Centre for Research in Rural and Industrial Development (CRRID)

POLICY BRIEF-3

(August 2015)

Punjab's Energy Sector: Growth, Structure and Strategic Policy Issues

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Introduction

Energy is one of the vital inputs for raising production and running other activities across all major sectors of an economy - agriculture, industry, mining, transport, commercial, domestic, etc. A rapid economic expansion in the post-reforms era has created unprecedentedly high demand for and consumption of different forms of energy inputs. India has already become 4th largest consumer of energy (after USA, China and Russia) in the world, though not gifted with abundant energy resources (GOI, 2013). India's rising energy needs could not be fulfilled by utilizing available domestic energy resources such as the coal, oil, hydro, uranium and other renewable resources. A significant part of India's energy needs are to be met by imports. However, heavy reliance on imported energy inputs involves not only high costs, but also put greater pressure on India's scarce foreign exchange which, in the long-run, impinges its energy security adversely.

Composite Punjab: An Important Part of Indus Basin

Composite Punjab (before 1947's Punjab) formed an important part of the Indus Basin. This part endowed with natural resources like perennial river water and fertile land - had become a beneficiary of agricultural development and related economic activities. After the partition of 1947, however, water of three perennial rivers (Indus, Jhelum and Chenab) along with the most productive and agriculturally developed areas went to Pakistan. Indus Water Treaty (1960) divided available water of these rivers (aggregating 167.2 billion cubic meters yearly) by giving 80.52 percent share to Pakistan and 19.48 percent to India (FAO, 2010; Chellaney, 2014). This partition also erected artificial borders, which blocked not only the natural flow of economic transactions but also played havoc with already created institutional infrastructure. In 1947, composite Punjab suffered heavily on account of (a) unprecedented displacement of people (10 million); and (b) communal riots that killed 0.5 to 0.8 million of people (Ahmed, 2011). There was no such parallel example in the world's recorded history of population displacements.

Indian Punjab in the post-partition era had successfully rehabilitated these uprooted people, which came from the West Punjab, rather quickly by allocating productive assets such as agricultural land, residential houses, etc (Randhawa, 1954). In subsequent years, state's agrarian policy emphasized on building primary sector's capabilities for raising production base by investing heavily in the irrigation system of canals, rural road networks, rural electrification, agricultural credit facilities, regulated grain markets, agricultural extension services, rural education and health infrastructure (Gill, 2001). This public policy was favourable for creating and developing institutional networks that played a pivotal role in implementing modern agricultural practices in the state. In the subsequent decades of 1970s and 1980s, Punjab economy prospered largely due to the faster pace of agricultural development and small-sized industrialization, which, in turn, gave a big push and necessary dynamism for socio-economic transformation of the Punjabi society, as predicted by Chenery's theory (Chenery, 1960). Although the development gains were unevenly shared by Punjab's peasantry in direct proportion to their share/s in ownership/operational land holdings yet the push to agricultural development was tremendous (Bhalla and Chadha, 1983; Chadha, 1985).

Growth of modern agriculture, industrial and services sectors in Punjab along with rising income, education and people's aspiration levels for having high living standards have created greater demand for modern and clean energy sources. Rising automation, mechanization and new productive activities have also added to the ever-rising demand for electric power, petroleum products and LPG. Further, Punjab's development during the last three decades have witnessed many significant changes such as greater application of science and technology, mechanization and automation, labour-displacing production processes, energy saving machines/equipments, and their impacts on reducing production costs. As a major proportion of Punjab' energy needs are fulfilled by the fossil fuels, energy efficiency and renewable energy sources have gradually been emerged from being an advocacy subject to a powerful, cost-effective, and environment-friendly policy tools to narrow down the widening demand-supply energy gap faced by the state.

