

## **SESSION 2.2 (INNOVATION & GOVERNANCE FOR SUSTAINABLE DEVELOPMENT)**

### **From democratic participation to participatory governance: Applicability of the PPACID Model in development policies for adivasis**

Papia Sengupta

*Centre for Political Studies, Jawaharlal Nehru University, New Delhi, India,  
papiasg@jnu.ac.in*

**Abstract:** The last few years have seen an upsurge in the field of innovation studies especially 'inclusive innovation', aiming not only at economic but social development. In developing countries like India, inclusive innovation must incorporate governance and governance to be inclusive should encompass participation by all, especially the marginalized, to make public policies efficacious and delivering. The paper introduces PPACID a new model developed to facilitate inclusive innovation of the marginalized communities and groups often neglected in the process of governance. I argue that any model of inclusive innovation needs to take cognizance of participation by all stakeholders. Objective of innovations must be to enable and empower people at the periphery through awareness, accessibility and democratic deliberations rather than solely aiming at economic outcomes. Implementation of PPACID promotes the United Nation's sustainable development goals (SDGs) by making governance participatory, expediting the process of social justice. Reaching SDGs must entail addressing the issue of injustice and democracy without which realization of SDGs remains an incomplete endeavour.

### **Framing a new approach towards Sustainable Development through CSR initiatives in India: An Evaluation**

Purnima Singh<sup>a</sup> and Dr. Madhukar Sharma<sup>b</sup>

*<sup>a</sup> PhD Research Scholar, Department of Management Studies, Central University of Haryana, Mahendergarh, [purnimacuh@gmail.com](mailto:purnimacuh@gmail.com). <sup>b</sup> Assistant Professor, Centre for human rights and conflict management, Central University of Jharkhand, Ranchi, [madhukarsharmag@gmail.com](mailto:madhukarsharmag@gmail.com)*

**Abstract: Purpose:** In the contemporary socio-economic scenario the concept of Corporate Social Responsibility integrated with the sustainable development and business ethics in all parts of the country. With reference to the new Companies Act

2013, lays emphasis on the CSR to emerge as a norm so as to develop a culture of social welfare and environmental sustainability. CSR practices in India have difference between saying and doing (idea and practices). This paper brings out the relationship between the sustainable development and corporate social responsibility, focuses on the myth and reality towards the implementation of the mandatory CSR provision under the Companies Act 2013. The current study also focuses on the dynamic role of CSR in the context of new Companies Act 2013 as a determinant for the market expansion and as a weapon for achieving sustainable tomorrow towards the development of the nation.

**Design/ Methodology/ Approach:** Through a range of online databases an extensive study of literature review has been made to ascertain the contribution of corporate social responsibility towards Sustainable development. CSR has increased focus on the corporate governance as a vehicle for incorporating social and environmental concern into the business decision process, benefiting not only the financial investors but also employees and communities. The data is analyzed taken from the annual report of 2012-13, 2013-14, audited annual report of 2014-15, and the sustainability report of the selected companies. The companies are chosen on the basis of convenience.

**Findings:** There are some companies that have a distinguish operations; they are neither using raw material from India nor selling their product in Indian market but using resources and degrading the environment, creating a big challenges for Sustainable development. The Paradox of Power in Corporate Social Responsibility and Sustainable Development is rising just because of the freedom to choose the issue from the schedule given under the Act where companies are not bound to take the serious issues of their locality and issues of the liability of the particular region as so many companies involved in hazardous and serious environmental sensitive production still they are not making efforts for health and environment.

**Practical Implications:** The study would help the companies to formulate effective strategies and policies and adopt various instruments so that CSR can be best implemented towards its goal of sustained environmental, social and economic growth of people and planet.

**Originality/ Value:** Much of the literature of corporate social responsibility is focusing on the philanthropic activities. This paper brings out the information about the practical implementation of mandatory provision of corporate social responsibility under sec 135 of companies act 2013 towards sustainable development by fulfilling the concept of triple bottom line.

# **Corporate Social Responsibility for Inclusive Development in India: A Case Study Analysis**

Kavitha P

*PhD Scholar, Centre for Development Studies, Trivandrum, Kerala, India*

**Abstract:** At the present era of globalization, the corporate sector as the largest wealth generating entity is considered to be one of the main actors for the inclusive development of a country. Recently, a number of regulatory measures have been proposed by the India government to ensure corporate support to the goals of sustainable and inclusive development. The objective of these regulations is to include all sections of the society in the growth process. Notable among them is the inclusion of Corporate Social Responsibility (CSR) as a social innovation in Companies Act 2013. This made an attempt to supplement the government efforts of equitably delivering the benefits of the growth and to engage the corporate world with the country's development agenda. Even before the Act there were a lot of corporates who were voluntarily involved in doing CSR activities. The implementation of the Act made CSR mandatory for certain specified social welfare activities. The primary objective of this rule is to ensure that all corporations contribute to the betterment of the society as a whole which make corporate growth more inclusive. Against this background, this paper made an attempt to analyze the role of CSR for inclusive development in India. In India, CSR activities are mainly concentrated in social welfare activities and tried to include all the marginalized sections of the society in the developmental process. To understand this issue in detail, we have identified the cases of ITC Limited and Kitex Garments Limited and the various initiatives taken by these companies for an inclusive development of the society.

## SESSION 2.3 (LOW CARBON INNOVATION)

### **Dunking the Dust: Innovation Diffusion and Informality in a Polluting Cluster, Odisha, India**

Keshab Das

*Gujarat institute of Development Research, Ahmedabad, India, [keshabdas@gmail.com](mailto:keshabdas@gmail.com)*

**Abstract:** Diffusion of innovation, especially, in the developing economy context has continued to elude scholars, civil society organisations and policy makers alike in terms of devising a contextualized strategy mostly agreeable to the local users for whom it is meant. It has been recognized that while the literature on factors influencing diffusion, adoption and adaption is heavy on developed country cases much remains to be known regarding the same in developing or low income countries. The lapse to recognize *failures* in innovation diffusion in developing economies reflects an inability to appreciate the dynamics of the overwhelming presence of informality in these economies. As Altenburg (2009)<sup>1</sup> observes, innovation in developing economies is deeply context-dependent compared to developed nations and it is determined largely by the specificities of the sector in question as the institutional capacity and level of economic performance of the local economy. Importantly, while structural constraints and institutional inadequacies act as significant barriers to innovation diffusion, it remains to be examined if the innovation *per se* has been relevant to the local context and acceptable to the users. This is particularly the case even where the innovation diffusion is 'orchestrated' by the state. It has often been noted that despite an improved or better technology made available there has been either a resistance or reluctance to adopt the new technology. The disincentives to adopt and/or adapt innovation in the developing country context are, possibly, the least addressed in the literature.

Even as micro, small and medium enterprises (MSMEs) have emerged as the drivers of industrial dynamism and contributed to income and job generation in large developing economies as India, the overwhelming informality in both the production and labour processes raise serious questions if the high performance of MSMEs has largely been possible by compromising quality parameters, particularly, those concerning the living and working environment. There has been a growing recognition of the adverse effects of the so-called polluting industries on the environment and health of those working in the firms and those living in the locality, both in the short and long run. The

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<sup>1</sup> Altenburg, Tilman (2009), 'Building Inclusive Innovation Systems in Developing Countries: Challenges for IS Research', in Bengt-Åke Lundvall, K.J. Joseph, Cristina Chaminade and Jan Vang (Eds.), *Handbook of Innovation Systems and Developing Countries: Building Domestic Capabilities in a Global Setting*, Edward Elgar, Cheltenham. Northampton, pp. 33-56.

introduction of relevant technological innovations (clean or green technology) often has, as experiences have shown, been conditioned by institutional and economic factors.

What are the incentives and disincentives in adopting a given technological innovation? What facilitates or constrains innovation diffusion in low-end informal enterprises or industrial clusters? This paper discusses the trade-off between environment gains and informality in the production process highlighting the case of innovation diffusion dilemmas in a highly polluting MSME stone crushing cluster in the underdeveloped state of Odisha, India. The huge dust that rises in the entire process has seriously polluted the air and settled on the farmlands, trees, buildings, homesteads, animals and humans in the surrounding region resulting in farming decline, road accidents due to poor visibility, school drop-outs, out-migration and various ailments affecting lung, heart, eyes and skin. Abatement of dust control has been an important concern of the State Pollution Control Board, which has enforced use of water sprinklers designed to soak the dust as it emerges during crushing by the machine. Introduction of relevant clean technological innovations often has been conditioned by institutional and economic factors. Due to dysfunctional institutional arrangements, absence of collective responsibility by the cluster enterprises and the pecuniary gains of informality the local business have no incentive to opt for a cleaner technology in the larger interest of pursuing sustainable development goals. The empirical core of the research draws upon interviews with 50 enterprises spread over the cluster using structured questionnaire. This has been supplemented by information collected from secondary sources and discussions with various state and non-state stakeholders.

## **The Capacity Building in the Wind Energy Sector: A Case Study of Suzlon**

Vineet Kumar

*Phd Scholar, Centre for Studies in Science Policy (CSSP), Jawaharlal Nehru University (JNU), [vineetkumarno1@yahoo.co.in](mailto:vineetkumarno1@yahoo.co.in)*

**Abstract:** Wind energy is the backbone of India's renewable energy programme. Since the early 1990s, India has been promoting wind power development. This reflects the growth trajectory of Indian wind energy sector having favourable institutional support and encouraging policy structure which has supported the capacity building in terms of strong R&D base, manufacturing capacity of wind turbines and equipments, skilled manpower, and others. The main focus of this paper is to understand the process of capacity building at the firm level as the wind energy sector of India has developed due to the 100% involvement of private sector and also, unravel the influence of various factors such as leadership, knowledge base (skilled human resources and technological capabilities), and entrepreneurship on this building process. A case study of Suzlon has been undertaken to comprehend the influence and nature of these factors on its growth as it is a leading firm with more than 40% share in the Indian wind energy market. The

efforts put by the company have helped India to be a leader in this fast growing sector due to its huge manufacturing units and R&D centers spread across the world. The favorable environment at the national level has given the impetus to the private sector without which the capacity building at the firm level could not take place. The growth in this sector is the result of three decade-long policy and institutional support of the Indian government.

