



Pig based production system contributing towards the sustainable livelihood of the tribes of Jharkhand

MUKESH KUMAR, JANCY GUPTA, APARNA RADHAKRISHNAN AND MINU SINGH

ABSTRACT : The present study was conducted in two randomly selected districts of Jharkhand. The study assessed the extent of Pig Based Production System Contributing towards the Sustainable Livelihood of the tribes in the Govindpur and Ormanjhi blocks of Dhanbad and Ranchi districts, respectively from 2013-14. The data was solicited from 120 randomly selected households and the study was conducted through personal interviews of the selected respondents in the villages selected by random sampling technique, personal observations and participatory rural appraisal techniques *i.e.* transect walk, social mapping, key informant interview, focus group discussions. The results indicated that the livelihoods of tribal communities in the area have traditionally been dominated by the pig based production system- C+G+P. Among the sustainable livelihood components human capital was minimum compared to others and use of traditional knowledge (5.88), education of family members (5.98), ICT tools (5.95) and use of natural resources (5.71) had highest influence on sustainable livelihood of the respondents. The pig production system prevalent in the area were found to be substantially contributing for the sustainable livelihood of the respondents and were the integral part of day-to-day livelihood activities, nutritional security and traditional life style for tribal people in the area (C=Cattle, G= Goat, P=Pig).

KEY WORDS : Pig production systems, Sustainable livelihood, Tribes

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INTRODUCTION

India having one of the largest livestock population in the globe which play crucial role in rural economy and livelihood. Among the Indian state, Jharkhand is rich in natural diverse environment surrounding the people provides several goods, services and amenities and other environmental resources that forms the livelihood of the tribes. Livelihoods are ways of keeping one self meaningfully occupied by using one's endowments (human and material) to generate adequate resources to

meet the requirements of the household in a sustainable manner (Bernstein, 1992). In simple terms these are combinations of the capabilities and resources people have (including social, human, financial, natural and material assets) and the activities they undertake in order to make a living and to attain their goals and aspirations (Bhuwaneshwari, 2008). Livestock contribute to food, economic, environmental, institutional, health, educational, social, infrastructural, nutritional security and thus in total to the livelihood security of tribes by providing transport and on-farm power, among the different livestock's pigs are believed to be the most productive and is the fastest growing sector. In India, pig rearing and pork industry are run by traditional pig farmers belonging to the lowest social-economic stratum and Jharkhand is no exception. Pig production system play importance in tribes' societies

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because of shorter life cycle, high return rates with high feed conversion efficiency. Pig production helps the marginal and back yard farming community to generate wealth of assets or safety nets at the time of crisis and also fulfil a wide range of socio-cultural roles of tribes. Even the poorest of the poor tribes often have pig farming that can help them along a pathway out of poverty. Properly managed pig production system can play an important role in mitigating hunger, nutritional security and counteracting environmental degradation. Sustainable livelihoods approach, are genuinely transdisciplinary as they are produced, disseminated and are applied in the borderland between research, policy, and practice (Knutsson, 2006). Among the livestock systems, pig is more efficient converter of low quality feed to high quality animal protein and also need less feed per kg grain of body weight and plays significant role in sustaining the rural livelihoods. Moreover, as an important diversified activity, the pig based production systems of the tribes are more crucial for economic development of the state in specific and country in general. A systematic study was designed to investigate contributions of pig system towards the sustainable livelihood of the tribes of Jharkhand.

MATERIAL AND METHODS

The present investigation was conducted in Jharkhand state which was selected purposively as livestock contributes 27 per cent of value output from agriculture. Out of 24 districts of Jharkhand, Govindpur and Ormanjhi blocks of Dhanbad and Ranchi districts of Jharkhand state were selected randomly for the study. From these two blocks, four villages were selected randomly and from each village 30 farmers were again selected randomly, constituting a total number of 120 respondents. Questionnaire was pre-tested for its validity and reliability purpose before data collection. After normalization, the testing of suitability of indicators and elimination of non-significant indicators was carried out using Principal Component Analysis (PCA). For selection of suitable indicators, PCA was run separately for Production system so as to determine the weights by the factor loadings and Eigen vectors were obtained.

Selection of indicators :

To bring the values of the selected indicators within the comparable range and also to standardize their values

normalisation was required (Maiti, 2013; Piya *et al.*, 2012; Feroze and Chauhan, 2010; Nelson *et al.*, 2010; Gbetibouo and Ringler, 2009 and Vincent, 2004). Normalisation was done by subtracting the minimum value from the observed value and dividing by range using the formula (Kaiser, 1958) :

