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**HJDD**

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**PAPERS, ABSTRACTS AND PROCEEDINGS**

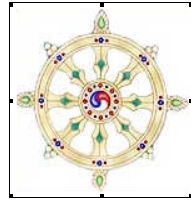
**OF**

**The Fifth Annual Himalayan Policy Research Conference**

**Madison, Wisconsin, October 14, 2010**

**Nepal Study Center  
The University of New Mexico**

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OF  
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**Session 5B: Agriculture, Industry, Health and Finance II**

Chair: Abdu Muwonge, World Bank, USA

Discussants: Stephanie Smith, University of New Mexico, USA

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## **Welcome Note from Editors**

On behalf of the editorial board of the *Himalayan Journal of Development and Democracy (HJDD)* and the conference organizing committee, I would like to thank all the participants at the Fifth Annual Himalayan Policy Research Conference (HPRC) held at the venue of the University of Wisconsin's 39th Annual South Asian Conference, Madison, WI.

Nepal Study Center (NSC) organizes the HPRC as an annual event for researchers and observers of development in Nepal and South Asia. NSC was established at the University of New Mexico in 2004 with the objective to promote policy research related to the South Asian region and the countries of the Himalayan region. The NSC team remains dedicated to creating platforms for the enhancement of knowledge sharing, particularly in the areas of sustainable development, environment, poverty, governance, and health. Among its other prominent activities, NSC publishes two e-journals (*Himalayan Journal of Development and Democracy* and *Liberal Democracy Nepal Bulletin*), maintains an electronic repository to allow scholars to upload, store, and disseminate policy research, coordinates the Himalayan study abroad program, and doctoral and post-doctoral research projects.

Nepal Study Center has also added a milestone by facilitating the signing of the Memorandum of Understanding (MOU) between the University of New Mexico and the Kathmandu University (KU) and the Centre for Integrated Mountain Development (ICIMOD)'s 8-country Himalayan University Consortium (HUC). The delegation from UNM was led by the executive Vice President and the Provost Dr. Ortega. As a part of the UNM-KU MOU, the NSC-UNM now has a branch office at KU's School of Management (KUSOM) complex in Balkumari, Kathmandu. This regional office hopes to facilitate academic activities in the region, and ultimately leading to the establishment of a Graduate School of Economics and Public Policy.

Our inaugural HPRC in 2006 was ambitious in ensuring a significant convergence of researchers working on policy relevant issues on South Asia. That foundation work led to consecutive successes in the following years and has now made HPRC a durable annual event. We hope that these conferences, together with research activities performed at NSC and



by its research affiliates, will culminate in the formation of an *Association for Himalayan Policy Research*. In recognition of the activities directly and indirectly supported by NSC, many scholars from North America, South Asia, Europe, the Far East, and Australia have joined this network. Our policy research association will continue to expand this global network of scholars, professionals, and policy practitioners interested in the development of the South Asian region.

This year we included a live broadcast of several of our presentations and discussions virtually over the internet. This mode of participation allowed scholars from South Asia and around the world to engage in discussion with the scholars in Madison. We look forward to improving and expanding the virtual dissemination of the conference next year. Our broadcast was made possible with financial and technical support from the Robert Wood Johnson Foundation at UNM.

We are grateful to the University of Wisconsin's 39th Annual South Asian Conference for giving us the pre-conference venue. We are also thankful to those who have, as listed in the acknowledgement section, provided financial support to conduct this conference. We appreciate the help from the staff and graduate students of the Department of Economics, UNM, and the goodwill and support of many friends of NSC. We particularly thank UNM students Steven Archambault, Prakash Adhikari, Hari Katuwal, and Naresh Nepal for their assistance. Finally, we would like to thank our guest editors Vijaya R Sharma, Jeffery Drope, and Mukti Upadhyay for their help in preparing this issue of *HJDD*.

Sincerely,



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Alok K. Bohara, PhD  
Editor, *HJDD*  
Professor, Department of Economics, University of New Mexico

## **Acknowledgements**

The Nepal Study Center and the conference organizing team would like to acknowledge financial contributions being made by various individuals and organizations. We would like to especially thank the Honorary Nepalese Consul General in Chicago Marvin A. Brustin for his support of the Center.

Please send your tax deductible contribution payable to *Nepal Study Center* at the following address: Attn: Ms. Maria Daw Department Administrator II; Department of Economics; University of New Mexico; Albuquerque, NM 87131, USA; Phone: (505) 277-5304; Fax: (505) 277-9445; Email: [mdaw@unm.edu](mailto:mdaw@unm.edu). Contact Ms. Daw for any direct wire transfer information. NSC thanks a group of student volunteers: Hari Katuwal, Steven Archambault, Naresh Nepal, Prakash Adhikari, Santosh Lamichane, Surendra Prajapati, and Shikha Basnet for their support and encouragement.

## **Virtual Conference Sessions**

As part of the efforts to increase our **Global Reach**, this year's conference included several paper presentations that were broadcast live over the internet to viewers anywhere in the world. We particularly welcomed those virtual participants from the Himalayan Region and South Asia! We owe gratitude to the Robert Wood Johnson Foundation (RWJF) Center for Health Policy Research at UNM. We would not have been able to accomplish the virtual component of this conference without their guidance and financial assistance. Thank you RWJF!

 **Center for Health Policy**  
at the University of New Mexico  
<http://healthpolicy.unm.edu/>

## **Financial Support**

NSC would like to encourage all the friends of NSC to continue their financial support so that it can successfully undertake various tasks: update software, run conferences, produce proceedings, maintain the electronic research repository, provide a platform for virtual e-conferences, and advertise and publish journals (*HJDD* and *LDNB*). NSC is a not-for-profit organization registered under the College of Arts and Sciences, University of New Mexico.

**PAPERS AND ABSTRACTS**

## **India's poverty eradication efforts: Some vital questions**

**Mohd. Saeed Khan**

Aligarh Muslim University, India

**Ghazala Aziz**

Aligarh Muslim University, India

### **Introduction**

India is the country that can take pride in according fairly high priority to tackle the widespread poverty after independence in under colonial rule 1947. Stagnant growth of the economy for more than one and a half centuries, a rapid growth of population, poor infrastructure, little industrialization, low productivity agriculture, and consequently low per capita income are some of the features of the economy that was inherited by independent India. But this is not a complete story. Social and political exclusion of a segment of population that emerged in ancient India and continued unchecked for several centuries has been another cause of extreme poverty in India. Existence of tribal population in some pockets with their acute deprivation and lack of property rights over the land they inhabit is another phenomenon to which poverty in India could also be attributed.

Our paper is an attempt to revisit the phenomenon of poverty in India in a non-quantitative way, from its genesis to an evaluation of public policy response to mitigate poverty. Some of the analysis is based on either well-documented facts at the micro level for different States or on our own observations. Some of the data we wanted to use but did not might not be representative of the whole economy. But the questions raised in the paper, we believe, are still relevant.

### **Genesis of Poverty**

The insight into the genesis of India's poverty is necessary in order to assess if the measures undertaken – legislative and budgetary – were appropriate to mitigate poverty. The measures so undertaken in independent India, to a greater extent, address the root cause of poverty. It appears the political leadership was able to correctly identify the poverty traps as mentioned in the Chronic Poverty Report 2008-09.

The genesis of India's poverty can be found in two historical factors, namely, the institution of rigid and discriminatory caste system which

prevailed since before 1000 B.C. and the colonial rule India has been subjected to for little less than two hundred years before it became independent. The former resulted in social discrimination against a sizeable section of the population which in turn deprived them of the various opportunities and benefits that flow from the economic progress of the country. The caste system also inflicted political exclusion on the underprivileged class leaving it without representation in political and economic decision making. The colonial rule, on the other hand, was also responsible in many ways of India's impoverishment. An important result that is still relevant today was the decay of India's urban handicrafts that were widely acceptable the world over for centuries. Such a development caused a large scale migration of the working class from urban to rural areas putting agriculture under further stress. Indian intellectuals of the 19<sup>th</sup> century especially Nauroji (1901) and Ranade (1892) have given a detailed account of extremely low per capita income during 19<sup>th</sup> century, the phenomenon of 'economic drain' and its impoverishing effects and the miserable state of agriculture.

### **Public Policy Response**

The required strategy for poverty alleviation was two pronged. One, constitutional measures to give hitherto neglected class political representation which would be further strengthened through positive discrimination favoring this class and two, accelerating economic growth along with a conscious policy of taking the benefits to the deprived and poor. The country began providing reservation of seats in Central as well as State legislatures for certain castes and tribes together with reserving some jobs for them in government employment. Centralized planning was instituted for quicker economic development with resources being allocated in accordance with national priorities under government supervision. Thus, instead of launching programs to attack poverty directly, policymakers chose the trickle down path in their attempt to achieve rapid economic development.

Probably the country was not properly equipped to tackle poverty head on. It did not even define "poor". Data base was inadequate to measure the incidence of poverty. The only relevant statistics was per capita GNP which was low and hence created a general belief that poverty was widespread.

### **Poverty Defined**

It was only in the 1960s, with the initiative of the Planning Commission (PC) and the efforts of individual researchers that we find a definition for poverty and a few estimates both by the PC and academics. Thus a formal beginning was made to address the poverty issue in a scientific manner. The poverty thus defined was “the failure of earning an income sufficient to ensure the per capita calories intake of 2100 and 2400 for urban and rural people respectively.” Methodological aspects of poverty measurements are beyond the scope of this paper. True, the estimation method suggested by a committee appointed by the PC would substantially raise the poverty ratio in India but it does not affect the focus of the present paper. One of the serious limitations with this definition is the lack of data about the depth of poverty. Any upward mobility within poor population as a result of either anti-poverty programs or trickle-down effects of development often remains unnoticed. More so, it does not take into account the poor’s access to factors that can contribute to significant economic and social mobility, for instance, children’s education which is often sacrificed because of its higher opportunity cost.

### **Incidence of Poverty**

As mentioned earlier, the decay of handicrafts during the latter half of the 19<sup>th</sup> century had increased the dependence of work force on agriculture. Those who depended on agriculture far exceeded in number than optimal employment which resulted in either zero or very low marginal productivity of labor. This kept agriculture’s saving capacity low. Agriculture not only failed to contribute to capital formation in other sectors, along the lines suggested by Johnston and Mellor (1961), it had to rely on public funds for its own capital needs. With an alarming growth of population after 1951 and agriculture trapped in low productivity, the sector was just unable to absorb rising work force.

It is argued that poverty actually exists because of the low opportunities in rural sector where non-farm economic activities are extremely limited. Urban poverty is largely a result of rural out-migration in search of livelihood. This indicates that the solution to poverty may be a direct attack on the rural poverty first.

### **Anti-Poverty Programs**

Initially the focus of public policy was economic growth much of it through growth of public sector. The idea was to bring about resource allocation in accordance with national priorities toward growth. But by the early 1970s it was realized that ‘trickle down’ theory did not work. So

there was a shift in policy stance. Realizing that poverty exists because of a huge supply-demand gap for labor in agriculture, a few employment programs were initiated at smaller scale during the 1970s, such as the Employment Guarantee Scheme, the Food For Work Program, the Small Farmers Development Agency, the Marginal Farmers and Agricultural Labor Program, the Drought-Prone Area Program, and Desert Development Program. These programs were in operation for various target groups but were limited in their coverage. Though the activities in which work was to be offered were identified, the primary objective was to create employment.

Since these programs were carried out by different agencies with hardly any coordination between them, the result was considerable lopsidedness and duplication in the selection of target groups. The Sixth Five Year Plan, learning from the past experience launched ambitious wage and self employment programs in the form of National Rural Employment Program (NREP) and Integrated Rural Development Program (IRDP). These programs had all-India coverage. In the latter part of the 1980s all the wage employment programs were merged into a single Jawahar Rozgar Yojna.

Major step in this direction has been the enactment in 2005 of National Rural Employment Guarantee Act (NREGA). It guarantees 100 days of employment to any rural household whose adult members are willing to accept manual work. The Act offers employment to the poor as an entitlement but also expects to generate social and economic infrastructure. At this moment it is premature to say to what extent the new policy will succeed in realizing its objectives.

### **Implications for the Economy**

Limitations in the design and implementation of these programs are well researched and documented. One of the major shortcomings of these programs is that they are not integrated with the national development plan and thus not likely to create social and economic infrastructure in proportion to the public expenditure incurred on them. Though the growth of the economy during the decade of 2000s has been the highest of all decades, it is largely demand driven growth achieved at the cost of fiscal prudence. Rural development has still lagged considerably despite huge public expenditure on employment programs. As a result, the perpetual dependence on budgetary support for much of rural employment has continued.

Growth during 1980s was not sufficient to keep its external sector in balance, its public debt sustainable and its fiscal deficit in reasonable limits. The result was a near collapse of the economy in 1991 with all its fiscal parameters in a terribly unfavorable state. This was not only a jolt to the employment programs but future course of economic development as well. In order to keep the fiscal deficit low with most of the revenue expenditures downward rigid, each finance minister found it easier to cut development expenditure instead.

The net result of such fiscal imbalances has been the near stagnation in public expenditure, in real terms, on merit goods like health, education, water and sanitation. One aspect which is often missed in almost every analysis is the quality of the delivery system of public and merit goods. Therefore when it comes to the expansion of these goods it is the increase in allocation which remains in focus or at the most such increase is deflated for the inflation to arrive at the variations in real terms.

The most potent means to ensure socioeconomic mobility is education albeit with a longer response lag. An examination of publicly provided primary education is sufficient to present the scenario which is disappointing. There is no doubt that the allocation for primary education has risen in recent times. But greater part of such increase is devoted to the teacher's salaries, mid-day meal scheme (meant to attract the greater number of children to school). There has never been a serious introspection as to why poor children stay away from school. The reason lies in the fact that the opportunity cost of education for poor population is substantially high. Moreover, mere primary education may not ensure them any social and economic mobility. The quality of education offered in the government schools is far below the required standards while teachers in these schools are paid much higher in comparison to their counterparts in private schools. Moreover the fact needs to be realized that for the purpose of making the poor more productive, education up to a certain level is like an indivisible good which is useful either in certain volume or nearly useless.

Other merit goods mentioned above are also in the same state. Therefore the inference that emerges is "unless the delivery system is improved mere allocation of fund may not yield results". As there are other competing heads for the public funds the current allocation on primary education, particularly the manner in which it is being managed,



is largely a waste. So whether it is inadequacy of allocation to these competing areas or poor management or both which was responsible for limited job opportunities, can be judged only after case by case studies. Information provided by official agencies cannot be taken on its face value.

### **Subsidies**

Subsidies are theoretically justified in case of goods that have either positive externalities of significant magnitude or for which market will lead to inefficient allocation since market determined prices are likely to result in sub-optimal consumption of such goods. But subsidy has its own politico-economic dynamics. These are normally justifiable initially but often continue long after the purpose for which they were initially provided has been achieved. Presently 'subsidies' are major items of expenditure in the revenue budget which incidentally has been in deficit since 1979 in case of Central government and 1987 in case of the Indian States taken together.

An example from electricity would illustrate the matter. Electricity is usually provided to the rural sector on fixed charges though some States went to the extent of providing it for free. It was in the 1970s that de-metering was effected for rural consumer for agricultural and household uses of electricity under the justification that it would be easier to realize fixed charges from the users. This makes Power Corporations understate theft and transmission losses with cover-up of corruption of its field staff as a byproduct.

According to Arvind Vermani (2006) total subsidies offered by the Central government alone in 1999-2000 were Rs 25,690 crores, a staggering amount sufficient to lift the population from below the poverty line if an equivalent cash transfer was offered. While several questions would arise regarding the practicality of such a scheme, the sheer size of the subsidies can indicate their failure in a cost benefit calculation.

### **Concluding Remarks**

India has undertaken two measures over the long run, constitutional and budgetary, to address poverty. The constitutional measures undoubtedly helped a great deal in lifting up those who have been oppressed for centuries. They have secured representation in legislatures as well as in bureaucracy. So they have come to occupy the position where they are part of decision making and policy implementation. But

continued reservation on the basis of cast alone created a class within class with the consequence that those of the same caste who could not derive benefit from such arrangements face serious disadvantage at the hands of the subclass that has reaped most of the benefits of reservation. The more deprived group may not have fully realized that many of the privileged fellows within the same castes have remained the biggest stumbling block for their progress. Such realization could potentially have dangerous political implications.

As for the budgetary measures to mitigate poverty, so far there is no empirical evidence to suggest that the opportunities created through budgetary allocation are sustainable in the event of its partial or complete withdrawal. The employment schemes so far have not succeeded in creating infrastructure in rural areas or generated enough economic activities to decelerate the process of out-migration from rural to urban areas.

Further research is required to measure the income generation and job creation in the event of reallocation of budgetary resources in favor of competing alternatives that have the potential to alleviate poverty on a sustainable basis.

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## **Poverty and indigenous peoples of Nepal**

**Gyanesh Lama<sup>1</sup>**

Washington University, USA

**Martha Ozawa**

Washington University, USA

**Palsang Lama**

Tribhuvan University, Nepal

### **Abstract**

This study analyzes nationally representative sample of women (N =10793) to quantify the magnitude and predictors of poverty among indigenous peoples of Nepal. The study estimates the risk of poverty among the major ethnic groups in Nepal. Cross-sectional data from the Nepal Demographic and Health Survey 2006 (NDHS 2006) was used. Step-wise multivariate logistic regressions were conducted. The results show that significant variations exist in the risk of poverty between indigenous and non-indigenous peoples. Tamangs were at the highest risk of poverty among the indigenous peoples. The disparity between indigenous and non-indigenous peoples remained significant even after controlling for human capital, occupation, geography and other individual characteristics. Attention to the intrinsic development practices are needed to determine if these variations are reflective of the variations in institutions, including the elite capture of the community resources.

**Key word:** poverty, indigenous, geography, Nepal

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## **Coping mechanism among tribes in India: A case study of Melghat**

**Nilratan Shende<sup>2</sup>**

Indian Institute of Technology Bombay, India

### **Abstract**

India has witnessed a series of economic changes over time: transition from repeated hunger and family crisis to self-sufficiency in food, from poor industrial growth and infrastructure to sizable industrial and economic growth as well as significant strides in science and technology. India appears to present a dichotomous and paradoxical picture of accelerating economic growth on one hand and persistent malnutrition and food security at the regional and household level on the other. Despite attaining self-sufficiency in food, the country still has large sections of the poor and extremely poor experiencing social discrimination and acute deprivation from their due entitlements. India continues to grapple with translating national food security to household food security. As a result, India continues to face mammoth task of attaining food security. At a much more local level, this research identifies a series of coping mechanism on which people of Melghat in the state of Maharashtra rely throughout the year. Variation in each of the coping mechanisms is analyzed in light of ownership of resources, access to natural resources, and gender discrimination. The paper takes a sociological approach to relate problems of food security to the prevailing structural social disparities and consequent discrimination.

**Keywords:** Poverty, indigenous community, food insecurity, coping mechanism

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## **Developing soil erosion indices in Nepal using distributed modeling**

**Keshav Bhattarai<sup>3</sup>**

University of Central Missouri

Repeated subductive actions of the Indian and Tibetan plates coupled with deforestation, high intensity strong monsoon rainfall, steep topography, and extensive farming system contribute to the losses of precious soils from Nepal. The loss of precious soil not only creates problems for Nepal to restore her ecosystems and food security, but it also affects the ecosystems in India and Bangladesh. Very often, too much muddy water enters the Bay of Bengal, over fertilizing and suffocating sensitive organisms and destroying coastal biodiversity. The Nepali agricultural base is under serious threat due to soil erosion, so much in fact, she may not be able to feed her 27 million people in the years to come. Past trends show that Nepal's population doubles every 35 years. The increasing population needs to expand farmlands to meet its food need, which causes the losses of precious soil. Deteriorating land fertility puts enormous stresses on the remaining resources.

This research is an attempt to develop soil erosion index maps of Nepal by integrating biophysical and socioeconomic-demographic information. Areas exhibiting high erosion caused by biophysical and socioeconomic-demographic factors are identified for all the three ecological regions of Nepal – mountains, mid hills, and Tarai – covering 147,181 square kilometers. The terrain attributes derived from 30 x 30 m<sup>2</sup>, 60 x 60 m<sup>2</sup> and 90 x 90 m<sup>2</sup> grids resolutions are used to compare soil erodibility in different places. A soil erosion index map helps to differentiate productive areas from non-productive ones, and such a map becomes instrumental to examine food security. Research in the past decades has advanced our understanding of these processes, leading to mathematical relationships that can be incorporated into mechanistic, process-based models. Further research advances are necessary to study the intertwined effects of surface flow, seepage, vegetation, slopes, aspects, precipitation, and solar insolation on soil erosion. A multidisciplinary approach is essential to fully understand the impacts of soil erosion processes on economy and food security.

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**Economics of urban drainage system: A case study of Cuttack city, Orissa, India<sup>4</sup>**

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This research study explores the economic value of a well-functioning drainage system in an urban center of India. The urban drainage system regulates the environment and through it the health of the people. It promotes the urban economy.

A poor drainage system contributes to the ill-fare of the people by way of health hazards, stinking, water-logging, bad landscape, urban flooding that endangers lives and property, disrupts communication, leads to stagnation and pollution of water, adverse effects on aquatic habitats, soil erosion, silting, solid-waste blockade and migration, so on and so forth. The urban runoff mixes up with sewage from overflowing latrines and sewers and gives rise to a wide range of problems associated with water borne diseases. Flooded septic tanks and leach pits provide breeding sight for mosquitoes, and fecally contaminated wet soils provide ideal conditions for the spread of intestinal worm infections. Infiltration of polluted water into low pressure water distribution system contaminates drinking water supplies causing outbreak of diarrhea and other gastro-intestinal ailments. To this is added the poor solid waste management, lack of sufficient resources, equipment and know-how with the municipal agencies for drain cleaning. Particularly in the ancient cities, the modern techniques for improved designing in the urban hydrological cycle are not forthcoming to replace and rectify the inherent bottlenecks. Hence, the thrust is on providing a welfare oriented sustainable urban drainage system and better environment planning. However, the local urban government may not have the where-withal to meet the requirement. Thus for initiating a positive policy in this regard how much are the people willing to pay for better drainage system needs to be assessed.

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We use a hedonic property price function to estimate the effects of water-logging due to poor drainage system on property value. Hedonic price models have enjoyed wide spread use in determining the implicit value of different aspects of products since their introduction by Court (1939) and their theoretical explication by Rosen (1974). After that many studies have applied the hedonic property price models to estimate the value of environmental amenities such as the effects of proximity to schools, air quality, crime-rates, racial mix, access to jobs, earthquake zones, and floods on the selling prices of real properties (Brookshire et al. 1985, Dubin and Goodman 1982, Evans and Beed 1986, Freeman 1979, Harrison and Rubinfeld 1974, Li and Brown 1980, Palmquest 1984, Ridler and Henning 1967, Schwartz et al. 1981, Bernknopf, Brookshire and Thayer 1990, Beron et al. 1997, Freeman 1993, Bin and Polasky 2004, and W.A Donnelly 1989). But the literature has not scrutinized the impact of water logging on the value of properties. This paper attempts to explain the effect of poor urban drainage system in the form of water-logging on residential properties represented through the rental values.

