

# **FINAL REPORT**

## **BIHAR RURAL LIVELIHOOD PROJECT**

### **LIVELIHOODS STUDY AND VALUE CHAIN ANALYSIS**

**NR International Limited**

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## EXECUTIVE SUMMARY

### 1. Setting the Agenda

The Indian economy has witnessed a consistent decline in the poverty ratios during last 15 years. The rate of decline has been faster during the period 1999-2000 to 2004-2005, as suggested by the recently released 61<sup>st</sup> round estimates on Employment and Unemployment in India. Some of the early analyses carried out for the inter-regional variations indicate that the faster decline witnessed at the national level has been on account of the rapid decline in the poverty ratios in states that had higher than national level poverty averages at the beginning of the period. Bihar depicts one such case. The rural poverty in Bihar stood at 35.9 per cent in 2004-05 as against 51.9 per cent in 1999-00, implying an annual decline of 3.2 per cent.

However, the flip side of the story is that while such major decline at regional levels, such as in states like Bihar, had significant impact on the reduction in poverty at the national level, it masks a number of realities. One, that despite the low growth rate of unemployment in Bihar (1.5 per cent per annum during 1999-05 as compared to 4.6 during 1993/4-1999), and increase in the growth rate of non-farm workers in the state (from 5.1 per cent per annum during 1993/4-1999 to 7.7 per cent during 1999-2005), the rural real wages for male workers in Bihar showed a slower growth rate (3.4 per cent per annum during 1999-2005 compared to 5.1 per cent pr annum during 1993/4-1999). Second, that the rate of decline in food prices was faster in the period 1999-2005, which actually led to faster reduction in poverty. Third, that there has not been significant increase in agricultural output and growth rates of real rural wages in Bihar.

The above macro picture of Bihar presents a story of decline in rural poverty during recent times, coupled with expansion of the non-farm sector, a stagnant agriculture output (and also low productivity) as well as low growth in wages. The expansion of workers in the non-farm sector, though an encouraging trend about the potential of the sector in terms of employment, has however not demonstrated the capacity of the sector to provide growing wages and incomes to the workers. There is thus pressing need for looking more closely at the possibilities of promoting rural livelihoods in Bihar.

## **2. Study on Livelihoods and Value Chain Analysis**

The present study conducted by NR International for the BRLP, Government of Bihar, may thus be seen within the above larger canvas of poverty, livelihoods and employment. The study involved a detailed study of the livelihoods opportunities in select six districts, namely Gaya, Nalanda, Purnia, Khagaria, Muzaffarpur and Madhubani. Thereafter, detailed value chain of select potential sectors for each district was done. Field studies were conducted during November-December 2006 and detailed consultations were held with various stakeholders, including the primary producers in the sample villages, the DDCs, development agencies such as the NABARD, a host of government officials from line departments, private players, industry representatives, academicians and NGOs working in the respective districts on the issue of livelihoods. Regular interactions with the BRLP officials greatly enriched the process of designing the framework and design for the study. The analysis from both sets of observations enabled in arriving at specific issues confronting each sector/commodity and the possible interventions that may be taken up under the aegis of the Bihar Rural Livelihoods Project (BRLP) of the Government of Bihar and the World Bank.

While there a number of sectors – major and minor – where poor are involved in each of the districts, the use of a host of analytical parameters helped the consultants in arriving at key sectors/commodities for each sector, where large numbers of rural poor are involved. The degree of involvement of poor in these sectors is based on interplay of vulnerability factors ranging from structural issues (such as inequity in land ownership), technical issues (such as lack of modern inputs and mechanisation in production process), and institutional issues (such as lack of adequate credit, insurance and marketing linkages etc.). Interestingly, the study also shows that in all the identified sectors/commodities in the BRLP districts, the current engagement of poor is largely on account of the push factors inherent in the larger social-technical-institutional issues confronting those placed at the lower rungs of the socio-economic ladder.

