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Full Length Research Paper

A study on the role of non-farm activities on rural sustainable development in West Azarbaijan Province of Iran

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In the rural area, majority of households are involved in farm activities but many of them get their income from non-farm activities. This paper examines the comprehensive effects of non-farm incomes on west Azerbaijan rural development. The study was based on the original field survey with data from about 60 experts of rural development from three different organizations. This study was a descriptive-correlation research and a combination of data gathering techniques. The study found that this activities have economic, social and environmental effect which explained while 68.40% variance at saving rural sustainable developement in west Azerbaijan province and the economic effects are important as first priority. Finally, the study found that putting into consideration the limited capability of agricultural sector, it is necessary to provide infrastructure, legislation, incentives and training for Non-farm business.

Key words: Non-farm activities, economic effects, social effects, environmental effects.

INTRODUCTION

In many rural areas, agriculture alone cannot provide sufficient livelihood opportunities. Migration is not an option for everyone and where possible, policy-makers may in any case prefer to limit the worst excesses of urbanization with its associated social and environmental problems. Policy makers and the donors community increasingly acknowledge that agriculture alone is not sufficient to achieve sustainable poverty reduction in the Central Asian context with high population pressure, constrained land resources, and unfinished agricultural reforms (World Bank, 2004; Spoor, 2008; Maddock, 2009).

West Azerbaijan Province or West Azarbaijan Province is one of the 31 provinces of Iran. It is located in the North West of the country. The province of West Azerbaijan covers an area of 3, 791000 hectare without reaches 34°C in July, and the lowest temperature is – Lake Urmia that includes 26.5% of its agricultural land, 46.5% of the pastures and 4.6% of the forest. The climate of the province is largely influenced by the rainy winds of the Atlantic Ocean and Mediterranean sea. According to same data, the highest temperature in the province 16°C in January. Agriculture is the main economical sector in rural areas which plays a major important role in socio-economic development in this region. The province with an annual production of 5.5 million tons of crop and 46 horticultural type, present in approximately 6% of the country's crops and garden produce 4.1% of farm products, 7.62% of horticultural products, 4.67% of livestock, 4.2% of the country's aquaculture products, 9 thousand tons of honey, 850 tons of apple, 9 thousand tons of fish product is produced in West Azarbaijan. Also, there are 4.3 milion sheep, 540 livestock and 592 poultry unit, 5 sugar unit, 24 tomato paste factory and 17 nuts packing unit. Agriculture, being a means of livelihood of almost two third of the population in the province, it represents West Azarbaijans most important economic sector.

Agriculture accounts for 22% in GDP and employed

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34% of the population.

Research shows that income streams from on-farm enterprise alone cannot sustain the livelihood needs of the region's rural population (Haggblade et al., 1989; Lanjouw and Feder, 2001; Davis et al., 2003). The economy of rural areas in Iran is predominantly based on agriculture and other activities related to the agricultural sector. Rural areas cover a very important economic and social territory, both in terms of size and in terms of significant human and natural resources. Hence an overwhelming majority of rural population is mainly depending on the agriculture sector both for its employment and livelihood. According to the National Statistical Committee, in spite of the fast growth of the service sector, agriculture still plays a leading role in the economy, contributing to 29% of GDP in 2010. The high population growth in developing countries and, in particular, in the rural regions of west Azerbaijan in Iran increasingly calls for more intensive efforts to create new job and income-earning opportunities, otherwise, it will not be possible to reduce the sizeable migration of the economically most active segments of the population to the urban centers. The crucial question is, however, which type of economic growth within regulative-policy frame is best suited for rural development. Active employment policies in rural regions have better chances of being successful if the entire agribusiness sector is the target of the activities. This signifies the interlinked sectors of market-oriented agriculture with its forward and backward-linked sectors. The production and marketing of agricultural inputs and services (the backward-linked sectors) and the processing and marketing of agricultural products all the way to the consumer provides numerous opportunities for decentralised job-seeking generation in rural regions (Bezemer and Davis, 2002).

The surplus manpower in the household can be used to generate income. The non-agricultural earnings in this group lead to widespread multi-employment structures in rural regions, whereby various forms of multi-employment are possible. These allow a high degree of flexibility at the same time.

