

Government Initiatives for Solar Water Pumps in Selected States

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ABSTRACT

The world we live in is becoming more and more dependent on electrical energy, which, sadly, still heavily relies on outdated techniques involving the burning of fossil fuels (Amplus Solar, 2018). Renewable energy sources are non-conventional energy sources which are the need of the hour. A target of installing 175 GW of renewable energy capacity by the year 2022 has been set in India, which includes 100 GW from solar, 60 GW from wind, 10 GW from bio-power and 5 GW from small hydro-power (India Brand Equity Forum [IBEF], 2018). India being agriculture based, sixty-two per cent of farmers with irrigation land rely on tube or bore wells to draw and distribute water on field requiring energy-intensive pumping. Solar pumps can be heralded as a solution that the rural agrarian society needs- they can be used in power deficient and remote regions, and reduce diesel consumption, both necessary steps to ensure sustainability as well as a clean environment. The present study was conducted with the aim to understand the policy framework for solar water pumps at central and selected state levels. The study was carried out in two states namely Chhattisgarh and Uttar Pradesh, where a total of thirty farms were selected as sample including small¹, medium² and large³ farms. The tool used for data collection was questionnaire along with secondary sources. It was seen that Ministry of New and Renewable Energy (MNRE) is the nodal ministry of the Government of India for all matters relating to new and renewable energy. For solar water pumps, MNRE was giving incentives under the Jawaharlal Nehru National Solar Mission. Further, each state has its own state nodal agency which implements the policies and programmes of MNRE in their respective states. It was observed that both the selected states (Chhattisgarh and Uttar Pradesh) were providing additional incentives for solar water pumps under their Saur Sujala Yojana and Solar Irrigation Pump Scheme, respectively.

Key Words : Solar water pumps, Government policies, Government initiatives, Off-grid solar energy, Chhattisgarh, Uttar Pradesh

INTRODUCTION

The world we live in is becoming more and more dependent on electrical energy, which, sadly, still heavily relies on outdated techniques involving the burning of fossil fuels (Amplus Solar, 2018). The heavy reliance on fossil fuels and inefficient and outdated coal-fired power plants is one of the main reasons for the energy sector's high

contribution to global greenhouse gas emissions. This not only elevates global temperatures but seriously impacts on air quality and human health (United Nations Development Programme [UNDP], 2019).

Renewable energy sources are non-conventional energy sources which are the need of the hour. India is surging ahead in the area of renewable energy and is among the most attractive renewable energy market in

1. Small farms: Farms having area below 2.00 hectares
2. Medium farms: Farms having area between 2.00 – 10.00 hectares
3. Large farms: Farms having area above 10.00 hectares

How to cite this Article: Singh, Anugya, Mital, Meenakshi and Jain, Meenal (2019). Government Initiatives for Solar Water Pumps in Selected States. *Internat. J. Appl. Soc. Sci.*, **6** (6) : 1498-1500.

the world. The major energy sources like coal, natural gas and petroleum products are non-renewable fossil fuels, which can only be used for a finite period. Thus, switching towards renewable energy sources becomes essential for us to sustain our economy. To meet India's growth objectives in a sustainable manner, there are options like solar, wind, hydro and biomass energies (Ministry of New and Renewable Energy [MNRE], 2018).

A target of installing 175 GW of renewable energy capacity by the year 2022 has been set, which includes 100 GW from solar, 60 GW from wind, 10 GW from bio-power and 5 GW from small hydro-power (India Brand Equity Forum [IBEF], 2018).

India being agriculture based, sixty-two per cent of farmers with irrigation land rely on tube or bore wells to draw and distribute water on field requiring energy-intensive pumping. Roughly 19 million of India's 28 million irrigation pump sets are grid-based, while the remaining run on diesel. In most cases in India, grid electricity is highly subsidized for agriculture, but this practice has also led to unsustainable patterns of consumption and widespread use of inefficient pumps across the nation. Electric pump sets consume electricity equivalent to 85 million tons of coal burned annually. In addition, limited and unreliable grid electricity supply has resulted in extensive dependence on diesel for water pumping and users of diesel pumps use 3.1% of national diesel consumption, or 4 billion litres of diesel annually. Reliance on diesel puts additional pressure on farmers and releases large amount of CO₂ emissions and pollutants in a country that can be harmful (Shakti Sustainable Energy Foundation, 2017).