## **Innovation ecosystem and knowledge production in Indian solar energy sector**

Akoijam Amitkumar<sup>a</sup> and V.V Krishna<sup>b</sup>

<sup>a</sup> *Doctoral candidate and* <sup>b</sup> *Professor at the Centre for Studies in Science Policy (CSSP), School of Social Science, Jawaharlal Nehru University, New Delhi, [amit9ses@gmail.com](mailto:amit9ses@gmail.com)*

**Abstract:** In 2010, government of India introduced National Solar Mission to promote our country's energy security challenge, aims to become a leader in solar power generation, supporting R&D activities, develop trained human resource for solar industry. Knowledge production here refers to the research outcomes such as patents and research publications from the various R&D institutions, university, firms, etc. and innovation ecosystem is one of the perspective where the sense of environment or ecology of various institutions, actors and various other factors surrounding the activity of research and innovation. The study shows that research outcomes specially patents, research publications and R&D investment has become a more essential area after the announcement of the solar mission in the country. It highlights the number of research publications and patents has been increased and there is a significant presence of productive academia, R&D institutions and supportive policy initiatives in the country. This paper also addresses the research trust area in various solar technologies, the current solar energy scenario in the country and explores the ways in which various actors, agencies and policies shape the solar sector from different perspectives on innovation literature.

## **SESSION 3.1 (INNOVATIONS FOR SUSTAINABLE AGRICULTURE)**

### **Constraints to the Diffusion of Natural – Resource –Conserving Agricultural Technology in India: The Case of SRI (System of Rice Intensification) in Tamil Nadu**

Saravanakumar R.

*Ph.D. scholar in Madras Institute of Development Studies (MIDS)*

**Abstract:** Agriculture sector has been acknowledged as engine of economic growth and critical to poverty reduction in developing countries like India. India has witnessed, initial periods, problems of low per capita food grains along with food insecurity. This problem was addressed by Green Revolution technology in early 1960s, restricted with wheat and rice in irrigated regions of the country. Initially it was criticised for its large farmer bias and bias towards farmers with assured irrigation, of late there is a growing recognition of its negative environmental impacts due to high use of chemical fertilizer/pesticide. The country has not witnessed any big technological breakthrough in agriculture that can challenge high input driven post green revolution agricultural technologies. Policy makers and different stakeholders involved in agriculture plan to develop and spread System of Rice Intensification (SRI), is a natural resource conserving and sustainable technology. Sectoral System of Innovation (SSI) has been used as conceptual/theoretical framework to explore constraints to diffusion of SRI technology. It was observed from analysis that the SRI prevalence among small and marginal farmers is very low. Finally, it is evident from this micro level study that the condition for synchronization of these three blocks of SSI is not conducive in this process. This Paper is divided into four sections. The introduction and background, statement of the problem and objectives of the study are given in section I. Sources of the data, methodology and theoretical framework of the paper is presented in section II. Discussions on the distribution and constraints of SRI technology are carried out in Section III and the summary and findings are presented in section IV.

# **Agricultural diversification and inclusive development: A case of Jammu and Kashmir**

Sheeraz Ahmad Alaie

*Research Scholar, Centre for Studies in Science, Technology and Innovation Policy, Central University of Gujarat, Gandhinagar, [elahisheeraz10@gmail.com](mailto:elahisheeraz10@gmail.com)*

**Abstract:** Development in itself means equal resource allocation, but it has not yet proven in major cases as the socially excluded persons deprived of such opportunities. Inclusive development follows UNDP's human development approach and integrates the standards and principles of human rights: participation, non-discrimination and accountability. The significance of agriculture as a driver towards inclusive development in various countries acknowledged in many policy circles, especially in terms of employment and competitive industrial sector. The agricultural diversification towards high valuable and profitable crops enhances the income and employment opportunities for the rural marginal people. In the research study inclusive development taken into account based on horticultural diversification in Jammu and Kashmir (J&K) state in India. The objective of the research study is to analyse the role of diversification on the inclusive development of the rural people of J&K, within the framework of innovation system. The research methodology is qualitative in nature based on the data collected via both primary and secondary measures. The increase in area towards the horticultural commodities shows its impact on the income and employment enhancement of the people. Hence a positive sign of inclusive development driven by horticulture is observed involving children, females and other marginal rural people.

## **CROP DIVERSIFICATION AND SUSTAINABLE AGRICULTURE IN INDIA**

**Minati Mallick<sup>a</sup> and Urmi Pattanayak<sup>b</sup>**

<sup>a</sup>Lecturer in Economics and <sup>b</sup>Ph.D Scholar, Dept. of Economics, NOU, [minuminati@rediffmail.com](mailto:minuminati@rediffmail.com)

**Abstract:** The basic challenge for sustainable agriculture is to make best use of available biophysical and human resources. But growth being at the centre- stage of the policy agenda of almost all countries in the world has led to fast depletion of natural resources. Land and water constitute two important renewable resources extensively used in agricultural sector. The diversification of agriculture is an alternate way for the regeneration and conservation of land and water.



The present paper attempts to study if diversification can ensure sustainability in agriculture. For the purpose secondary data at two points of time 2007-08 and 2013-14 are used. Herfindahl Index is used to measure agricultural diversification with respect to 7 major crops i.e. Coarse Cereals, Pulses, Oilseeds, Sugarcanes, Vegetables, fruits and spices. It is observed that area under Coarse Cereals has declined from 2.10 to 1.76 percent. For rest of crops it has increased and in case of sugarcane it is constant. The index values for the country as a whole reveals the fact that there is crop concentration in favour of fruits and vegetables. At the state level, crop diversification is found to be highest in Andhra Pradesh followed by West Bengal, Bihar, Maharashtra and Karnataka. Rest of the states have concentration of crops with highest in Odisha followed by Madhya Pradesh. Using linear Regression it is found that the significant factors influencing crop diversification are fertiliser consumption, pesticides, seeds, credit and irrigation. The shifting of cultivation from cereal production to fruits and vegetables at all India level gives positive indication for sustainability in agricultural sector.

## **Farmer Suicides in Maharashtra-Exploratory Study**

Bhavna Pandey<sup>a</sup>Dr. Manju Singh<sup>b</sup> Dr.Bindya Kohli<sup>c</sup>

*<sup>a</sup>Junior Research Fellow, Symbiosis School Of Banking &Finance, Symbiosis International University, Pune ; <sup>b</sup> Director, Department of Economics, Manipal University, Jaipur ;<sup>c</sup>Associate Professor, Symbiosis School Of Banking &Finance, Symbiosis International University, Pune*

**Abstract:** The problem of farm distress has enveloped the Indian economy since long. The instances of farm distress are prominent in some states like Maharashtra, where the distress is only deepening by every passing day. The farmer suicide count recorded in past one year was 3228 according to the National Crime Records Bureau Report 2016. This is the highest figure since 2001. In fact, it is 52.5% higher than 1,207 cases recorded by the Maharashtra government in 2014. Studies attribute these deaths to credit crunches in the agrarian sector of India and increased debt burden among farmers. Most of the farmer suicides have taken place in Maharashtra and Andhra Pradesh of India's 29 states, suggesting that adverse financial circumstances affected farmers only in some states. Why did accumulating debt and credit crunches affect farmers only in some states? This paper talks about how increased competition in the banking sector diverted lending from agriculture to create economic conditions that led to farmer suicides in few of the Indian states.

## **SESSION 3.2 (INNOVATION & GOVERNANCE FOR SUSTAINABLE DEVELOPMENT)**

### **Banking to unbanked population in India: nationalisation of banks and pradhan mantra jan- dhan yojana**

Vandana Verma

*Centre for Studies and Research in Science, Technology and Innovation Policy, Central University of Gujarat, Gandhinagar,*

**Abstract:** In one of the major financial inclusion drive, Government of India recently launched Pradhan Mantri Jan -Dhan Yojana (PMJDY) to provide banking facility to unbanked people of the country. However, it is not the first of its kind and in the past other initiatives have been taken and nationalization of banks in 1969 was one of them. Both the initiatives by the government has nearly same objectives, however, both have different impacts in the society. The use of new and innovative information technology in banking sector had provided leverage and has potential to make PMJDY to be more sustainable in comparison to the nationalization of banking. This paper tries to understand the process of both the initiatives and looks in to their micro and macro impacts in the Indian economy. It was found that, the two major steps to provide banking facilities to unbanked people have different methods of delivery, as one lacks the technological aspect and other is done by using new innovative technologies like Information and Communication Technology (ICT), which makes it cost effective and sustainable.

### **Do the financial innovations and financial inclusion contribute to sustainable development? A Study of Indian Bank Credit Delivery System**

**T R Bishnoi <sup>a</sup> and Sofia Devi Sh <sup>b</sup>**

<sup>a</sup> *RBI Chair Professor, RBI Endowment Unit, [trbishnoi@yahoo.com](mailto:trbishnoi@yahoo.com) & <sup>b</sup> Faculty, Department of Business Economics, Faculty of Commerce, The M S University of Baroda, Vadodara [sofeedeve@gmail.com](mailto:sofeedeve@gmail.com)*

**Abstract:** Technological change and innovations in any form of economic activity has significant roles in determining prospects for sustainable development. In global finance, the sustainable financial system or sustainable development is contingent on focusing cost efficiency of a transaction or an activity. For this purpose, the financial

innovations comprising institutional innovations, product innovations, technology innovations, all that strengthening the process of financial inclusion for sustainable development. This innovation has disrupted the existing mode of banking from its traditional functions of delivering services. Also financial inclusion has become a critical financial component for ensuring sustainable and equitable economic growth as access to financial services has far reaching economic and social implications. The role of innovations and technological change, particularly in banking industry is significant. It has increased efficiency levels in functioning of banks, in terms of product diversification, provision of services, delivery of credit, more customer friendly system, geographical coverage, and so on, thereby reaching and benefitting different sections of the society. The pertinent question is whether financial innovations and financial inclusions contribute to sustainable development of the nation. The study focused on the cause effect analysis of these three interrelated indicators by using historical data to address the issues relating to Indian Bank Credit System and appropriate conclusions are drawn for policy guidance.

