DEMAND FOR SOLARISATION OF ELECTRICITY IN THE AGRICULTURAL SECTOR

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CHAPTER I: ABSTRACT

According to the World Bank data recovered in 2022 India is currently country of 1,407,563,84 people, where around 60% of Indians are involved in the Agricultural industry directly or indirectly. Where 19% of India's GDP is achieved from the agricultural sector and around 19.1% of the total exports that has happened in the year 2021-2022 has been contributed by the agricultural sector. In a total area of 3287263 square kilometres, there exist 6 lakh 40 thousand villages in India where key survival of the villagers is through agricultural industry and livestock industry. In the recent years India has been trying to achieve sustainable goals in the agricultural and farming industry as well. Asper the Annual Report published by the Information bureau of India titled as '*Achieving Atmanirbharta in Agriculture*' dated 11th November, 2022 it states that India's slogan for years has been screaming loud as *Jai Jawan Jai Kisaan*[1]. Furthermore, as rightly stated by the Report that till date India's sole economy is generated from the agricultural sector, the farming sector. But the more important point to look ahead of our times is, what exactly is India doing to help and support the farmers? Or whether the amount of support and help the government is providing Indian Farmers with is enough for the development and wellbeing of their families?

Although it would be wrong on my part to completely deny the fact that recently there has been effective schemes, policies and frameworks to help farmers feel that the country is for them. The word *kisaan* or *farmers* have a very sensitive connotation in our hearts, not only because we often find ourselves sympathising with their conditions of livelihood but also because we owe to them everything, in fact they are reason why every day we are able to eat a plate full of meal. Therefore, it all comes from a sense of gratefulness. But the policy makers or the legislature however cannot afford to just showcase a sense of gratefulness and empathy, they should implement not only effective policies but also laws to support the farmers of our country. From 2018 onwards the government of India has tried enforcing such

[1] Read referral: https://pib.gov.in/FeaturesDeatils.aspx?NoteId=151185&ModuleId%20=%202

policies to enhance the income and most importantly increase the scope of income for farmers. For examples, some of the names of policies and schemes are, *the PM Kisaan Scheme*, *Pradhan Mantri Fasal Bima Yojana* for crop insurance policies, and *Kisaan Credit Card* facilities for small and micro loans for farmers, the *KUSUM scheme* etc.

India now presently is moving towards an increase in use of renewable energies, through the mediums of transport, cooking gases and biodegradable waste composting. India aims by 2030 to increase around 50% of sources for renewable energy. Therefore, as agriculture plays a very vital role in not only contributing to the total GDP of India but also various renewable methods could be implemented for the benefits of farmers in the agricultural sector. For example, use of solarised electricity for irrigation purposes.

In 2015, the Supreme Court of India in Hindustan Zinc India LTD v. Rajasthan Electricity Commission commented that, "*industries need to get on board with renewable energy or risk getting fixed.*" Through the same petition the Hon' Supreme Court also stated that, "*the provisions requiring purchase minimum percentage of energy from renewable sources of energy have been framed with an object of fulfilling the constitutional mandate with a view to protect the environment and prevent pollution in the area utilizing renewable energy sources as much as possible in larger public interest.*" [2]To understand and interpret we must first look into the Constitution of India and its respective provisions with regard to environment and agriculture. Firstly, Article 51(A)(g)[3] of our Constitution exhibits a duty on every citizen to protect and improve the environment and have compassion for all living beings. Secondly, in the constitution 'Agriculture' has been placed under the State List and several ancillary matters related to agriculture under both the Union List and the Concurrent list. Therefore, to draw a nexus between the two most important aspects of our Constitution it could be interpreted as protecting the environment would also include controlling the increased level of pollution caused due to hazardous methods of farming, which includes using motor generators for irrigation purposes an alternative for which is switching to sustainable forms of farming for instance solarised electricity.

Therefore, this Article is an attempt to analyse and examine *the demand for solarised electricity in agricultural sector.* This article is a way through the ambitions of India in the field of renewable energy, transition 2030, the involvement of the World bank is funding such programmes or initiatives, a detailed study on the KUSUM scheme and its outcome, in the agricultural industry. Most important aspect of this article would be bringing out the need for sustainable farming methods.

