



Islamic Social Finance and Green Finance to Achieve SDGs through Minimizing Post Harvesting Losses in Bangladesh

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Abstract

The whole world is passing through an unprecedented period and struggling to overcome the economic and financial losses caused by a tiny virus COVID 19. Bangladesh is no exception. The economy of the country is agricultural-based and post-harvesting losses of fruits and vegetables is a significant issue here. This paper tries to investigate the old problem from a different perspective, with a new strategy, hoping to mitigate the impairment. Basically, renewable energy-based cold storage can solve the issue. Green financing, along with Islamic Social Financing, can play a vital role to facilitate the cold storage opportunities to the rural farmers. This paper, following a qualitative research method, is trying to offer a solution to minimize the post-harvesting losses. The implementation of this solution can help the rural mass to get rid of the poverty, hunger and malnutrition problems. In this effort not only good health and well-being will be ensured, but also partnership business practices will be enhanced while guaranteeing affordable clean energy uses. Consequently, the successful implementation of the new strategy can help the country to achieve several sustainable development goals, some directly and some indirectly.

Keywords: Islamic social finance, green finance, post harvesting losses of fruits and vegetables, SDGs

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1. Introduction

Bangladesh is mainly based on agriculture and the development of the country largely depends on the development of the agriculture sector which contributes 17 percent of the GDP (BBS, 2015) and 63 percent of the employment (Kabir, 2018). Bangladesh produces about 176,000 metric tons of vegetables annually, of which about 65 percent are produced in winter and the rest in summer. Therefore, production is not well distributed throughout the year (DAE, 2016); to maintain stable supply of vegetables and fruits strengthening post harvesting preservation system is essential. However, due to absence of proper postharvest management system, a bulk quantity of the harvested produce is damaged every year and the farmers sell their hard-earned produce at throw-away prices and incur losses (Kabir, 2018).

The losses basically have two-fold social impacts. Firstly, the country is facing enormous annual monetary loss. Secondly, the consumers are deprived from the consumption of the highly nutritious fruits and vegetables. A considerable proportion of the harvested produce never reaches the consumers mainly because of postharvest losses. The estimated postharvest losses of fruits and vegetables lie in the range of 20-40% throughout the world (Wills et al., 2004). The losses are due mainly to the lack of storage facility, sub-standard postharvest handling practices, inadequate transport, and ignorance of the stakeholders (Hassan 2010). Moreover, in the entire marketing channel, there is no facility for short- and long-term storage of perishables. Ideally, storage facilities should be located at each of the loading and unloading points, and in the wholesale markets. This is a critical problem in the present marketing system, especially for the perishables like fruits and vegetables. Therefore, this article will search the existing literature to get the answer of the question, how is it possible to reduce the post harvesting losses of fruits and vegetables in Bangladesh?

Introduction and establishment of cool chain or small cold storage is a must to reduce postharvest quantitative and nutritional losses, stabilize commodity price, reduce the negative engagement of the

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intermediaries, and ensure product's quality and safety (Sawicka, 2019). The cool chin at the grip of farmers could reduce the losses in a significant proportion, and thereby, millions of Takas would be saved annually. Though cold storage is extremely necessary for Bangladesh, modern storage of fruits and vegetables is virtually absent in Bangladesh. The constant supply of electricity is necessary for cold storage and the inconsistency of the electricity supply at rural level is the major hindrance for introducing the cold storage. Considering all these factors, if it is possible to introduce mini solar based cold storage in Bangladesh, it will be a revolution in agriculture sector.

The solar mini cold storage will not only save huge amount of produce fruits and vegetables and money but also will create different kinds of employment related to managing these cold storage systems. Moreover, servicing of this equipment will create new employment opportunities in the local region. Broadly, it will help the country to achieve many of the SDGs. The solar mini cold storage is expensive and beyond the capacity of individual farmer to afford it. Therefore, an innovative financing mechanism is required. Keeping all these in mind, this paper will also try to get the answer of the question, what are the possible ways to finance the product that will solve post harvesting losses of fruits and vegetables in Bangladesh? This article will find the answer of the question related to the solar mini cold storage, including green finance with social Islamic finance and by involving banks or non-bank financial institutions under one umbrella. To facilitate the finding, the paper is divided into various sections and the sections begin with literature review, followed by methodologies, finding and discussion and finally the conclusion and recommendations.