### **Starting with the Basics: Where do Smart cities Stand in the Promotion of Innovation and Entrepreneurship?**

Rama Krishna Reddy Kummitha

## **SESSION 3.3 (MANUFACTURING ISSUES & SUSTAINABLE DEVELOPMENT)**

### **Subcontracting: A Solution or a Failure for the Indian Manufacturing Industry**

Mitali Gupta

*Senior Research Associate, Giri Institute of Development Studies, Sector- 'O', Aliganj, Lucknow-226024, Uttar Pradesh; [miafgr2809@gmail.com](mailto:miafgr2809@gmail.com)*

**Abstract:** Subcontracting perceived to be an alternative strategy for the organized sector (in terms of attaining a competitive edge in the market) and for the unorganised sector (as a case of survival) is not able to deliver in the present scenario as it had been perhaps thought to be when it newly emerged into the production scenario. The basis of this argument lies somewhat in the discrepancy of the understanding of existence of this sector, which this paper attempts to delve into by exploring the origins of this mode of production and how it has changed its nature and operation over the period of time with special emphasis on the Indian Manufacturing Sector. The findings derived from the review of literature as well as NSSO data 67<sup>th</sup> Round (2010-11) seem to suggest that the subcontracting relationships in India have missed the operation of two important facets of this mode of production-bargaining power and specialization which helps in understanding of poor functioning of subcontracted enterprises in the post-2000 period.

### **Export Spillovers from Foreign Direct Investment in India: A firm level analysis**

Sanghita Mondal (Ph.D)

*Assistant Professor, P.G.D.A.V. College*

**Abstract:** FDI and its effects on host country firms have drawn considerable attention during the last few decades due to the surge of FDI in developing countries. In view of that, the present study focuses on the channels of export spillovers from FDI activities in the host country market, namely India, using the firm level data from manufacturing sector for the period 1994-2010. For the econometric analysis, the study considers manufacturing firms from all 2 digit industries. Moreover, the manufacturing firms are

also categorised according to the technology intensity following OECD definition. We have divided the FDI spillover channels into competition (domestic market activity), information (export activity), skill (a proxy to measure spillover from higher foreign skills) and imitation (R&D and technology import) spillovers. We also consider that in house R&D activity, technology import influence the export performance of the host country firms. Our findings show that most of the spillover channels are not influencing export decision or export activity of the Indian firms. Information spillovers from foreign export activities have shown negative impact on domestic firms from all technology categories. Among other factors, in house R&D activity is found to important factor to influence export decision and in enhancing export intensity.

## **Commercial Success in Product Innovation: Evidences from Manufacturing Firms in India**

George Paily

*PhD Research Scholar, Centre for Development Studies*

**Abstract:** This paper attempts to contribute to the emerging research stream on innovative capability building in developing countries, considering the case of India's manufacturing industry. We have examined technological strategies expressed in terms of certain dimensions of technology and innovation and its impact on new product development. This research is based on the data obtained from World Bank Enterprises Survey 2013-14 covering 4105 manufacturing firms located in India including micro, small, medium and large across the sectors<sup>2</sup>. The set of indicators of innovation capability used is inspired by the influence from the literature on National Systems of Innovation<sup>3</sup> framework on which the study is based. We present certain new empirical evidences on the link between the nature of innovative activities and firms' ability to come up with new product lines.

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<sup>2</sup> The Survey was originally conducted for more than 9000 firms. After omitting the firms with missing information, we have selected 4105 firms for this study

<sup>3</sup> For earlier usage of this concept, see Lundvall (1992), Nelson and Winter (1993), and Freeman (1995)

## **Exporting Behaviour and Employment Generation Capacity: A Study Of Micro, Small and Medium Enterprises**

Uma S.

*Assistant Professor, Lady Doak College, Madurai, Tamil Nadu, India,*  
[umasankaran@ldc.edu.in](mailto:umasankaran@ldc.edu.in) ; [umacds@gmail.com](mailto:umacds@gmail.com)

**Abstract:** This paper analyse the impact of exporting behaviour of Micro, Small and Medium Enterprises (MSMEs) on their employment generation capacity using All-India Fourth Census of MSME, 2006-07. The present paper has taken exporting behaviour as heterogeneous in terms of direct, indirect and both (direct and indirect) export networks/channels. Further employment generation capacity was measured in terms of labour intensity. The overall conclusions are that, the labour-intensity of direct and indirect channel exporting units is higher than for both channel exporting units. On the other hand, the labour-intensity of direct exporters is higher than for indirect exporters. Labour productivity and wage rate have a negative impact on the employment generating capacity of firms. All the policies related to the promotion of MSMEs have been oriented to the objective of employment generation. However, schemes related MSMEs have tended to encourage capital-intensity across all industry-groups. This is probably because schemes meant to enhance export capabilities of firms might be encouraging them to adopt capital-intensive nature of production.

## **Innovation and Employment: A Case of Indian Manufacturing Firms**

Swati Mehta

*Assistant Professor, Punjab School of Economics, Guru Nanak Dev University, Amritsar-Punjab, India,* [swatieco@gmail.com](mailto:swatieco@gmail.com)

**Abstract:** While innovation has widely acclaimed as an important source of productivity and growth, its relationship with employment remained largely ambiguous. The debate assumes importance as the recent past has witnessed economic growth with falling or stagnant employment growth in large number of countries. The loss of additional employment resulted in widespread inequalities and poverty that put the whole issue of economic growth in jeopardy. Moreover, the need is to understand the relationship between innovation, employment and economic growth and the present paper is an attempt towards deciphering this relationship to find the way-out for higher economic and employment growth using the case of Indian manufacturing sector. With the motive to find the impact of innovation on employment at different technological intensive industries, the present paper collected the firm level data from four industries namely pharmaceuticals (high technology), transport (medium-high

technology), ferrous metals (medium-low technology) and textiles (low technology) for the period 2000-01 to 2013-14. It was found that the impact of 'product innovation' is positive on employment for different industries. Therefore, the need is to build the 'system of innovation' in such a manner that radical innovations could be produced for long term growth and employment.

## **SESSION 4.1 (INNOVATIONS FOR SUSTAINABLE AGRICULTURE)**

### **Exploring the inclusivity and exclusivity of Kenya's extension & advisory service as part of agricultural innovation system**

Ann Kingiri

*Director of Research at the African Centre for Technology Studies (ACTS), Kenya*

**Abstract:** Agricultural education, extension, and advisory services are a critical means of sharing new knowledge with farmers for the benefit of agricultural productivity, increasing food security and improving rural livelihoods. This is because such institutions have a mandate to transfer technology, support learning, assist farmers in problem solving, and enable farmers to become more actively embedded in the agricultural innovation system. Using secondary and primary data, this paper interrogates Kenya's extension service as part of agricultural innovation system. The case provides some empirical evidence to interrogate the inclusivity/exclusivity of extension approaches in reaching out rural communities especially women in the acquisition of knowledge for innovation purpose. The study finds differences in extension approaches that can effectively stimulate innovation, particularly institutional innovation, in a sustainable and equitable way. In addition, delivery of advisory services is constrained by several factors that denote exclusivity or inclusivity more generally. The paper opens up a discussion around the role of context in helping unpack inclusivity or exclusivity in dynamic innovation systems.

### **Technological innovation and agrarian transition: impact on small and marginal farmers**

Atrayee Saha

*Assistant Professor, Department of Sociology, Muralidhar Girls' College, Calcutta University, Kolkata, India.*

**Abstract:** HYV (High Yielding Variety) seeds brought about green revolution in the 1960s and Genetically Modified crops in the form of Bt cotton was introduced after the 1990s in India. These scientific innovations are widely debated and discussed over the claims of increasing productivity and reducing poverty among the economically impoverished groups of farmers. However, they have not been successful to bring about structural change in the agrarian economy. Social and economic inequality in the rural farming community still persists. The paper seeks to analyse the impact of introduction of these scientific innovations on small and marginal farmers. These scientific innovations have been conceived as 'paradigms' which have brought about technological revolution in Indian agriculture but have failed to bring about structural



change. The aim of the paper is to understand if these scientific innovations have helped in reducing the caste and class inequality found among the different groups of farmers or not. The paper is based on field and secondary evidences collected during specific time periods from 1960s to 1990s and after 1990s. Two important questions have been taken up in the paper: What is the nature of these two scientific innovations? How did these innovations impact upon the caste and class category of farmers?

## **Does Access to Technical Knowledge impact on Farm Yield? A Comparative Role of ICT and Non-ICT Sources**

Bibhunandini Das

*Assistant Professor, Centurion University of Technology and Management, Bhubaneswar, bibhu31@gmail.com [bibhunandini.das@cutm.ac.in](mailto:bibhunandini.das@cutm.ac.in)*

**Abstract:** Agricultural output in India is largely influenced inter alia by factors like agricultural technology and social as well as institutional architecture that in turn shape the use of the technology. The development of agricultural sector largely depends on three components: actors involved in the agricultural research and extension services, the farming communities and the policy making agencies. The interaction and learning among these three components leads to agricultural innovation system. In this context, the present paper analyses the role of agricultural research and extension actors in disseminating technological knowledge and its impact along with institutional policies on farm productivity. To analyse, the paper relies on 59th and 70th round of National Sample Survey. To understand the role of agricultural research and extension services, the paper relies on descriptive analysis and to find out the impact the study uses ordinal least square regression. The study found that over the period the use of different sources- ICT and non-ICT sources has marginally increased and there is still disparity across the states. The estimated regression analysis shows that expenditure on modern agricultural input is a decisive factor in order to determine the farm yield. Other than that the use of both ICT and non-ICT sources significantly differentiates the farm yield for cereals and pulses cultivator.