The hedonic price theory starts with the presumption that as environmental quality changes property prices would also change, indicating the scope for estimating an implicit demand function for the environmental goods by observing the property price variations. The hedonic price model estimated in this study is parsimonious; it regresses the monthly rent with 10 explanatory variables chosen through a grid search from a wide range of variables. The chosen variables are: whether the house rented is a single or multiple storey house, whether the ground floor or higher floor is rented, whether the renter's entry to the house is private or common, the square feet of living space rented, the number of rooms, the number of washrooms, the distance to market, the distance to kids' school, the distance to bus stop, and the total number of hours of water logging annually.

This study is conducted in Cuttack city of Orissa, India. Cuttack is situated about 80kms west of the coast line of the Bay of Bengal and is 25kms from Bhubaneswar, the capital city of Orissa state. The city is situated at the head of Mahanadi delta, flanked on both sides by the perennial rivers, the Mahanadi on the north and the Kathajori on the South and East. The general ground levels inside the city are low and below high flood levels of the two rivers. The sewage and storm water mixes together and finds its way into the households in many water-prone areas of the city and creates extremely unhygienic condition. The city's drainage lacks



infrastructures to segregate waste water and sewage from surface run off. The tributary drains joining the main drain have been encroached upon unscrupulously and are in dilapidated state. The carrying capacity of the drain is throttled due to narrow culverts all through. Apart from this there is frequent silting due to insufficiency in channels hydraulics, constructions in the water way, encroachments and widening of roads, intrusion of electricity and telephone poles, uncivil practice of throwing garbage into drains, lower elevation of the roads, slums at several reaches, degradation of natural wet lands, streams and tanks and leakage from sluices, etc. The problems aggravate when flood water levels in the major two rivers are above the water levels in the drainage channels. This causes flood leakage. During such times, many areas in the city remain water logged while low lying areas get inundated.

As far as sampling is concerned it is undertaken with the help of two GIS maps: (A) proposed drainage map and (B) inundation map of Cuttack city. The inundation map is changing every year. So some adjustment is being made. Then both the maps are put in one map. Then forty seven clusters are made over it. All these clusters are selected on the basis of four criteria such as (1) Blue Exposed to low pocket and inundated (2) Unexposed and uninundated (3) Exposed to low pocket and uninundated (4) New drainage extension area. There are 28, 9, 5 and 5 sample points respectively in these four categories. All the points are plotted with the help of GPS. From each cluster 16 renters are selected at random. However, before final survey a review is made whether 16 renters exist in each cluster or not. In total there are 752 households surveyed.

A simple linear multiple regression model is estimated using the econometric package LIMDEP. The problem of multicollinearity is avoided partly through an observation of the correlation matrix and mainly through the software which dropped multicollinearity variables by default. The regression output corrects for heteroscedasticity. The output shows that all the chosen explanatory variables along with the intercept yield coefficients which are highly significant except the two variables: the floor rented and the distance to market. These two variables are significant at  $(0.05 < \alpha < 0.10)$  level. The rest of the variables are significant at below 1% level. Signs of the coefficient are as per our theoretical expectations. The coefficient of the environmental quality variable (the number of days of water logging) is highly significant and qualitatively of negative sign as per our theoretical expectation. The coefficient which is the implicit price of water logging implies that in order to avoid the suffering of water

logging by 1 hour during a year the households are willing to pay a higher rent of 72 paisa in the house rent per month. Thus the annual implicit price of an hour of water logging is Rs.8.64 per household. Assuming this amount as the annual willingness-to-pay of one household, the annual property market valuation of the damage done by an hour of water logging to 73,618 households is Rs 636,060. In terms of the marginal effect for the average 68.97 hours of water logging per annum, the implicit price is estimated at Rs 49.57 per month. This estimate of willingness to pay will definitely help the policy makers to arrange resources for providing an improved sustained urban drainage system in the city.

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**Environmental attitude and water treatment behavior of residents of Kathmandu Valley**

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Population pressure and urbanization have both contributed to the deterioration of water quality and the sanitation situation of the Bagmati River system in Kathmandu Valley. The rapid urbanization has also put a lot of pressure on the municipality water supply system. Additionally, the outdated water supply system in the valley has forced the residents to seek alternate sources for water supply, which includes getting water through the privately ferried tanks. Many households have also built private taps by tapping into their groundwater, which has further threatened the water table in the entire valley affecting the water level in the Bagmati River. All of these have led to two problems for the households in Kathmandu.

First, the cultural value of the holy river has been threatened to its core. There are many organizations which have been formed to deal with the clean-up of the holy river. The Government of Nepal has formed a high powered commission for the purpose. As a side benefit, this issue has enhanced the environmental awareness among the people of Kathmandu valley.

The second issue is the deteriorating quality of household drinking water. As explained above, households depend upon three different sources for drinking water: municipality, private tankers, and private well/taps.

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This paper tries to assess a correlation between the ever increasing environmental awareness and attitude and its practical consequences in influencing the household behavior in dealing with the treatment of drinking water. The paper uses a two-equation system and the full-information maximum likelihood method to jointly estimate the water treatment decision equation and the environmental attitude equation. In addition, the paper looks at the role of media's public health awareness campaign in changing the household behavior. Preliminary results indicate that the environmental attitude and the media both play an important role to affect the household's decision to treat drinking water.

## **Understanding Nepal's Madhesi movement and its future trajectory**

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In early 2007, Nepal's hitherto sleepy Terai region became the epicenter of its continuing political turbulence. The Seven Party Alliance (SPA) of pro-democracy parties and the hitherto insurgent Maoists, known as the Communist Party of Nepal-Maoist (CPN-M) had signed a Comprehensive Peace Agreement (CPA) in November 2006. As the two sides were forging a governing partnership, the country's Terai region, home to almost half of Nepal's population, was threatened by a violent movement that quickly engulfed the entire region. What had started as a protest against the exclusion of vital Madhesi issues (federalism, proportional representation etc.) from the just promulgated Interim Constitution turned into a massive rebellion resulting in the deaths of dozens of protesters. Spearheaded by a little known Madhesi civil society organization, the Madhesi People's Rights Forum (MPRF), the movement showed resilience and ferocity. First denounced by the SPA government and the Maoists as foreign-inspired and regressive, the government had to quickly accept many of the Madhesi demands.

To date the Madhesi movement has several accomplishments to its credit. Thanks to this movement, federalism and regional autonomy have become central to the state restructuring, the victims of Madhesi protests have officially been recognized as martyrs, and the Madhesi parties gained the fourth and fifth positions in the Constituent Assembly Elections of April 2008, with important role in the volatile coalitional politics of the country. Never before had the Madhesi parties have so many seats in the national legislature. The Madhesi leaders since have occupied high profile positions: President, Vice-President, and, for a time the Foreign Minister.

As Shahdevan (2003) points out, ethnic conflicts in South Asia tend to fester into "major wars marked by heavy loss of lives and destruction of property." The success of Nepal's Madhesi in quickly ascending to power positions is an anomaly. Although the jury is still out on the longer

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term trajectory of this movement, its achievements are noteworthy. How definitive is the success of the Madhesi movement and how does one explain its course? What was the nature of the Madhesi uprising? Has there been a real shift in the attitude of Nepali elites toward the Madhesi issues? Are the Madhesi issues likely to be resolved peacefully? Many such questions about the Madhesi movement remain still unanswered. During my field study in Nepal in July-August 2010, I posed some of these questions to numerous Madhesi politicians, civil society leaders and ordinary citizens. My paper combines my field study observations with scholarly research to examine the dynamics of Madhesi movement.

### **Madhesis and the paradox of their marginalization in Nepal**

The Madhesis constitute 33 percent of the total population; however, Madhesi leaders have blamed the census for under recording the Madhesi population. They claim this percentage is well above 40 percent. Yet, defining a Madhesi is problematic. Excepting a minority of people indigenous to the region, people from both north and South (India) migrated into the Terai. It is in view of such migration pattern that Gaige (1975) called Terai as “geographically and culturally a transitional region between the hills and the plains (p. 11).” The only clear marker of Madhesis is their mother tongues, which are part of one of what Gaige calls “the plains language category.” This category includes Hindi, Urdu, Maithili, Bhojpuri, Bengali, the dialects of these languages such as Awadhi, and Morang Pradesh dialects and languages spoken by relatively few people such as Jhangar, Marwari, and Raji (p. 15). Lacking any other distinct socio-cultural markers as a group, the Madhesis clearly lack what Weber (1994) regarded as key elements of a nation, “common descent and homogeneity (p. 22).” How did the Madhesis unite to launch a powerful protest movement? How did the term Madhesi become a rallying factor?

Exclusion is the key to understanding the formation of Madhesi identity. The history of this exclusion began with the formation of modern Nepal as a nation in 1769. Gaige (1975) highlights this when he writes, “hill people were given preference over plains people settled in the Tarai, so that the plains people were relegated to a second-class status.” For example, in the pre-1950 period, Madhesis needed passports to travel to the capital, Kathmandu. Discrimination against the plains people continued in the post 1950 era by “making the acquisition of citizenship more difficult for people of plains origin living in the Tarai (Gaige, 1975, p. 87-88).” Rajendra Mahato, a leader of Terai-based Nepal Sadbhavana

Party, highlights the discrimination in these words: The Terai people were alienated from the national bureaucracy, politics, army, civil service, etc. No more than five percent Teraians were represented in the police. No Teraians were represented at all in the army. And in bureaucracy itself, despite their population, less than five percent people were represented. So there was also imbalance in national politics and bureaucracy. There also was no adequate representation of Terai people in the parliament and politics. Even for the Constituent Assembly (CA) elections we are demanding that a proportional representation of the Terai people be accepted in candidature or membership of the political parties.<sup>8</sup>

Nepal's Madhesi nationalism supports Beissinger (1996)'s assertion that "nationalism achieves political potency only in the form of collective discourse, mass mobilization or state practice (p. 100)." Following multiparty democracy since 1990 various groups engaged in identity movements. However, as Lawoti (2008) finds, the representation of many underrepresented groups, including that of Madhesis, really declined during the democratic era of 1990-2002.

### **The 2007 Movement and Its Achievements**

As Varshney (2002) has pointed out, protests are more likely in democratic polities (p. 24-25). Madhesi movement erupted against the backdrop of the successful April Movement, which for Madhesis had bitter ironies. The future trajectory of the Madhesi movement will also be largely contingent upon the fate of Nepal's still shaky political transition. The immediate spark for the Madhesi protests was provided by the promulgation of the Interim Constitution on January 15. The Interim Constitution was drafted exclusively by the members of the SPA and Maoists; the Madhesi leaders were left out. On January 16, 2007, the supporters of the MPRF showed their opposition to the promulgation of the constitution by burning its copies on the streets of Kathmandu. They opposed the constitution for omitting any reference to a federal structure and proportional electoral system. The government's effort to suppress the movement failed and the movement spread quickly to most parts of the plain region; security forces killed dozens of protesters.

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<sup>8</sup> Quoted from Text based on a presentation entitled "Violence in the Terai and the Madhesi Movement: Prospects for Peace in Nepal." delivered by Minister Rajendra Mahto on 17 July, 2007 at the United States Institute for Peace, Washington, D. C. [http://www.nepalmonitor.com/2007/09/the\\_madhesi\\_movement\\_prospects\\_for\\_peace\\_in\\_Nepal\\_-print.html](http://www.nepalmonitor.com/2007/09/the_madhesi_movement_prospects_for_peace_in_Nepal_-print.html)

The Madhesi movement came in the wake of some critical developments. The Madhesi leaders found the peace deal with the Maoists as accentuating their marginalization. According to a highly placed political analyst, Madhesi leaders' insignificant role in the drafting of the interim constitution followed a unified rejection by the major political parties of their demand for the reconfiguration of electoral districts on the universally recognized basis of population. Moreover, concessions to the Maoists had raised serious Madhesi objections. For example, the Asian Center for Human Rights (2009) reported Madhesi militants asking if the Maoists could pick up the gun and become members of parliament, why they could not do the same (p. 5). Madhesi land owners suspected that the Maoists would grab more of their land to redistribute to their supporters, mostly the hill migrants. A badly handled riot in the western Nepali town of Nepalganj in the plain region on December 25-26, 2006 was another prelude to the movement. Sparked by confrontations between the supporters of the Madhes based Nepal Sadbhavana Party and those of the SPA, the riots' victims were disproportionately Madhesi. A report by the People's Level Civil Investigation Committee consisting of human rights groups found only 14 percent of the property destroyed in the riot belonged to the Pahadis. The most damaging for the government was the allegation that it abandoned what Esman (2004) would call "any pretense of impartiality in the face of ethnic disputes (p. 16)." The Office of the High Commissioner for Human Rights in Nepal (OHCHR) in a press release on October 22, 2007 also noted the accusation of "police acting partially" in Nepalganj agitations and in other Madhesi agitations in the months of January and February 2007. The government is yet to release the findings of an official investigation into the Nepalganj riot.

### **From confrontation to compromise: How real a turnaround?**

The government was challenged by both pressures from the streets and a lack of any international support for its preferred policy of dealing forcefully with the Madhesi protests. Nepal government pointed fingers at the Indian indifference to the activities of Madhesi militants from across the borders and sought Indian assistance in restoring normalcy in the plain region. To Kathmandu's disappointment, however, New Delhi urged the government to resolve Madhesi' "genuine grievances." A well informed source told me that India cautioned Nepal against using military to suppress the Madhesi by warning that it could create East Pakistan type situation that resulted in the dismemberment of Pakistan and in creation of Bangladesh in 1971.

Still, the government only moved very slowly and hesitantly in making any concessions to the Madhesi leaders. Each round of concessions also marked a different stage for the Madhesi movement. The first such concession came through Prime Minister Girija P. Koirala's address to the nation on February 9, 2007, which included the guarantee of a federal system after the CA election, a mixed-proportional electoral system, and a reconstitution of election constituencies in the Terai based on population. In response, the MPRF called off its strike but its protests continued demanding the resignation of the Home Minister, who the Madhesi leaders viewed as conniving with the Maoists against the Madhesi interests. These protests ended in August 2007 when the government agreed to a charter of 22 MPRF demands; the MPRF since has accused the government of non-implementation of many of these demands.

The Madhesi movement entered another critical phase soon after the SPA reached a 23-point agreement in December 27, 2007 with the Maoists to end the Maoists' boycott of the government and to hold the CA elections in April 2008. The agreement with the Maoists, however, accentuated the divide between the Madhesi and Pahadi leaders. The divide got a boost by the defection from the Nepali Congress of a senior Madhesi leader, Mahantha Thakur, who formed a new political party, the Terai-Madhes Loktantrik Party (TMLP); the party was formed on December 28, the day after the SPA reached agreement with the Maoists. The party started off amidst widespread rumor that its formation was inspired by India as a counterweight to the MPRF.

The rise of a United Madhesi Democratic Front (UMDF) was a distinctive as well as an intriguing development of this phase of the Madhesi movement. The Front was formed on February 9 jointly by the MPRF, the Sadbhavana Party led by Rajendra Mahto, and the newly formed TMLP in order to galvanize the Madhesis. The Madhesi leaders deplored the failure of the government in implementing the 22-point agreement and called for fresh Terai agitation if their demands were not met by January 19. The UMDF also called for boycotting the CA elections unless their demands were met. The Madhesi groups also objected to the deployment of special police force in the Terai (Nepalnews 26 January 2008). The Madhesi protests that followed left the Nepali government besieged and paralyzed. Widespread disruptions of transport and communication networks left Kathmandu without supplies, especially of petroleum products – a déjà vu for the capital's residents who had seen

similar shortages resulting from the non-renewal of trade and transit treaty with India in 1989.

On February 28, the UMDF and the government signed an eight-point agreement to end the nation-crippling indefinite strike in the Terai. Interestingly, the agreement was brokered by the outgoing Indian ambassador S. K. Mukherjee with the last round of negotiations being held in the Indian Embassy in Kathmandu. The main stumbling block in the negotiations was the UMDF's demand for a single autonomous Madhesh province stretching from Nepal's Eastern most to Western most plain areas with the right to self determination. The agreement remains controversial to this day. The UMDF leaders claimed that the government accepted their demand of a single Madhes state whereas the government leaders sounded vague. Soon after the CA election, differences between the UMDF and SPA-M (the SPA and Maoist) leaders became more pronounced. Resentment at India's role in the negotiations also appeared widely in the Nepali media. Some observers also noted a direct Indian role in the formation of the TMLP; yet another evidence of New Delhi's increasing reliance on the Madhesi groups against the Maoists in view of the apparent inability of the SPA parties to resist the Maoist pressure (Thapa, 2008).

### **Nepali Politics: The post-CA election scenario**

Unlike, Lijphart's elite consensus-based approach, Nepali elites tend to favor brinkmanship to advance their interests. Hence, shifting and highly unpredictable elite interactions have been driven essentially by their respective electoral, street as well as disruptive capabilities. The Madhesis are the last to join Nepal's power circle by using the combination of these capabilities, first gaining world attention through powerful street protests, and since the CA elections, by leveraging on their strength in the assembly. Nepal's case resonates with Collier (2009)'s generalization from his broader study of the poorest and conflict prone countries that he calls the "bottom billion." Instead of a shared sense of belonging, the state functions because its component groups are suspicious of each other and can use the institutions of accountability to prevent being disadvantaged. Such societies may not be cozy, but they are viable (p. 186).

The Nepali case, however, is more complicated as it lacks any effective institutions of accountability barring an embattled judiciary fighting both allegations of massive corruption and attempts by politicians to undermine its independence. As a result, the ability of domestic

political actors to build and sustain a functioning state has been severely compromised leaving both Nepal's peace process as well as governance in a state of limbo. Since the ouster of the Maoist-led coalition in May 2009, Nepali political parties have made very little progress on contentious issues like the rehabilitation of the Maoist combatants currently housed in the United Nations Mission in Nepal (UNMIN) supervised cantonments, the division of power between the center and the provincial units under the proposed federal system, the demilitarization of the Maoists if they are to be part of a democratic process, etc. Unless the political parties reach a compromise, severe breakdown of the peace process may follow the termination of UNMIN mission in January 2011; nothing better exemplifies the political stalemate than the inability of the CA to elect a Prime Minister after more than sixteen rounds of voting.

Political observers in Nepal hold both positive and negative views of Nepal's current political imbroglio. Those on the applauding side view the current stalemate resulting from many complex issues that Nepali people and politicians have taken up and are seeking to resolve. They cite major breakthroughs like the end of the Maoist insurgency, the declaration of republic, and the massive mobilization of various sections of people for their fair share in the state restructuring as major cornerstones for Nepal's new democracy. The pessimists have no less impressive litany of concerns. The pessimists are haunted by extreme political uncertainty and instability, which they consider as pointing strongly to looming state failure and chaos. Among the factors they blame for producing such a situation, the Maoists' indeterminacy tops the list. The pessimists largely share the view that the Maoists have yet to convince other major political parties and international forces that their participation in the democratic process is not just a ploy to advancing their ultimate goal of establishing a one-party state. This failure, the pessimists point out, has been extremely counterproductive as it has made all non-Maoist political forces extremely dependent on Nepali army to defend themselves from feared Maoist onslaught; the Maoists' is the only party that has its own army and tens of thousands of organized, disciplined and armed cadres. Nepali politics, thus, has come to be fixated on a single political agenda: keep the Maoists out. Even key foreign players in Nepal, mainly India and the United States, share and support this agenda of Nepal's non-Maoist parties, thus, ossifying a polarization and uncertainty.

There is a general alarm at the risk inherent in this political stalemate. Prof. Lok Raj Baral, a leading scholar of Nepali politics and the nation's

former ambassador to India, described the current situation as the “biggest crisis in the country’s history.” He saw Nepal as suffering from “total dependence syndrome” with the state collapse scenario looking “closer than at any other time.”<sup>9</sup> Another leading journalist expressed concern that Nepal is fast turning into a hotbed of international rivalries, primarily between India and China, but also as a diplomatic and military listening post for others.<sup>10</sup>

### **Madhesi movement: The road ahead**

Madhesi leaders of Nepal consider the current political deadlock as a major setback to the Madhesi interests. Madhesi leaders regard the regularization of democratic process with the adoption of a constitution and the holding of national elections as key to structural reforms that will address the deep rooted grievances of the Madhesis. However, few of them are hopeful that this would happen. Madhesi leaders are of the view that the ruling elites of the major political parties, unsure of how to accommodate various conflicting demands, including those of the Madhesis, favor the current stalemate. Even a compromise among the major political parties, they bemoan, will do little to resolve the Madhesi issues. They regard the mainstream parties as patently hypocritical; the major political parties, including the Maoists, oppose the idea of real decentralization of power under a federal set up. They believe that Kathmandu elites, overwhelmingly non-Madhesis, crave the now endangered centralized state that has allowed them to amass enormous power and wealth. A well connected Nepali scholar deeply involved in the constitution deliberation process corroborated such Madhesi apprehension by describing the ruling elites as being in a “state of siege;” their paralysis is explained by their nostalgia for the past and deep fear of what is to come. They are taking refuge in the current stalemate to postpone difficult decisions as long as possible.

The Madhesi leaders’ outlook for the future exudes both confidence and alarm. Their confidence arises from the success of the Madhesi mobilization during the movement. The view that Kathmandu’s grip over Madhesh is a relic not current reality is widely held among Madhesi leaders and Madhesi population. In the current draft of the interim constitution this reality has been accepted by division of the Madhes region into three provinces. Although the projected federal structure does not meet the demand for a single unified Madhes province, Madhesis,

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<sup>9</sup> Interview with the author in Kathmandu in August 2010

<sup>10</sup> Interview with the author in Kathmandu in August 2010

elites as well as commoners, believe that, 2007 movement was successful in asserting Madhesi identity. With more around 80 members in Constituent Assembly and demonstrated disruptive power of Madhes proven by the 2007 movement, the Madhes has forced itself into the center stage of Nepali politics.

Yet, the Madhesi leaders are aware that there is no room for complacency. The benefits of this movement are yet to percolate to the popular level. Most demands of the Madhesi movement remain unimplemented. There is growing alienation in the Madhes, especially among the young Madhesis; Madhesi leaders are increasingly losing their support and are viewed as typical of Nepal's "predatory elites," the main beneficiaries of political changes. Several Madhesi lawmakers have expressed fear that another Madhesi movement is already brewing in the region. Life in the region is bedeviled by complete absence of law and order, disruption of business and industries and complete breakdown of institutions of governance and education. Lack of governmental authority in the region is compounded by corruption in the government and complicity of public officials and politicians with criminals (Jha, 2008).

Growing power rivalry among the Madhesi parties has compromised the Madhesi leaders' ability to unite behind the Madhesi issues. For example, the MPRF, the largest Madhesi party, has been rocked by defections and internal squabbles driven more by self interests than by differences over policies and issues. Reports of disaffection within the ranks and files with the party leadership's penchant for power have also been in the news. In January 2009, for example, a group of 38 out of 52 MJF lawmakers opposed their party members in the government by urging the Prime Minister to relieve them from their cabinet positions (Kantipuronline, January 6, 2009). The Madhesi leaders also have to contend with divisiveness of Madhesi identity from Terai groups that resent being labeled Madhesi. The Tharu and Muslims, for example, have engaged in persistent campaigns to protest such labeling and demand greater representation. In April 2009, the Maoist-led coalition agreed to address the demands put forth by the Tharuhat Joint Struggle Committee (TJSC) to prevent their threatened series of protests. Hence, Madhesi leadership will have to operate in the context of its own diversity and cannot, to put it in Gorenberg (2000)'s words understood "entirely at the level of the whole ethnic group (p. 117)."

