the concept of wider macro level federal polity within the broader constitutional framework of our country. This could further be strengthened with more interdependent format with a reciprocal dependence of both central as well as regional governments. The mechanism would not purposefully loose the aspects of autonomy, or raises the level of subordination and subjugation of unit of governments (Tillin, 2019).

That really goes ambiguous with the existing form of federation in the outlook towards it. When Constitution makers set the idea of federalism what they envisaged was a basic feature of federalism in which a type of jurisdictional federalism could have instated. This model was likely to be a centre- periphery and concentralised matrix for power sharing, delegation, for federal culture in which a cooperative and organically interdependent framework of federal governance could have been applied (Anderson, 2008). Due to lack of visionary application this methodology could no where get followed instead we got adopted to a strict federalist culture which we called ourselves as a quasi federal culture. This is the real problem why any change happening within the system cannot be properly figured out instead a peripheral solution is always followed even without proper configuration of the real problem.

Emerging Challenges of the Ongoing Federal Culture of Our Land

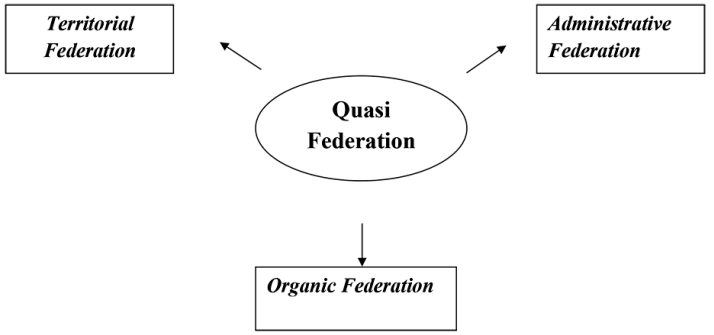
Indian federalism phrased as 'federation sui generis' means federation of its own kind features a more quasi federal type of system. If we look detail into the history of federal culture in the land it is quite pertinent to understand one shift, that is from a unitary system to a federal system without losing the basic skeleton of the unitary form. This itself is the major hindrance why the ongoing federal culture is more slippery with adaptation or with its organic culture. The reason can be better laid with the story of compromise between two conflicting considerations.

Fiscal Council

The ongoing situational analysis gave an idea of the necessity of an independent institutional set up which would help any government to concentrate more on fiscal rules in a better way. These discussions would lead to the thought of a separate fiscal council as

suggested recently by former governor of Reserve Bank of India. The implementation of this concept would uphold the signalling capacity of nation by ensuring the adoption of a well laid down fiscal discipline. Though firstly recommended by thirteenth Finance Commission headed by N.K.Singh such an institution framework is very much necessary for enhancing the transparency of the system.

Though the concept of fiscal council within the institutional framework is of western origin but due to the change of methodological nature of federalism more organic changes need to be adopted for turning more adaptive and sustainable. That is the sole reason again in 2018; Srivastava Committee on fiscal statistics do went forward with this suggestion. They reinstated that such councils could coordinate more harmoniously with all other levels of government. As our financial credibility is highly depended on the accurate and transparent system of government agency such an inclusion to check out the budget numbers with lesser amount of scepticism by public is depended on these initiatives (Sarma & Gupta, 2019).



Organic Mode of Federalism Structuring

Indian mode of federalism lies in its principle of quasi- federation where it is clearly visible the different levels of quasi forms like:

The real contradiction falls in its understanding of the essence of our system which is purely unitary. This is the real problem why the federal structure fails at most of the time in upholding the sovereign democratic nature of the land. Therefore the entire system need to be turned more towards an organic format which is more prone to adaptability which is neatly arranged within the federal jurisdiction (Singh, 2015). This concept itself is contradicting as the ongoing structure of federalism need to be cross sectionally studied to understand this basis. In real Indian federalism we cannot argue for its organic mode as the system is not that much structurally relevant to this concept. This is the prime thing concerned with this organic mode when centre should really get ready to give strong lead to state governments in some cases by keeping full spirit of federalism. If it is practiced then the entire federal concept of division of powers need to be rattled and hence prone for structural contradiction. It need to be regarded as a great challenge though now it is invisible but should be able to pro actively figure it out.

CAG- Reframing Functional Mode

CAG being the watchdog of fiscal related submissions of India, the rule is that this authority will to an extent would prevent the ruling government from gaming the fiscal rules. Earlier in this article we strongly recommended the setting up of a fiscal council as suggested by strong voices from stalwarts of the field with a view as CAG mechanism in losing its teeth against fiscalship. If such an alteration occurs then the office of CAG would extend their office space by providing secretarial and logistic support to this committee and related offices.

India's federal system needs to remain flexible, pragmatic and transparent. These reframing steps need to be analysed and empirically tested for reducing the tone of challenges in the ongoing system of federalism.

Niti Aayog Vs Planning Commission

In 2015 a neo step got initiated with the aspiration of actualization of cooperative federalism with the setting up of Niti Aayog by replacing the sixty five year old Planning Commission institution. The paradigm shift was aimed at ensuring the objective of indicative policy formulation and with the aim of development of 'National Development agenda'. It is there by the half century old tradition of five year plans got changed to yearly plans. According to this initiation the concern of state on policy related matters got an extra space indirectly focusing on the organic mode of federalism.

Niti Aayog initiation is much focused on the synergetic attempt to weave all units of administration into a more cooperative manner aiming to one nation which is under inclusive pattern. The working of this institution within the framework of ongoing quasi federal notion itself is challenging in preserving the federal culture of our nation.

Functional Framework

Functionally the ambit of federalism needs to be made more collaborative. From this perspective the federal governance structure in our country requires change of its functional application. In order to reap the real benefits of federalism a more cooperative to more deliberate type need to be augmented with collaborative institution. Along with the structural recommendation a functional rethinking is also necessary in the contemporary period.

As a first step measures need to be focused on non centralisation of political process and the continuing activities need to be shaped under the notion of more collaborative mechanism. Institution need to be designed to ensure this format of governance which seems to be comparatively difficult task. It is only through these changes possibilities of manipulation could be eliminated. The essence of

federalism need to be properly understood on an agreeable basis and it should be woven within the totality of governmental power with this should be ensured without sacrificing the basic political integrity.

'SMART' Features Inclusion

In the new age of governance principle of administration is focused on translating policy goals into policy outcomes. This is more dependable upon complex policy matters. These situation from conventional federalism arrangements and more inter governmental management are necessary. A democratic country like India is facing many hurdles in the goal achievement of many policies as it is working in the platform where the basic principle is fined in the notion of 'Unity in Diversity'(Sarma & Gupta, 2019).

Today the form of problems faced by policy makers is different with changes in the society. Many times any sort of analysis of a situation turns to be critical.

Conclusion

We need to strike a balance between both forms of our federalist culture that is unitary and federal features. Due to changing nature of problems the basic mentality of the federalism culture need to be changed. Accordingly a culture needs to be focused where states should be autonomous in their own sphere but at the same time a complete autonomy should not be focused as it will create a contradictory mark upon the tradition of our federalism. A good amount of solution need to be wrapped in a long term solution where in to foster a genuine fiscal federalism which is in accordance with the contemporary world order giving more focus to cooperation and interdependence.

States should be able to rise own revenue under the provisions lay down by the centre of power. Thus this fiscal structure so created would set as the base of new thought of an organic collaborative federalism.

Ongoing mechanism should move away from centralisation-decentralisation thinking and should focus on a macroeconomic sustainable inclusion method where decentralisation is given proper maintained autonomy.

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ISDA Journal 30 (2) 2020, pp. 87-422
 ISSN 0971-2550.

AGROECOLOGY AS A PRACTICE: THE CASE OF POKKALI FARMING

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Abstract

The subject matter of Agroecology got its relevance with the emergence of need for sustainable agriculture all over the world. An agricultural activity becomes sustainable when it possesses certain agroecological principles. Pokkali farming, a traditional agricultural practice in Kerala, where rice cultivation complements prawn culture which follows it, makes a unique agro-ecological continuum. This study discusses the agroecological peculiarities of Pokkali farming in Central Kerala and documents its present situation through SWOT analysis. The study traces out a number of constraints as well as opportunities of this agroecological practice.

Key words*: Sustainable Agriculture, Agroecology, Pokkali*

The Green Revolution of the mid-1960s represents the most dramatic shift in agricultural practices in human history. Since then, food production has increased in many parts of the world, yields of wheat, rice and other food crops doubled and even tripled; leading to the belief that Green Revolution will provide solution to the growing demand for food and nutrition across the globe(Ayesha,2017). However, green revolution replaced traditional varieties with high yielding ones, these high yielding varieties now recognised as 'high input varieties' needed tonnes of fertilisers to achieve the targeted growth (Balasubramanian et al, 2017. The new crops and varieties alien to the soil, attracted new pests and diseases and also resulted in outbreak of the pests that had already

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existed. To tackle these issues huge quantities of pesticides began to be used which resulted in decline in micro organisms, loss of soil fertility and vitality, increase in water demand and disappearance of time tested traditional varieties, subsequently dissolving the eternal relationship between farmer and farmland. More importantly, the sustainability of agriculture systems collapsed, cost of cultivation soared, the income of the farmers stagnated, and food security and food safety became a daunting challenge (Sagar, 1991; Shiv, 1991). These issues led to a rethinking of sustainable practices in agriculture and food systems and much research, policies and practices gained importance in the domain of agriculture.

Sustainable agriculture is both a philosophy and a system of farming. It has its roots in a set of values that reflects an awareness of both ecological and social realities. It involves design and management procedures that work with natural processes to conserve all resources and minimise waste and environmental damage while maintaining or improving farm profitability (Wisniewska, 2011; Ecological Agriculture Projects, 1989). Sustainable agriculture systems are designed to take maximum advantage of existing soil nutrient and water cycles, energy flows, beneficial soil organisms, and natural pest controls. By capitalising on existing cycles and flows, environmental damage can be avoided or minimised. Such systems also aim to produce food that is nutritious, and uncontaminated with products that might harm human health. Sustainability in agricultural systems incorporates concepts of both resilience (the capacity of systems to buffer shocks and stresses) and persistence (the capacity of systems to continue over long periods), and addresses much broader ecological, economic and social and institutional dimensions: Ecological – the core concerns are to reduce negative environmental and health externalities, to enhance and use local ecosystem resources,

and preserve biodiversity. More recent concerns include broader recognition of the positive environmental services from agriculture (including carbon capture in soils, flood protection, biodiversity services).Economic – economic perspectives seek to assign the value to ecological assets, and also to include a longer time frame in economic analysis. They also highlight the often-hidden subsidies that promote the depletion of resources or unfair competition with other production systems. Social and institutional – there are many concerns about the equity of technological change. At the local level, agricultural sustainability is associated with farmer participation, group action and the promotion of local institutions, culture and farming communities. At a higher level, the concern is for enabling policies that target poverty reduction in developing countries and diet management in industrialised countries (Pretty et al, 2001; Pretty, 2008; Sulewski, 2018).

A sustainable agricultural development strategy that is environmentally enhancing must be based on agroecological principles and a more participatory approach for technology development and dissemination, as many agree that this may be the most sensible avenue for solving the problems of poverty, food security and environmental degradation (Mockshell, 2018).Agroecology is a scientific discipline, a set of practices and a social movement. As a science, it studies how different components of the agroecosystem interact. As a set of practices, it seeks sustainable farming systems that optimize and stabilize yields. As a social movement, it pursues multifunctional roles for agriculture, promotes social justice, nurtures identity and culture, and strengthens the economic viability of rural areas (FAO, 2018).Meaning and scope of Agroecologycan be understood from the definition of the term given by different authors.In the words of Altieri and Nicholls (2005), "Agroecology is a science that draws

on social, biological and agricultural sciences and integrates these with traditional knowledge and farmers' knowledge".According to DeSchutter (2010), "Agroecology is the application of ecological science to the study, design and management of sustainable agroeco systems. It is highly knowledge-intensive, based on techniques that are not delivered top-down but developed on the basis of farmers' knowledge and experimentation."Gliessman(2014) defined Agroecology as "the science of applying ecological concepts and principles to the design and management of sustainable food systems. It has the explicit goal of transforming food systems towards sustainability, such that there is a balance between ecological soundness, economic viability and social justice." Schaller (2013) defined Agroecology as "a set of innovative principles and practices, involves obtaining the most efficient and effective socio-technical arrangements in heterogeneous environments."

Following are the five principles that are to be followed by a farming system based on Agroecology;1. Enhancing recycling of biomass, optimising nutrient availability and balancing nutrient flow.2. Securing favourable soil conditions for plant growth, particularly by managing organic matter and enhancing soil biotic activity.3. Minimising losses due to flows of solar rotation, air and water by way of micro climate management through increased soil cover.4. Species and genetic diversification of the agroeco system in time and space at the field and landscape levels, and 5. Enhancing beneficial biological interactions and synergisms among agro biodiversity components, thus resulting in the promotion of vital ecological processes and services (Altieri, 2005).

Agroecological principles take technological forms or practices in order to be applied. Appropriate technologies should be based on indigenous knowledge and rationale; be economically viable,

accessible and based on local resources; be environmentally sound and socially, culturally and gender sensitive; be risk-averse and adapted to different circumstances, and enhance total farm productivity and stability(Ikerd, 2009). Many agroecological management practices increase agroeco system's diversity and complexity as the foundation for soil quality, plant health, and crop productivity. In Agroecology, the emphasis is on diversifying and strengthening the agroeco system by adding regenerative components such as crop rotations, cover cropping, crop-livestock mixture, agro forestry, polycultures, intercropping, field crop border diversification and corridor linking field and natural vegetation. More and more benefits emerge as biodiversity increases in agroeco system: there will be more beneficial interactions, better resource use efficiency, higher associational resistance to invaders and increased nutrient cycling. A farm can provide for its soil fertility, its pest regulation, and so on, just by imitating the way nature functions, allowing for interactions to occur between the different soil, plant and animal components (Altieri, 2015). Rather than modifying the practices of unsustainable agricultural systems, Agroecology seeks to transform food and agriculture systems, addressing the root causes of problems in an integrated way and providing holistic and long-term solutions. The interrelated and interdependent elements that are essential for a farming practice to develop an environment for Agroecology are as follows;Diversity, Co-creation and sharing of knowledge, Synergies, Efficiency, Recycling, Resilience, Human and social values, Culture and food traditions, Responsible governance and Circular and solidarity economy. Those farming systems that clearly identify and target key ecological functions and aim to integrate these elements carefully into the farming systems can create multiple levels of

positive interactions, and is not limited to just substituting external inputs and engaging in isolated, singular interventions (FAO, 2018).

Agroecological practices can take different forms depending upon the locality, geography and society. Organic farming, diversified crop rotations, biological pest control, extensive agro-pastoral systems, agro forestry etc. are major examples of farming method using Agroecology. Of these different agroecological practices followed, Pokkali farming is a specific case which effectively complements the natural system, utilising indigenous knowledge and ensuring efficient utilisation of local resources. Pokkali rice cultivation is the unique way of rice farming practiced in the water-logged coastal regions of central Kerala. The rice cultivation complements the prawn culture which follows it, making a unique agro-ecological continuum which is traditionally practiced. In this natural system, the ecological balance is maintained, and the farmer obtains a reasonable profit. The paddy field provides room for naturally available shrimp juveniles to grow and attain marketable size, providing natural feed for shrimps while the animal excreta provide nutrients for the next paddy crop. These features make Pokkali farming different from the other farming practices in Kerala.Against this background, the present study examines the agroecological features of Pokkalifarming and also aims at its situation analysis in terms of SWOT assessment.