Solar pumps can be heralded as a solution that the rural agrarian society needs- they can be used in power deficient and remote regions, and reduce diesel consumption, both necessary steps to ensure sustainability as well as a clean environment (Srinivasan and Pandey, 2017).

Objective:

– To study the central and state government initiatives for the promotion of solar water pumps in selected states

METHODOLOGY

Locale:

The study was conducted in two states namely Chhattisgarh and Uttar Pradesh. As per MNRE's annual report (2017), both Chhattisgarh and Uttar Pradesh were among the top performing states with a large installation base of solar water pumps. Table 1 presents the number of pumps sanctioned in the selected states along with cumulative installation of pumps as on December 2017. The sampling was done in the year 2018 and thus, data for the year 2017 was taken as reference.

Sr. No.	Selected states	Pumps sanctioned during the year 2017-18	Cumulative installation of pumps as on 31.12.2017
1.	Chhattisgarh	15,000	26,673
2.	Uttar Pradesh	20,000	10,877

Apart from the policy of MNRE, both Chhattisgarh and Uttar Pradesh had their own state policy for solar water pumps.

RESULTS AND DISCUSSION

Under Jawaharlal Nehru National Solar Mission (JNNSM), MNRE was providing Central Financial Assistance (CFA) to the state nodal agencies (SNAs) of Chhattisgarh and Uttar Pradesh for deployment of solar water pumps to meet out the electricity needs of the farmers in rural areas. SNAs were the intermediaries through which CFA of 30% was being provided to the channel partners. The solar water pump policy by central government has been presented in Table 2.

Name of the programme	Objectives	Incentives offered	Details of incentives
Jawaharlal Nehru National Solar Mission (JNNSM)	<ul style="list-style-type: none"> – To establish India as a global leader in solar energy by creating the policy conditions for its deployment across the country – Further in the context of solar water pumps, the aim was the deployment of solar water pumps to meet out the electricity needs of the farmers in rural areas 	Capital subsidy	The central financial assistance (CFA) is 30% of the benchmark cost or the actual project cost as applicable.

Table 3 : Solar water pump policies in Chhattisgarh and Uttar Pradesh

State	Solar water pump policy	Starting year	Implementing agency	Details of the solar water pump policy
Chhattisgarh	Saur Sujala Yojana	2016	– CREDA – Agriculture Department of Chhattisgarh	<ul style="list-style-type: none"> – Under this scheme, farmers were provided with surface and submersible AC/DC pumps. – Farmers having small or medium farms were provided with 2HP or 3HP solar water pumps while, farmers having large farms were provided with 5HP solar water pumps. – A total of 95% capital subsidy was given i.e., 30% from central government and 65% from state government. Beneficiary had to pay 5% of the cost for solar water pump, along with a processing fee ranging approximately between Rs. 1800 – Rs. 4800.
Uttar Pradesh	Solar Irrigation Pump Scheme	2016	– UPNEDA – Agriculture Department of Uttar Pradesh	<ul style="list-style-type: none"> – Under this scheme, farmers were provided with surface and submersible AC/DC pumps. – Farmers having small or medium farms were provided with 2HP or 3HP solar water pumps while, farmers having large farms were provided with 5HP solar water pumps. – A total of 75% capital subsidy was given i.e., 30% from central government and 45% from state government. Beneficiary had to pay 25% of the cost for solar water pump. – Under this scheme, processing fee was not required as it was covered under the 25% of the cost that was given by the beneficiary for solar water pump.

It was found that Chhattisgarh had two policies for solar water pumps namely Saur Sujala Yojana and Community Irrigation Pump Scheme. For the purpose of the study, only Saur Sujala Yojana was considered because the other scheme *i.e.*, Community Irrigation Pump Scheme focused on community irrigation and thus, was outside the scope of the study. Table 3 presents the solar water pump policies in Chhattisgarh and Uttar Pradesh.

Conclusion:

Apart, from MNRE’s central policy for solar water pumps *i.e.* Jawaharlal Nehru National Solar Mission (JNNSM), both the selected states (Chhattisgarh and Uttar Pradesh) has their own separate policy for solar water pumps. With the help of these central and state government initiatives, solar water pumps are being promoted in the selected states.

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