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**EVALUATION STUDY OF SOLAR LANTERN
&
SPV HOME LIGHTING SYSTEMS
IN HARYANA**

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PREFACE

An evaluation study of scheme/programme entitled Solar Lantern and Solar Photovoltaic (SPV) Home Lighting Systems was carried out in Hisar and Panchkula districts to ascertain the availability, functionality and usefulness of such lighting systems and to suggest corrective measures to be applied for improvement in the scheme/programme.

The Ministry of Non-conventional Energy Sources (MNES), Govt. of India and Indian Renewable Energy Development Agency (IREDA) is implementing country wide programme on promotion of SPV and its applications and is providing full advantage of physical and financial incentives to the State Governments. Haryana Renewable Energy Development Agency (HAREDA) in Haryana is responsible for formulating policies and programmes/projects necessary for popularising the applications for various non conventional and renewable sources of energy. The department utilised all the year-wise allocated amount during the period 2000-01 to 2003-04 in Hisar and Panchkula districts and thus achieved 100% targets under Solar Lantern and SPV Home Lighting Systems.

The study revealed that there was no lighting system with 24.2% of sampled beneficiaries. Out of available lighting systems, 13.5 % were found non functional. Inadequate monitoring regarding inspection of devices after their distribution was also noticed.

The study further revealed that knowledgeable persons/sampled beneficiaries were of the opinion that no doubt the scheme is very effective and useful especially in the hilly areas like Pinjore and Morni blocks of district Panchkula, but due to improper implementation, the actual desired results could not be retrieved. The scheme needs systematical implementation for which suitable suggestions have been given for rectification.

I am thankful to the Director, HAREDA and his staff for their cooperation in supplying the required information/data necessary for the evaluation study.

The report has been prepared by Sh. Harjeet Singh, Research Officer with the assistance of Smt. Kanchan Bala, Assistant Research Officer under the supervision of Sh. Satnam Raheja, Deputy Economic & Statistical Adviser and

over all guidance of Sh. A.K. Gupta, Additional Economic & Statistical Adviser, Haryana (Now retired).

It is hoped that the finding and suggestions made in the evaluation report will be useful to the HAREDA in the effective and smooth implementation of the scheme of Solar Lantern & SPV Home Lighting Systems. The information contained in the report may also be helpful to the planners, researchers and educationists.

(R.K.Bishnoi)

Dated : 12-11-2007.

Economic & Statistical Adviser
to Government Haryana.

Place : Chandigarh.

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CHAPTER-I

Introduction

It is well known that the problems of energy scarcity and environmental pollution, which are acute day by day pose a serious threat to our economic progress and welfare of the society. Energy insecurity is one of the major bottlenecks that hinders the process of economic development. The rural habitations in India suffer from dual problems of poor availability of energy from commercial sources and inefficiency in the use of energy from non commercial sources. The need to have a sustainable supply necessitates the exploitation of available energy sources and among these renewable resources are at the forefront. It is now an established fact that renewable energy can be an integral part of sustainable development because of its inexhaustible nature and environment friendly nature.

Haryana State Energy Development Agency (HAREDA) is promoting various Solar Photovoltaic Technology (SPV) devices for meeting the energy demand to a great extent. SPV converts the sunlight into DC electricity through solar cells. The generated electricity can either be used directly during the day or may be stored in batteries for use during night hours for various applications. The system has emerged as a viable power source for the purpose of lighting and is being increasingly used for meeting lighting energy needs.

1.1 Evaluation Study

The Economic and Statistical Organisation Haryana took up the evaluation study, "Solar Lantern and SPV Home Lighting Systems" as per decision taken by the Financial Commissioner & Principal Secretary to Government Haryana, Planning Department on 12-8-2005. The objectives of Evaluation are to ascertain the availability, functionality and usefulness of the system.

1.2 Methodology

The study is based on primary and secondary data. The secondary data was collected from the HAREDA and offices of two selected project officers viz. Hisar and Panchkula. Besides discussions were also held with the officers/officials implementing the scheme. 273 beneficiaries were covered under the sample survey.