Study Area, Materials and Methods

Pokkali rice field is one among the twenty-three agro-ecological units delineated by National Bureau of Soil Survey and Land Use Planning, Bengaluru based on climate, geomorphology, land use and soil variability. Among the three districts; Ernakulam, Alappuzha and Thrissur where Pokkali cultivation is practiced, Ernakulam district has the largest share. Hence, Eranakulam district is selected purposively since out of 5700 ha of total Pokkali cultivating land,

the major area of land (4050 ha) is in Eranakulam district. Out of eight blocks of Eranakulam district, where Pokkali Rice Farming is concentrated, Kalamasseri block is selected randomly for the study. In Kalamasseri block Kadamakkudy Gramapachayath (figure.1) is randomly selected as the study area. The Kadamakkudy Pokkali field is coming under Kalamassery block of Ernakulam district. The wetland area lies between 10°01′ 53″ – 10°4′ 21″ N latitude; 76° 14′ 25. 7″ – 76° 16′ 46″ E longitude. KadamakkudyPokkali wetland has an area of 475 ha. It is surrounded by the small tributaries of Periyar river (Mulavukadupuzha, Cheranelloorpuzha and Chathanadu river), Vembanad lake in Vypinkara called Veerenpuzha and backwaters like KodungalloorKayal and VarapuzhaKayal. There are four PokkaliPadasekharams under Kadamakkudi Gramapanchayath viz, Kadamakkudy Nellulpadaka Padasekharam (55ha), Pizhala Pokkali Padasekharam (19 ha), ChennurPadasekharam (7.7ha) and Ponmani Padasekharam (14.77 ha). From these Padasekharams, 60 farmers are selected randomly as respondents.

Agroecological features of Pokkali farming is examined based on a detailed review of available literature, Focus Group Discussion and situation analysis is carried out using primary data, which is collected from among Pokkali farmers in the study area (Kadamakkudy) using semi-structured interview schedule which focuses on strength, weakness, opportunities and threats of Pokkali farming.

The SWOT analysis is used for assessing the current situation of Pokkali farming. The SWOT analysis is a very popular framework for its simplicity and practicality. It is widely used to analyse the internal factors under the heads Strength and Weakness and external factors under the heads Opportunities and Threats to arrive at a systematic approach for decision making (Shefat, 2018). In this study, SWOT analysis is used to assess current picture of Pokkali farming

and to find out unexploited opportunities from it. The SWOT analysis covers all agroecological indicators of the cultivation under ecological, economic, social and institutional dimensions. Five point Likert scale is used to collect the perceptions of respondents on each indicator. The five points from 1 to 5 indicates strong disagreement to strong agreement towards the statements. Normalisation (range from 0 to 1)made data comparable across indicators so that the information could be combined in a meaningful way. Arithmetic mean was used to aggregate the normalised indicators into sub-index of each dimension.

Pokkali farming as an agroecological practice

As a prelude to the agroecological examination of Pokkali farming, we look into the general features of Pokkali farming including area of cultivation, farm operations, prawn filtration, institutional intervention etc.

Rice cultivation in Pokkali field

A unique system of farming viz. Pokkali rice cultivation has been evolved through ages by the farmers of the area for the maximum utilisation of available resources without affecting the ecosystem. Pokkali is a different saline tolerant variety of rice. It is cultivated in waterlogged coastal areas of Alappuzha, Thrissur and Ernakulam districts of Kerala (Abraham, 2004). June to early November is rice cultivation period, at that time level of salinity is less in the field. When the salinity is high, from mid-November to mid-April prawn cultivation takes place in the same field. During this period the prawn seedlings, which swim in from the backwaters after the rice harvest, feed on the residues of the rice crop (Ranjith, 2018). In order to control the water flow to the fields sluice gates are used. For the rice crop, the farmers do not use any fertiliser or manure. It draws nutrients from the prawns' excrement and other leftovers. The

seedlings grow naturally since the tidal flows make the soil fertile. So there is no need for manure or fertiliser. The Pokkali rice plants grow up to two meters in order to survive in the waterlogged field. However, when they get matured, they lean over backwards and collapse. Only the panicles stand right. By the last week of October, harvest is done with the help of canoes. After panicles are cut, the rest are left to decay in the water. It becomes feed for the prawns that would arrive in November - December. Then, the prawn filtration, that is the second phase of Pokkali cultivation starts(Roshni, 2016).

Pokkali is well known for its taste and its high protein content. It's grains are larger compared to other rice varieties. The Pokkali field is a peculiar ecosystem having rich biodiversity and ability to generate alternatively organic salinity resistant paddy and prawn. This unique system is called as "trap and hold" system of cultivation (Shylaraj, 2005).For the geographical uniqueness,Pokkali rice received Geographical Indication (GI) tag in 2008 and Plant Genome Savior Award in 2011. The success of Pokkali farming system depends on the soil quality and water quality. Degradation of these two factors limits the production and productivity of the system. Crop rotation is the best strategy for this issue. The challenge of an ideal crop rotation system is ensuring the profitability of the farm while maintaining soil quality for long term productivity(Balachandran, V., 2004). Prevention of pest population is the significant advantage of crop rotation in Pokkali farm since it has helped to interrupt pest life and to alter pest habitats(Anson C. J., 2014).

Prawn Filtration

Traditional prawn filtration in Pokkali field known as "chemeenkettu", is an age-old practice in Kerala. The preparation for prawn filtration starts soon after the harvest of paddy. By this time the rainy season is over, and the salinity of water reaches a level

conducive for large scale ingression of post larvae and juveniles of shrimp in the coastal inlets and adjoining rice fields. November-April is the normal period of this filtration (Sudhanetal, 2016). Once the preliminary preparation is over the field is ready for trapping and holding of the shrimp/fish seed. The harvesting is carried out towards the end of the season for about eight days in a fortnight in the spring tide phase, just before and after the full and new moon. The final harvesting is done by draining the field and resorting to cast netting and even hand pricking (Sebastian et al., 2016).

In Kerala, 84 per cent of traditional extensive prawn culture is practised in Pokkali fields. These fields are concentrated in Ernakulam, Alappuzha and Thrissur, the central part of Kerala. Reports say that in Ernakulam district is first while considering the area of Pokkali field. There are 4000 hectares of Pokkali fields in Ernakulam. The paddy field under Pokkali cultivation in Alappuzha and Thrissur is about 3000 hectares and 2000 hectares respectively. However, a drastic decline is reported in area under Pokkali over the last few decades. According to Pokkali Land Development Agency, the cultivation has reduced from 25,000 ha to 8,500 ha. The local agricultural officers reported that only about 60 per cent of the reported area is actually under cultivation and the rest is either left fallow or under the monocropping of shrimps(Ranga, 2006).

Agroecological Elements of Pokkali Farming

The major ten agroecological elements of Pokkali farming are analysed in the following table.

Table 3. Agroecological elements in Pokkali farming

Agroecological Elements	Agroecological peculiarities of Pokkali farming
Diversity	eBird an online citizen science platform, where birdwatchers upload their daily bird watching data, has listed 174 bird species out of 430 birds' checklist since 2011 in Pokkali fields near the Kadamakkudy rice field (The Hindu, 2018). A total of 100 species of aquatic macrophytes were noticed in and around the Pokkali wetland area. They include wetland macrophytes, mangroves and mangrove associates and terrestrial plants. Pokkali wetland supports 50 species of fishes belonging to 29 families and 11 orders. The most dominant order was Perciformes followed by Siluriformes. The least represented orders were Cypriniformes, Mugiliformes, Gonorynchiformes, Tetraodontiformes,Synbranchiformes,andClupeiformes with one species. Among these 26 species were very common, 20 common and 4 were rare (Deepa., K M, 2014).
Co- Creation and sharing of Knowledge	Pokkali farmers have applied indigenous knowledge in various stages of farming in order to meet their livelihood necessities (Ashamol, 2014). Pokkali Rice received the Geographical Indication (GI) tag during the year 2007 (Ranjith, 2018)
Synergies	While harvesting, only the panicles of the Pokkali are cut and the rest of the stalks are left to decay in the water, which in time become feed for the prawns stocked over the field (Gayatri&Raveendra, 2009). The use of fertile bottom mud of Pokkali field as manure for the coconut plantation is common (Sudhanetal, 2016). Pokkali varieties possess great medicinal properties due to the high content of iron, zinc, potassium and antioxidants (oryzanol, tocopherol and tocotrienol etc) and (Ansonet al, 2014)
Efficiency	Pokkali farming system does not require any external inputs(Sathiadhas, 1989). Absence of fertilizer application and pesticide spray make the system less expensive (Shylaraj, 2005). Time bound operations performed in the Pokkali farms can realize better performance of both rice and prawn in the wonderful environment (Ranjith, 2018).
Recycling	The rice-fish/prawn system in the *Pokkali*lands continuously replenished the nutrients, which in turn helped to yield paddy and fish sustainably (Purushan, 2002) The Pokkali seedling grows in natural way without addition of any inorganic fertilizers except organic within the field supports nutrient cycling and eradication of unwanted weedy plants and fishes respectively (Sathiadhas et al, 1989).

Resilience	The Pokkali variety of saltwater-resistant rice, mostly grown in the coastal areas of Alappuzha, Ernakulam and Thrissur districts, has emerged triumphant over the devastating floods that swallowed large swathes of farm land in the state (Martin, K. A., 2018)
Human and Social values	The Pokkali farmer as the owner of a collective and cultural property can enjoy the reputation, a historically established brand name and control of a niche market (Anson et al, 2014). Women with traditional expertise are the inevitable part of Pokkali farming and it provides them additional income (AathiraPerumchery, 2019).
Culture and Food traditions	Rice has a role in social and holy rituals; in connection with paddy cultivation itself a plethora of rituals have evolved irrespective of the location or religion and caste of the farmer. Thus, there exist customary festivals, and rituals specific to various occasions such as seed germination, land preparation, sowing, during different growth stages, and pre and post harvesting (Sebastian etal, 2014). The organic Pokkali Rice is famed for its special taste and high protein content as well. It also provides adequate energy to fishermen to stay in the sea the whole day without consuming any other food (Mumthas& John, 2017).
Responsible Governance	Keeping in view the importance of Pokkali rice, government of Kerala has taken many steps for supporting Pokkali cultivation viz, Pokkali Land Development Agency, PadasekharaSamithis, Conservation acts, establishment of Vyttila Rice Research station and constitution of M.S.Swaminathan committee (Shamna, 2014).
Circular and Solidarity Economy	Pokkali farming a classic example of sustainable Agri – Aqua integration providing a means of rural livelihood (Deepa & John George, 2017). Pokkali rice which has high quality, good taste and having international market value is highly beneficial to Pokkali farmers. The soil fertility in Pokkali rice farming increases due to tidal flows which is beneficial for ecosystem and since Pokkali fields are highly organic, it does not require any external inputs like fertilizer or pesticides; which reduces the cost of cultivation and save money for farmers (Shamna, 2014).

1. Diversity of flora and fauna in the Pokkali field: The rice fish system adapted to specific environments maximises diversity (Ridler et al, 2007). Diversification can increase productivity and resource - use efficiency by optimising biomass and water harvesting (FAO, 2018). Aquatic macrophytes like Echinochloastagnina, Diplachnefusca and Sphaeranthus africanus showed more abundance, density and frequency during paddy cultivation season in Pokkali fields (Deepa., K M, 2014). Coconut cultivation is also common in this area.

2. Co – creation and sharing of traditional knowledge among Pokkali farmers: Through the co – creation process, Pokkali farming as an agroecological practice blends traditional and indigenous knowledge, producer's and trader's practical skills and global scientific knowledge. The farmers maintained close contact with each other, often sharing resources for efficient farm management. They have applied indigenous knowledge in various stages of farming in order to meet their livelihood necessities.

3. Synergies: Pokkali farming builds synergies, which enhances key function across food systems, supporting production and multiple ecosystem services. While harvesting, only the panicles of the Pokkali are cut and the rest of the stalks are left to decay in the water, which in time become feed for the prawns stocked over the field**.** The mud in the Pokkali field is used for coconut cultivation in the land area. Food/medicines, local climatic regulation, raw materials, livelihood support, cultural values, gas exchange, wildlife habitat and aesthetic and tourism value are the major ecosystem services of Pokkali farming system.

4. Efficiency: Increased resource use efficiency is a significant property of agroecological practice. It enables farmers to use fewer external resources and thus reduces costs. Pokkali field is a highly

nutritive agricultural land with paddy and prawn cultivated as alternative crops. It is an eco-friendly biodegradable area which provides economic security. The investment of prawn filtration is negligibly low. It is a source of subsidiary income to the farmers without much investment. If the season is favourable, a good crop of rice ensures a good catch of prawn because residual plant material is also high which offers a rich feeding ground for the prawns.

5. Recycling: Enhanced biological processes and recycling biomass, nutrients and water reduces dependence on chemical inputs and reduces the negative impact on the environment. The special feature of the Pokkali land is that there is no need of chemical pesticide and fertilizers for high yield. The decaying straw and other waste products from paddy cultivation make the land nutritive for prawn culture.

6. Resilience: Diversified agroecological systems are more resilient, as they have a higher capacity to recover from disturbances including extreme weather events such as drought, floods or hurricanes, and to resist pest and disease attack. Pokkali fields in Kadamakkudy was relatively unaffected by the floods that ravaged paddy fields where other short rice varieties were cultivated.

7. Human and Social values: For protecting and improving rural livelihoods, equity and social well – being are essential. These two are the inherent characteristics of Pokkali farming inevitable for sustainable food and agricultural systems.

8. Culture and Food Traditions: By supporting healthy, diversified and culturally appropriate diets, Pokkali farming contributes to food security and nutrition while maintaining the health of ecosystems.

9. Responsible Governance: Sustainable food and agriculture

require responsible and effective governance mechanisms at different scales – from local to national to global. In the case of Pokkali farming it is strongly supported by local to national Government through legislation and institutionalization.

10. Circular and Solidarity Economy: Circularity and solidarity of local economy reconnect Pokkali farmers and consumers and provide innovative solutions for living within the planetary boundaries while ensuring a social foundation for inclusive and sustainable development of the local area through food security, export and tourism.

Presence of the above mentioned ten agroecological elements can establish that Pokkali farming is an agroecological practice. These ten elements are interrelated and the interactions among them help the farming practice to sustain.

Situation Analysis of Pokkali farming

Pokkali cultivation, an ancient agricultural practice continuing today indicates its resilience for an extended period with its inner strength. However the area of cultivation under Pokkali fields is declining, indicating the presence of some internal and external issues hindering its existence. The present section aims at making a situational assessment while considering these issues and tries to bring out various unexplored opportunities of the particular farming system. For this purpose, SWOT analysis is used.

Strengths

Strengths of Pokkali farming include those attributes, characteristics and factors that give competitive advantage to the particular farming activity. The following table shows ecological, economic, social and institutional strengths of Pokkali farming.

