



Public Spending Towards Harnessing Renewable Energy in India



Policy Brief #2

February 2014

The energy sector unquestionably constitutes one of the major driving forces of Indian economy. Ever since the 12th Plan has projected the growth rate of 8-9% per annum for the economy for the plan period, meeting the enormous energy deficit for the economy has been seen as a key issue. Tapping renewable energy sources is being mooted as a means for meeting the shortages in energy access for the country. Also, for the policy efforts towards reorienting the traditional carbon intensive economy to a low carbon pathway, the focus will essentially remain on the development of renewable energy (RE) to a large extent. The current budgetary outlays for the sector are extremely limited and account for less than 0.1% of the Union Budget. For the development of renewable energy, there is an urgent need to enhance public expenditure for the sector. The policy brief is an attempt to assess the policy priorities and corresponding public spending for the renewable energy sector.

Context

Energy security is essential to ensure achievement of the projected growth rate of 8-9% annually in India by 2016-17, the end of the 12th Plan period. The current Plan recognizes the concerns of energy deficit and advocates for commercial energy supplies to grow at a rate between 6.5-7% per year, which translates into capacity addition of around 1,00,000 MW power by 2016-17¹. At the beginning of the 11th Plan, the total installed capacity from renewable sources was 10,255 MW, which witnessed a substantial increase over the plan period with the installed capacity reaching 28,000 MW at the end of March, 2013.² Currently, renewable energy contributes approximately 12.5% in the installed national electricity capacity.³ India's primary energy generation at present, is largely based on fossil fuels (Coal and Lignite, Oil and Natural Gas), which constitute 92% of the total energy supply. As per the 12th Plan, the share of renewable energy in 2021 would be 2% of the total energy consumption, unless substantiated with proactive planning and significant investments. Harnessing energy from renewable sources is still seen as a secondary option to meet the energy requirements in the country.

Tapping renewable energy (RE) potential can go a long way in meeting the enormous unmet demand for electricity and energy in the country. The provisional figures of Census (2011) indicate that only 67% of the households in the country and 55% of rural households have access to electricity⁴ and 85% of the rural households are significantly dependent upon biomass fuels for their energy requirements. The per capita consumption of electricity in the country increased from 15.6 KWh in 1950 to about 814 KWh units in year 2011. The per capita electricity consumption in India is 24% of the world's average and 35% & 28% respectively that of China and Brazil.⁵ In spite of the massive addition in generation, transmission and distribution capacity over the last sixty years, growth in demand for power has always exceeded the generation capacity augmentation. During the year 2010-11, the country faced an energy shortage of 73,236 MU⁶ (8.5%) and a peak shortage of 12,031 MW (9.8%).

According to the Base Case Scenario built by the Working Group on Power for the 12th Five Year Plan⁷, capacity addition requirement for the 12th Plan period works out to be 75,715 MW. To fulfil

¹“Availability of Identified Non-Conventional Resources of Energy – Their Potential via-a-vis Utilisation”, Twenty-Ninth Report of the Standing Committee on Energy (2011-12), Fifteenth Lok Sabha, (Accessed on July 18, 2013)

²Departmentally Related Standing Committee Report on Detailed Demand for Grants 2013-14, Ministry of New and Renewable Energy, Lok Sabha ³ibid

⁴See ‘Sources of Lighting’ in ‘Housing Census 2011’ for state-wise figures in URL http://www.censusindia.gov.in/2011census/hlo/Data_sheet/India/Source_Lighting.pdf (Accessed on July 18, 2013)

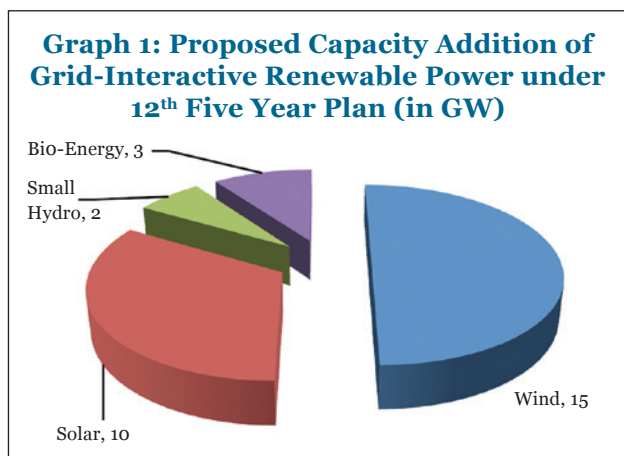
⁵See National Electricity Plan 2012, Volume 1 (Generation) in URL http://www.cea.nic.in/reports/powersystems/nep2012/generation_12.pdf (Accessed on July 18, 2013)

⁶MW stands for Mega Watt; MU stands for Million Units which is equivalent to a gigawatt-hour

⁷Report of the Working Group on Power for the 12th Plan (2012-17), Planning Commission, GoI available at http://planningcommission.nic.in/aboutus/committee/wrkgrp12/wg_power1904.pdf

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this demand, renewables have been accorded some priority in the energy mix, in line with the 12th Plan approach of pursuing a Low Carbon Strategy for Inclusive Growth. The capacity addition under this sector for the 12th Plan period has been pegged at 30,000 MW (30 GW) for grid-interactive (see Graph 1), which excludes other sources like hydro, nuclear, gas and coal.