### **3. District level analysis**

The following sections provide a brief summary of the key findings for the six districts:

#### **3.1 Gaya**

##### ***Key sectors***

Paddy cultivation, dairying, incense stick making and weaving are the major sectors that have the potential for having large scale employment and income impacts for the rural poor in Gaya district.

A predominance of small-sized and marginal land holdings on the land ownership map of the district and the continued dependence on kharif paddy (monsoon dependent) reflects the importance of paddy cultivation in the livelihoods choice vector for the poorest of the poor in Gaya district. The fact that most of the paddy production is subsistence in nature, the need for regular flow of cash to cater to daily subsistence requirements, has led a number of poor households (including the women folk of such households) to adopt dairy and incense stick making as a secondary source of income in the rural areas of Gaya district. The fact that more women are seen to be working part time and/or full time in these occupations, reflects the gender equalising potential of these sectors in terms of rural livelihoods. The adoption of weaving (of cotton/synthetic cloth/blankets) spread in nearly seven blocks of the district, on the other hand largely indicates the presence and use of specialised skills for managing livelihoods by poor households. While examples of such skill-based livelihoods in the district are many (for instance stone cutting), the limited geographical spread of these did not enable them to qualify for a district-wide rural livelihoods intervention strategy. This however, does in no way, reduce their importance within the individual economies of such households in those limited pockets.

##### ***Value chain analysis, Issues and Interventions***

As regards the value chain, it was found that in case of paddy, an average farmer (owning less than 1 acre of land) is able to produce a small marketable surplus of nearly 3 to 4 quintals of paddy, at a cost of nearly Rs.500-600 per quintals. The net returns, even for the good quality of paddy is in the order of Rs. 3000 per quintal. Overall, the

farmers are able to generate a net return of Rs. 10,000-12,000 from cultivation of paddy. It is clear that the primary producers of paddy are not able to take advantages of the minimal opportunities available for value addition post kharif production, and are instead forced to sell the produce through the adhatiyas in the local mandis at low prices in the post-harvest period.

As regards the involvement of the primary milk producers, it is found that with an intermediate cost of nearly Rs. 7000 per cattle per year and a return of approximately Rs. 10,000 per cattle per year, the milk producers are trapped in a low-level equilibrium. The absence of the purchase cost of the milch animal as well as the cost of household labour involved in rearing of these cattle in the overall cost estimation, gives an initial impression of good returns to the primary producers. However, the reality is that given the limited shelf life of the product and limited number of milk routes available in the district, the milk producers are forced to sell their product to unorganised traders (called *dahiyars*), with much lower net returns.

Even in the case of incense stick making, while the final price (paid by the final consumer to the retailer) is in the order of Rs. 150 per kg, the returns to labour at the rolling stage is only Rs. 8 (about 5 per cent of the final price). Labour is involved at the above stage, with a significant presence of women folk of the poor households who pursue this activity to supplement the incomes from the primary sources of livelihoods. A very small proportion of manual labour is involved at the stage of perfuming, where the labour gets a piece rate wage of Rs. 4 per kg. The labour, involvement, though intensive in terms of magnitude of efforts put in across the entire production chain, is however not reflected in terms of the returns. Involvement of poor households is found to be at the lower ends of the value chain of incense stick production, (given the need for limited skills at the rolling stage) and therefore, yielding low returns to this group.

The major constraints in case of paddy cultivation are in terms of high cost of irrigation, spurious seeds and fertilisers in the market, and lack of adequate storage capacity. The analysis suggests that the interventions would have to focus on creating physical infrastructure in terms of storage godowns, institutional framework for ensuring quality seeds and fertilisers and capacity building of PRIs as extension agents for use of modern methods of production for improving the yields. The inclusion of more milk

producers under the cooperative umbrella would facilitate in expanding the geographical range of the existing limited milk routes in Gaya district. In the area of incense stick making, the analysis shows that efforts will have to be made to allow for the primary producers to start undertaking a part of the perfuming of the sticks, thereby enabling greater returns (as a proportion of the final consumer price) to the primary producers, i.e. women workers in rural households of Gaya district.