Understanding the behavior of households to farming with regard to how they allocate their time between farm and non-farm activities is crucial for adjusting farming and rural policies. This is all the more relevant because many economic policy machinery get focused on improving and reducing the variation in income in the rural area while decision-makers do not seem to attach much importance to the non-farm income as a supplement to the farm income which is part of the strategy to lessen fluctuations (Lamb, 2001; Mishra and Goodwin, 1997).

In many developing countries, agriculture is not the only source of employment and income for rural households, but non-farm activities also have special importance. In the rural area, the majority of households are involved in farm activities but many of them get their income from non-farm activities (World Bank, 2008).

Putting into consideration the limited capability of the agricultural sector in providing gainful employment to increasing rural labour force and sustainable income to the farming households, it would be necessary to initiate a policy for developing a long term planning approach towards the development of various potential non-farm economic activities.

The rural non-farm sector in general and the rural agribusiness sector in the industry as well as the developing countries have not been comprehensively I nvestigated in depth to date. This is true in both the case of the theoretical frame as well as empirical findings (Valdes, 1999). An important reason is undoubtedly the pronounced heterogeneity of this sector. Although the development of the rural economy will still be largely determine by the development of the rural-agricultural sector, however, the development of the non-agricultural sector, particularly small-scale industries is equally of crucial importance in leading the economy towards a more effective and significantly integrated rural development (Redzuan and Aref, 2011). At the same time, various non-farm activities are playing an important role in providing employment opportunities and incomes to the labour force belonging to both farming and non-farming households. Consequently, identification of the factors affecting access and income from non-farm activities is crucial for policy makers to inform and adjust policies in the rural domain (Reardon et al., 2006).

Previous research had found that the income from non-farm activities was essential for the welfare of rural households (Rosenzweig, 1998). Non-farm activities thus contribute to giving the rural economy a multi-sector dimension. Recent studies have indicated that non-farm income represents between 22 and 40% of the total household income (Zahonogo, 2001).

While agriculture is still the main activity of the poor rural populace, non-farm activities such as agro-processing and input supply activities become important. However, for the majority of rural workers, the rural non-farm sector provides only a little source of livelihood and a safety-net, and only some relatively privileged households with sufficient resources can engage in rural non-farm activities with high returns. Thus, in the rural area, it is hard to find peasants who do only farming. As a matter of fact, households devote part of their time to farm activities and part of it to non-farm activities (Zahonogo, 2001).

The rural non-farm economy accounts for a third or more of rural employment in many Asian countries. Its importance depends on the stage of economic development. Services (personal, public, and financial) account for the largest share of rural non-farm economy, followed by trade and business, construction activities, and transport operations (Hossain et al., 1994).The rural non-farm sector provides opportunities for compensating

the risks and uncertainties related to the variations in farm income (Islam, 1997).

The growth of non-farm activities can ease the constraint on credit and liquid assets required for agricultural production and can boost agricultural competitiveness (World Bank, 2008). The growth of the farming sector activities provides opportunities to the non-farming sector, thanks to the demand for inputs and services with such a growth need. In situations where there are no credit constraints, the non-farm income becomes a determinant in the rural households' strategy for farming investment (fan et al., 2004). Importance of Non-agricultural employment includes employment for the rural poor groups, increased income, women's participation in economic activities, increase skills, prevent migration, mutual development of agriculture, the rural economy is stabilized, provides assistance to rural community sustainability. However, to the extent that the demand for products from the non-farm sector depends on the income from the farming sector, the level of non-farm activities will be low if the farm income is low. This means that the role of non-farm employment in compensating for the fluctuations of farm income is limited. The efficiency of the non-farm sector in stabilizing income over different seasons or consecutive years will therefore depend on the strength, the nature of links between farm and non-farm activities and the type of non-farm activities concerned (Zahonogo, 2001).

Rural non-farm activities may be expected to absorb part of the underemployed rural population and to divert the rural workforce away from the existing and overcrowded agricultural sector. Rural non-farm employment can play a potentially significant role in reducing rural poverty and numerous studies indicate the importance of non-farm enterprise to rural incomes. Rural non-farm opportunities can have an indirect effect on wages amongst the poor rural dwellers, also "expansion of non-agricultural employment opportunities is likely to tighten casual labour markets in general and thus raise wages in the agricultural labour market" (Lanjouw, 1999). A further indirect effect occurs where rural non-farm (RNF) income enables poor households to overcome credit and risk constraints on agricultural innovation (Ellis, 1998; Taylor and Wyatt, 1996).