1.3 Sampling Design and Coverage

The following sampling design was adopted for the sample study keeping in view the methodology of the study:

- i) Two districts namely; Hisar and Panchkula were selected for conducting the study.
- ii) Four blocks namely; Adampur, Hansi-I, Hisar-I and Hisar-II from Hisar district were selected.
- iii) Two blocks namely; Morni and Pinjore from Panchkula district were selected.
- iv) A total no. of 273 (10%) beneficiaries were selected at random from 6 blocks for the interview and collection of primary data required for the study.

1.4 Tools of the Study

Three schedules were designed for collecting requisite data for the study. Schedule "A" Project schedule was canvassed from Project Officer of the selected districts. Opinion of beneficiaries was canvassed through Schedule "B" Beneficiary schedule to ascertain the availability, functionality and usefulness of the system. Views of knowledgeable persons regarding various issues relating to adequacy, utility, impact etc. of the system were ascertained through Schedule "C" General schedule

1.5 Reference Period

The requisite secondary data pertaining to four years (2000-01 to 2003-04) was collected from HAREDA for the purpose of the study. The primary data for the study was collected from the sampled beneficiaries during March to September, 2007.

Chapter-II

Salient Features/Programme Implementation

Solar Photovoltaic (SPV) system has emerged as a viable power source for applications such as lighting and is being increasingly used for meeting the lighting energy needs.

The SPV technology converts sunlight into electricity without any moving parts and causing pollution. In this context, the Ministry of Non-conventional Energy Sources (MNES), Govt. of India and Indian Renewable Energy Development Agency (IREDA) is implementing country wide programme on promotion of SPV and its applications and is providing full advantage of fiscal and financial incentives to the State Governments with the objective to reduce the burden of electricity in cities/towns and to divert the energy thus saved to small towns and villages that face acute shortage of power.

To give impetus to the process of implementation, State Government has set up a new agency called Haryana Renewable Energy Development Agency (HAREDA). The agency is acting as a nodal agency to implement the various Centrally and State sponsored schemes/projects in the area of renewable energy in the State.

The Department of Renewable Energy is responsible for formulating policies and programmes/projects necessary for popularising the applications of various non conventional and renewable source of energy in Haryana.

HAREDA provide purchase order to supply the number of systems as per targets allocated to each district on the basis of the rate contract finalised by the Supplies & Disposals Department, Haryana. All suppliers are asked to install the systems as per instructions conveyed to them by the HAREDA from time to time.

2.1 Solar Lantern & SPV Home Lighting System

The details of Solar Lantern and SPV Home Lighting Systems promoted under this programme are as under :—

Solar Lantern

It is a lighting system consisting of a PV module 10 wp, 7 watt of Compact Fluorescent Lamp (CFL), 7 Ah 12 volt battery and electronics, all placed in a suitable housing and is similar to the conventional 'Lantern'. The battery being charged with the electricity, generated through the solar photovoltaic module. The Lantern is a basically portable lighting device suitable for outdoor/indoor lighting. The daily average operating time of the Lantern is 3 hours.

SPV Home Lighting Systems(Model-I)

This system is used for lighting one Compact Fluorescent Lamp(CFL) of 9 Watt. The system consists of 18 watt solar PV panel, 12 volt 20 Ah tubular lead acid battery, charge controller. The battery being charged with the electricity, generated through the solar photovoltaic module. The daily average operating time of the SPV Home Lighting System is 3-4 hours.

SPV Home Lighting Systems(Model-II)

This system is used for lighting two Compact Fluorescent Lamp(CFL) of 9 watt each. The system consists of 37 watt solar PV panel, 12 volt 40 Ah tubular lead acid battery, charge controller. The battery being charged with the electricity, generated through the solar photovoltaic module. The daily average operating time of the SPV Home Lighting System is 3-4 hours.

SPV Home Lighting Systems (Model-III)

This system is used for lighting one Compact Fluorescent Lamp (CFL) of 9 Watt and one D.C. fan 20 Watt. The system consists of 37 watt solar PV panel, 12 volt 40 Ah tubular lead acid battery, charge controller. The battery being charged with the electricity, generated through the solar photovoltaic module. The daily average operating time of the SPV Home Lighting System is 1-2 hours for one CFL and one fan.

2.2 Eligibility

As suppliers take some time to supply the devices, in the meanwhile, the beneficiaries are identified and systems are installed with in 15 days from the receipt of the systems. The eligibility criteria is as following.