## 3.2 Nalanda

### ***Key sectors***

The core competence of the district lies in agriculture and allied activities. The key sectors for promoting rural livelihoods as identified in the present assignment are: paddy cultivation, vegetable cultivation, dairying and cultivation of betel vine and medicinal & aromatic plants (MAP).

The reasons for paddy cultivation by a large section of marginal and small farmers lie in the need to address the fundamental question of household level food security. With 85 per cent of the production of paddy being able to provide 4-6 months of household level food security, paddy cultivation acquires importance in the livelihoods decision matrix in rural areas of Nalanda district.

With a high yield of nearly 16000 kg per ha on an average for all vegetables grouped together, and of potato in the order of 19000 kg per ha, the district shows a general advantage in vegetable production and specifically that of potato cultivation.

With an estimated amount of 2.9 LLPD<sup>1</sup> milk being traded outside the organised cooperative route (and another 30 LLPD is being traded through the COMFED route), the dairy sector provides sustenance to large number of families. Assuming an average of 5 litres of milk yield per day per cattle, and that each family owns 2 –3 cattle, the marketable surplus is estimated to be in the order of 8-12 litres per day. Overall, 30-32,000 families (or 1.5-2 lakh persons) in the district would be dependent upon the dairy sector.

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<sup>1</sup> LLPD: lakh litres per day

Viewed in the perspective of household strategy, livelihoods diversification in the form of both vegetable cultivation and dairying thus reflect a step to enable some regular cash flow for the poor households in rural areas through sale of primary products in neighbouring local markets.

The cultivation of betel vine by more than 14000 members of Chaurasia community<sup>2</sup> in Nalanda has emerged as a strong example of potential livelihoods sectors that are embedded within the traditional activity domain of specific communities and the extent to which these activities continue to provide sustenance to its members. Sourcing of critical inputs, such as bamboos from West Bengal and selling the products in bulk, through community led initiatives in major trading centres such as Varanasi (in Uttar Pradesh), reflects the strength of this activity as a source of livelihood.

The cultivation of medicinal & aromatic plants (such as mentha and lemon grass) in and around 400 villages in Rajgir, is another example of the comparative advantage of the district. With an estimated 200 households per village, and about 50 per cent of these households engaged in some form in the production of MAP, it may be estimated that nearly 40,000 families would be deriving their livelihoods from this activity. The topography and the climate of the Rajgir hills, therefore lends itself for intensive utilisation in the cultivation of high value crops such as the MAP.

### ***Value chain analysis, Issues and Interventions***

With relatively better rainfall, water table and an extended irrigation, the cost of cultivation is slightly lesser in the cultivation of kharif paddy in Nalanda district. Further, with a relatively slightly higher marketable surplus (at 16 quintals per acre) and also marginally better price at the *mandi* (Rs. 3,600 per quintal), the average net returns per acre of paddy works out to be in the order of Rs. 13,000 per annum.

As regards the dairy sector, the value chain depicts a somewhat similar picture as in the case of Gaya district. Higher prices offered by the middlemen (Rs. 13-14 per litre of cow milk) as against Rs. 10-11 per litre offered by COMFED, attracts the primary producers to sell their milk to the middlemen. The reality of some deductions being made by the

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<sup>2</sup> Overall, it may be estimated that at the present level of activity, betel wine cultivation would be catering to nearly 80-85,000 persons within Chaurasia community in Nalanda district.

middlemen as observed in Gaya district is also found in Nalanada. Further, the fact that the middlemen act as indigenous money lenders in the form of petty cash advances made to the primary milk producers forces the latter to be tied into a trap of low returns month after month.

