

# An Innovative Dairy Model Leading to Sustainable Development for the Rural People of Bangladesh

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**Abstract:** Women are vulnerable due to limited access to economic opportunities, capital, land and skills in rural Bangladesh. Kazi Shahid Foundation (KSF), an independent welfare organization has promoted an innovative “Specialized Dairy Farming Model” linking with the commercial organic tea plantation, organic produces and biogas production to improve the rural community, particularly women, in the northern part of Bangladesh, Panchagarh district. This model aims to develop innovative farming systems to deliver economic value and environmental benefit and is implemented entirely through rural women. Due to KSF’s continuous efforts towards enhancing community based dairy farming, has now become one of the income generating activities for poor and marginal households. In the course of innovation and outreach development for entrepreneurial opportunity, such as, demonstration, commercialization, adopting scientific farming practices, significant increase in quality milk production and animal performance occur. The typical dairy farming models involve exchanging of cash, limit the potential for sustainable development, whereas, KSF Dairy Model provides milking cows and calves to its women members and repayment is based on milk and cow dung and also ensures risk minimization through cow insurance and veterinary care. Additionally, poor households receive technical and financial management support. Increasing opportunities for women is considered to have a powerful impact on productivity and agriculture-led growth. The beneficiaries of this dairy program become entrepreneurs and started dairy farming, selling milk and compost, improving their household incomes. Another direct advantage of small-scale milk production is the immediate nutritional benefit provided to growing children, which greatly contributes to a balanced diet. The distressed women who lived in utter miseries are now leading a better life by taking three meals a day along with other members of their families and sending their children to schools. The female dairy entrepreneurs now have been able to support their families financially and also been able to participate in decision making process. The Kazi Shahid Foundation has introduced organic vegetable farming to the people of Bangladesh. KSF provides the resources, financial capital and knowledge necessary for the community to grow organic food as well as collect vegetables directly from beneficiaries and supply them to the largest super market. Vermicomposting is generally known as a nutrient rich source of organic compost used in farming and small scale sustainable, organic farming. Vermicompost is an excellent soil conditioner and nutrient-rich bioactive fertilizer. Another KSF initiative is vermicomposting which encourages and trains the members to do it and use the compost in their organic produces.

**Keywords:** Dairy Model, Family Nutrition, “No-cash” Microfinance, Organic Farming, Sustainable Development

## Introduction

Panchagarh is a district of Rangpur division in the extreme northern part of Bangladesh. The poverty level in the Panchagarh area is one of the highest in the country. Within this backdrop rural people of this region have a very limited access to income generating activities apart from extraction of sub-surface sand and stone.

Livestock are well integrated into the mixed farming system in Bangladesh, where 25 per cent of the population is directly involved in livestock production and another 60 per cent are indirectly involved.<sup>1</sup>

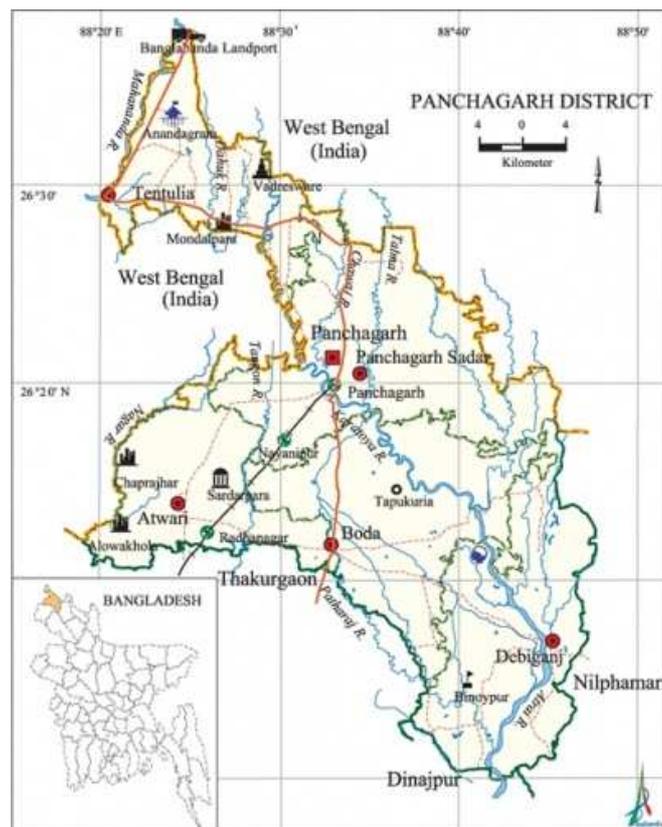
Kazi Shahid Foundation (KSF), has been executing a contractual dairy program with a plan to help in expanding earnings and reasonable occupations of the focused on landless and smallholdings through supporting sustainable agricultural processes. A further equally significant aspect of the intervention is KSF's advance is given not just on the premise of abilities and open doors additionally on the capability to reimburse. Thus, the "smarts" generally overwhelms the credit procurements, leaving the "less smarts" in their typical dejected circumstance. The KSF Dairy Model for credit procurement for a budgetary riches creation is a wonderful flight from the conventional micro credit administrations. The exercises of the venture could be best seen by sub-classifying into three real fragments: cattle feed, milk and dung. An essential need for cultivating high yielding fodder is to nourish dairy animals with bigger amount and better quality grass, to get maximum yield.