- i) In case of Solar Lantern, all categories of individual beneficiaries, institutions/ organizations are eligible to have such system and after availing benefits of MNES/GOI subsidy.
- ii) In case of the SPV Home Lighting systems all categories of individual beneficiaries and non-profit institutions/organizations are eligible for State and MNES/GOI subsidy.
- iii) While distributing Solar Lanterns, preference are given to the Girls Hostels, Adult Education Center meant for women and DWARCRA centres. Preference are also extended to the families having Senior/High School going girl child.
- iv) No individual family is given more than one system.

2.3 Subsidy Pattern

The subsidy on Solar Lantern, Home Lighting systems is provided to encourage an individual and institution and to popularize the systems. MNES, GOI and State Govt. has given the benefit of subsidy to spread the system throughout the country.

As per rate contract finalised by Supplies and Disposals Department Haryana, cost of system, MNES, State Subsidy and beneficiary's share during 2000-01 to 2003-04 are given in the table 2.1 :—

Table 2.1

**MNES/State Government subsidy & beneficiary's share
during 2000-01 to 2003-04.**

	(Rs.)			
	2000-01	2001-02	2002-02	2003-04
<u>Solar Lantern</u>				
Total Cost	2835	3000	From the year 2002-03 as MNES has withdrawn the subsidy and hence has not allocated any targets	
MNES Subsidy	1500	1300		
Beneficiary's share	1335	1700		
<u>SPV Home Lighting Systems</u>				
Total Cost	10560	10975	10975	9850
MNES Subsidy	5280	5487	5487	4550
State Subsidy	2000	2000	2000	2000
Beneficiary's share	3280	3488	3488	3300

The above table revealed that in case of Solar Lantern, the percentage of subsidy to each beneficiary was 53 during 2000-01. However, it decreased by 10% during the year 2001-02 i.e. 43%.

Under SPV Home Lighting Systems, the percentage of subsidy to the beneficiary was 69 during 2000-01. It decreased by 1% during 2001-02 and remained same in the subsequent year 2002-03. However, it again decreased by 2% during 2003-04 as compared to previous year i.e. 2002-03.

The beneficiaries share are collected in advance and are deposited with HAREDA in the form of Demand Draft in favour of Director, HAREDA for release of payment to the suppliers in time.

2.4 Warranty/Guarantee Card

Each beneficiary will get a warranty/guarantee card duly signed by the firm representative indicating the date of installation of the material and its validity period. A photocopy of such warranty card distributed is kept by the respective PO/APO in their record.

2.5 Repair Centres

The concerned Project Officer/Assistant Project Officer (PO/APO) Integrated Rural Energy Plan (IREP) also provide the names and addresses of the repair centres to the beneficiaries so that they can avail the help of these centres for repair and maintenance work even after the warranty period.

2.6 Monitoring

Atleast 10% of the systems are inspected by the respective PO/APO (IREP) after installation and the report in this respect is conveyed to Director, HAREDA.

2.7 Scheduled Castes

20% of the total expenditure on schemes is for the welfare of Scheduled Castes population. Therefore, while distributing these systems, proportionate coverage of scheduled castes beneficiaries is made accordingly.

2.8 Beneficiary Record

The beneficiary record is maintained in the beneficiaries register and a copy of the same is forwarded to HAREDA after the completion of the project.

2.9 Inspection of the material

Inspection of material is carried out by inspection team to be constituted by the Director, HAREDA. Delivery of the material is to be taken by the respective ADC-cum-CPO(IREP) based on the report of the inspection team and receipt of required quantities of systems in good condition.

2.10 Complaint Records

All ADC-cum-CPO (IREP) /PO/APO/ (IREP) are maintaining complaint register. A copy of such complaint is immediately forwarded to the concerned supplier with a copy to HARDEA and the date on which the complaint is attended by the firm is also recorded in the complaint register. The complaint received without name and address of beneficiaries, make and serial no. of the system and date of complaint etc. is not entertained by the HAREDA.