2. Literature Review

According to the title of the paper, Islamic Social finance, Green finance, Sustainable Development goals, post harvesting losses of fruits and vegetables literature will be searched to get a solution to the problem. The combined effort of Islamic social finance instruments and green finance supported by banks or nonbank financial institutions can facilitate poor people to own mini solar cold storage in group or collective manner so that all the year-round fruits and vegetables can be stored and kept fresh to get appropriate price.

2.1 Islamic Social Finance

Social finance is a multibillion-dollar approach to manage investments that generate financial returns while having assessable positive social and environmental impact. Though the area is rapidly advancing but remains an under-institutionalized field. Social finance or social investment does not mean a grant or donation, it is still an investment which is repayable and often comes with profit. Islamic social finance is social finance or social investment which follows Shariah rules and principles (Mohd Zain and Engku Ali, 2017).

According to the current practices, Islamic social finance can be divided into three main groups which consist of: (a) Islamic traditional instruments based on philanthropy; examples: zakat, sadaqah and waqf (Abduh 2019; Syed Azman and Engku Ali 2019; Jouti 2019) (b) cooperative-based foundations; examples: *qard al hasana* and *kafala* (Islamic Social Finance Report, 2015). (c) Other modern forms of Islamic financial services; examples: Islamic microfinance, sukuk and takaful waqf (Jouti 2019), socially-impactful Islamic crowdfunding (Syed Azman and Engku Ali, 2019).

From the Islamic finance viewpoints many scholars have discussed the Sustainable Development Goals (SDGs) (Gundogdu, 2018). According to few Islamic finance scholars the SDGs are aligned with the philosophy of Islamic finance and therefore, Islamic finance is the novel finance substitute to achieve SDGs in 2030 (Zarrouk, 2015). Three Islamic social finance instruments namely infaq, waqf and zakat are excellent alternative philanthropic fund to cover global SDG's investment gap; SDG no. two that is "end hunger, achieve food security and improved nutrition and promote sustainable agriculture" is possible to achieve through Islamic social finance (Abduh, 2019). Islamic finance could promote agricultures sustainability and a more efficient process with FinTech enabled platform (Ningrat and Nurzaman, 2019). Therefore, Islamic social finance crowdfunding platform can be a possible financing source to finance the solar mini cold storage to reduce post harvesting losses of fruits and vegetables.

2.2 Green Finance

Bangladesh central bank, that is Bangladesh Bank, had inaugurated green banking policy and guideline in 2011 and has made it compulsory to all banks and nonbank financial institutions to create their own green banking units, guide and branch. Since then each bank in Bangladesh is providing green financing to green clients (GBPG Circular 2 2011). Green financing helps to create green businesses, according to banking policy green clients are involved in eleven categories of green business such as renewable energy, energy efficiency, solid waste management, liquid waste management, alternative energy, fire burnt brick, non-fire block brick, recycling and recyclable product, green industry, safety and security of factories and miscellaneous. Among the eleven categories there are 47 product lines (GBPG Circular 4 2014).

Green finance comprised financing of (including preparatory cost and capital cost) green investments, financing of public green policies and green financial system (Linderberg, 2014). According to the *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ), green finance is a strategic approach to incorporate the financial sector in the transformation process towards low-carbon and resource-efficient economies, and in the context of adaptation to climate change (GIZ, 2011). Green businesses adopt principles, policies and practices that improve the quality of life of the customers, employees, communities, and the planet. Green businesses are socially and environmentally responsible and challenge themselves to bring the goals of social and economic justice, environmental sustainability, as well as community health and development. Green businesses improve communities.