Finally, it is possible, employment in these activities is likely to reduce the pressure on agricultural lands, reduce consumption of chemical fertilizers, reduce environmental hazards, and leads to environmental sustainability.

The latter consumption effects are realized in reducing food inadequacy and income poverty in the short-term while in the long-term, the national forest inventories (NFIs) can be realized in reducing human poverty (Abdul Malek and Usami, 2010).

Ann and Catherine (2001) argued that RNF activities may absorb surplus labour in rural areas, help farm-based households spread risks, offer more remunerative activities to supplement or replace agricultural income, Offer potential income during the agricultural off-season and provide a means to cope or survive when farming fails. In general, based on the works of Ellis (1998), Taylor and Wyatt (1996), Reardon et al. (2000), Reardon et al. (1998), Davis et al. (2007), Choi (2001), Vaidyanathan (1968), Unni (1991), Jayraj (1989), and the others several reasons why the promotion of rural non-farm activities can be of great interest to developing country policy-makers are as follows:

Labour intensity

One important supply issue is whether RNF activities are more labour-intensive than other segments of the economy. In developing countries, capital and foreign exchange are relatively scarce and unskilled labour is relatively abundant. Those activities and techniques of production that are more labour-intensive would generate the largest amount of employment per unit of scarce factor and thus appear to be the most appropriate for their factor endowments.

Labour productivity

A second supply issue centers on how the labour productivity of RNF activities is compared to those in other segments of the economy. The available empirical evidence generally indicates that the average productivity of labour is lower in small-scale enterprise than in the larger-scale enterprise. Such findings are not surprising in the light of the results presented in the previous section that the larger enterprise possess greater amounts of capital per worker. Many studies found a positive relationship between the labour endowment (measured as the number of adults) of the household and its participation in the RNF (Davis et al., 2007).

Capital productivity of rural non-farm activities

A third supply issue is whether or not RNF enterprise use capital as efficiently as other enterprise. It has been argued during the 1960s that small-scale, labour-intensive activities would use not only need more labour, but also more capital than their larger-scale counterparts. Hence, they argued that these small-scale, labour intensive activities would offer lower output to capital ratios and would be consequently less efficient than the larger, more capital-intensive enterprise (Choi, 2001).

Income enhancement

The evidence shows that RNF income is an important factor in household economy and also in food security,

since it allows greater access to food. This source of income may also prevent rapid or excessive urbanization as well as natural resource degradation through overexploitation (Reardon et al., 2006).

Enhanced Inputs productivity

In the face of credit constraints, RNF activity affects the performance of agriculture by providing farmers with cash to invest in productivity-enhancing inputs. Furthermore, development of RNF activity in the food system (including agroprocessing, distribution and the provision of farm inputs) may increase the profitability of farming by increasing the availability of inputs and improving access to market outlets. In turn, better performance of the food system increases rural incomes and lowers urban food prices.

The findings of a large numbers of studies have revealed that there is a positive relationship between the growth of agricultural productivity and non-agricultural employment across the regions of the country (Vaidyanathan, 1968; Unni, 1991; Mahendra Dev, 1990; Jayraj, 2004) even within the states across the district level (Singh 1991).

The main objective of this study is to examine the impact of non-farm activities in reducing the problems of unemployment and poverty in rural areas of west Azerbaijan province, and attempted to examine the following issues:

1. Differences existing in the socio-economic condition among the households engaged and those who are not engaged in non-farm activities.
2. Investigate the role played by the non-farm activities to labour employment and the level of contribution of these activities in providing employment and income opportunities.
3. Impact and contribution of non-farm activities on household economy and income enhancement
4. Examine the impacts of non – farm activities on poverty and migration reduction.