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**The war disease: A spatial-temporal analysis<sup>11</sup>**

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Social phenomena rarely occur in isolation, and civil wars are no exception. Given that past studies have viewed wars as one dimensional phenomena and studied the spillover of war across international boundaries only, this study is a first step towards building a conceptual framework to analyze violence upsurge in a more dynamic and disaggregated setting. Using data on the Maoist insurgency in Nepal, I propose a model to conceptualize violence as a spatial-temporal process and to estimate the parameters of interest via Maximum Likelihood technique. Like the spread of a disease, the spread of war can be broken down into two stages. First is the infection stage when initial areas become involved in war. The second stage occurs when the extent of violence in the affected areas increases. In the model the two stages are allowed to be correlated, which allows for unobserved heterogeneity in an area's war receptivity to jointly influence the likelihood of war and the intensity of violence upon war starting in the area. While other studies find that the geographic and socio-economic conditions of a country affect the likelihood of an armed uprising, I show that once the spatial nature of war is controlled for, these factors are no longer significant. The main conclusion is that an area's proximity to another war affected area is the most significant determinant factor in that area's likelihood of engaging in war, and not the socio-economic conditions as previously thought.

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<sup>11</sup> The term "war disease" was first used by Norman Z. Alcock in his book: "The War Disease," Oakville: CPRI Press, 1972.

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## **Media contribution in transfer of power in Nepal**

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*“The achievement of Nepal’s citizen’s radio in establishing community broadcasting and then defending it from a dictatorial regime in 2005 has become a model for public radio in other parts of the region.” (Dixit 2010:12)*

### **Political communication in Nepal: A theoretical perspective**

Norris et al (1999:2) identified three main schools of thought on political communication developed over a period of several decades in the twentieth century mostly in the Euro-American democratic context. These included mass propaganda, partisan reinforcement and recent theories of cognitive, agenda setting and persuasion effects. Habermas (2006:415-416) reported an impressive increase in the volume of political communication in Euro-American democratic countries, a phenomenon quite visible in the South Asian countries including Nepal today. The political communication is dominated by mediated communication that lacks the defining features of deliberation. At the same time, the power of political communication shapes the presentation of messages in multiple ways tempered by political and social power of the ruling elite. The political communication contributes in agenda setting and also legitimating of democratic process. Such political communication helps in the formation of a plurality of public opinion that would “...yield non arbitrary standards for the identification of the courses of communication pathologies,” according to Habermas.

Media, especially radio in the context of Nepal, manifested “...itself in the choice of information and format, in the shape and style of programs and framing of issues” (Challaghan and Schnell 2005 as reported by Habermas 2006:419). Nepal’s political communication was reinforced by Maoist insurgents’ spread over large part of the country at a time when King had largely lost his legitimacy to rule, and the kingdom was inflicted with corruption and indifferent administration. Concurrent media

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development saw withering of the state's monopoly of radio and television, especially on the periphery of Nepal's boundaries.

The contribution of FM radio in achieving democracy must be examined in this frame of political communication for "partisan reinforcement" between the King and the Maoist insurgents.

### **Data**

In the last three years, the author has had direct interaction and exchange of views with several prominent Nepali journalists, researchers and radio broadcasters like Radio Sagaramatha, Nepal's first non-governmental independent radio station. In addition, the author could interview several Nepali men working in India. The views expressed are based on limited observations on the day-to-day reporting of Nepal television and Indian English news papers.

### **Aim**

The aim of the paper is to find out the contribution made by FM radio in achieving transfer of power to people in Nepal from monarchy.

### **Geopolitical position of Nepal**

The land-locked Hindu Himalayan Kingdom of Nepal was known for its relative isolation and the state-controlled media. Nepal, a member of the South Asian Association for Regional Cooperation (SAARC), is predominantly mountainous having physical and cultural diversity. In spite of linguistic and dialect diversity, Nepali language is widely spoken and remains a major means of communication. Often Nepal is considered "a yam between two boundaries" and sandwiched between two Asian giants – India and China" (Kasajoo 2008a and 2008b).

Nepal is divided into three regions: Himalayan, Hill and Terai. Snow covered mountains are cold and largely barren. The Himalayan region covers little over one third of the land mass of Nepal. The Mount Everest is situated in this region, along with other highest peaks of the world. Important valleys are situated in the Hill region of Nepal covering over 40 percent of the landmass. Kathmandu, the capital city, is situated in the Hill region. It is densely populated and continues to dominate the political scene of Nepal. The productive Terai region or plain area of Nepal covers little over 20 percent of the country's land mass and runs along the northern border of India. Almost half of the country's over 25 million humans live in the Terai region. These geophysical differences in the three

regions have played a significant historical role in the past, leading to the present political changes in Nepal.

### **Monarchy, Maoists and Media**

In South Asia, the non-colonized countries include Nepal and Bhutan which have had age old monarchy. Both are going through the process of democratization. In this process, China and India have been playing an invisible role. Tiwari (2001:3) believed that Maoist movement in Nepal must be viewed in the background of Naxalite movement in India and Maoism in China. Over a period of time, communists of Nepal, like in other parts of South Asia, divided and formed as much 19 communist parties while political movement for democracy continued. The main enemy remained King and/or Nepali Congress for most of the Maoists. In case of Nepali Congress, Maoists believed that they were supported by “expansionist India and imperialists America.” Many others believed that China supported Maoists in Nepal. Nepali journalists give no credence to the view that China gave covert or overt support to the struggle.

No evidence of direct or indirect media support from India or China is available in the struggle for democracy. The same is asserted by many Nepali journalists and communication researchers who do not even mention name of any country which supported Maoists during the armed conflict. Tiwari (2001:4) believed that Maoists did not have the advantage of geographical continuity from India and ideological support from Radio Beijing. However, Singh (2009) asserted that the Maoists had close links with China and had received material and moral support from it during their 10 years of armed struggle.

Shrestha (2009:5), a senior journalist of Nepal observed: “The experience of media during armed conflict in Nepal have testified that the media was sandwiched between conflicting parties... The partisan role they played unfairly dominated the whole media world.” According to Kasajoo (2008a:83), people who have been suppressed, exploited and marginalized for political, social, cultural and economic rights continue to strive for its transformation into a modern democratic country. During the political struggle period, constitutional monarchy was challenged by the Nepal Communist Party (Maoist) by way of sporadic but regular insurgency across country. “People’s War” was supported by men and women together; it was estimated that about 30 percent guerrillas were women.

### **Radio and roots of democracy**

Among all electronic media, radio broadcasting has had several ups and down but steady growth and development in Nepal over half a century dating back to 1951. Even in its infancy, radio was utilized to broadcast revolutionary messages (Kasajoo 2008a:341). The revolutionaries started Prajatantra Radio Nepal from Biratnagar, the eastern city in Terai in early 1951 (Kasajoo 2008a:341). According to Kasajoo, an eminent Nepali journalist, the seed of democracy was sowed in Nepal more than half a century ago in which media especially radio played an important role in challenging and attempting to throw monarchy.

Several attempts since then have been made to have a democratic Nepal by introducing multiparty democratic system to start with, which survived for a short period of 10 years till 1960. Two years later in 1962, King Mahendra introduced the *Panchayat* system which was viewed by Nepali people and other observers as direct and autocratic rule. Almost thirty years later, due to popular people's demand for democracy in 1990, King Birendra introduced constitutional monarchy and a multiparty democratic rule. The short lived multiparty democratic system could not fulfill the aspirations of Nepali people.

After 1996, radio in Nepal grew and spread through out the country in "Short Wave", "Medium Wave" and FM from 10 watts to 10,000 watts radio stations both in public and private sectors. Radio expansion was with or without the label of community radio since no distinction was made between commercial and community radio in Nepal (Kasajoo 2008a). FM radio was last to arrive on scene but with a bang, having over 290 licensed FM radio stations in August 2009 (Government of Nepal, 2010).

State owned Radio Nepal was used as a mouthpiece of the government. On the other hand, the community radios reached to the remotest part with the messages of change in social and political order. Technical skill training and financial support for the expansion of radio in Nepal was received from various parts of the world having explicit and implicit ideological and political agenda.

FM radio has been most preferred source of information, though Indian radio is also listened too, especially by shopkeepers and housewives in a low literacy and mountainous country. FM community radio dotted across Nepal influenced listeners in far flung and remote areas starved of information and news. The public opinion started getting

influenced directly by enabling radio listeners to hear what was happening in Kathmandu and in the rest of the country, while experiencing bullets of Maoists, disappearance of near and dear, and killing of informers or loyalists of the King.

The “People’s war” or armed struggle against monarchy by the Communist Party of Nepal (Maoist), called “Maoist insurgents” by the royal regime, and the radio broadcasts started around the same time. The wild fire of insurgency engulfed almost all parts of the country except some part of Kathmandu valley. The toll of violent conflict was estimated at 12000 to 13000 lives which included police, insurgents, alleged informers of police, and innocent civilians.

The demand for democracy was accentuated after King Gyanendra declared a state of emergency on February 1, 2005 and assumed direct power. The political struggle took a dramatic turn within a short span of time. The end result was the declaration of Nepal as a federal democratic republic and the removal of monarchy by the parliament constituted after the national elections of 2008.

Even after five rounds of parliamentary election for Prime Minister of Nepal no one has been elected (Chandrasekharan 2010). An experience of parliamentary democracy of Nepal is no different than experiences of many multiparty democratic countries. The struggle for bringing multi party parliamentary democratic system of governance in Nepal continues. Interviews of Nepali men working in India, who visit Nepal at least once a year for an extended period, indicated that radio listening has gained popularity over a period of time. These men also listened to radio broadcasts carrying Maoist messages; CDs containing those messages were also distributed and sold in the market place. Some of these CDs were sold in the bordering cities and towns of India and were available in New Delhi having large Nepali working population.

Radio especially FM Radio in the last ten years apparently helped to achieve democracy. Its role must be seen in the long drawn political struggle from the grass root in the frame of “agenda setting” and “partisan reinforcement.” The cumulative radio effects of political communication have brought about major changes in opinion of an average Nepali men and women who began to despise King Gyanendra. So much so that the King lost his “God-like image” that was taken for granted, not long time ago.

The transition from monarchy to total democracy has been some what a novel and exalting experience to the citizens of Nepal. In this context, Rashmi (2009:1) observed: “As Nepal continues in its transition of defining its political destiny, a new born republic, what remains certain is the fact that the Radio assumes an indispensable role in shaping the opinion of the people; and hence the fate of its future.... Indeed, the Radio has been a central pathway of connecting and empowering the diverse people of Nepal as a dynamic political entity”. Based on the above brief analysis, it is concluded that FM Community radio in Nepal played an important role in achieving the transfer of power from monarchy to people.

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## **Dam decommissioning with stochastic salvage value**

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Reservoirs are one of the most common forms of nonrenewable resources, yet their economic studies have been rare. Years after large dams were built en masse, engineering literatures began to realize that even when reservoirs were structurally sustainable, they would nevertheless become unsustainable for reasons such as sedimentation accumulation. The loss of storage due to sediment accumulation is nontrivial and alarming.

Our goal in this paper is to formally represent the reservoir management problem, taking into account the stochastic nature of salvage value of the dam at the time of its decommissioning. The formalization also provides us the following three major insights:

1. Ranking of different sedimentation removal techniques from the perspective of their impact on the age of dam. We differentiate between economic life, usable life, and the general life of dam, using the terminology of Murthy (1977).
2. Optimal sedimentation management is retrieved as a result of a control problem of the operator.
3. The value of the dam at any point. At the end, given the parameters of the model we calculate optimal dam size.

We contribute to the literature in the following way. This paper is the first one to look at the sedimentation issue as a discrete continuous model in a stochastic framework. Our model is rich in that it allows us to not only compare different sedimentation techniques from the perspective of their impact on reservoir age and the overall value of the reservoir, thus allowing us to rank the techniques, but also provides a framework to analyze the impact of uncertainty on these values.

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## **Conflict resolution and institutional arrangements for flood disaster management on Indo Nepal fringe: Focus on Kosi basin**

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### **Introduction**

Trans-boundary conflict is one of the chronic riparian problems in the Indo-Nepal region of South Asia. The construction of a barrage and canal system for irrigation in Nepal and India was initiated in 1953. An afflux bund was executed upstream of the barrage. Indian Government has also initiated eastern and western canal system along with embankments and powerhouses. The construction of embankment reduced loss of livelihood, facilitated irrigation, and enhanced employment, earnings and eco-security in the region. Despite this, problems have occurred in several areas including drainage congestion, rising riverbed and water-logging, severe floods, and recurring maintenance problems. A huge resource crisis has prevented the governments from adequately undertaking promotional and protective measures. Lack of coordination between the two countries has constrained agricultural development and enhanced economic insecurity in the region of upstream and downstream. Several contentious issues need attention. Examples include land dispute, flood planning, water discharge, and water management.

The purpose of this paper is to highlight riparian conflicts in Kosi basin of Indo-Nepal region. The paper focuses on characteristics of the basin, intensity of conflict, conflict minimization process, and areas of joint venture. It finds that institutional reform for minimum common governance (MCG) may yet lead to a sustainable solution. The paper proposes the modalities of MCG and its modus operandi and discusses plan appraisal, ex post evaluation, monitoring, and resource sharing. Planning by a single country may not solve this chronic problem.

The river Kosi originates in the Himalayas in Nepal. Its long tributaries merge together in Nepal. The river flows another 58 km before it enters India. Two hundred sixty km further down, it finally merges into the Ganga. In India, Kosi mainly passes through northern Bihar. Severe flooding during monsoon produces lateral shifts of uncertain directions up

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to 20 km a year which begets its name `the river of great sorrow` in South Asia. The river carries enormous silt loaded discharge during flood and spills into the plains of Indo-Nepal border. About 1,295 sq km of land in Nepal and 7,770 sq km of land in India have become unusable because of sand deposition.

Implications for agricultural development are severe because of sudden underflow or overflow of water in the catchment areas. Droughts or flooding can seriously affect production and cause immense damage to crops. This changes gross cropped area, and cropping pattern, and destabilizes production. This has potential to raise Indo-Bangladesh dispute over the Ganga water because of Farakka barrage project in West Bengal.

Similarly, projects on the Kosi and Gandak generated riparian conflicts between India and Nepal that were further accentuated by Tanakpur Barrage Project. Later, it was resolved slightly through Mahanadi Treaty 1996. Yet, the resolution to the Pancheswar Project is still not in sight. Conflicts may result from misunderstanding among the parties based on principles, sensitivity, ignorance, or indifference in information sharing. Disaster politics for electoral benefits have not been rare.

### **Characteristics of Kosi Basin**

River Kosi is known as “river of immense sorrow” in India. It originates at an altitude of over 7,000 meters above the mean sea level in the Himalayas. The upper catchment is 62,620 sq km (85% of total area) which lies in Tibet and Nepal. Remaining 11,410 sq km falls in India and mainly passes through northern Bihar. The meandering flow of the Kosi has rendered about 1,295 sq km of land useless in Nepal and 7,770 sq km in India because of deposition of sand. The river is especially known for lateral migration and has shifted west. The river has shifted up to 20 km in a single year. As a result the river has ravaged lands to the tune of around 3,000 to 15,000 sq km in North Bihar and 800 to 1,000 sq km in Nepal. It has also generated huge scattered swamps. There are at least three factors responsible for the Kosi led flood in Indo-Nepal region. The river hardly passes a well-defined flood plain. Silt discharge is enormous. And, there is also excessive fluctuation in daily discharge during flood season, which ranges from 5 thousand cusecs to 26 thousand cusecs. The riverbed has silted up considerably over the years. At several points the ground level is lower than the river bank. The problem becomes severe when the Ganga and other rivers start overflowing.

In 1950, it was decided to construct a barrage and canal system for 1.65 million hectares of land for irrigation in Nepal and Bihar. However, only after 1953 a barrage across Kosi in Bhimnagar could be initiated. Also afflux bunds were executed upstream of the barrage in Nepal. India initiated eastern and western canal system along with enlargement and powerhouse and constructed 468 km of embankment. Irrigation has been assured to 1.30 million hectares of land in India and Nepal, and further 0.35 million hectares of the irrigation project is in process. Also, 1.015 million hectares flood prone area has been protected. Flood prone area in India is 40 million hectares. This constitutes about 25 percent of cultivable land. This magnitude is much higher in frequently flood prone states and regions including North Bihar. Flood water conservation can be very useful for irrigation of rabi crops after monsoon is over, and for aquaculture. But in order to store and consume flood water public private partnership is quite essential.

**Damages Due To Heavy Rains And Floods During South West Monsoon In Bihar In 2002**

Total Districts

38

Affected Districts

25

Taluks/blocks Affected

205

Villages affected

8,208

Areaaffected (Lakh Hectares)

18

Population Affected (Lakh)

158

Damagesto Cropped Area (Lakh Hectares)

8

Estimated Value of Crops (Rs. In Crores)

467

Damages to Houses (No. in Lakh)

3.96

EstimatedValues of Damages to Houses(Rs. In Crores)

451.98

EstimatedValues of Losses to Public Properties (Rs. In Crores)

296.21

Human Lives Lost

434

Cattle Lives Lost

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1,380

### **Intensity of conflict**

There are conceptual and divergent opinions for planning, design, construction and operations of joint projects on trans-boundary rivers. Both India and Nepal would naturally want to maximize benefits for themselves. In one case, a water treaty was signed and a joint project was set up to create a detailed database. Things work out fine sometimes but there is a lack of mutually agreeable regulatory mechanism which unnecessarily creates disputes. There is more rigidity instead of flexibility in deal-making. As with the Indus river basin between India and Pakistan and the Ganga basin between India and Bangladesh, a sincere agreement of mutual cooperation is required for India and Nepal. According to the views expressed by the local people of the countries, flood is not just a natural process. Often people cut the embankment for fear of floods in their own areas. Nepal is upstream and Bihar downstream. It is essential to take pre-flood measures, post-flood measures, and structural and non-structural measures. to reduce the depth and duration of a flood. The focus groups of local people have shown willingness to have joint authority in the area for safeguarding their welfare.

### **Conflict Minimization**

From the viewpoint of hydrology and basin management, the political and geographical boundaries of the two countries could potentially be ignored and the whole basin or sub-basin may be treated as an integrated regional unit. A regional authority could be created consisting of technical and professional members from both the countries to plan for the development of the basin area. The finance for these purposes may be generated through proportionate contribution of the concerned countries. The regional body could have its own financial budget, time budget and may function as autonomous. It could be required to present its annual report to both the governments. The planning of the basin needs a comprehensive but flexible approach to develop a formula for water sharing for agricultural production, horticulture, animal husbandry, industrial growth, and growth of services including tourism and electricity. Nepal and India, like other countries of South Asia, depend for fresh water on monsoon which lasts about 90 days. The Kosi basin is basically a mono crop region. Due to monsoon floods, *kharif* crop is hardly grown.

Institutional mechanism for flood water conflict resolutions has become essential in these countries. There may be enough scope for consultations, convergence, mediation and adjudication.

The Indus water treaty between India and Pakistan for sharing the water of the Indus river has set up a permanent Indus commission. Despite political discords between these two nations it has been found that the commission has been working satisfactorily for the last 30 years. Similarly India and Bangladesh reached a long-term treaty on sharing of the Ganga water in 1996. With Kosi, places for possible storage of water flowing through the tributaries of the Ganga are in the political territory of Nepal. It has infrastructure for hydropower generation, irrigation extension, flood management and navigation. India and Nepal have already undertaken jointly the construction of the Pancheshwar project on the river Mahakali which is their common border in the west. The common minimum cooperation needs to be strengthened further in order to make the Kosi basin developed as well.

#### **Areas of Joint Venture**

There are several areas where Nepal and India could come forward for joint management of flood in general and economic development of the basin in particular. Construction of a major dam may be one option. The ecological and other effects of such a dam should be assessed at the planning stage. But a dam will help prevent chronic flood disaster that the region has seen. This may generate enough hydropower for economic activities like agriculture, industry and household consumption. A third area where both the countries can participate relates to surface irrigation. A major canal network may be constructed in such a manner that both the countries can develop agriculture, horticulture, aquaculture, tourism and encourage several other activities. It will facilitate the regulation of drinking water supply. The fourth area of development would be social forestry. This will help reduce soil erosion as well as provide a good source of earnings through production and sale of forest products. This system may be helpful along the railway track, canal and the catchments.

All these activities need heavy investment in water sector. An area of related investment would be setting up a water Research and Development Council jointly. South Asia is especially poor to carry out research in this sector which makes it desirable to create interdisciplinary regional institutions with a focus on water. A flexible and transparent institutional structure is the need of the day. Although the South Asian region does

have a few joint river commissions for management of water, new mechanisms should be placed to strengthen horizontal and vertical linkages which currently remain narrow and weak.

### **Conclusion**

Flood disaster is a chronic problem for the Kosi basin of India and Nepal region. It is a tricky issue of trans-boundary water conflict. Both the countries are trying to resolve the contentious issues like pre-flood management, preparedness, post-flood management, structural measures and non-structural measures. But it has not been possible to manage flood disaster in the region. Economic vulnerability is further deepening, production losses and those due to social dislocation are on the rise and water saving devices to balance water access across different seasons are not available. An institutional change is direly required for resolving the trans- boundary conflicts. A joint authority needs to be set up. Enough authority should be granted to this body to deal with the most contentious issues, to put in place a minimum common program effectively, to seek the assistance of local beneficiaries, professionals and non-professionals in order to resolve the difficult issues first. In the second stage, the authority should formulate developmental water-related plans to promote regional environment. We hope the countries of South Asia can resolve the water issues in an eco-friendly manner.



**Local people's perception of climate change, its impact and adaptation practices in Himalaya to Terai regions of Nepal**

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**Introduction**

Climate change is expected to have serious environmental, economic, and social impacts on South Asia in particular, where rural farmers whose livelihoods depend on the use of natural resources are likely to bear the brunt of its adverse impacts (ICIMOD 2009). The region is also confronted by issues like poverty, environmental degradation, natural resources depletion, shrinking water resources; desertification and climate change (Schid 2008). Climatic variability in this fragile ecosystem and nature based livelihood system of the rural communities has further threatened the livelihood of the local people.

Nepal's share in climate change is negligibly small. The population of Nepal is less than 0.4% of the world population and is responsible for only about 0.025% of annual greenhouse gas emissions (NAPA\MOE 2009). However, Nepal is highly vulnerable to climate change impacts. Temperatures are likely to increase more in high mountain areas than elsewhere (Shrestha et. al. 1999). Glaciers and snowfields will recede and may even disappear, reducing Nepal's dry season water resources. This will affect irrigation and drinking water supply and hydroelectricity will be less reliable. In addition, receding glaciers often leave behind growing glacier lakes that can break through terminal moraines causing

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catastrophic floods. Global climate change will also likely shift monsoon precipitation patterns in ways that will threaten Nepal's current agricultural practices, infrastructure, bio-diversity, especially in mountain regions where migration of species is physically restricted (Regmi et. al. 2009). In order to improve the ability of communities and households to adjust to ongoing and future climate change, we need improved understanding of the risk they are facing. Estimating possible future adaptation is essential to climate change impact and vulnerability assessment. Therefore, assessing the potential climate change impacts on livelihood are urgently needed for the survival of these rural communities.