With an average yield of nearly 80 quintals per acre of potatoes in Nalanda, of which 75 quintals are available as marketable surplus, it is clear that the cultivation of potato and its returns are monetised and therefore, justifies the hypothesis that activities like vegetable cultivation in Nalanda are more of a coping mechanism of the poor households to address the need for ready cash on regular basis. The field survey indicates that the average cost of potato cultivation is approximately Rs. 80 per quintal. A disaggregated picture of the cost of cultivation further suggests that total purchased inputs cost is approximately Rs. 4800, apart from the labour cost in cultivation which is Rs. 1300 (approx.), totalling Rs. 6100 for approximately 80 quintals of final output of potato. The cost at the farm level for producing potatoes in Nalanda is estimated to be therefore Rs. 80 per quintal (approx). However, as the product changes hands from the farm gate to the *mandis*, there is additional cost of another Rs. 100 per quintal. The price that is offered at the *mandis* gives a net of return of Rs. 380 to the farmer. The quantum of value addition made from the wholesaler stage to the retailer stage (with no corresponding increase in physical output), is however, much higher. The final wholesaler buys at nearly Rs. 800 per quintal from the *mandis* and the final consumer pays approximately Rs. 10 per kg (or Rs. 1000 per quintal).

As regards the production of MAP in Nalanda, the value chain analysis suggests that the cultivation of mentha is likely to yield a net return of Rs. 11,000 approximately per year. Alternatively, the cultivation of lemon grass, would yield about Rs. 7000-7500 per acre per year. It is clear that these activities continue to provide alternative secondary sources of income to the marginal and poor households.

Rural livelihoods in Nalanda district could thus be best promoted by “betting on its core competencies”, wherein the mix of paddy, potatoes, dairy and MAP cultivation could provide the strategic fit to enable the fruits of specific interventions planned under the BRLP for the district. Certain infrastructural interventions are warranted to significantly push the incomes of the primary producers and the labour to higher orbits. Some of

these relate to: creation of adequate storage godowns for paddy (that may be managed by the community), expansion in the capacity of the milk chilling plant at Asthawan and setting up of a milk processing plant.

In case of potato, the study found that even while faced with a constraint of not being able to reach the wholesaler directly, the potato farmer's equilibrium indicates that higher returns are coming and more is possible. This could be facilitated if organised institutional interventions were made to lift the product from the farm gate and farmers were offered a price higher than that offered by the *mandis* (and lower than what the wholesaler would have offered). The economics of such a procurement mechanism will have to be worked out to arrive at the specific intermediate price range, to enable the primary producers of potatoes to reap better returns than at present.

The cultivation of betel vine as a community specific livelihoods activity suggests that there is ample scope for value addition and enabling the primary producers also to take up local production of processed value added products from the betel leaf. Further, as part of BRLP, institutional initiatives need to be undertaken to explore new markets. By being able to demonstrate better returns from above initiatives and integrating this into the sector specific strategy for betel vine production in Nalanda, it is very likely that even non-traditional communities and people may begin to take this as a remunerative livelihoods activity based upon the comparative advantages of the district.

A similar approach may be warranted for engaging more persons in the blocks around Rajgir to take up production of MAP. The role of the state even in this case would be to expand the market frontiers and also to set up institutional mechanisms to enable setting up of more oil extracting and processing units in the district. If community based oil extraction units were established, the cost of oil extraction (say for instance approx. Rs. 3000 for one litre in case of mentha oil) could be potentially saved and the gains could be passed on to the primary producer, a with say only 20 per cent (i.e Rs. 600/-) retained by the community owned cooperative unit for the maintenance of the oil extraction unit and the rest (i.e Rs. 2400/-) passed on to the primary producer . Setting up forward linkages through state support with potential buyers in the pharmaceutical and cosmetics industry would be the logical step to enable the primary produce of MAP in leveraging the benefits from expanded production and extensive markets.

### 3.3 Khagaria

#### Key sectors

Maize cultivation (including storage and trading) in farm sector and dairy, fishery and honey bee cultivation in off-farm sector are the key livelihood sectors in Khagaria that can be promoted to create adequate employment opportunities for the poor along with a considerable enhancement in their income levels in the district. To ensure passing on direct benefit (and not trickle down of the same) to the poor, who has limited access to the land, the interventions in the farm sector are suggested around strengthening the 'secondary' (storage/processing/ manufacturing) and tertiary (services) sectors through involvement of the poor groups.