Rural clients, who most of the cases are farmers, are deprived from the banking services. Green financing is such a platform that can bring banking services at the doorstep of rural households. In Bangladesh context besides banks, non-bank financial institutions had extended green financing to green projects or renewable energy sectors to install solar home system to poor people houses. Infrastructure and Development Company Limited (IDCOL), Sustainable and Renewable Energy Development Authority (SREDA) etc. are playing remarkable role in this regard. In Bangladesh, Islamic banks are performing well in case of green financing compared to conventional counterpart, moreover, Shariah relevance of green banking policy is a motivational factor to involve Islamic banks more in green financing (Julia and Kassim, 2019, 2020; Julia et al., 2016). Consequently, Islamic social finance along with green financing can accumulate huge financing for mini solar cold storage.

2.3 Sustainable Development Goals (SDGs)

UN Sustainable Development Summit was held in New York from 25-27 September 2015 for the adoption of an ambitious, bold and universal sustainable development agenda that will end poverty and promote prosperity by 2030, while addressing the environment. The summit outcome document, entitled “Transforming our World: The 2030 Agenda for Sustainable Development,” was agreed on by the 193 member states of the United Nations, and includes 17 Sustainable Development Goals and 169 targets (GRI & UNGC, 2016). The seventeen goals are- no. 1 no poverty, no. 2 zero hunger, no. 3 good health and well-being, no. 4 quality education, no. 5 gender equality, no. 6 clean water and sanitation, no. 7 affordable and clean energy, no. 8 decent work and economic growth, no. 9 industry innovation and infrastructure, no. 10 reduced inequality, no. 11 sustainable cities and communities, no. 12 responsible consumption and production, no. 13 climate action, no. 14 life below water, no. 15 life on land, no. 16 peace, justice and strong institutions and no. 17 partnerships for the goals.

To appreciate the SDGs understanding, five P’s are vital. They are People, Planet, Prosperity, Peace and Partnership. These five P’s are considered as elements of SDGs and three of them are the pillars of SD: People, Planet and Prosperity. The 2030 Agenda is indivisible. Therefore, countries should avoid cherry picking goals and carefully assess the trade-offs across goals or targets. SDGs are very comprehensive and designed to achieve universal goals which are agreed by the world community in general and have no direct conflicts with Islamic percepts. The sustainable development discourse has, however, acknowledged that the three pillars of sustainable development need to be completed by an ethical dimension at the level of popular values. The World Summit on Sustainable Development in Johannesburg (2002) added a short paragraph 6 to its Programme of Action: “We acknowledge the importance of ethics for sustainable development and, therefore, emphasize the need to consider ethics in the implementation of Agenda 21” (WSSD, 2002).

Green financing is an initiative of sustainable development program and Islamic finance can play a great role to achieve sustainable development goals, hence, combination of Islamic finance, green finance and

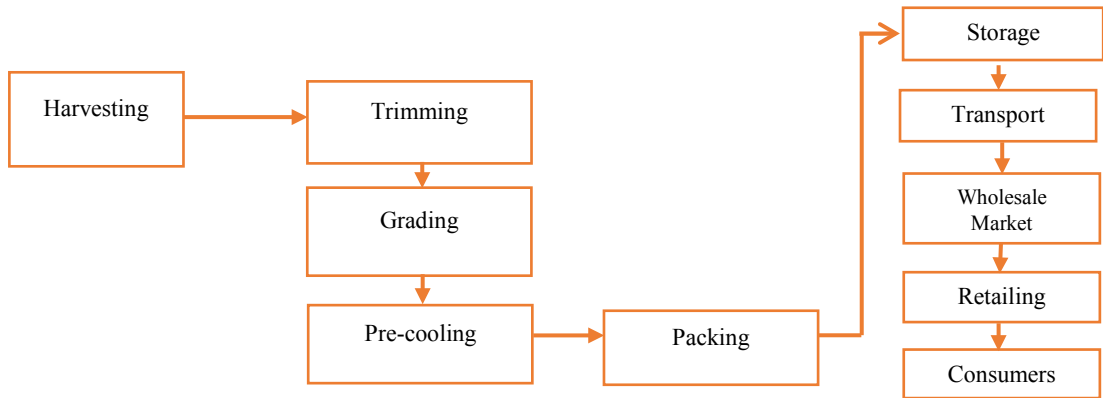
Islamic social finance can play a pivotal role to achieve many of the SDGs. This financing combination can also solve post harvesting loss problem and many other problems related to that.

