

The role of indigenous knowledge in sustainable rural economic development

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ABSTRACT

Today, the formal knowledge transmitted through educational institutions to the community is particularly supported by the government, which is also very proper and correct. However, efforts to develop local skills and knowledge have been neglected, while in rural communities, such knowledge has a higher degree of climate and cultural originality than formal knowledge. Based on previous studies, to increase the results obtained from implementing the policies, the ones included and affected by those policies need to have the opportunity to comment, and they should be encouraged to work collaboratively. Therefore, by understanding the importance of experience and highly valuable and tacit knowledge of the villagers, in dealing with unfamiliar problems, a basis for decision-makings in order to achieve sustainable economic development can be found to be used as a supplement to formal knowledge. Then, through the synergy created, we can contribute to improving the quality level of policies effectiveness and the villagers 'welfare. In this paper, we have tried to explore the role of indigenous knowledge in sustainable rural development.

KEYWORDS: Indigenous knowledge, Sustainable rural development, Informal knowledge

1. INTRODUCTION

Since the dominant new technologies have a great impact in human society increase, use of them regardless their environmental impacts and suitability to different climates and only based on the increasing profits and economic interests has led to imposing numerous damages in various parts of the nature, and especially the agricultural sector, such as soil erosion, environmental degradation, etc. To solve the problem caused, the man found the solution in integrating the qualitative knowledge based on the villagers experience and quantitative knowledge based on statistics and experiments of the formal sciences' scientists. However, it should be noted that with the death of every old villager, in fact, one can say that a valuable treasure of indigenous knowledge becomes unavailable. In the first part of the paper, we defined the concepts of indigenous knowledge - formal knowledge and sustainable rural development, and then, described the role of indigenous knowledge in sustainable rural development.

2. Concepts

Indigenous knowledge and formal knowledge

There are other names for indigenous knowledge (IK) such as local knowledge, indigenous technical knowledge and traditional knowledge. However, the term of indigenous knowledge is used more than others. Indigenous knowledge introduced by Warren and Cashman includes the sum of knowledge and experience that in dealing with known and unfamiliar problems is obtained by a society, which has been put as a basis for making decisions and facing the challenges. Indigenous knowledge is rooted in the experiences of the past centuries, and as long as the society exists, it continues to evolve as its cultural and technical foundation. Indigenous knowledge is the knowledge that the people believe and have developed and improved it over time in their community [15].

Indigenous knowledge is based on experience and has been often tested over the time and made compatible with local culture and environment, and therefore, it has acquired the necessary dynamism and efficiency. Indigenous knowledge is not limited to ethnic groups or residents of an area and village, but belongs to all urban, rural and tribal communities [7].

Davis believes that local knowledge provides favorable contexts for the development. He resembles the local knowledge to a bird's feathers; i.e. by appearing a bird's feathers, it learns to fly [9]. Indigenous knowledge is a part of the national resources of any people, involving their beliefs, values and local knowledge and is a result of centuries of trial and error in the natural environment. It is often orally transmitted heart to heart, from one generation to the next [1].

Applicability of indigenous knowledge emphasized the point that efforts to gathering it is not a purely academic exercise, but it has begun specifically to solve the problems facing humanity. Dependence and compatibility of local knowledge refers to its geographical origin; this means to solve the problems of

development of a country, it is necessary to scientifically explore and study the indigenous knowledge of that land.

In September 1993, a conference was held in Washington, DC, in which a large number of the leaders of local communities of the world were invited. The purpose of the conference was to determine whether indigenous knowledge can create a sustainable future for the humanity? The results of the conference revealed that the knowledge is not exclusive to western and formal sciences, but there are thousands kinds of science and technology in cultures and civilizations around the world that have a significant contribution in the sustainable development [16].

In 1992, three International Academic Indigenous Knowledge Centers, namely as Leiden Ethno systems and Development Programme (LEAD), Center IK Agriculture Rural Development (CIKARD) in Netherlands and Center for International Research and Advisory Networks (CIRAN) at Iowa State University, signed a Memorandum of Understanding suggesting to help establish research centers for indigenous knowledge around the world. Since then more than thirty indigenous knowledge centers have been established, among which, the most active centers are as follows: Sri Lanka native knowledge resources center, Nigerian indigenous knowledge center, supreme research center for indigenous knowledge systems in India and center for resources of indigenous knowledge and sustainable development in the Philippines [17]. These two types of knowledge are not in conflict with each other, but they complement each other; however, they are conceptually, fundamentally and methodologically distinct from each other. First, formal knowledge systems are global and thus, sometimes they are also called as "International Knowledge", since this type of knowledge has rooted in most cultures of the world. Second, scientific knowledge have been documented through validated observations, experiences and methods; but, indigenous knowledge systems do not have such characteristics [4]. However, one of the main differences between indigenous knowledge and scientific knowledge relies on the power of their respective owners, the power that local knowledge holders lack. Some academics and many natives do not believe in separation of indigenous knowledge from formal or international knowledge; but they believe that the indigenous knowledge is legitimated when it will be matched with theories and classifications of scientific knowledge. Another difference relates to their methodologies. This means that some social scientists are tended to collect quantitative data rather than qualitative data, and give more value to this work, while the research and interviews of local knowledge is often of a qualitative type. Another difference is that, the international science is detail-oriented, which means to understand the system, it separates and classifies them into their components and analyzes the components accurately. For example, in the international system, agriculture is separate from the reforestation; natural resource management is separate from lands and agricultural lands management, and finally, the managers are separate from the producers. But, the local knowledge considers a holistic approach and, holistic suggests that systems are something more than the sum of their parts; for example, crop rotation is a livelihood strategy that encompasses agriculture, reforestation and local people with management and collecting the crop. Indigenous cultures often understand the humans and nature as a set and innovative system and use a systematic method. The main aim in this method is general understanding of the system, which examines the effects resulting from interrelationship of components and systems. Thus, the local knowledge is embedded in the culture more than science [5].