[2] *Supra: (2016) 2 WLC (UC) 409.*
[3] Read the Constitution Of India, Supra Article 51(A)(g).

CHAPTER II: INDIA'S GOAL FOR 2030 - A GREEN TRANSITION

Numerous articles have been published all across India to interpret and understand what India aims by 2030. While the Prime minister of our country addressing COP26 summit on climate change in Glasgow, he kept his speech titled *Panchamrit* where he promised that by 2070 India would achieve net – zero carbon emissions and by 2030 India would switch to 50% of its energy consumption from renewable energy sources. Additionally, by 2030 India would reduce its carbon emission to 70%. Where countries like China and USA deemed to achieve such similar targets by 2070 and 2050 respectively. [4]

In the review of India 2020 organised by the IEA (International Energy Agency), it variedly opined that India is pursuing a very ambitious deployment of renewable energy, notably solar and has boosted energy efficiency through innovative programmes such as replacing incandescent light bulbs with LED bulbs (UJALA scheme). The review further also stated that India has being an active player in the fight against climate change. The county's Nationally determined Contribution under the Paris Agreement sets out targets to reduce emissions intensity by shifting to the use of renewable sources of energy like solar, wind, and water.

The word green transition used is quite inclusive of the thoughts for visualising a better India and an environment friendly India, we have been struggling enough for more than 50 years to chieve sustainable goals through implementing and ratifying several international treaties, agreements and contracts. But here lies the more important aspect that is awareness in the minds of people because until we the people of India don't want a green a transition, unless and until we don't visualise a safer and healthier environment such a transition solely through the efforts of the government is impossible.

The idea of sustainability and sustainable development comes from the perspective of being concerned about the existence of the future generation and their wellbeing. Such a transition would not only help India mark a new position in the international forum but also take us further near to a sustainable way of living. Switching to solar electricity could be considered as one such major progress in acknowledging sustainable development. Secondly to take into consideration the increased levels of consumptions of fossil fuels. Fossil fuels are regarded as

[4] Read Referral https://www.ndtv.com/india-news/cop26-india-will-by-2030-5-promises-pm-modi-made-at-climate-summit-2596263

limited resources whereby another pertinent reason for such a transition is to safeguard and protect the fossil fuels from being getting exhausted completely.

The goal and the vision that India dreams of by the year 2030, could be considered as a key element to change and transfer to renewable source of energy consumption and farming sector is one such booming sector where such transition to use of renewable energy would help India achieve its goals. Sustainable farming or sustainable practices in agriculture is the current need of the hour and post such climate summit, Indian government is on its way to pursue such objectives in implementing such green transition.

According to NITI Ayog, conference dated 10th January, 2022 commented that, India's announcement that aims to reach net zero emissions by 2070 and to meet 50% of its renewable energy sources by 2030 is a hugely significant moment for the global fight against climate change.

"*Furthermore, as a part of international climate commitments, India has rightly pointed out that it would source roughly half its energy needs from non-fossil fuel sources by 2030.*[5]" Lastly the COP26 summit also pointed out on few important essential elements for 2030 what India aims and there are as follows; a) taking into consideration the decarbonization journey of India, b) reducing import dependence through – *make in India*, c) creating markets for such similar purposes, d) mobilizing investment. Thus, by solarising electricity demand in farming and in the agro industry would not only help India reach its target in using renewable energy sources but also mobilise great sources of investment and income for farmers of India which we will further deal with in this article.

With modern technologies and innovations in the field of agriculture, not only the farmers would be benefitted but also for India it would result in game changing initiatives. Therefore, as to conclude the demand for solarisation of electricity in the agricultural sector is not important but urgent and necessary for the farmers, for India, for us.

[5] Energy-Water-Agriculture Nexus: Grow Solar, Save Water, Double the Farm Income, dated New Delhi December 18, 2019.