Strength	Value	Weaknesses	Value
Ecological Component			
Less chemical inputs	1.00	Reduction in area	1.00
Salinity resistance	0.95	Vulnerability of food chains	0.16
Benefit of crop rotation	0.99	Increasing mud	1.00
Adaptability of Pokkali rice	0.95	Inadequate nutrient flows	0.75
Natural weed management	0.89	Less diversity	0.91
	0.96		**0.76**
Economic Component			
Low chemical input cost	1.00	Less value addition	0.975
High market access	0.31	Labor intensive production	1.00
Year round income	0.88	Lack of labourers	1.00
Economies of production	0.16	Increase in labour cost	1.00
Organic products	1.00	Lack of marketing strategies	0.975
		High maintenance cost	1.00
		Inadequate infrastructure	1.00
	0.67		**0.99**
Social Component			
Food security	1.00	Less cooperation	0.48
Social status as an employer	0.87	Farmers' organization is weak	0.77
Higher education for children	0.93	Less social status	0.075
More social network	0.87	Passive political participation	0.75
Healthy life	0.95	Issues relating to lease	0.25
More social commitment	1.00		
Religious harmony	0.77		
	0.91		**0.47**
Institutional Component			
Special interest of State Govt.	0.87	Less technological innovation	1.00
Special incentives	0.75	Ineffective policy execution	1.00
Crop insurance	0.75	Misuse of funds	0.61
Timely monitoring	0.20	Inadequate monitoring	1.00
Farmers group	0.75	More reliance on subsidies	0.37
		Inadequate number of machines	1.00
		Inadequate incentives	1.00
	0.66		**0.86**
Aggregate Index	**0.80**		**0.77**

Source: Calculated from Primary data

Strengths: Ecological Component-Fertile soil is the foundation of sustainable agriculture. Soil fertility is ensured through the minimum use of chemical inputs. The most important strength of Pokkali cultivation is that it can keep its soil healthy throughout the year without using any chemical inputs. There is no need for additional inputs for growing crops under Pokkali farming system since the two rotational crops Pokkali rice and shrimp are synergistic. Another important strength of the farming system is nutrient recycling. It is also an additional benefit from regular crop rotation in the field. Salinity resistance and adaptability of rice under Pokkali farming system are making the system peculiar. Weed management is a big struggle for every farmer. But Pokkali farmers have least concern over it, since natural weed management is possible under their farming system.

Strengths: Economic Component - Pokkali farming system ensures year-round income to all farmers. So, it is considered as one of the most crucial economic strengths. Another significant strength is less chemical input cost. Chemical control of the pest is a widespread practice in agriculture. However, in Pokkali cultivation the cost for chemical inputs is not incurred.

Strengths: Social Component -Food security and social commitment of the farmers are the major strengths of Pokkali cultivation. Pokkali farming ensures safe and quality farm products to the farmers' family and the local community as a whole. The farmers' commitment towards the society is evident from their experience sharing on all heightened natural calamity they have ever faced. They said that they gave seeds and financial assistance to those farmers who suffered from the disaster.

Strengths: Institutional Component - Coming to the institutional strength of Pokkali cultivation, special incentives and crop insurance and freeseed distribution are institutional strengths.

Weaknesses

The factors that hinder the potential of any activity are regarded as its weaknesses. They are always internal to the system. Pokkali farming system also has some shortcomings. Weaknesses of a farming system is analysed under four heads; ecological, economic, social and institutional

Weaknesses: Ecological Component **-**The crucial ecological weaknesses of Pokkali farming are reduction in natural farm productivity due to climatic change. The area of Pokkali farming is also decreasing. Farmers opined that even the Pokkali rice having adaptability and salinity resistance couldn't perform well in the previous years. Increasing mud in the field is another most important internal issue of the farming system. Mud in the field should be removed to make the field dry before each season. Otherwise, it will attract weeds. Pokkali farming system is limited to two crops, paddy and prawn. Diverse crops experiments of crab and other fish varieties almost failed in the system. So crop diversity is not possible in Pokkali fields mainly due to its geographical peculiarity.

Weaknesses: Economic Component **-**Every farmer argued that labour intensive production is the most crucial economic weakness of the particular farming system. Labour shortage, as well as increasing labour cost, adds the woes of the farmers. Fear of leptospirosis and availability of other attractive employment opportunities in the urban area keep the local workers away from farming activity. The success of Pokkali cultivation heavily depends upon the strength of bund, correct channeling and flawless sluice gate. But the maintenance of these elements is costly, and it makes the farming activity less attractive.

There is no efficient value addition taking place in Pokkali cultivation. Online marketing is also weak as the product (Pokkali

rice) is not in stock most of the time. It is a fact that farmers are successful in case of product strategy (organic product) but are a complete failure in adopting the marketing strategy. There is a farmer's cooperative society, but it is not working correctly. Inadequate infrastructural facilities also delimit the prospects of Pokkali cultivation, since it has made difficulty in transportation of farm products especially in rainy season.

Weaknesses: Social Component **-** Eventhough there is an organisation called "Padasekhara Samiti", it is weak in action. It remains only for namesake. Most of the farmers agreed that they had the least political participation. Political participation ranges from voting to active involvement in political parties, but these farmers only cast vote in the election. So they can't make use of political pressure in attaining their requirements. Generally, low social status is considered as a principal weakness of farming activity, but in the case of Pokkali farmers, they opined that there are no such issues. They claimed that they were popular among the people, and others recognised them very well.

Weaknesses: Institutional Component **-**Institutional weaknesses are crucial in Pokkali farming system. Less technological innovation, inadequate number of machines, insufficient monitoring and inadequate incentives are major among them. All the farmers argued that they lack technological innovations that could increase the crop production, and alsothat could helpthe farmer to manage large areas of land and thereby they could enjoy economies of scale. Another issue is whatever machines which are distributed by Krishibhavansare inadequate in number. Therefore,some of the farmers have to wait for machines even though paddy is ready for harvest. It often results in a poor yield. All the farmers complained that there was no timely monitoring from the government institutions; it results in an inappropriate allocation of funds in terms of incentives and

insurance. Therefore, most of the farmers were denied compensations what they actually deserve.

Opportunities

Opportunities indicate favorable situations and factors that can strengthen existing condition of a system. The following table provides idea of opportunities of Pokkali farming under four heads; ecological, economic, social and institutional.

Table 4.C: Opportunities	Value	Threats	Value
Ecological Component			
Modifications in cropping period	0.75	External Pollution	1.00
Revival of fallow Pokkali field	1.00	Viral infection	1.00
Use of hybrid seeds	0.59	Natural calamity	1.00
Timely mud clearing	1.00	Arrival of exotic birds	1.00
Use of geographical peculiarity	0.80	Climate change	0.81
	0.83		**0.965**
Economic Component			
Maximum export	1.00	Less demand for Pokkali rice	1.00
Attract local labourers	0.48	High competition	1.00
Value addition of products	1.00	Asymmetric information	1.00
Shift to capital intensive production	1.00	Increasing oil price	0.9
Scope of monopoly market	1.00	Alternative employment opportunities	1.00
		Disappointment on financial expectations	0.89
	0.90		**0.96**
Social Component			
Publicity through visual &social media	0.73	Social conflicts on land leasing	0.25
Scope of powerful organization	1.00	Cultural issues	0.62
Active political participation	0.49	Religious issues	0.025
Popularize cultural activities	0.71	Social hierarchy issues	0.04
Social movements	0.85	Changes in social values	1.00
Total	**0.76**		**0.39**
Institutional Component			
Provide adequate machines	1.00	Political instability	1.00
More research and development	0.975	Constructional works	0.75
Increase in supporting price	1.00	Issues in government hatcheries	0.69
Provision for tourism	0.96	Transfer of officials	1.00
Effective policy execution and monitoring	1.00		
Active working of Padasekhara Samithi	1.00		
	0.99		**0.77**
Aggregate Index	**0.87**		**0.77**

Source: Calculated from Primary Data

Opportunities: Ecological Component -Pokkali farming has immense potential to become an economically viable and sustainable activity. If all the area of the Pokkali field is revived, it will reduce the environmental cost of conventional farm production. From time immemorial,Pokkali cultivation has been following a strict pattern like Paddy cultivation from June to October and shrimp cultivation from October to April. However, all the farmers opined that it is better to start the paddy cultivation a little earlier considering the recent climatic variations. If the farming activity is carried out according to the variations in climate change, it will lessen crop failure. Due to the changes in tidal flow, a lot of mud has accumulated in most of the farms. If this mud is cleared correctly, it will increase the farm production. The mud can be used as manure for coconut trees as it is fertile.

Opportunities: Economic Component -Farmers have to take the initiative for registering a company to export organic Pokkali rice by using its geographical indication certificate. It will increase the net gain from rice cultivation. For this, first the farmers should ensure the quality of rice. In addition to this, there is a higher potential for the farm products to gain monopoly power in the market primarily because of the medicinal property of Pokkali rice.Value addition is another opportunity by which farmers can make their farming system more profitable. Usually, the farmers sell their product to traders immediately after harvest without further processing. Value addition like preparation of brown rice, puffed rice, sliced rice, packed rice flour and ready-to-eat foods will increase the income. Increasing labour cost is also major issue in Pokkali cultivation.

Opportunities: Social Component-In addition to producers' organisation, which is an institutional one, if there is a social organisation, it will emulate the culture that has been followed by the traditional farmers. It will also enhance the self-esteem of the farmers. Since pollution is a matter of concern among Pokklai farmers, a social movement is a better way to control increasing pollution and to check all malpractices in farming activity.

Opportunities: Institutional Component -Every farmer unanimously opined that the government should take necessary steps to help them mechanise their agricultural activity. The government should take action to give an adequate number of high quality machines at a subsidised rate at each stage of production. More Research and Development and the training programmes can ensure proper mechanisation, and in turn, it will increase the return. An active producer organisation can have an increased access to various sources and types of financing, more sharing of knowledge, improved bargaining power, increased value addition and greater opportunities to optimise agricultural mechanisation. Every farmer required that there must be a revision in supporting price for organic Pokkali rice. Proper monitoring will enhance the quality of farm products and can assure adequate support to the farmers when they needed, for which a farm register can be used.

Threats

Threats are the unfavorable situations and factors that could create problems in near future. Following table gives an idea of intensity of various threats that have been faced by Pokkali farmers under ecological, economic, social and institutional heads.

Threats: Ecological Component -There are so many threats that hinder the efficiency of Pokkali farming system. Considering the environmental component, pollution, viral infection, natural

calamity and arrival of exotic birds are most important. Viral infection and water contamination are interrelated threats since water contamination is the cause and viral infection becomes the effect most of the times. Both of them result in lessening of crop productivity. Farmers complained that no agricultural expert or scientist could diagnose the disease and could find a solution. Recurring flood in the area threatens crop production to a great extent. Especially the devastating flood that recently happened has left a trail of destruction,cripplingthe Pokkali rice production, but it is less compared to the case of conventional farms.

Threats: Economic Component **–**The economic risks faced by Pokkali farming are less demand for Pokkali rice, high competition from conventional farming, asymmetric information and more attractive alternative employment opportunities. Only the farmers know the quality of farm product that the Pokkali rice is organic. There is certification process for product; even though the Pokkali rice has GI tag. Thus, Pokkali cultivators have to compete with a large number of conventional farmers for market demand. More attractive employment opportunities like MGREGS, household work and construction works reduces labour availability and increase the labour cost. Increasing oil price also becomes a threat both directly and indirectly. As the farmers use generators, the oil price hike has a direct effect on farming activity and as there is an increase in transportation and raw material cost.

Threats: Social Component -Coming to social threats, Pokkali cultivation faces fewer social threats. The change in social value is only the major social issue that was mentioned by the farmers. The new generation is less willing to realise the emotional and physical attachment between the aged farmers and their farm land.

Threats: Institutional Component - Considering the institutional

threats faced by the Pokkali farmers, political instability and transfer of officials are significant. The policies and programmes that are undertaken by the institutional set-up lose its continuity as there are recurrent political shift and transfer of officials. Container road construction also pose a threat against the successful working of Pokkali farming system as it affects the tidal flow in the area which is considered as the sole determinant of the Pokkali farming.

Conclusion

Pokkali - a unique salt tolerant, flood-resistant rice variety that is endemic to coastal areas of Central Kerala is grown across a few hundred hectares and this variety having medicinal properties was awarded the Geographical Indication (GI) tag in 2008 as well as Plant Genome Savior Award in 2011. It is cultivated without any external inputs - fertilizers or pesticides. The rice-prawn cultivation in the Pokkali field is mutually complementary. Several agroecological elements make the Pokkali farming a peculiar one in the World. However, the current status of Pokkali farming raises some issues. The situational assessment of Pokkali farming by SWOT analysis reveals that even though unexploited opportunities and strengths over weigh threats and weaknesses, the prevalence of later two are not ignorable and it will endanger the sustainability of Pokkali farming. Therefore, to sustain the agroecological practice like Pokkali farming, development of strategies becomes inevitable.

Thus Pokkali farming, a synonym for agroecological practice that has time tested application needs to be further strengthened by synergizing interventions from stakeholders. The agroecological features of Pokkali farming needs to be documented and popularized with a view to encourage more institutional support, research and policy interventions. This can not only generate increased demand and price for the product, thereby improving socio economic

situation of the farmers, but also spread the message of ecological application in agriculture creating ecofriendly empowerment.

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ISDA Journal 30 (2) 2020, pp. 87-422
 ISSN 0971-2550.

REGIONAL DIFFERENCES IN ECONOMIC DEVELOPMENT- A CASE OF KERALA

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Abstract

Though balanced regional development is one of the important objectives of any welfare state, regional difference in economic development has been a cause of concern for the governments across the world. As a result, gap between the regions in a country / state show disparity in the distribution of income and wealth among people. The present paper analyses whether there is any regional difference in economic development. Since socio-economic infrastructural facilities are contributing to the economic development of any region, the present paper also analyses whether there is any regional disparity in infrastructural facilities. For the study, Kerala state, one of the leading states in India in respect of literacy and other indicators of social life has been chosen. The study proves that there is regional disparity in economic development in Kerala and the same has been caused by differences in the availability of infrastructural facilities.

Key Words: Regional disparity, economic development, infrastructural facilities, Kerala, northern region, southern region.

Introduction

The term disparity can be stated as the status of being unequal in respect of conditions, facts or degree. It is also expressed by the terms like inequality, unlikeness, disproportion and difference. Myrdal (1957) and Hirschman (1958) have explained regional disparities

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with the help of terms like 'backwash vs. spread effects', 'polarisation vs. trickling down effects'. In his Cumulative Causation Hypothesis, Myrdal points out that "the play of market forces normally tends to increase rather than decrease the inequalities between competing regions". Hirschman stressed "the tendency of 'polarisation' of free market forces to increase inter-regional inequalities and advocated for government intervention". Economist (2015) magazine reports that in Italy, there is a deeper divide between the northern and southern regions. During 2001-13 the northern and central Italy grew at only 2 per cent where as the southern economy has grew by 7 per cent. Employment in the south is at 40 per cent as against 64 per cent in the north. The share of the northern and southern families living in absolute poverty grew from 3.3 per cent and 5.8 per cent respectively in 2007, to 5.8 per cent and 12.6 per cent in 2013. Shetty (2015) has found that "regional disparity in industrial development exist in India. The five major industrial states of India, Maharashtra, Tamil Nadu, Gujarat, West Bengal and Andhra Pradesh jointly accounted 40 per cent of total location of all large factories, 55 per cent of total industrial employment, 59 per cent of total industrial output and 58 per cent of value-added..." Civil War Trust in its article 'North and South: Different Cultures, Same Country'(2014), shows that "in America 75 per cent of the wealth, 92 per cent of iron/ore production, 68 per cent of the value of export and 85 per cent of the factories are in the southern region as against only 25 per cent, 8 per cent, 32 per cent and 15 per cent respectively in the northern region". Kurian (2015) has observed that "the disparities in economic and social development across the regions and intra-regional disparities among different segments of the society have been the major planks for adopting planning process

in India since independence". OECD (2011), in its report states that "the regional differences in respect of per capita gross domestic product within countries are very high. The emerging economies like China, Russian Federation, India and Brazil have displayed disparity in per capita GDP in 2007. During 1995-2007 regional disparities increased in 19 out of 31 countries considered".