Higher vulnerability to flood restricts the kharif options in Khagaria and therefore explains the reliance on rabi maize. The crop is also now seen as synonymous with Khagaria as it has become 2<sup>nd</sup> largest maize market in India after Nizamabad. Given the availability of fodder and water bodies and age-old linkages of local farmers with off-farm livelihood options such as dairy and fishery, both these sectors depict strong potential for rural livelihoods in Khagaria. In this district, more than 50 per cent of the households are involved in dairy activities and 7 per cent of the households are member of dairy cooperatives at present. Further, nearly 15 per cent of the district's population are involved in fisheries. Apiculture is also emerging as a key livelihood options in this district with support coming in from different credit and technical institutions. There are also many other off and non-farm livelihoods on which a poor household relies as part of its multiple livelihood portfolio like SRTO, spice making, leaf plate making etc. However the ability of such location specific options is limited in absorbing the demands of poor in terms of both scale and spread.

#### ***Value chain analysis, Issues and Interventions***

As regards the value chain, it was found that in case of maize, an average farmer (owning about 1 acre of land) is making a net profit of about Rs 3000 to Rs 5500/- under present conditions. Considering the current inefficiencies in input use, technical guidance, output holding/bargaining capacity, there seems to exist adequate space to

enhance profit by at least 50-75 per cent, a major part of which can be passed on to the poor through suitable institutional arrangements.

Similarly in the dairy sector, an average cattle owner makes a profit of approximately Rs. 9,500 per cattle per year without taking into consideration the family labour. The predominance of indigenous breeds of cattle, inadequate coverage of dairy cooperatives and limited passing on of desired benefits of these cooperatives to the members as well as lack of technical and input facilitation along with restricted processing options comes in the way of higher benefit realisation. Making the processes of production, collection, processing and marketing effective and involving the disadvantaged '*dahiyars*<sup>3</sup>' in a new institutional set up has got lots of promise in passing on higher benefits to the poor.

The value chain of fisheries indicates very minimal profit realisation from culture fisheries option. The policy and field implementation of leasing of water bodies by different government agencies, lack of benefit realisation of poor fishermen in present cooperative set up, silting up of water bodies as well as limited capture fisheries option appear to restrict higher profit realisation by fishermen communities. There has also been requirement of upgrading and expanding technical support infrastructure (e.g. fish seed farm etc) and marketing facilitation to make the fish farmers' institution gain higher return and equitably share among the members under a democratic set up.

Apart from these measures, promotion of allied activities like facilitation of small ruminant based systems and backyard poultry; tapping on options under Small Road Transport Operators (SRTTO), augmenting skills to earn higher income at the place of migration can also help to augment the income of the poor resorting to distress migration.

### **3.4 Purnia**

#### **Key sectors**

Cultivation of winter paddy, jute, banana and medicinal and aromatic plants along with their initial processing, storage and trading are the key livelihoods under farm sectors in Purnia that can be promoted to create adequate employment opportunities for the poor along with a considerable enhancement in their income in the district. To ensure passing

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<sup>3</sup> Dahiyars are persons who collect milk from primary milk producers for sale in the unorganised milk market.

on direct (and not trickle down of the same) benefits of the poor, who has limited access to the land, the interventions in these sectors are suggested around strengthening the 'secondary' (storage/processing/ manufacturing) and tertiary (services) sectors through involvement of the poor's groups.