# **Technological Innovations and Agricultural Credit in India: An Analysis of Impact of Kisan Credit Card on Agricultural Credit**

Kiran Kumar Kakarlapudi

*PhD Scholar, Centre for Development Studies, [kiran20uohyd@gmail.com](mailto:kiran20uohyd@gmail.com)*

**Abstract:** This paper analyses the impact of technological innovations, Kisan Credit Card, in the delivery of agricultural credit in order to facilitate and ease the process of credit access from the formal banking sources. The study is in the context of increasing initiatives to enhance the access to formal banking services particularly to historically excluded sectors and sections. It is well known that availability and access to adequate, timely and low cost credit from institutional sources is of great importance especially to small and marginal farmers. It has been a major challenge to find a way for formal financial institutions to provide credit to meet agricultural needs of poor farmers. It is in this context Kisan Credit Cards have been introduced to ease the process of credit delivery to agricultural farmers particularly to poor and marginal farmers. In this paper we use macro data published by Reserve Bank of India to examine the impact of Kisan Credit Cards on access and availability of agricultural credit. Our analysis of trends and patterns of agricultural credit indicates a decline in the access to agricultural credit, measured in terms of number of credit accounts per 1000 cultivators, in the 1990s and revived after 2000 which corroborates with the implementation of KCC. Secondly, the share of credit to marginal farmers also increased particularly in the second decade of reforms. We also find an increase in access to KCC and the amount borrowed through KCC over the years. Similarly, the estimated results of Bundell and Bond (1998) dynamic panel model shows a positive and significant effect of Kisan Credit Cards on access to agricultural credit and also availability of agricultural credit indicating that the technological innovations have positive effect on increasing access to agricultural credit.

## **SESSION 4.2 (PLANTATION AGRICULTURE)**

### **Voluntary Sustainability Standards: The Costs of Compliance for Small Producers of Coffee in Wayanad, Kerala**

D Narayana & Anna Rony

**Abstract:** Plantation economy conjures up a vision of foreign owned, export oriented and slave or indentured labour based agriculture. The main market for the produce of plantations is the metropolitan economy and as such the success of the plantation economy depends on how effectively it moves from 'passive' to 'active' incorporation into the international economy. A major change that has come about in the produce market in the last twenty years is the demand for voluntary sustainability standards compliant produce. With the adoption of the 2030 agenda for sustainable development by the United Nations in its Sustainable Development summit in September 2015 the demand for sustainability standards compliant production is bound to increase. While the Indian plantation economy had its beginnings in Western European enterprise, over the last six decades it has become largely Indian owned and the export orientation too has come down. The large domestic demand is a disincentive to comply with standards but the future of the sector lies in 'active' involvement in the metropolitan economy and not doing so is a sure recipe for the decline of the sector. Governments at all levels in India have an important role to play in evolving a policy framework for the adoption of environmental and livelihood standards as the plantations are located in environmentally fragile ecosystems providing livelihood to some of the poorest population groups.

### **Fair trade as civic innovation? The case of tea certification in India**

Karin Astrid Siegmann

*Senior Lecturer, Labour and Gender Economics, International Institute of Social Studies of Erasmus University Rotterdam (ISS), The Hague, siegmann@iss.nl*

**Abstract:** Workers on tea estates at the beginning of the tea value chain have historically been and continue to represent some of the most marginalised agricultural workers. The tea sector in India is the country's largest formal sector in terms of employment. Yet, wages of tea workers are the lowest among the formal labour force and their living conditions are appalling (Bhowmik 2015: 29).

In this paper, I discuss whether fair trade certification, i.e. the certification of products whose production adheres to a set of social, environmental and governance standards as fair trade-compliant, can contribute to a transformation of the tea chain, able to support moves towards more decent work. With Biekart et al. (2016), I refer to such progressive societal change driven by civic actors as forms of 'civic innovation'.

The paper is based on a review of existing studies of the impact of fair trade on tea cultivation in India. Waged employment in fair trade tea cultivation is concentrated in plantations in India and growing.

Given tea workers' marginalisation, the analysis of fair trade tea cultivation offers a litmus test of the potential of fair trade certification to promote inclusive development in line with the 8th Sustainable Development Goal to "[p]romote inclusive and sustainable economic growth, employment and decent work for all" based on partnerships between different societal actors (UN 2015).

## **Analyzing Competitiveness of Coffee Plantation Sector in International Market to Develop Innovative Framework for Inclusive and Sustainable Development**

Sangeeta Mehroliya <sup>a</sup> Vinod D.N.<sup>b</sup> Abhishek M <sup>c</sup>.

*<sup>a</sup>Assistant Professor, MBA Department, PES University, Bangalore - 85, India; <sup>b</sup>MBA 4<sup>th</sup> Semester, PES University, Bangalore - 85, India; <sup>c</sup> MBA Department, PES University, Bangalore – 85*

**Abstract:** This Paper aims to analyse compateitiveness of Indian coffee plantation sector exports in international market. India's competitiveness was analyzed against top 10 exporters in top 9 importing countries by calculating RCA index. Main objective is to understand the position in different importing market. Second objective is to study the main problems faced by small growers and estate mangers which hampers the path of development and growth. This objective is achieved by interviewing growers and estate managers. Third objective is to study best agriculture and exporting & re-exporting activity of coffee exporting countries to develop innovative framework for inclusive and sustainable development. Fianally few points were highlighted to addressed to resolve the problem of growers to achieve main objective of achieving sustainability.

# **Climate Change and its Impact on Tea Plantation: A Study of North Indian Tea Growing Region**

Razia Bano <sup>a</sup> and Faiza Nafees <sup>b</sup>

<sup>a</sup> *Research scholar, Department of Geography, AMU, Aligarh, [Razia8habib@gmail.com](mailto:Razia8habib@gmail.com)*

<sup>b</sup> *Research Scholar, Department of Political Science, AMU, Aligarh*

**Abstract:** The paper entitled "Climate Change and its impact on Tea Plantation: A Study of North Indian Tea Growing Region" is an attempt to deal the impact of climate change in North Indian Tea Growing region in India. Tea plays a very pivotal role in rural development, poverty reduction and food security in the rural population hence gives the balanced socio economic development to the nation. Climate change is an important environmental issues and impacts gradually over the Indian agricultural pattern especially on those crops that are dependent on consistent climatic condition like tea plantation.

## **SESSION 4.3 (MANUFACTURING ISSUES & SUSTAINABLE DEVELOPMENT)**

### **Whether FDI or Exports enhance Innovation : Evidence from Indian Manufacturing firms**

Krishan Singh<sup>a</sup> & Dr. Sandeep Kaur Bhatia<sup>b</sup>

*<sup>a</sup> Research Scholar, Centre for Economic Studies, Central University of Punjab, Bathinda, India; <sup>b</sup> Assistant Professor, Centre for Economic Studies, Central University of Punjab, Bathinda, India*

**Abstract:** The economic reforms of 1991 have introduced a heavy amount of FDI inflows into the manufacturing sector of Indian economy. However, for the invention of new techniques and skills, there is a great need to invest on R&D, requires a huge amount of capital, which can be available through FDI inflows. The manufacturing sector depends on both. Technology has been imported in heavy amount after the implementation of liberalization policies. Therefore, the present study intends to know whether FDI contributes to the Indian manufacturing sector through R&D or not. The average growth of the manufacturing sector in India (7.93 per cent) has been found considerably higher during the second decade of reforms (2001-2012) as compared to first decade reforms (1991-2000). In context of this, the present study has tried to examine the trends and patterns of FDI and R&D in Indian manufacturing firms during during second decade of reforms (2001-12) and also, to analyze the impact of FDI, exports on R&D in manufacturing firms of India through fixed effect model. The results asserts that R&D has significantly impacted by the import of capital goods, foreign equity, disembodied technology and export intensity during the second decade of liberalization period. The present study suggests that greater approvals for foreign capital inflows are required in India, for enhancing the R&D in the manufacturing sector. There must be an appropriate coordination between public and private sector, which can improve the R&D expenditure of manufacturing firms of India.

# **Diffusion of Computer-Numerically Controlled Machine Tools in India**

Thaarcis Albin

*Teaches Economics at the Department of Economics, St.Xavier's College (Autonomous), Palayamkottai – 627002, Tamil Nadu, India. E-mail. albin66@rediffmail.com*

**Abstract:** Given the globalized economic order, achieving a high order of growth by industrialization has been a priority for the developing countries. In which, diffusion of technology have its own important role in contributing to economic growth. This study deals with the impact of liberalization on the diffusion of Computer Numerically Controlled Machine Tool (CNCMT) technology in its embodied form during the pre and post economic liberalization period. Apart from the 'net addition' and 'relative stock' methods, Ray's method is chiefly used to measure the extent of diffusion of CNCMT in India. It is found that liberalization has favoured the diffusion of CNCMT technology. However, the increasing share of the imports contributing to the increasing diffusion of CNCMT technology is noticed since 2000-01. Unlike in the past, the spread of CNCMT technology among the small scale industries after 2000-02 marks the beginning of a new dimension in the diffusion of CNCMT technology in India as it further widens the scope of CNCMT technology becoming available to a range of small scale industries in the near future but compromising with employment aspects. To this extent, it may also be viewed as a failure in fulfilling the United Nation's Sustainable Development Goals (SDGs) of achieving inclusive development.