CHAPTER III: THE WORLD BANK'S WORKSHOP ON ENERGY – WATER – AGRICULTURE NEXUS: IN ASSOCIATION WITH NITI AYOG

The role of World Bank in funding and financing various environment protection and conservation programmes all over the world is certainly not a new addition to its ventures. The World Bank has encouraged and supported many such environment and climate related programmes in India. The following are such examples of projects executed in the South Asian and specifically in the Indian subcontinent;

i. Maharashtra Project on Climate Resilient Agriculture (2018)

ii. Innovations in Solar Power and Hybrid Technologies (2019)

iii. AP Integrated Irrigation & Agriculture Transformation Project of Andhra Pradesh (2019)

iv. Haryana Power System Improvement Project (2010)

The Workshop named **Energy- Water- Agriculture**[6] dated 18th December, 2019 was a workshop organised by the World Bank and in association with NITI Ayog laid down certain important principles of sustainable farming. It focussed on key aspects such as opening options of solar energy for agricultural and irrigation purposes to farmers. The workshop dealt with various issues like depleting levels of ground water in agriculture, how despite sustainable methods opted by farmers their income remains low, it enumerated on points which states how groundwater levels have been decreasing in India due to no limitation laid extracting ground water from its sources, as electricity is not limited. Therefore, the workshop aimed at implementing and planning to limit the amount of groundwater out sourced by the farmers, by enforcing limits in energy sourcing that is by use of *solar power.* The tag line that was used by the workshop was ***Grow solar, save water, and double the Farm Income***. We shall discuss and analyse each such point as mentioned above.

To begin with, the involvement of World Bank in funding and supporting environment programmes in the 3rd World countries was brainstormed after the Brutland Commission

[6] Read Referral: Energy-Water-Agriculture Nexus: Grow Solar, Save Water, Double the Farm Income New Delhi December 18, 2019.

Report [7] was published as a result of which the Stockholm Declarations of 1972 [8]came into effect, to summarise such declaration by the United Nations it further enlisted few aims and objectives behind formulating such environment programmes and they were as follows;

a) Basic declaration forming a set of common principles to aid the people in protecting and conserving the environment.

b) A detailed resolution for financial and institutional arrangement for environment protection programmes.

c) Third and most important for the purposes of this chapter, global environmental facility, and the role of World Bank in financing environment programmes.

The above-mentioned points feature the three most crucial aspects of the Stockholm Declarations of 1972. Among all the various other functions of the World Bank, financing and supporting environment programmes is one of them. The idea to finance and support such programmes was for the beneficial purposes of the environment and it indirectly fulfilled the other two objectives of the Declaration of 1972 which was to formulate principles to aid people in protecting and conserving the environment. The present Workshop on water- energy and agriculture is one of the many projects which the World Bank financed with regard to the KUSUM scheme the workshop went on pointing out the reasons as to the present crisis faced by the farmers in terms of irrigation methods and improving sustainable farming methods for the betterment of farmers and increasing their ways of income.

The Workshop was opened by the CEO NITI Aayog, Mr. Amitabh Kant, and the World Bank Country Director, Dr. Junaid Ahmad. Dr. Ramesh Chand, Member (Agriculture) NITI Aayog gave a key note address and Dr. N. S. Bains, Director (Research), Punjab Agriculture University gave the concluding remarks and closing address. The workshop included seven panel discussions focused on the experience of different states on energy-water-agriculture nexus, critical evaluation & sustainability of the KUSUM scheme, institutional arrangement and financing of the farmers and state's share of capital cost buy-down in the **KUSUM scheme.** It also extensively discussed on the possibilities of increasing farm income through grid

[7] Read Referral: Report of the World Commission on Environment and Development: Our Common Future, dated October,1987.
[8] Read referral: The Stockholm Declaration on the Human Environment, dated 5th June,1972.

connected solar pumps and their enforcement for extracting ground water and by selling such electricity to various discom companies in a way to increase farm increase.