2.4 Post Harvesting Losses

In Bangladesh the vegetables production rises by one-third in the last 5 years that is 37.63%, between 2013-2014 and 2018-2019 fiscal years (Hasan, 2020). Although production increases, negligible actions has been taken to reduce the post harvesting losses (PHL). Postharvest loss is often used to describe “losses between harvest and the onward supply of produce to markets and equates broadly with waste in the food supply chain” (Gogh et al., 2013). According to officials at the Department of Agricultural Extension (DoAE), though there is larger production amount, but the postharvest loss is almost 40% in Bangladesh and in other developing countries. The estimated postharvest loss of fruits and vegetables in Bangladesh is 23.6%-43.5%. The total loss was found to be the highest in jackfruit followed by pineapple (43.0%), papaya (39.9%) and cauliflower (27.1%). Hence, loss reduction strategies must be strengthened right from the beginning. Results suggested that around 3442 Crore Takas or 344.2 Million Takas are lost every year due to postharvest spoilage of some selected fruits and vegetables (Hassan et al., 2010) .

The contribution of fruits and vegetables remains extremely important for ensuring food and nutritional security in Bangladesh. The food and nutrition situation in Bangladesh are fragile due to inadequate and imbalanced diet intake. Fruits and vegetables are highly valued in human diet mainly for vitamins and minerals. However, the present consumption of fruits and vegetables in Bangladesh is 126 g/day/capita which is far below the minimum average requirement of 400 g/day/capita (FAO/WHO, 2003). Consequently, the high levels of low birth weight (33%), underweight (41%), stunting (43%) and wasting (17%) among children less than five years; anemia among infants, young children, adolescent girls and pregnant women are very common (BCIP, 2010; BDHS, 2009). The prevalence of overweight (12.5%) among women that has increased by 10% between 2004 and 2007 also indicates the existence of double burden of malnutrition in Bangladesh (BDHS, 2009), which also impacts the macro economy of the country and a major hindrance to achieve the SDGs.

Figure 1: Flow diagram on harvesting and post harvesting handling steps of horticultural produce



Sources: (Hassan et al., 2010)

In addition, the price of commodity at different levels of supply chain is very important in Bangladesh, where the commodity price varies quite significantly due to the engagement of numerous intermediaries in the system. The price of produce is high at the retailers’ level as compared to that of the growers’ level. High price increase of a commodity at the retail level is possibly attributed to the less market integration and vice-versa. Price analyses of horticultural commodity at different levels of marketing showed that the increase in price ranged from 44.52% (mango) to 252.35% (red amaranth) at the retailers’ end when compared with the growers’ sales price. More than 100% price increase was observed in pineapple, jackfruit and tomato. The levels of price increase in cucumber, banana, cauliflower and okra were 94.31%, 89.48%, 88.13% and 86.40%, respectively (Hassan et al., 2010). The average increase in price of fruits and vegetables is 105% in the marketing channel before reaching the consumers. The main reason is that the lake of storage facilities in postharvest stages of the products, farmers fear that their hard-earned products will be perished if they cannot

sell to the local intermediaries on the field. The supply chain of horticultural produce in Bangladesh has various parties' involvement such as grower, dealer (*Baperi*) wholesaler, retailers and consumer. The above Figure 1 indicates the flow diagram of harvesting and post harvesting handling steps of horticultural produce. During this pandemic situation when the whole country was lock down due to COVID-19, the farmers worked tirelessly round-the-clock however instead of their hard work they could not change the miserable conditions. Many traders from cities and deficit zones could not visit the producing zones, particularly in the distant districts from Dhaka, because of the absence of public transport, therefore, many farmers failed to get enough buyers to sell their produce at an appropriate price (Parvez, 2020). Because of limited buyers, they sold perishable produce at low price and felt the extreme need of the cold storage facilities; if there was cold storage available, they could store those produce and could trade them when price is appropriate.