Source: Unstarred Question No. 3673 'Power Generation from Renewable Energy Sources'; answered on 14.12.2012 by Ministry of New and Renewable Energy; Lok Sabha, Government of India

There are enormous challenges put forth by the conventional sources of energy on national economy in addition to their contribution to the growth of greenhouse gas (GHG) emissions. The total GHG emissions from electricity generation in 2007 were 719.31 million tons CO₂ eq. which was 41.6% of India's net GHG emissions. This includes both grid and captive power. Coal constituted about 90% of the total fuel mix used.⁸ As India moves forward on the path to low carbon economy, the high dependence on these sources for energy needs to be reconsidered. As large hydro and nuclear power projects are marred with environmental and ecological concerns and associated social costs in terms of displacement of people, deforestation etc., shifting to renewable energy sources becomes a more viable option to explore.

Additionally, India's commitment to reduce its emission intensity of GDP by 20-25% from the 2005 levels by 2020⁹ accentuates the need for rethinking our energy policies, given power sector's major contribution to India's GHG emissions. In contrast to the conventional sources, the renewable sources of energy are clean, localized, sustainable, and favourable to economic growth in the long-run. Notwithstanding their contribution to reduce GHG emissions, it can help in reducing energy (and overall) imports' burden as well as reducing India's current account deficit. Moreover, the sector is highly labour intensive and can contribute significantly towards employment generation (WISE Report, 2011¹⁰). Renewables can go a long way in ensuring economic development of renewable-abundant states and can help ensure energy security in remote and inaccessible rural areas through off-grid applications. Union Government recognizes the potential of RE and post the launch of the National Action Plan on Climate Change (NAPCC), a flurry of initiatives were introduced such as the implementation of Jawaharlal Nehru National Solar Mission (JNNSM)¹¹ and Renewable Energy Certificates (REC)¹² to promote renewable sources through markets. Additionally for states, the Renewable Purchase Obligation (RPO)¹³ through the National Electricity Act 2003 already exists, to purchase minimum level of renewable energy out of the total consumption in the area of a distribution licensee.

Given the above backdrop, Centre for Budget and Governance Accountability (CBGA), in this policy brief, has looked at various policies and budgetary allocations by the government for the development of renewable energy and tried to assess the adequacy of the targets set, policies at work and the budgets allocated. In the process, budgetary information from various budget documents such as Union Budgets, *Detailed*

⁸India: Green House Gas Emissions 2007, Indian Network for Climate Change, Ministry of Environment and Forest, Government of India (2010), page. iv.

⁹Interim Report of Expert Group on Low Carbon Strategies for Inclusive Growth (2011), Planning Commission, Government of India

¹⁰"Achieving 12% Green Electricity by 2017", June 2011; World Institute of Sustainable Energy, Pune

¹¹The Mission will adopt a 3-phase approach, spanning the remaining period of the 11th Plan and first year of the 12th Plan (up to 2012-13) as Phase 1, the remaining 4 years of the 12th Plan (2013-17) as Phase 2 and the 13th Plan (2017-22) as Phase 3.

¹²REC is regulated by Central Electricity Regulatory Commission (CERC).

¹³See the Analysis of state-wise RPO Regulation across India, <http://mnre.gov.in/file-manager/UserFiles/Solar%20RPO/analysis-of-state-RPO-regulations.pdf> (Accessed on July 18, 2013)

Demands for Grants (DDGs), Annual Reports and Outcome Budgets (various years) and the Parliamentary Standing Committee Reports on Energy and Power have been assessed to review the level of public spending and the broad policy direction for the development of renewable energy.

Government budgets are an important indicator of the government's priorities and public investment is necessary to enable renewable energy to meet its true potential in India. Moreover, looking at the case for ensuring energy security for all, off-grid renewable energy can go a long way in ensuring access to energy for far-flung rural areas. Recognizing the fact that basing the analysis on these budgetary data sources has its inherent limitations, certain insightful findings and inferences can still be drawn pertaining to broad policy directions for the sector, cases of budgetary priority attached within the sector, and finally flagging certain issues affecting the sector along with potential recommendations to overcome these barriers.

The remainder of this policy brief assesses the case for promoting renewable energy in India and identifies potential intervention points under two key areas, policy framework and budgetary allocations, to bolster renewable energy development in the country.

ANALYSIS

Increased share of renewable energy will strengthen India's energy security

Pro-active policy measures for renewables have positive co-relation with the energy security of the country. The country's energy security is highly dependent on imported fossil fuels. For instance crude oil imports, as per Energy Statistics (2012), have increased from 11.68 MTs during 1970-71 to 163.59 MTs during 2010-11. An absence of active pursuit of the development of renewables makes us rely even more than we already do on imported fossil

fuels, which has implications on both the balance of payments and energy security (12th FYP¹⁴).