## **Impact of FDI on incumbent innovation: Intra and inter-industry effects**

Qayoom khachoo <sup>a</sup> and Ruchi Sharma <sup>b</sup>

<sup>a</sup> Research Scholar, School of Humanities and Social Sciences, IIT Indore, India. phd12116101@iiti.ac.in; <sup>b</sup> Assistant Professor, School of Humanities and Social Sciences, IIT Indore, India.

**Abstract:** It is often believed that transfer of technology and know-how resulting from Foreign Direct Investment (FDI) goes beyond the actual projects undertaken by foreign investors and, spills over to domestic firms affecting their knowledge base and productivity. This paper is an endeavour to investigate the existence of spillovers and their impact on the innovative performance of domestic firms active in the manufacturing sector of India. By employing data on FDI by industry and merging it with information on time-variant buyer-supplier linkages obtained from a series of national input outputs tables, the study develops intra-industry and inter-industry

measures to capture the effects of FDI on innovation performance of the incumbent firms' active in the same sector as the MNC and in upstream and downstream sectors. The econometric analysis after accounting for endogeneity issues reveals that FDI has a moderate impact on innovative performance of firms residing in identical industries. However, impact on the innovative performance of firms in supplying sectors appears to be statistically strong.

## **Does foreign ownership matter in the technological capability of firms? Evidence from Indian manufacturing industry**

T J Joseph

*Department of Economics, Central University of Kerala, Kasaragod, India.*

**Abstract:** This paper seeks to contribute to the debate related to industrial technological capability building in association with economic liberalization policies adopted by many countries since the early 1990s. We investigate the technological capability building in a transitional economy from ownership perspective by examining the impact of foreign equity participation on the technological capability of firms in selected Indian manufacturing industries during the high growth period of 2001-2007. Using panel data of 731 firms, this study makes two major contributions to the existing knowledge. Firstly, we focus on a wider range of firms' technological capabilities rather than just on R&D as used in previous studies. Secondly, we utilize the variations in foreign equity participation to capture the extent to which foreign ownership or control affect the technological capability of firms rather than a dummy variable classification of foreign and domestic ownership. The study observed that foreign ownership plays an important role in the technological capability of firms. Our findings also support the internalization theory that higher the degree of foreign ownership, the more technology intensive the firm will be, since the foreign partner gets larger control on firm's operations. This study indicates that, given the importance of technology on economic growth and the contribution to productivity and export, the government's policy initiatives to encourage foreign equity participation in Indian manufacturing actually contributes to the technological capability of the firms.

## **Indian Ayurvedic Medicine Industry at a crossroads: exploring technological capabilities in the post-WTO policy regime**

Abha Arya<sup>4</sup> and Saradindu Bhaduri<sup>5</sup>

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<sup>4</sup> Centre for Studies in Science Policy, Jawaharlal Nehru University

<sup>5</sup> Centre for Studies in Science Policy, Jawaharlal Nehru University and Centre for Frugal Innovation in Africa, International Institute of Social Studies.



## **SESSION 5.1 (SOCIAL SECTOR INNOVATIONS: HEALTH/EDUCATION)**

### **Role of Universities in building research and innovation capacities in Nepal**

**Sohan Prasad Sha <sup>a</sup> & V. V. Krishna <sup>b</sup>**

*<sup>a</sup> PhD Candidate, Center for Studies in Science Policy(CSSP), School of Social Sciences, Jawaharlal Nehru University, New Delhi -110067, INDIA. Mobile: +91-9650965292*

*email: [sohansha@gmail.com](mailto:sohansha@gmail.com). <sup>b</sup> Professor at CSSP, School of Social Sciences, Jawaharlal Nehru University, New Delhi -110067, INDIA.*

**Abstract:** Innovation is crucial for competitiveness of the economies and growth. Learning is an integral part for innovation. 'Innovation system' is a popular framework to study the dynamics of the innovation at various levels. The university/ education system is a major actor in the framework to enhance competencies in the economy. The paper explores the role of universities in building indigenous scientific community for least developed countries, like Nepal, towards making her own 'national innovation system'(NIS). NIS framework explores the interaction, linkages and the appropriate institutions, in developed nations as it is explicitly assumed, however, in the context of LCSs like Nepal, it is not only difficult but also largely inaccessible to unpack such trends. Thus, the modest attempt in the paper is to contextualize Nepal's specificities and evolution process in education system as a whole and henceforth, to contrast with historical experiences of newly industrialized nations and others to learn the transition towards NIS. The historical experiences will not only free our assumptions but it may open the possibility for 'new policy' imagination for LDCs through theoretically informed empirical analysis for approaching NIS framework.

### **Universities and innovation in informal settings: evidence from case studies in South Africa**

Glenda Kruss and Michael Gastrow

*Education and Skills Development programme, Human Sciences Research Council, South Africa, [gkruss@hsrc.ac.za](mailto:gkruss@hsrc.ac.za)*

**Abstract:** Technological and economic development benefits a minority of the global population, challenging universities to consider how a transformative framework of innovation for inclusive development can inform an expanded understanding of their 'third mission'. However, there is little conceptually and empirically informed research available, a gap that stimulated exploratory qualitative research to open up the field,

through four case studies of emergent practices in South Africa. The paper aims to identify conditions that facilitate and constrain interaction and knowledge flows between universities and marginalised communities around livelihoods in informal settings. Analysis highlights how actors are driven to interact with one another, to learn and develop new competences. Conditions in the national and local policy environment intersect with organisational conditions within universities and communities, and within the interaction itself, to shape outcomes that impact on livelihoods and development. The conclusion reflects how working concepts may be refined to inform further research.

## **Knowledge-based Economy and Innovation: Does Gender Gap in STEM Education pose a challenge for India?**

Christabell P J

*Assistant Professor, Department of Futures Studies, University of Kerala,  
Thiruvananthapuram, E-mail ID: [christabell@keralauniversity.ac.in](mailto:christabell@keralauniversity.ac.in), Ph: +91 471 2305321  
(Office), +91 9497850893 (Mobile)*

**Abstract:** Knowledge and innovation are widely acknowledged as key drivers of growth and economic development. All the economies in the world are shifting into a new phase of development based on the production, communication and consumption of knowledge which is popularly known as “the knowledge-based economy” (KBE). In a KBE, a significant part of a nation’s value consists of intangible assets, such as the value of its citizens’ knowledge. In many countries attention is being given to the participation of students in tertiary Science, Technology, Engineering and Mathematics (STEM) education as industry, government, and academic leaders cite increasing STEM workforce as a top concern. India holds world’s largest young population, but she must also be a possessor of the largest young work force with the highest level of knowledge skills in the world. The nation needs to increase the number of experts in STEM fields to drive innovation and keep the country competitive in the global economy. The gender gaps in entrance to and attainment of postsecondary STEM education have long been a concern to educators and policymakers. This concern is increasing because, in the modern technology-oriented world, full use of human resources is imperative to keep the nation competitive with other countries. It is in this context the present paper tries to examine how the gender gap in STEM participation pose a challenge to the future of KBE and the resultant innovations in the country. An empirical investigation on female participation in STEM education is attempted using factor analysis.

# **Challenges of Molecular Diagnostics Innovation System Development in India**

Nidhi Singh and Prof. Dinesh Abrol

**Abstract:** This study, have been done to analyze the emergence and formation of molecular diagnostics innovation system in India. The study through empirical analysis finds India being a latecomer country in the field of molecular biology research and has not been able to keep up with the worldwide pace of development of technological innovation system and lacks in production and new technology development related capabilities in case of molecular diagnostic development. Investigations also indicate that as far as the current situation stands with regard to the development of value chain in the sphere of molecular diagnostics, even today the components essential for the development of indigenous technology development are mostly absent in India. Dependence on imports and lack of competition from domestic players to foreign firms in the supply of molecular diagnostics has resulted into high prices due to which these tests are unaffordable and thus, it is also unavailable to majority of population. Traditionally the development of diagnostics in domestic private sector pharmaceutical firms was overshadowed by drug and vaccine development due to low revenue returns. Although recently few start-up firms have begun to take interest in both manufacturing and R&D for developing diagnostics for tropical disease for example, specific disease related biomarkers, but their overall market share as compared to foreign firms is quite insignificant. Study also suggests that failures seem to be occurring at the end of both, discovery research as well as technology development which clears out that the practice and policy regime have been affected adversely by the belief that the new regime will create a market for knowledge enabling the industry and institutions to accelerate their activities of learning, competence building and innovation making. Therefore, the failures in alignment would have to be tackled by undertaking a suitable systemic correction of the policy regimes under perusal in the sphere of trade, industry building, science and innovation in India.

# **Innovation and Exclusion in Emerging Technologies: Understanding the Dynamics of Oncology Research and Innovation Systems in India.**

Rajesh Kalarivayil

*Assistant Professor, Department of Social Work, Tezpur University, Assam -784028,  
[rajesh.wdr@gmail.com](mailto:rajesh.wdr@gmail.com), Ph. 08800120984*

**Abstract:** The present paper is an attempt to explore exclusion from the macro level in knowledge production and its links to inclusion at the micro level. This paper examines the recent trends in oncology research and innovation in India and its implications for access and inclusion of poor and marginalised communities. This paper maps biotechnology, nanotechnology and information communication technologies in the oncological research and innovation in India. The empirical analysis is performed on a unique data set of publications and clinical trials related to oncological research. The trends indicate that research in oncology is drifting towards Molecular and cellular level particularly in biomarkers, nanomedicine and bioinformatics. The immediate effect of this drift is a decrease in the research in organ based cancers. This has also led to an exclusion of epidemiologically relevant cancers like oral cancer and lung cancer which is predominantly prevalent among lower income groups in India. Technology platforms like nanomedicine, biomarkers and genetics receive high funding in research stage. However the extent to which public funding goes in to the utilization of the knowledge, product development and commercialization are not clear. Further there are no specific policies or guidelines towards the utilization of research taking place in these technology platforms.