KSF Dairy Model additionally encourages organic tea plantation, natural vegetable cultivating and supply, bio-manure creation and instruction programs. KSF accepts that by starting and encouraging smallholder dairy creation in the Panchagarh especially among the rural women could be utilized as a capable device for diminishing destitution, raising sustenance levels and enhancing the livelihoods of poor across the country. KSF's Specialized Dairy Farming Program had turned out to be an intense apparatus for poverty alleviation.

## Description of Project

### Project Area

The project area is in Panchagarh, which is an impoverished, secluded and drought prone area. Panchagarh is located at the extreme northwest of Bangladesh, with an area of 1,404.53 sq-km and bounded on three sides by 286.27 km of Indian border. Its soil is sandy, alluvial and bears close affinity with the soil of the old Himalayan basin.



The poverty incidence in Panchagarh is relatively higher than any other regions of the country. In Panchagarh, nearly 80 percent of the population is considered as poor. They are mostly smallholder farmers, landless day laborer and stone extractor/breaker. The other human indicators, such as literacy, nutrition, education, health care, etc. are all below the national average.<sup>3</sup>

Since there are not enough employment opportunities in Panchagarh, people do not have many options to earn their living. They cannot carry on farming due to the reduced rainfall, reduced water flow in most of the rivers; insufficient electricity and the high price of diesel for irrigation in the dry season also make cultivating crops a significant challenge. Therefore, working in a stone field is the one of very few options available for the people of the Panchagarh district to generate income. Under such backdrop a need for engaging women in income generating activities seemed to be a true call of the moment. It has been argued that at least half of all the estimated 50,000 stone workers stretching from the Mahananda, Dahuk, Karatoa and Chawai River and the adjacent areas are women. It is also considered a fact that women are being paid significantly lower than men doing the same work.<sup>4</sup>

### ***Innovativeness of KSF Dairy Model***

KSF dairy model is highly innovative. This model aims to develop innovative farming systems to deliver economic value and environmental benefit. The model is implemented entirely through rural women of Panchagarh. In the course of innovation & outreach development for entrepreneurial opportunity (like demonstration, commercialization, farming practice changing and so on) significant increase in the quality milk production and animal performance occur. The intervention package entails: improved dairy animals supply and cow-comfort awareness, green fodder cultivation and standard feeding, artificial insemination service, better disease prevention strategy, availability of drugs at affordable cost, dairy farming enterprise value chains, risk management fund and family capital for its women members.

### ***Conventional Approach in opposition to the KSF Dairy Model***

According to the typical dairy farming models, traditionally involving the exchanging of cash, limit the potential for sustainable development. Besides, lack of capital hinders smallholder dairy farmers to employ workers and further limitations include farmers' inability to obtain technical support, risk management, and inability to choose right varieties of dairy cows.

Furthermore, the purpose of micro credit, apart from financial sustenance of the economically deprived community, has many multi-faceted objectives. Developing group cohesiveness and triggering a community feeling amongst the group members is also one of the important targets of micro credit. The conventional credit mechanism practiced today is essentially dividing the groups. The loan is provided not only on the basis of skills and opportunities but also on the ability to repay.<sup>5</sup>

KSF Dairy Model provides milking cows with calves to its beneficiary and repayment is based on milk and cow dung. Moreover, this model enables beneficiaries to enhance improved technical capacity and skills through training. KSF Dairy Model also ensures risk minimization through introducing cow-insurance and veterinary care.