1. Economic Development in the Northern and Southern Regions of Kerala

Kerala State, considering its historical origin and geographical spread, can be classified into two regions. The southern Region (erstwhile Travancore-Cochin Region) consisting of Thiruvananthapuram, Kollam, Pathanamthitta, Alappuzha, Idukki, Kottayam, Ernakulam and Thrissur districts, and the northern Region (erstwhile Malabar Region) consisting of Palakkad, Wayanad, Kozhikode, Malappuram, Kannur and Kasaragod districts.

As per Census 2011 the northern region accommodates about 44 per cent of the population of Kerala state as against about 56 per cent in the southern region. Thus the difference in population size between these two regions is only of 12 per cent. The Literacy rate in the southern region is higher (95%) as compared to that in the northern region (93%). The geographical areas of the northern and southern regions are about 45 per cent and about 55 per cent respectively, indicating a difference of 10per cent.

Economic development in the state is studied using the status of primary, secondary and tertiary sectors, as a whole and sub sectors of economy. The table 1 shows the domestic product, per capita and per sq.km. income and primary, secondary and tertiary sectors of the economy in Northern and Southern Regions of Kerala.

Table 1: Domestic Product and Primary Sector in the Northern and Southern Regions of Kerala as on 2013-2014(QE) (at Factor Cost) (at constant prices) (Base year 2004-05) (Rs.)

Sl No	Sector	Kerala State	Northern Region	Southern Region	NR as % of Total	SR as % of Total
1	Domestic Product (Lakhs)	22617862	8109900	14507962	36	64
2	#Per Capita Income	68889	58053	76915		
3	Per Sq. Km. Income	581990	464405	677942		
4	Agriculture & Allied	1547330	618017	929313	39.9	60.1
5	Forestry & Logging	257174	116606	140568	45.3	54.7
6	Fishing	192686	50647	142039	26.3	73.7
7	Mining & Quarrying	76512	28411	48101	37.1	62.9
8	Total Primary Sector	2073702	813681	1260021	39.2	60.8

Source: Economic Review 2014
#Based on mid-year population

The table shows that the northern region produces only 36 per cent of the domestic product of the Kerala State as against 64 per cent in the southern region. There is a difference of 28 per cent between the regions as against a difference of only 15 per cent in respect of population. The per capita income of the southern region (Rs.76915) is higher even that of the State average (Rs.68889) and that of the northern region is lower at Rs.58053. The per Sq. Km. domestic product of the southern region (Rs.677942) is higher even that of the Kerala state (Rs.581990) and that of the northern region is lower at Rs.464405.

The table shows that only 39.2 per cent of the State's primary sector is contributed by the northern region as against 60.8 per cent by the southern region. Across all the sub segments, the contribution of the northern region is far lesser than that of the southern region. While in agriculture and allied sector, the northern region contributes only 39.9 per cent, in forestry and logging 45.3 per cent, in fishing 26.3

per cent and mining and quarrying 37.1 per cent as against 60.1 per cent, 54.7 per cent, 73.7 per cent and 62.9 per cent respectively by the southern region. It shows that the northern region does not have a proportionate share (as compared to its population and geographical area) in the primary sectors contribution of the State and is backward in respect of these sectors as compared to that of the southern region. The table 2 shows the status of sub sectors in the secondary sector of the economy in the northern and southern regions of Kerala.

Table 2: Secondary Sector in the Northern and Southern Regions of Kerala as on 2013-2014 (QE) (at Factor Cost) (at constant prices) (Rs. Lakhs) (Base year 2004-05)

Sl No	Sector	Kerala State	Northern Region	Southern Region	NR as % of Total	SR as % of Total
1	Manufacturing	1632153	443370	1188783	27.2	72.8
2	Construction	2625982	966887	1659095	36.8	63.2
3	Electricity	207386	45832	161554	22.1	77.9
4	Gas	6153	2422	3731	39.4	60.6
5	Water Supply	38798	8756	30042	22.6	77.4
6	Total Secondary Sector	4510472	1467267	3043205	32.5	67.5

Source: Economic Review 2014

The table shows that in respect of all the segments of secondary sector of the economy, the southern region dominates over the northern region. 72.8 per cent of the manufacturing output of the Kerala state is contributed by the southern region as against only 27.2 per cent by the northern region. 63.2 per cent of the construction sector of the Kerala state is contributed by the southern region as against only 36.8 per cent by the northern region. 77.9 per cent of the electricity output of the Kerala state is in the southern region as against only 22.1 per cent in the northern region. 60.6 per cent of the

gas output of the Kerala state is contributed by the southern region as against only 39.4 per cent by the northern region. 77.4 per cent of the water supply output of the Kerala state is contributed by the southern region as against only 22.6 per cent by the northern region. Thus all the sectors which essential for entrepreneurial development in a region are lower in the northern region as compared to that in the southern region. The table 3 shows the status of sub sectors in the tertiary sector of the economy in the northern and southern regions of Kerala.

Table 3:- Tertiary Sector in the Northern and Southern Regions of Kerala as on 2013-2014 (QE) (at Factor Cost) (at constant prices) (Rs.Lakhs) (Base year 2004-05)

Sl No	Sector	Kerala State	Northern Region	Southern Region	NR as % of Total	SR as % of Total
1	Railway Transport	64446	32086	32360	49.8	50.2
2	Transport by Other Means	1840263	614229	1226034	33.4	66.6
3	Storage	10881	3254	7627	29.9	70.1
4	Communication	2260082	653832	1606250	28.9	71.1
5	Trade, Hotel & Restaurant	3935974	1588165	2347809	40.3	59.7
6	Banking & Insurance	1896834	652324	1244510	34.4	65.6
7	Real Estate Ownership, Business, Legal	2640846	990847	1649999	37.5	62.5
8	Public Administration	1222643	354200	868443	29	71
9	Other Services	2161719	940015	1221704	43.5	56.5
10	Total Tertiary Sector	16033688	5828952	10204736	36.4	63.6

Source: Economic Review 2014

The table shows that except railway transport, the status of all other sectors is very lower in the northern region as compared to that in the southern region. However, the contribution of transport by other means in the northern region is (33.4 per cent) only half of that in the southern region (66.6 per cent). Contribution of

Storage sector (29.9 per cent) and Communication sector (28.9 per cent) in the northern region are less than half of that in the southern region (70.1 per cent and 71.1 per cent respectively). Trade, hotel and restaurant sector in the northern region is 40.3 per cent as against 59.7 per cent in the southern region. In the northern region contribution of banking and insurance, real estate ownership etc., and public administration sectors are also less than half (34.4 per cent,37.5 per cent and 29 per cent respectively) of that in the southern region (65.6 per cent, 62.5 per cent and 71 per cent respectively). As a whole, tertiary sector in the northern region is only 36.4 per cent of the Kerala, whereas the majority is contributed by the southern region (63.6 per cent). Table 4 shows the share of primary, secondary and tertiary sectors in the Gross Domestic Product in The northern and southern Regions of Kerala

Table 4: Share of Primary, Secondary and Tertiary Sectors in the Northern and Southern Regions as on 2013-2014 (at Factor Cost) (at Constant prices) (Rs. Lakhs) (Base year 2004-05)

Area	Share (%) in Gross Domestic Product		
	Primary Sector	Secondary Sector	Tertiary Sector
Northern Region	**10.1**	**18.2**	**71.7**
Southern Region	**8.7**	**21.2**	**70.1**
Kerala State	9.2	20.1	70.7

Source: Economic Review 2014

The table shows that in both the northern and southern regions of Kerala, services sector dominate (71.7 per cent and 70.1 per cent respectively) in the economy. In the northern region primary sector contributes more (10.1 per cent) to the GDP than that in the southern region (8.7 per cent). However, secondary sector is more active in the southern region (21.2 per cent) than that in the northern region (18.2 per cent). Tertiary sector remains more or less at similar status in both the regions. The table shows that among

the districts in the northern and southern regions, contribution of the three sectors to the GDP have disparity. It also indicates that both between the regions, there are differences in status of different sectors in the economy.

Thus it shows that in respect of different sectors of the economy, the northern region has only less than proportionate status (as compared to its population share and geographical coverage) in the State GDP, as compared to that of the southern region, indicating that the northern region is backward in respect of major economic parameters.

The table 5 shows a comparison of the Southern Region (Travancore-Cochin Region) and Northern Region (Malabar Region).

Table 5: A Comparison Between the Southern Region (Travancore-Cochin Region) and Northern Region (Malabar Region)

Region	Per Capita Domestic Income (Rs.)		Per Capita Domestic Income from Industries (Rs.)		Per Capita Bank Deposit (Rs.)		Per Capita Bank Loan (Rs.)	
	1980-81	2010-11	1980-81	2010-11	1980-81	2010-11	1980-81	2010-11
Travancore-Cochin	1480	88366	252	7760	693	68497	486	45636
Malabar	1260	67240	159	4003	312	23028	237	19423
***Gap Between Regions %)**	**17.46**	**31.42**	**58.49**	**93.85**	**122.12**	**197.45**	**105.06**	**134.96**

Source: Statistics for Planning 1983, Directorate of Economics and Statistics.

Economic Review 2011, Kerala State Planning Board. (Jose Sebastian 2012, Mathrubhoomi Daily, "Thirukochiyude Kuthippum Malabarinte Kithappum" translated as 'growth of Travancore-Cochin and fall of Malabar' July 7).

**Gap is computed as the quantity of [(Travancore Cochin -Malabar) / Malabar]*100*

The table shows that the gap between The southern Region

(Travancore- Cochin Region) and Northern Region (Malabar Region) have widened in respect of all major parameters of economic development over the period from 1980-81 to 2010-11. While the gap in respect of per capita domestic income in 1980-81 was only 17.46 per cent, it has worsened to 31.42 per cent by 2010-11. Similarly the gap between the two regions per capita domestic income from industries has worsened from 58.49 per cent to 93.85 per cent over the period. In respect of the per capita bank deposit (122.45 per cent to 197.45per cent) and the per capita bank loan (105.06 per cent to 134.96 per cent) also have drastic fall in the northern region as compared to that in the southern region over the period 1980-81 to 2010-11.

Infrastructural Facilities in the Northern and Southern Regions of Kerala

Economic development basically is influenced by a variety of region-level environmental elements. Human development basically requires availability of a set of socio-economic institutional arrangements. Access to basic resources like as educational institutions, health institutions, water supply, basic infrastructural facilities like transportation, telecommunication etc., are inevitable.

3.1 Status of Road Infrastructure in the Northern and Southern Regions of Kerala

Roads are one of the important modes of transportation system. Among the different modes of domestic transport systems, road transport carries more than 80 per cent of the goods and passenger traffic. The road network helps in speedy movement of goods and facilitates entrepreneurial development. Hence there should be adequate road network for developing entrepreneurial activities. The table 6 shows the availability of road networks in the northern and southern regions of Kerala

Table 6: Road Networks in the Northern and Southern Regions of Kerala as on March 2014

Particulars	Total Road#(Length Kms)
Northern Region	12020.140
Northern Region Per Sq. Km.	**0.6883**
Southern Region	19791.460
Southern Region Per Sq. Km.	**0.9248**
Kerala State	31811.60
Northern Region as % of Total	37.8
Southern Region as % of Total	62.2

Source: Economic Review 2014, Public Works Department, Govt. Kerala.
#Include state highways and district roads

The table shows that majority of road networks are situated in the southern region (62. 2 per cent) as compared to that in the northern region (37.8 per cent). The per Sq. Km. road in the northern region is only 0.6883 as against 0.9248 in the southern region. Thus the table shows that availability of road facilities is lower in the northern region as compared to that in the southern region.

3.2 Postal Facility in the Northern and Southern Regions of Kerala

Postal facilities are needed for sending documents and articles between distant places. The table 7 shows the availability of postal facilities in the northern and southern regions of Kerala as on March 2014.

Table 7:-Postal Facilities in the Northern and Southern Regions of Kerala as on March 2014

Area	Population Covered by one Post Office
Northern Region	7046
Southern Region	6290
Kerala State	6601

Source: Economic Review 2014, Chief Post Master General, Kerala Circle

The table shows that while in the southern region one post office serves only 6290 persons, in the northern region one post office serves 7046 persons. It indicates that post office facilities are lesser in the northern region as compared to that in the southern region.

3.3 Telecommunication Facilities in the Northern and Southern Regions of Kerala

Kerala has a tele-density of 80 per cent as compared to an all-India average of 52.7 per cent as on March 2010. The state has 1,242 automatic telephonic exchanges, of which about 98 per cent have internet connectivity through the national internet backbone. According to estimates by the Telecom Regulatory Authority of India, Kerala had nearly 24.2 million wireless subscribers and 3.5 million wire-line subscribers as of March 2010. The table 8 shows the availability of telecommunication facilities in the northern and southern regions of Kerala.

Table 8: Telecommunication Facilities in the Northern and Southern Regions of Kerala as on March 2014

Area	No of Exchanges	Equipped Capacity	Working connections	No of connection per Sq. Km.	No of telephone per 1000 population
Northern Region	523	3744033	3972646	227	271
Southern Region	731	6117159	6613185	309	353
Kerala State	1254	9861192	10585831	272	317
NR as % of Total	41.7	38.0	37.5		
SR as % of Total	58.3	62.0	62.5		

Source: Economic Review 2014, and Bharat Sanchar Nigam Limited.

The table shows that 41.7 per cent of the telephone exchanges of BSNL are situated in the northern region as against 58.3 per cent in the southern region. However, the northern region has an equipped capacity of 38 per cent as against 62 per cent in the southern region. Similarly only 37.5 per cent of the working connections in the State

are in the northern region as against 62.5 per cent in the southern region. The number of connections per Sq. Km., in the southern region is 309 as against only 227 in the northern region. Similarly, number of telephones per 1000 population is 353 in the southern region as against only 271 in the northern region. It indicates that telecommunication facilities are not proportionately available in the northern region as compared to that in the southern region.

Thus it can be concluded that, the availability of telecommunication facilities is lower in the northern region as compared to that in the southern region.

3.4 Motor Vehicles in the Northern and Southern Regions of Kerala

Motor vehicles available in a region represent the availability of transportation facilities. In order to move from one place to another, transportation facilities are inevitable. Absence of adequate number of motor vehicles will prevent smooth flow of goods and services and people and thereby will adversely affect entrepreneurial activities. The table 9 shows the availability of motor vehicles in the northern and southern regions of Kerala.