## **SESSION 5.2 (PLANTATION AGRICULTURE)**

### **Demand Driven Approach in the Systems of Innovation in agriculture: A Case of Natural Rubber**

**A. Sajitha**

*Ph D Scholar, Centre for Development Studies, Email:sajiananthakrishnan@gmail.com,  
[sajitha12d@cds.ac.in](mailto:sajitha12d@cds.ac.in)*

**Abstract:** The contemporary agricultural sector in India dominated by small and marginal holdings appears to be complex and highly influenced by various price and non-price related challenges. These challenges are identified to be highly uncertain and unpredictable with multiple dimensions (biophysical, technological, socio-cultural, economic, institutional, and political) and the involvement of multiple actors. In this context, many studies have questioned the inability of exiting models in agriculture which focused only on the creation of new knowledge and its conversion into technologies that can directly be used by farmers. Hence, to cope up, compete and survive the rapidly evolving challenges in the contemporary agriculture, it becomes necessary the sector to innovate continually if it is to contribute towards sustainable economic development. In this regard, the agricultural innovation system (AIS) gained importance as an analytical framework which follows a demand driven approach to generate learning, innovations and competence building among different stakeholders. At this juncture, this paper have chosen the case of natural rubber (NR), a small grower dominated sector which is highly vulnerable towards risks and uncertainties, to explore whether the system involved in the NR sector follows demand driven approach to address the real challenges in the sector.

### **Forms of Exclusion/Inclusion in the Innovation System – A Comparative Analysis of Access of Small Growers to Formal Institutional Arrangements in Tea and Natural Rubber**

Namrata Thapa

*PhD Scholar, Centre for Development Studies, Trivandrum*

Historically, both tea and Natural Rubber (NR) has had an elaborate institutional mechanism in place for the generation and dissemination of knowledge. It is well known that invention unless applied cannot be termed as innovation - the solutions that the researcher comes up with in their research stations has to reach out to the growers in the field. In this context, taking the case of two plantation crops- tea and natural rubber, the paper explores the issue of exclusion/inclusion faced by small growers in

the process of dissemination of knowledge. Drawing insights from the literature on agricultural innovation system and the concept of exclusion as used in the development discourse, the paper particularly attempts to identify various forms of exclusion/inclusion in terms of the growers' access to formal institutional arrangements. The study is based on fieldwork conducted in the tea growing regions of Assam and NR growing regions of Kerala. The analysis helps in providing an understanding of the reasons for the exclusion of growers. This might enable to undertake proper institutional intervention to ensure effective dissemination of knowledge to the growers.

## **Policy and Institutional Regimes for Rubber Plantation Development in Diverse Social and Agro-Ecological Environments: A Study in the Indian context**

P.K. Viswanathan and Indraneel Bhowmik

**Abstract:** Policies and institutional interventions for agricultural development of the backward Northeastern region of India continue to be a prerogative for the national government and the respective state governments in India since long. Various national and state agricultural development agencies, especially the commodity boards have been constantly engaged in the development of commercial agriculture in the region. Among the commodity boards, the interventions by the Rubber Board have been quite significant in terms of social and economic impacts and the entire NER is emerging as the 'Hub of rubber production' in the country accounting for 18 percent of the total area and 6 percent of the total production during 2013. The process of rubber expansion has been quite dramatic, even surpassing the growth observed in the traditional rubber growing states in south India, including Kerala, Tamilnadu and Karnataka. The phenomenal growth of rubber plantation areas in the NE region is also a matter of serious concern, as rubber is highly promoted as a monoculture system in the otherwise diverse agro-ecological environments of the NER. Rubber expansion in the NER has been justified on the grounds of: (a) ever increasing domestic demand for natural rubber from the manufacturing sector (dominated by tyre industry); and (b) the saturation of agro-climatically suitable lands in the traditional regions, especially, Kerala. Moreover, promotion of rubber cultivation in the NER has been considered to have greater social impacts in terms of rehabilitating the erstwhile shifting cultivators in the region and thereby leading to their social and economic empowerment. However, it emerges that the specific policy and institutional interventions have been oriented towards promoting rubber as a monoculture system in the NE region, which seem to pose potential threats to the co-existing land use and resource management as well as integrated livelihood systems followed by the rural households, dominated by tribal communities in the region.

In this backdrop, the Chapter makes a critical analysis of the compatibility of the policies and institutional interventions historically followed by the Indian Rubber Board in the wide-scale promotion of rubber monoculture in the North Eastern region in India in a comparative perspective of the traditional rubber growing regions in South India, with particular reference to Kerala. If we examine the trajectory of development of rubber plantations in Kerala under the institutional interventions spearheaded by the Rubber Board, it emerges that the Board had promoted a system of rubber production that was highly oriented towards monoculture without considering the crop promotion from an integrated farming system perspective. The paper further argues that given the agro-ecological diversity and the specific socioeconomic, ethnic and institutional settings as well as the pattern of livelihoods followed, the policies and institutional interventions for rubber development in the NER invariably requires an integrated and holistic approach, so as to minimise the damages caused to the fragile agro-ecosystems of the region and thereby not disturbing the inland fishery, livestock and forestry integrated livelihood systems in the region. Replication of the rubber monoculture as had been widely promoted in the traditional regions, especially, Kerala to the NER, can be a cause of conflict with the pre-existing as well as coexisting agricultural production (including food crops) practices/ farm integrated livelihood systems. Moreover, the institutional makeover, including infrastructure support of the Rubber Board in the region also require major restructuring to evolve an integrated approach towards rubber development along with promotion of other livelihood and rubber integrated agro-forestry systems.

## **India's Trade Liberalisation Initiatives and Trends in Balance of Trade under the Regional Trade Agreements: The case of Rubber and Rubber Products**

Joby Joseph <sup>a</sup> and Tharian George K <sup>b</sup>

<sup>a</sup> *Scientist B, Economics Division, Rubber Research Institute of India, Rubber Board, Kottayam-9, Email: jobyjoseph@rubberboard.org.in (corresponding author);*

<sup>b</sup> *Joint Director, Economics Division, Rubber Research Institute of India, Rubber Board, Kottayam-9, Email: tharian@rubberboard.org.in*

**Abstract:** India's rubber sector has been endowed with the unique feature of a well-developed natural rubber (NR) production and rubber products manufacturing segments since the 1940s. A remarkable degree of domestic market orientation of both the segments had been protected from external competition till the early 1990s. India's Regional Trade Agreements (RTAs) assume importance for the trade sensitivity arising

from higher shares in the total value of external trade in rubber and rubber products (47.17 %) and in the negative balance of trade (278.6 %) during 2014-15. Among the total 24 trade agreements signed by India, tariff reduction/elimination commitments for rubber and rubber products are covered only under 11 agreements. This paper is concerned with (i) India's tariff policies on rubber and rubber products under the RTAs; and (ii) the impact of the same on India's balance of trade in rubber and rubber products. Analysis of time series external trade data for the past 15 year period from 2000-01 to 2014-15 revealed that India provided ample protection to its NR production segment under various RTAs except Asia Pacific Trade Agreement (APTA) and less developed countries under the South Asian Free Trade Area (SAFTA). However, the total value of imports of NR under RTAs grew at a rate of 39.54 per cent and the negative balance of trade during 2014-15 was US \$ 785.35 million. At the aggregate level, India's exports and imports of rubber and rubber products under the RTAs grew at the rates of 16.84 per cent and 26.34 per cent respectively during the period under review. The magnitude of the emerging trends is evident from a higher negative balance of trade with the RTAs (US \$ 1469 million) than with the world during 2014-15. The results of the study underlined the need for a comprehensive policy package for India's rubber sector rather than segmented ad-hoc measures from a long-term policy perspective.



## SESSION 5.3 (THE EXCLUDED AND SUSTAINABLE DEVELOPMENT)

### A Critique of Development in India's Predominantly Adivasi Regions with Special Reference to the Hos of India's Jharkhand

Antony Puthumattathil <sup>a</sup> and Dhiraj Kumar <sup>b</sup>

<sup>a</sup> *an independent researcher based in West Singhbhum, Jharkhand;*

<sup>b</sup> *research scholar at the National Institute of Technology Rourkela, Odisha.*

*Correspondence: [pmantony@gmail.com](mailto:pmantony@gmail.com), [dhirajsociology@gmail.com](mailto:dhirajsociology@gmail.com).*

**Abstract:** This paper reviews development interventions (DI) in predominantly Adivasi regions that focus on the extraction of abundant forest and mineral wealth to benefit regions beyond Adivasi territories. While this process deprives Adivasis of their subsistence needs, it invokes resistance and resultant conflicts. Such interventions and consequent conflicts of interests have been well documented. Hence, using two comparative case studies, we explicate DI as a self-reproducing system embodying colonialism and racism as process and praxis. We show how development facilitates resource accumulation and socioeconomic differentiation of a few and pauperisation of the rest. We further show how this systemic processes have historically found favour with political Brahmanism (PB), the dominant taken-for-granted socio-religious and political ideology (doxa) in India. In contrast to PB we highlight Adivasis' alternative imaginations based on their Sacral Polity (SP). Then we contrast SP with PB and the dominant neoliberal development paradigm. This comparison allows us to conclude that the secret of sustainable development rests with Adivasi social formations that adhere to SP based self-restriction and egalitarian democratic principles. However, historical domination and co-option of Adivasis engender ambivalence of violence which helps perpetuate "development" as a colonial and racist system among Adivasis in forms of state formation.