2.5 Solution Available to Reduce Post Harvesting Losses

After extensive literature survey the following solution to reduce PHL of fruits and vegetables are observed. In Bangladesh, to reduce the PHL of fruits and vegetables farmers are widely applying formalin to preserve the perishable products fruits, vegetables, meat and milks for long time, however, this chemical is posing a massive threat to the public health and nutrition at an alarming level. Food contamination with toxic chemicals has reached an astounding level in Bangladesh (Kamruzzaman, 2016). Pineapples are treated with formalin to protect against microbial attack after harvesting and it combats financial loss. For quick growth and ripening, various hormones and toxic chemicals are being used continuously by farmers in Bangladesh. Without knowing the health hazard people are consuming the contaminated fruit and suffering from health problems like respiratory, neurological, immunological, hematological, reproductive, cardiovascular, developmental, dermal, genotoxic and gastrointestinal causes for consumption of this contaminated pineapples (Proshad et al., 2018).

The Horticulture Development Centre of Bangladesh Agricultural Development Corporation (BADC) in 2013 has set up a cold storage at Jhumjhumur, in Jessor district to preserve fruits, flowers, vegetables, meat and fish. However, considering the high cost, the weekly and monthly costs for storing vegetables stand at 25.20 Taka and 108 Taka respectively per kilo, farmers are reluctant to store produce there claiming that the rates are not favorable for business (FreshPlaza, 2016). Though the importance of cold storage is extremely necessary for Bangladesh, modern storage of fruits and vegetables is virtually absent in Bangladesh. Cold storage facility is only available for potato and very insignificant number for imported fruits. The collective potato cold storage facility for small-scale farmers in Bangladesh can be a way to resolve PHL of potatoes (Douma, 2016).

In India, to solve the PHL problem as well as to save the environment from the harm of diesel made cold storage, three alumni of IIT Kharagpur has provided an impactful solution to the agro-community. The solution is known as Ecozen Solutions. The best way towards developing a clean, non-exhaustible and optimized technology was by harnessing solar energy. Ecozen's solar-powered cold room, called Ecofrost, is designed to help farmers store fresh produce until it reaches end consumers. Expanded shelf life of crops enables the farmers to earn more and reduce postharvest losses. The startup targets agro-traders, wholesalers, retailers and farmers (SmartWorld, 2018).

Controlling PHL can reduce the hunger problem in the developing countries. Both developed and developing countries are applying three strategies to resolve the PHL problem. Firstly is the application of current knowledge to improve the handling systems. Secondly, overcoming the socioeconomic constraints, such as inadequacies of infrastructure, poor marketing systems, and weak R&D capacity, and thirdly, encouraging consolidation and vertical integration among producers and marketers of horticultural crops (Kumar et al., 2015).

2.6 Literature Gap

To prevent the PHL of fruits and vegetables, among many recommendations by Hassan et al (2010), one is mentionable here that is the public private partnership. The researchers had emphasized on introducing new and modern postharvest technologies like low temperature storage, refrigerated transport vehicle, ethylene induced ripening technology and plastic packaging and the dissemination of low-cost storage technology at farmers' doorsteps. Generally, the losses were greater at the hands of the intermediaries, especially the dealer (*Bepari*) and wholesalers due to improper supply chain. The growers generally sell their produce either to the

broker (*Faria*) in their own field or to the dealer in the nearby rural markets. Subsequently, they never get their expected price from the market. This scenario could be changed if the chain can be introduced at the reach of the farmers. It is recognized that the intermediaries are also vital components of today's business. Therefore, they could not be excluded from the supply chain. Nevertheless, if cold storage is possible to be introduced at the reach of the farmers, the bargaining power of the poor farmers will be increased and monitoring will be strengthened in order to reduce the negative influence of the intermediaries in fruits and vegetables supply chain. This would ensure two-fold benefits, firstly, the growers would receive reasonable price of their produce, and secondly, the consumers would purchase produce at reasonably lower prices. However until to-date, no initiatives have been taken in Bangladesh to set up cold chain in extensive manner. Therefore, there is a gap that needs to be filled.