Table 9: Motor Vehicles in the Northern and Southern Regions of Kerala as on March 2014

Particulars	Goods Vehicles	Buses	Four wheelers	Three Wheelers	Two Wheelers	Tractors / Tillers	Total
Northern Region	207515	71719	684020	240609	1627938	40233	2872034
Per capita	0.0142	0.0049	0.0467	0.0164	0.1111	0.0027	0.1960
Southern Region	305981	88811	1122284	422632	3660591	75633	5675932
Per capita	0.0163	0.0047	0.0599	0.0226	0.1954	0.0040	0.3030
Kerala State	513496	160530	1806304	663241	5288529	115866	8547966
NR as % of Total	40.4	44.7	37.9	36.3	30.8	34.7	33.6
SR as % of Total	59.6	55.3	62.1	63.7	69.2	65.3	66.4

Source: Economic Review 2014, Motor Vehicles Department

The table shows that the southern region accommodates 59.6 per cent of the goods vehicles as against only 40.4 per cent in the northern region. The northern region has 44.7 per cent of the buses available in the state, whereas the southern region has 55.3 per cent of the buses in the State. The southern region has 62.1 per cent of the four wheelers, 63.7 per cent of the three wheelers, 69.2 per cent of the two wheelers,65.3 per cent of the tractors/tillers as compared to only 37.9 per cent, 36.3 per cent, 30.8 per cent, and 34.7 per cent respectively in the northern region. In the northern region the per capita figures of goods vehicles are 0.0142, buses 0.0049, four wheelers 0.0467, three wheelers 0.0164, two wheelers 0.1111, tractors 0.0027. In the southern region the respective per capita figures are 0.0163, 0.0047, 0.0599, 0.0226, 0.1954 and 0.0040.

Thus it can be concluded that, all forms of road transportation vehicles are lower in the northern region as compared to that in the southern region on a per capita basis.

3.5 Status of Number of Schools in the Northern and Southern Regions of Kerala

Educational institutions, especially at high school level and above, play an important role developing qualified human resources. They impart training and guidance for individuals for enhancing their intellectual and academic skills, which in turn may lead them into productive engagements. The table 10 shows the status of number of schools in the northern and southern regions of Kerala.

Table 10: Number of Schools in the Northern and Southern Regions of Kerala as on March 2014

Particulars	High Schools (State Syllabus)	CBSE	ICSE
Northern Region	1117	324	20
Per Every Lakh Population	7.6214	2.2107	0.1365
Southern Region	1847	654	119
Per Every Lakh Population	9.8604	3.4914	0.6353
Kerala State	2964	978	139
NR as % of Total	37.7	33.1	14.4
SR as % of Total	62.3	66.9	85.6

Source: Economic Review 2014, Directorate of Public Instruction
Note: The list includes govt., private aided and private unaided schools

The table shows that majority of the schools of the Kerala state, across the categories, are situated in the southern region of Kerala. Southern region has 62.3 per cent of the High Schools with State syllabus, 66.9 per cent of the Schools following CBSE syllabus and 85.6 per cent of the schools following ICSE syllabus, of Kerala State. Their availability in the northern region is only 37.7 per cent, 33.1 per cent and 14.4 per cent respectively. The number of high schools(state syllabus) for every lakh population in the northern region is only 7.6214 as against 9.8604 in the southern region. The number of high schools with CBSE syllabus for every lakh population in the northern region is only 2.2107 as against 3.4914 in the southern region. The number of high schools with ICSE syllabus for every lakh population in the northern region is only 0.1365 as against 0.6353 in the southern region. Thus the table shows that the northern region has no proportionate share of education facilities at school level as compared to that in the southern region.

Thus it can be concluded that, availability all types of schools are lower in the northern region as compared to that in the southern region on a per capita basis.

3.6 Status of Number of Plus Two / VHSE Schools, Arts and Science and Engineering Colleges in the Northern and Southern Regions of Kerala

Educational institutions at Plus Two / VHSE level, arts and science and engineering colleges, assumes great significance for the development human resources in a region. They impart higher level training and guidance for students for enabling them to do a focused learning and enhancing academic skills in a specialised area. The table 11 shows the status of number of Plus Two/VHSE Schools, arts and science and engineering colleges in the northern and southern regions of Kerala as on March 2014.

Table 11: Number of Plus Two / VHSE Schools, Arts and Science and Engineering Colleges in the Northern and Southern Regions of Kerala as on March 2014

Particulars	Plus Two	VHSE	Number of VHSE Courses	Arts& Science Colleges	Engineering Colleges#
Northern Region	898	131	385	68	38
Per Every Lakh Population	6.1271	0.8938	2.6269	0.4640	0.2593
Southern Region	1148	258	715	131	122
Per Every Lakh Population	6.1287	1.3774	3.8171	0.6994	0.6513
Kerala State	2046	389	1100	199	160
NR as % of Total	43.9	33.7	35.0	34.2	23.8
SR as % of Total	56.1	66.3	65.0	65.8	76.2

Source: Economic Review 2014, Directorate of Higher Secondary Education, Directorate of Vocational Higher Secondary Education, Directorate of Technical Education, Directorate of Collegiate Education,
#List includes Schools in Govt., Private Aided and Private Unaided Schools.

The table shows that, on a per capita basis, the northern region has only a lesser number of educational institutions offering VHSE courses, number of VHSE courses offered, number of arts and science and engineering colleges as compared to that of the southern region. The table shows that 43.9 per cent of the plus schools are in

the northern regions as against 56.1 per cent in the southern region. The southern region contains 66.3 per cent of schools offering Vocational higher secondary courses, offering 65 per cent of the VHSE courses available in the state as compared to only 33.7 per cent of the VHSEs in the northern region offering 35 per cent of the VHSE courses. 65.8 per cent of the arts and science colleges in the state are in the southern region as against only 34.2 per cent in the northern region. Similarly only 23.8 per cent of the engineering colleges are in the northern region as against 76.2 per cent in the southern region.

The number of Plus Two schools for every lakh population in the northern region is 6.1271 as against 6.1287 in the southern region. However, the number of VHSE for every lakh population in the northern region is only 0.8938 as against 1.3774 in the southern region. The number of VHSE courses for every lakh population in the northern region is only 2.6269 as against 3.8171 in the southern region. The number of arts and science colleges for every lakh population in the northern region is only 0.4640 as against 0.6994 in the southern region. The number of engineering colleges for every lakh population in the northern region is only 0.2593 as against 0.6513 in the southern region.

Thus it can be concluded that, the availability of plus two schools, VHSE schools, arts and science and engineering colleges are lesser in the northern region as compared to that in the southern region.

3.7 Medical Institutions in the Northern and Southern Regions of Kerala

Medical institutions are important for any region for satisfying health care needs of individuals. Only healthy body can produce healthy mind. Hence availability of adequate number of health care institutions assumes great significance for entrepreneurial

development. Table 12 shows the number of medical Institutions in Allopathic, Ayurveda and Homeopathy in the northern and southern regions of Kerala.

Table 12: Medical Institutions in the Northern and Southern Regions of Kerala as on March 2014

Particulars	Allopathy#		Ayurveda##		Homoeopathy	
	Number of Institutions	Number of Beds	Number of Institutions	Number of Beds	Number of Institutions	Number of Beds
Northern Region	537	13515	748	1186	532	285
Per Every Lakh Population	3.664	92.214	5.104	8.092	3.63	1.945
Southern Region	744	24726	1128	1848	852	670
Per Every Lakh Population	3.972	132.002	6.022	9.866	4.548	3.577
Kerala State	1281	38241	1876	3034	1384	955
NR as % of Total	41.9	35.3	39.9	39.1	38.4	29.8
SR as % of Total	58.1	64.7	60.1	60.9	61.6	70.2

Source: Economic Review 2014. Directorate of Health Services, Directorate of Ayurveda and Directorate of Homoeopathy.

#Includes General Hospital, District Hospitals, Primary Health Centres, Community Health Centres, Speciality, T. B. Clinics / Centres, Taluk Hospitals, 24X 7 PHC and Others

Includes Hospitals, Dispensaries and Institutions.

The table shows, that across all the categories of medical treatment systems, the number of medical institutions and beds are not proportionately (to the population) available in the northern region as compared to that in the southern region. The table shows that 41.9 per cent of the institutions offering allopathic treatment are in the northern region as against 58.1 per cent in the southern region. Only 35.3 per cent of beds in allopathic segment are in the northern region as against 64.7 per cent in the southern region. 39.9 per cent of the institutions offering Ayurveda treatment are in the northern region as against 60.1 per cent in the southern region. Only 39.1 per cent of beds in Ayurveda segment are in the northern region as against 60.9 per cent in the southern region. Only 38.4 per cent of the institutions offering Homoeopathic treatment are in

the northern region as against 61.6 per cent in the southern region. Only 29.8 per cent of beds in Homoeopathic segment are in the northern region as against 70.2 per cent in the southern region.

The number of allopathy institutions for every lakh population in the northern region is only 3.664 as against 3.972 in the southern region. The number of beds in allopathy institutions for every lakh population in the northern region is only 92.214 as against 132.002 in the southern region. The number of ayurveda institutions for every lakh population in the northern region is only 5.104 as against 6.022 in the southern region. The number of beds in ayurveda institutions for every lakh population in the northern region is only 8.092 as against 9.866 in the southern region. The number of homeopathy institutions for every lakh population in the northern region is only 3.63 as against 4.548 in the southern region. The number of beds in homeopathy institutions for every lakh population in the northern region is only 1.945 as against 3.577 in the southern region.

Thus it can be concluded that, all forms of health care facilities(allopathy, homeopathy and Ayurveda) are lower in the southern region as compared to that in the southern region

3.8 Water Supply Schemes in the Northern and Southern Regions of Kerala

One of the important infrastructural facilities required for running entrepreneurial units is availability of water supply controlled by govt. agencies. The number of water supply schemes, water supply connections and street tapes etc., indicate availability of water supply in an area. The table 13 shows the status of water supply in the northern and southern regions of Kerala.

Table 13: Water Supply Schemes in the Northern and Southern Regions of Kerala as on March 2014

Area	Water Supply Schemes	% of Population Covered	Water Supply Connections#	Street Taps
Northern Region	484	30.55	338920	49535
Per Every Lakh Population	3.3024		2312	338
Southern Region	757	54.2	1254674	157924
Per Every Lakh Population	4.041		6698	843
Kerala State	1241	43.82	1593594	207459
NR as % of Total	39.0		21.3	23.9
SR as % of Total	61.0		78.7	76.1

Source: Economic Review 2014, Kerala Water Authority
 # Include domestic, non-domestic and industrial connections

The table shows that only 39 per cent of the water supply schemes in the Kerala state are available to the northern region as against 61 per cent in the southern region. On an average, only 30.55 per cent of the population in the northern region is covered by water supply schemes in the northern region as against 54.2 per cent is covered in the southern region. Only 21.3 per cent of the water supply connections in the State are available to the northern region as against 78.7 per cent in the southern region. Only 23.9 per cent of the street tapes in the State are available to the northern region as against 76.1 per cent in the southern region. The number of water supply schemes for every lakh population in the northern region is only 3.3024 as against 4.041 in the southern region. The number of water supply connections for every lakh population in the northern region is only 2312 as against 6698 in the southern region. The number of street taps for every lakh population in the northern region is only 338 as against 843 in the southern region.

Thus it can be concluded that, the availability of water supply facilities is lower in the northern region as compared to that in the southern region.

3.9 Status of Banking in the Northern and Southern Regions of Kerala

Banks constitute one of the important sources of short term and medium term funds for any entrepreneurial venture. Availability of adequate number of bank branches, mobilising deposits and lending them for productive purposes etc., show the extent of banking facilities available in a region. The table 14 shows the status of bank branches, CD ratio of scheduled commercial banks in the northern and the southern regions of Kerala.

Table 14: Bank Branches, Deposits, Credit and Credit Deposit Ratio of all Scheduled Commercial Banks in the Northern and Southern Regions as on March 2014

Area	No. of Branches	Deposits (Rs. in Crores)	Credit (Rs. in Crores)	C D Ratio
Northern Region	1803	61370	43410	70.7
Per capita	0.0001	0.0042	0.0030	
Southern Region	3799	216570	163953	75.7
Per capita	0.0002	0.0116	0.0087	
Kerala State	5602	277940	207363	74.61
NR as % of Total	32.2	22.1	20.9	
SR as % of Total	67.8	77.9	79.1	

Source: Economic Review 2014, Reserve Bank of India

The table shows that the southern region has majority of bank branches, bank deposits and credit allowed by scheduled commercial banks in the state as compared to that in the northern region. The table shows that 67.8 per cent of the bank branches are in the southern region as against only 32.21 per cent in the northern region. Similarly only 22.1 per cent of the deposits mobilised in state are from the northern region as against 77.9 per cent from the southern region. 79.1 per cent of the credit granted by scheduled commercial banks is in the southern region as against only 20.9 per

cent in the northern region. The credit deposit ratio is higher in the southern region (74.61) as against only 70.7 in the northern region, indicating that in the southern region more portion of deposits mobilised are lent for various purposes and where as in the northern region more idle money remains with banks. Per capita figures show that in the northern region status of banking is poor as compared to that in the southern region. In the southern region per capita number of branches is only 0.0001 as against 0.0002 in the southern region. Similarly per capita deposits mobilised in the northern region was 0.0042 as against 0.0116 in the southern region and per capita credit lent by banks in the northern region was 0.0030 as against 0.0087 in the southern region.

Thus it can be concluded that, bank branches, deposit mobilisation and credit disbursal are lower in the northern region as compare that in the southern region.

Conclusion

Thus it can be concluded that there is regional difference in economic development between the northern and southern regions of Kerala state. This has been caused due to the disparity in the socio-economic infrastructural facilities in these regions. Thus it can be concluded that disparity in the socio-economic infrastructural facilities lead to disparity in economic development in a region.

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ISDA Journal 30 (2) 2020, pp. 87-422
 ISSN 0971-2550.

INDIA-AFGHAN RELATION AFTER THE FALL OF TALIBAN

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Abstract

India and Afghanistan have strong cultural and historical relation. Historically Afghanistan is a strategic region for India. After independence India continued good relation with Afghanistan. But when Islamic radical groups began to dominate Afghan politics, India could not manage her relation with Afghanistan. During the rule of Taliban regime, relation between the two countries deteriorated. The incident of 9/11 and consequent action of Global War Terror brought power changes in Afghanistan. Thus India decided to re- start diplomatic relation with Afghanistan and take part actively in the reconstruction process of Afghanistan. India provided much needed aid and capacity building measures for supporting Afghanistan. The signing of Strategic Partnership Agreement of 2011 is a landmark in their relationship. This article is focusing on strategic changes in the Indo-Afghan relation after the fall of Taliban and also the need of Indian support in the stability and capacity building measures of Afghanistan.

Key words*:* Indo-Afghan relation; Taliban; Indian Assistance; Strategic Partnership; Pakistan; Bilateral Relation.

India and Afghanistan have powerful relationship for a long time. Historical contacts and transactions have played important role in bringing their relation close and intimate. India's engagement with Afghanistan has reached multi-centred and multi-dimensional after the American intervention in Afghanistan. Now Afghanistan have gained much importance in South Asian geopolitics due to its geostrategic and geopolitical position. Historically both India

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and Afghanistan had strong relationship. From the colonial period India have maintained good relation with Afghanistan. Since the imperial rivalry between Britain and Russia, Afghanistan was crucial for India. In the post-independence period, Afghanistan has become strategically important to India because of her strategic position as Afghanistan can provide an easy transit to central Asia.

Even though now India provides millions of assistance to the development of Afghanistan, her friendship with Afghanistan can be traced back to decades earlier. During the freedom fight movement, they shared common feelings and inspiration. Even though partition divided India into two countries, India was able to manage good elation with Afghanistan. It continued up to the Soviet invasion of 1979. During this period many developments were took place in their relation which include technical assistance, training to the Afghan bureaucrats, construction of Indira Gandhi Children's Hospital in Kabul.