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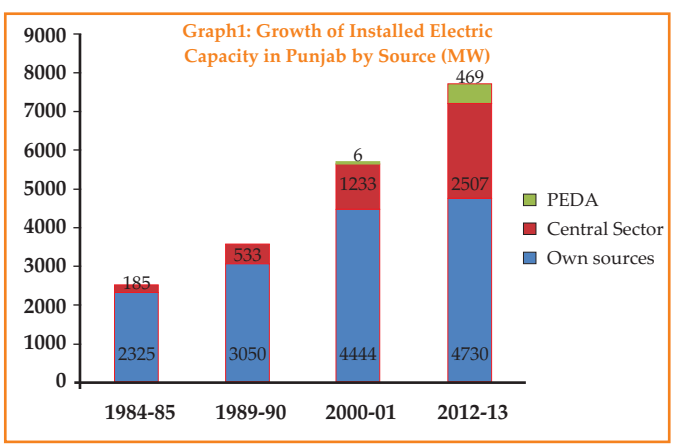
Punjab's Energy Sector: Growth and Structure

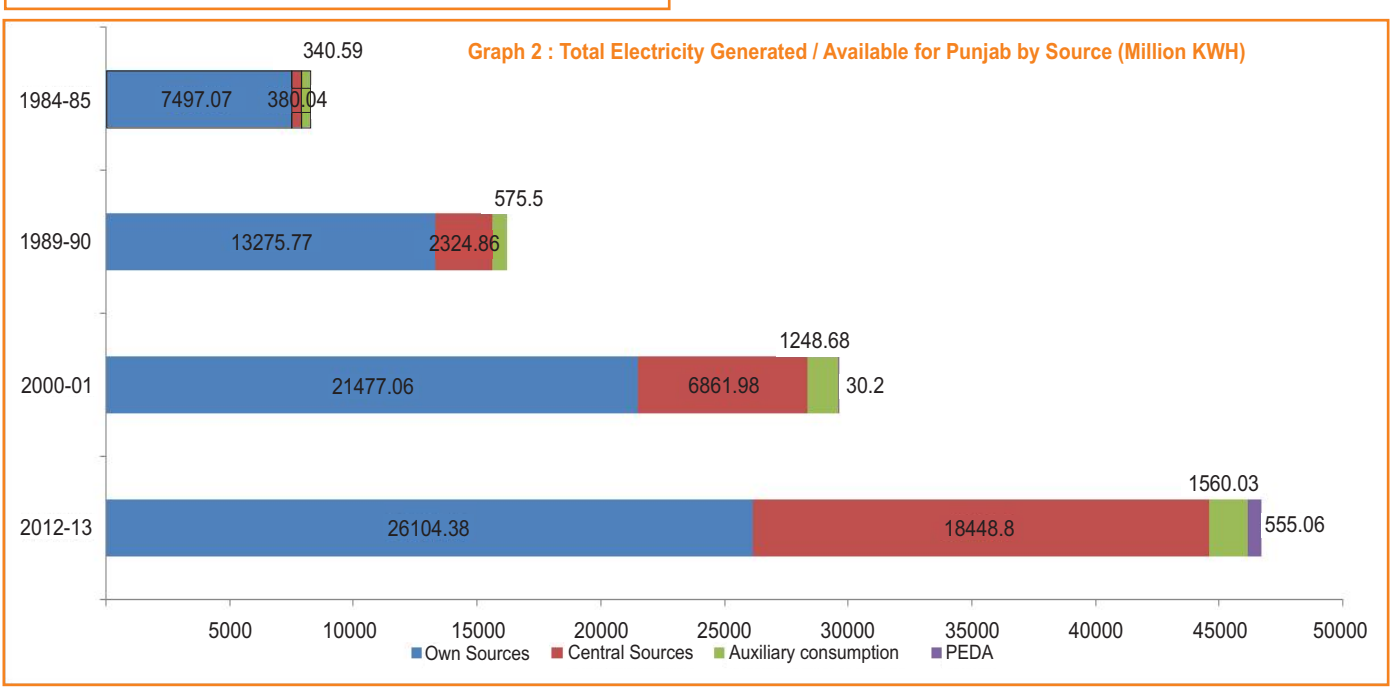
In Punjab, overall installed capacity of electricity from all sources rose from 2510 MW in 1984-85 to 3583 MW in 1989-90, 5683 MW in 2000-01, 6609 MW in 2007-08, 6918 MW in 2011-12 and 7706 MW in 2012-13 (Graph 1; Table 1). Over the time period, the share of state's own hydro power in the total installed capacity consistently decreased from 57.93 percent in 1984-85 to 27.38 percent in 2012-13 because no new hydro power project was constructed in the state since the 1990s. The share of central sector in total installed capacity increased from just 7.37 percent in 1984-85 to 32.53 percent in 2012-13. The renewable energy sources started under the aegis of PEDA cornered 6.09 percent of state's installed power capacity. Interestingly, almost all installed electric power plants in the state were in the public sector. Entry of private thermal plants in Punjab's power sector is of recent origin as nearly 3200 MW power capacity has been added in the last two years (2011-12 and 2012-13).