3. Methodology

Based on literature review approach, this study attempts to find possible solution to lessen the post harvesting loses of fruits and vegetables in Bangladesh. It has been identified that solar based mini cold storage facilities can solve the problem significantly. The model used by EcoFrost seems appropriate to handle unique natured vegetables and fruits which require different level of temperature to preserve the freshness as well as the nutrients (Hassan et al., 2010; SmartWorld, 2018). Financing is an issue, keeping in mind that solar based mini cold storage facility is expensive, approximately 2 Million to 1.5 million Taka per storage, therefore, this study will offer a unique funding method including green financing and Islamic social financing as mechanism based on authors' analytical abilities and literature reviewed. Considering the country's legal and socio-economic background, the appropriateness of the offered solution is justified.

4. Finding and Discussion

The solar mini cold storage solution, invented by Ecozen, seems appropriate to resolve PHL condition in Bangladesh as well. However, the financing mechanism will be different. Although the projects are subsidy driven, the product cost varies depending on different customer requirements, markets and regions. Solar power helps users to save major running costs on electricity or fuel. In most cases, the company followed lease-based business model and the model received positive responses from buyers. The system has especially helped horticulture farmers, who have specific season-based production in the year, by allowing leasing the system whenever required.

The system comes with a five year maintenance contract. The return on investment (ROI) solely depends on the mode of usage and the commodity stored inside the system. The crops which are highly perishable, highly valued, ensure good returns. The payback period is two to three years of use; however, regular crop production may take slightly longer payback time. The web and mobile applications bring the sellers (farmers and perishable crop growers or vendors) and buyers (organized retailers, fresh e-commerce players, wholesalers or traders) in one platform to trade. Therefore, it enables both parties to transport the commodities in a refrigerated truck from source to destination that allows maintaining the quality of produce.

The advantages of the solar micro cold storage are enormous. It uses renewable energy that is solar power the storage capacity is five metric tons, hybrid in nature, therefore, can use both grid electricity and solar power. During cloudy weather, the system automatically switches to the available alternative power supply, notifying the operator. The temperature varies from 2-10 to 10-12 degrees Celsius, relative humidity is 80-95 percent. It also has pre-cooling capacity; it requires less battery and portable. It is controlled by report and prognosis which not only helps run the system but also charges the thermal plates installed inside, that can provide backup up to 30 hours. These thermal batteries have at least twice the life compared to conventional solar batteries and lower replacement costs that reducing running costs significantly.

Figure 2: Solar Mini Cold Storage



(Sources: SmartWorld, 2018)

4.1 Mechanism of Financing

The solar mini cold storage is expensive (per cold storage cost about 2 Million to 1.5 Million) and beyond the capacity of individual farmer. However, farmers can collectively afford it and own it, for this one party is required to combine them, train them and help them to manage the whole process including getting financing. The party can be a green company or cooperative society. One cold storage can be used by many to preserve different variety of fruits and vegetables one by one throughout various seasons. On other way, farmers can use the cold storage upon needed, rental basis and green companies can provide the services to farmers as well as all other parties in the supply chain. In this case green company will own the cold storage. This study offers three ways of managing financing to be affordable in Bangladesh. Table 1 represents financing mechanism, parties involved, sources and process of financing.