### **KSF Dairy Model Features**

The KSF Dairy Model designed to ensure quality dairy cow, proper veterinary care, animal comfortness, access to right quantity of quality feed and water, ensure regular breeding and proper marketing of products and by-products. In addition poor households also receive technical and financial management support.

#### ***a) Improved scientific dairy cow management***

Dairy farming support needs to be provided in different forms: hands-on technical training and demonstrations along with training on business, cooperative management and governance. Apart from knowledge building the KSF Dairy Model also put attention on supply of farm inputs, cow comfort and housing, balance feed and to ensure green fodder cultivation and also waste management.

#### ***b) Financial services***

KSF Dairy Model includes a procedure to deposit from the sale of beneficiaries' milk and dung, where they receive 6% incentive known as Family Savings. Besides there are provisions for risk management at the rate of 1% on cost of dairy cows which together with additional 1% matching fund of KSF cover death insurance of cow. KSF members receive veterinary care (de-worming, vaccination and artificial insemination) support through additional deposit of TK 500.

#### ***c) Technical and Marketing services***

This project was successful in improving feeding, breeding, vaccination, milk quality and hygiene as main strategies to enhance dairy cattle productivity and farmers access to the formal market i.e. milk chilling plants and value-added dairy commodity producers. KSF also provide marketing services for the raw cow

dung and processed vermin-compost produced by beneficiaries. Recently, KSF started to supply organic beef cattle directly from the beneficiaries to Meena Bazar, the largest superstore in Bangladesh. The accomplishment of the identified project objectives ultimately resulted in a higher and more stable income, improved nutrition and livelihoods for the women beneficiaries.

### **Linking Activities within the Project:**

The activities of the project could be best understood by sub-categorizing into three major segments: quality dairy cow, proper management and marketing of products & by-products.

A primary necessity for farming a high milk yielding cow needs to be fed with adequate quality and quantity of feeds and fodder, to obtain maximum output. Hence, KSF's beneficiaries have extended their activities to backward integration by growing wide range of improved quality fodder for their cows. KSF is providing continuous training and other support, as well as emphasizing the importance and the significance of the quality grass. Today, the trend has led farmers producing good quality grass in larger quantities enabling them to sell it to their neighbors.

A more direct interlinking income generating activity involves milk production. One of the core intentions of KSF Dairy Model was to engage farmers in producing large volume of better quality milk. Today it is standing out as one of lucrative trade for farmers, as they are able to sell it to KSF's own milk processing firms. Besides they also sell to individuals processors producing milk products such as cheese, sweets, curd, ghee, etc. Cow-dung in the initial implementation of the program was considered a straight forward trade, where farmers traded with Kazi & Kazi Tea who required fertilizers for their crops. However, KSF trained the farmers the art of vermicomposting, enabling them to generate higher income, than they previously did. Vermi-compost is better quality organic fertilizer, enhances soil fertility, improves soil health and reduces requirement of chemical fertilizer, and thus has a higher demand with greater margin of profit.

### ***Organic Farming***

KSF has encouraged the members to practice organic farming. Awareness and capacity was developed. The total area under organic agro farming currently is 21 acres. Organic agriculture not only enables ecosystems to better adjust to the effects of climate change but also offers a major potential to reduce the emissions of agricultural greenhouse gases. Moreover, mixed farming and the diversity of organic crop rotations are protecting the fragile soil surface and may even counteract climate change by restoring the organic matter content. It is generally believed that the carbon sink idea of the Kyoto Protocol (Article 3.4),<sup>6</sup> may partly be accomplished efficiently by organic agriculture practices.

### ***Biogas Program***

Kazi Shahid Foundation (KSF) is currently running a homestead biogas project in Panchagarh district. The objectives of the project are to provide a clean, healthy and environmentally sustainable source of energy for cooking, lighting and small to medium size power generation. It also had a community empowerment agenda where besides increased productivity and health/ environmental benefits, the users of the technology would be able to generate some income out of selling by-products of the operation (bio-slurry). The payment for buying and using the technology was made efficient through KSF Dairy Cooperative Program's non-traditional form of micro-credit as a barter system, the household would repay KSF the cost of the plant through bio-slurry, dung, milk and so on.