Despite the differences between formal knowledge and local knowledge, they should be put against each other, since they originate from human intelligence and wisdom in pursuing one another. Formal or scientific knowledge have relied on ancient practices and grown within them. In other words, indigenous knowledge can be considered as mother of scientific knowledge [1].

There are many common points between indigenous and scientific knowledge, and they are difficult to distinguish from each other; since local knowledge changes over the time, and understanding that whether a technology is truly indigenous or has been taken from outside adapted or is a local mixture appears to be a difficult task. However, it does not matter for development projects that the local knowledge is really local or is combined with other local knowledge. What really matters is to focus first on available on knowledge and facilities in the community rather than emphasizing the techniques and external solutions, and then, to combine and use the best of them [7].

According to Chambers, local knowledge and formal knowledge are complementary in terms of strengths and weaknesses so that through their combination, successes can be achieved that none of them would be possible alone [4].

It must be pointed out that the indigenous knowledge has a systematic approach and methodology and a general understanding of the phenomena, while scientific knowledge uses analytical methodology and detailed understanding approach of the phenomena. However, these two are not only contradictory but complementary to each other [5].

The reasons for recent attention to indigenous knowledge

The causes of the recent attention to indigenous knowledge systems are due to emergence of some problems as follows:

- Green Revolution techniques have been associated with ecological degradation and reduced income of poorer regimes.
- Developments realized in the past six decades have imposed unprecedented pressures on soil, forests, water resources and other natural resources.
- The majority of external development solutions have been based on incorrect assumptions, which have been neither economically feasible nor consistent with cultural, social and ecological conditions of communities. For this reason, most were abandoned.
- Some technical solutions were not suitable and acceptable at local level.
- Some crises that rural areas of the developing world are facing with have often exogenous origins.
- Top-down planning of natural resource management at local levels has often failed.
- Development plans have often been in favor of wealthy groups and rich resources farmers [2].

3. Sustainable Rural Development

Villages are one of sustainable areas and very ancient of human settlements and include public spaces in which the social life takes place (Khakpour). Developments of the twentieth century changed the face of villages and villagers' way of life and social relationships first slowly and then more rapidly [3]. Economization and industrialization of Western countries and adopting some strategies in many Third World countries led to occurrence of negative consequences such as migration and severe population displacement, sharp increase in the gap between urban and rural areas, etc (Seydaii). Due to such outcomes, the rural planners tend to focus their attention towards sustainable development. The World Commission on Environment and Development defined sustainable development in 1987 as a development capable of meeting the current needs of the society without compromising the abilities of future generations to supply their needs [14].

Sustainable development is maintaining required flexibility to respond to the future. But, in terms of technical conditions, sustainable development can be introduced as the development path in which range, the maximum human welfare would be considered for today's generations without compromising the welfare of future generations. Progress towards sustainable development needs changes at all three local, national and international levels [11].

Sustainable rural development strategy has been widely linked with local and regional growth increase, attention to the activities of rural residents and the ability to conserve resources for the future [12].

The role of indigenous knowledge in sustainable rural development

The farmers in developing countries benefit from intelligent knowledge of agriculture and natural resources. This knowledge has been gained from past generations and through close interaction with small natural environments [13].

Following changes in environmental conditions of indigenous knowledge systems of agriculture also become dynamic and variable, and therefore, provide stability to the communities and the environment. For example, the farmer's experience is a part of agricultural transformation and changes and local knowledge dynamism [8].

The knowledge systems are created based on indigenous experiences, knowledge and technologies that have been transferred and adapted from the outside [9].

The objective of rural development is to improve the quality of life for low income people. This can be achieved by improving the status of agriculture, health care issues, technology, political, economic, social and educational conditions and strengthening the initiative structures of the individual in the society. However, the starting point must be the people themselves; those who have the inherent knowledge of phenomena and their surrounding conditions and would be affected by them. When the development firms try to improve the living standards of the rural societies, they need to consider their social, economic, cultural, ecological and political conditions and histories. Until such efforts are made without regard to the farmers themselves and their resources, the investments and development programs will not work properly. The success of development projects is concerned to the own farmers' systems of knowledge, credibility and transfer of technologies so that the majority opinions of farmers considered previously primitive and wrong are now known properly and wisely [13].