The relation between India and Afghanistan are very much influenced by the Pakistan factor. Pakistan always wanted to isolate India from engagements in Afghanistan. They consider Indian presence in Afghanistan is a threat to their interest. We can understand relation between India and Afghanistan through three stages. The first category of their relationship started after the Indian independence of 1947. This phase continued till the close of the cold war period. During the first phase India managed good and intimate relation with Afghanistan. Afghanistan have border dispute with Pakistan and stand with Afghanistan. But the Soviet invasion (1979-89) created discontent and misunderstanding in their relationship. In the Soviet invasion, India took a neutral stand on the issue and it adversely affected India's relation with Afghanistan. India's figure in the International sphere badly deteriorated. Many countries criticised India that she is deviating from her traditional policy of

non-alignment. The second phase of indo-afghan relation started by the end of cold war period and it continued till the fall of Taliban regime in 2001. During this period India's relation with Afghanistan very much influenced by jihadism, religious fundamentalism and civil war between radical Islamic groups. During this period India managed a relation with Nejibullah. But it was only limited scope. Nejibullah's administration was overthrown by Pak sponsored Islamic fundamentalist movement Taliban. Taliban established a religious based a govt. in Afghanistan. They controlled major part of Afghan territory. After gaining the control of the government, Taliban started rude and strict religious rule in the country. India faced a setback in her relation with Afghanistan. Consequently, India had to support Northern Alliance, a group of anti-Taliban nexus. Pakistan got much advantage from Taliban administration. The third phase of indo-afghan relation began with the fall of Taliban regime in 2001. In this stage we can see that there are remarkable changes in the Indo-Afghan relation. India re-established her diplomatic relation with Afghanistan. India tried her best to strengthen her bilateral relation. India actively participated in the reconstruction and rebuilding of Afghanistan's nation building process. India considered that stability in Afghanistan is important for securing India's interest in the region.

Indian Engagement in Afghan after the fall of Taliban

After the incident of 9/11, America and her NATO Alliances attacked Taliban regime and removed them from the administration of Afghanistan. During the American invasion India provided much needed assistance to the coalition forces including the intelligence assistance. After the fall of Taliban regime, India started her bilateral relation with newly set Afghan government. India offered all the possible help to the reconstruction and rebuilding of Afghanistan. India provide trillions of aids to the rebuilding of the country and became the leading regional contributor of Afghanistan nation

building process

India and Afghanistan are now engaged to construct a strong partnership. Historical and cultural factors have played important role in bringing these two countries together. They share common cultural entities, multi ethnic values and a quest for stability and development of the people and nation. Since 2001 their relation has improved much better than ever. Now India is one of the leading partners of Afghanistan's nation building process. There are four broad areas in which India shared her assistance and development partnership with Afghanistan such as humanitarian assistance, major infrastructure projects, small and community based development projects and education and capacity development. India strongly supported the rebuilding efforts in Afghanistan by giving massive assistance in the form of humanitarian, financial and developmental project assistance. Indian involvement in Afghanistan covered wide range of areas which include all parts of Afghanistan. U.N and other organisation actively took the initiatives to bring and improve nation building process of Afghanistan. India also join with these international agencies to bring changes in the country. Let us look some of the areas where India have contributed assistance to Afghanistan.

Humanitarian Assistance

In Afghanistan literacy of the people was low. So Afghan govt. implemented different programmes. One of them is Back to School Programme. The school feeding programme was the critical element for the success of the programme. It improved attendance and schooling activity particularly of girl students. The funding of the programme was carried by World Food Programme. In 2002 they faced fund shortage and hence withdraw from School Feeding Programme. Then Afghan govt. look for a donator for their programme. Now India came forward and expressed her willingness

to partner with WFP for participating in the school feeding programme. India provided millions of tone wheat to Afghan for their school feeding programme. India also offered high protein biscuits to be distributed in Afghan schools. In 2009 prime minister Manmohan Singh announced similar kind of aid to Afghanistan.

Public Health

Civil war in Afghanistan completely destroyed the medical system of the country. Their medical sector was not able to meet the vast and urgent medical needs of the country. By 200 India sent a medical team to Kabul to provide medical assistance to the Afghans. They organised medical camps in many parts of the country. In places like Kabul, Herat, Jalalabad, Kandahar and Mazar-e Serif Indian medical team is working. They give free consultation and free medicines to the poor patients. India also took the initiative of renovating the Indira Gandhi Institute for Child Health in Kabul (IGICH). Advanced medical equipment was installed in the hospital. Surgical block (2005), Policlinic block (2007) and Diagnostic block were constructed. Moreover, capacity building measures were taken to improve the standard of the Afghan soldiers. India also constructed several public health centres in many provinces of Afghanistan. Afghan medical teams were given training in All India Institute of Medical Service in New Delhi.

Road Construction

Another landmark in the history of Indo-Afghan relation is the construction of Zaranj-Delaram Highway. This high way has a length of 218 km which connect southwestern Afghanistan and Iran through connecting Zaranj to the Kandahar-Herat highway. The construction of the highway will encourage and enable new trade and transit to Iranian port Chabahar. The construction of the road completed in 2009 and it is jointly inaugurated by the Indian

external affairs minister Pranav Mukherjee and Afghan president Hamid Karzai. Along with this, India also constructed many inner city roads in places like Zaranj, Gurguri etc.

Power and Transmission

It is another package of Indian sign to Afghan's development. India constructed 20 KV double circuit transmission Line from Pul-e-Khumri to Kabul in 2005. The project fully completed in 2009. The sub-station is also capable of transmitting additional 220 KV electricity supply from Uzbekistan. Again in 2004, India started construction of Salma Dam and it was completed and inaugurated in 2016 by the Indian prime minister Narendra Modi along with Afghan president Ashraf Ghani. Moreover, India conducted surveys for starting micro-hydro power projects and supplied solar panel in many provinces. India also completed the rehabilitation of Amir Ghazi and Quargha dam in 2007.

Support to Democracy

India obligated to construct a parliament for Afghanistan. This is considered as India's commitment to establish and strengthen the democratic aspiration of Afghanistan. Construction of the Afghan parliament started in 2009 and it is completed in 2015. The newly constructed parliament building of Afghanistan jointly inaugurated by the Indian prime minister Narendra Modi and Afghan president Ashraf Ghani. In addition to this officials of Afghan National Assembly Secretariat were given training in Indian Bureau of Parliamentary Studies and Training. Then the election commission of New Delhi and Kabul have made regular exchanges, mutual visits, observation and provided training to the Afghan officials.

Transport and Communication

Long years of tribal war lordism, civil war and fighting collapsed Afghan transport system. Realising the need of Afghanistan, India

offered 400 buses to Afghanistan. Besides, 200 mini buses were given for the use of hilly and mountain regions to connect with remote villages of the country. In addition to this, utility vehicles, water and cessptic tankers were given to municipalities. In the civil aviation sector, India provide three aircrafts and essential spares. India also extended her assistance by providing training opportunities in air traffic control, airport management and pilot and navigation training.

In the telecommunication field India provided technical and infrastructure facilities to Afghanistan. India installed digital telephone exchanges with facilities of towers and power supplies. Multi-purpose community tele-centres were also established with ICT services in 12 provincial capitals. India implemented a project to uplink Radio and Television of Afghanistan to provide downlink facilities in all provinces.

Capacity Building Measures

India took initiative to improve the capacity building level of the Afghan nationals. As a part of this, Afghan national got training and scholarship in specific areas. From 2006 onwards every year 500 Afghan students were given educational opportunities in various Indian Universities under the special scholarship of Indian Council of Cultural Relations. Moreover, every year 500 placement opportunities were given to Afghan public officials in any professional institutions of their choice in India. Another Indian effort is that the Confederation of India Industries in collaboration with Afghan Ministry of Labour and Social Affairs is organising training to 1000 Afghan youths in different skill programmes such as carpentry, welding, plumbing, cutting and stitching and masonry. These training programmes expected to improve the skilled labour force of Afghanistan throughout the nation.

The Self Employed Women Association (SEWA), a woman NGO, provides vocational training to Afghan woman under the assistance of India. SEWA setup a Community Learning and Business Resource Centre at Bagh-e-Zanana in Kabul. Through the training centre SWEA expect to ensure woman empowerment through economic self-reliance. The training process mainly concentrated on three areas such as garment making and embroidery, nursery plantation and greenhouse plants, and food and fruit processing. Since 2007, India have deputed some civil servants to Afghan government department for imparting professional skill in public administration. They also give advice to Afghan public officials

India-Afghan relation further strengthened by the Strategic Partnership Agreement of 2011. The agreement calls for Indian assistance for the rebuilding of Afghanistan. In 2014 election held in Afghanistan some dispute aroused on the result of the election. Finally, a power sharing arrangement made between the disputing candidates, Ashraf Ghani and Abdullah Abdullah. Ashraf Ghani appointed as the Afghan president and Abdullah Abdullah as the Chief Executive Officer. After becoming the President of Afghanistan, Ashraf Ghani visited India in 2015. Indian prime minister Narendra Modi made an unexpected visit to Afghanistan in 2016. This was his first visit to Afghanistan. Two landmark took place in this visit: the inauguration of newly built Afghan parliament and secondly, handovering of four attack Mi-25 helicopters to Afghanistan. Supply of military helicopter was a sign that India is shifting from her traditional policy towards Afghanistan. In 2016 Afghan CEO Abdullah Abdullah visited India. As a result of the visit an agreement on Exemption of visa requirement for holders of diplomatic passport was made between New Delhi and Kabul. Indian friendship further extended with the joint inauguration of India-Afghan Friendship Dam by Narendra Modi and Ashraf Ghani.

(Praveen Swami, The Hindu, June 5, 2016) India govt. decided to implement 116community development projects in several Afghan provinces. This decision is based on the understanding arrived in a meeting between Indian External Affairs Minister Sushma Swaraj and Afghan Foreign Affairs Minister Salahuddin Rabbani.

Conclusion

It is concluded that relationship between India and Afghanistan are close and intimate. During the cold war period India maintained strong relation with Afghanistan. But this was changed with the arrival of Taliban regime. India faced trouble to manage relation with Afghanistan. The incident of 9/11 and consequent Global War on Terror brought drastic changes in the Indo-Afghan relation. In the post-Taliban period India strengthen relation with Afghan. She actively participated in the nation building process of Afghan. India provided much needed aid and assistance to their growth. Now India is the leading regional contributor of Afghanistan. Now India balance and maintain good relation with Afghanistan as it is crucial for India's interest in the region. India's role in Afghanistan is vital for their development and stability. Still Taliban is trying to recapture Afghan's control. Here India can provide much needed help to Afghanistan.

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ISDA Journal 30 (2) 2020, pp. 87-422

THE DEPRESSING LIFE OF WOMEN IN SLUM: A STUDY IN THE SLUM OF TRIVANDRUM

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Abstract

City is one of the important reflections of urbanization. It is an explanation of urban growth and development, but on the other hand there are many social situations that pose challenge towards the phenomena. One among that is the unstoppable growth of ***slums*** *with a deprived background. It creates and molds a population with less advantage and more deprivation. Especially the situations of women in slums are more deplorable and needs to be changed. Moreover they face social stigmas and exclusion because of their identity as "slum dwellers". Through this paper the analysis of two objectives, such as, to study the socio- economic background of the women in slum as well as the problem they face for being a slum dweller are going to be discussing. For the purpose of the study one of the main slums in Trivandrum, namely Karimadom colony was selected. The sample of the study was 64 and the tool used for data collection was a semi- structured interview schedule. The main findings of the study shows that the necessity of empowerment of women in slum through educational as well as employment opportunities and thereby the total emancipation of the community will make more development of the women in the slum.*

Key words: Slum, Women, Identity, Stigma, Exclusion

Urbanization refers to the population of a nation living in urban areas and is an indicator of modernization, the sign of growth and economic progress. Urban growth is an inevitable fact of the futures in India. The growth in urban population is somewhat threatening the availability of basic services, such as water, housing, transportation,

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and electricity etc. This result in urban shanty towns becomes weighed down by poverty, pollution, congestion, homelessness and unemployment. The existence of 'slum' is one of the major problems faced in almost all the major cities or towns throughout the world.

The word "slum" was first used in London at the beginning of the 19thcentury to describe a "room of low repute" or "low, unfrequented parts of the town", but has since undergone much iteration in meaning and application (UN-HABITAT, 2003b) A Slum is a densely populated usually urban area marked by crowding dirty rundown housing, poverty and social disorganization. A Slum is a residential area with substandard housing that is poorly serviced and or overcrowded, and therefore unhealthy, unsafe, and socially undesirable. A slum is usually considered as a highly populated urban residential area consisting mostly of closely packed, weak housing units in a situation of deteriorated or incomplete infrastructure. Slums are the product of socio- economic and cultural conditions of a particular social system restrain the physical, mental, moral and social development of the dwellers. The conditions in the slums affect the capacity of the individual to develop, and participate directly in the activities of the wider community life of the city.

In India the total number of identified slums according to 2011 census is 6.56 Crore. In a study on "Causes of Urban Poverty in India: How to Improve Life in the Slum" done by Habitat for Humanity Organization (2017) stated that, one in five people across the world live in slums and substandard housing, locking them into a grinding cycle of poverty. Nearly one in four urban residents' lives in a slum. Urban poverty in India is unique, particularly in the way that it follows certain patterns of growth. Though the proportion of urban poor has reportedly declined over the past decades, the numbers keep growing up, because of the persistent nature of slums**.** In 2001 according to the National Report (India Habitat III by the

Ministry of Housing and Urban Poverty Alleviation) about 23.5 per cent of urban households were slum dwellers. This percentage had decreased to 17 per cent by 2011 even though the total number of households living in slums had gone up from 10.5 Million in 2001 to 13.75 Million in 2011.

In slums across the world, there is a noticeable lack of basic infrastructure, services, and basic shelter. Slum life has never been easy for the urban poor insofar as housing and living conditions are concerned. For **women**, the problems are especially acute. The social situations of their life in slum always negligible and is hosting challenge towards their life in many ways[1].

When go through the literature, many studies shows that women in slum are socially, physically and economically backward. But through the analysis, the researcher found a research gap that, there was meager consideration upon the exclusion they faced only because of their identity as a slum dweller. To them being identified as a slum dweller in society seems to be an anti- social experience for majority of the respondents. It shows that the study is more relevant and particular for find out the reason, its impact as well as the need of change in developing the situation of women in slum.

Objectives and **Hypotheses**

The study is based on two main objectives:

(i). To study the socio- economic background of the women in slum

(ii). To find out the problems faced by women in slum through their social identity as a slum Dweller

The hypotheses developed for the study are:

(i) There is association between the age and the extent of social stigma faced by women in slum

(ii) Higher the educational attainment lower will be their problems by the identity as a slum dweller

Method

For the purpose of the study the researcher selected respondents who were aged from 18 years from the universe Karimadom colony. According to the report of local self government, the slum inhabited with 2000 of families approximately. However after collected the demographic and Ward wise details from Trivandrum Corporation the researcher selected 64 samples through purposive sample method. Both primary and secondary data were collected for verify the objectives under study. The study was carried out by a semi-structured interview schedule to gather the entire aspect of their situation. Primary data were collected from respondents using semi-structured Interview schedule. Secondary data were collected from books, journals, published research works and authorized websites. The design used in this study was descriptive and exploratory in nature. The selected data analyzed through quantitatively and qualitatively.

Conceptual definition

Social identity: According to Henri Tajfel **"**Social identity is a person's sense of who they are based on their group membership(s)."

Hesitation: According to Cambridge Dictionary, Hesitation refers to "the act of pausing before doing something, especially because you are nervous or not certain"

Stigma: According to Cambridge Dictionary, Stigma refers to "a strong feeling of disapproval that most people in a society have about something, especially when this is unfair."