### **Services Offered to Underprivileged Women:**

In addition to radically increasing the women's income and assets, KSF also facilitates organic tea cooperative, organic vegetable farming and supply, bio-fertilizer production and education programs. It has now expanded to two more places: Sirajganj and Savar. KSF believes in steady and sustainable growth, guided by their value: 'we grow only in harmony with nature and society'.

### ***Contractual Dairy Farming Program***

KSF is based on an innovative approach. They provide their beneficiaries dairy cows instead of cash and ownership is transferred in exchange for milk and cow dung. Rural people, especially women, are encouraged in Specialized Dairy Farming which improves their economic status as well as social status.

### ***Group orientation and training program***

KSF designed various types of training program for its women beneficiaries. These trainings extensively focused on developing women empowerment and a sharp sense of equity as well. These include Leadership, Cow Management, Vermicomposting, Organic Farming and Primary Health & Hygiene factors. A total of 1,410 women beneficiaries were trained by KSF eventually.

### ***Service delivery strategy***

Smallholders lack the skills to manage their farms as 'enterprises'; have poor access to support services like veterinary services, reproductive care services and marketing services; have little or no capital to reinvest with limited access to finance; and are handicapped by small herd sizes, low milk yields and poor quality milk. Therefore, KSF intervenes and crafts certain mechanisms helping them address of these challenges:

- **Group Formation and Development:** Formation of contractual dairy farming groups at each community in the program areas. Working in groups, enables women accomplish their earnings/tasks with higher success rate and at a most cost effective manner.
- **Dairy Management Services:** KSF is also providing animal health and breeding services and advice on hygienic milk production. Other services include such as advice on feed, practice vaccination & deworming, animal comfort through appropriate husbandry, etc., management to the group members.
- **Feed Management:** Facilitate to establish community based good quality fodder and feed management and provide technical support to prepare feed locally through local feed sellers.
- **Market Linkage for Milk and Dung:** Provide effective channels and transportation of the milk and cow dung for marketing. By linking up around 1,100 farming households directly to the milk processor, KSF Dairy Model demonstrates significant increases in the profit margin of the beneficiary households.
- **Asset Formation Support:** Provide milking cow to group farmers from KSF and help manage improved dairy cow effectively and in coordination with KSF repayment buy-back system through milk and dung.
- **Capacity Building:** Provide training and orientation to all group members in relevant livestock and dairy milk production to improve technical skills of the group members.

### **Impact of KSF Dairy Model-Analysis of results**

#### ***Quantitative and qualitative improvement of beneficiaries***

Increasing opportunities for women is considered to have a powerful impact on productivity and agriculture-led growth.<sup>7</sup> Smallholder farmers with less than 20 decimals of land contribute to almost 90% of agricultural production in Panchagarh but have very low yields, mainly due to poor knowledge and technologies. Dairy farming practice is one of the most rudimentary and traditional in Panchagarh resulting in lower yield in income compared to cost of management and production. KSF supported Dairy Farming program is one of the key initiatives, which aims at increasing milk production and rearing of high yielding cows for farmers. KSF's Dairy Farming program is training women to become dairy producers, improving their incomes and helping to fill up the yield gap in the dairy farms and also buying this locally-produced milk.<sup>8</sup>

#### ***Occupation of the beneficiaries***

The occupation of the beneficiaries before joining KSF was primarily homemakers (64%). A few were working as agricultural day-laborer (18%), stone mining worker (14%), and small business (4%). The occupation of the beneficiaries has dramatically changed after joining KSF. They all have become entrepreneurs and started dairy farming and selling milk and compost and earning extra from various others income generating activities.<sup>9</sup>

#### ***Income generation from dairy farming***

The net profit of farming a local milking cow is approximately Tk. 27,000 per year including the value of a calf (Tk. 8,000). A small quantity of the milk is often used by the beneficiaries for their home consumption and the rest is sold either to KSF or in the market at an average price of Tk. 30 per liter. The following benefit and cost framework shows that a poor with a credit support to start dairy farming can have a round the year revenue stream and at the end of the year can earn about TK. 22,100.<sup>9</sup>

### *Changes in income of beneficiaries after joining in KSF*

Majority of the beneficiaries (particularly female) did not have any income sources before joining KSF. This has been dramatically changed after the beneficiaries joined KSF. It is also remarkable that the income level of the beneficiaries have significantly increased to TK 5,000 to TK 10,000 per month.<sup>9</sup>