The following points are to elucidate the important aspects of the workshop conducted by the World Bank in association with NITI AYOG: -

i) That, to understand India's energy deficit demand in which India has been trapped for more than 50 years in the agricultural sector and to analyse the nexus between *Water – Energy – Agriculture.*

ii) That, to understand India's socio – economic – political complexities, major impediment to finding financially and economically viable and politically acceptable solutions.

iii) That, while all the protest and rebel happening regarding the Farm Laws enforced by the Indian parliament, many states have come forward to discuss their problems in electricity deficit in the agricultural, to implement solutions for the same universally.

iv) That, the workshop discussed extensively on the possibility of looking beyond energy or water as a source for grid connected solar energy to increase farm income.

v) That, the Workshop concluded that grid-connected solar irrigation for agriculture and rural electricity supply holds immense potential to achieve the trifecta of saving water, doubling farmer income, and saving electricity.

vi) That, while some speakers argued on the notion of whether implementing off-grid solar pumps would help in extracting ground water.

vii) That, the workshop went ahead elaborating on points such as benefits and disadvantages of grid connected and off grid solar pumps used for the purposes of irrigation.

viii) That, It also helped formulate a pricing policy for such surplus electricity generated by grid-connected solar could encourage water and energy conservation.

ix) That, the workshop intended in finding viable solutions to cease illegal and unlimited extraction of ground water, especially during the night time. Therefor the use of solar irrigation pumps especially in the day time would not only decrease ground water exploitation but also would help the farmers have an increase in farm income.

x) That, a considerable point to be taken into note was also the fact that use of solar pumps would have opportunities of extracting ground water without any limitations.

xi) The workshop also discussed individually on problems faced by agricultural states of India, for instance Rajasthan's drought problem and ways to conserve ground water. In Gujarat farmer's cooperative has been formed which primarily focusses on investing in solar irrigation and selling surplus electricity to various Discom Companies.

xii) Mr. Ashwin Gambhir from Prayas presented a different scheme of feeder level grid connected solar installation which can provide reliable day time electricity to the farmers and cut down losses of the DISCOMs.

xiii) This panel discussion was focused on sustainability of grid connected solar irrigation

xiv) In conclusion the World Bank went forward initiating the model **KUSUM - A (Kisaan Urjha Suraksha evam Uthaan Mahaviyaan)**[9] was approved by 87% votes of total delegates present in the panel.

[9] https://pmkusum.mnre.gov.in/landing.html

CHAPTER IV: THE KUSUM (KISAAN URJHA SURAKSHA EVAM UTHAAN MAHAVIYAAN) SCHEME – ACHIEVING TRIFECTA SAVING WATER AND ELECTRICITY AND DOUBLING FARM INCOME

Before we dwell into the scheme, we must investigate further to understand what do we mean by *grid connected and off-grid connected solar grids* for the purposes of understanding the scheme better.

Figure 1 A solar Irrigation pump (source: Sarkariyojana.com)

Solar energy is one of most efficient ways of generating renewable source of energy. As we have discussed in this paper this paper that India aims for 50% use of renewable energy by 2030. Although the idea of consumption of solar energy dates back to centuries where solar cooker, solar heaters were used as an alternative for home appliances. Currently in order to analyse the KUSUM scheme we must understand that there are primarily two sources of solar electricity used often and has been found to be more effective and they are as follows;

1. Grid connected Solar Panel Systems

2. Off grid Solar Panel Systems

Grid Connected Solar Panel Systems

Grid connected solar panels are grids that are connected to the main utility power grid it means that the particular solar panel is connected to the main electric power supply. The surplus power that is generated through the solar grid is transferred to the main utility grid and thereby the user is compensated for the same. The grid connected solar panel is mostly used by industrial settlements and other domestic households. It is the more common type of solar power resource used by consumers as the benefit lies in it being connected to the main electric utility situated a few miles away. Thus, when the solar electricity falls short, the consumer can still enjoy the

benefits of electricity from the main power utility. Another reason for it being more consumer friendly is that an external battery backup storage is not required for storing the surplus electricity consumed it directly gets transferred to the main power utility.

