GOVERNMENT OF INDIA NEW AND RENEWABLE ENERGY LOK SABHA

UNSTARRED QUESTION NO:794 ANSWERED ON:01.03.2013 SECOND PHASE OF JNNSM Bapurao Shri Khatgaonkar Patil Bhaskarrao;Gaikwad Shri Eknath Mahadeo;Ganeshamurthi Shri A.;Paranjpe Shri Anand Prakash

Will the Minister of NEW AND RENEWABLE ENERGY be pleased to state:

(a) whether Government has chalked out a draft policy for the second phase of Jawaharlal Nehru National Solar Mission (JNNSM).

(b) if so. the details thereof;

(c) whether Government is going to adopt the Viability Gap Funding model for second phase of JNNSM, and if so, the details thereof;

(d) whether there is any delay in implementation of the second phase of JNNSM; and

(e) if so, the reasons therefor along with steps taken/proposed to be taken by the Government to launch the second phase of JNNSM at the earliest?

Answer

MINISTER FOR NEW AND RENEWABLE ENERGY (DR. FAROOQ ABDULLAH)

- (a) Yes, Madam.
- (b)&(c) The details are at Annexure-A.
- (d) No, Madam.
- (e) Does not arise.

Annexure-A

Annexure referred to in reply to Parts(b)&(c) of the Lok Sabha Unstarred Question No.794 for 01.03.2013.

The draft policy for Phase-II of JNNSM envisages installation of around 9 GW grid connected solar power projects in Phase-II from 2013-17. Out of 9 GW, capacity addition to the tune of 3 GW shall come under Central Schemes. The balance capacity shall come through the schemes of State Governments to meet their solar Renewable Purchase Obligation (RPO). The draft policy proposes the following options to support the grid connected power projects:

- (a) Bundling Scheme
- (b) Viability Gap Funding (VGF) Scheme
- (c) Generation Based Incentive (GBI) Scheme

However due to limited availability of central quota of unallocated conventional power, it may not be possible to continue with the bundling scheme. Hence, MNRE has proposed selection of projects based on Viability Gap Funding (VGF) wherein solar project developer who requires minimum VGF per MW would be awarded the project.

Major Targets envisaged in the Draft Policy Document of Phase-II of JNNSM

1. Grid Connected Projects In Phase-II, it is necessary to build on the achievements of phase-! to ensure continued success of National Solar Mission, Large scale solar projects are going to play a huge role in phase-II and for the same reason, it has kept as one of the thrust area under Phase-II. Phase-II is targeting to bring cumulative solar capacity to 10 GW by 2017. Central Government shall provide the required support for development of solar projects under this category. Unlike Phase-I, Phase-II is not entirely dependent on bundling scheme to bring the costs down, as the target capacity under phase-II will have to be reply upon combination on availability of unallocated quota with central generating stations, Implementation of Phase-II will have to be reply upon combination of various schemes like Generation Based Incentive (GBI), Viability Gap Funding (VGF) and Bundling schemes. Witnessing steep fall in tariff discovered under phase-II is expected to achieve new heights of success while achieving the grid parity before 2017. To make Phase-II another.success story wider participation of States is required with development of transmission and distribution network to connect areas with high solar potential. Developing cluster of Solar parks will help reduction in costs further and fair market

play will prevail and help in development of various technologies used for achieving phase-II targets.

2. Rooftop PV programme The whole country including cities, town and villages are experiencing a huge growth in their electricity demand. Distribution Utilities are finding it difficult to manage the peak demand of their particular areas resulting in severe electricity shortages. With this objective, Phase II would focus on deployment of both off-grid and grid connected rooftop PV systems in the country.

Grid connected rooftop PV system shall be connected to the grid either of 11 KV three phase line or of 220 V single phase line depending on the system installed at institution/commercial establishment or residential complex. Power generated by these systems would be utilized by Industrial and captive loads and feeding excess power to the grid as long as grid is available. The off grid roof top PV systems would be deployed at places which are not connected to the gird or not connected but getting electricity from the grid. The Phase II of JNNSM would target deployment of 1,000 MW of rooftop projects both at off-grid and grid connected levels

3. Off-Grid Schemes i Energy Access: Solar Energy is the need for the developing country like India where large section of country's population is primarily located in rural areas and lacks access to electricity. Electricity is vital for a better quality of life - along with reduction in poverty and improvement in education, health and livelihoods. Rural areas in the country mainly lack in distribution infrastructure and itself developing a reliable distribution infrastructure will have a major fixed cost which the utilities presently not in a position to support. With this backdrop, NSM Phase II would focus on standalone solar off grid generating systems which would facilitate the rural consumers to meet their routine requirements of electricity. During Phase-II, it envisaged that around 20,000 villages/hamlets/ basti/padas shall be covered through 'Energy Access' scheme by way of deployment of Off-Grid electricity generation projects.

ii.Off Grid Lighting Systems: The solar lighting systems include use of solar lanterns in rural areas which is an application of solar photovoltaic technology. Home lighting System is powered by solar energy using solar cells that convert solar energy directly to electricity. The electricity is stored in batteries and used for the purpose of lighting whenever required. Solar street lights are also renowned for outdoor application in un-electrified remote rural areas. With this backdrop, Phase II of the mission would also focus on the off grid lighting systems such as use of solar lanterns, solar home lighting systems, and solar street lighting systems. Phase II would target for deployment of around ten (10) lakh off grid lighting systems.