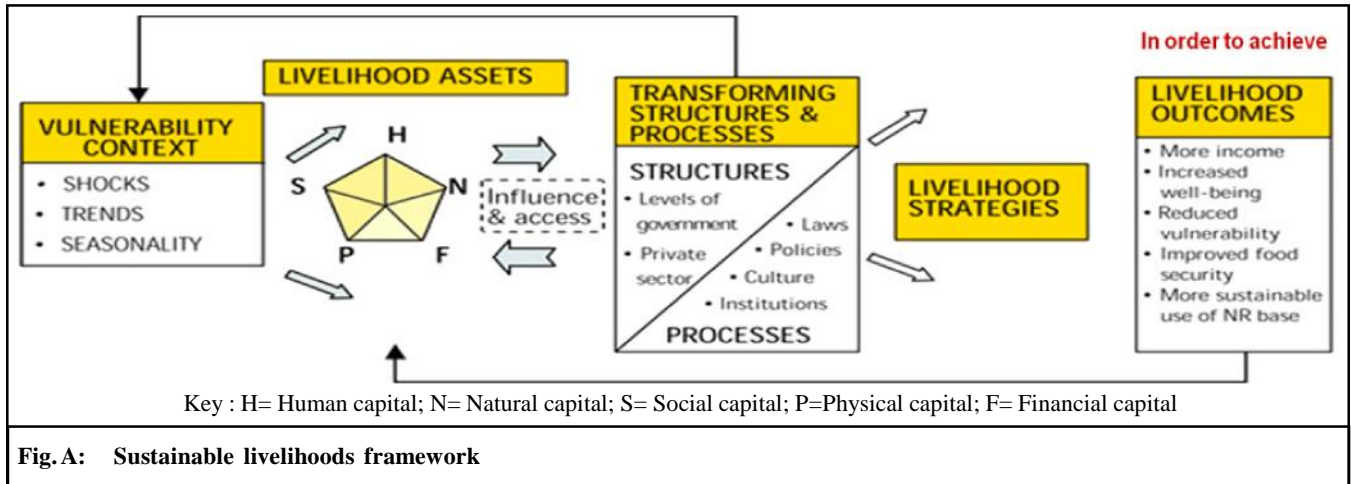
$$\text{Normalized value} = \frac{\text{Observed value} - \text{Minimum value}}{\text{Range}}$$

After normalization, the testing of suitability of indicators and elimination of non-significant indicators was carried out using Principal Component Analysis (PCA). PCA was used in earlier studies (Kolenikov and Angeles, 2005; Ravindranath *et al.*, 2011; Abson *et al.*, 2012 and Maiti, 2013). PCA compressed the data by reducing the number of dimensions without much loss of information.

Assigning weights to the indicators :

After selection of suitable indicators, PCA was run again separately for the production system so as to determine the weights by the factor loadings and Eigen vectors were obtained. Kaiser normalisation was used to identify the eigen values greater than one. According to the number of eigen values greater than 1, the same numbers of components were extracted by using varimax rotational method for each indicator as shown in rotational component matrix. The method followed by Kolenikov and Angeles (2005); Feroze and Chauhan (2010); Abson *et al.* (2012) and Maiti (2013) were adopted for this study to assign the weights to indicators.

The study adopted Sustainable Livelihood Approach (SLA) for assessing the extent of contribution of livestock production systems towards the Sustainable livelihood of tribes. DFID- Sustainable Livelihood framework (1999) (Fig. A) was followed as standard for the selection of factors and indicators. PRA techniques were used to delineate the different production systems and the various livelihood options of the tribes. The responses of the respondents were taken against each factor and indicators were scored and analysed for assessing the contribution of production system towards the sustainable livelihood of the respondents. DFID livelihood assets pentagon was made as background and another pentagon was reconstructed for the field conditions of Jharkhand for pig based production system by scoring the livelihood assets and indicators for the respondents and assigning weightage.



RESULTS AND DISCUSSION

The Fig. 1 clearly indicated that C+G+P was the most prevalent livestock production systems in Dhanbad and Ranchi districts of Jharkhand. The systems prevalent in the state villages varied from place to place and household to household. The villages possessed systems as per their resources endowments, production and marketing prospects and the level of motivation and positive attitude among the farming community. Farmers generally take decisions on the systems to be adopted on the basis of cost, risk and return calculations apart from social factors in preferring crops for home consumption. Pig farming provides an additional income to the household as well as its meat is more preferred for all tribal people of the state. The use of one or more animal species reduces the vulnerability to economic set-backs. The value of animals in identified systems was also related to their multi-functional role.

Fig. 2 indicated that the SL component human capital is minimum compared to other components. Given the preference, knowledge and skills required for piggery development, the potential for making pig farming as an important source of livelihoods for small holders can be exploited by creating awareness among farmers about the scientific pig rearing and management, which will ensure gainful income as well as nutritional security to in the state. Though piggery is commonly practiced in this state, there is a great demand of basic and scientific management technique along with proper and sustainable veterinary services at rural areas. Low education level of individual tribes as well as their family, low access to information, low awareness on rights policies and regulations was the major reasons for this. Principal component analysis was applied for the 19 identified factors of sustainable livelihood and index values were obtained. Among these factors, use of traditional