According to Merriam Webster Dictionary, stigma refers to a "mark of shame or discredit"

Exclusion: Duffy in 1995 defined exclusion as, "Exclusion is a broader concept than poverty, encompassing not only, low material

means but the inability to participate effectively in economic, social, political and cultural life and in some characterizations, alienation and distance from mainstream society."

Deprivation: According to Cambridge Dictionary, "Deprivation is a situation that people do not have things or conditions that are usually considered necessary for a pleasant life."

Results and discussion

1. The Socio- Economic Background of the Women in Slum

Every slum is portraying the life situation of people who resides there. Through the study it was found that socially and economically, women in the slum possess a poor background. The Table 1.1 shows the overall socio- economic profile of the respondents under study.

Table 1.1
Socio – Economic Profile of the Respondents

Out of the 64 respondents, majority (54.68%) of them were belongs to the age group of 38 – 47. Religious wise data shows that most (46.87%) of the respondents belong to Muslim community. In the slum many kind of caste found but people in the slum were not reported any kind of casteism among them. They cherish all kind of festivals and occasions together without alarming any communal feelings. When analyzing their educational background, it was found that out of 64 respondents, 40.62 per cent of them were having education up to high school level. There were also reported that due to marriage and other household chores they couldn't continue the education. Thus most of them were had to drop out their education even they were good and interested in education. The study also shows that those who were not educated (7.81%) were not youngsters but elderly who couldn't receive proper education at their childhood.

Socio – Economic Profile of the Respondent

Variables	No: of Respondents					Total
Age	18 - 27	28– 37	38 – 47	48and above		64 (100%)
	8 (12.5%)	14 (21.87%)	35 (54.68%)	7 (10.93%)		
Religion	Muslim	Hindu	Christian			
	30 (46.87 %)	26 (40.62%)	8 (12.5%)			
Caste	OBC	SC	OEC	General		
	35 (54.68%)	14 (21.87%)	11 (17.18%)	4 (6.25%)		
Educational attainment	Not educated	Primary level	High school level	Secondary level	Degree level	
	5 (7.81%)	13 (20.31%)	26 (40.62%)	17 (26.56%)	3 (4.68%)	
Occupation	Coolie	Self employed	Unemployed			
	14 (21.87%)	23 (35.93%)	27 (42.18%)			
Marital Status	Married	Single	Widow	Deserted		
	49 (76.56%)	12 (18.75%)	1 (1.56%)	2 (3.12%)		
Monthly Income of the Household (in rupees)	1000- 2000	2000-3000	3000-4000	4000-5000	5000and Above	
	3 (4.68%)	6 (9.37%)	26 (40.62%)	11 (17.18%)	18 (28.12%)	
Ownership of the House	Own	Govt undertaking	Rent	Lease		
	7 (10.93%)	35 (54.68%)	8 (12.5%)	14 (21.87%)		

It was also found that (57.8%) majority of the respondents were doing some sorts of employment like domestic work, flower braiding, running petty shops, tailoring etc in terms of coolie work and self employment. But on the other hand there were still 42.18 per cent of the respondents who were unemployed. It also closes to the rate of employment in the study. When analyzing the marital status of the respondents, majority (76.56%) of the respondents were married.

It was very important to analyze the monthly income of the households to understand the economic background of the respondents and thereby their families. By the analysis it was evident that they face economi c hardship. Most (40.62%) of the respondents were having income in between 3000 – 4000 rupees monthly. Among the respondents neither they nor the family members have a stable

income source. Little or meager employment of the respondents or their family members, and pensions were the main sources of income to the respondents. Thus for meeting their daily as well as family needs such as educational purpose of the children, medical purposes and miscellaneous aspects, most of the respondents had to borrow money from private lenders with high interest due to lack of proper security to lenders. Respondents who were in self help group took loans from Kudumbashree groups and also from small micro finance; which lends money with the security of identity proofs. Though the slum located in government land majority (54.68%) of the respondents living in flats constructed by government. Thus the homes to them were owned by government. But the study also found that some respondents were living in their own homes that were constructed by themselves but in a substandard condition as temporary shelters with materials such as bricks, coconut leaves, metal sheets, asbestos and plywood. Even though they constructed it as temporary shelters most of them were living under the roof about 10- 20 years of old.

2. Problems Faced by Women in Slum through Their Social Identity as a Slum Dweller

In general the problems of a slum are its anti- social activities and poor socio- economic background. But when analyze deep into the situation it was very clear that more that of an explicating nature there were lots of implicit elements that were affected and created for them.

The study shows that women in slum facing more problems in terms of their gender and identity as a slum dweller. The major problems they face other than the general notions are bound with two aspects, such as *exclusion* and *deprivation*. Because by the identity as a slum dweller whatever their socio- economic standards, they experience exclusion and deprivation in terms of their dwelling

in slum. From the study it was found that during the time of spouse selection, in time of searching jobs for livelihood, in educational institutions and in other public places when they disclose their place of living, majority of them had to face some sorts of exclusion and deprivation as bullying and emotional torture. The study reveals that, they hesitate to reveal their place of living to others because of the stigma they have to face. Stigma on their place of living reflects to them as in terms of bad impression, lack of consideration, avoidance etc.

As the word hesitation explains, the women in slum feels uncertainty or doubt to disclose the place of living while interacting or interrelating to others. It is very clear that to a great extent woman in slum experiencing exclusion and thereby of deprivation so that they hesitate to disclose their place of living to others or avoiding the chance of getting acknowledged as a slum dweller for the better identity.

For better understanding of the situation, the researcher analyzed the data with many variables. And by analyzing the age of the respondent it was clear that, in every stages of life of women in slum they were facing the stigma. Table 2.1 intended for analyze the extent of hesitation they face on the basis of their age.

Table 2.1

Age and the Extent of Hesitation to Disclose the Place of Living to others

Extent of Hesitation Age	To a great extent	To some extent	Not at all	Total
18 - 27	6 (75%)	1 (12.5%)	1 (12.5%)	**8 (12.5%)**
28 - 37	9 (64.28%)	4 (28.57%)	1 (7.14%)	**14 (21.87%)**
38 - 47	18 (51.42%)	12 (34.28%)	5 (14.28%)	**35 (54.68%)**
48 and above	4 (57.14%)	2 (28.57%)	1 (14.28%)	**7 (10.93%)**
Total	**37 (82.81%)**	**19 (12.5%)**	**8 (4.68%)**	**64 (100%)**

The study shows that out of the 64 respondents, majority (82.81%) of them hesitating to disclose the place of living to others to a great extent. Among them the respondents who belong to the age group of 18-27 were more reported the issue.

During the study one of the respondent said that *"I am anxious about the marriage of my child…because we couldn't get a better alliance if we live here… we are planning to leave to some other place when she matured"*, she said desperately. Only 4.68 per cent of the respondents said they were not at all feels any hesitation upon their place of residence.

Table 2.2

Educational Attainment and extent of problems faced by women in slum

Educational attainment	Extent of problems			
	To a great extent	To some extent	Not at all	Total
Not educated	3 (60%)	1 (20%)	1 (20%)	5 (7.81%)
Primary Level	9 (69.23%)	4 (30.76%)	-	13 (20.31%)
High school Level	18 (69.23%)	6 (23.07%)	2 (7.69%)	26 (40.62%)
Secondary Level	15 (88.23%)	1 (5.88%)	1 (5.88%)	17 (26.56%)
Degree Level	3 (100%)	-	-	3 (4.68%)
Total	48 (75%)	12 (18.75%)	4 (6.25%)	**64 (100%)**

From the analysis (Table 2.2) it was evident that the educational attainment also not at all changing the situation of women from escaping the problems such as exclusion and deprivation rather majority of them said that *"even if we have much education, other will sense us as colony people, uncultured and uncivilized."* The study shows that majority (75 %) of the women in slum face problems just because of the dwelling in slum. Among them 100 per cent of the respondents who have degree level education said they were experiencing bullying due to their place of residence. Only 6.25 per cent of them responded that they were not at all experiencing any problems.

Summary and Conclusion

Individuals are social beings rather than a mere human being. Thus as a social being every individual are socializing and interacting and interrelating with each other but some section of society or people are marginalizing in terms of their identity. Somehow this situation becomes the prolonged stain of every slum and its people which hold back the generations from achieving a better education, occupation, and standard of life.

Majority of the people in slum were facing exclusion when disclosing their identity as a slum dweller. Most commonly in times of spouse selection, employment seeking, getting house etc they face some sorts of exclusion and stigma. Impression of others as "colony" is ill treating the identity of people in slum as a whole. The study shows that those who are having higher education were also not intend to be disclosing their identity as a slum dweller. The people feel low self esteem in the matter of their dwelling in the slum. The study clearly shows that fear of bad impression from others were common among them.

People in slum need emancipation from the clutches of exclusion and deprivation by improving mainly their educational rate and occupation by themselves and socio-physical developmental amenities by the help of the government. It will excludes the slumness from the generation and thereby a better standard of living and environment.

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ISDA Journal 30 (2) 2020, pp. 87-422

INDIA'S ENERGY SECURITY: MAJOR ISSUES IN THE POWER SECTOR

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Abstract

India was the third-largest energy consumer in the world after China and the United States. Its need for energy supply continues to climb as a result of the country's dynamic economic growth, population growth, and modernization over the past several years. Primary energy consumption in India has nearly tripled between 1990 and 2018. Coal continued to supply most (45%) of India's total energy consumption in 2018, followed by petroleum and other liquids (26%), and traditional biomass and waste (20%). Other renewable fuel sources make up a small portion of primary energy consumption such as solar, wind, and hydroelectricity. But despite the energy status, India's various energy sectors are facing a number of problems. The main purpose of this study is to bring out the important issues of India's non-renewable energy sectors. The paper also discusses how such issues affect India's energy security.

Energy security can be defined as a condition of having adequate supplies of reliable energy at affordable cost. Apart from this basic definition, there are various other factors which come into play in determining a nation's energy security. At present there is no pre-planned formula to attain energy security. Nations are different in their political, cultural and geographical atmosphere. But the challenges faced by policy makers in the energy sector are similar in nature. The energy security is intertwined with the economic policy, social policy, the environment, technology, national defence

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and the foreign policy. Former President of India, Dr. A. P. J. Abdul Kalam addressed the question of India's energy security in the 58th Independence Day Anniversary in 2004. He was explaining the key factors in India's energy security and the challenges which the country is going to face. He outlined two principles of energy security: efficiency, and the adoption of a more synergistic approach to consumption; and tapping all sources of energy at the local, regional and global levels, including 'coal, oil and gas supplies, till the end of the fossil fuel era, which is fast approaching' (PIB 2005).

Indian economy is growing very fast. But the global slowdown has made an effect on the growth rate of India. But it is expected that India will overcome these issues and reach about 8-9 percent growth over the next decade. As per the opinion of the experts, India needs to sustain 8 to 10 percent economic growth by 2031-2032 in order to eradicate poverty and meet its human development goals. To meet that developmental objective and the lifeline energy needs of all the citizens, India needs to increase its primary energy supply by two to three times, and electricity generation capacity/supply by three to four times. According to the *World Energy Outlook 2011*, India's energy demand became more than doubled from 319 Million tonnes of oil equivalent (Mtoe) in 1990 to 669 Mtoe in 2009. The New Policy Scenario of the WEO has projected that India's demand will grow continuously and will quickly reach about 1464 Mtoe in 2035. Thus, it means India's share in the global consumption will increase from 5.3 per cent in 2015 to 8.6 per cent in 2035 (IEA 2011)

Power sector occupies the central space of India's energy policy. The development of the power sector is closely tied up with India's energy policy objectives of universal energy access and energy security to its citizens. At present India has total installed power generation capacity of 345.49 GW, including around 70.64 GW of renewable

energy such as solar, wind and small hydroelectric. The country is the third largest energy consumer in the world. But the demand is not met with the rate of consumption of India. During 2015-16 period, the overall peak power deficit of the country was -4903 i.e. -3.2 percent, with peak demand of 153366 MW of power supply and peak availability of 148463 MW of power supply (Government of India). Considering this gap between power demand and supply, planned economic growth, and expected retirement of some power plants, a power capacity addition target was fixed for the Twelfth Five Year Plan (2012–2017) by the Planning Commission, which was comparatively a hard task. According to the Central Electricity Agency (CEA), in the period of 2017-18, peak power deficit was 2 per cent, while overall electricity deficit stood at 0.7 per cent across the country. Also it states that overall 433.48 Billion Units (BU) of electricity were supplied against the demand of 436.14 BU during the April-July of 2018, which indicated a deficit of 0.6 per cent (PTI 2018).

But still Indian energy sector faces much more challenges which need more governmental attention. This paper mainly focuses on the major issues in the energy sectors of India.

Issues in Different Energy Sectors

The energy intensity of India is too high which implies an inefficient utilisation of energy sources. According to The World Energy Report, in 1997, the intensity stood at 1.04 tons of oil equivalent (toe) per $1,000 (at 1990 prices) of GDP: more than double the world average (IEA 1999:132). A major reason behind this intensity hike was that a large part of rural energy needs is met by non-commercial renewables and biomass, which account for more than 40 percent of the total primary energy supply. For reducing energy intensity India introduced various measures as a part of Clean Energy Mechanism.

In 2010, India's energy intensity using Purchase Power Parity (PPP) GDP is 0.191, which is on par with the world average but higher than most of the European countries. Even though, this can be reduced to a considerable level; it still posesas a major obstacle in achieving energy independence in the country. The problems in the energy sources sector have made a profound impact on the power sector of the country. Obviously, India is facing multiple issues in different energy source sectors such as coal, oil and gas. The following section discusses the issues in each sector which hinder the development of the power sector of India.

Coal Sector

Coal plays a major role in the Indian power sector as it is expected to be the prime source of power generation in the future decades. It is considered that India will overtake the United States as the second largest consumer (first being China) of coal in 2025 (Crabtree 2015). In 2014, the Government of India has targeted to double India's coal production to 1.5 billion tonnes by 2020, to reduce reliance on imports (Raghavan 2015).India has to increase its production by around 100 million tonnes each year, which would equate to an average annual production growth of almost 15 per cent a year to achieve this target. But this target is challenging as the average growth is less than 2 per cent a year over the past five years. If all projects proceed as planned, it will still take several years before they are completed and operated at its full capacity.

In the coming years, there may be a chance for an increase of efficiency in the coal power plant. A number of factors like plant technology and coal quality will support for the increase of efficiency. In the past, around 90 per cent of India's coal-fired capacity was based on subcritical technology. As outlined previously, an increasing proportion of new coal-fired plants are likely to employ supercritical

technology and eventually ultra-supercritical technology. Hence, coal import will continue because more efficient plants need good quality coal. Due to the slow growth in domestic production over the past few years, the Indian Government estimates that it may need to import almost a third of its total coal requirements, or up to 350 million tonnes, by 2016–17 (Government of India 2015). Obviously, this will lead to the hike of the price of electricity, steel and cement.

Problems in Production

Due to financial and technical issues, Indian coal mining is being done up to the depths of less than 300 metres i.e., around 90 percent of India's coal production is sourced from open cut mines. Even though there are hundreds of underground coal mines in India, most of them are small-scale and will account only for a very low proportion of total production. To explore vast coal resources, there should be an essential adoption of underground mining and advanced technology. Presently 'Board and Pillar Method'[3] is used to extract coal in 230 mines of the Coal India Limited's (CIL) underground mines. The introduction of continuous 'long wall mining' at some coal mine sites show that Coal India can extract 70 per cent more coal from its existing and future operations. Thus, technological improvement is essential to help India to achieve its targeted coal production. CIL has decided to cut down its workers by 30 percent to minimise the cost and improve the productivity. The CIL plans to make extensive investments in mechanisation, to further reduce its manpower requirement and increase productivity. This decision is also aimed to ensure more competitive coal prices vis-a-vis private sector producers.