The CNBCTV news18 writes in one of their articles, "*that grid connected solar panels are easy to install and cost-effective methods of using renewable energy.*"[10]

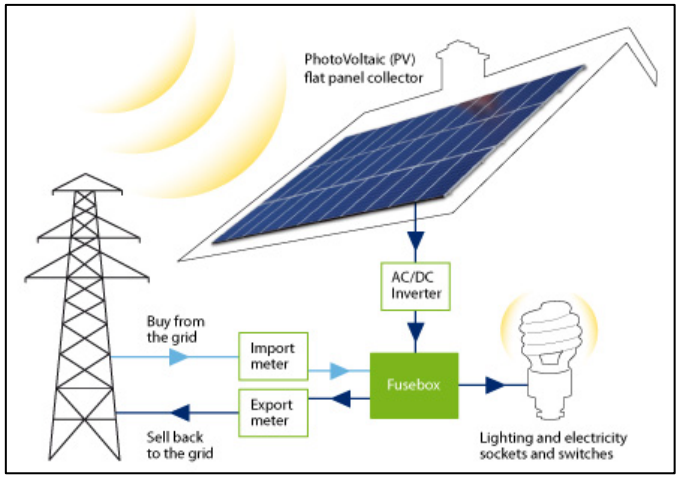

Figure 2 Grid Connected Solar panel (Source: raypower.in)

Off Grid Solar Panel Systems

Off Grid Solar panels are the one which is not connected to any utility power and it works independently without connecting itself to any grid. It usually uses an extra battery backup to store its extra or surplus electricity generated through the solar panel. Off Grid ones are not cost effective as they require consumers to invest on battery backups and other storage machineries.

The Economics Times writes that, "*The system is ideal for places that suffer frequent power outages. In rural and remote areas, off-grid solar systems can facilitate independent and sustainable electricity generation.*"[11]

The Off Grid Solar systems have been the most prevalent ones in terms installation of solar pumps for irrigation facilities, one beneficial factor lies in the fact that it is independent of any

[10] Read referral article: https://www.cnbctv18.com/environment/off-grid-or-on-grid-solar-power-systems-which-one-should-you-choose-12171952.htm
[11] Read referral Article: https://www.cnbctv18.com/environment/off-grid-or-on-grid-solar-power-systems-which-one-should-you-choose-12171952.htm

connection to any power utility making consumers more self-reliant.

The Government of India over the years has established various initiatives where many rural homes, villages, agricultural fields have been lighted up through these Off Grid Solar Systems.

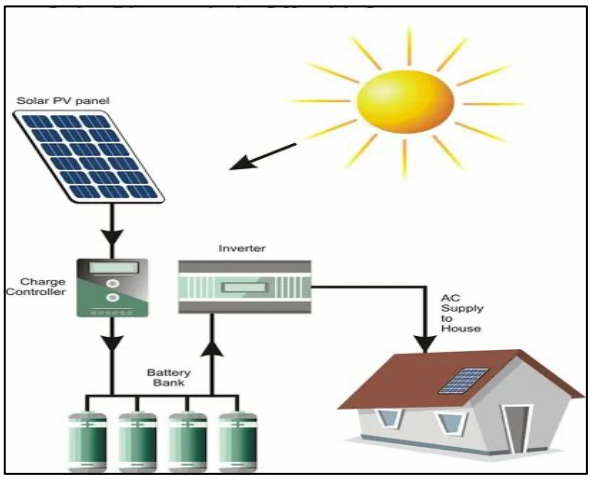

Figure 3 Off Grid Solar Systems (Source: Indiamart.com)

Moving forward, in 2019 the Ministry of New and Renewable Energy (MNRE) under the guidance of our Prime Minister launched a scheme named PM-KUSUM (Kisaan Urjha Suraksha evam Uthaan Mahabhiyaan) for the purposes of; (i) increase of farm income, (ii) for inviting investors in the form of DISCOM companies so that farmers can sell off the surplus energy generated through the solar pumps, (iii) to initiate sustainable methods of farming and irrigation.