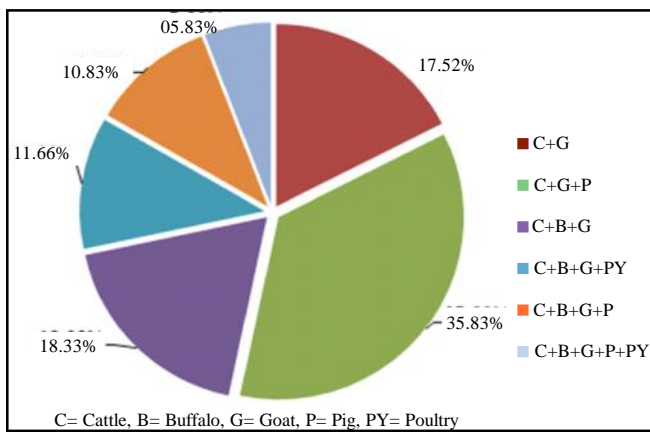


Fig. 1 : Distribution of respondents as per production systems (n=120)

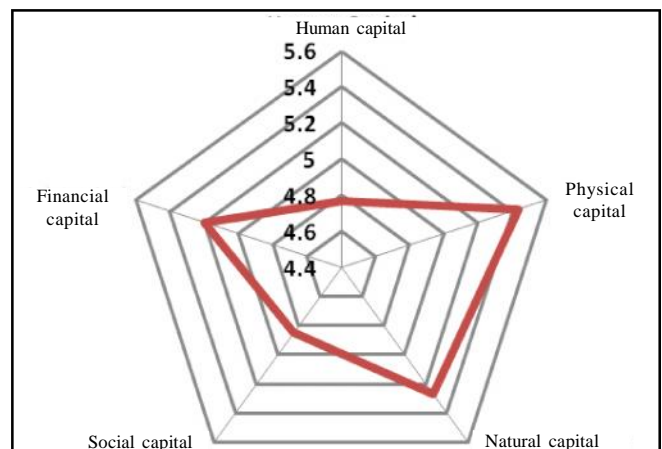


Fig. 2 : SL pentagon for pig based production system

knowledge in production systems (5.88), ICT tools (5.95) and access to natural resources (5.94) had highest influence on sustainable livelihood of the respondents. The Table 1 also revealed that ICT tools availability increases, the physical capital component increases and the sustainable livelihood index also increases. ICT tools help the farmers to get novel and upto date information on improved management practices of livestock and traditional knowledge reduces the destruction of natural capital and thus together increasing the sustainable livelihood index of the respondents.

Conclusion :

All these results pave way to the conclusion that the livelihoods of tribal communities in the area have traditionally been dominated by pig based production systems. However, other livelihood options like dairy production, kitchen gardens, backyard poultry, goat rearing and artisan activities also play a vital role in the livelihoods of tribal people these all are found to be substantially contributing for the sustainable livelihood of the

respondents and are the integral part of day-to-day livelihood activities, nutritional security and traditional life style for tribal people in the area. Formulation of policies on sustainable livelihood of tribes ensured a number of rights and concessions for tribal people. Therefore, the livelihoods promotion among tribal people needs a paradigm shift focusing on pig production systems to keep pace with sustainable development and poverty elimination in the area.

Pig based production systems among the tribal are traditional practices which have not changed much over the years. The pig farming constitutes the livelihood of rural poor belonging to the lowest socio-economic strata and they have no means to undertake scientific pig farming with improved foundation stock, proper housing, feeding and management. Therefore, suitable models to popularize the scientific pig breeding cum rearing of meat producing animals with adequate financial provisions are necessary to modernize the Indian pig industry and to improve the productivity of small sized rural pig farms. Pig producer are poor and

Table 1 : Determinants of sustainable livelihood in cattle + goat + pig - LPS

Sr. No.	Variable	2 nd run factor analysis (PCA) communalities		Weightage
		Initial	Extraction	
1.	Education of family member	1.000	0.814	5.99
2.	Health care	1.000	0.736	4.82
3.	Indigenous knowledge	1.000	0.791	5.88
4.	Access to info	1.000	0.81	5.98
5.	Dwelling place	1.000	0.77	5.65
6.	ICT tools	1.000	0.96	5.95
7.	House hold assets	1.000	0.801	5.59
8.	Land improvement activity	1.000	0.92	5.99
9.	L.S. to natural resources	1.000	0.840	5.94
10.	Extension contact	1.000	0.879	5.60
11.	Habit of saving	1.000	0.829	5.19
12.	Form of saving	1.000	0.950	6.28
13.	Debt	1.000	0.674	4.65
14.	Remittance	1.000	0.795	4.99
15.	Service received	1.000	0.829	5.39
16.	Organizational participation	1.000	0.866	5.59
17.	Versatility of resources	1.000	0.850	5.63
18.	Use of natural resources	1.000	0.895	5.71
19.	Land holding	1.000	0.789	4.76

cannot manage more 3 to 4 pigs using their own household labour and feed resources. But this small number of pigs play very important role to maintain the livelihood and sometimes serve as the saving and insurance for the tribal of the Jharkhand.

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