2.11 Involvement of Panchayat

Effective participation of Gram Panchayat in the implementation of Solar Lantern and SPV Home Lighting Systems is taken into consideration. Gram Panchayat is involved in the identification of the beneficiaries. Beneficiaries

applications are recommended by Gram Panchayat. The Gram Panchayat is also associated in the distribution/ installation, maintenance and subsequent maintaining of the above scheme in their respective jurisdiction. A report in respect to compliance of above guidelines is forwarded to the Director, HAREDA.

After receipt of material as per the state contract, the detail of the same is sent to Hon'ble Finance Minister for verification/information of quality and quantity at his level.

2.12 Outlay & Expenditure

The following table depicts budget allocated and amount utilised in two districts namely; Hisar and Panchkula during 2000-01 to 2003-04 under Solar Lantern and SPV Home Lighting Systems.

Table 2.2

Outlay and expenditure under Solar Lantern & SPV Home Lighting Systems during 2000-01 to 2003-04.

	(Rs.)			
	Hisar		Panchkula	
<u>Solar Lantern</u>	<u>Outlay</u>	<u>Expenditure</u>	<u>Outlay</u>	<u>Expenditure</u>
2000-01	898695	898695	615195	615195
2001-02	1005000	1005000	666000	666000
<u>SPV Home Lighting Systems</u>				
2000-01	1985280	1985280	2946240	2946240
2001-02	1481625	1481625	6409400	6409400
2002-03	2963250	2963250	3160800	3160800
2003-04	2363000	2363000	4368950	4368950

The above table reveals that both the districts had utilized whole of the allocated amount in each year.

In Solar Lantern, outlay/expenditure in district Hisar was increased by 11.8% during 2001-02 whereas in district Panchkula it was increased by 8.3%.

In SPV Home Lighting Systems, outlay/expenditure in district Hisar was decreased by 25.4 % in 2001-02 whereas in 2002-03 it was increased by 100%. Further in 2003-04 the outlay/expenditure was decreased by 20.3%. In district Panchkula outlay and expenditure was increased by 117.5% in 2001-02 but it decreased by 50.7% in 2002-03. Again, it increased by 38.2% in 2003-04.

2.13 Target and Achievement

The targets and achievements under Solar Lantern and SPV Home Lighting systems during the year 2000-01 to 2003-04 is given in the following table :—

Table 2.3

Target and Achievement under Solar Lantern & SPV Home Lighting Systems during 2000-01 to 2003-04.

Solar Lantern	Hisar		Panchkula	
	Target	Achievement	Target	Achievement
2000-01	317	317	217	217
2001-02	335	335	222	222
<u>SPV Home Lighting System</u>				
2000-01	188	188	438	438
2001-02	135	135	584	584
2002-03	270	270	288	288
2003-04	295	295	647	647

The above table reveals that both the districts have fully attained their targets.

In Solar Lantern System District Hisar's target and achievement was increased by 5.7%. Whereas in Panchkula district it was increased by 2.3% in the year 2001-02. As far as SPV Home Lighting Systems is concerned, in district Hisar during the year 2001-02, the target and achievement was declined by 28.2% over the previous year i.e. 2000-01. But in 2002-03 it increased by 100% over the year 2001-02. Further target and achievement was increased by 9.3% in 2003-04. Like-wise in district Panchkula target and achievement is increased by 33.3% in 2001-02, in 2002-03 it declined by 50.7% whereas during 2003-04 it increased by 124.7%.

During the year 2004-05, devices were not provided to the beneficiaries as MNES, GOI had not conveyed any targets to provide central financial assistance for promotion of Solar Lantern and SPV Home Lighting Systems.

CHAPTER-III

Sample Survey

A sample survey was carried out in Hisar and Panchkula districts with a view to study the implementation and performance of Solar Lantern(SL) and Solar Photovoltaic Home Lighting systems(SPV HLS). Four blocks namely; Adampur, Hansi -I, Hisar- I and Hisar- II from Hisar district and two blocks namely; Morni and Pinjore from Panchkula district were selected for field survey. These blocks were selected keeping in view the maximum number of beneficiaries covered under the scheme during four years i.e. 2000-01 to 2003-04 by adopting purposive method of sampling. The opinion of Project Officer/Assistant Project Officer of these concerned districts were also ascertained. The field survey work was carried out between the months of March to September, 2007. The broad findings of the survey are as under:-