iii. Solar Cities: The Solar City aims at minimum 10% reduction in projected demand of conventional energy at the end of five years, through a combination of enhancing supply from renewable energy sources in the city and energy efficiency measures. Solar City aims to motivate the local Governments for adopting renewable energy technologies and energy efficiency measures. Phase II of JNNSM would focus on development of solar cities and also leads to inclusion of more number of cities.

iv. Solar Water Pumping: Solar PV water pumping systems are used for irrigation and drinking water in India. Solar pumps are constituted by an array of solar panels and are developed to operate on DC power produced by solar panels. No such fuel like diesel or electricity is required, which leads to very little or having the minimal operating costs of the systems. Under Phase I of JNNSM, solar pumps are being provided for irrigation and community drinking water through financial support in the form of capita) subsidy and interest subsidy. Under Phase II of JNNSM. target for deployment of 25000 solar pumps by the end of FY 2017 has been envisaged.

v. Jelecom Towers: As per Telecom Regulatory Authority of India (TRAI) consultation paper on Green Telecommunication published in March 2011, India currently has more than 3.10 lakh telecom towers, 60% of their power requirements are met by diesel generators which together consume about 2 billion litres of diesel fuel each year and result in 5.3 million tonnes of CO2 emission. If all these cell phone towers switch to solar energy then it could save significant amount of fossil fuels and also reduce carbon foot print of the Indian telecom industry to a significant extent. With this backdrop, Phase-II of JNNSM would focus on developing special schemes for promotion of solar telecom towers and would target around 25000 solar integrated telecom towers.

vi. Solar Water Heating Systems: In domestic category, hot water is typically required for bathing while in industrial category; it is used during pre-heating process. In commercial and institutional category, hot water is used for variety of purposes such as bathing, cooking and washing, etc. Depending on the location, terrain, climate profile, economic status, etc quantum as well as quality of hot water requirement varies significantly. Further, source of energy for heating water varies significantly from region to region.

Phase II would also have a prime thrust to promote such a useful, efficient and energy saving solar technology in every part of the country. Phase II would target at-least 15-20 cities where solar water heaters would become the main source of heating water replacing electric geysers. Keeping into consideration the good progress in Phase I, Phase II would target around 8 million sq.m. of collector area by the end of 2017.

vii. Solar Cookers and Steam Generating Systems: Dish Solar Cookers is a concentrating type parabolic dish which uses solar energy for cooking applications. These systems use manual tracking to work efficiently and thus it has to be adjusted in15 to 20 minutes during cooking time.

Indoor direct cooking systems have unique feature that it is possible to cook using solar energy within the kitchen itself. Around 7 m. sq. of large reflector standing outside the kitchen reflects the solar rays into the kitchen through an opening in its North wall while a secondary reflector further concentrates the rays on to the bottom of the pot / frying pan painted black. The temperature attained is around 400Ű C that the food could be cooked in a shorter time unlike box solar cooker.

Both the dish and solar cookers are most suitable for N- West, South & Central parts of country where good DNI is available. These cookers are mostly used by individuals, mid day meal schools, tribal areas, aganwadis, army border, posts, road side dhabas etc. for saving mainly LPG/ firewood.

Solar steam generating systems are mainly of two types, one is based on fixed receiver E-W automatically tracked concentrating

technology and the other on fully tracked receiver on dish technology would be the focused areas for promotion under Phase II. These are mainly used in community kitchens in institutions, hostels, hospitals, hotels, ashrams, para- military/defence establishments, prisons for cooking; industries, hotels, etc for solar cooling, laundry & other applications for saving LPG/Electricity/Diesel etc.

Phase II would target at-least 100 institutions for deployment of solar cookers and around 25000 installations for solar cooking applications in schools for mid day meals. An overall target of deployment of 50000 solar cookers would be set in Phase II of JNNSM.

viii. Industrial Process Heat Applications: There are many applications of CSTs in industries. CSTs basically focus the sunlight at receiver to achieve higher temperatures for various applications. Since these technologies can focus the direct radiation coming from the Sun, they need to be tracked along with the Sun. The technologies can be based on single axis (E-W) tracking as well as dual axis (E-W & N-S) tracking. Depending on their tracking arrangement, they can be put in the category of medium or high temperature applications. Over 15 million tonnes of fuel oil has been estimated to be consumed in industries for application temperatures below 250ŰC. Likewise, over 35 million tonnes of fuel oil is consumed for application temperatures above 250ŰC, which includes core industries such as chemicals, textile, plastics and other hydrocarbon-based industries. CSTs installed in industries along with existing boilers/heaters will save significant amount of fuel oil during the daytime. Phase II would target at least 400 systems. 250 sq. m. each on an average (100,000 sq. m.) of CSTs for heating applications in industries.

ix. Air Conditioning / Refrigeration: Cooling through solar is most relevant for India as its` most required when sun is available. Huge amount of fuel oil is being used for cooling through Vapour Absorption Machines in industries/ establishments where power cuts/ electricity tariff are high. Solar Thermal systems at such places can help in significant savings. Solar air- conditioning also has vast scope at places where cooling is required mostly during daytime. This includes office complexes, educational institutions, and commercial establishments like Malls etc. Phase II would target at least 200 systems, 30 TR each on an average (60,000 sq. m.) for air conditioning / refrigeration systems.