The 12th Five Year Plan (12th FYP) notes that to sustain a growth rate of 8% per annum for the Plan period, the import bill would go up substantially, especially on the import of energy inputs. The price of imported energy will have an impact on our growth capacity in the sense that high energy prices could impose a cost on the economy and make it more difficult to generate domestic surpluses for investment. Further, dependence on energy imports also raises concern about energy security in the country. High import payments subject to global price fluctuations combined with modest export growth means that the current account deficit will be an important source of stress in the coming years. The Economic Survey (2012-13)¹⁵ also notes that the growth in imports during 2011-12 was mainly due to higher growth in imports of petroleum, oil and lubricants (POL), gold and silver and machinery. "According to scenarios developed as part of the Integrated Energy Policy (IEP) by the Planning Commission, coal imports could increase to as high as 45% of the total coal requirement by 2031-32. Given this scenario, it is of paramount importance that the country develops all possible domestic energy sources"¹⁶. (See Graphs 2 & 3)

The country has vast amount of renewable energy potential, which if utilized can help meet India's energy demands without having the need to import fuel and even equipment (Graph 4). However, to realise this potential, the country will need to adopt a two-fold approach: i) build a policy environment that is conducive to large scale RE deployment; and ii) mobilise and secure adequate financial resources to incentivise market transformation.

Recommendation: *Given the challenging scenario with respect to India's Balance of Payments (BOP) and soaring fiscal deficit, it is important to explore and develop options other than the conventional sources of energy.*

¹⁴12th Five Year Plan, (2012–2017) Faster, More Inclusive and Sustainable Growth; Planning Commission, GoI

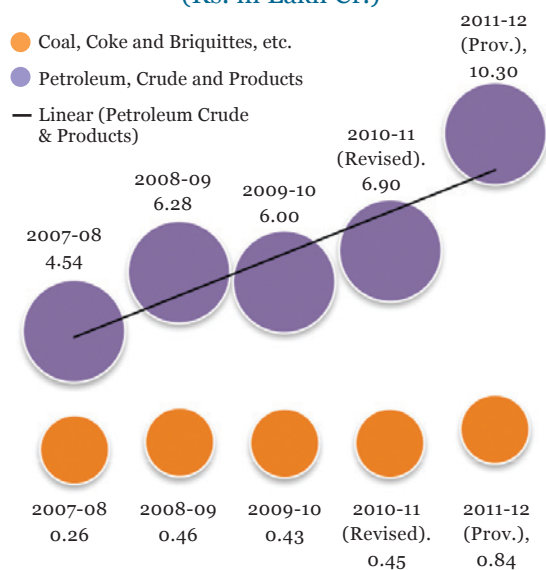
¹⁵Economic Survey 2012–13, Ministry of Finance, GoI

¹⁶Achieving 12% Green Electricity by 2017; Final Report, June 2011; World Institute of Sustainable Energy, Pune

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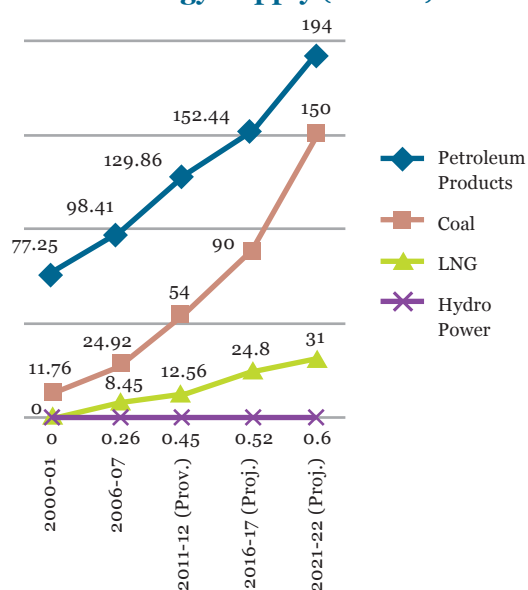
Renewables in this respect definitely score over the fossil fuels as they are locally available and increasingly becoming economically viable. Thus, it is imperative for India to promote deployment of renewable energy through its policies as well as concomitant budgetary outlays.

Graph 2: Import of Principal Commodities under Energy Sector (Rs. in Lakh Cr.)



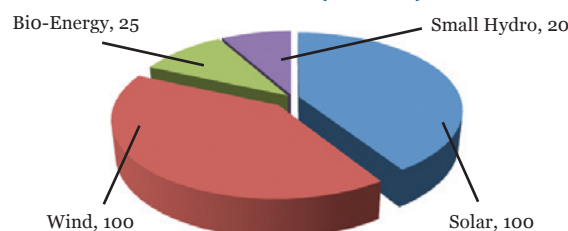
Source: Director General of Commercial Intelligence & Statistics as cited by RBI

Graph 3: Imports of Primary Commercial Energy Supply (in Mtoe)



Source: Planning Commission, as cited in Economic Survey, 2012-13

Graph 4: Government Estimation of Potential of Power Generation from RE Sources (in GW)



Source: Question No. 735 answered on 04.03.2013 'Potential for Renewable Energy Sources' by Ministry of New and Renewable Energy; Rajya Sabha, Government of India. Available at <http://164.100.47.4/newsquestion/ShowQnIPAD.aspx?qno=188346>

Development of renewable energy requires a conducive policy environment and adequate fund allocation