### **Objectives of the Study**

1. To evaluate long-term climate data (on precipitation and temperature) in order to determine variation in climate at different altitudinal regions of Nepal.
2. To understand farmers' perception and experience of climate change.
3. To identify the impact and adaptive measures being taken to maintain farmers' farming and livelihood in different regions (Himalaya to Terai region) of Nepal.

### **Research Methodology**

*Study area:* Study was conducted along a north-south transect of the Narayani Basin, a major tributary of the Ganga river. This transect runs from the Trans-Himalayan to lowland southern regions (Upper-Mustang (Trans-Himalayan region near Tibet-China region, Mid-mountain and Lowland Terai (near India border) of Nepal. Data were collected from each site at different altitudes (3500 m, 2500 m, 1500 m and 150 m) which covers the range of the high altitude to lowland regions of Nepal. The study area is one of the most suitable in which to study climate change impacts and adaptation practices through different communities and ethnic groups from Himalayan to the Terai regions.

*Data collection:* Studies on perceptions, responses and local knowledge of climate variability, impact on farming and adaptive strategies at the household and community levels were gathered through field observations, personal interviews (50 – 70 HH in each sites), key informants interviews as well as consultation with institutions and community based organizations. Rainfall and temperature data (1979 – 2008) were collected from the Department of Hydrology and Meteorology, Government of Nepal. Secondary sources of data about policy, programs and activities regarding climate-related risk

management, and adaptation practices were also collected from different government agencies.

*Data analysis:* Statistical tests such as time series; regression, mean comparison, frequencies were used to compare impact of climate change on different groups of adaptation strategies in different regions.

## **Results and discussion**

*Long-term temperature data analysis (1979-2008):* The temperature data from different region (High Mountain to Terai region) between 1979 and 2008 showed a warming trend. During the period of 30 years, the mean annual temperature has increased by  $0.03^{\circ}\text{C yr}^{-1}$  (Table 1). Though this warming trend is in line with the mean annual maximum temperature estimated by Shrestha et. al. (1999), it is higher than global average increased given by IPCC (2007). Average seasonal temperature data analysis showed more prominent rising of temperature in winter ranges from  $0.05^{\circ}\text{C}$  in Middle Mountain to  $0.02^{\circ}\text{C}$  in Terai region  $\text{yr}^{-1}$  (Table 1), which clearly indicates the warming trend in winter is more as compared to summer seasons. The annual temperature increasing trend followed  $0.055 > 0.0455 > 0.035 > 0.02^{\circ}\text{C yr}^{-1}$  from Middle Mountain, Siwalik, Himalayan and Terai regions respectively.

*Precipitation data analysis:* The recorded data on rainfall from 1979 to 2008 showed large inter annual variability, with highest rainfall in middle mountain region (5441 mm) to lowest in the Trans-Himalayan region (179.4). More than 80 percent of the annual downpour was found to occur during Monsoon season only (Table 2). However, during the last few years (2000 to 2006), there was a substantial decrease in the amount of rainfall especially in monsoon followed by increasing downpour in the consecutive years.

*Local people response to climate change:* Majority of the local people (more than 75 %) were responded that they have experiences change in climate with increasing temperature in all ecological regions. Additionally, more than 80 % of the respondents were reported rainfall variability with untimely, late monsoon start, no winter rain and high intensity pattern with short periods (Table 3). Furthermore, they have been experiencing an unpredictable rainfall patterns over the past 10 years. Almost 70 percent respondents said that the incidents of drought have been increasing and link it with the untimely and unusual rainfall patterns over the past few years in both study sites (upstream and downstream). Additionally, Trans-

Himalayan communities reported that there used to be good snowfall in high altitude area, before it could be up to 2 to 2.5 feet. But, lately snowfall is only negligible in last 3-4 years. Furthermore, local people have also noticed spectacular changes in their surroundings in the last couple of decades; hillsides that once used to be covered in snow throughout the year are now bare and dry. In many cases, stories from local people confirm findings from recent scientific studies, particularly about shrinking snow cover and retreating glaciers (ICIMOD 2009). Stream flow and spring characteristics have changed dramatically in recent years, making it challenging to manage water supplies.

*Local peoples' perceptions on changing climate and major impacts:*

People responded that climate change has both positive and negative impact on rural livelihood. Some farmers in Mustang, in the Jomsom (district head quarter), reported that the changed climate has positive impact in the agriculture farming. Farmers are growing new vegetables such as cauliflower, cabbage, chili, tomato and cucumber, which used to need greenhouses to survive. Local fruits have better sizes and tastes.

Erratic rainfall patterns, contributing to soil erosion, landslides in the upstream and flooding and sedimentation in the downstream sites, which resulted loss of soil fertility, and decreased crop yields as well as crop damage. Key informant reported that there were drastically decreased Millet, Black gram and Mustard production over the last 4 years in the Mid-mountain and Siwalik region. This may affect agriculture production, and subsequently food security. In Trans-Himalayan region, Nomad groups and livestock farming has found negative impact through climatic variability at Upper Mustang (Lomanthang). Most highland communities depend on cattle and sheep farming and, therefore, have serious concerns over the declining production of grass in the Himalayan grasslands. This is mainly due to moisture deficiencies resulting from reduced snow deposits. Furthermore, local people noticed that there was less availability of medicinal plants such as Nirmasi (*Aconitum gammiei*) and Jimbu (*Allium species*) (Table 3). It might be due to climatic stress such as less water, and change in weather patterns herbs in high altitude became vulnerable and found less and less.

More than 50% respondents said that warming days have been increasing, rainfall pattern has become more unpredictable, seasons may have been changing, frequency of drought has increased, warmer wind flows these days, decreasing natural water sources, windstorm is getting

stronger, changes in flowering and fruiting time (Rhododendron, Bauhania species), invasion of new plant species such as Kalo banamara (*Ageratina adenophora*), Seto banamara (*Lantana camera*) plant with bluish flower are found in abundance. These invasive species such as Kalo banamara (*Ageratina adenophora*), Seto banamara (*Lantana camera*) sifted in the higher altitudes also. Additionally, there were decreased fish availability in the stream and wild bee hives in the study areas (Table 3). Furthermore, local people reported that there is increasing the stream bed and expanding the sedimentation area in the Terai and Foothills sites.

### **Adaptation measures**

Different types of adaptation practices were found in Himalaya and Terai region. In high mountain regions adaptation measures were found very limited. Farmers were reported that degradation of the grass land and low grass production they have reduced the livestock numbers as well as practiced rotational grazing. Some respondent reported that hardship of the livestock and agriculture farming they were either changed the occupation such as Hotel business or migration from that place. Furthermore, in Mountain and Siwalik regions, local people have been managing forest as a community forest, which may increase the resilience of community by fulfilling the demand of forest products and minimized shifting cultivation from indigenous communities (Chepang) in Siwalik region. They have adopted Sloping Agriculture Land Technology (SALT) as an agroforestry (Herto-Silviculture) practices in their steep land and minimized soil erosion. Majority of these local farmers were practicing vegetable farming instead of cereal crops as crop diversification, livelihood diversification to earn more income than cereal crops. Optimum utilization of marginal lands by planting fodder trees, fruit trees, and other grasses also observed. Additionally, upstream people are now started rain water harvesting, conservation pond and utilization of excess drinking water for vegetable production. Ellis (2000) reported that rural people in developing areas accrue specific responses to cope with short-term shock events.

Additionally, those affected from loss of land from flooding and river bank erosion in the last downpour rainfall events (1986 and 1993) were moved to encroach nearby forest land for agricultural cultivation and settlement in the foothills of the Siwalik region. The array of potential adaptive responses available to human societies is very large ranging from purely technological through behavioral to managerial and to policy

(IPCC 2007). For developing countries like Nepal, availability of resources and building adaptive capacity are particularly important.

It is reported that there were no any government or non government organization working to aware and minimize impact on climate change in the field level. It is on development process. Moreover, communities have formed many groups such as Mothers' group, Community Forest User groups, Buffer Zone User Groups, Community Managed Cooperatives, Vegetable farmer's group for community level works such as, natural resource management, awareness raising, cleaning and fund collection. Owing to the presence of many institutions influencing each and every aspect of the community works as Agrawal and Perrin (2008) reported they are critically important in the design of adaptation projects.

### **Conclusion**

Variations in temperature and precipitation patterns have impacts on various aspects of local life. People reported that these impacts are both negative and positive. Farmers' perceptions of climate variability were in line with climatic data records. Study found that Farmers' in the different regions were able to recognize that temperatures have increased, snow fall decreased and there has been a fluctuation in the rainfall pattern. Inadequate scientific monitoring makes it difficult to validate the observed changes.

Reviving traditional practices and improving knowledge on how to harvest rainwater, forest management, crop and livelihood diversification, provides one way of coping with different climatic variability. Adaptation measures such as crop diversification, crop and livestock insurance and risk transfer mechanisms should be developed to minimize the risk of climate change.

Empowering communities with information, technological skills, education and employment is the best way to address vulnerability. The local observations described above provide a clear direction for future research and for development planning and adaptation management programs in different ecological regions. Policy and program should be formulating holistic approach to mitigate climate change and improve livelihood of the local communities.

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**Table 1: Analysis of long term (1979-2008) temperature (0C) data analysis in different ecological regions**

Region	Mean annual	Maximum	Minimum	Summer trend 0C\yr	Winter trend 0C\yr	Annual trend 0C\yr
Transhimalayan	6.8	14.3	-0.67	0.05	0.02	0.035
Midmountain	15.6	16.6	14.5	0.07	0.04	0.055
Siwalik	23.1	31.9	16.5	0.02	0.05	0.045
Terai	24.5	34.0	18.3	0.01	0.01	0.02

**Table 2: Analysis of long term (1979-2008) rainfall (mm) data analysis**

Region	Annual rainfall	Monsoon rainfall	Maximum	Minimum
Transhimalayan	179.4	79.0	297.1	8.5
Midmountain	5441.5	4615.4	6561.4	3445.6
Siwalik	2282.5	1900.7	3033.4	1680.5
Terai	1972.5	1659	2598.8	1529.2

**Table 3: Local responses on various climate change related changes in different regions (n=400)**

Major areas of impact	Responses	Yes (%)	No (%)	Don't know (%)
Climatic conditions	Snow fall decreasing	90	5	5
	Warming days has been increasing	85	10	5
	Rainfall pattern is unpredictable	80	10	10
	Seasons are changing	83	5	12
Ecosystem function and process	Incidents of drought is increasing	78	12	10
	Soil moisture depletion	84	5	11
	Flood frequency	85	10	5
	Water source availability decreased	88	5	7
	Ground water table decreased	75	5	20
Biological systems	Changes in flowering and fruiting time	70	15	15
	Invasive plant species seen (Forest & Agriculture land)	87	5	8
	Decrease in grass production in pasture land	80	10	10
	Decrease in medicinal herb availability	70	10	20
	Decrease in Fish species in rivers	88	5	7



## **Looking for stability: Holistic policy analysis in light of rapid development among Kham Tibetan herding groups**

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### **Introduction**

The last twenty years have brought immense changes to nomadic peoples worldwide, including Kham Tibetan nomads (mobile pastoralists) of Yushu in Qinghai province, China (玉树州, 青海省, 中国). In efforts to improve people's standard of living and to prevent serious ecological degradation, government has recently enacted at least 14 different policies that have had, and are likely to have, immense consequences for the Kham Tibetan people's way of life. Unfortunately, there are often unforeseen, unintended consequences to such widespread and rapid restructuring of society. This paper examines these policies in a holistic fashion, each policy examined independently and in concert with each other; that is, in both a linear and a vertical manner, in order to show how researchers and policy-makers may gain a better grasp about how individual policies, often created in a vacuum, may affect the outcome(s) of other policies. More importantly, we aim to demonstrate how all of these policies, when considered together, may affect the Kham Tibetan pastoralist communities in which they are enacted — sometimes in a positive manner, sometimes in a negative manner.

### **The Policy Framework**

In the course of planning and carrying out community-centered conservation and sustainable development work in the project area, we have noted 14 different policies that target or affect the Tibetan Plateau region. Traditionally, most organizations (including government) only examine a proposed policy in a vacuum, or a 'silo', with little recognition or analysis of ramifications on, or interactions with, other policy areas. This type of situation can occur for various reasons—with financial, personnel, or political constraints being most common. Unfortunately,

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because there are too few, if any, attempts to understand how new policies are acting upon (and being acted upon by) other development policies in the area, a comprehensive picture of the impact of development initiatives among Kham pastoralists in Yushu Prefecture is lacking; and our current understanding is incomplete at best. (See list of policies below.)

**Figure1 - Development policy analysis with the aim of improved “horizontal policy coordination”**

Analysis of the potential positive and negative outcomes, or ramifications, of major development policies across different fields; with a focus on policies that recently have been or presently are being implemented in the high altitude grasslands of the Sanjiangyuan region in Qinghai Province, People’s Republic of China				
Name of policy (or primary focus)	Main areas of development or conservation impact			
	<i>Poverty alleviation</i>	<i>Community health</i>	<i>Basic education</i>	<i>Environmental protection</i>
<b><i>Policies related to poverty alleviation</i></b>				
Sipeitao (houses, livestock shelters, fodder, fencing)	Reduced livestock overwinter mortality	Improved living conditions (e.g., air quality, temperature, etc.); and possibly more time closer to sedentary forms of health care	No change; unless longer time spent in ‘winter’ areas, hence children available for more sedentary forms of education provision	Changes in land use patterns, with the potential for increased land degradation
Fencing (promoted by grassland bureau)	Assumed improvement in grassland quality, and hence long-term income; but significant startup costs, and with manpower available in local pastoral context not necessary	No direct impact	No direct impact	Movement of certain wildlife species is hindered, with some mortality reported
<b><i>Policies related to community health</i></b>				
Rural clinics	If less illness (due to greater accessibility of healthcare provision), then local people’s personal economic situations improved	Increased access to healthcare provision, greater availability of medicines and trained medical personnel, easier logistics (e.g.) for immunizations	No direct impact; except through increased likelihood that a good model of ‘rural development’ is approved, supported	No direct impact
Health insurance	Direct refund of a significant portion of people’s medical costs	Greater financial accessibility to healthcare	No direct impact	No direct impact
<b><i>Policies related to basic education</i></b>				
Compulsory	Greater diversity	No direct impact;	Increased rates of	Some schools

education	of economic opportunities potentially available in the future; yet may also require 'urbanization' (see below) with some potential negative socio-economic impacts	but sometimes vaccines (immunizations) are provided in schools	education	provide teaching to increase people's environmental awareness
Centralization of schools	No direct impact, but see 'urbanization' that is implicitly required for people to comply with new situation	Children have more direct access (e.g.) to county health services; but also more crowded living in schools, with some negative impacts	No direct impact – as with similar investment education also could be provided at the village level, which would be more accessible to all	No direct impact, but loss of way of life, a livelihood proven to be sustainable over some centuries...
Language of instruction	No direct impact	Less effective, as compared to mothers (and others) learning in their native language	Loss of cultural heritage	No direct impact { <i>loss of TEK regarding interaction with environment</i> }
<b><i>Policies related to environmental protection</i></b>				
Tuimu huancao	No direct impact, but people who leave their land for ~10 years then must subsist on government subsidies for a time, possibility of losing abilities in pastoral living	No direct impact, other than matters relating to more urban living (both positive and negative)	No direct impact, other than matters relating to more urban living (both positive and negative)	Assumed good environmental effect through recovery of degraded grassland; however not all land under this policy was degraded, and the ecosystem developed over millennia with grazing by both wildlife and livestock
Nature reserves	Income matters not generally considered... however some new opportunities may be provided e.g. wardens	Not generally considered...	Not generally considered...	Main purpose for the establishment of nature reserves (and other 'protected areas') is 'conservation'
Shengtai yimin	A form of urbanization (see below) with some potential (and some already observed) negative social consequences, also with few economic opportunities for former herders	Not necessarily more accessible, for both economic and socio-cultural reasons	Not necessarily more accessible, for both economic and socio-cultural reasons	Not necessary for sustainable use and long-term preservation of grassland ecosystem and native wildlife

Community co-management	Good model which accommodates various new forms of income generation (including, e.g., nature tourism)	Both development and conservation can occur simultaneously	Both development and conservation can occur simultaneously	May be successful for conservation, expects input from outside experts working in collaboration and in genuine partnership with local people
Contract conservation	Good model which accommodates various new forms of income generation (including, e.g., nature tourism)	Both development and conservation can occur simultaneously	Both development and conservation can occur simultaneously	May be successful for conservation, but more dependant on local conservation efforts only (does not benefit as much from outside experts, partnership to lesser degree), yet promotes/supports sense of autonomy
<b><i>Over-arching development policies, or broad “directions” pursued</i></b>				
Individualization	Less community collaboration, benefits from traditional forms of land use and livelihoods reduced, less community-based mutual assistance	No direct impact	No direct impact	Parcelization of land resources, less adapted to variable climatic conditions, with ensuing increased ‘conflict’ with land
Urbanization	New arrivals often on periphery of towns, not able to integrate and to develop or occupy new economic opportunities	Not necessarily more accessible, for both economic and socio-cultural reasons	Not necessarily more accessible, for both economic and socio-cultural reasons	Not necessary in first place, also may lead to new problems (overuse of nearby resources, unexpected ecological impacts, etc.)

Before we examine these policies in detail, it is important to show why it is important to view them in a comprehensive manner. Generally, a policy is examined via one course of thought—e.g., how does this policy alleviate poverty? While this is a valuable approach when there are only one or two policies being enacted in a region, it unfortunately is both insufficient and inefficient when dealing with a multitude of policies. What we have done, therefore, is determine the four basic things the government (both local and national) is seeking to accomplish on the Qinghai-Tibetan Plateau. These four areas of concern are common enough to us all: poverty alleviation, community health, basic education, and environmental protection. If we also include in our analysis the rubrics for understanding environmental protection, education success, and community health – that is, the set of criteria by which the above

outcomes are to be assessed; or their proxy measures – then we begin to see an even more complex picture. We also begin to see a more complete picture of what ‘development’ looks like, or is leading toward, in Yushu Prefecture.

### **Detail – *Shengtai yimin***

As for detailed discussion, we examine the “shengtai yimin” (ecological migration) policy and its intended effects, as well as the actual effects now being seen on the ground. Government officials often assume that the nomads are directly responsible for the current state of environmental degradation on the Tibetan Plateau, and therefore recently began to enact a policy of “Ecological Migration” (*Shengtai yimin* 生态移民) to “relocate more permanently a large segment of the (former) herding population into new towns” (Foggin 2008: 29). Some officials argue that the herders – despite their nearly 5,000 years of a pastoralist life on the Tibetan Plateau – have now begun to overgraze the region, leading to a degradation of the land in some areas, and a paucity of flora and fauna in others. Many other factors, however, are also involved in the observed land changes.

In reality the emerging degradation has occurred largely due to changing climatic conditions, and as our global climate continues to shift, most likely this trend will continue, through no or little fault of the nomads alone, who are merely following a way of life known to them for several millennia. Thus, some claims of causality are inaccurate, due primarily to incomplete (or too narrow) scientific and socio-cultural research. As several authors have shown, the system used by the nomads “has allowed them to subsist on the Northern Plateau [part of the Tibetan Plateau] for centuries without destroying their natural resource base *precisely because it fostered a balance between their highly adapted herds and their harsh environment*” (Goldstein 1990: 149, italics added). Research in several African nomadic areas has shown that in an arid climate, the nomadic groups play such an integral role in the maintenance and flexibility of the ecology that to remove them is disastrous (Leonard and Crawford 2002). Throughout the Tibetan Plateau, it is rapidly becoming apparent that the removal of the herders from the land, moving them to towns, is having increasingly obvious negative social consequences.

All of the above reasons are why a new approach to policy analysis is required. As we have already argued elsewhere, “the current policy in China is still an *untested* trial at an enormous scale – with potential

devastating long-term (generational) social, cultural and possibly environmental consequences; some of them irreversible” (Foggin, forthcoming). There are several reasons for this assessment. First, the main rationale behind the *shengtai yimin* policy is inadequate, as the resettlement it requires has not been convincingly argued as the *only* way to circumvent environmental degradation in the region. Several forms of local governance or community co-management schemes are viable alternatives. These would include, for example, joint operations between government authorities and local Tibetan herders for wildlife monitoring and for the conservation of selected endangered species; a greater integration of local human development needs or aspirations with conservation goals, and for this purpose enhanced dialogue with protected area management authorities; and unique collaborations to mitigate emerging conflicts between local people and some problematic species such as brown bear.

### **Conclusion**

For Tibetan herders in the *Sanjiangyuan* region, where multiple policies are moving forward rapidly – each often in a vacuum, with little or no connection to other policies also affecting the area – the implications are clear. Specifically, in order to promote cultural continuity and thus enhance community health and well-being, the extent to which any given policy is being implemented should be limited until it can be more fully examined in relation to the other policies centered on the same area, or known to affect in some way the same communities. New forms of community co-management should be researched, trialled, and adopted; and more appropriate and accessible forms of social service provision should be developed, both for herders living in grassland areas and for (former) herders now living in newly developed towns. With social concerns already on the rise in China, and with proven alternative means possible to attain the conservation goals set out for us, policies like *shengtai yimin* should not be blindly carried forward, even less expanded, or simply left unquestioned. Rather, some of the important lessons that have recently been learned in China, Canada, and elsewhere in the world, should be taken seriously to heart; and more equitable, sustainable and economic measures for long-lasting community development and environmental conservation introduced to the vast grasslands of the Tibetan Plateau.

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**Economic growth and human development in South Asia:  
Experiences of selected countries**

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*"The real wealth of a nation is its people. And, the purpose of development is to create an enabling environment for people to enjoy long, healthy and creative lives. This simple but powerful truth is too often forgotten in the pursuit of material and financial wealth".*

These are the opening lines of the first Human Development Report (UNDP 1990). The main engine of growth is the accumulation of human capital and/or knowledge and the main source of difference in living standards among nations is a difference in human capital. Physical capital plays an essential but decidedly a subsidiary role in development. In the words of Stiglitz (1997), *improvements in education or health are not just means to an end of increased output, but are ends in themselves* (p. 19). Further, *if a government reduces its fiscal deficit by cutting back vital investments in infrastructure or in human capital, growth may actually suffer* (Stiglitz, 1997: 29). Improved education and health are thus essential means of increasing GDP.

The new growth theories have amply established that economic growth and development cannot attain an optimum and self-sustenance path without the development of human resources (Romer 1990, 1993a and 1993b; Lucas 1993; Srinivasan 1993 and 1995; Stiglitz 1993; Nelson 1997 and 1998; Pack 1994; Benhabib and Spiegel 1994; Barro and Sala-i-Martin 1995; Barro 2001; Kruger and Lindahl 2001). The human development, thus, goes beyond growth and development. Human

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development is an umbrella which encompasses both growth and development. The growth and development could be sustainable only on the substrate of human development and vice-versa.

South Asia, thus, needs to learn from the development history and experience of the present day developed countries and high-performing economies. The region must develop the human capabilities, along with human freedoms, while moving towards a high growth trajectory. With huge amount of human resources they possess the seamless possibilities of economic and social change.