## **Forest rights and Forest Based Livelihoods of the Santals of Purulia, West Bengal, India**

*Atrayee Banerjee<sup>a</sup>, Arup Ratan Bandyopadhyay<sup>b</sup> and Nirmal Kanti Chakraborti<sup>c</sup>*

*<sup>a</sup>Senior Research Scholar, Department of Anthropology, University College of Science, Technology and Agriculture, University of Calcutta*

*<sup>b</sup>Professor, Department of Anthropology, University College of Science, Technology and Agriculture, University of Calcutta.*

*<sup>c</sup>Professor, Department of Law, Kalinga Institute of Industrial Technology.*

**Abstract:** The relation between tribal people and forest can be traced down the lanes of history. History says that the conditions of the indigenous people were unsatisfactory during the colonial rule and mass exploitation of their basic rights and utter poverty reigned supreme. The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 is an important piece of forest legislation passed in India on December 18, 2006. The law ensures the rights of forest-dwelling communities to land and other resources, denied to them over decades as a result of the continuance of colonial forest laws in India. The Santal villages in and around the forest areas of Purulia, the most backward district of West Bengal have been chosen as the study area. The basis of this paper is to empirically study the occupational pattern and the dependence of the Santals on the forest products in tribal areas of Purulia, West Bengal, India. The use of Non-Timber Forest Products (NTFPs) is manifold in the livelihood of the Santals of this area. They include fruits, resins, gums, herbal plants, roots, honey and wood that is not timber (for example, firewood).

## **Livelihood Changes and Health Status Among The Paniya Tribe of Wayanad District**

Asoora V T

*Assistant professor, Dept. of Rural and Tribal Sociology, Kannur University Campus, Mananthavady-670645, [vtasoor@gmail.com](mailto:vtasoor@gmail.com)*

**Abstract:** Paniya are mainly rural based with 96 percent of them residing in rural areas, in forest land, forest fringes and wildlife sanctuaries. This implies that access to land and forest resources is very important to them economically and socially. The livelihood and healthcare systems of Paniya community was closely associated with the plant and animal diversity of the region in which they lived in. In this context, the questions towards the connections between livelihood changes and health status of Paniya community are relevant. Eleven tribal communities are residing in Wayanad and they

constitute 31.23 percent of Adivasi population of the entire state. Paniya is the largest Adivasi group in the state. Paniya families residing in Wayanad is facing severe social problems in their daily life. Its highest concern is the deteriorating health condition is closely related to declining livelihood options and consequent changes in food security and resource deterioration. Unfortunately Paniya communities are deprived from these two basic needs. Marginalization and social exclusion in the case of health care system and modern livelihood options affected more adversely on Adivasi. Modern reductionist attitude of the leadership in policy making causes negative impacts by ignoring their culture and life in development planning. The present study aims to understand the livelihood changes and its impact on the health conditions of Paniya community in Wayanad district of Kerala.

## **Rethinking Tribal Development through Participatory Planning – The Birhor Experience**

Sreerupa Ray

*Assistant Professor of Economics, Goenka College of Commerce & Business Administration*

**Abstract:** Tribal communities need to be treated as ethnic entities with uniqueness in all facets of their life, living and livelihood. Development initiatives need to recognize this ethnicity in all its phases of intervention, inclusive of prioritizing, planning, implementation and even the analysis of the outcome. Will such a methodology for human development be feasible? Following the framework of Amartya Sen's capability approach can 'development' be redefined as (i) participation and involvement of the community in prioritizing their needs and thereafter (ii) expansion of individual capabilities through provisioning of such priorities and opportunities? The research paper will pivot around this central question.

## **SESSION 6.1 (SOCIAL SECTOR INNOVATIONS: HEALTH/EDUCATION)**

### **Health for All (SDG 3) by 2030: An Indian Perspective**

T.C.James

### **Improving Health Practices for Achieving MDG: A Study on Role of Media and Communication in India**

Jyoti Ranjan Sahoo <sup>a</sup> and Mamita Panda <sup>b</sup>

<sup>a</sup> *PhD Scholar, Centre for Culture Media and Governance (CCMG), Jamia Millia Islamia-a Central University, New Delhi-110025, India, Email: [jyoti.kumarpur@gmail.com](mailto:jyoti.kumarpur@gmail.com);*  <sup>b</sup> *PhD Scholar, Group of Adult Education (GAE), Jawaharlal Nehru University (JNU), New Delhi-110067*

**Abstract:** Communication is an important means and mediating factor in empowering communities on their health and nutrition entitlements. By keeping a dialogue between the community and other key stakeholders, interpersonal communication processes can empower the vulnerable groups in terms of providing information and knowledge. Thus, the study tries to assess the interpersonal communication campaign factors that determined a positive change in the knowledge, attitude, behavior. But the research question is how communications campaign has become effective for promoting Mother and Child Health practices/behaviours among the disadvantaged communities in rural areas. This paper is based on empirical study conducted in six states from different regional parts of the country to understand influential and the probability factor due to intrapersonal communication in terms of measuring changes in knowledge and attitude. ANOVA & Co-relation result shows that publicity campaign in terms of interpersonal and oral mode has made a significant impact on awareness generation on breastfeeding, institutional deliveries, and family planning. But the peculiarities of cultural, linguistic, regional and even semiotic differences further complicated the problem understanding the message delivered under these schemes since the point for legitimacy and acceptance of new behaviours. Hence, behaviour change through interpersonal communication attempts to create an environment where positive behaviour change is acceptable.

## **Inequalities in the Utilization of Maternal Healthcare Services among the women of different Caste Groups and its Determinants: a Special Focus on Scheduled Tribes**

Rimon Saha <sup>a</sup> and Arijita Dutta <sup>b</sup>

<sup>a</sup> *PhD Scholar, Centre for Development Studies, Thiruvananthapuram, Kerala, India Contact Details: E-mail- [rimonsaha500@gmail.com](mailto:rimonsaha500@gmail.com), Mobile Number- +918089842776 (corresponding author);* <sup>b</sup> *Professor, Department of Economics, University of Calcutta, West Bengal, India Contact Details: 56A, B.T. Road, Kolkata – 700050, India , E-mail: [dutta.arijita@gmail.com](mailto:dutta.arijita@gmail.com)*

**Abstract:** The paper focuses on the extent of inter and intra-group inequalities in utilization of maternal healthcare services among the women of socially stratified groups. Using the unit level data from National Family Health Survey 2005-06, the paper finds striking inequality within scheduled tribe (ST) women and low-inter caste inequality. In addition, we apply logistic regression to identify the determinants of the utilization of maternal healthcare services among ST and the other social groups. The cultural exclusivity of the North-Eastern tribal women acts as a huge barrier in the usage of the maternal healthcare facilities. The results of this analysis succinctly points out that while across-the board support policies of the government have failed to adequately redress the within group inequalities among the most vulnerable social group. However inequalities between the groups do not appear to be strong, thus challenging many myths of politics and social justice in the subcontinent.

## **Turnaround in Maternal and Child Healthcare of India: Role of Institutional Innovation and ASHA**

Amarendra Das

*Assistant Professor in Economics, School of Humanities and Social Sciences, National Institute of Science Education and Research (NISER), Jatni Khordha -702050, Odisha, Email: [amarendra@niser.ac.in](mailto:amarendra@niser.ac.in), [dasamarendra@gmail.com](mailto:dasamarendra@gmail.com), Telephone (M): 91-9439923626*

**Abstract:** This paper examines the impact of institutional innovation in health care delivery system on the use of health care in India. With the launch of National Rural Health Mission (NRHM) and National Health Mission (NHM) the approach to health care delivery has changed from a top down model to bottom up and participatory system. The appointment of Accredited Social Health Activists (ASHA) and formation of Village Health, Sanitation and Nutrition Committee (VHSNCs) and Rogi Kalyan Samities (RKS) have helped bring a behavioural change among the rural health care users. The circular flow of information between the health practitioners (innovators) and users (rural

women and child) through ASHA, Anganwadi workers and ANM have facilitated interactive learning and further innovation in health care delivery system. The new institutional arrangement for healthcare provisioning has brought a turnaround in the health care use by the rural households. After the implementation of NRHM the rate of increase in institutional delivery and reduction in IMR and MMR has been substantially higher than the pre NRHM period. Thus, the paper concludes that the innovation in health delivery system has brought in a turnaround in the maternal and child health care of India.

## **Institutional Bearing on Determinants of Participation and Choice of Institutions in Higher Education: Evidence from in India**

Jannet Farida Jacob

*Doctoral Student, Centre for development studies, Trivandrum, Kerala. Email id: [jannet11d@cds.ac.in](mailto:jannet11d@cds.ac.in)*

**Abstract:** The goal of equity, expansion and excellence in higher education in India is perfectly in keeping with the United Nation's resolution on Sustainable Development goal (2015) which aims at, among other things, 'a world with universal literacy, and equitable and universal access to quality education at all levels'. Towards this goal, institutional innovation in terms of education policies has been evolving ever since the independence of the country. Recently, the eleventh five year plan (2007-2012) increased the allocation for higher education by nine fold owing to the growing demand for tertiary education, despite high rate of graduate unemployment in India. Besides, the government is promoting an innovative policy of public-private partnership in higher education leading to an expansion of colleges including innovation universities, mostly in the private sector catering to professional/technical courses. This, however, has created a vast divide between technical and non-technical streams of education as well as raised the question of equity in access in the wake of greater private participation and the possible gradual exit of government from higher education sector. This is more so with the government promoting education loans in lieu of subsidised higher education.

This calls for a revisit into the determinants of participation in higher education in the light of labour market outcomes and a quest into the determinants of choice of higher education institutions, whether public or private. Using Logit model, the study first looks into the determinants of participation in higher education controlling for labour market conditions, college proximity and geographical characteristics, which are at the same time treated as three sources of omitted variable bias and thereby correcting for endogeneity problem. Further, using multinomial logit model, the study analyses the determinants of choice of institutions, whether public or private, in higher education.

The study uses the National Sample Survey (NSS) data on Social Consumption: Education 2014, which is a nationally representative data on household and individual level information on family education status, current participation status with details on type of institution, expenditure on education and household consumption expenditure.