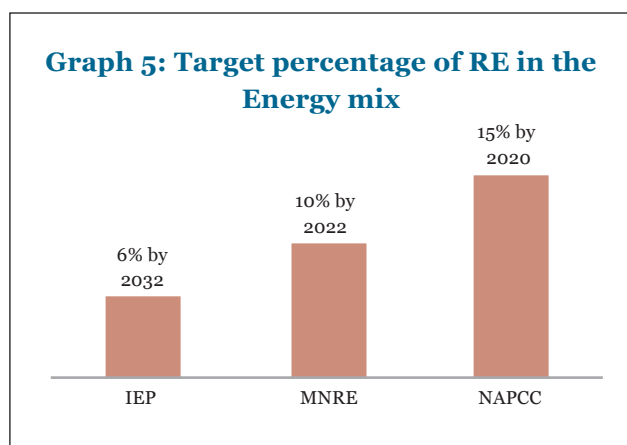
Intervention on the part of the Government of India is required in two key areas: creating an enabling policy environment for renewable energy and ensuring adequate budgetary support for bolstering development of renewable energy.

A. Design and implement enabling policies for development of renewable energy in India

A.1. Build a long-term vision for scaling up renewable energy

A number of independent studies have concluded that potential of RE sources in India is not a constraint. Falling costs of solar, established estimates of enormous wind potential, favourable global markets, increased access to best available technologies and deployment practices, have all made renewable energy an important constituent of India's energy mix. However, what is impeding the development of RE in the country is the absence of long term planning which is supported by a cohesive policy vision. We have multiple programmes running under various ministries, some of which are technology specific and others are state-specific. Government of India and regulatory commissions spell out their intent over a period of five years or even lesser, which is believed to be a concern for investors and a factor that constraints the flow of private sector investment in the sector. Multiple RE

Graph 5: Target percentage of RE in the Energy mix



deployment targets, set at various governmental levels and under various initiatives, lead to ambiguity in India's vision for RE (see graph 5). Limited co-ordination between central government institutions as well as between central government and the states is another source of concern. Such lack of coordination results in delayed grid expansion, sub-optimal market structures, and limited state level interest in high RE targets.

Our present energy mix, persistent demand-supply gap, the available energy supply options, and macro-economic implications of depending heavily on conventional sources of energy, makes it imperative for us to transform our industry and markets to support RE penetration. To achieve this, we need to solve the technical and operational issues inherent with these sources in an integrated fashion.

Recommendation: *A comprehensive approach to policy development should be considered. Adopting an overarching long term enabling policy framework for development of RE could be the first step. This framework should be drawn keeping in mind the long term energy scenario of the country. This will facilitate states to draw their plans in alignment with the nationally accepted trajectory and channelize developmental and infrastructure investments accordingly. In parallel, strengthening our legislative framework to promote RE can streamline the planning processes and implementation mechanisms. The Electricity Act 2003 is the backbone of electricity sector in India. Though it is comprehensive*

for conventional sources of electricity, it lacks provisions for meeting the energy needs of the country.

On the other side, creating markets for RE will also play a vital role in greening our energy mix. For this, the central and state governments need to ensure strict enforcement of Renewable Purchase Obligations (RPO). Development of transmission, balancing power and ancillary services markets, strengthening institutions for deployment and enabling access to finance are ways to directly provide a favourable environment for growth.

Strong analytics that provide energy scenarios for India, going beyond the usual five-year planning cycles, will help establish a long-term and stable environment for all players in the energy markets. Designing and implementing integrated energy policies for the country could not only promote greater adoption of clean energy solutions but also help utilize our conventional resources in a more sustainable manner.

A.2. Design policies to increase competitiveness of renewable energy

Renewable energy is currently placed at margins to conventional power generation. It is widely perceived that renewable sources, due to the variability factor (i.e. the uncertainty associated with sustained energy generation across the year), cannot be relied on as the primary source of energy. This coupled with the fact that it involves higher investment costs in generation, storage and transmission of power from the renewable surplus areas to other areas acts as a barrier in the development of renewables as a primary source of energy in grid-connected areas. These characteristics imply the need for some special efforts for balancing renewables with other sources to ensure a reliable supply to the grid.

One very important limitation faced by RE is the high capital costs involved. Another argument used against it is its high unit costs as compared to conventional sources of energy which makes RE less competitive. But this argument fails to take into account the fact that the conventional sources of energy are

highly subsidized. Coal, oil and natural gas have large amounts of inherent subsidies, for instance domestic coal prices in India are controlled by Coal India Limited. These implicit subsidies are not taken into account when computing their unit cost. However, if the subsidies were accounted, then the cost of these products would increase substantially. Additionally, the unit costs of renewable energy, especially solar energy, are coming down while the marginal cost of conventional energy based on fossil fuels is likely to remain high. These trends suggest that over the next 10 to 12 years, the unit cost of renewable energy such as wind and solar may come close to the unsubsidized cost of conventional energy (12th Plan document). The costs associated with the conventional sources further increase when one takes into account the social and environmental costs involved with them.

Another key reason for higher unit cost of RE is its high interest rates that get increased further by the loans for this sector given the high risk factor and long gestation period. According to a WISE (2011) report “The current interest rates are prohibitive and they are the single most important factor in making RE projects unviable.”