MATERIALS AND METHODS

This study was a descriptive-correlation research, carried out in 2011 in west Azarbaijan province. In order to achieve the goals of the study, we utilized a combination of data gathering techniques: interviews with government officials, library research, participatory observation and questionnaire, in the west Azerbaijan province. The population of the study consisted of senior experts in related fields from departments of Agriculture and Natural Resources, Environmental Organization and State Officials who were involved in activities related to rural industries and non–farm activities. Sample size included 60 senior experts.

The questionnaire was found to have content and face validity by a panel of experts consisting of faculty members of Tehran University, Departments of Agricultural Extension and Education and food science**.** Questionnaire reliability was tested using Cronbach alpha. The results indicated that the reliability coefficient was acceptable (alpha = 0.87).

Data were analyzed using Statistical Package for the Social Sciences (SPSS). Descriptive and inferential statistics were used to analyze the collected data. Descriptive statistics included frequency values and inferential statistics included correlation coefficient and factor analysis. Factor analysis was used to identify underlying constructs or factors that explain the correlations among a set of items. A major goal of factor analysis was to represent relationships among sets of variables parsimoniously yet keeping factors meaningful. Theory and methodology for exploratory factor analysis have been well developed for continuous variables. In practice, observed or measured variables are often ordinal. Jöreskog and Moustaki (2001) describe four approaches to factor analysis of ordinal variables which take proper account of ordinality and compare three of them with respect to parameter estimates and fit (Jöreskog and Moustaki, 2001). In this study, exploratory factor analysis with data reduction approach was used. Exploratory factor analysis is a useful tool for understanding the dimensions of a set of variables and also for isolating variables that do not represent the dimensions well.

RESULTS

In total, 60 experts in rural development from three different organizations which are engaged in the process of planning and implementation of rural development projects were randomly selected to evaluate the major effect of non- farm activities in West Azarbijan province of Iran. All of the respondents were males with an average age of 36 years. Age distribution shows that majority of the respondents were within the age bracket of 25- 35 years (55%) and minority were between 45-55 years (15%) (Table 1). Educational qualification shows that majority of the sample population had Bachelor's degree (58.3%), 20% of them had Master of Science degree, 11.7% had Associates and 10% Associates Degree (Table 1), who were educated in different fields of agriculture (35.2%), natural resources (22.3%), food and agricultural industry (29.9%) and environmental science. All of the respondents had above 10 years experience.

Results show that majority of the respondents worked in agriculture and natural organization (58.2%), some are State Officials (23.6%) while the others are in environmental Organization (18.2%).

Factor analysis was applied to reduce the numbers of variable and detect structure in the relationships between variables. To determine the appropriateness of data and measure the homogeneity of variables entered in the analysis, the Kaiser-Meyer-Olkin and Bartlett's Test of Sphericity was used. KMO measure of adequacy (0.83), Bartlett's Test and Bartlet statistic was significant at 1% level, which showed that the data are appropriate for factor analysis.

Exploratory factor analysis was used and out of 53 effects, only 35 were classified into 3 factors which of variance (Table 2). Accordingly, four factors were

Table 1. Characteristics of respondents.

Variable	Frequency	Percentage (%)
Age		
25-35	30	55
36-45	18	30
45-55	9	15
Total	60	100
Educational qualification		
Associates(diploma)	7	11.7
Associates degree	6	10
Bachelor's degree	35	58.3
Master of Science	12	20
Total	60	100

Descriptive statistics for main variables			
Variable name (combination of variables)	**Number**	**Mean**	**Standard deviation**
Economic situation	60	4.22	1.04
Production status	58	4.11	1.58
Social Status	60	3.54	0.83
Environmental situation	57	3.09	1.25
The situation of Natural Resources	59	3.18	1.81

Table 2. Eigen values and variance explained by each factor.