Paddy, which occupies half of the gross cropped area and winter paddy, as a flood-responsive cropping pattern, accounts for maximum area under any crop at 32 per cent of gross cropped area in Purnia with a higher yield potential. Traditionally famous for jute since colonial era, the district used to have about one-fifth area under this commercial fibre till recently. District produces about 2, 22, 000 bales of jute per year. Jute cultivation plays very important role in the household economy of large number of jute growers. Jute rating (extraction of fibre), baling, transportation, handicraft and marketing provide employment to lots of people. Purnia's agro-climate and moisture characteristics are suitable for horticulture and plantation activities and the district is one of the largest producers of banana in the state producing about 17,000 tonnes per annum. Banana also provides maximum employment (per ha of plantations) besides offering scope of inter-cropping in initial years. Cultivation of medicinal and aromatic plants, particularly mentha and lemon grass is emerging as an economically attractive crop suitable for flood prone areas as it can be harvested early. Existing market at Barabanki in Uttar Pradesh and institutional supports being facilitated by NABARD, Horticulture Mission and the civil society promise to provide impetus to this fast-growing livelihood option in the district.

There are also many other off and non-farm livelihoods on which poor relies as part of its multiple livelihood portfolio like goatry, poultry, fisheries, makhana, blanket making, agarbatti, SRT0, etc. however these only offer location specific and skill/caste based options to augment livelihood and may not be able to absorb at present the demand of poor either in terms of scale or spread.

### ***Value chain analysis, Issues and Interventions***

A perusal of value chain of paddy reveals a negative return, when a cost is put to family labour at a yield of 4t/ha. Further, the analysis points to the increasing cost on irrigation and ploughing (by tractor) with diesel price rise; lack of use of quality seeds and other inputs along with absence of technical facilitation to be the inefficiencies in the existing

cropping practices. Moreover, an inelastic minimum support price, lack of ability of farmers to withhold harvest for a better price and absence of aggregation and intermediate processing also restricts higher returns to the farmers. The interventions, therefore, have been suggested to institutionalise the whole system with focus on input provision and output aggregation through groups of poor to enhance the return to the poor and farmers.

Similarly in case of jute, an average grower gets an average net return of Rs 500 to Rs 2000 per acre at the current level of efficiencies. Analysis of its value chain reveals a higher cost on irrigation, lack of use of quality seeds and very limited technical guidance apart from poor quality of rating facilities. The situation is also highly exploitative on the marketing front and processing has not been as expected. Therefore, with focus on poor, the interventions suggested include institution building and empowerment of poor to streamline desired input provisions and output aggregation, taking up improvised rating for better value addition and also to go for intermediate processing and trading to enable higher returns for the primary producers engaged in jute cultivation.

Banana is found to provide a high net return to the farmers at about Rs 20,000/- per *bigha* per year on a four year rotation from one plantation. However, an examination of value chain of banana indicates unsustainable agronomical practices which could lead to fatigue of the land and hence reduced return in coming years. There is very high investment on irrigation and chemical inputs and limited farmers' attention about quality of planting stock. The trade practices have also been exploitative in absence of good communication facilities, perishable nature of product and lack of aggregation and processing. Considering the involvement of poor - mostly as small and marginal growers and wage labourers in this farming - the suggestions for intervention in this front are to enhance the returns through an institutionalised process, right from the stage of input provision to output aggregation, processing and trade. It is expected that, there is possibility to enhance the return by minimum of 20-40 per cent from the current levels.

The net return from cultivation of aromatic plants in Purnia in the order of Rs 7,000 for mentha (assuming three cuts of mentha in nine months) - Rs 11,000 per acre per year for lemon grass (assuming five cuts of lemon grass in one year). Value chain analysis of these crops points to the lack of availability of choices in selection of species and

planting materials; timely availability of formal credit and other inputs; higher cost of irrigation and distillation and direct trading by farmers. Therefore, in terms of the intervention under the BRLP, it is suggested to consolidate institutional facilities, enable crop-diversification and intensive technical support so that some of the current non-growers of MAP may pick up this as an area of livelihood. Further, there is a need to facilitate credit and processing facilities to transfer higher gains to the farmers and the poor.