The KUSUM scheme is a scheme to subsidise farmers to install solar irrigation pumps for cultivation. Each farmer would be benefitted with 60% subsidy to set up such tube wells and irrigation pump sets, which would all be solarised either off grid or grid connected solar panels. Secondly, the scheme also aimed at providing sustainable ways of irrigation to safeguard the conservation of ground water. The farmers would also be getting a 30% credit loan from the Government to set up such independent or grid connected solar pumps.

There were 3 components to the scheme and they are as follows;

a) Component 01 – to install a total of 10GV grid connected stilt- mounted decentralised solar plants and other renewable energy-based power plants. Each plant is seized up to 500KW to 2MV.

b) Component 02 – to set up stand alone solar pumps of up to7.5HP of individual capacity & worth 17.5 lakhs.

c) Component 03 – to provide financial aid to all the Solaris by rendering up to 10lakhs grid connected agricultural pumps of 7.5HP of capacity each.

The Objectives set by the KUSUM scheme are as follows;

1) That, to make high end technological advancements in the agricultural sectors and by making such technology available to the farmers.

2) That, to improve the quality of irrigation methods for farmers and increase the use of renewable sources of energy by 50%.

3) That, the installation of such solar pumps would suffice ***the electricity demand in agricultural sector*** and introduce sustainable methods of farming.

4) That, the installation of such solar pumps would comprise of energy power grid that would generate more power than the usual diesel driven power.

5) That, the solar pumps would not generate any amount of air pollution, causing no harm to the environment.

In my opinion such a scheme would bring much prosperity and growth to not only the economy of our country but also would witness a safer and healthier environment.

CHAPTER V: CURRENT ENVIRONEMENTAL PROBLEMS FACED BY FARMERS IN AGRICULTURE AND IRRIGATION

To think that the agricultural sector does not contribute to any form of pollution would be a wrong notion as increasing ***Agricultural Pollution*** is a matter of concern for not only the policy makers but most importantly the farmers.

Agricultural pollution would denote to the various forms of pollution caused by traditional farming methods which includes diesel run irrigation pumps for extracting ground water or excessive use of chemical fertilisers causing soil pollution or the methods of open agricultural burning which might look fast and economical before ploughing fields for cultivation but in reality, it is one of the most unsustainable methods of agriculture causing air pollution. Recent reports suggest that the agricultural sector is responsible for causing 17% of total pollution in India. Although India aims for a more sustainable environment, but agricultural sector needs our attention. It is the epicentre of many modes of business, import and export and all such other activities which ignites or improves the Indian economy. Therefor agricultural pollution needs to treated and controlled for the beneficial purpose of better yield of crops, and for conserving the environment from getting hampered.

But to blame the farmers for such conditions of agricultural pollution would not be a wise opinion as the farmers are mere le men whose survival depends on crops and their faster yield. Looking at the socio- economic conditions prevailing among grassroot level farmers, it would be unfair to blame them for causing such environmental hazards. What shall be the need of the hour is effective alternatives which are beneficial for the farmers income and growth and it would also stand out as a source for depleting the agricultural pollution in India.

In an article published by Mongabay, by quoting Dr. Sunilam, "*There is no denying the connection … Whether it is rain, hail storms or floods, drought, etc., there is always much uncertainty due to environmental issues that keep the farmers on their toes*,"[12]

Therefor to examine problems faced by today's farmers a vivid study of the climate change is required. Due to the rapid changes in the climate off season rains, droughts, and other such drastic climatic changes have been witnessed by the farmers. Secondly, to increase yield and

[12] Read referral article: Environmental issues in agriculture a silent reason behind farmers' protests by Mayank Aggarwal, S. Gopikrishna Warrier, dated 8 December 2020.

productivity farmers have been using excessive chemical fertilisers which in turn is becoming very harmful for the conditions of the soil for the upcoming harvests. Farmers face major agricultural drawbacks because of such unprecedented changes in the climate. Global warming is another aspect of climate change that should be considered when talking about environmental problems faced by Indian farmers, because due to such ill effects of global warming today farmers face off season rain which damages their yields. Post Green Revolution the farmers started using high yield seeds but presently these seeds have in turn have exploited the soil condition of our agricultural soil. Therefore, farmers now find it difficult to use sustainable farming methods. Additionally with the growing population of our country faster yield is the only way to produce surplus crops over the years, mainly the *ravi* and *kharif* crops. Although India's main produce remains rice, wheat, bajra, and other grains as well.