Recommendation: *It is necessary that steps are taken to lower the rates of interest being charged in order to make renewable energy more affordable. The same can be done by (i) providing an interest subsidy and (ii) allowing Indian Renewable Energy Development Agency (IREDA) to secure domestic and international low-interest finance and lending the same to RE development in India; would go a long way in achieving national RE targets.*

Also, the prescription to use resources available under National Clean Energy Fund (NCEF) to lend low interest bearing funds to renewable energy projects is a step in the right direction; it may help make the cost of using renewable energy competitive with conventional energy. This could help in reducing high initial capital costs involved in producing renewable energy.

It is equally important that while comparing the renewable sources of energy with the conventional

sources, “true cost” of conventional sources is taken into account (non-subsidized and inclusive of any externalities) thus providing renewables with an equal footing in comparison.

B. Ensure adequate budgetary support for development of renewable energy in India

B.1. Increase budgetary allocations for renewable energy to meet NAPCC and 12th Five Year Plan targets

In the context of the acute need for increasing the share of renewable energy in the total domestic energy production and moving away from the fossil fuels dependence, the current levels of public investment do not seem adequate. The RE sector requires large initial capital investments not only for creating infrastructure, but also in developing technological breakthrough and markets to make the sector competitive like many conventional sources of energy in the country.

While the huge potential of renewable energy sector seems to have been recognized in the Five Year Plan documents in the country, this recognition does not seem to have translated into adequate budgetary provisions for the sector even in the 12th FYP. The budgetary provisions of ministries that deal with the conventional sources of energy (such as, Ministry of Power and Ministry of Petroleum and Natural Gas) have been much higher as compared to those for Ministry of New and Renewable Energy (MNRE) (See Table 1). Moreover, the allocations for MNRE made in the first two years of the 12th Plan (i.e. in 2012-13 and 2013-14), including both the Gross Budgetary Support or GBS (i.e. the amount provided from the Union Government’s budget) and the Internal and Extra Budgetary Resources or IEER (i.e. the amount of investment made by the Public Sector Undertakings, which are outside the purview of the Union Government’s budget), are visibly lower than the average level of annual outlay approved for the five years of the 12th Plan.

Further, the evidence submitted by the MNRE shows that the proposed 12th Plan outlays would be grossly inadequate for up-scaling of activities envisaged by the nodal Ministry. According to

Table 1: Indicative Twelfth Five Year Plan Outlays for the various Ministries/Departments in the Energy Sector (Figures in Rs. Crore)

| Name of the Ministry/ Department | Twelfth Plan (2012-17) Projections | | | Allocation in 2012-13* [2] | Allocation in 2013-14* [3] | Allocated share of the total outlays (column [2+3]/ [1]) [4] | Difference to be met in the remaining years of the 12 th Plan [1-2-3] [5] | Required Annual Outlays for achieving the 12 th FYP projections in column [1](column [5]/3) |
|--|--|---|-------------------|----------------------------|----------------------------|--|--|--|
| | Gross Budgetary Support (GBS) for the Plan | Internal and Extra Budgetary Resources (IEBR) | Total Outlays [1] | | | | | |
| Ministry of Power (MoP) | 54,279 | 3,86,517 | 4,40,796 | 59,507.12 | 59,760.48 | 27% | 3,21,528.4 | 1,07,176.13 |
| Ministry of Coal | 4,617 | 1,08,244 | 1,12,861 | 9,681.13 | 11,801.91 | 19% | 91,377.96 | 30,459.32 |
| Ministry of Petroleum and Natural Gas | 5,147 | 4,36,541 | 4,41,688 | 1,23,444.73 | 144,197.58 | 61% | 1,74,045.69 | 58,015.23 |
| Ministry of Renewable Sources of Energy | 19,113 | 13,890 | 33,003 | 3,367.79 | 3,927.55 | 22% | 25,707.66 | 8,569.22 |
| Department of Atomic Energy# | 41,615 | 65,572 | 1,07,187 | 15,305.41 | 17,832.38 | 31% | 74,049.21 | 24,683.07 |

*Includes IEBR as well # Includes outlays for Nuclear Power Schemes Source: 12th Five Year Plan, GoI, Expenditure Volume 2, Union Budget

the MNRE, Solar Photovoltaic (SPV) Off-Grid programme have suffered a setback due to lack of required funds leading to non-achievement of target during the first phase of the Jawaharlal Nehru National Solar Mission. MNRE was unable to meet a committed Central Financial Assistance (CFA) liability of Rs.1,141.88 crore towards the sanctioned 118.12 MWp (Megawatt Peak) SPV Off-Grid projects during 2010-11 and 2011-12. MNRE needed to sanction an additional capacity of about 82 MWp during 2012-13 to meet the target of 200 MW in the first phase of the mission. Adequate funding is an important consideration for harnessing the potential of available renewable resources.¹⁷

The budgetary allocations indicated for the 12th Plan period are inadequate for addressing the requirements of high capital investments for the renewable energy sector. Against a proposed

outlay of Rs. 40,876 crore by the MNRE¹⁸, it was allocated Rs. 33,003 crore for the 12th Plan period. Moreover, the Working Group on Power (for the 12th FYP) reported a resource requirement to the tune of Rs. 1,35,000 crore for the MNRE to meet its set targets.¹⁹ Certain areas of concern in the renewable energy sector like the lack of evacuation, transmission and distribution infrastructure, the need for developing dedicated renewable energy transmission networks, development of the storage technologies, incentivizing the sector to achieve grid parity with the conventional sources of energy etc. warrant huge public investments. As per the Power Grid Corporation of India's estimates, in order to realize the capacity addition plans for the 12th FYP period, an investment of around Rs. 30,000 crore would be required for creating and strengthening renewable energy power transmission infrastructure alone.²⁰

¹⁷Departmentally Related Standing Committee Report on MNRE Budget 2012-13.