It may be noted that the measure suggested above under the interventions, also point towards augmenting the 'service' sector in agriculture value chain to increase the scope for remunerative employment of labour as a factor of production.<sup>4</sup>

### **3.5 Madhubani**

#### ***Key sectors***

Rural livelihoods in Madhubani district are centred around the opportunities offered by the both the geographical and cultural topography of the region. While cultivation of paddy (including winter paddy), fisheries and makhana are strongly supported by the availability of water resources, chauris and ponds in the district, the Madhubani paintings as a source of livelihoods is deeply embedded within the social-cultural map of the district. It is interesting to note that a hitherto form of folk art, Madhubani paintings have graduated to acquire the status of a major livelihood for large number of women in the district.

It has emerged from the present study, that across the year marginal and poor households are engaged in some form or the other with paddy cultivation, dairying, with women folk involved also in paintings. The occupational distribution within the district, however, continues to reflect certain traditional norms, such as the engagement of the members of the "Mallah" community in fisheries.

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<sup>4</sup> Further, allied activities like promotion of small ruminant based systems and backyard poultry; tapping on options under Small Road Transport Operators (SRTOs), augmenting skills to earn higher income at the place of migration can also help the vulnerable groups resorting to migration out of distress.

***Value chain analysis, Issues and Interventions***

The value chain analysis conducted for these sectors have shown that institutional gaps in the form of either extension services for paddy or fisheries, lack of adequate organised marketing platforms for paintings or makhana, defunct cooperatives (of milk producers and fishermen), rigidities in existing provisions for state support (such as for leasing out of fish ponds), continue to keep the returns at low levels for the primary producers.

Further, physical infrastructural constraints such as lack of adequate procurement centres and storage godowns for paddy in the district, refrigerated chambers for transportation of fish, high cost of fish seed from private hatcheries, lack of active and holistic AI and animal care centres again tend to limit the production possibilities of paddy, milk and fish in the district. It is encouraging to note that there have been some recent initiatives by private entrepreneurs in the makhana sector in the district. Similar proactive steps from private players are almost absent for the other identified areas of livelihoods.

Within this gap, the middlemen has emerged as a strong player, be it the procurement of paddy, or milk or fish and in makhana too in some cases. Even the 'paintings' sector has seen emergence of middlemen who buy the institutional space in the name of the poor artists and sell the products in organised fairs, within and outside Bihar. Needless to say, that in the bargain, the primary producers in these potentially strong areas of livelihoods continue to be live at a low level equilibrium, marked by low productivity, poor inducement for productivity enhancement and therefore low returns to their outputs.

The suggested interventions for promoting rural livelihoods in Madhubani district have therefore to be focused on a mix of institutional, infrastructural and policy level interventions

### **3.6 Muzaffarpur**

#### ***Key sectors***

The sub-tropical climate of Muzaffarpur district is conducive for a number of livelihoods activities centred on agriculture and allied activities. Even though the district does not have sufficient proportion of irrigated area (only about a quarter of the total cultivable area), mean annual rainfall of 1200 mm is able to support livelihoods such as paddy cultivation, litchi cultivation and vegetable production. Some other related activities such as bee keeping (and honey production) - dependent on large areas under horticulture in the district (particularly litchi) and fisheries – dependent on nearly 1400 water bodies (perennial and seasonal and owned by either government or individuals)- also dot the livelihoods map of Muzaffarpur district. Apart from this, dairying (as in other districts) continues to be a major subsidiary source of livelihoods for a majority of rural families in the district.

It is interesting to note that the productivity and production levels of litchi have a significant influence on the national levels (as nearly 60,000-100,000 MT of litchis are produced in Muzaffarpur out 20 per cent of the national production). Similarly, the area under vegetable production (8 per cent of the state's total) and accounting for nearly 6 per cent of the total vegetable production in Bihar indicates that the state level trends are governed by the trends and behaviour of vegetable production in Muzaffarpur district. Further, the production of 4.12 LLPD of milk per day and a greater part of the milk producing areas falling under the milkshed of TIMUL, Muzaffarpur shows strong potential in some of the above sectors to serve as growth engines for expanding incomes for the population dependent on these activities.