3.1 Sampled Beneficiaries

There were 2728 beneficiaries in four and two blocks of Hisar and Panchkula districts respectively during the year 2000-01 to 2003-04. These beneficiaries were covered under rural area of general programme and integrated rural energy plan. A sample of 273 was selected at random among these beneficiaries for the purpose of this study. The block-wise beneficiaries selected for examining the implementation and performance of the scheme has been shown in the table 3.1 :—

Table 3.1
Block-wise number of sampled beneficiaries (2000-01 to2003-04)

(Number)			
District	Block	Total number of beneficiaries	No. of sampled beneficiaries
Hisar	1. Adampur	362	36
	2. Hansi-I	403	40
	3. Hisar-I	112	12
	4. Hisar-II	332	33
	Total	1209	121
Panchkula	1. Morni	1157	116
	2. Pinjore	362	36
	Total	1519	152
G. Total		2728	273

The above table revealed that a sample of 10% of total beneficiaries each from Hisar and Panchkula district was selected to obtain the opinion of beneficiaries about the devices and requisite data for the study. Out of 273 sampled beneficiaries 121 was from the four blocks of Hisar district and 152 from two blocks of Panchkula district.

3.2 Availability of Systems

The surveyors visited the sites of each 273 sampled beneficiaries to know whether they received the system from the department during 2000-01 to 2003-04, the information regarding systems found available with them during the course of field survey has been worked out in the table 3.2 :—

Table 3.2
Devices found available with the beneficiaries (2000-01 to 2003-04)

District	Block	No. of sampled Beneficiaries			Devices found available			% of available devices		
		SL	HLS	Total	SL	HLS	Total	SL	HLS	Total
1	2	3	4	5	6	7	8	9	10	11
Hisar	1. Adampur	19	17	36	13	11	24	68.4	64.7	66.7
	2. Hansi-I	19	21	40	10	15	25	52.6	71.4	62.5
	3. Hisar-I	3	9	12	2	8	10	66.7	88.9	83.3
	4. Hisar-II	14	19	33	11	14	25	78.6	73.7	75.8
	Total	55	66	121	36	48	84	65.5	72.7	69.4
Panchkula	1. Morni	5	111	116	4	102	106	80.0	91.9	91.4
	2. Pinjore	19	17	36	10	7	17	52.6	41.2	47.2
	Total	24	128	152	14	109	123	58.3	85.2	80.9
G. Total		79	194	273	50	157	207	63.3	80.9	75.8

Arduous efforts were made by the survey team to contact each sampled beneficiary. However, out of 273 sampled beneficiaries selected from Hisar and Panchkula, views of only 75.8% about the lighting systems could be obtained by the surveyors. The remaining 66 (24.2%) sampled beneficiaries told that they did not get any lighting system or knowledge having taken any such lights. Some of them gifted/given the devices to another persons. Information about availability of devices for dead beneficiaries or those who have left the villages etc. were collected from the neighbours. The separate percentage of Hisar and Panchkula districts having lighting systems with the beneficiaries was 69.4 and 80.9 respectively. The percentage of Hisar district was lowest (11.5%) in comparison to Panchkula district.

The surveyors found 65.5% SL and 72.7% HLS in Hisar district whereas, in Panchkula district the percentage of SL found available with the sampled beneficiaries was 58.3, the percentage for HLS was 85.2.

3.3 Functionality of Systems

The lighting systems found functional out of available with the sampled beneficiaries are shown in the following table :—

Table 3.3
Available system found functional (2000-01 to 2003-04)

District	Block	No. of Devices available with the sampled beneficiaries			Found Functional			% of functional devices		
		SL	HLS	Total	SL	HLS	Total	SL	HLS	Total
1	2	3	4	5	6	7	8	9	10	11
Hisar	1. Adampur	13	11	24	9	11	20	69.2	100.0	83.3
	2. Hansi-I	10	15	25	8	14	22	80.0	93.3	88.0
	3. Hisar-I	2	8	10	1	6	7	50.0	75.0	70.0
	4. Hisar-II	11	14	25	11	13	24	100.0	92.9	96.0
	Total	36	48	84	29	44	73	80.6	91.7	86.9
Panchkula	1. Morni	4	102	106	4	89	93	100.0	87.3	87.7
	2. Pinjore	10	7	17	7	6	13	70.0	85.7	76.5
	Total	14	109	123	11	95	106	78.6	87.2	86.2
G.Total		50	157	207	40	139	179	80.0	88.5	86.5

The above table reveals that 86.5% lighting systems were found functional by the surveyors during their field survey in Hisar and Panchkula districts. 13.5 % lighting systems was out of order.