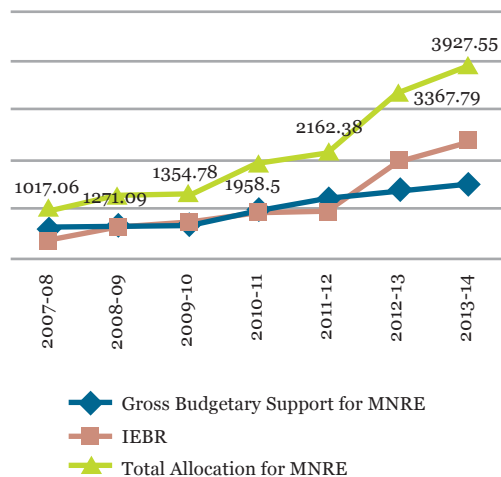
¹⁸Annexure IV, Departmentally Related Standing Committee Report on MNRE Budget 2012-13

¹⁹As per the Working Group Report on Power for the 12th Plan (pg: 52), the fund requirement for the RE projects for Biomass is Rs. 10,500 crore, SHP is Rs. 8000 crore, Solar is Rs. 49400 crore, Wind is Rs. 67,200 crore

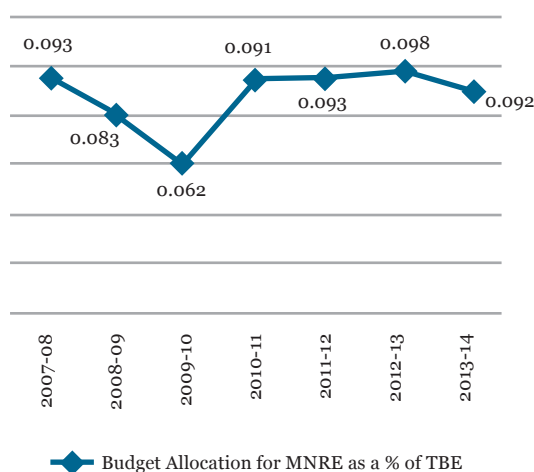
²⁰See Energy Chapter in 12th Plan Document.

**Budget of MNRE since Eleventh Plan
(Union Government)**

**Graph 6: Allocations for MNRE
(Rs. in Crore)**



**Graph 7: Union Budget Allocation for
MNRE as a % of TBE (BE)**



Source: Expenditure Budget Vol. 1 and 2, Union Budget, various years, GoI

The Union Budget 2013-14 has shown an increase of nearly Rs. 136 crore in GBS for MNRE over the preceding financial year (Graph 6). But the outlays are very small compared to those for the conventional energy ministries. As a percentage of the Total Budgetary Expenditure (TBE) (does not include IEBR), the share of the MNRE has consistently remained much below 1% (Graph 7). The Estimate Committee²¹ (2011) argues in favour of allocating at least 1% of Union Budget for the development of the sector in view of the importance and the huge investments required in the sector. It is a matter of concern that the current level of allocation for MNRE is not even a tenth of this 1% mark.

Recommendation: *Considering the potential of renewables in India and the limitations of the conventional sources of energy (which are likely to aggravate further in the coming years), there is an urgent need to step up the priority being given to renewables.*

Taking into account the inadequacy of resources for this sector, it is crucial that the budgetary allocations for renewable energy are stepped up substantially in order to meet the NAPCC and the 12th Five Year Plan targets for the sector. Even by the current 12th Plan budget projections, the first two annual budget outlays have been quite low and fund allocations in the remaining three years of the 12th Plan will have to be significantly higher to achieve the financing projections.

Given the high initial capital costs for the RE sector, it is crucial to ensure adequate funding to achieve the required development of this sector for meeting the growing needs and demands from renewables as a viable source of energy. The Estimate Committee (2011) recommendation of 1% of Union Budget for renewable energy²² is still unmet. Taking requisite steps to meet the targets and envisioning further budgetary support corresponding with

²¹Committee on Estimates (2011-2012) for Ministries of Power; Coal And New & Renewable Energy for Power Generation – Demand and Supply; December, 2011; Lok Sabha Secretariat, GoI

²²Climate Parliament has estimated following ways the Government might spend its 1% of budget expenditure on renewable energy (a) 30% of the 1% should be spent on a Feed-in-Tariff (FIT); (b) 40% of the 1% should be spent on capital subsidy at a rate of 30% of the cost of renewable energy plants; (c) 10% of the total available funds should be spent on Risk Guarantee Fund (RGF); (d) 10% should be made on village mini-grids; and (e) remaining 10% should be spent on R&D and HRD.