Because of poor technical support, Indian productivity of coal is too low in comparison with international producers. CIL produces

1100 tonnes of coal a year for each employee compared with US Peabody's 36,700 tonnes and China's Shenhua Energy's 12,700 tonnes (Das 2015). According to coal minister Piyush Goyal the CIL coal production will increase to 1 billion tonnes by 2020, from 554 million tonnes in 2016-17 periods (The Hindu Business Line 2018).India also faces technical problems which affect the performance of power stations in India which uses blended coal[1]. In 2005, National Thermal Power Corporation (NTPC) plants have failed in achieving the target in the generation of power because of coal supply shortages and critically low coal stock levels (Chikkatur 2005: 5457).

Problems in Investment

The lack of private investment is a serious issue which affects the efficiency of the Indian coal sector. The two coal giants, Coal India Limited (CIL) and Singareni Collieries Company Limited (SCCL) are enjoying the monopoly of coal production. In India the private investment is allowed only in captive mining (coal taken out by companies for its own use) which are not allowed to be sold in the market. It is assumed that the participation of private companies in this sector will enhance efficiency. Therefore, many of the experts advocate that ending the monopoly of CIL in coal sector is the most important solution to reduce the investment issue. According to the Anil Swarup, the then coal secretary of India, "Right now Coal India is determining the price. With another entity coming in, some sort of a market will be created and price discovery will happen" (Bundhun 2016). The CIL alone cannot increase the coal production to meet the growing requirement of the nation. The liberalisation in coal sector will modernise and make it a competitive one.

Oil Sector

Although, India has not enough domestic potential, the oil still

remains the centre of energy security of the country. According to the governmental data, the estimated reserves of crude oil in India as on 2016 is about 621 Million Tonne (MT). The country produced 277 Million Barrels of Oil Equivalent in 2014-15 periods. But the Ministry of Petroleum and Gas indicated that there is declining tendency in the production of domestic oil. The recent data shows India produced 37.866 Million Metric Tonnes of oil in 2012-13 and it has declined to 37.460 mmt in 2015 (PIB 2015). The International Energy Agency also indicates that domestic oil production will decline at a rate of 1.7 per cent from 900,000 barrels per day (bpd) in the rate of 2012 to 600,000 bpd by 2035. In the 11th Five Year Plan period (2007–2012), India had set itself a target of 800,000 bpd, but it could only produce 711,000 bpd and there is a gap of 14 per cent (Sreenivas 2012:17). The reason behind this decline is the natural decline in production from the ageing fields of ONGC and OIL and also the lower production from Krishna Godavari Basin. It is believed that India will rely 80 per cent of its demand of crude oil through imports by the end of 2017.

The above facts assert that the share of imported crude oil will increase to 90 per cent by 2035. It is predicted that India's oil imports are to grow because the oil consumption will increase in coming years from 4.1 million barrels per day (mbpd) in 2015 to over 9.2 mbpd in 2035 (PIB 2015).

Inefficient Diversification of Import Source

India is the third largest importer of crude oil after the United States and China by surpassing Japan in 2015.India's oil imports are mainly concentrated in the Middle Eastregion which is always instable due to social and political problems. The turbulent nature increases the chances of deliberate oil supply disruption by state or non-state actors which can raise the probability of a dramatic

increase in the price of oil in the international market. Any supply disruption will make a drastic impact on India's energy security. Hence India's Integrated Energy Policy recommends the policy makers to diversifying oil supply sources to include greater number of 'secure sources'.

India's crude oil import bill in 1998-99 was $3.518 billion on import of 39.8 million tonnes of crude oil and climbed to $9.2 billion in the following year on import of 57.8 million tonnes of crude oil. India has paid a record $144.293 billion on import of 184.79 million tonnes of crude oil in 2012-13. It spent $112.748 billion in 2014-15 on import of 189.43 million tonnes of crude oil. In rupee terms, it came to Rs 687,369 crore (PTI 2015). Any hike in the prices of crude oil by any reason will affect India directly. The stability of the political system in Gulf Countries is an important concern to India. Presently, American maritime forces not only underwrite the stability of oil production in the Persian Gulf but also ensure the security of oil supply lanes in the region.

Indian leaders are concerned in the reduction of the United States engagement with the Persian Gulf region. According to the 'BP Energy Outlook 2035' report, United States' oil import is expected to fall nearly 75 per cent in the period between 2012 and 2035 (BP 2014). If the United States implements policies for increasing fuel efficiency and emission reduction, the extent of imports is likely to fall considerably in future. The security and stability in oil producing regions encourages the global oil market which reduces overall cost of oil production and supply. The Ministry of Defence decided to strengthen its maritime security to protect the crude oil supply lines as counter to China's effort to strengthen its maritime security.

By understanding the risk of import dependence, Indian policy makers are trying to concentrate on the domestic production of crude

oil. The New Exploration Licensing Policy (NELP) has introduced programmes aimed at better exploration of its hydrocarbon potentials. But the current share of domestic production can only meet just 2 per cent of India's total demand. Thus, India is increasingly focusing on mitigating its growing oil consumption through demand-side management, such as vehicle fuel efficiency and bio-fuels. The inefficient working of NELP led to the adoption of Hydrocarbon Exploration Licensing Policy in 2016 by the Union Government. It aimed to a new contractual and fiscal model for award of hydrocarbon acreages towards exploration and production (E&P).

Issues in Pricing

After the independence, Indian government regulated the price of oil through 'import parity' type of pricing, known as the 'Value Stock Account' (VSA). This was basically a cost-plus mechanism which included all the costs such as shipping charges up to the Indian ports, insurance, transit losses, import duties and other levies. In 1974 the VSA was substituted by the Administered Price Mechanism (APM) which actually involved artificial price fixing by the government from time to time. The hike or reduction in the prices became a political decision, rather than being a rational economic decision. It ensured stable prices for oil so that the domestic market is protected from the volatility of prices in the international market.

But the Government in 1995 had appointed a Strategic Planning Group on Restructuring of the Oil Industry ('R' Group) comprising eminent experts from the Public Sector and Private Sector. Their decision to dismantle the APM was aimed at gradually shifting from artificial pricing of petroleum products towards a situation where the price is determined by the market forces. Hence, as a conscious policy change, the government brought a new pricing mechanism

on April 1, 2002. The oil companies are allowed to made frequent revisions in the selling prices of petrol and diesel. During 2002 and 2003 when the international prices were fairly stable the policy was highly beneficial for India. But in the later years there was a sharp fluctuation on international oil price which deeply affected the Indian oil industry.

The current oil pricing system makes problems to all stakeholders in the sector. Government gives higher compensation to Oil Manufacturing Companies (OMC) than total tax revenue from oil products. This makes the existing pricing system very costly. Because of heavy taxation by Government, the consumers already pay a relatively high price for oil. And the current subsidy system fails to effectively reach those who are in need, while untargeted subsidies benefit mostly middle and upper income classes. Furthermore, the system results in uncontrolled adulteration of fuel (adding diesel to petrol and kerosene in diesel), which creates artificially greater demand for subsidised fuels.

Oil PSUs, both in the upstream and retail sectors, are also worse off. Upstream players such as ONGC, OIL and GAIL have been asked by the government to shoulder the financial burden of OMCs. To do so, upstream PSUs sell their crude and products at a discounted rate to OMCs. For OMCs, financial compensation from the government has become indispensable to keep its balance sheet afloat. Furthermore, the delayed compensation from government hinders the cash flow of OMCs and undermines its investment capability and management autonomy. Ultimately, the current system provides no incentive for private companies to re-enter the retail market in India.

Gas Sector

India's natural gas reserves are low when compared to the global

gas reserves. The country is estimated to have about 1227.23 billion cubic metre (BCM) of gas in 2017 which is only 0.7 per cent of the global total reserves. There is a 2.6 per cent growth in the production of gas in 2017-18 periods comparing with 2016 fiscal year. In 2017 India produced 2,738 MMSCM whereas in 2016 India's production of gas is 2,447 MMSCM. (PTI 2018). There was a sharp decline of 4.18 per cent in the domestic production of natural gas in 2016. The reason behind the fall of production attributed the low output from the state-owned Oil and Natural Gas Corporation and private companies. The production problems in Krishna Godavari D6 block (KGD6), Panna-Mukta, M&S Tapti and Ravva fields also increases the issue. But in 2017-18 the performance of ONGC made an increase of natural gas output.

Since 2004, India has been importing gas in the form of LNG through the west coast of the country. From April 2017 to March 2018, India imported about 19.87 Million Metric Tonnes (MMT) of gas which is a huge hike in comparison with the 6.81 MMT in 2006-07. It is expected that these imports will increase in future as a result of low domestic production. Compound Annual Growth Rate (CAGR) of production of energy from natural gas is 0.44 percent. Due to the low domestic production, gas is not sufficient as a Plant Load Factor (PLF) for achieving 90 per cent of the power plant capacity. A number of researches show that there would be a huge gap between demand and supply of gas in the future. As per the Hydrocarbon Vision 2025 report, the demand of gas in India is likely to be roughly 746 BCM by 2030 (PNGRB 2013).In next few years, Natural gas may also replace diesel and petrol in public and private transport, which will help to reduce pollution. This is an important input for India as more than 65 per cent of carbon emissions originate in coal-based power plants.

Problems in Gas Power Generation

Like any other energy sector, gas resource-based power generation also faces many problems. These issues in gas sector will directly affect the power generation and also energy security of the country.

Decline in Domestic Production

The percentage of domestic production of gas in India is decreasing considerably. India's domestic gas production in 2014 was about 35.407 Billion Cubic Meters (BCM) which indicates a 12 per cent decrease in the production against 40.67 BCM in 2013. This decline was mainly because the gas production from the eastern offshore KG-D6 deep water block operated by Reliance Industries stopped the production from 3 wells out of 9 due to some technical problems. This KG-D6 gave a boost to the domestic gas production from 2010 to 2014. However, gas supply from this block fell and averaged 11.8 million metric standard cubic meters per day (mmscmd) in the last quarter of 2014, as against the peak production of above 60 mmscmd in 2010 (EY 2015). Reduced level output from the KG-D6 raises a doubt about its reserve capacity. Moreover RIL's (Reliance Industries Limited) minority partner Niko Resources of Canada stated that the field contains about 80 per cent less reserve than estimated. The Niko, which owns 10 per cent stakes in the KG-D6 block off the East Coast, said that the proved plus probable (2P) reserves at KG basin D6 block has declined to 1.93 trillion cubic feet (tcf) from its previous estimate of 9.65-9.9 tcf. This supply deficit has affected large gas consuming industries mainly power and fertilizers field. The uncertainty in the domestic gas production has made cascading effects on the role of gas in India's energy sector.

Low Gas Consumption

The lack of availability of domestic gas and inability to import

expensive LNG led to a decline in the consumption of gas in power plants. The recent data shows that India's gas consumption declined from 172 mmscmd in 2010 to 139 mmscmd in 2014. In India the major gas consuming sectors like power, fertilizers, City Gas Distribution (CGD), refineries and petrochemicals also faced the decline in consumption.

The retail gas distribution has covered more than 50 cities. At present, the retail gas sector has more than 3 million homes, 1,015 CNG stations, and 2.5 million CNG vehicles, 22,786 commercial and 6,087 small industrial users. A total of 16.5 mmscmd of gas was used by the CGD sector during 2014-15, representing 14 per cent of total gas consumption in the country. The reduced domestic production will lead to the importing of gas to meet such programmes.

Investment Issue

The lack of dynamism in policy framing and regulatory policy uncertainty over issues such as natural gas pricing had led to loosing of investments from the foreign companies. The underinvestment in the gas sector results in the infrastructural development problems which also affected the domestic production and the country failed to keep up with rising demand. The gas sector has limited participation from foreign and Indian private players which is evident in their declining participation in many of the New Exploration Licensing Policy (NELP) rounds. An analysis of foreign participation shows that, a total of 21 foreign companies participated in NELP-VII (2008); ten foreign companies took part in the NELP VIII (2009), while only eight companies participated in NELP IX (2011) round. More than 1,48,000 square kilometres of exploration acreage has been identified for auction under the 10th round of NELP but it has not yet started. Moreover, the companies spent fewer amounts in exploration programme out of their investment commitment.

Shortage of Field Equipment and Skilled Employees

India is facing shortage in gas field service especially the drilling equipment. The rising global demand of gas resulted in the increase of exploration programmes which led to the shortage of deep-water rigs. In 2007 the leading petroleum companies in India tried to halt the exploratory activity in the already awarded blocks due to this rig shortage. The Petroleum and Natural Gas Ministry has even made a proposal for granting an "exploration holiday" for three years. India faces many serious issues like the lack of domestic expertise in the manufacturing of deep-water rigs, time lapse in delivering new rigs, outdated rigs which need upgradation, scarcity of other upstream-related infrastructure such as process platforms, pipelines, collecting stations and other surface facilities to transport oil and gas from wells to delivery points.

Another major issue faced by the Indian gas sector is the lack of sufficient skilled human resources mainly due to the reduction of strength, retirement and inability to attract young work force to this sector. The gas industry fails to make awareness of the available career opportunities for its employees unlike other industries. The significant differences in remuneration also resulted in losingthe employees from domestic national oil and gas industries to private field. The shortage of talented persons will increase as a result of retirement which may impact operations across the value chain. Even though Geologists, geophysicists, loggers, tool-pushers, drillers, petro-physicists and production engineers are considered to be excess in India, the problems in the recruitment process keep them away from this field.

Issues in Long-Term Gas Supplies from Abroad

The import of gas in the form of LNG and the transmission of gas through transnational pipelines are the main options before India to

meet the rising domestic demand for natural gas. Indian companies are constructing new LNG terminals and expanding the capacities of the existing pipelines. There is a stiff competition with China for the discovery of new ventures of gas abroad. The new discoveries of gas filed in foreign countries has turned the focus on the need for a comprehensive long term natural gas policy covering pricing, sourcing and end-use issues. In the last month of 2015, world's largest supplier of LNG, Qatar's state-owned company RasGas agreed to fulfil all the long-term LNG requirements of GAIL India and Petronet (The original contract was signed in 1999). The new contract is for a capacity of 8.5 million tonne per annum as against 7.5 million tonne per annum in the earlier contract (The Hindu Business Line 2015). Qatar also waived a penalty of Rs 12,000 crore imposed on Petronet for importing less gas in 2015.

Conclusion

In short, achieving energy security is a major issue of the twenty-first century for all economies,large and small. No doubt, India is a rising economy which needs lots of energy to boost its all over development. A key national priority for India is to supply the electricity to the hundreds of millions of its citizens those who are living without access to the modern energy services. But India faces many obstacles to achieve this foremost and important aim. Every energy sector in India has shown its own weakness and severe issues which hinders the sectors' growth. Even with ambitious plans to promote renewables and nuclear power, India faces a steep demand curve that will continue to put pressure on its pursuit for securing supplies to fuel the power sector. It will also face huge investment requirements for improved energy infrastructure to achieve greater reliability and to enable greater access to energy. Hence India has to focus a serious policy approach to the energy sector to resolve the basic but serious issues.

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