The GDP growth rate in South Asia registered an upward trend since 1970s through the first decade of the 21<sup>st</sup> century. The annual average growth rate increased from 3.5 per cent during 1970s to 5.5 per cent during 1980s and 1990s. It further reached at 7 per cent during 2000-06.

The higher GDP growth rate has been reflected in higher per capita growth rate, which, of course, is broadly a mathematical exercise. Nevertheless, the population growth rate, declining at various rates, also affects the per capita GDP growth rate. Taking per capita income as a general indicator of average living standards, we may conclude that South Asia as a region has witnessed an improvement during the period under discussion.

Though the economic growth in South Asia has resulted in improvement in human development index (HDI), yet it is still grappling with the problem of low human development, both in absolute and relative sense. India, Pakistan, Bangladesh and Nepal ranked between 124 and 152 in terms of HDI during all these years. Sri Lanka ranked between 90 and 99. However, in terms of real per capita GDP (US \$ PPP) their ranking was between 143 and 179 in 2005. It is, thus, worth noting that South Asia could not attain any note-worthy improvement in its relative ranking among the countries of the world.

Nevertheless, all the South Asian countries have registered an improvement in life expectancy, adult literacy rate and the infant mortality rate (IMR). In the case of South Asia, life expectancy increased from 50 years during 1970-75 to 63 years during 2000-05. As compared to it, the average life expectancy of all the developing countries went up from 56 years to 66 years during the same time period. The life expectancy in the case of high HDI countries increased from 69 years to 76 years and in the

case of medium HDI countries, it increased from 57 years to 67 years during the same period. The countries with low HDI value are far behind South Asia and all the developing countries. Their life expectancy was 48 years even during 2000-2005. The world average life expectancy increased from 58 years during 1970-75 to 66 years during 2000-05. Clearly, South Asia is below the world average life expectancy.

At the same time, South Asia is still suffering from poverty and inequality. Their poverty and inequality go beyond income poverty. The extent of deprivation in terms of health and education are serious concerns as these are important determinants of human development. About 29 per cent South Asians were facing deprivation on account of health parameters in 1996, with highest percentage in Nepal, followed by Pakistan. Such a deprivation, however, declined to 21 per cent in 2005 in South Asia as a whole. Among three countries – India, Pakistan and Bangladesh – the extent of health deprivation was still 32 per cent in Bangladesh in 2005.

The educational deprivation in South Asia declined from 36 per cent in 1996 to 29 per cent in 2005. The decline was from 35 to 27 per cent in India; from 42 to 37 per cent in Pakistan; and from 41 to 39 per cent in Bangladesh during the same period. It is important to note that income deprivation in South Asia has been higher than the other two types of deprivations. Clearly, economic growth has been able to achieve a marginal success in scaling down the human deprivation. But, again, human deprivation is an average measure. Accordingly it has been beset with all those limitations which an average measure is subjected to. The health and educational deprivation is more pronounced in the poorest and poor sections of population, across all the South Asian countries.

The classic illustration of causal relationship between poverty and educational attainment is reflected by the data pertaining to India. It highlights that 88.4 per cent illiterates belonged to poor and vulnerable strata of population in 1993-94. After a gap of 11 years (i.e. in 2004-05) 86 per cent illiterates were from the poor strata of population. Again in 1993-94, 86 per cent people with up to primary level education were from this section of population. This share registered a marginal decline (83.3 per cent) in 2004-05. The share of people with middle standard qualifications from among the poor and vulnerable sections was 74.7 per cent in 1993-94 and 71.2 per cent in 2004-05 (Sengupta et. al. 2008).

The high degree of education deprivation among the poor and vulnerable strata of population in the South Asian countries is mainly attributed to two factors: extreme income poverty and low proportion of public spending, on education, in the GDP. It strongly indicates that if these countries want to include the poor and vulnerable sections of their population in education domain then they would have to raise their share of public spending on education. That is the only way to attain higher level of human development and the higher level of growth and economic development.

As justice cannot be indifferent to the lives that people can actually live (Sen 2009:18), growth, too, cannot be indifferent to the actual living conditions of the people. If the protagonists of growth do not understand this powerful truth then more and more people would be bypassed by the growth and the benefits of growth. And eventually people would reject the growth strategy and the society may not remain liveable.

The South-Asia as a region has, thus, been lagging behind in terms of human development. In terms of HDI ranking their position in the world did not improve during a period of 15 years. Nevertheless, they have registered a definite improvement in their respective value of HDI and narrowed down their gap with the high HDI countries. Despite the fact, that the region has attained a remarkable improvement in certain indicators related to health and education yet the extent of inequality among the various strata of people is quite disturbing. The prevalent of malnutrition among the poorest and poor people is far higher than those in the higher income strata.

The education gaps by income and gender are also very glaring in these countries. There is a wide spread inequality between the poorest quintile and the richest quintile of population. In terms of gross primary enrolment ratio and the primary completion rate the females in the poorest strata are far behind the females in the richest strata of population.

The low level of income, along with poor public funding to education and health, turns the situation from bad to worse. As a consequence, the share of out of pocket expenditure on education and health has been very high. How can the poor and vulnerable people afford the high cost private education health services? This is a clear indication of wrong priorities of public spending.

Astonishingly, the expenditure on defence was higher than that on education and health, both as percentage of GDP and percentage of central government expenditure. In such a scenario, there are two way outs: redistribution of the benefits of growth with public policy intervention and making the very growth process more and more inclusive. The second path would require raising human capabilities and, hence, is a medium and long-run process. The first path cannot be adopted by the state and the government if they could not understand that it is also in the enlightened-self-interest of the influential and affluent sections of society. However, in the face of large-scale exclusion of people from the growth process, this path may not sustain in the long run. The ultimate solution then is the inclusion of all the people in the growth process. That would require empowering all the people with human capabilities. That, in turn, would require widespread access and affordability to quality education health, sanitation and clean water. And here comes the role of the State and the Government.

The very quality and sustainability of growth, eventually, depends on the human development and vice-versa. There is, no doubt, that the causal relationship between growth and human development needs to be viewed in this spectrum. The daunting challenge of poverty and inequality and the human development may not be addressed only with growth, though growth is a pre-requisite to it. The two-pronged policy recommendation would then be to strengthen the redistributive mechanism and empower the people with quality education and health.

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## **Postmodernism in development studies: The last bastion of the noble savage**

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### **Introduction**

Postmodernism (PM) has had a massive influence throughout social science; in development it has taken the form of post-developmentalisms (PD's). It has become increasingly intellectually fashionable and has, in fact, created many "new" lines of inquiry -- gender studies and social capital, just to name two -- that are assumed to be academically acceptable without any serious critical analysis. If the theory is fundamentally flawed, then what follows in its applications is also fundamentally flawed, and we note some examples in development with respect to Nepal, which has become the "academic development poster child" with a plethora of self-help fantasies driven by the astronomical ninety-seven thousand INGO's and NGO's exclusively residing in Kathmandu. This paper argues that the ideology of neoliberal globalization is the ideology of PM itself, despite its self-proclamations of being critical to the processes of continuing imperialism, expanding capitalism, and neocolonialism. This extended abstract only outlines the argument drawing on a review of current scholarship on Nepal in gender studies and social capital.

### **Origins of Post-Developmentalisms and a Critique**

Dependency theory as an alternative explanation for underdevelopment, popular in the 60's and 70's in Latin America, has seen a resurgence given the deepening of the current global economic and its ill effects on the Third World which was already suffering from several crises in food, energy, peace, and the environment. The economic remedy for the continuing colonial and imperial economic relations between the core and periphery was commonly known as delinking. But what became

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popular was not delinking from the many and in fact increasing political, economic and social dependencies Third World countries face today mainly through international finance capital, but rather the supposedly more “radicalized” version couched squarely in PM epistemology of delinking cognitively. Cognitive delinking is a critique to the worldwide cognitive dependency on Western modes of knowing and science.

One major critique of PD is focused on the fundamental flaw of this theory: cognitive relativism and its Eurocentric foundation. While there is a history of solid criticisms of PM in development studies for its romanticism and neopopulist ideas, these critiques, to my knowledge, are not equally critical of its cognitive premises.

The main characteristic of PM is the negation of the uniqueness of truth. For PDs, scientific knowledge and reason are forms of imperialism within the cognitive sphere. Therefore, Foucault is celebrated as an intellectual hero who is virulently anti-Marxist. PD has gained popularity with anti-Marxist theorists, as PM is considered less reductionist than Marx, despite the fact that these assertions have never actually been proved, and if anything, shown to be the opposite, as this paper argues. In Foucault’s view, power is everywhere, which divorces his theory from any analytical value. Unlike Marx, however, Foucault offers no solution to the human condition.

*As evidenced by the natural sciences*, universal reason is applicable everywhere. Under this universal reason, people must be treated equally, but cognitions cannot be. Given that every individual has his or her own cognition, this multiplicity of cognitions cannot all be regarded as equal or, to extend this logic, conflict between essential components of these varying cognitions is inevitable. Therefore, a logical toleration of all cognitions is theoretically impossible. PD theorists conflate these notions of “equality,” despite their logical distinction. Equality of individuals and equality of cognitions need to be separated, and yet PDs deliberately confuse and intermingle the two notions in order to bolster their façade of tolerance, anti-essentialism, anti-orthodoxy, anti-determinism, and anti-homogenization.

Once we come to the realization that devaluing cognitions does not necessarily imply the devaluation of the individual, we can appreciate, without corresponding feelings of PM guilt and “intolerance,” that it is simply impossible to tolerate all forms knowing. For example, is a

colonial and racist ideology an acceptable form of knowing? Should it be as tolerated and credible as other ideological paradigms? Accepting this position in true PM form results in the legitimization of bigotry and recurring colonial ideology as merely another way of knowing. What is even worse is that these forms of knowing are assumed to be as intellectually valuable as any other!

A growing contradiction within PM's own logic emerges. Adherence despises the superiority of science and cherishes all the oppressed cognitions or non-Western ways of knowing. But they do this within a Western epistemology and based on European thinkers such as Foucault and Derrida, two thinkers who not only have no relevance to understanding the complicated dynamics of the Third World, but whose theory exclusively serves the interests of late capitalism, as many call PM the "new spirit of capitalism" and the ideology of neoliberal globalization of gigantic transnational oligopolies.

Paradigmatically, is it possible for a man embedded culturally, geographically, and intellectually in Europe to develop a globally transferable methodology to understand the world in its entirety? Foucault's understanding of the world and its interactions derives from French and German philosophy. Foucault takes his understanding from such cultures which have historically systematically colonized the entire planet, and uses those same understandings to analyze the Third World regions they previously colonized. Is this analysis of Third World dynamics based on French discourse not epistemological imperialism in its most crude form? Is systematically ignoring non-Western philosophy and ways of knowing yet another form of subjugating and minimizing the contributions of non-Western ways of knowing? Is this not epistemological imperialism/colonialism itself?

PM is still more Eurocentric than modernity itself. For example, the overbearing PM obsession with demolishing grand narratives such as religion, tradition, national liberation, democracy, communism, and history is detrimental to the very existence of the non-Western world and countries like Nepal. Yet such narratives form our definition of ourselves; our understanding of ourselves is captured in those grand narratives. The cultural constructions that have taken literally thousands of years to evolve are the very things PM's are so keen to destroy.

PM does not make this radical critique to promote the emancipation of individuals and of society through socialism or communism. Instead it proposes a return to pre-modern, pre-capitalist alienations. The forms of sociability that it promotes are necessarily in line with adherence to a ‘tribalist’ identity for communities (para-religious and para-ethnic), at the other extreme from what is required to deepen democracy, which has become a synonym for the ‘tyranny of the people’ daring to question the wise management of the elite who serve the economic and geopolitical interests of Western imperialism. The critiques of the ‘great narratives’ advanced by PM do not look to the future but return to an imaginary and false past, which is romanticized. As Samir Amin puts it eloquently, PM is not a way forward but a dead end.

The exclusionary morality of PM thus becomes dangerous by taking cognition for granted, because this necessarily implies passive acceptance of the morals and overall worldview of that cognition. Thus, according to Christianity evil men will disbelieve in Christianity. According to bastardized Marxism, class enemies will disbelieve in Marxism. According to psychoanalysis, disbelief in psychoanalysis is the equivalence of admitting some form of neurosis. And, more to the point, according to PM and its PD offshoots, only the evil imperialist or “Hindu fundamentalist” (as I often get called at conferences by white feminists) will disbelieve in PM and the importance of identity politics in understanding the world. Ironically, in true fundamentalist fashion, PD directly evades confronting the problem of cognitive relativism by elevating relativism to an intellectual virtue in itself.

### **Gender Studies and Social Capital in Current Nepali Scholarship**

Gender studies in Nepal, a flourishing field and development industry in itself with countless NGO’s funded by Western monies, is one of many applications of this intellectual GMO, which exemplifies the need to liberate Nepali women from their backward cultures, from their backward fathers, from their backward husbands. The field claims a commitment to cultural sensitivity and pluralism while resting entirely on liberal white (Western) feminism as the universal norm. The Third World’s destiny is liberal development because the West is liberated and has a moral Christian imperative of self- imposed obligations to save others. The number of expats and experts on gender in Nepal is truly astounding. They more or less have the same profile: they visit Nepal, learn the language, have a few Nepali friends, etc.--all enough to verify their authenticity (of course, only to their own community).

Western feminism claims to act for the benefit of Third World women, denying all of the contradictions of imperialism and complete external dependence. Western feminists flourish in the developing world by depriving women in developing countries of their view. They flourish because poor women's perspectives are viewed as backward, inferior, and unliberated, developed in oppressive regimes that deny women the freedom of thought that would necessarily lead them to Western liberal feminist ideology!

It is equally true that the family and professional success of white educated women depend on the ill paid and exploited labor of Asian and Latina women in America who serve them, and the indigenous and marginalized lower-caste women in Kathmandu who serve the luxurious expat elite who function as new missionaries. These women who are severed from their own families, severed from their own children, severed from their own possibilities of love. But those women are never discussed. Not surprisingly, these very women's experiences are never privileged in this de-privileging, de-centering idea of PM. And when Nepali women and structural problems such as neoliberalism are discussed, the misappropriation of gender takes on an even more ugly and brutal form. Within these so-called critical gender studies and anti-neoliberalism positioning, progressive posturing and do-good attitude form a narrowly construed dichotomy of good versus evil, imbued with a profound undercurrent of western interventionism into the lives of Nepali women (as if Western intervention has a positive track record in the history of Nepal!)

Social capital theory is another example of how PM in development is synonymous with colonial ideology and discourse through its glorification of the individual removed from the geographic, economic, and social confinement the majority of the world finds themselves in daily. Social capital theory, as a product of PM, is another self-help fantasy, claiming that the chronic underdevelopment plaguing the Third World could be cured if individuals simply had more trust, reciprocity and community spirit, no different than mainstream neoclassical economics and their solution to the infamous Prisoner's Dilemma. This position, of course, rather glaringly blinds itself to all the economic dependencies that exist in the world today. Even if social capital theorists acknowledge that economic dependency may have some influence on developmental

progress, these concerns are seen as peripheral to the main issues of social capital.

The idea of social capital has been referred to as the McDonaldization of the social sciences. As Ben Fine (2008) argues, one should not consume it unless one is prepared to be consumed by it. First, there is no such thing as social capital; it is but another illusory and fictitious concept created within an illusory and ideologically-driven paradigm of PM. Social capital itself implies that there is some capital that is not social. That is another myth. All capital requires a social relationship, in some way or another, regardless of one's views on Marxian economics and political economy. However, taking the concept of social capital and placing it on the right hand side of every equation as an independent variable to explain something on the left hand side, is a gross misspecification. Everything in the world is social capital.

Take for example, the adage "it's not what you know, but who you know." What social capital theory ignores is that what you know is a function of multiple objective constraints and privileges. Ignoring this robs social capital of any explanatory power. The very concept of social capital is amorphous because every interaction, object, relationship is social capital. If social capital is everything (like their view of power), then there is no analytical explanation of what such capital can be and what it can differentiate in data. Social capital theory is yet another panacea developed by the World Bank and endorsed by academics in an attempt to avoid discussion of substantive redistribution of wealth. It does not have a methodological, theoretical or empirical leg to stand on.

Within social capital theories, practitioners claim to be using nonmarket variables and thus demand recognition for bringing the social into economics. This demand ignores the obvious: economics has always used nonmarket variables. Social capital theory, however, avoids a critique of economics itself. Instead, it glorifies the individual by theorizing about nonmarket variables, while assuming perfect competition and an affirmation of the universal rights of man (not woman!) through bourgeois individualism, again concealing the dynamics and contradictions of US imperialism, which very much shape the possibilities and constraints of the popular (not populist) classes.

The "consensus politics" of rallying to gender equality or advocating the neoliberal solution of building social capital in communities (and

countless other nuances to these themes) relies on an unchallenged American liberalism, a PM liberalism that is necessarily accompanied by the complete devaluation of different paths of other nations. All revolutions are seen through the lens of “identity politics” and hence denigrated (French, Chinese, Russian, and Nepali!) for their totalitarian tendencies, and so on and so on.

The glorification of the individual in PM (ideologically indistinguishable from neoclassical economics and neoliberalism) gives rise to a “multitude” (Hardt and Negri) of “collective subjectivities” and “identity politics.” Many popularizers in Nepal join the gender studies and social capital industry with minor variations to Manuel Castell’s networked society, Rifkin’s notion of “exclusionary politics,” Robert Reich’s use of social democracy, and so on and so on.

### **Conclusion**

It is in this way that present PM scholarship in Nepal (and developing countries in general) facilitates the fragmentation of the majority of the population, making them accept adjustment to the domination logic of Western imperialism. This fragmentation hardly undermines that domination; on the contrary, it makes it far easier. The glorified individual embedded in all of this scholarship does not become a conscious, lucid agent of social transformation, but the slave of triumphant merchandization. Rather than the empowered and liberated self PM seeks, the real citizen disappears, giving way to the consumer/speculator, no longer a citizen who seeks emancipation, but an insignificant creature who blindly accepts submission to present day US-led imperialism in Nepal.

It is truly remarkable how ideologically driven this so-called scholarship is when it is impervious to the reality of the historic revolution underway in Nepal, the most advanced in modern times, as if there were no Maoists or they were all gone. In this way, PM scholarship becomes a form of intellectual genocide by silencing the experience of the majority of Nepali citizens who reside outside KTM, where the imperative of immediate survival is much too hard to escape and much more demanding than the promise of social nirvana dangled by Western feminism and social capital theories.

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## **An opportunity to improve service delivery through local governance in Nepal**

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### **Introduction**

The present form of Nepali state was created in 1769 by unifying many small and large principalities. Since 1769 to 2008, the country remained a kingdom and the dynasty that led the unification process headed the state. In terms of exercising executive powers, the country witnessed different forms of rules and forms of governance, ranging from direct rule by the king to hereditary prime minister to absolute monarchy and then a parliamentary form of government. Despite different forms of rules, the country remained unitary and highly centralized.

Currently, Nepali people are writing their constitution through the constitution assembly (CA) which has been a longstanding demand of Nepali people. The election of the CA was held in the backdrop of the historic people's movement in 2006 and a decade long Maoist insurgency preceding the movement. The Interim Constitution declares Nepal a federal democratic republic and the CA is writing the constitution along the federal line. The Constitution justifies federalism as a means to end ethnic, cultural, linguistic, geographical and class-related discrimination that has been practiced by the establishment. One of the major reasons why people belonging to particular ethnic, linguistic, geographic, cultural communities felt discriminated by the regime is the poor state of public service delivery.

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<sup>24</sup>[ammuwonge@yahoo.com](mailto:ammuwonge@yahoo.com). The authors would like to thank the reviewers for comments received on the paper during the 5<sup>th</sup> Annual Himalayan Policy Research Conference at the University of Wisconsin, Madison, organized by the Nepal Study Center, University of New Mexico. The views expressed in this paper reflect those of the authors and not the views of the institutions the authors are affiliated with.



This article explores the State of Nepal's service delivery and decentralization efforts in the light of the current opportunity of constitution writing. Nepal is a late starter in terms of providing public services to the general people. Prior to 1951 when Nepal was ruled by a family autocracy there was no question of providing public services to the citizens. The State machinery was devoted to please the rulers, who were not accountable to the citizens. Schools and hospitals that existed were accessible by only a few. After the end of autocratic rule in 1951 the government started thinking providing basic services to the people. Since then, despite its tough geographic terrain and prolonged conflict there been progress in terms of increasing access to the basic services. By 2004-05, 91 percent and 63 percent of households had primary schools and health posts/sub-health posts, respectively, within 30 minutes of travel time (CBS, 2004). Thirty seven percent and 44 percent households had access to electricity and piped water, respectively. The private sector is also expanding its investment in sectors like health and education.

However, Nepal still faces challenges improving efficiency in public service delivery. A sizeable number of people do not yet have access to basic public services. Some health facilities, for example, are devoid of essential medicines and equipment or the medical personnel to work at the facilities. The poor state of service delivery is a cause of public concern. While the central government has played a lead role in policy formulation, financing, and regulation, it's involvement in the delivery of basic services has not been as efficient and effective, as would be desired. More recently, the role of local bodies in service delivery has increased; however, they are yet to be established as institutions of public service delivery.

With the ongoing constitution writing process in Nepal, an opportunity presents to create a foundation for strong, reliable, responsive and accountable local governments that can more efficiently and effectively deliver basic services. Therefore, defining the roles and responsibilities of the different tiers of government is a fundamental step in the current policy deliberation. Of particular focus in this article, the role of local governments will have to be carefully incorporated in the constitution to enable them to function as effective self governments that can provide basic local public services.

The potential role of local bodies has not been fully discussed and deliberated to inform the constitution writing process. The debate has mostly centered on the division of roles and responsibilities between the

central and state governments. Against this background, this paper briefly analyzes the potential roles of local governments, the state of service delivery in Nepal and discusses some measures to improve service delivery under a federal structure.

### **Concluding remarks**

In conclusion, despite the recent efforts to improve access and quality of service delivery, Nepal is yet to reach a more desired and efficient model in which citizens' priorities and needs are provided by their jurisdictions. The central government still occupies a central stage in basic service delivery. Yet, for some of these services, local bodies are better situated to provide them and perhaps other higher level local governments where services with greater economies of scale are involved. The role of local bodies' remains limited in part due to weak administrative capacity to manage and implement government programs. Enhancing the roles of the local bodies to efficiently deliver basic services will require a shift in the current paradigm.

In the context of the ongoing constitutional writing process, the role of the lowest tier of government, and indeed the entire realm of fiscal decentralization in Nepal will continue to be debated. In this article, we discuss some of the key issues that pertain to the subject of fiscal federalism and service delivery with the aim that much more attention will be paid by the policy makers on what may be required to provide basic services more efficiently and effectively in Nepal. In conclusion, the following are some of the issues that may require greater attention.

*Constitutional guarantee of local governments:* Local governments need to constitutionally form a tier of government headed by elected representatives. With this, the local governments will unlikely be victims of vagaries of the central and state governments.

*Clear expenditure assignments:* Local governments ought to be mandated to provide basic local public services. The expenditures of local governments should be clearly assigned. Perhaps not all expenditure responsibilities of the local governments need to be listed in the constitution itself. After assigning certain rights and responsibilities in the constitution, it could be laid down in the constitution that the rest will be devolved based on the principle of subsidiarity. This will avoid constitutional rigidity and at the same time ensure competencies of different tiers of government.