Table 2: Budget Allocations for Key Interventions in the Union Ministry of New and Renewable Energy (Rs. in Crore)

| Key Programmes | Total Plan Outlay under 11 th Plan (2007-08 to 2011-12) | Actual Expenditure on the Programme as a % of the Budget Outlay (2007-08 to 2011-12) | Outlays for 12 th Plan proposed by MNRE* (2012-13 to 2016-17)* |
|--|--|--|---|
| Grid-connected | | | |
| Grid Interactive and Distributed Renewable Power | 1,779 | 103 | 27,732 |
| RE for Urban, Industrial and Commercial Applications | 216 | 68 | 1,724 |
| Rural Application | | | |
| RE for Rural Applications | 910 | 100 | 3,195 |
| Others* | 1,163 | 77 | 8,225 |

*Includes Research, Design and Development in RE and other supporting programmes

Source: 12th Five Year Plan, GoI; The proposed figures compiled from the Departmentally Related Standing Committee Report of MNRE on DDG 2012-13, GoI & Expenditure Budgets (Vol.-II) of various years.

the true potentiality of the sector can help in mainstreaming renewables in the country's energy map.

B.2. Ensure adequate budgetary support to the Ministry of New and Renewable Energy and concurrently improve their resource absorption capacity

The union budget for renewable energy, which is generally administered by MNRE, has registered small increases in its allocations since 2007-08, i.e. since the inception of the Eleventh Plan period. However, since the NAPCC was introduced, there have been higher budgetary outlays than previous years to support formulation and implementation of the JNNSM. It may be worthwhile to also note here that, since the launch of NAPCC, the resources provided for the Indian Renewable Energy Development Agency (IREDA)²³ have come more from the Internal and Extra Budgetary Resources (IEBR), which is investment made by the Public Sector Undertakings, than the amount provided from the Union Government's budget itself. The

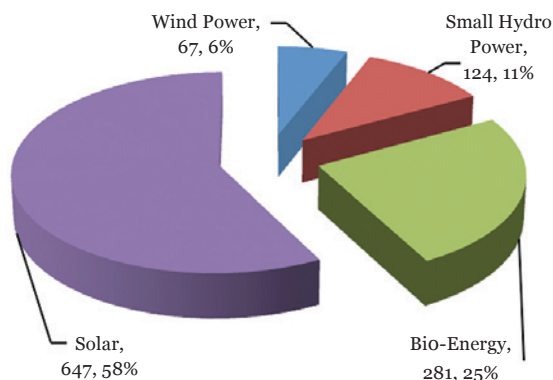
IEBR investment is mainly meant to increase equity inflows to the sector as viability gap funding (VGF) and Generation Based Incentives (GBI) in order to augment the share of renewable in the country's energy baskets.

Within the MNRE, there are two important interventions: Grid Connected RE and RE for Rural Applications. The budgetary allocations indicate that there are significant variations in the outlays incurred by these two interventions (refer to Table 2). A review of these two programmes is given below.

Grid Connected RE: The expenditure trend over the 11th Five Year Plan (Table 2) indicates that the 'Grid Interactive and Distributed Renewable Power' has shown the highest expenditure during this period as compared to previous FYPs, particularly since the launch of the NAPCC. Further, pertaining to outlays towards diverse sources of energy, solar energy has received nearly 50% of the budget, much higher than the budgetary priorities for developing other renewable energy sources like wind, small-

²³IREDA is a Public Limited Government Company established in 1987, under the administrative control of Ministry of New and Renewable Energy(MNRE) to promote, develop and extend financial assistance for renewable energy and energy efficiency /conservation projects with the motto : "ENERGY FOR EVER", see <http://www.ireda.gov.in/default.aspx>.

Graph 8: Share of various Renewable Energy in 2012-13 (Rs. in Crore)



Source: Detailed Demand for Grants, Ministry of New and Renewable Energy, 2012-13, GoI

hydro and bio-energy (see Graph 8). Most of this outlay has been allocated under the Phase 1 of the Jawaharlal Nehru National Solar Mission (JNNSM); and the allocations for solar energy are expected to increase further under the Phase 2 of JNNSM (envisaged till 2016-17). Thus, with the Phase 2 of the JNNSM, the solar energy sector can be expected to get greater amounts of budgetary resources under the overall budget for MNRE in the 12th FYP.

Rural Application: Renewable energy has tremendous potential of electrifying rural villages. The Remote Village Electrification Programme (RVEP), implemented by MNRE, provides financial support for lighting/basic electrification in those

remote un-electrified villages and un-electrified hamlets of electrified villages where grid extension is not feasible by the State Governments and hence is not covered under the Rajiv Gandhi Gramin Vidyutikaran Yojana (RGGVY). Such villages are provided basic facilities for lighting / electricity through various renewable energy sources (DRSCR on DDG on MNRE, 2012-13²⁴). The budgetary outlays and expenditure for RVEP during the 11th Five Year Plan (year-wise) was quite good till 2010-11, however it has been declining since 2011-12 (see Table 3).

In addition to this, Decentralized Distributed Generation (DDG) scheme under RGGVY (see table 4), implemented by the Ministry of Power (MOP), also focuses to a large extent on rural electrification primarily comprising of off-grid renewable energy applications. Under this scheme, nearly 90% capital subsidy is being provided towards overall cost of the projects and rest 10% of the project cost would be contributed by states through their own resources, loan from financial institutions or Renewable Energy Certificates. All un-electrified villages and hamlets (above 100 populations) are eligible under DDG scheme of RGGVY.