Table 1: Solar Mini Cold Storage Financing Mechanism

Owner of Cold Storage	Financier	Process
Farmers	Green financing scheme of Banks and non-bank financial institutions. Agricultural bank (state-owned specialized bank)	Step1-There are 60 schedule banks, 34 financial institutions (FIs), 3 state-owned specialized banks in Bangladesh. Currently, all are practicing green financing. Step2-Green companies on behalf of farmers or farmers themselves collectively can approach Agricultural bank or any other banks or FIs for soft loan with grant facilities to buy the solar mini cold storage. Step3-Green companies will provide servicing as well as help banks to get repayment of loan installments on time. Step4- Green companies as seller of product will manage the product and the farmers as owner will use the product throughout the year according to their need and harvesting type.
Green Companies	Green Financing scheme of banks and nonbank financial institutions	Step1- Green companies can approach for financing facilities to any bank or Infrastructure and Development Company Limited (IDCOL) or Sustainable and Renewable Energy Development Authority (SREDA) to buy the product. Step2- Green Company then will provide the storage facilities to rural people and farmers according to their needs on rental basis. Step3- Farmers will be hassle free as they need not to think about the servicing or maintenance. Step4- Green companies will be liable to pay bank installments.
Farmers or Green companies	Islamic Social Financing - Crowdfunding Platform	To handle the coronavirus pandemic situation and to help the poor as well as small business to overcome the crisis, the Information and Communication Technology Division State Minister has inaugurated first digital crowd-funding platform, Ekdesb on May 2020. The platform is accumulating zakat or financial aid (Dhaka Tribune, 2020).

Therefore, it is quite possible to create another platform to finance solar mini cold storage. The Food and Agricultural ministry in collaboration with Information and Communication Ministry can take initiative to help green companies or farmers directly through crowd funding platform. Obviously, that would be investment platform. Banks from green financing scheme, IDCOL, SREDA all other parties could join in this platform as investors. Consequently, the large amount of investment could help farmers or green companies to buy remarkable number of storage facilities to lessen the PHL of highly valuable fruits and vegetables.

4.2 Achieving SDGs

If the proposed financing mechanism is possible to be implemented successfully, a revolutionary will occur in the Bangladesh agricultural sector. The strategies that will reduce PHL, will simultaneously achieve few SDGs directly such as SDG no. one- no poverty, SDG no. two- zero hunger, SDG no. three- good health and wellbeing, SDG no. seven- affordable and clean energy, SDG no. eight- decent work and economic growth and SDG no. seventeen- partnership for the goals. Few SDGs will be achieved indirectly too those are SDG no. nine- industry, innovation and infrastructure, SDG no eleven- sustainable cities and communities and SDG no. twelve responsible consumption and production.

5. Conclusion and Recommendation

Post harvesting loses of fruits and vegetables is an important hindrance to grow country's economy, however, solving the issues can resolve many problems such as hunger, malnutrition, overweight, health hazard, over pricing of commodities and will ensue farmer's gain, their good health and wellbeing, increases employments etc. Recently, the growth rate of the agriculture sector and its contribution to the country's economy have dropped (Murtuza, 2019). Negligence to the sector would affect employment of the country as well as government's development goals including achieving 8.2 percent gross domestic production (GDP) growth and sustainable development goals (SDGs). The unprecedented event of pandemic is going to deteriorate the scenario of PHL and currently farmers are feeling the extreme need of cold storage facilities (Parvez, 2020). Solar mini cold storage can solve the PHL issue and the mini cold storage with average 5-10 tons capacity will be the best alternative sources of dependable, sustainable, cost effective and environment friendly solution to postharvest storage problem. Considering the environmental factors and agricultural scenario of Bangladesh, solar mini cold storage market opportunity is huge. This study tried to offer three financing solutions to afford the mini cold storage. However, authors are strongly recommending the third financing solution that is the Islamic social financing crowdfunding platform where as an individual investor, Islamic banks with green financing, conventional banks and non-bank financial institutions with green financing could take part, therefore, the accumulated fund will be huge which would support the purchase of bulk amount of solar mini cold storages. Consequently, the massive installation of mini cold storage could drastically reduce the PHL of fruits and vegetables and could help the country to attain the sustainable development agenda.

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