Ground water depletion and its conservation has also become another concern for farmers and agriculture researchers as well modern technologies and irrigation methods is the need of the hour as to protect the ground water levels in India and to help farmers with more innovations in irrigation methods. Research suggests that due to lower levels of ground water, the roots of the trees have to dig through deeper layer soils and for more sources of energy and power is required to extract such ground water for irrigation.

Agriculture is an important aspect of our country; therefor best efforts should be implemented by us to protect and conserve agriculture and farmers.

CONCLUSION

In conclusion, I would like to examine and analyse few major findings of this research paper. The conclusion shall be divided into few important sub- points which shall demonstrate and explain the point of opinion arrived at;

Need for increased methods of sustainable farming

It is pertinent to mention as a conclusion that there lies a high demand for introducing more sustainable methods of farming. For instance, the use of organic seeds, replacement of fertilisers with bio-enzymes generated from fermented bio-degradable waste, enzymes made from cattle waste. The bio enzymes which are still at its infant stage should be promoted more as it would not only help yield better but also protect the nitrogen levels of the soil, preventing

it from causing soil pollution. Sustainable farming denotes to farming techniques which involves keeping the soil, climate, water and other natural resources safe for the future generations to benefit from it. Exploiting natural resources would leave a darker and a negative impact on the future generations.

Another important point lies in use of solarised source of energy through the KUSUM scheme. In my opinion the scheme would benefit in extracting limited ground water and would increase their income by way of selling the surplus energy to various DISCOM companies. Such demand for solarised energy in agricultural sector is high because to increase sustainable methods of irrigation as well, the use of diesel run pumps needs to stop. Solar energy stand-alone pumps or grid connected solar pumps are safer and eco-friendly options for irrigation.

The hazardous activities like crop burning and usage of chemical pesticides should be banned completely and should be recognised as illegal methods of farming.

Is policy making enough or do we need effective laws?

The numerous policies that have been implemented are commendable efforts by our government. The involvement of such international organisations such as the World Bank could also be considered as a major leap in formulating such policies. But we need laws we need to enforce effective laws on sustainable farming methods. As mentioned earlier certain activities and practices that are traditional in nature and are harmful at the same time should be banned and made illegal. It is an agreed point of opinion that policies are effective but laws are binding laws are a compulsory obligation that is to be performed or not to be performed that binds every individual. Therefor laws should be more effective for introduction of such modern methods of agriculture. There are farm laws which exists such as ***the Sugar Cane Act,1934, the Live Stock Importation Act, 2001, the Agriculturists Loans Act,1884.*** But if we look at these enactments, they generate a sense of traditional laws which need evolution. Modern farm laws would include traditional practices but not the ones which have been causing numerous climate and environmental problems to farmers.

The effectiveness of KUSUM scheme in fulfilling demand for solarisation of electricity in agricultural sector.

According to me the KUSUM scheme is a brilliant project aiming towards a longer goal of

2030 in India. The scheme has not only turned out to be effective but the proper implementation would make farmers' lives easier and prosperous. The scheme has been recently modified where an investment of 48,000 crores have been made by the Government and presently it includes solarised feeders as well in addition to the solar pumps for irrigation. The feeders would plough and irrigate the field by using solar energy reducing the use of diesel run pumps and now feeders as well.

Thereby the KUSUM scheme is an effective scheme to start a sustainable journey in the farming sector. It promises to fulfil the electricity demand in agricultural sector by use of solar energy. Thus, promoting use of renewable energy resources in India.

To conclude, although India is regarded as a third world country but the efforts of India in thriving such initiatives to protect and conserve the environments proves India's broader ways to flourish as a nation.

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