*Adequate revenue for the local governments:* Unlike in the current context, local governments should be provided adequate revenue sources. In addition to local taxes, they should be allowed to levy surcharges in tax revenues like income tax and valued added tax. This will allow urban local governments to generate substantial revenues from their own sources.

*Principle-based intergovernmental transfer system:* Even after assigning substantial revenue sources to the local governments, it is highly likely that there will remain substantial gap between the revenue generated and the expenditure needs, particularly in rural areas given the low revenue potential of rural local governments. This gap will be serviced through transfers from the federal and state governments. The design of the transfer system will therefore form an important part of the fiscal federalism agenda in Nepal.

*Separate provisions of local governments in rural and urban areas:* Given the uneven development and revenue potential between rural and urban areas and the differences in administrative and fiscal capacity to deliver on basic public services, separate structures need to be created for rural and urban areas. This allows for separate expenditure and revenue assignments to the local bodies. As the local bodies in urban areas will be more capacitated and more liquid than their counterparts in the rural areas, the municipal bodies can be given more powers to manage their affairs, and state and central governments can put a greater emphasis on improving the capacity of the rural local governments.

*Proper accountability structure in place:* The constitution should provide for proper and adequate institutions ensuring accountability of the local governments, without which there is no guarantee that local public service delivery will improve. In this regard, the role of the electoral system, intergovernmental relations and citizen empowerment in development programs are critically important. Likewise, fiduciary issues (financial management, procurement, budgeting, accounting, auditing and reporting) will require focus and clarity across the tiers of government. Rights to information, including enhanced social accountability mechanisms and cognizance of environmental and social safeguard issues will be equally important.

*Restructuring of local governments:* Restructuring is necessary to make local governments as viable. Much has changed in terms of

technology, infrastructure and connectivity since the present form of local bodies, especially districts and village development committees were created and as such will have to be reflected in the new structure of local governments. The structure of local governments will have to take into account geographical proximity; ethnic, cultural and linguistic homogeneity; ease of service delivery; economies of scale, and physical infrastructure, among many other factors.

*Staffing:* Local governments should be allowed to have their own staff that is accountable to locally elected representatives. This right should not be unconstrained, however. The local governments should face a hard budget constraint; otherwise the central and state governments will have to bear the brunt of the liabilities created by the local governments. Finally, the authority to hire own staff should be guided by clear accountability principles.

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## **Federalism Dialogues: Voices from Below in State Restructuring in Nepal**

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### **Background**

The UNDP Support to Participatory Constitution Building in Nepal (SPCBN) project has been conducting a series of Federalism Dialogues in each of the proposed new federal provinces of Nepal since March 2010. A total of 14 three day Federalism Dialogues will be organized (one per province) concluding with a national seminar in Kathmandu in September 2010. Each Federalism Dialogue includes 50-60 local civil society leaders, political party representatives, ethnic and caste leaders, as well as representatives from human rights, legal and business communities. A rigorous effort is made to ensure proportional caste/ethnic diversity and gender representation. To-date, eight Federalism Dialogues have been conducted in Limbuwan, Kirat, Mithila-Bhojpura-Koch-Madhes, Sunkoshi, Tamuwa, Narayani, Magarat and Lumbini-Awadh-Tharuwan provinces.

The three-day workshops provide the opportunity for community leaders and opinion makers to learn more about the actual content of the Constituent Assembly State Restructuring and Power Sharing Committee (CA SRC) Report, as well provide their feedback on the report and assess the potential for their social harmony and economic prosperity of their proposed province. The workshops are facilitated by Professors Krishna Khanal and Krishna Hachhethu of Tribhuvan University, while the

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logistics are organized and individuals invited by UNDP with the assistance of a capable local NGO partner.

The research seeks to assess whether this dialogue form of outreach and participation in the process of national constitution drafting provides an effective means of both democratic civic education, as well as conflict mitigation by creating a safe, respectful space for diverse community leaders to engage publicly and openly on critical and sensitive issues of state transformation during the process of drafting a new constitution.

### **Methods**

The research methodology will depend primarily on dialogue, discussion, interviews and an assessment form. Detailed notes are taken during each of the Federalism Dialogues that have been collected and will be presented in individual reports on each of the Federalism Dialogues, along with a two page summary of each Dialogue. Each participant also fills out an evaluation form at the end of the three day Dialogue assessing the three day workshop and providing recommendations. In addition, more detailed interviews will be conducted with individual participants to assess their thoughts on the effectiveness of the dialogue methodology for gaining knowledge on the Constituent Assembly process and addressing potential local conflict(s) while creating a new federal state from the current unitary state of Nepal.

### **Results**

Between March and May 2010, six Federalism Dialogues have been completed. The additional eight will be conducted by September 2010. In the first six Dialogues, 312 individuals have participated to-date including: 69% (215) men and 31% (97) women. The caste/ethnic breakdown includes: 45% (142) from the hill indigenous communities, 27% (83) from the Brahmin/Chhetri communities, 7% (22) Dalits, 6% (18) Terai Middle Castes, 4% (13) from various Terai indigenous communities, 3% (10) Tharu, 3% (8) Madhesi Brahmin, 2% (7) Terai Dalit, plus others. These percentages will shift as we complete the Federalism Dialogues in all fourteen proposed provinces.

Among the results identified todate from the Federalism Dialogues, we may include:

- Recommendations on CA SRC report changes: e.g. provincial houses to include ethnic/caste representation and clarification between various forms of minority rights;

- Identification of unresolved territorial claims by various proposed provinces;
- Lack of clarity on structure and feasibility of the Autonomous Regions;
- Lack to-date of CA or political party outreach to districts/provinces on CA Committee reports;
- Urgency of conflict mitigation or resolution clauses for inter-provincial relations and the provision of mediation services at the local level; and,
- Final questionnaire results to be tabulated and compiled.

### **Conclusions**

- Greater consensus on the cultural names for the provinces, e.g. Limbuwan and Kirat;
- Increased desire by provincial representatives in decision-making on federalism issues;
- Agreement to increase the authority and responsibilities of the provinces vis-à-vis the center;
- Expansion of proportional representation and minority protection at provincial level;
- Emphasis on increasing social, cultural and linguistic rights at local and provincial levels;
- Strengthening affirmative action and reservations for the Dalit communities; and,
- Extensive listing of economic opportunities by province, esp. natural resources and new tourism sites.



## **Measurement and determinants of efficiency in crop production in Nepal**

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### **Introduction**

The share of agriculture in Nepal's GDP has been falling over time. Yet, this sector still accounts for over a third of GDP and about two-thirds of total employment in the country. Unfortunately, the decline in agriculture has resulted from stagnant or declining productivity in agriculture itself, and not because manufacturing or industry has rapidly overtaken agriculture in productivity changes. How to attain a continued rise in agricultural productivity remains a concern of policy.

Most farmers in Nepal have not attained a reasonable level of technical efficiency that farmers in its neighboring countries have achieved. Farms in Nepal are typically very small which limits the use of modern farming practices and seems to perpetuate low productivity. Our study is an attempt to quantify efficiency of farmers and estimate the gap from its potential given the technology currently prevailing in Nepal.

To estimate inefficiency in agriculture, we use a stochastic frontier production function. We also use OLS to compare the results for the Cobb-Douglas and translogarithmic functions to determine which of the two provides a better representation of the data. It is also interesting to examine what these functions yield for the levels of technical inefficiencies, returns to scale, and the elasticities of output with respect to different inputs.

Most studies of agricultural productivity in Nepal rely on small samples drawn from one specific region or another within the country. In this paper, we make use of data from the Nepal Living Standard Survey (NLSSII) collected during 2003/04 by Central Bureau of Statistics (CBS) Nepal. This is a truly representative national survey in that the samples

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were drawn from all three topographical regions and all five development zones. Our dataset comprises all households which had positive numbers for crop production and crop area. The dataset contains a total of 2535 households that meet these criteria and has some details on inputs and outputs related to agricultural production. The survey also provides a range of socio-economic characteristics at the household level. What sets of characteristics are associated with greater efficiency is also of strong interest to us since this information is likely to provide clear implications for policy.

### **The OLS and Stochastic Frontier Models**

Our basic frontier production function can be written as follows:

$$Y_i = f(X_i \cdot \beta) \cdot TE_i \quad (1)$$

where  $Y_i$  is the actual output of farmer  $i$ ,  $f(X_i; \beta)$  is the production function where  $X_i$  is a vector of inputs used by the farmer  $i$  and  $\beta$  is a set of parameters to be estimated, and  $TE_i$  is the technical efficiency achieved by the farmer  $i$  and is defined as the ratio of observed output to the maximum feasible output.  $TE_i = 1$  implies the  $i^{\text{th}}$  farmer lies on the frontier having achieved the maximum feasible output while  $TE_i < 1$  indicates how far below the frontier the farmer is actually producing. Thus, the technical efficiency of a farmer is the ratio of observed output to the output of the most efficient farmer and lies between 0 and 1 (Coelli and Battese, 1996). Since the function is stochastic, random shocks such as a drought or flood can affect the production process. This modifies equation (1) as follows:

$$Y_i = f(X_i \cdot \beta) \cdot \exp(-u_i) \cdot \exp(v_i) \quad (2)$$

or, in logarithms,

$$\log Y_i = X_i \beta - u_i + v_i \quad (3)$$

where  $f(X_i; \beta)$  is assumed to equal  $\exp(X_i \cdot \beta)$ ,  $v_i$  is the stochastic noise with distribution  $N(0, \sigma^2_v)$ . The technical efficiency term  $TE_i$  has been re-expressed as  $e^{-u_i}$ , or simply  $-u_i$  in logarithms. This indicates that  $u_i$  is a non-negative random variable that still reflects the inefficiency of the farmer and is assumed to be *i.i.d.*:  $u_i \sim |N(0, \sigma^2_u)|$  truncated on the left, whereas  $v_i$  is the random influence on production. The expected value of the farmer-specific inefficiency term  $u_i$  is defined as the conditional mean of  $u_i$  given the difference between symmetric and non-symmetric terms:  $\varepsilon_i = v_i - u_i$  (Jondrow et.al., 1982).

We can also calculate the relative dominance of  $u_i$  and  $v_i$  as follows:

$$\pi = \frac{\sigma_u^2}{\sigma_u^2 + \sigma_v^2} \quad (4)$$

Equation (4) shows that as  $\pi$  approaches zero, either  $\sigma_u$  approaches zero or  $\sigma_v$  approaches infinity or both, which implies that the random error  $v_i$  is the primary determinant of the composite error  $\varepsilon_i$ . Thus the difference between the observed and frontier outputs is mainly due to random factors that are beyond the control of the farmer. In this case we cannot claim that the farmer is inefficient. On the other hand, a high value of  $\pi$  attributes a greater role to factors that are more in the farmer's hands.

The estimation of efficiency follows a two-step process. The first step is to estimate the frontier which leads to an estimate of the technical efficiency for each household. The second step then regresses the predicted inefficiencies against a set of variables ( $Z_i$ ), particularly the household characteristics that are expected to influence inefficiency. The first step uses maximum likelihood estimation while the second uses the ordinary least squares regression (Coelli and Battese 1996). The second stage regression is given by the equation below:

$$u_i = Z_i\gamma \quad (5)$$

where, as noted above,  $Z_i$  is a set of farm-specific variables that are related to technical efficiency, and  $\gamma$ s are respective parameters to be estimated.

We start with the Cobb-Douglas function estimated with OLS and stochastic frontier methods. The stochastic frontier is obtained by setting up a log-likelihood function where the estimation procedure chooses parameters in a way that maximizes the probability that the outputs converge to those actually observed. The OLS is a simple regression of outputs on a set of inputs where we estimate the composite errors whose variance cannot be divided into the variances of  $u$  and  $v$ . The stochastic frontier analysis, however, allows one to observe the size of farmer-specific inefficiencies separately from the random shocks.

Our variables in the production functions are measured in quantities per unit of labor used, where labor equals the sum of family, hired and exchange labor in man-days, and family labor adjusts child labor for adult equivalence.

*Croplbr* is the value of crops produced per unit of labor used,

*Arealbr* is the amount of cultivated land for crop production per unit of labor,

*Fertilbr* is the amount of fertilizers used per unit of labor, and

*Pestlbr* is the amount of pesticides used per unit of labor,

The survey data do not give a direct measure of capital input used. Most farms in Nepal do not use modern machinery such as tractors, nevertheless an omission of this input is a limitation of the present study. Second, about 66 percent of farmers in the sample use fertilizers but only about 16 percent use pesticides. Note that almost all the pesticide users (98 percent) use chemical fertilizers as well but only about 24 percent of fertilizer users also use pesticides. Further, pesticides used equal only Rs.453 among the users which amounts to barely Rs.74 for all farmers in the sample. Thus, while we note the results for pesticides, we focus more on the results for the cultivated land area and the use of fertilizers below.

## **Results**

The OLS estimates of Cobb-Douglas function for crop value per unit of labor are as follows:

$$\ln crpval_i = 7.36^{***} + 0.659 \ln area_i^{***} + 0.147 fert_i^{***} + \varepsilon_i$$

(0.081)    (0.018)                  (0.008)    (6)

$$\bar{R}^2 = 0.462, \quad F_{2,2532} = 1090.5, \quad N = 2535$$

where the numbers in parentheses indicate the standard errors. All the coefficients are highly significant at one percent level. The elasticity of output per worker with respect to area under land is 0.66 and the elasticity with respect to fertilizers is 0.15. When *fert* in equation (6) is replaced with the sum of fertilizers and pesticides, the  $R^2$  falls somewhat and causes a marginal reduction in the sum of the two elasticities (from 0.81 to 0.79). The reason is an increase in the coefficient of land-labor ratio (to 0.70) which is overcompensated by a reduction in the coefficient of other inputs (to 0.09). Thus, the inclusion of pesticides in the regression brings no gain in the efficiency of estimates.

Our translog production function has the following results:

$$\widehat{\ln crpval}_i = 6.96^{***} + 0.520 \ln area_i^{***} + 0.204 \ln fert_i^{***} + .0008(\ln area_i)^2$$

$$(0.182) \quad (0.088) \quad (0.037) \quad (0.011)$$

$$+ 0.0411(\ln fert_i)^{2***} - 0.0458(\ln area_i * \ln fert_i)^{***}$$

$$(0.003) \quad (0.009)$$

$$\bar{R}^2 = 0.491, \quad F = 489.0, \quad N = 2535$$
(7)

where the numbers in parentheses indicate the standard errors. The output elasticity values are now a function of the inputs. However, at the mean values of the inputs, the elasticities turn out almost identical: 0.65 with respect to land and 0.16 with respect to fertilizers, as compared to 0.66 and 0.15 respectively under Cobb-Douglas. To resolve the question of which function is a better representation of data under OLS, we perform an F-test on the implied restrictions on Cobb-Douglas that the coefficients of  $(\ln area)^2$ ,  $(\ln fert)^2$ , and  $(\ln area * \ln fert)$  are all zero. The calculated F-statistic = 47.7 which is highly significant at 1 percent level. Thus, we accept the translog function to reflect reality better.

Moving on to the stochastic frontier version of the translogarithmic model, and using the same inputs, we obtain the following results:

$$\widehat{\ln crpval}_i = 7.92^{***} + 0.657 \ln area_i^{***} + 0.192 \ln fert_i^{***} + .018(\ln area_i)^2$$

$$(0.184) \quad (0.086) \quad (0.036) \quad (0.011)$$

$$+ 0.0452(\ln fert_i)^{2***} - 0.0527(\ln area_i * \ln fert_i)^{***}$$

$$(0.004) \quad (0.009)$$

$$\log L = -2984.6, \quad \sigma_v = 0.581, \quad \sigma_u = 0.894, \quad \sigma^2 = \sigma_u^2 + \sigma_v^2 = 1.137,$$

$$\lambda = \sigma_u / \sigma_v = 1.537, \quad \pi = \sigma_u^2 / (\sigma_u^2 + \sigma_v^2) = 0.703, \quad N = 2535$$
(8)

where the parentheses below the coefficients indicate the standard errors underlying z-statistics. Unlike with OLS where it was insignificant, the coefficient of  $(\ln area)^2$  now passes the test at 10 percent, while other coefficients stay highly significant. The elasticity values for output with respect to inputs in the frontier estimation (0.654 and 0.155) undergo no substantial changes from their levels in the OLS regression.

The frontier estimation provides several other useful statistics. The estimate of  $\pi$  shown conceptually in equation (4) yields the proportion of idiosyncratic shocks specific to farmers to the total shocks that include

shocks beyond the farmers' control. We find this statistic for Nepali farmers to be equal to 0.703, that is, 70 percent of the total variance in  $u$  and  $v$  is attributable to  $u$  alone. Moreover, the ratio of the standard deviations ( $\sigma_u/\sigma_v$ ) equals 1.54 which implies a substantial range of inefficiency among farmers. The average inefficiency, given the prevailing modes of production, equals 38 percent of the maximum output based on the frontier estimates, since the mean efficiency is 62 percent of the maximum, with a standard deviation of 15.2 percent.

In the estimation of the farmer-specific efficiency levels, we use various characteristics of the households in the sample. Our main results appear in equation (9):

$$\begin{aligned}
 TE_i = & 0.5097 + 0.0005agehd^{**} + 0.0202sexhd^{***} - 0.00004eduhd - 0.018occuhd^{**} \\
 & (0.015) \quad (0.0002) \quad (0.0077) \quad (0.0056) \quad (0.0043) \\
 & + 0.002fertpest^{**} + 0.0219irridm^{***} + 0.0524areamed^{**} + 0.0448arealrg^{***} \quad (9) \\
 & (0.0009) \quad (0.0063) \quad (0.008) \quad (0.0079) \\
 \bar{R}^2 = & 0.038, \quad F = 13.39, \quad N = 2535
 \end{aligned}$$

where the variable suffix 'hd' means the head of household, *fertpest* is the interaction between the use of fertilizers and pesticides, *irridum* is the irrigation dummy (0: no irrigation, 1: yes), *areamed* and *arealrg* are dummies for medium and large farm sizes respectively, where *arealrg*=1 if *cropped* area is greater than 3 hectares, and *areamed*=1 if the area is greater than 1 hectare and less than or equal to 3 hectares.

As expected, the interaction between fertilizers and pesticides raises efficiency. The inclusion of the pesticide use separately in addition to the interaction between these two factors does not make a substantial change in our results (full results available upon request). This variable comes out statistically significant but makes the interaction coefficient insignificant, and leaves all other coefficients and their standard errors virtually unchanged. Among other results shown in equation (9), efficiency rises with the age of the household. When we include the age squared to check if the effect of age is nonlinear, we do find a small (-0.00004) but significant negative coefficient (at one percent level). Thus, at sufficiently old age of the head of the household, efficiency begins to fall. Households headed by a male also have slightly higher efficiency but the education

variable produces no effect on efficiency after we control for age, sex and occupation.

Furthermore, irrigation dummy is highly significant although its size is rather small. This, however, does not resolve the question of a differential impact of irrigation across farms of different soil quality, or whether irrigation is available in a few months or year long or its possible interaction with high-yielding seeds, fertilizers and pesticides. It is also possible to explore interaction of irrigation with institutional (including tenancy) arrangements in Nepali farming.

Finally, we do find a substantial improvement in efficiency for medium and large farmers compared to small farmers. On average, households with larger farms achieve about 10 percent greater efficiency than small farms of up to one hectare even after irrigation and other variables are controlled for as in equation (9). It is important to note, however, that large farms do not seem to gain any particular advantage over medium farms in the country.

### **Conclusion**

We find that the translog production function represents the NLSS data on farming better even though output elasticity estimates from the Cobb Douglas function also come close. The stochastic frontier estimate yields the separation of the effects of household-specific shocks from random shocks that affect Nepali agriculture in general. The average level of efficiency in Nepal's crop production is about 62 percent of efficiency achieved by the best practice farms. A mix of household characteristics together with size of farms impinges on farm efficiency in Nepal.

A main limitation of our study comes from limited nature of our data set. In particular, a more thorough processing of data can determine the values of physical capital used in farming. A major problem was that we could not arrive at suitable numbers or values for oxen or other draught animals used in farming. The aggregative number of animals in the raw NLSS data included chickens and goats which were of no use in crop production.

Another caveat relates to our division of farms into small, medium and large. However, the criteria set at 1 and 3 hectares, while generally sensible in the context of Nepal, are still arbitrary, and using data to devise a different scheme can change our results, at least to some degree.

We pursue further work along several other lines as well. One is to see differences in technical efficiency among the three topographical and five development regions of the country. Another is to make a greater use of education and health data within the family, rather than be restricted to one bit of information on education, namely the education of the household head. Further, the access to and use of extension services can indicate the degree to which the extension policy has been effective.

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## **Estimating equilibrium exchange rate in Nepal: A BEER approach**

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### **Abstract**

Nepal has a large trade deficit with India, its main trading partner, and an overall negative trade balance. Its economy is growing slow relative to India, while its exchange rate is pegged with Indian rupee at a level that is believed to be overvalued. In this study, Nepal's real effective exchange rate and India-Nepal (INR/NPR) bilateral real exchange rate are considered in estimating a BEER based equilibrium exchange rate, in order to further study the possibility of exchange-rate misalignment. Estimation is carried out using Johansen (1988) cointegrated-VAR model. In both regressions, relative debt supplies, trade balance, money supply differential, and remittance flows are found significant. Productivity differential is significant only in explaining the real effective exchange rate.

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## **Micro, small and medium enterprises (MSME) and economic development of Odisha**

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### **Introduction**

Micro, small and medium enterprises (MSMEs) play a vital role in the process of development in India. They generate employment at low costs and help the society to move on the path of prosperity and growth. According to the Fourth Census of MSME in 2006-07 in India, the number of MSMEs was estimated at 26.1 million of which only 1.55 million were officially registered (Government of India, 2010) but employed about 59.73 million workers. 72 percent of the MSMEs are engaged in manufacturing and 28 percent in service enterprises. In terms of size of enterprises, 94.67 percent are micro, 5.05 percent are small, and the rest 0.25 percent are medium enterprises. This sector contributes to more than 45 percent of the total manufacturing output, accounts for over 33 percent of the total exports of the country and is the second largest source of employment. MSME sector is better employment generating sector. The organized industrial sector requires an investment of 0.67 million rupees to generate employment of one person, whereas the MSME sector employs 1.27 persons on average with the same investment. On this background, we analyze the position of the Orissa state to find out the areas of strength, weakness and opportunities to make MSMEs more effective and achieve accelerated growth.

### **Literature Review**

A number of studies have been undertaken in the state of Odisha in establishing relationship between industrial development and the role of MSME and big industries. Development in this state is largely dependent

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upon MSMEs rather than big industrial houses. In recent years the State of Odisha has attracted multinational companies like Vedanta, POSCO and Arcelor Mittal Group (Mittal Steel NV) to set up large industries in steel, aluminum and power sectors. However, these industries are facing severe resistance by displaced people. This is also the general phenomenon in other parts of the country. To mitigate the situation of the displaced, it is necessary to adopt a strategy whereby displaced people are gainfully employed elsewhere. It has been seen in the past in many places that displaced people were not resettled to make their living better. Therefore it is necessary to have a strategy to encourage the setting up of MSME units natural resources, low capital investment and without too much pressure toward migration to urban areas. People displaced or unemployed can be trained and suitably employed. A holistic view may be taken to mitigate the situation of unemployment.