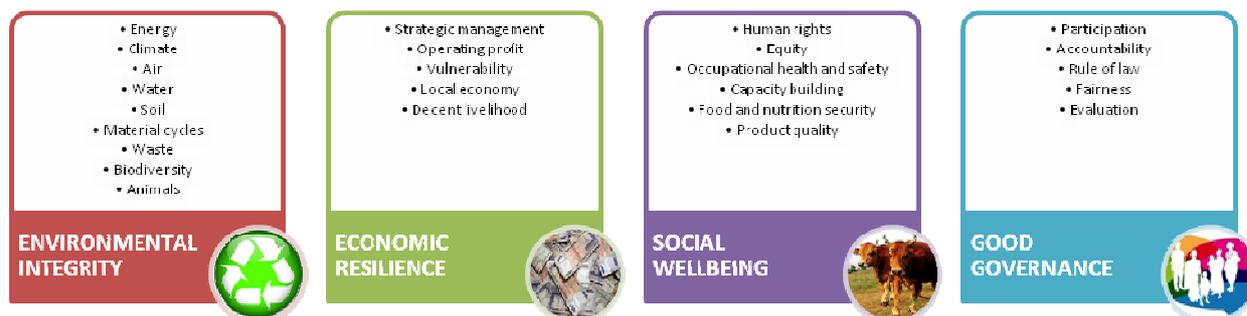
The distressed women, who lived in utter miseries even a decade ago, are now leading a better life by taking three meals a day along with other family members and sending their children to schools. Talking to female dairy entrepreneurs, including housewives, widows and divorcees said they have been able to support their families financially which has removed their extreme poverty.<sup>10,11</sup>

### *Milk consumption by Farmers-The ideal diet that has been a “dream food”*

As a nutritious food and a source of regular income, milk plays a key role in the household food security in many developing nations. In small-scale dairying, milk is available for the family needs first and surplus milk is marketed. One of the most important, but often ignored, direct benefits of small-scale milk production is the immediate nutritional benefit provided to growing children (Calcium and Vitamin A for example) which greatly contributes to a balanced and nutritious diet. The current per head consumption of milk is increased to 45ml per day among KSF’s beneficiaries which is much higher than the national standard of 32ml milk per day per head.<sup>9</sup> KSF is working persistently to raise awareness and to promote “A glass of milk for every person/child in Panchagarh” which aims at eradicating malnutrition among Panchagarh children.

### **Sustainability of the Program**

For a model to become sustainable, focused activities on the following key functional areas are essential. KSF is in the process of developing and standardizing almost all the key ingredients to make the model sustainable. However, it required to address issues relating to management control and performance measurement in improving social, environmental, and financial performance.

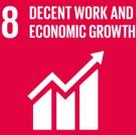
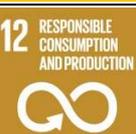


The transition towards more sustainable dairy farming systems is a central element on the KSF agenda. This transition process can be supported with improved insight into the effects of management measures and farming systems on individual sustainability aspects and overall sustainability.

### **KSF Activities and Sustainable Development Goals:**

KSF through its different interventions such as contractual dairy farming, promoting organic farming, learning center for the children and adults, etc, are improving the livelihood of local people. This program directly and indirectly helps in achieving the different social, economic and environmental wellbeing particularly the Sustainable Development Goals (SDGs). On September 25th 2015, countries adopted a set of goals to **end poverty, protect the planet, and ensure prosperity for all** as part of a new sustainable development agenda. Each goal has specific targets to be achieved over the next 15 years through global partnership by 2030 (<http://www.un.org/sustainabledevelopment/sustainable-development-goals/>).<sup>13</sup>

KSF is strongly committed through its core intervention and dairy farming and other integrated programs for livelihoods development contribute directly to the following goals and, indirectly, most of the 17 global goals.