Further, overall electricity generated by state's own plants and through central plants increased from 7537 million kwh in 1984-85 to 15025 million kwh in 1989-90, 27121 million kwh in 2000-01, 40616 million kwh in 2007-08, 43153 million kwh in 2011-12 and 43659 million (kwh) in 2012-13 (Graph 2; Table 2). As expected, out of total electricity generated, share of electricity generated by state's hydro projects declined from 60.49 percent in 1984-85 to 25.88 percent in 2000-01, 21.94 percent in 2007-08 and 18.53 percent in 2012-13; and by state's own thermal plants rose from 39.99 percent in 1984-85 to 53.31 percent in 2000-01, but declined to 40.52 percent in 2007-08 and marginally rose to 41.26 percent in 2012.13. Further, in 2012-13, the electricity generated by PEDA plants shared just 1.27 percent of total electricity generated in the state despite having 6.09 percent share in the total installed capacity.

It is interesting to note that, during 2012-13, out of the total electricity generation available in the state, 41.26 percent share was contributed by state's own thermal plants, 18.53 percent by own hydro units (including share from BBMB), another 42.26 percent came by net imports from other states (including share of central sector), and 1.27 percent from the co-generation plants (PEDA/captive). It showed that Punjab's own power plants contributed nearly three-fifths of state's electricity needs (59.79 percent) in 2012-13, and the rest of energy needs were fulfilled by purchasing electricity from outside resources (Table 2).

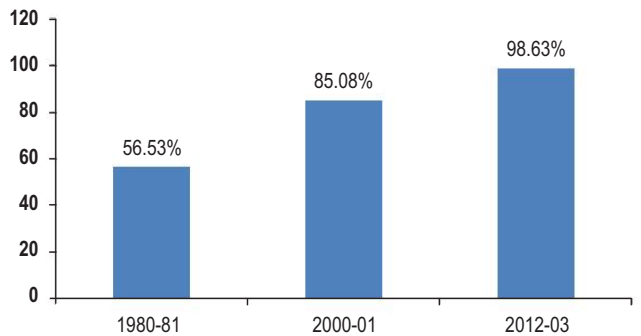
It means that Punjab consistently faces an acute shortage of electricity supply compared to electricity demand. Electricity consumers in the state faced frequent power cuts



and peak load restrictions. For instance, electricity demand registered a peak load requirement of 10,471 MW (July 7, 2012 at 20.30), whereas the total installed capacity was just 7706 MW - a huge gap of energy shortage of 26.40 percent at that time. The transmission and distribution (T&D) losses were also on higher side; 20.12 percent in 2009-10 and 16.95 percent in 2012-13. In the early 1990s, T&D losses were much higher to the tune of 22-23 percent. Moreover, growth of connected load, in terms of MW, across all different sectors of consumers (general, industrial, agricultural and others) rose from 25,934 MW in 2009-10 to 29,738 MW in 2012-13. Between 2009-10 and 2012-13 (four years), more than 3.65 lakh new electricity connections per year were released in the state, still 4.23 lakh new applications with 20.00 lakh KW load factor were pending with the PSPCL by March 31, 2014 (www.pspcl.in; assessed in March, 2015).

Further, rising income and education levels along with successful implementation of rural electrification have generated ever-growing demand and better access to electricity in the state. One can easily find a rising proportion of households having electricity connection in their dwellings. For instance, just 56.53 percent households in Punjab in 1981 had access to electricity, which rose to 80.43 percent in 1991, 85.08 percent in 2001, 95.93 percent in 2011, and 98.63 percent in 2013 (Graph 3; Table 3). Just 1.37 percent of households in the state did not have an independent electricity connection. It is different aspect that there were widespread inequalities in electricity consumption across rural vs. urban consumers, BPL vs. APL consumers, landed peasants vs. business houses, etc.