#### ***Value chain analysis, Issues and Interventions***

The value chain analysis conducted for all the identified sectors indicate that while in some sectors such as litchi production, bee keeping and honey production, the returns are fairly good. This is because of the comparatively better production processes followed by the primary producers in the production of these commodities. However, the external demand may also be seen as a trigger for the primary producers to adopt standard processes, to improve the production and productivity levels, and thus enabling better net returns. The fact that a large part of the benefits of the high prices of honey are transferred to the primary beekeepers in the district is an indicator of the

distributional impacts of organised trading channels for such products. A similar case of milk producers in Muzaffarpur emerges, wherein the large number of dairy cooperatives have helped the milk producers to get access to organised milk procurement, fair prices and assured returns by trading.

In the case of the fisheries sector – which may be seen as an embedded production system of the district and wherein the district has comparative advantage in terms of the natural resource endowments - the existence of at least one block level fishermen cooperatives in each block have not been able to engineer a process of improved production, productivity and procurement of fish in the district. Further, the apathy of the concerned line department to maintain the ponds and the water bodies has led to growth of weeds and accumulation of silt in these water bodies, thereby depressing the production and productivity of fish in the district. The problem has been further compounded by the defunct status of all the four seed farms in the district. The fisheries sector, though has a strong potential- as is evident from the topography of the district and also from the largest concentration of the mallah community – is however in distress and some strong institutional measures are required to allow it to realise its full potential.

The cultivation of vegetable (potatoes) in the district is confronted with availability of spurious seeds and fertilisers, higher costs of irrigation (due to lack of sufficient supply of electricity) and lack of organised procurement and trading channels. The returns could be enhanced if the availability of genuine seeds at the gram panchayat levels were made available through the agri-livelihood support centres (or any such platform) and cooperatives of vegetables growers could be made for enabling collective procurement. Cold storage for potatoes would have to be created, for which incentives at the policy level may have to be built in for attracting private players to undertake such investments.

Overall, the rural livelihoods of Muzaffarpur district, shows some strong potentials. However, the district needs a mix of interventions to build on its comparative advantage. In brief, some of these are interventions in terms of capacity building of primary producers (such as in price negotiation skills for vegetable growers, bee keepers), infrastructure maintenance (such as addressing habitat degradation for enhancing fish production), creation of new infrastructure (such as storage capacity for vegetables and institutional capacity creation through setting up cooperatives of vegetable growers),

activating the defunct fish seed farmers and improving the extension agencies that could improve the use of quality production methods (with recommended doses of inputs, including fertilisers). There are important lessons to be drawn for devising interventions that helped push some of the products such as litchi cultivation, bee keeping and honey production in Muzaffarpur district to higher levels.

#### **4. Conclusions**

The present study indicates that rural livelihoods in the select districts of Bihar are still ensconced within the agrarian structure. Alongside, a number of allied activities (farm based/off farm/non-farm) are also positioned as secondary sources of livelihoods. In some areas, however, even these have acquired the status of primary sources of livelihoods. The varying forms of micro level household behaviour in terms of their livelihoods strategy however indicate a common behaviour, viz: dependence on agriculture (cultivation of foodgrains – cereals/coarse) to address the issue of household level food security coupled with at least one secondary occupation, that ensures some cash flow to meet the daily requirements of non-food items in the household consumption basket.

The factors that emerged as constraints in the realising higher gains along the value chain of the key sectors/activities of livelihoods in the various sectors may be broadly classified as technical and institutional. The interventions, therefore, have also been suggested accordingly, with varying combinations of technical and institutional measures for the different sectors in the select districts covered under the BRLP. However, the study also shows that in order to address the basic livelihoods question at present in the six district, the institutional interventions may have to be taken on a priority basis, so that adequate base is created among the key players to absorb the technical interventions. It is the institutional interventions that would help define the willingness of the poor marginal households to absorb the technical inputs so as to move to a higher output, employment and income trajectory.