The results show that demographic and geographic/regional characteristics i.e. rural-urban difference, labour market conditions and college proximity have a significant influence on the participation decisions of individuals regarding higher education. Analysing the choice of institutions it is found that there is significant negative participation in private aided and unaided institutions compared to public institutions in the case of females, lower income quintiles, and Socio-religious categories (SRC), especially scheduled tribes, scheduled castes and Muslims. The study finds its relevance in that it brings out the fact that even when the socially and economically disadvantaged groups and females in general are less likely to participate in higher education, they show greater preference for public higher education institutions, reiterating the role of government in ensuring equity through innovation at the policy level to establish inclusive institutions to enhance access to higher education for the marginalised and vulnerable groups.

## **SESSION 6.2 (PLANTATION AGRICULTURE)**

### **The sustainable future for Indian coffee: Certified, Organic and Specialty coffee**

P G Chengappa, Devika C M, Arun Muniyappa and Pradeepa Babu B.N

**Abstract:** The paper examines the role of certification, as a measure to improve the sustainability for Indian coffee in view of emerging demand for certified and specialty coffees in the global market. The global imbalance of supply and demand have often eroded farm-gate prices to low levels. Indian coffee growers have to make a choice of either staying as low-cost producers of a bulk coffee or adopt innovative practices to differentiate their produce to access quality conscious consumers. This aspect is further analysed with a perceptions case study in India's largest coffee growing district - Kodagu by interviewing a sample of conventional and certified coffee growers. Our analysis indicated that adoption of certification programs in Kodagu is relatively limited with a few individual-level niches in the area of certified coffees. Therefore, we have argued that the potential for conservation-oriented certification for coffee in Kodagu offers greater promise keeping the uniqueness of the natural offerings from Kodagu as a hotspot of biodiversity.

### **Return to labour, innovation and inclusive growth in the context of Indian tea plantations: Recent happenings in Kerala and West Bengal**

Kingshuk Sarkar

*Fellow, VVGNI*

**Abstract:** Tea plantation sector is very important sector in India's inclusive growth strategy because of its significant contributions towards providing livelihood opportunities to millions of plantation workers, majority of which are women and tribal workers and marginal sections in medium and small plantations. However, since adoption of liberalized economic policies from early nineties which stresses on the export expansion, there is this stress on export competitiveness. Despite pitiable living and working conditions majority of tea workers are tied to the plantation work over generations. Even though women workers constitute more than half of the total labour force, their interests are consistently neglected and their representation at the union level is very minimal. Last year in Kerala women workers of the KHDP Ltd. did something new and induced innovation in mobilizing large number of women workers against anti-worker designs of the management and succeeded in getting their demand at the end. They did this without taking help from operating trade unions and without seeking any political patronage. This movement had a spread effect on the plantation workers across Kerala and as a result daily wages for tea plantation workers increased from Rs 231 to Rs 300 at a single go which is unprecedented in the past. This is the first instance where indigenous leadership came in the forefront and secured their just



demands. In this sense this is a path breaking effort even though on a small scale. But it has the potential to spread across plantation regions and ensure a degree of inclusive development.

## **Revealed comparative advantages and competitiveness of India's agricultural, food, tea and coffee products**

Tinku Barik <sup>a</sup> and Dr. Byram Anand <sup>b</sup>

<sup>a</sup> *Doctoral Research Scholar, Department of Management, Pondicherry University, Karaikal Campus, Karaikal-609605; Email:tinkubarikphd.pu@gmail.com, Mobile: 9087546374.* <sup>b</sup>*Assistant Professor, Department of Management, Pondicherry University, Karaikal Campus, Karaikal-609605., Email:byramanand\_1999@yahoo.co.in., Mobile: 9443610064*

**Abstract:** International competitiveness governs with the comparative advantage of a particular nation. Comparative Advantage proposes that even if a nation is less competent or has an absolute detriment with respect to another in the production of all commodities, there is still a basis for communally beneficial trade. Based on above an attempt has been made to investigate the revealed comparative advantages and competitiveness of India's agricultural, food, tea and coffee products for the periods of 1995-2014 for agricultural, food and tea products and 1996-2015 for coffee products measuring the comparative advantages and competitiveness of the these products. The different tools like RCA, TSC,RSCA,RC and NPC indices has been illustrated for which Sequence of data employed for the study and it has been obtained from World Trade Organisation (WTO), EXIM-Trade data, Federation of agriculture organisation (FAO), India brand equity foundation (IBEF), Tea board of India, RBI trade bulletin also from various journal publications. Findings of the study shows that although almost all of the above products are having comparative advantages and competitiveness even than due consideration need to take for maintaining the same.

## **Sustainability of NR Sector under Liberalised Trade Regime in India**

**S. Mohanakumar**

*Institute of Development Studies, Jaipur*

**Abstract:** Natural Rubber (NR) has been subjected to continuous and unrelenting price fall for more than half a decade since 2011. The NR being a small holder's crop with an average size of holdings of 0.46 hectare, staying capacity of farmers have been shaken. Sustainability of NR production sector implies sustenance of marginal and small farmers constituting more than 98% of the total rubber holdings and 78% of area in under NR in India. Against the setting, the study explores factors influencing NR price in India during the pre-reform and reform periods. Supply side variables viz., production,

import and exports on the one side and demand side variables such as NR consumption, growth in agriculture, manufacturing, aggregate GDP are used. The influence of international market on NR is captured with world oil price, world GDP, world price of NR representing the aggregate impact of the supply and demand side variables in the international economy. The variables tested for unit root (to detect the stationary property) and cointegration (Engle-Granger test and Johansen test) for both domestic as well as world NR price along with demand and supply side variables used in the study. Having identified the co-movement of variables, causality test is applied to detect the cause and effect relationship of variables with NR price. The VAR Model was applied to find the short run causality between the variable as there was no long run co-movements between the domestic and world price of NR. The Impulse-Response function indicated that a impulse in world price creates a response in domestic market for almost a week in the daily price of NR. The study concluded that the NR sector in India was closely integrated with the world NR market after 1991. Sustainability of NR farmers calls for production of NR at a competitive price in the international market or opt to leave the NR production for the market. The NR sector in India may not be sustainable in the long run in the present situation as long as the domestic market is integrated with the world NR market. Government intervention in the domestic NR market is less likely to yield desired results as long as domestic market is connected to the world market.

## SESSION 6.3 (GRASSROOT INNOVATION)

### **Below The Radar Innovations' Within 'Health Regions': Innovations And Property Rights In Sowa Rigpa Medicine In India**

Harilal Madhavan

*Azim Premji University, Bangalore*

**Abstract:** This paper analyses the innovation system within the Sowa Rigpa medicine in India focusing on both the institutional as well as non-institutional interactions among the agents contextualized in its unique historical trajectories of development. Sowa Rigpa or Tibetan medicine is the latest entrant to Indian Health system. Beyond the usual complex medical science and technology led definitions of innovation, the paper traces the 'pathways' of creative innovations and the informality in interactive learning platforms in indigenous medicines, where the transfers of knowledge becomes a part of livelihood and cultural protection. The data is compiled from the fieldwork of Ladakh, dharamshala and Darjeeling. While the world of innovation is very much research oriented and patent dependent, we connect these *below the radar innovations* to the international scene where, a larger attempt for property right creation and industrial production is imminent. This analysis brings forth the possibility of placing the contemporary health innovation system within the regional innovation analysis (we call it 'health regions') but largely to be alerted against the transnationalization of knowledge and the hijacked rights of the owners.

### **Patents and grassroots innovations: rethinking intellectual property rights in the informal sector**

Gautam Sharma<sup>a</sup> and Hemant Kumar<sup>b</sup>

*<sup>a</sup>Centre for Studies and Research in Science, Technology and Innovation Policy, Central University of Gujarat, Gandhinagar, Gujarat-382030.; <sup>b</sup>Centre for Studies and Research in Science, Technology and Innovation Policy, Central University of Gujarat, Gandhinagar, Gujarat-382030.*

**Abstract:** This paper aims to explore the role of intellectual property rights (IPR) for informal sector innovations with special reference to grassroots innovations in India. Drawing on the literature on patents and innovations in the formal sector, we examine whether the theories and rationales which promote IPR can stimulate innovations in the informal sector too. In India, grassroots innovations represent informal sector innovations and the management of their intellectual property is one of the main activities of National Innovation Foundation (NIF). IPRs as an institution have supported innovations by firms and industries which have a large market and resources to commercialise their products. Grassroots innovations on the other hand represent a culture of individual innovators who innovate out of adversity and needs, most of whom

are unaware of IPR. By conducting interviews with grassroots innovators and collecting patent related data of grassroots innovations from secondary literature we seek to explore whether the current institution of IPR could provide same set of incentives and motivations to the informal sector innovators as it has to certain industries in the formal sector. The study finds that most of the grassroots innovators are unaware of these rights or the process of filing patents and also consider the entire patenting process very complex to understand.

## **Grassroots Innovations and road ahead**

Sazzad Parwez

*Senior Research Fellow, Centre for Studies in Economics and Planning, School of Social Sciences, Central University of Gujarat, Gandhinagar, Gujarat (India), E-mail: [sazzad.parwez@gmail.com](mailto:sazzad.parwez@gmail.com)*

**Abstract:** The grassroots innovators and some of who will become entrepreneurs may be themselves or through supporting organisations create space in the international market for their products and services. Globalisation and its significances so far have not been very accommodating to the people from disadvantaged regions. But there is no inevitability of such consequences. The informal economy employs the majority and largest proportion of people who suffer from various socio-economic disadvantages. The problems become more severe in economically depressed regions or where despite richness of natural resources, enough opportunities for value addition or reduction of drudgery or improvement of livelihoods opportunity have not emerged. By building the bridge between informal and formal sciences, several opportunities can be created that may have remained unexplored for the socio-economic development of poor people. In order to understand innovation at grassroots, one needs to address the question that, how do local innovators alone or in groups, explore the potential of using either available knowledge and/or resources to generate new solutions for wider use has been a question? This paper tries to bridge important gaps in the way we conceptualise the evolution of innovations in informal sector by formally untrained minds.