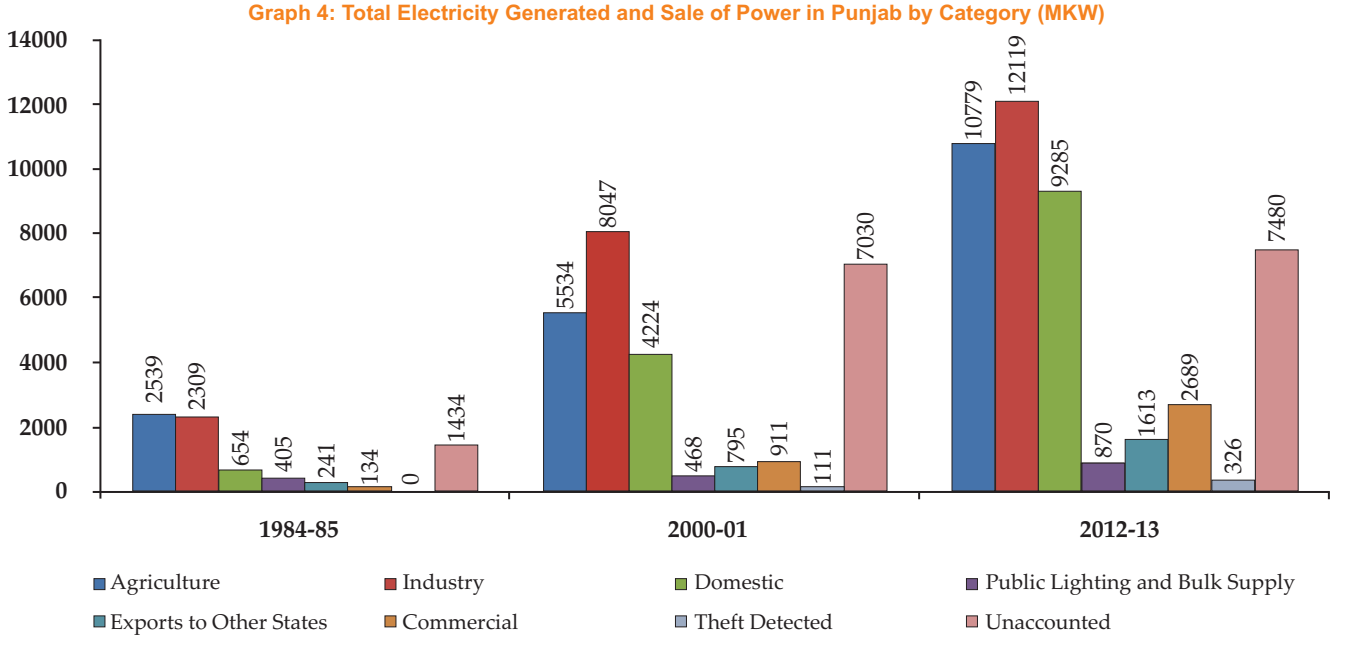
Graph 3 : Proportion of Households with Electric Connections in Punjab



Per capita consumption of electricity in the state also increased to 1291 kwh in 2012-13 from 1076 kwh in 2007-08. Further, Punjab's all public sector thermal plants are operating at their best in terms of plant load factor since inception, except the GNDTP, Bathinda' below average performance in 2011-12 and 2012-13 (www.pspcl.in; assessed in March, 2015).

Regarding number of electric consumers, the data revealed that although their numbers had increased very sharply, yet the structure of electric consumers did not change much. For instance, domestic consumers formed the biggest category as nearly 7 out of 10 electricity consumers belonged to this category from 1984-85 to 2012-13. Commercial consumers constituted 10.36 percent of total consumers in 1984-85 and 11.72 percent in 2012-13. Number of industrial consumers although rose from 2.86 lakh in 1984-85 to 9.24 lakh in 2012-13, yet their relative share declined from 2.49 percent to 1.57 percent. Similarly, number of agricultural tube

Graph 4: Total Electricity Generated and Sale of Power in Punjab by Category (MKW)



wells although increased from 4.11 lakh in 1984-85 to 11.91 lakh in 2012-13, but their relative share rose marginally from 14.90 percent in 1984-85 to 15.11 percent in 2012-13 (Table 4).