Factors	Eigen value	Percentage of variance	Cumulative percentage	Share of each factor from total explained variance
Economic Effects	5.23	28.82	28.82	42.13
Social Effects	2.78	21.56	50.38	31.52
Environmental Effects	1.21	18.02	68.40	26.35

extracted. Factor loadings of each variable are shown in Table 3. It was revealed from Table 3 that, increased revenue (0.826), increased rural labour productivity (0.741), increased employment in rural areas (0.861), created background to increase value-added agriculture (0.658), reduced waste in agriculture (0.712), proportional distribution of inputs (0.745), mutual development of agriculture and non-farm jobs (0.621), use of local agricultural raw materials (0.864), increased investment in agriculture (0.750), development of local markets (0.631), product supply to local markets (0.581), development of rural tourism (0.629), sustainable rural economy (0.760), are the main effects of non-farm activities on economic sustainable development of rural areas. Economic effects contain 28.82% of total explained variance (Table 3)**.** Second factor is related to Social effects. This dimension includes 21.56% of total explained variance (Table 3). To absorb surplus agricultural labour force (0.579), employment for poor rural groups (0.691), Use of local labour (0.781), increase women's participation (0.866), reduce migration (0.587), promote equality and justice (0.656), rural poverty reduction (0.663), food security (0.684), preservation of rural values and traditions (0.568), reduce income difference (0.864), Increase integration of households (0.841), promote the welfare of villagers (0.622), develop new skills (0.527), socialization of productive activities in rural areas (0.732), contribute to social stability (0.652), improving economic – social indicators (0.849), are among major effects of non- farm activities on social sustainable development of rural areas. Third factor is named environmental effects which contain 18.02% of total explained variance. Proper use of agricultural inputs (0.764), prevention of the degradation of natural resources (0.826), reduce pressure on fragile resources (0.811), reduce use of chemical inputs (0.750), conservation of natural resources (0.621), environmentally sustainable building (0.596).

Table 3. Factor loadings of effects of rural non-farm activities on rural sustainable development in Western Azerbaijan Province in Iran.

Name of factors	Effects	Factor loadings
Economic effects	Increased revenue	0.826
	Increase rural labour productivity	0.741
	Increase employment in rural areas	0.861
	Create background to increase value-added agriculture	0.658
	Reducing waste in agriculture	0.712
	Proportional distribution of inputs	0.745
	Mutual development of agriculture and non-farm jobs	0.621
	Use of local agricultural raw materials	0.864
	Increased investment in agriculture	0.750
	Development of local markets	0.631
	Product supply to local markets	0.581
	Development of rural tourism	0.629
	Sustainable rural economy	0.760
Social effects	To absorb surplus agricultural labour force	0.579
	Employment for poor rural groups	0.691
	Using local labour	0.781
	Increasing women's participation	0.866
	Reducing migration	0.587
	Promote equality and justice	0.656
	Rural poverty reduction	0.663
	Food security	0.684
	Preservation of rural values and traditions	0.568
	Reduce income differences	0.864
	Increased integration of households	0.841
	Promote the welfare of villagers	0.622
	Develop new skills	0.527
	Socialization of productive activities in rural areas	0.732
	Contribute to social stability	0.652
	Improving economic – Social indicators	0.849
Environmental impact	Proper use of agricultural inputs	0.764
	Prevent degradation of natural resources	0.826
	Reduce pressure on fragile resources	0.811
	Reduced use of chemical inputs	0.750
	Conservation of natural resources	0.621
	Environmentally sustainable building	0.596

DISCUSSION

Focusing on the analysis of non-farm activities, this paper has enabled us to demonstrate that the non-farm activities form a more significant component in rural areas of Iran. It thus seems that the development of non-farm activities can be a more important factor for rural. Analysing the structure of the non-farm activities showed that these activities have economic, social and environmental effect which explained 68.40% of variance to save rural sustenance in west Azarbaijan province.

The results of this study and examination indicated that the economic effects are important as first priority. This explains while the poor agricultural infrastructure and lack of forward and backward linkages are the main reason for the importance of non-farm activities in West Azarbaijan rural economy. We hold high hopes that rural non-farm growth can offer a pathway out of poverty for a large segment of the poor rural populace. As my results shows, prospects for non-farm growth prove brightest in well-

connected west Azerbaijan rural regions in countries with rapidly growing agricultural and national economy.

These findings suggest that social effects that are aimed at improving the rural areas can have secondary effects on non-farm activities. Thus the importance of environmental effects, in sustainable rural development, is another important impact of these activities on the development of rural areas.

Putting into consideration the limited capability of the agricultural sector in providing gainful employment and sustenance to increasing rural labour force, it is therefore crucial for policy makers to inform and adjust policies in the Non-farm domain. It is necessary to provide infrastructure, legislation, incentives and training for non-farm businesses.

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