In Hisar district, the percentage of functional SL & HLS was 80.6 and 91.7 respectively and overall percentage was 86.9. Similarly in Panchkula district, the percentage of SL and HLS was 78.6 and 87.2 respectively whereas, its overall percentage was 86.2 slightly low (0.7%) from Hisar district.

3.4 Use of System

It was observed by the survey team that only 8.4 % sampled beneficiaries were not using their lighting systems regularly as given in the following table:

Table 3.4
Systems being used regularly by the sampled beneficiaries

District	Block	Systems Functioning	Regular use	% of regular use
Hisar	1. Adampur	20	17	85.0
	2. Hansi-I	22	17	77.3
	3. Hisar-I	7	7	100.0
	4. Hisar-II	24	24	100.0
	Total	73	65	89.0
Panchkula	1. Morni	93	89	95.7
	2. Pinjore	13	10	76.9
	Total	106	99	93.4
G.Total		179	164	91.6

From the above table it is clear that majority of the sampled beneficiaries were in habit of regular use of lighting systems. Some beneficiaries who were not using the systems told that they use the systems only in case of power cut. Majority of the sampled beneficiaries were of the opinion that use of lighting systems is very useful and in the time of need, it proves very beneficial for the user.

3.5 Installation/Inspection of System

Information regarding installation and inspection of lighting systems by the department concerned was obtained from the sampled beneficiaries. The collected information on this aspect is analyzed in the table 3.5 and 3.6 given below:

Table 3.5
Systems installed by the department (2000-01 to 2003-04)

District	Block	Devices installed			% of devices installed		
		SL	HLS	Total	SL	HLS	Total
1	2	3	4	5	6	7	8
Hisar	1. Adampur	13	9	22	100.0	81.8	91.7
	2. Hansi-I	9	5	14	90.0	33.3	56.0
	3. Hisar-I	1	4	5	50.0	50.0	50.0
	4. Hisar-II	2	5	7	18.2	35.7	28.0
	Total	25	23	48	69.4	47.9	57.1
Panchkula	1. Morni	No installation by the department					
	2. Pinjore	No installation by the department					

Though all the sampled beneficiaries who were contacted and having lighting systems informed the surveyors that they received the demonstration from the officials of the department, only about the installation of devices, the department could install only 57.1% of available 84 devices in Hisar district. The percentage of SL and HLS separately was 69.4 and 47.9 respectively. In Panchkula district, not even a single device was installed by the department

Table 3.6

Systems Inspected by the Department (2000-01 to 2003-04)

District	Block	Devices inspected			%of devices inspected		
		SL	HLS	Total	SL	HLS	Total
1	2	3	4	5	6	7	8
Hisar	1. Adampur	3	-	3	23.1	-	12.5
	2. Hansi-I	8	4	12	80.0	26.7	48.0
	3. Hisar-I	1	2	3	50.0	25.0	30.0
	4. Hisar-II	1	2	3	9.1	14.3	12.0
	Total	13	8	21	36.1	16.7	25.0
Panchkula	1. Morni	No installation by the department					
	2. Pinjore	No installation by the department					

During the course of survey, it was observed that only 25.0 % of available 84 devices were inspected after installation in Hisar district. The percentage of inspection with regard to SL was 36.1, it was on very low side in case of HLS just 16.7. Further it is a matter of great concern that the officer/official of the department neither installed nor inspected any lighting system in Panchkula district.

3.6 Receipt of Payment/Warranty/Guarantee Card

It is the responsibility of the concerned PO/APO to provide each beneficiary a warranty/guarantee card duly signed by the representative along with receipt of payment made by the beneficiary for purchasing the system. But during survey, the surveyors not found even a single beneficiary in all six selected blocks of Hisar and Panchkula districts having warranty/guarantee card.

3.7 Problems Faced by Sampled Beneficiaries

The surveyors physically inspected the devices, besides held detailed discussions with the sampled beneficiaries to know the problems being faced by them.