Interestingly, agricultural consumers in the state did not pay any charge/price for electricity consumption since March/April 1997, whereas they consumed 21,028 million kwh electricity (nearly one-fourth) during last two years (2011-12 and 2012-13). Further, 26.84 percent of total electricity (12,119 million kwh) was consumed by industrial consumers in 2012-13, whereas their share was 30.64 percent (2309 million kwh) in 1984-85. Domestic consumers consumed 20.56 percent of electricity (9285 million kwh) in 2012-13 and their share stepped up from 8.68 percent (654 million kwh) in 1984-85. Public lighting and bulk supply cornered 5.38 percent share (406 million kwh) in 1984-85 compared to just 1.93 percent (870 million kwh) in 2012-13. Further, amount of electricity sold to other states varied in the range of 2.93 percent to 6.39 percent during study period. Surprisingly, more than one-sixth (16.56 percent in 2012-13) to one-fourth (25.92 percent in 2000-01) shares of electricity produced went to unaccounted category (Graph 4; Table 5).

The PSPCL has also taken many positive steps to raise accessibility and equity for supplying 24 hours x 7 days quality and reliable power. **First**, 4.76 lakh new electricity connections (including 61849 new tube-well connections) were released in the state during 2007-09. **Second**, 12428 villages and 6158 Deras/Dhanies with at least 5 or more houses were linked with urban pattern supply (24 hours x7 days). **Third**, free electricity consumption of up to 200 units per month to the poor households (SC & BPL consumers) has been allowed for a connected load of upto 1 kw since October 12, 2006 instead of earlier 0.5 kw load. **Fourth**, strict measures have been taken to reduce theft of power by introducing electronic metering and shifting of electricity meters. Already, 20.29 lakh electricity meters (36.25 percent of total 55.98 lakh meters) of domestic and industrial consumers were shifted out of their premises by March 31, 2009. **Fifth**, new technologies like remote control of transformers, remote meter reading and HVDS system for the AP/Industries were introduced. **Lastly**, 62 new grid sub-stations were erected and capacity of 132 grid sub-stations were augmented, besides adding 1070 circuit km transmission lines and 149 MVAR shunt capacitors in state grid system during 2007-09. One 400 KV sub-station with 1000 MVA capacity was added in 2012-13. All these measures have helped the PSPCL in reducing T&D losses by 4 percentage points from 23.92 percent (2006-07) to 19.91 percent (2008-09) and 16.78 percent (2012-13) which resulted in substantial gains to PSPCL revenue (www.pspcl.in; assessed in March, 2015).

Surging Consumption of Petroleum Products

Along with the electricity, petroleum products consisting of petrol, high speed diesel, kerosene, light diesel oil, furnace oil and LPG are other important sources of energy in the state. An analysis of growing consumption of petroleum products reveals that high speed diesel gained importance as its share increased from 48.85 percent in 1990-91 to 63.76 percent in 2011-12. Rising consumption of diesel was largely due the rising number of diesel operated transport vehicles, agricultural implements and industrial machinery. The share of petrol marginally rose from 8.75 percent in 1990-91 to 10.06 percent in 2011-12. Moreover, proportionate share of kerosene, which mostly used as a kitchen fuel, also decreased from 13.25 percent in 1990-91 to just 4.37 percent in 2011-12, largely due to decreased quota by restricting its use to the BPL families only and not to the LPG households. The share of furnace oil also reduced drastically from 28.31 percent in 1990-91 to 14.63 percent in 2011-12. Interestingly, number of LPG connections in the state increased from 6.22 lakh in 1990-91 to 55.43 lakh in 2011-12 — nearly nine-fold rise. Consequently, the share of LPG in total energy consumption has rose from 7.69 percent in 2000-01 to 12.55 percent in 2011-12 (Table 6).

Strategic Policy Issues and Suggestions

On the basis of foregoing analysis and discussion, it has been noticed that Punjab's rising energy needs are largely dependent of fossil fuels. Further, it has been found that rising energy demands of Punjab's agricultural and industrial sectors cannot be met by the public sector plants alone; although public plants must have a commanding role. Private players must be involved in the generation and distribution of energy sources (electricity, petroleum products, LPG, etc.). The state must put more emphasis on new hydro, nuclear and renewable (solar power, biomass, etc,) energy sources. Punjab should negotiate with its neighbouring states - J&K and HP - to establish more hydro projects as joint ventures or public-private partnerships. For this, there is need to reformulate new energy policy by involving all stakeholders (producers, consumers, distributors, etc.). In the eventuality of surplus electricity, state government put pressure on the centre to ensure electricity trading with her neighbouring countries (Pakistan, Bangladesh, and Myanmar). For addressing these issues, the following policy measures are suggested:

- There is need to develop grid connectivity with Pakistan as being discussed in the recent years. Already, there is grid connectivity across India-Bangadesh, India-Bhutan, India-Nepal and Pakistan-Iran. India can easily start electricity trading with Pakistan, if missing link of grid connectivity between India and Pakistan is established. This can lead to

establishment of South-Asia grid connectivity. Punjab can certainly gain by trading electric power both in the years of shortage as well as surplus.