#### **Data and Discussion**

This paper examines the importance, contribution and development potential of micro, small and medium enterprises in the state of Odisha. Data are collected from primary and secondary sources. The paper focuses on two important sectors: handlooms and handicrafts in a wider perspective in comparison to the rest of MSME.

It is important to analyze the nature of MSME development to understand any policy implications for a more durable and dynamic growth of this sector. The details are presented in Tables 1 and 2.

**Table 1 – MSME: Number of units and employment generated–Odisha**

<b>Year</b>	<b>MSME units setup (Cumulative)</b>	<b>MSME units set up during the year</b>	<b>Investment made (Rupees in million)</b>	<b>Employment generated (number of persons)</b>
2000-01	66206	3676	1531.80	18115
2001-02	70125	3919	1652.30	16582
2002-03	74133	4008	1551.40	16320
2003-04	78568	4435	1701.30	20547
2004-	83075	4507	2455.90	21898

05				
2005-06	87861	4786	2704.40	25142
2006-07	92417	4556	2711.40	20839
2007-08	97127	4710	2955.10	23301
2008-09	101933	4806	2279.20	20996
<b>TOTAL</b>		<b>39403</b>	<b>19542.80</b>	<b>183740</b>

*Source: Economic Survey, Orissa: 2009-10*

The tables reveal that the number of MSME units set up has been increasing over the years commensurate with an increasing trend in total investment except for 2002-03 and 2008-09. The sub-sectoral breakdown reveals a concentration of establishments in repairing and services. In terms of investment, the food and allied sector accounts for the largest 28.04 percent of total MSME investment. It also ranks second in employment generation (20 per cent), which is exceeded somewhat by glass and ceramics (21 per cent). As a whole the number of MSMEs has increased from 66206 to 101933 over the 2000/01–2008/09 period which amounts to a sustained 5.5 percent average annual growth.

**Table 2 – Sector-wise classification of MSMEs**

<b>Category</b>	<b>No of units set up</b>	<b>Investment (Rupees in million)</b>	<b>Employment ( No. of persons)</b>
Food & Allied	23026	9392.40 (28.04)	120217 (19.99)
Chemical & Allied	2742	1747.10 (5.21)	21108 (3.51)
Electrical & Electronics	1090	455.40 (1.35)	6961(1.15)
Engineering & Metal	11641	7109.50(21.23)	86747 (14.42)
Forest & Wood based	6316	572.60 (1.70)	40032 (6.65)
Glass and Ceramics	7670	3998.10 (11.93)	126197 (20.99)
Livestock & Leather	425	69.00 (0.20)	2423 (0.40)
Paper & Paper Products	2736	848.80 (2.53)	14967 (2.48)
Rubber & Plastics	1675	1186.40 (3.54)	9810 (1.63)
Textiles	7842	1011.00 (3.01)	46508 (7.73)
Misc. manufacturing	5951	1624.80 (4.85)	29331 (4.87)

Repairing & Services	30819	5470.80 (16.33)	96904 (16.11)
<b>TOTAL</b>	<b>101933</b>	<b>33485.90</b>	<b>601205</b>

Source: Economic Survey, Orissa: 2009-10.

Figures in parentheses are percentages of total.

Based on tables 1 and 2, we note that close to 40 thousand new MSMEs registered during the nine years shown have created under 200 thousand jobs which puts the average employment at about 5 workers per firm. This rate seems very low and indicates a tremendous scope for growth in this sector in Odisha. Looking at job creation per unit of investment for one year, 2007-08, we find 7.9 jobs created per million rupees of investment. This is again a low number considering the smallness of enterprises and the low cost of unskilled to semi-skilled labor that is represented highly in this sector. In view of the fact that food and allied, repairing & services, and engineering and metal sub-sectors provide 71.51 percent of the total employment in MSME, there is significant scope for growth in the MSME sector in Odisha.

Some of the traditional industries of Odisha are stone carving, coir, filigree work, handicraft and handloom works which are famous for their aesthetic design, vibrant color and durability. All these industries form part of MSMEs. The promotion of these industries has become more importance now for accelerating employment at the local level because of abundant supply of workers and other local resources. The state government provides administrative, managerial and financial support for the revival, promotion and diversification of these industries through various schemes. It has sought to promote economic development by addressing three obstacles to the emergence of big industrial hubs, namely, unemployment, poverty and worker displacement. We take a closer look at two of the important industries now: handlooms and stone carving.

### **Handloom Sub-sector**

The handloom sector occupies an important place in preserving the state's heritage and culture. Its products have received wide recognition all over the country and abroad for their highly artistic design, color combination, superior craftsmanship and long durability. Some examples are: Khandua of Nuapatana, Maniabandha of Maniabandh, Habaspur of Kalahandi, Bomkai of Ganjam, Katki of Jagatsighpur and Bichitrapuri of Bargarh. During 2008-09, nearly 49,095 looms operated in the state and produced 16.67 million square meters of handloom products and employed 98 thousand persons with an investment of Rs.1662.10 million.

*Weavers earn more with better access to credit:* By January 2008, credit worth Rs.7.59 million was extended to these groups, enabling weavers to produce and supply more products (mainly sarees and dress materials) and stop distress sales. Around 600 families in the cluster were earning at least Rs.500 more per month with the facility of credit flow. Some contractual weavers who were working for Master Weavers on low wages are now able to buy raw materials and have become entrepreneur weavers themselves.

*Improved productivity, mechanization of pre-loom processes:* All pre-loom activities have been mechanized. The motor operated warp winding machine has enhanced the loom's productivity. With the help of the winding machine more than 50 warps are being produced at a time which is 25 times higher than the previous output. Smaller size of the machines allows the weavers to work indoors, thus work become possible round the year and with optimum capacity.

*Skill upgradation:* UNIDO has promoted skill upgradation of semi-skilled Kuli weavers. As a result, 145 Kuli weaving families are using their own tie and dye yarn for weaving instead of buying them from the market, and are also selling these yarns directly in the market. Weavers are now producing higher end products which earn them a margin 60 percent higher than low cost products.

*Social development:* Weavers are now aware of the availability of health and life insurance schemes. Health conditions of the weavers have significantly improved with the construction of a number of sanitary latrines as well as sanitation camps organized to raise health awareness.

*Women empowerment:* Women weavers, confined to their homes stepped out, and set up their own federations with the help of UNIDO, undertaking joint social and economic activities including design and product development projects and participating increasingly in decision making at household as well as community levels.

### **Stone carving cluster: Puri, Konark & Bhubaneswar**

Stone carving is one of the major crafts of Odisha and also one of its oldest. The origin of stone carving in Odisha dates back to the 13 century when the Kalinga school of architecture flourished and the world renowned Sun Temple of Konark stood as one of the finest examples of

artistry carved in stone. Since then families have passed on this tradition from generation to generation. Stone carving has been characterized by the state government as “a craft with a development dimension”. We discuss some of the important developments in this sector below:

*Access to credit:* Loans of 7.5 million rupees worth were extended to artisans at lower rates of interest than what was being charged from them earlier by informal money lenders. And 100 percent of the credit is invested in productive activities namely, purchase of raw materials, tools and machines and payments to the work force.

*Market Linkages:* Artisans were made aware of market requirements, market trends and consumer preferences. About 15 buyers have been linked to the clusters and linkages have been established with 10 premier national exhibitions and 3 institutions CCIC (Central Cottage Industries Corporation), Utkalika and Self-Employed Womens’ Association (SEWA) which have sales outlets all over India.

*Higher Quality:* There has been a shift in the clusters from the production of low quality, cheaper goods to higher quality, higher priced products, as a result of establishment of direct linkages with retailers and demanding buyers.

*Higher Margins:* Margins earned by artisans and master craftsmen have increased very substantially from a meager 5 per cent to as high as 35 to 50 per cent. As many as 45 units have reported average increase of 20 per cent in sales, which in turn has resulted in higher incomes for the 400 artisans employed in these 45 units.

*Higher Incomes:* The income of the skilled artisan has risen from an average of Rs 3000 to Rs 5000 per month, while the corresponding increase for semi-skilled artisans is estimated to have gone up from Rs 1000 (\$ 22 approximately) to Rs 2500 (\$53 approximately) per month. All trained young people have found employment or self-employment in the cluster.

*Increase in productivity:* Intervention has increased productivity of the units by 15 per cent to 20 per cent through the introduction of modern machinery (such as stone cutting machines) and best business management practices.

*Empowered women artisans:* Women artisans have gained increasing self-confidence, going to the markets to directly sell their products and have taken the lead in addressing other social issues including health and hygiene, leading to better sanitation and better environment for work

### **Conclusion**

The MSME sector is the second highest employment generating sector, next only to agriculture. It needs special attention of policymakers at the national and state levels. MSMEs can be an engine of significant force in realizing the twin objectives of accelerated industrial growth and productive employment expansion in rural and hitherto backward areas.

Out of the total 1.55 million MSME units, only 102 thousand (6.57 per cent) are registered and employment at only these units are recorded with the government. There is an urgent need to have a policy to record all units in the state to understand the actual employment situation. This will enable policymakers to decide the appropriate course of action in terms of the creation of industry clusters, provision of suitable infrastructure, product and market development, expansion of financial support.

There is a need for industry-ready manpower; as such there is an urgent need for upgrading the existing MSME institute to a national level institution with branches in state centers such as Rourkela, Berhampur and Sambalpur. The institute should have R & D facilities specific to MSME sector. There should be close coordination among various agencies including the industry associations, technology providers, bankers, government agencies, local/international agencies like UNIDO.

Among MSMEs, the handloom sector plays a dominant role. Weavers produce a variety of fabric. The cluster development program has enabled the weavers to improve their standard of living and develop a better community life. It has helped them to unite under a single forum, WCS. The handloom sector remains less market friendly for its inadequate skill, limited market exposure, lack of capital and initiatives. For long, its master craftsmen remained too traditional, self centered and less development friendly.

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## **Use of modern technology in rural development: A case study of National Rural Employment Guarantee Scheme in Odisha**

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It has been observed that only rural development can take off India from a developing to developed state. For this purpose, the Government of India has been introducing various rural development schemes/plans during five yearly plan periods, since independence. An introduction of any plan/scheme is not the end; its successful implementation is the right approach to achieve the targeted goal. The introduction of National Rural Employment Guarantee Scheme (NREGS) in the Tenth Plan, through a parliamentary act is one such big scheme which is operational till date in all part of India. Now, questions arise whether this very alluring scheme is being rightly implemented and whether the scheme requires a greater degree of monitoring for successful implementation. The present study is an attempt to find any lacunae in the implementation of the scheme at the grass root level such as a Block or Panchayat level and to suggest policy measures to enhance the quality of applicability of the scheme.

The actual process flow and implementation at the grass root level needs to be studied in detail. Since the financials and the number of stakeholders involved are huge, it becomes all the more important that we study the process to find out flaws, if any, and also to suggest any procedural changes required to streamline the process.

### **The present process flow of disbursement of funds in Odisha**

The central government is the chief sponsorer of the program. Funds are allocated to each and every state in terms of works being undertaken and the projection of work that has been done. The block for the entire village panchayats under it collates the data with regards to the details of the various projects. The block's data are collated, the district's data is made, and all the districts data are collated for arriving at the state's figure. In Odisha, the Department of Panchayati Raj is the nodal department for the said project. A secretary heads the department. We

have a position called “Director (Special Projects)” who is in charge of the said scheme under the Department of Panchayati Raj.

The process flow in details is as follows:

- a. The local Panchayat Office/Block Development Officer chooses the number of projects that would be done in the villages of a particular panchayat. The said project is sent to the Collector of the district for approval, who is the project director of all projects within the district. The project is submitted online and the approval from the collectorate is also obtained online. A specific job code is generated for each project after approval (after technical and financial sanctions, as they call it).
- b. It is presumed that job cards have been allotted apriori. This is allotted to all adults in a household after getting the certificate from the village Sarpanch.
- c. The Junior Engineer makes the financial estimate of the said project(s). This would have been made in the previous year also while submitting the panchayat-wise demand for financial sanction but it has to be re-visited for the sake of inflationary or other financial changes within a year.
- d. After the necessary approval(s), the announcement of the said program is made across villages and job-card holders are invited to participate in the said project. A list of interested people is drawn by the village officials from those who register. The people who apply are also registered against the specific code as mentioned in point a above. This information is also uploaded on the website of the scheme, which is visible to the national decision makers as well as those of the state.
- e. The data entry of the interested people is done manually. The process involves signing of a muster-roll sheet by each interested laborer. The village chief also verifies the same. The progress of the work requires daily monitoring, updating of man-days / work-in-progress in the muster-roll data.
- f. An edifice is created on the spot where the actual work takes place detailing the name of the project, number of people involved, cost of the project and the duration of the project.

- g. Job commences and the work is regularly monitored and involvement of the requisite laborers is also checked and processed.
- h. The attendance of each and every day is maintained physically by the supervising officials who are basically the block/panchayat level officers.
- i. Payment is done every eighth day for the entire work done till that day. This is as per the records submitted and updated by the officials. However practically, no such payment actually takes places. All payments are done only after the completion of the project. The website of the scheme is updated every eighth day stating that the payments has been made on a work-in-progress basis. A rough estimate is made with regards to the financials and the physical work done and it is entered in the system.
- j. After the due completion of the work, the physical verification is done. The engineer as mentioned in point c, verifies the physical completion of the work.
- k. Final payment to all the participants is done only after the completion of the work. Sufficient time delay takes place due to data entry in the system, certification of the junior engineer getting the due clearances and final approval of the collector and subsequently the advice reaching the block level.
- l. Upon the completion of all the processes mentioned above, the payment is issued in the form of cheques signed by the Block Development Officer and handed over to the village Sarpanch for onward delivery to the beneficiary villagers. These villagers have to go to the issuing bank, as these are bearer cheques where each of the beneficiaries has to be present in the bank to withdraw the money. The entire payment is handed to them in cash individually.

At the central level, government is very keen to continue the project. It wants to add more and more beneficiaries into the system. However the flaws mentioned above at the grass root level can severely deter the further prospect of government's motive. It is highly recommended that these are addressed immediately and necessary checks are put in place so as to mitigate any further occurrence of the said or newer problems.

### **Proposed method of disbursement**

The methodologies described above and the problems associated with each are typical to each and every state of the country. Each nodal officer (Collector in the case of Odisha) tries to find out the best possible way of minimizing the problem. Various efforts that have been used are as follows:

- a. Opening up of the scheme account with post-offices along with the beneficiary accounts. Post-offices have a better spread than banks in rural India. They have their own savings bank system. This reduces the distance factor to some extent but the problem of handing out/disbursing cash remains.
- b. Not only post-offices but bank branches were also used to open no-frill accounts of the beneficiaries. But this led to complications in account management and reconciliation for the state government, as no single bank covers the entire geographical spread of a block. When one bank catered to a part of the area, another bank catered to another part of the block. Besides this, the cash handling as mentioned above was also a problem. Another fundamental problem associated with no-frill accounts is the *no-frill services*. The banks are least bothered about servicing or addressing the queries/requirements of these clients.
- c. The state machinery is used to transport cash to the requisite branch. This reduces the cash problem of the respective branch, but it does not take care of the identification/wrong credit to any beneficiary. This is not a foolproof method as this cannot be handled by the government officials every time; there are many projects running under a Block Development Officer's jurisdiction making it impossible to cater to all.
- d. Engage one senior person of the village to liaison with the bank officials for quicker arrangement(s) of cash.
- e. Giving top priority to the project sanction, approval for payment and final certification of all projects under NREGS. The Collector has multiple functions but this one is given priority. This reduces the total delay to some extent but cannot help in mitigating the cash arrangement and disbursement problems.

It is evident, despite the interest of the people involved, the payment is delayed. So we have to go beyond the traditional mode of thinking and

doing things. The proposed scheme involves the smart use of technology. We are talking of smart use of technology for (a) electronic disbursement of funds, (b) linking of relevant information to NREGA server, and (c) online monitoring of day-to-day progress.

The Committee on Suggesting a Framework on Electronic Benefit Transfer has proposed a framework towards the first part (April 15-2008). It may be noted that any use of technology and development of a subsequent sustainable model in this segment has certain nuances and requirements, which need to be taken care of. The following points are noteworthy:

- a. The model should address the problem of geographical spread.
- b. The model should be financially attractive for any entity which takes over the same; government/statutory implementing bodies should not enforce charity or corporate social responsibility as the garb for undertaking this project. The scale of operations/model should either have a regular profit (in a mutually agreed transparent manner as the entire investment would be routed through the government's corpus) or have a model wherein profit is reaped on a long-term approach either on scale or through quick breakeven or any other complex fuzzy logic/framework/model. This suggestion is made keeping in mind the long term running of the project and usage of the best people, best system and the best technology for the same. It is for sure that in this world of business, any entity who undertakes the usage of technology and relevant people should have a recurring inward cash flows atleast for few seasons.
- c. It should encompass the typicalities of the complex transactional requirement of the general rural masses who are uneducated, do not know much of banking but the right to speed of transaction(s) is as high as that of any other urban community/individual. The system used also should be scalable to accommodate multitude number of beneficiaries.

The proposed model involves usage of handheld devices with GPRS enabled connectivity. A schematic representation of the device is attached below. This would act as a connector to information held in distant server of banks. This is to be used by Banking Correspondents (BCs) hired by the approved banks. The model encompasses this indirect route through banks

primarily because of two reasons namely:

- a. There is involvement of delivery and deposit (read handling) of public money which requires statutory sanction from the regulators.
- b. There is a set of rules already existing for the banking sector in India; routing the system through banks does not entail establishing fresh set of rules.

The detailed process flow is as follows:

- a. The bank, which is chosen by the Department of Panchayati Raj in joint consultation with the Reserve Bank of India, has to choose a Banking Correspondent (BC) to handle the process. They would be the extended arms of the respective banks. The nearest branch (from the place of work) would be the nodal branch for the respective BC. The BC would be directed by the official(s) of this branch for handling the project(s) being handled close to the branch. *The important names providing technical consultancy in this line are FINO & ALW.*
- b. The BC has to first identify the villages where the projects are going to come. They would have to cover the villages and check out the exact details of the job cardholders. A thorough KYC check needs to be done for all the individuals. The bank officials can guide the BCs to check out and record specific demographic aspects of the individuals. KYC check is required to open bank accounts.
- c. This seems to be a typical thing which was earlier being done anyway by the bank official(s) when the beneficiaries used to approach them for opening no-frill accounts as mentioned earlier. The technical aspect comes in the form of record of thumb impressions and the images getting embedded in a chip based smart cards. These smart cards are compatible to the handheld devices.
- d. The smart card is issued to the beneficiaries upon proper KYC check and the fingerprint details are permanently stored in the chip. Each card number is numbered and this numerical value is marked to the bank account of the respective individual.
- e. Here there is no requirement of certification from any individual be it the Sarpanch or any government official. In Odisha each villager has

now got an` Election Commission's voter identity card (courtesy the electronic voting methods) which can be used as a base document to issue a smart card.

- f. Once issued, the said cards are handed over to the respective individuals. Now when the beneficiary wishes to enroll for a particular project, he/she has to punch in the details into the biometric smart card reader. All such individual card details are thus punched in to the system. The BC has to carry the information to the block officials. They need to download the data and convert it into a particular format for onward updation in the NREGS server.
- g. When the job begins, the card reader may be used to take care of daily attendance. A BC has to reach the site for just keying in the details of the people working in the site. A surprise visit may be arranged in mutual coordination between the government officials and the bank's branch to bring in a further degree of transparency. Each day, these data are also keyed in to the main server. In the back-end an auto counter is on with regards to the number of days an individual is getting work. Based on the same, a cumulative payable amount against his/her name is generated. For example, the rate of digging soft soil is INR 145 per day (INR 160 for hard soil and INR 250 for laterite soil) per 100 cubic feet and if suppose a person has already worked for 3 days, a payable amount of INR 435 should be generated for that individual.
- h. On the seventh day of completion of work, a system-generated communication goes to the Collectorate advising the officials for generating the payment. Upon receipt of such a communication, the necessary information may be passed on to the block officials for generation of necessary advice to the bank. It is presumed out here that the bank's branch, which maintains the accounts of the beneficiaries, also maintains the money provided by the Central Government for the said project under NREGS. The block officials need to inform the bank to transfer the money to beneficiary account. The advice needs to be necessarily given in a soft format for immediate upload by the bank.
- i. When the bank completes the transfer of requisite funds from the project's accounts to the beneficiary accounts as per the advice



received from the block official(s), the BCs may be advised to carry on their next level of activity.

- j. They need to carry cash to the point of work. This may be done the next day i.e. eighth day. The quantum of cash would be determined by the amount of work that has been completed.
- k. At the point of work, they hold the smart card reader and check out the authenticity of the beneficiary by checking out the fingerprints. The details are checked online through the GPRS connector, which is in turn connected to the bank's server. Upon checking out the genuineness of the individual, the BC then asks for the option of withdrawal from the beneficiary. The beneficiary may choose to withdraw partly, fully, not withdraw at all, and deposit any amount. Depending upon the transaction (credit/debit), the necessary receipt is generated and handed over to the beneficiary. After returning to the bank's branch the necessary cash settlement may be done. Those days when these transactions are supposed to happen, the respective branch may be allowed to close a little later by their senior functionaries. At the bank level, these accounts may be specially isolated to allow such transactions.

We shall now check whether all the irregularities discussed above are routed out and the existing compliance to the rules of the scheme is met or not.

- a. The smart card shall check out the details of an individual like name, date of birth, father's/husband's name and prepare a unique combination number. This number is the digital signature of the individual. This cannot tally with any other individual's. Duplicity of cards in the individual names is ruled out. The family member's names are also tagged to any individual. Hence the chances of a family earning more than 100 days of employment in a year are ruled out. This would be checked by the system every time a request for payment is made.
- b. We have been discussing the case of fake entities making it to the muster rolls. If a system generated attendance is maintained, there are no chances of people making it into the payment list without actually carrying out work.

- c. No manual entry is undertaken resulting in lesser (read no) mistakes, time being saved with no duplicate data entries.
- d. The payment to the beneficiaries is quicker. They need not go to the bank to have their transactions done.
- e. Savings habit of individuals is generated. As the no-frill accounts are savings accounts, the beneficiaries are liable to get interest earning.

Odisha as a state has not yet utilised the said model. The benefits both societal and financial are discussed at length later during the course of the paper.

### **Summary and conclusion**

This is an approach if applied at the grass root level will bring in transparency in the system, develop an integrity angle to the entire set of processes and ultimately bring in the sense of satisfaction to the actual workers. As we have mentioned in the course of the discussion, this satisfaction will cause the successfully strengthening the very motive of the project. The state government should rise to the necessity and accordingly chart out the selection of banks to carry forward the agenda in a time bound manner.

Odisha is now treated a backward state amongst its peers. As a whole, the state consists of 30 districts and 314 blocks. Imagine the amount of silent change which this process can bring in to 47,529 villages in the state of Odisha and the image it will be able to create amongst its peers.