In the past, most development programs were made by governments and through top-down strategies, and it was believed that only by providing infrastructure and the provision of facilities, the rural problems will be resolved.

The role and use of indigenous knowledge in sustainable development and sustainable rural development

Local knowledge of any people has made the aboriginals able to provide their requirements from natural resources without undermining those resources. Therefore, the collection of world's indigenous knowledge is a valuable treasure trove of time-tested methods and tools that will be used in the development of sustainable communities. The areas of application of indigenous knowledge in the development can be summed up as follows:

1. The conservation of natural resources is of our history achievements. Indigenous natural resources management practices will be an appropriate model to manage natural resources in the sustainable development.
2. The success of sustainable development projects depends on the participation of indigenous people at all stages, including design, planning, implementation and evaluation of plans. The need to the participation of aboriginals makes the use of indigenous knowledge indispensable.
3. Given the current state of the world, in many cases, the solution should be searched in the integration of indigenous knowledge and formal knowledge. Since, due to current needs of the world's population and vulnerability of remaining natural resources, none of the two types cannot alone meets the needs.

To identify development needs, the issue of finding the problems should be done from the aboriginal people perspective. Proper detection of problems and effective communication with aboriginals is possible through indigenous knowledge [6].

Indigenous knowledge systems is the basis of decision making at local level, since it is the result of the efforts of local people to identify problems and find solutions to help innovation and to experiment them. Local people develop new technologies at the local level and benefit from indigenous communication organizations for their dissemination. The role of indigenous knowledge in collaborative activities for achieving development has surprisingly expanded in recent years. In some communities, indigenous knowledge is considered as a priceless national heritage that provides opportunities for social development programs and helps to identify, prioritize and organize local interests [1].

Sustainable development is a development that considers the two main goals:

1. Providing the basic needs of the people
2. Sustainability or conservation of resources

Indigenous knowledge is the result of experiential learning process and the thousand years old trial and error of any community in relation to its surrounding environment. Obviously, this knowledge represents the interaction of man with nature and a complete perspective view of natural and climatic characteristics and properties, flora and fauna of the area, and more importantly, their interrelationships with each other and with humans. Having such valuable information that is not obtainable in any other laboratory, the nature and the relationship of its components can be predicted, and the forces behind it would be used intelligently to maintain the balance between existing collection as well as meeting the needs of people living in the community.

On the other hand, in addition to valuable information embedded in indigenous knowledge, the aboriginals' epistemology will strengthen the relationship between the experts and the locals. Through in-depth analysis of local knowledge and close familiarity with the attitude and understanding and cognition of the local people, this will repair the wide and deep gap between the set of experts and researchers and rural people. Due to emergence of gross changes in the past thirty years in rural areas of developing countries, the context of using indigenous knowledge by the same traditional methods has been vanished. In these countries, indigenous knowledge will find valued and development only when is combined with other systematic efforts [6].

Advantages of exploiting indigenous knowledge in development

Indigenous knowledge, which is also called local, traditional or ethnic knowledge, is used to define and classify the phenomena in the physical, natural and social environments. It differs from knowledge that the society's individuals gain through formal institutions such as universities, public and private research institutions. Dial defines indigenous knowledge as a type of knowledge unique to a particular culture and society, which is considered the basic information for decision-making. He believes that research on indigenous knowledge emphasizes the fact that we learn a lot of agricultural activities from natives. These people have experiences regarding the activities of production, fighting against pests and diseases, methods of plants productivity, soil fertility, etc. That have been gained over the centuries.

Diala citing the opinions of many experts suggests that to achieve sustainable development, attention to indigenous knowledge systems is so important and matters to the farmers and agriculture specialists as well. For example, farmers have valuable information about the classification of their regions soils based on which they cultivate their crops. Also, the smallholder farmers have much knowledge about the ecological zone of their region, which helps them to cope with environmental constraints. The use of indigenous knowledge reduces the risks arising from applying technology, since using technologies originated from the local environment will reduce the uncertainty about their performance, and the acceptance of such technologies would be significantly more compared to unfamiliar to non-native technologies.

4. Conclusion

In fact, the importance of indigenous knowledge should be considered from several notable aspects. First, this knowledge is as expensive as mines with thousands of years of history. Since, the people through pain and suffer for several thousand years and experiential learning in relation to adapt themselves to different environments and climates have become the owners of this knowledge. Thus, in case of not using it correctly and timely, this huge resource would be nonrenewable and will vanish with an unimaginable speed. Perhaps, the

evidence beyond the scarcity principle of economics can be applied to this knowledge. Secondly, with the death and burial of each of the carriers of this valuable treasure, indeed, we and the future people will close our eyes on the vast amount of thousands of years old experiences of our ancestors. Thirdly, indigenous and formal knowledge are not in conflict; rather, they are complementary to each other and through integrating them, the contexts of sustainable agricultural and rural development can be provided with minimal damage to the environment and lower costs.

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