- Punjab's heavy reliance on fossil fuels for her energy needs is cause of concern. In future, Punjab government must augment its power sector by rely more upon renewable energy resources (nuclear, solar, biomass, micro-hydro, etc.) and clean coal technology. An ultra super critical thermal plant having 3200 MW (4x800 MW) capacity must be established in the state sector in Punjab. India's nuclear vision envisages to create 63,000 MW of installed nuclear power capacity by the year 2032 should be implemented by allocating 1000 MW plant to the state.

Box 1: Punjab Shines in Reaping Sun's Bounty

On solar power front, Punjab state received national accolade for raising solar power generation capacity from 9 MW in 2012 to 235 MW in 2014. Most solar power projects in the state are started by private players by taking farmers' land on lease for 30-year period. Most companies have signed power purchase agreements with the PSPCL to buy every unit of solar electricity at the agreed rate between Rs. 7.20 and Rs. 8.75. Further, state's solar power policy allows setting up solar power plant/s at any type of land after getting land use changed. The policy also allows establishing rooftop and canal-top solar plants with 'net metering' where people producing their own power, using renewable means, can sell surplus power to the PSPCL. The state's future target is to increase the solar power generation to 4200 MW by 2020.

- Mini-hydro electricity plants in the state must be reenergized. Those gone out of use must be restarted and their operational efficiency be increased. There is an urgent need to develop new and more energy efficient and environment-friendly/green technologies and processes in the power sector.
- Entry of private sector in Punjab's power sector is of recent origin as nearly 3200 MW thermal power capacity were installed during 2011-12 and 2012-13. Private sector must be encouraged in tapping untapped hydro power of the Himalaya origin which falls in the Indus basin. In this context, Punjab should start joint ventures with her neighboring states.
- The working of Punjab State Electricity Regulation Authority be made transparent and it must involve all the stakeholders. Free electricity given to all farmers with any differentiation of land holdings is highly regressive in nature and drain on state's financial resources. It must be rationalized at the earliest by restricting it to the marginal and small farmers only.
- The Energy Conservation Act 2001 must be implemented in the state at the earliest by adhering to energy consumption norms, energy performance standards, new buildings to follow 'energy conservation code' and by display energy consumption labels at each product and at public places. This act, in fact, provides institutional paraphernalia for strengthening delivery mechanism for energy efficiency programmes. It also provides a legal framework and a regulatory mechanism at the central and state government levels. The bureau of energy efficiency (BEE) in the state must be strengthened and its recommendations be made mandatory and legally enforceable. LED bulbs/tubes should be low priced and made compulsory across the industrial and street lighting system at the initial stages.

Box 2: Innovative Practices Adopted in Few Villages of Punjab

In recent past, three small/medium sized villages have adopted certain innovative agricultural and rural development practices which are worth emulating elsewhere. First, sewerage treatment plant/s established with NRIs help in Chakar Village (Jagraon Block of Ludhiana District); second, drip & sprinkler irrigation system started by few farmers in Ramtattwali Village (Bhunga Block of Hoshiarpur District), and third, 15 solar powered street lights installed with state help in Daulatpur Village (Payal Block of Ludhiana District) are of worth quoting. The adoption of these innovations at macro level will certainly reduce demand for energy in the future. Liberal state subsidies should be granted to more villages/farmers so that they can adopt energy and water saving innovations.

- Both central and state governments should allocate sufficient funds to develop renewable energy resources in the state. Recent policy decisions of the state to exploit solar energy by propagating Solar Rooftop/Canal-Top PV system across the rural and urban areas must be encouraged. For economic sustainability, at least 50 percent of cost of machinery and equipments (including one-time installation charges) of solar power must be subsidized by the state. Such beneficiaries will be off-loaded from the grid system, thus, avoiding peak load breakdowns of electricity. Further, application of solar lamps, water heating system, etc should be propagated in the state.
- At the household level, direct burning of solid fuels such as fuel wood, crop residue and cattle dung in tradition chullas be discouraged because smoke omitted out of these chullas is highly toxic. So, there is need to invent new clean combustion cooking stoves for domestic cooking. One such chulla has been invented by the IIT, New Delhi must be a bench-mark (standard) for further research and invention. Further, gobar gas plants be installed by grating liberal grants to the beneficiaries.