**Impact of industrial environment on socio-economic conditions of mine workers: A study of coal industries in Odisha**

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**Introduction**

In the process of industrialization and output generation, working community play a vital role. The working environment and working conditions of worker is equally important to that of capital and organization to promote sustainable development. The socio-economic condition of coal mine workers in this study covers various dimensions of workers such as: working conditions, work environments, occupational hazards and industrial accidents and income generation etc. The conditions under which the workers perform their duty have a great bearing on their general health, efficiency and productivity. The performance is affected by environmental problem such as temperature, noise, ventilation, humidity, work zone air quality and ambient air quality etc. The continuous exposure of the miners to such unhealthy atmosphere leads to fatigue and boredom ultimately leading to the serious fatal accidents. So it has been correctly said that a perfect man can be from a good and healthy environment. The piece of research is mainly meant of the economic policy measures for the control of environment pollution particularly in the coal industry. Since the coal industry has been already identified as one of the most polluted units in the country, this study is very much contextual and worthwhile from the angle of policy decision making. Again, the study is based on grass root level observation covering socio- economic aspect of the groups affected by the pollution due to coal mines. We are hopeful that it will provide a pragmatic approach to the policy measures in the context of pollution control.

The main objectives of the present study are as follows:

- To examine the changes in the socio economic condition of the workers over a period of time.
- To examine the income pattern of the miners.
- To examine the degree of variability of income of company workers and contract workers.

- To determine work environment and working conditions of the workers.
- To probe into the occupational diseases, health hazards and industrial accidents and to assess the measures taken towards these problems.
- To suggest appropriate policy measures on the basis of findings to raise the socio-economic conditions of the miners.

### **Summary and Findings**

Coal mining is one of the basic industries of India. Economic development of our country depends on the speed and efficiency with which the coal mining sector develops. Orissa is full of important minerals like iron ore, mica, coal, and chromites etc; which are meant for basic and heavy industries. Ib valley coal field, one of the subsidiaries of Mahanadi Coal fields Limited is located at Jharsuguda district of Orissa has 45 percent of total coal reserve in Orissa. There are nine coalmines and projects in this coalfield. The coalmines of the district in the Orissa as well as in the Indian economy enjoy a strategically important position.

The mining works is the principal occupation of the workers as observed in the field. Wages and salaries are their main source of income. We observe two categories of workers i.e. Company Workers and Contract Workers. The company workers are getting higher average monthly income than contract workers.

The present study reveals that the working condition and the work environment are not congenial to the health of the workers. The miners in all mines except for a very few, work under risky, unhealthy and hazardous condition, which gives rise to the industrial fatigue and feeling of frustration among the workers. Due to manual nature of the work labor turnover and absenteeism is more in the industry. It has been proved through the hypothesis that labor turnover has a relationship with the blue-collar job. The jobs are not only manual but also heavy and strenuous. Of the total workers 77% are engaged in heavy and strenuous work whereas only 23% are doing light jobs. It has been shown that heavy and strenuous work in the mines leads to frequent illness, because of which the workers remain absent from duty. 69% of the workers remain absent from duty due to heavy and strenuous work. Remaining 31% remain absent due to participating in religious ceremonies, attending marriages and paying visits to their native places. Working in the mines involves physical accident and blows, muscular and nervous strain, monotony, noise, unhealthy dust and air, which bring down the workers efficiency. Poor

ventilation and foul smell in underground constitute a serious problem. Open cast coalmines also have the same problem, which cause diseases in the respiratory system. Expenditures made by the Coal Company towards the welfare at work place appears scant and inadequate. The condition at work place such as extensive unbearable heat, irritating noise and unhygienic dust tells upon the efficiency of the workers and causes industrial fatigue. However, under such working environment the tribal workers discharge their duty up to the satisfaction and are found to be more efficient, industrious, disciplined than the non-tribal. Often changing the posture of work and rotating the work shift reduces the work efficiency and productivity of the labor. 78% of the workers work standing and often changing conditions and 57% workers attend their job in the rotation shift. Taking psychological factors into consideration it is observed that 84% of workers are dissatisfied with their monotonous and strenuous job.

The present study reveals that the miners suffer from various occupational diseases and accidents due to adverse working conditions. Occupational hazards in coal mining occur due to (1) personal factors like negligence, carelessness etc; and (2) material factors like unguarded and defective machinery, industrial and chemical explosives, defective equipments etc. So in mining industry accidents are not uncommon. Some accidents result in a temporary or permanent disablement of the miners, which is the outcome of irresponsibility of the workers, poor supervision, and poor and inadequate safety measures made available by the company. Safety appliances such as globes, leg guards, goggles, helmets, boots, masks are not adequately supplied. Out of 71% accidents 54% accidents are due to poor safety measures. Climatic condition of the district also causes major accidents in mining area. Serious injuries are more than fatal injuries and minor injuries. Accidents are enormously costly which are both visible and invisible. Economically the cost of the accident is heavy for all concerned. The cost of the compensation payable to the family of the dead miners and injured workers, the cost of the time of the injured men and the cost of the lost time by their employees who stop work out of their curiosity and sympathy are tremendous. Adequate safety measures are essential to recover the loss to some extent.

### **Suggestions**

While conducting survey, certain important factors have drawn our attention, about which we want to offer the following suggestions.

- Wages and salaries are not sufficient to run a decent life, it may be hiked.

- Exploitation of employer be minimized.
- Creation of new employment activities in the periphery.
- Coal dust being the chief cause of air pollution it is suggested to take appropriate abatement measure to control spreading dusts in the mining area. The possible steps are: (a) to take air quality management strategy like setting up air quality monitoring stations in the mining location; (b) adequate plantation of trees around the coal projects so that it will check the wind flow from mining area to the 'basti' area.
- Medical facilities at work place should be provided to all the workers and the workers must be trained in giving first aid.
- Clean drinking water facilities should be provided to all work place as well as to the 'basti' areas. Proper spray of water at a regular interval on the main roads of the mining area for avoiding dust is essential. The safety department should ensure this.
- Informal education and appropriate training etc. should be provided to the illiterate and ignorant miners regarding their environment and working conditions to avoid occupational hazards and diseases.
- Proper display of information on the notice board and display of pamphlets in square places is essential regarding the causes of occupational hazards, awareness camp on safety to maintain consciousness throughout the year. The message of safety policy must be passed on to all levels in letter and spirit.
- The message of health statute '*prevention is better than cure*' should reach each and every worker so that accidents and occupational diseases can be checked to a great extent.
- Last but not the least the government should create ideal industrial environment and good working conditions for the workers in the coalmines, those who produces 'black diamonds' for us which ultimately strengthen the country' economy.

**Factors in health initiative success: Learning from Nepal's newborn survival initiative**

**Stephanie Smith**<sup>33</sup>

University of New Mexico

What determines the success of health initiatives in acquiring sufficient levels of political priority to alleviate significant health problems in low-income countries? We investigate this question in the context of significantly increasing political priority for newborn survival in Nepal since the turn of the century. We use a process-tracing methodology to investigate the causes of this shift, drawing on twenty-nine interviews with individuals close to newborn health policymaking in Nepal and extensive document analysis. Shifts in the political context (commitments to the child health MDG), the strength of concerned actors (emergence of collective action, leadership, resources) and the power of ideas (problem status, existence of contextually relevant solutions, agreement on these points) surrounding the issue have been instrumental in elevating priority for newborn survival, if not institutionalizing that priority to ensure long-term support. The findings highlight the significance of political fragmentation in war-torn areas for impeding priority generation and impact. They also suggest that theories of social construction provide important insights to the sources and roles of ideas in shaping health initiative success.

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**Swine flu: A preliminary study of the planning and policies of Nepal to deal with H1N1.**

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In the early April 2009, the world was hit by H1N1 subtype of Influenza A virus. The first outbreak occurred in Mexico, which then spread to United States. On June 11, 2009, with the global contagious spread of the novel influenza virus (H1N1) with 74 countries reporting approximately 30,000 confirmed laboratory cases, the World Health Organization, WHO raised the pandemic alert level to pandemic phase 6. During the period, US reported 13,217 laboratory confirmed cases with 27 deaths, India 9 cases, China 174 cases and Nepal no cases of H1N1. As of 27 November 2009, more than 207 countries had reported the laboratory confirmed cases of pandemic influenza H1N1 with a total death count of more than 7,820. WHO reported heightened disease activity in US and high ILI (Influenza like illness) cases in India and Nepal. With the arrival of year 2010, as of 28 February, worldwide more than 213 countries reported laboratory confirmed cases with at least 16,455 deaths. By the time, most areas indicated declining disease activity, US indicated low prevalence of influenza virus with low and declining pattern of pandemic influenza activity, however, active transmission were observed in Southeast Asia. According to WHO/SEARO, as of 2 February 2010, Nepal has reported cumulative cases of 172 with 2 deaths. However, no cases of H1N1 have been reported since that date. In the mean time the candidate vaccine virus (CVV) has been developed, H1N1 vaccine now has been manufactured, antiviral susceptible to the subtype been identified. WHO is making an effort to distribute the donated H1N1 vaccines, antiviral and PPE (Personal Protection Equipment) to the countries in need of vaccine.

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### **Introduction**

Influenza usually causes an acute self-limiting upper respiratory tract infection. The causative agent of influenza is “the Influenza A virus”. The virus through continuous point mutation, a phenomenon called as antigenic shift, can possibly generate the reassortant virus, bringing about the potential pandemic. H1N1 2009 virus is a consequence of antigenic shift, identified as a triple reassortant virus, developed as a result of reassortment among swine, avian and human influenza strain, pigs acting as the intermediate host or mixing vessels for gene reassortment among strains. The transmission of swine flu occurs by inhalation of infectious air borne droplets or droplet nuclei through direct or indirect contact. The incubation period is 1-7 days. The symptoms include fever, cough, sore throat, runny or stuffy nose, myalgia, body aches, headache, chills and fatigue and occasional gastrointestinal upset with complication as pneumonia, respiratory failure. The infection can further exacerbate with rhabdomyolysis on renal failure, myocarditis on worsening of underlying condition as asthma and cardiovascular disease on mixed infection with bacteria. The other unusual symptoms reported are conjunctivitis, parotitis, hemophagocytic syndrome. Individuals that are at high risk of developing severe disease falls among the group of younger less than five years, elderly people with suppressed immunity and pregnant women with chronic systemic illnesses, adolescents on aspirin and immune-compromised patients with lower respiratory tract infection. Vulnerable population includes children and young adults below the age of 65. Diagnosis of H1N1 2009 pandemic virus is based upon three tests; PCR/RT-PCR, viral culture and 4-fold rise in virus-specific neutralizing antibodies. Control and prevention consist of isolation (social distancing), good infection control practices (standard droplet and contact precaution, practicing respiratory and hygiene etiquette), supportive care and use of antiviral drugs as oseltamivir, zanamivir and peramivir, and immunization.

### **Nepal Influenza Pandemic Plans and Policies**

To predict the proper measures to be taken in harmonizing the global health with the emergence of the new influenza virus subtype capable of uncertain pandemic threat, WHO has developed guidelines regarding the preparedness and preventive measures and requires every country to follow the guidelines in formulating national pandemic and response plans plus implementing the measures effectively with regular monitoring. With the emergence of H1N1 infection worldwide, the Government of Nepal has considered the “National Avian Influenza and Influenza Pandemic Preparedness and Response Plan” (NAIIPPRP), the plan developed in

2005 to deal with the Avian Influenza. The main objective of NAIIPPRP is to prepare the country for early recognition and containment of a possible outbreak of avian influenza (AI), to reduce the risk of human infection in the presence of animal disease and identifying and promptly treating human influenza cases where they occur. In the event of human to human transmission of H5N1 or other novel virus and a possible influenza pandemic affecting Nepal, the plan aims at building preparedness to contain it rapidly and mitigate its health and socio-economic impacts.

The NAIIPPRP provides a strong basis on which to detect and combat possible outbreaks of AI and other related virus such as H1N1 that occurred in 2009. The plan also outlines the institutional mechanisms for carrying out those activities being candid about the capacity and resources constraint associated with the country as low financial resources, underdeveloped health care system, centralized planning and administration, low health profile, low literacy rate with diminished development in transportation and communication. The plan has detailed various actions and improvement which need to be accomplished in the health care system, under two main components, the Animal Health component and the Human Health component. These components to control and contain the Highly pathogenic Avian Influenza (HPAI) mainly focus on strengthening the surveillance and epidemiological Investigation, strengthening animal and human quarantine services, strengthening the capacity of the veterinary and human laboratory and its network, improving public awareness information and communication, developing health care delivery system preparedness and response plans, developing compensation and rehabilitation.

The Government of Nepal, to implement the plan requested for the World Bank assistance which was approved in 19 January 2007 with a total grant of \$18.2 million under a four year project plan, “Avian Influenza Control project (AICP) – Nepal, 2007/08-2010/11”, which is ongoing with a completion date of 31 July 2011. The goal of AICP is to reduce the risk of human avian influenza infection in the presence of animal disease, to be able to identify and treat promptly humans infected with avian influenza, and to build preparedness to contain rapidly and mitigate the health and socio-economic impact of an influenza pandemic affecting Nepal. With the completion of the four year AICP, it is hoped the health care system of Nepal will be enhanced so as to prevent, detect and contain an avian influenza or related outbreaks.

Under the animal health component, the project will enhance AI prevention and preparedness programs through strengthening the

veterinary services, disease surveillance and diagnostic capacity. The project will be focused on strengthening the laboratory capacity of one of the eight animal disease diagnostic laboratories to BSL (Bio-safety level) 3 and the remaining seven to BSL 2. The project will focus on controlling and containing the outbreak as well as providing compensation fund to assist the poultry owners for their loss.

Under the human health component, the project aims to prevent the human influenza caused by HPAI through enhanced year round surveillance by strengthening the existing disease surveillance capacity at the national, regional and district level. This will be accomplished by building and implementing an influenza surveillance system on the existing surveillance system and building the capacity to detect the occurrence of human cases of avian influenza. Additionally, it calls for providing and ensuring a laboratory network support at the health care facilities to assist in implementation of the national influenza surveillance system. This focuses on improving the laboratory capacity to enable accurate and effective diagnosis and case detection with conventional and real-time Polymerase chain reaction (RT-PCR) and enzyme linked immunosorbent assay (ELISA), developing virus isolation capabilities (typing, subtyping and strain identification capacities). There is a need to enhance BSL 3 capacity at NPHL (National Public Health Laboratory), development of laboratory information management system and appropriate trainings of personnel.

Under the prevention and containment measures, the project aims to prevent avian and seasonal influenza transmission in high risk occupational settings. This attempts to accomplish in developing a modern human quarantine system in main points of international transit and building the capacity for pharmacological and non-pharmacological interventions as antivirals. PPE (Personal Protection Equipment) and vaccination will need to be provided to the public plus information about social distancing and monitoring the occurrence of infection during different pandemic phases. This requires planning for the acquisition and use of pandemic vaccines and developing a legal and regular framework for public health interventions during epidemics.

Under the health care system delivery and preparedness response, the project aims on developing and implementing a system of acute respiratory disease triage and referral. Capacity building of the primary health care system (district and below) together with the preparation and

implementation of contingency plans is necessary to meet the health care needs during an influenza pandemic.

The project also aims on enhancing the communication strategy to ensure accurate information being relayed to the general public through the resources available. Nepal government, with the progress on ongoing AICP on overcoming the constraint associated with the health care system is modifying the NAIIPPRP. According to WHO-SEARO, with the ongoing H1N1 pandemic, Nepal has developed the first draft of the revised NAIIPPRP under the heading “Avian Influenza Pandemic Preparedness and Response Plan for Government of Nepal, (AIPPRP)”.

### **Mitigation Measures and Controversial Scenario**

According to the press release made by MoHP, with the pandemic alert 5 declaration on 28 April 2009, the Government of Nepal initiated the following activities:

- a. Conducted series of planning and coordination meeting with various line ministries, departments and other stakeholders.
- b. All district health offices and regional health directorates were alerted on influenza like illnesses surveillance. Trainings events were conducted on surveillance, case management, infection control and community mitigation to health workers and other relevant people at central, regional and district levels.
- c. Initiated surveillance activity and health screening at Tribhuvan International Airport on 29 April, 2009 and major land crossing (India and China border).
- d. Developed and circulated guidelines on who should get laboratory test; who should seek immediate medical care; and who should get antiviral.
- e. Public and private hospitals including security forces hospitals have been instructed to establish an isolation room. Control Room is established at Epidemiology and Disease Control Division (EDCD).
- f. Standard Operating Procedures on patient management have been circulated widely to all hospitals. The community mitigation and health promotion materials have been disseminated to the community.
- g. Media messages on H1N1 and preventive measures have been disseminated to the general public. Risk communication templates and leaflets (Flu Dos and Don'ts) have been distributed to all districts.
- h. Laboratory capacity was strengthened to carry out the testing of H1N1 in NPHL. International and National trainings have been provided to Laboratory person to conduct testing of H1N1.

- i. Nepal government in coordination with WHO, is scheduled to receive vaccine in the first quarter of 2010

*No cases as of 11 June 2009:* Government of Nepal with porous Indo-Nepal border, and country sheltering the refugees with the incidence of H1N1 infection in neighboring countries and country's associated capacity constraint and lack of transparency regarding the improvement in the health care system with low health profile and nutritional status, poor sanitary condition and hygiene etiquette, is highly prone to contagious airborne infection. However, with neighbor countries reporting confirmed cases of H1N1, Nepal had not reported any cases as of 11 June 2009. H1N1 influenza, being a contagious airborne disease, no borders or boundaries can prevent its spread. No cases indicate a high health profile and advanced health care system in Nepal. However, considering the facts of Nepal and the characteristics of H1N1 infection, the report does not seem to convey accurate information.

*Surveillance activity and effectiveness:* The fact that no cases were reported as of 11 June 2009 raises questions regarding the surveillance activities and its effectiveness. Screening at the International airport though revealed the identification of the first three cases on 28 June 2009, screening done on the borders still remain under question indicating ineffective and inadequate surveillance with no cases among the massive mobility population entering and exiting the country at these levels. The government of Nepal has not made public information about the surveillance being done on pig farming regarding H1N1 and probable cases.

*Diagnostic capability of Nepal:* The Government of Nepal had reported confirmed cases on the basis of report submitted by NPHL. Strengthening the laboratory capacity of NPHL is one of the main aspects of AICP. The AICP focuses on three staged development of the NPHL. The first phase is distribution and use of rapid antigen detection kits, the second phase involves use of polymerase chain reaction (PCR) methods, and the third involves virus isolation and tissue culture, the development of BSL facilities.

According to AICP, strategic and operational plan 2006, NPHL has basic laboratory equipment, much of which is substandard, outdated, and unreliable. NPHL is limited to performing rapid tests distinguishing influenza A and B virus only. Though the laboratory is equipped with

PCR equipment and can perform conventional PCR for other organisms. It is in need of reagents, chemicals, and accessories to do conventional PCR for influenza. To perform the more reliable and sensitive test of detection, the real-time PCR (RT-PCR), NPHL will require facilities renovations necessary to do PCR testing and the training needs together with need of equipments, primers, reagents, supplies, and accessories and laboratory management information system, and computer equipment to run and interpret PCR. However, BSL-3 is a long term goal and requires facility renovations, equipment, and supplies necessary for BSL-3, training to operate such a facility, and personnel requirements.

According to WHO report, 13 May 2009, Nepal was not listed as one of the countries able to perform PCR to diagnose influenza A (H1N1) virus infections in human. According to the report of the WHO/SEARO, partners meeting on H1N1 2009 at New Delhi on 21 August 2009, Nepal does not have Influenza center lab (ICL) capable of virus isolation, PCR. WHO has guided the nation to report confirmed cases as per three confirmatory tests result; PCR, viral culture and serology test, 4 fold rise in pandemic (H1N1) 2009 virus virus-specific neutralizing antibodies. WHO has guided countries without a designated National Influenza Center (NIC), with no ongoing influenza surveillance activities or with no laboratory capacity to diagnose the pandemic H1N1 2009 influenza virus to collect representative samples from clinically compatible cases from newly affected areas and among severe cases per week and send to neighboring countries or regional influenza laboratories with laboratory capacity for virus characterization.

The laboratory confirmation report of H1N1 cases from NPHL requires transparency, so as to assure the public regarding the improvement on the diagnostic capabilities of NPHL and the type of test being implemented or collaboration with certain national private or international organization for confirmation. The government of Nepal, in order to assure improved health care system requires having some degree of transparency to gain public confidence.

*Immunization program:* The government of Nepal has not initiated any vaccination program as it is still awaiting vaccine deployment from WHO. By now the country should have been ready for the next pandemic wave with effective immunization program and stockpiling in hand of antiviral and appropriate personal protection equipment, however claims to be ready for pandemic wave.

*Total H1N1 cases identified:* According to WHO/SEARO, Nepal has reported cumulative cases of 172 with 2 deaths as of 2 February 2010. No cases of H1N1 have been reported since that date when WHO is reporting increasing incidence of H1N1 in Southeast Asia. The cases cannot be taken as the actual cases when the surveillance measures and diagnostic tools applied are in question for the effectiveness.

*Efficacy of the mitigation measures applied apart from AI incidence place:* With the pandemic preparedness on hand from AICP and existing plans and programs implemented to deal with the January and February 2009 AI pandemic in Jhapa and Morang district, the government of Nepal initiated the mitigation measures. The national action preparedness plan and the mitigation measures applied seems to correlate with each other as per the activities been addressed by the MoHP. However, the efficacy of the measures applied remains in question regarding other areas of Nepal where no sign of AI have been observed.

### **Conclusion**

Nepal with capacity constraint, low financial resources, low manpower and limited technology, political instability has undergone challenges to implement a plan. Issues such as an under-developed health care system, the topography of the country, economic remoteness, difficulties in enhancing literacy among the female and rural populations, conservative social custom and traditions and centralized planning and administration has contributed to the implementation problems. The Avian Influenza Control Project (AICP) has made an endeavor to improve and implement mitigation measures to deal with the H1N1. However due to existing challenges; country's associated constraints and uncertainty in the development of the health care system, the capability enhancement and effectiveness of the diagnostic laboratory, National Public Health Laboratory and the surveillance measures implemented, issues following the mitigation measures applied remains. Transparency to gain public confidence and assure the citizens of their safety and capability enhancement in the health sector is necessary.

Until the NPHL capacity is enhanced or collaboration with national private or international organization for diagnosis question about Nepal has a high health profile or is immunized to the subtype will continue. Transparency and open communication regarding the capabilities of the government needs to occur. Furthermore, the method of surveillance will

be impeded. Screening of swine operation should be implemented. Table top or field exercise of pandemic planning should occur. No immunization campaign has been implemented and the country is still awaiting vaccine deployment from WHO which indicates management and leadership issues, contributing to a lack of effective mitigation measures. With WHO continuing to report additional cases in Southeast Asia, continue vigilance and reporting in Nepal should occur. The government of Nepal however needs to be better prepared for the unpredictable pandemic threat and its consequences.



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Journal articles should be cited as follows:

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According to Douglas Yates (1982, p. 151), the state can weild power to....  
...that links policymaking to the democratic popular will (Bertelli and Lynn, 1998).

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**Referee # 1, comment #1:**

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The reviewer's comment has been addressed on page 13 (second paragraph) with the line that begins with "The negative effect of GR could be interpreted as ...." A foot number 5 at the end of the manuscript has also been added to further clarify the seemingly contradictory effect of GR by citing two other similar findings in the literature.

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