Though it is necessary to provide the names and addresses of the repair centres to the beneficiaries so that they can avail the help of these centres for repair and maintenance work after the warranty period but none of the beneficiaries could show such type of paper to the surveyors.

In Hisar district almost all the sampled beneficiaries expressed dissatisfaction with regard to absence of availability of spare parts and repair facility of devices whereas, in Panchkula district some of the sampled beneficiaries reported the availability of repair and spare parts facilities

Some of the beneficiaries reported their devices not working/proper functioning either due to defects in systems or defects in batteries. They also complained regarding short life of batteries.

The surveyors found most of the batteries of the devices were empty not having distilled water. Besides above, majority of the beneficiaries interviewed were found careless about maintaining the devices.

3.8 Views of Project/Assistant Project Officers

1. The items received are not sufficient. There is meager supply of devices against heavy demand of public due to shortage of power supply in rural areas.
2. The programme is on going, therefore, devices are given in the consecutive years to the remaining applicants. Hence availability of devices should be through out the year.
3. Target allocated are decreasing per year. It should be demand based. Number of unelectrified Dhanis should be covered under special compain. Devices should be supplied in all blocks in sufficient quantities.
4. Solar light be installed in community institutions in all rural areas of the districts for socio-economic development of community.
5. Each company should impart training to at least one unemployment youth and he/she should be given some assistance in opening repair/sale outlet.
6. Separate funds should be provided for fully/partly assistance to the gram panchayat for maintaining the community devices.
7. As per opinion of Project Officer Hisar, the product of Ritika and Bhel Companies should be preferred due to less complaint.
8. Transport Vehicle should be made available to carry devices and other material to the demonstration camp.

9. Due to acute shortage of sufficient staff, better result and monitoring is not possible.
10. Financial assistance for replacement of old batteries of systems are not provided due to which after lapse of time the battery goes out of order. Beneficiaries are not in a position to replace the defective one and makes system functional.
11. Companies should open their outlets at least block level.
12. Wide Media publicity about the scheme is required.

3.9 General Observations of Surveyors

1. In 24.2% cases, there was no lighting systems with sampled beneficiaries on date of survey.
2. 13.5% devices were found not in working condition.
3. In most of the cases, the beneficiaries installed the devices at their own level.
4. Repair facility for servicing of devices was not available in the blocks.
5. Original spare parts were not available in near local markets and if available were costly. Short life of battery was major complaint of the beneficiaries.
6. Beneficiaries were not maintaining the devices properly due to lack of knowledge.
7. Improper implementation of the scheme.
8. Inadequate monitoring regarding inspection of devices after distribution.
9. The awareness level among the people about the scheme was found low.

3.10 Views of Knowledgeable persons

Views of 26 knowledgeable persons from Hisar and 12 from Panchkula were ascertained regarding various issues of overall functioning of the lighting systems. The main views expressed by them are summarised as below:

1. Keeping in view the cost of the devices and to popularize the scheme subsidy provided by the department is less. Subsidy

should be increased and the benefit of subsidy should be given to more and more persons.

2. The tube of the system oftenly remains out of order.
3. Life of the battery is short and additional battery is very costly in market so knowledgeable persons are of the view that additional battery should be provided at the subsidised rate by the department.
4. Briefing about the system is not made properly to the beneficiaries. It creates problem in its utility.
5. Most of the beneficiaries have installed their systems themselves even then no official has visited to their place to see whether the system is properly installed or working.

In nutshell, the knowledgeable persons likewise sampled beneficiaries were of the opinion that no doubt the scheme is very effective and useful especially in the hilly area like Pinjore and Momi blocks of district Panchkula, but due to its improper implementation, the actual desired results could not be retrieved. The scheme needs systematical implementation.

Chapter-IV

Summary of Findings, Shortcomings and Recommendations

Haryana State Energy Development Agency(HAREDA) is promoting various Solar Photovoltaic Technology(SPV) devices for meeting the energy demand to a great extent. SPV converts the sunlight into DC electricity through solar cells. The generated electricity can either be used directly during the day or may be stored in batteries for use during night hours for various applications. The system has emerged as a viable power source for the purpose of lighting and is being increasingly used for meeting lighting energy needs.