- At the domestic front, women are the primary stakeholders in the energy conservation and management, therefore, a comprehensive energy policy on domestic front be evolved to create various portfolios of energy options. Apart from the electricity and biomass sources, solar power for the small producers should be promoted.
- The women' self-help groups be encouraged to undertake small solar power units and energy-based enterprises such as making charcoal, briquette making and gassifiers. Special training should be provided to the women to develop their expertise in using renewable energy sources, including installing/repairing of solar heating system, solar lanterns, improved cooking stoves, pump-sets and so on. For this, a long term policy measures like formal credit institutions and fulfilling credit needs of women at low rates of interest should be directed to develop rural energy infrastructure in the state.

Table 1: Total Installed Capacity of Electricity in Punjab by Source (MW)

Year	Own Sources			Central Sources**	PEDA	Total (MW)
	Hydro*	Thermal	Sub-Total			
1984-85	1,454	871	2,325	185	0	2,510
%	57.93	34.70	92.63	7.37	0.00	100.00
1989-90	1,770	1,280	3,050	533	0	3,583
%	49.40	35.72	85.12	14.88	0.00	100.00
2000-01	2,314	2,130	4,444	1,233	6	5,683
%	40.72	37.48	78.20	21.70	0.11	100.00
2007-08	2,258	2,370	4,628	1,918	63	6,609
%	34.17	35.86	70.03	29.02	0.95	100.00
2011-12	2,163	2,620	4,783	1,933	202	6,918
%	31.27	37.87	69.14	27.94	2.92	100.00
2012-13	2,110	2,620	4,730	2,507	469	7,706
%	27.38	34.00	61.38	32.53	6.09	100.00

*Including State's share from BBMB; **Including shares of Private Plants.
Source: Electricity Statistics of Punjab (various years).

Table 2 : Total Electricity Generated/Available for Punjab by Source (Million KWH)

Year	Own Sources*			Central Sources**	PEDA	Auxiliary Consumption	Total Energy
	Hydro	Thermal	Sub-Total				
1984-85	4,558.80	2,938.27	7,497.07	380.04	0.00	340.59	7,536.52
%	60.49	38.99	99.48	5.04	0.00	4.52	100.00
1989-90	6,761.63	6,514.14	13,275.77	2,324.86	0.00	575.50	15,025.13
%	45.00	43.35	88.36	15.47	0.00	3.83	100.00
2000-01	7,019.85	14,457.21	21,477.06	6,861.98	30.20	1,248.68	27,120.56
%	25.88	53.31	79.19	25.30	0.11	4.60	100.00
2007-08	8,911.93	16,456.70	25,368.62	16,569.65	233.33	1,556.00	40,615.60
%	21.94	40.52	62.46	40.80	0.57	3.83	100.00
2011-12	9,806.30	19,068.23	28,874.53	15,501.46	442.75	1,665.58	43,153.16
%	22.72	44.19	66.91	35.92	1.03	3.86	100.00
2012-13	8,091.09	18,013.29	26,104.38	18,448.80	555.06	1,560.03	43,658.99
%	18.53	41.26	59.79	42.26	1.27	3.57	100.00

*Including State's share from BBMB; **Including shares of Private Plants.
Source: Electricity Statistics of Punjab (various years).

Table 3 : Total Number of Households and Domestic Electric Consumers in Punjab

Year	Number of Households (Census Data)	Number of Domestic Electric Consumers	%age share
1980-81	27,48,453	15,53,629	56.53
1990-91	34,24,666	27,54,312	80.43
2000-01	43,48,580	36,99,739	85.08
2007-08	51,39,939	44,94,822	87.45
2011-02	58,12,857	56,42,850	97.08
2012-13	59,01,169	58,20,606	98.63

Source: Electricity Statistics of Punjab (various years).