		<p>KSF through its dairy farming for livelihoods development effort is tackling hunger, nutrition and create employment and income opportunities at the base of the economic pyramid also ensuring food security.</p>
		<p>KSF through its awareness program, events and campaigns, is creating awareness on health, hygiene, health care services among employees and target beneficiaries.</p>
		<p>The Learning Center/School operated by KSF is making it easier for children and adults, specially girls and women to access education. This initiative is empowering women and girls in developing their skills and capacities to become entrepreneurs and leaders in their community.</p>
		<p>KSF is driving environmental excellence along the project chain and its biogas and bio-slurry management program, setting targets to encourage environment friendly agricultural practices, combat harsh climate vulnerabilities, help to mitigate climate change.</p>
		<p>KSF's programs ensure the sustainable management and efficient use of natural resources, composting, reduce waste generation through prevention, reduction, recycling and reuse, adopting organic lifestyle.</p>
		<p>KSF through its dairy cow rearing for livelihoods development effort strengthens and empowers the local community, boosts dairy farming and agricultural development and builds local capacity through partnership with private sector enterprises for mutual benefits. The mutual activities promote environment friendly, organic farming, renewable energy by building support for increasing value-added dairy management practices.</p>

### Conclusion and way forward

Women empowerment is a prerequisite for most development outcomes such as, economic growth and poverty reduction, for this reason any discussion on post-2015 development agenda needs to include women empowerment as a cross cutting dimension to all development priorities.<sup>14</sup> An effective community engagement and response to improve the present status of livelihood and quality of life of women and children is not limited merely to the program design and delivery, but has critical dynamics of true participation of women and children and a commitment from all levels of people in the family and community. The most successful results can be harnessed by involving women and children as well as youth with experience in issues related to livelihood and quality of life of women and children.

Gradual transition from the subsistence dairy farming to profit oriented knowledge based farming require consistent and passionate techno-social intervention with market link at farmer's door step. Barter system dairy financing model does work when consistent visibility, technical services and buy-back of dairy products are ensured at borrower level.

A comprehensive development and agribusiness policy support may result in a successful livestock value chain. In Bangladesh, the small livestock growers for a long time have been denied a favorable policy support resulting in stagnation of the livestock sector and increased rural poverty. These policies of neglect stand in sharp contrast to those of developed nations, which provide farmers with a strong foundation of government policy support. The competitiveness of agribusiness not only depends on the functioning of players within a cluster, but most importantly, on the entire chain at the national and global level. This means agribusiness in needs to take globalization into account in order to improve competitiveness. The KSF Dairy Model shows that business and

poverty relief are not mutually exclusive. It can relieve poverty in a way that benefits an entire economy, and the people in it.

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### References

- [1] Bangladesh Economic Review, 2010.
- [2] Community Report Panchagarh Zila “Population and Housing Census 2011”, Bangladesh Bureau of Statistics, Statistics and Informatics Division, Ministry of Planning, Government of Bangladesh, 2011.
- [3] Narayan, A., Yoshida, N. and Zaman, H. ‘Trends and Patterns of Poverty in Bangladesh in Recent Years’ A Background Paper for Bangladesh Poverty Assessment (2007) South Asia Region, World Bank, 1-29, 2007.
- [4] Bangladesh Bureau of Statistics (BBS), 2011. Statistical Yearbook of Bangladesh, Bangladesh Bureau of Statistics, Planning Division, Ministry of Planning, Government of the People’s Republic of Bangladesh.
- [5] Farouk Jiwa and Kevin McKague Using Cows to Pull Bangladeshi Farmers out of Poverty, Economic Development Team, CARE, August 2010.
- [6] FAO. (2003)*Uplift and Empowerment of Rural Women (Farmers Wife)*. Rome: FAO.
- [7] Kazi Shahid Foundation - Policy Manual 2012.
- [8] Information Regarding Number of Dairy Coop and Member by Branch, KSF Annual Report: July’2015 - June’2016.
- [9] Markley, D., Macke, D., Luther, V. B. (2005). *Energizing entrepreneurs: Charting a course for rural communities*. Lincoln, NE: Heartland Center for Rural Entrepreneurship.
- [10] Munawar, M., Safdar, U., Luqman, M., Butt, T. M., Hassan, M. Z., & Khalid, M. F. Factors Inhibiting the Participation of Rural Women in Livestock Production Activities. *J. Agric. Res.*, 2013, 51 (2), 213-220, 2013.
- [11] Valerio, A., Parton, B., & Robb, A. *Entrepreneurship Education and Training Programs around the World: Dimensions for Success*. Washington, D.C.: The World Bank, 2014.
- [12] UN Women Policy Division. *A transformative stand-alone goal on achieving gender equality, women’s rights and women’s empowerment: Imperatives and key components*. New York: UN Women, 2013.