The Ministry of Non-Conventional Energy Sources(MNES), Govt of India and Indian Renewable Energy Development Agency(IREDA) is implementing country wide programme on promotion of SPV and its applications and is providing full advantage of fiscal and financial incentives to the State Governments with the objectives to reduce the burden of electricity in cities/towns and to divert the energy thus saved to small towns and villages that face acute shortage of power.

A decision was taken by the Financial Commissioner & Principal Secretary to Government Haryana, Planning Department on 12.8.2005 that an evaluation study be carried out to ascertain the availability, functionality and usefulness of the Solar Lantern and SPV Home Lighting Systems.

The study was carried out in four blocks namely; Adampur, Hansi-I, Hisar-I and Hisar-II of Hisar district and two blocks namely; Morni and Pinjore of Panchkula district. Out of total 2728 beneficiaries(2000-01 to 2003-04) of these six blocks, a sample of 273(10%) was selected at random for the purpose of this study. The blocks were selected keeping in view the maximum number of beneficiaries covered under the scheme during four years i.e. 2000-01 to 2003-04 by adopting purposive method of sampling.

The main findings of the study are as under:-

1. The surveyors found in 24.2% cases though individual's name listed in the distribution list but were not virtually having any such type of lighting system on date of survey.
2. Out of available devices, 86.5% were found in working condition. 86.9% and 86.2% were functional in Hisar and Panchkula districts respectively.

3. 8.4% sampled beneficiaries were not using their lighting systems regularly.
4. The officials of the department installed only 57.1% systems at the beneficiaries residence in Hisar district.
5. Only 25.0% installed systems got inspected in Hisar district.
6. The position of Panchkula district was very serious as the department neither installed nor inspected any lighting system after their distribution to the beneficiaries.
7. The department never provided the list of names and addresses of the repair center to the sampled beneficiaries. Even warranty/guarantee card and receipt of payment were not available with the beneficiaries.
8. Almost all the beneficiaries of Hisar district were dissatisfied with regard to absence of availability of spare parts and repair facility of devices.
9. In Panchkula district, some of the beneficiaries did not express their views. However, some of the beneficiaries complained regarding lack of repair facility and non availability of spare parts of devices.
10. The beneficiaries were careless about maintaining the devices.
11. The beneficiaries complained regarding short life of batteries.

Shortcomings/Bottlenecks

The study has highlighted certain shortcomings/bottlenecks as per observations made by Surveyors/Project/Assistant Project Officer/ Knowledgeable persons etc. in smooth execution of the scheme which included (i) lack of effective supervision (ii) Non availability of spare parts, repairing facility (iii) short life of battery (iv) Non distribution of list of repair centres (v) Non issuance of warranty/guarantee and receipt of payment (vi) No proper care of devices by beneficiaries (vii) Low awareness level among the people about the scheme (viii) After distribution no installation/inspection of devices in majority of the cases (ix) Devices not working/proper functioning due to defects in systems or batteries.

Recommendations

On the basis of various findings, observations and detailed discussions held with officer/officials and beneficiaries, some of the main recommendations

to emerge out of this study for enhancing the effectiveness of the scheme are as follow:

1. The responsibility of concerned officers/officials should be fixed for not providing lighting system to the individuals though their's name were shown in the distribution list.
2. Monitoring of the lighting systems needs to be improved in terms of number of systems functioning satisfactory. For this, there is need to conduct regular visits so that beneficiaries take necessary steps for maintaining the devices.
3. Availability of the devices should be through out the year. Number of devices be supplied in all blocks in sufficient quantity. The target should be demand based.
4. Companies should be directed to open compulsorily their repair outlets at least block level.
5. It may be ensured that each beneficiary should receive warranty/guarantee card, payment of receipt and the name and address of repair centres. These all are necessary to avoid inconvenience in case of any maintenance problem came to the beneficiary before and after warranty period.
6. The need of the hour is to frame a new energy policy aimed at reducing consumption of power in the State by giving a special thrust to the use of solar energy based systems. To Attain the desired result, the department should promote use of these lighting systems through banners, workshops, media etc. The awareness programmes should be aimed for achieving effective development.
7. As the life of battery is not very long, solution in this regard should be found to solve the problem.
8. Products of those companies should be preferred having less complaints in quality and performance.