Table 4: Number of Electricity Consumers in Punjab by Category

Year	Number of Electricity Consumers by Category					
	Domestic	Commercial	Industrial	Public Lighting & Bulk Supply	Agriculture	Total
1984-85	19,89,507	2,85,505	68,532	905	4,10,519	27,54,968
%	72.22	10.36	2.49	0.03	14.90	100.00
1989-90	26,00,914	3,72,226	93,148	1,048	5,65,092	36,32,428
%	71.60	10.25	2.56	0.03	15.56	100.00
2000-01	36,99,739	6,03,908	1,10,910	1,885	7,94,475	52,10,917
%	71.00	11.59	2.13	0.04	15.25	100.00
2007-08	44,94,822	7,84,416	1,10,531	2,964	981,157	63,73,890
%	70.52	12.31	1.73	0.05	15.39	100.00
2011-12	54,20,916	8,95,949	1,21,207	3,298	11,63,274	76,04,644
%	71.28	11.78	1.59	0.04	15.30	100.00
2012-13	56,42,850	9,23,854	1,23,430	3,535	11,91,407	78,85,076
%	71.56	11.72	1.57	0.04	15.11	100.00

Source: Electricity Statistics of Punjab (various years).

Table 5 : Total Electricity Generated and Sale of Power in Punjab by Category (Million KWH)

Year	Sale of Power by Category						Theft Detected	Unaccounted	Total
	Domestic	Commercial	Industry	Public Lighting and Bulk Supply	Agriculture	Exports to Other States			
1984-85	654.03	134.20	2,309.03	405.46	2,358.99	240.62	0	1,434.19	7,536.52
%	8.68	1.78	30.64	5.38	31.30	3.19	0.00	19.03	100.00
1989-90	1,356.00	268.95	3,923.65	505.38	5,186.43	787.7	104.22	2,892.80	15,025.13
%	9.02	1.79	26.11	3.36	34.52	5.24	0.69	19.25	100.00
2000-01	4,224.09	911.42	8,047.14	467.58	5,534.35	795.44	110.78	7,029.76	27,120.56
%	15.58	3.36	29.67	1.72	20.41	2.93	0.41	25.92	100.00
2007-08	6,348.80	1,826.65	10,864.73	743.02	10,022.20	1,576.43	287.06	8,946.62	4,0615.51
%	15.63	4.50	26.75	1.83	24.68	3.88	0.71	22.03	100.00
2011-12	8,635.93	2,591.74	11,497.40	832.38	10,248.63	1,871.55	290.58	7,184.95	43,153.16
%	20.01	6.01	26.64	1.93	23.75	4.34	0.67	16.65	100.00
2012-13	9,284.90	2,688.84	12,119.42	869.84	10,779.03	1,613.18	325.85	7,480.34	45,161.40
%	20.56	5.95	26.84	1.93	23.87	3.57	0.72	16.56	100.00

Source: Electricity Statistics of Punjab (various years).

Table 6 : Distribution of Total Consumption of Petroleum Products in Punjab by Product Type

Year	Consumption of Petroleum Products (MT)							LPG Connections ('000)	Per Connection Consumption (Kg.)
	Petrol	High Speed Diesel	Kerosene	Light Diesel Oil	Furnace Oil (LSHS)	LPG	Total		
1990-91	2,12,442	11,86,288	3,21,712	20,530	6,87,586	NA	24,28,558	622	NA
%	8.75	48.85	13.25	0.85	28.31		100.00		
2000-01	4,23,196	20,73,089	3,36,679	37,727	8,58,905	3,10,561	40,40,157	2,253	137.84
%	10.47	51.31	8.33	0.93	21.26	7.69	100.00		
2008-09	5,08,037	27,03,565	2,36,188	15,440	2,61,588	5,40,696	42,65,514	4,705	114.92
%	11.91	63.38	5.54	0.36	6.13	12.68	100.00		
2010-11	5,89,816	29,36,445	2,23,021	5,363	7,61,778	6,17,678	51,34,101	5,338	115.71
%	11.49	57.19	4.34	0.10	14.84	12.03	100.00		
2011-12	4,90,594	31,09,249	2,13,148	847	7,13,339	6,49,601	51,76,778	5,543	63.07
%	10.06	63.76	4.37	0.02	14.63	12.55	100.00		

Source: Statistical Abstract of Punjab (various years).

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This document has been produced by Centre for Research in Rural and Industrial Development (CRRID) with the financial assistance from CUTS International, Jaipur under the project entitled Sustainable Development Investment Portfolio (SDIP) funded by Department of Foreign Affairs and Trade (DFAT), Government of Australia. The views expressed here are those of authors and can therefore in no way be taken to reflect the position of CUTS International or DFAT or CRRID.

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