The DDG, introduced in 2009, has not achieved the desired outcome, with the reasons being lack of clarity about the ownership of the project, low operational revenue, and lack of awareness among stakeholders as well as lack of adequate returns for the investing entrepreneur. Moreover, DDG is still being seen as a sub-optimal choice by the villagers

Table 3: Allocations and Expenditure for Remote Village Electrification Programme (RVEP) (Rs. in Crore)

| Year | Outlay (Budget Estimates / Revised Estimates) | Actual Expenditure |
|----------------------------|---|--------------------|
| 2007-08 | 143.00 / 143.00 | 133.04 |
| 2008-09 | 80.00 / 88.81 | 88.81 |
| 2009-10 | 80.00 / 82.85 | 82.85 |
| 2010-11 | 80.00 / 80.00 | 78.17 |
| 2011-12 (as on 20.03.2012) | 95.00 / 79.00 | 70.01 |
| Total (as on 20.03.2012) | 478.00 / 473.66 | 452.88 |

Source: Departmentally Related Standing Committee Report of MNRE on DDG 2012-13

²⁴Departmentally Related Standing Committee Report of Ministry of New and Renewable Energy on Detailed Demand for Grants 2012-13

Table 4: Budgetary Allocations for Rajiv Gandhi Gramin Vidyutikaran Yojana (RGGVY)
(Rs. in Crore)

| RGVY Components | Total Fund Requirement | GoI Assistance (Subsidy) |
|---|------------------------|--------------------------|
| (i) For Electrification of remaining villages & habitations | 63490 | 57141 |
| (ii) Providing LED lamps for BPL households | 1500 | 1350 |
| (iii) DDG | 1000 | 900 |
| Total RGGVY | 65990 | 59391 |

Source: Report of the Working Group on Power for 12th Plan (2012-17)

who still prefer grid-connected power supply (Report of the Working Group on Power for 12th Plan (2012-17)²⁵).

In the past, MNRE has lacked capacity to effectively absorb allocated funds. There are cases of under-utilisation of funds in overall budgets for renewable energy. On utilisation of funds during the 11th Plan, Standing Committee on Renewable Energy while looking into detailed budgets of MNRE 2012-13²⁶ noted that “During the 11th Five Year Plan, the actual budget provision made available to the Ministry of New and Renewable Energy (MNRE) was Rs. 4,068 crore (Budget Estimates) / Rs. 3,897.80 crore (Revised Estimates) and an amount of Rs. 3,798.37 crore was actually utilized. While the Government has done fairly well in utilization of the allocated amount particularly for Grid-Interactive & Off-Grid renewable power generation and Renewable Energy for Rural Applications programmes, the fund utilization was on lower side, especially during the first half of the 11th Plan period, under Renewable Energy for Urban, Industrial and Commercial Applications and Research, Design and Development in Renewable Energy Programmes. The trend of the utilization of the allocated funds indicate that the amount made available under various programmes were not being utilized properly during the first three years of the Plan period in general and the utilization of funds increased considerably during the last two

years, thus giving a better picture to the total tally of utilization of funds on completion of the 11th Plan.” The same trend continues in the first two Annual Plans of the 12th Five Year Plan as well. Such a pattern casts some doubt on the capacity of the ministry to utilize funds, which might be one of the reasons why the proposed allocations by the ministry have not been met by the Planning Commission and the Ministry of Finance.

Recommendation: *There is a need to take enabling measures for MNRE and the various agencies responsible for implementation of its programmes to ensure optimum utilisation of the funds. While there are a number of institutions²⁷ for promotion and growth of renewable energy in India, RE penetration in India has been limited till date. Lack of convergence of these dedicated institutions in planning, management, financing and implementation of renewable energy policies and programmes has resulted in low fund absorption capacity of the ministry. Therefore, it is essential to build a cohesive strategy that will assist in achievement of the goals under the various missions and also undertake activities to demonstrate commercial models to harness the large renewable energy potential. Additionally there is a need to establish a centralised structure for program administration as well as undertaking project implementation, covering grid as well as off-grid projects/applications.*

²⁵Report of the Working Group on Power for 12th Plan (2012-17), January, 2012; Ministry of Power, GoI

²⁶Departmentally Related Standing Committee Report of Ministry of New and Renewable Energy on DDG 2012-13

²⁷Institutions like Solar Energy Centre, IREDA, Centre for Wind Energy Technology, Alternate Hydro Energy Centre, National Institute of Renewable Energy have been playing critical role in facilitating the installation of renewable energy in the country. At the state level, State level nodal agencies are carrying out MNRE’s mandate and implementation of projects and programmes.

Public Spending towards Harnessing Renewable Energy in India

Fact is that unless ministry proves its ability for better utilisation of the allocated budgets, it remains doubtful whether the outlays for the ministry would increase substantially or not, irrespective of its targets. This is worrisome as the ministry has quite high targets set before it, which in future would need to be further enhanced and the ministry would need considerable resources to help meet them.

Thus, while there is a need to increase financial allocation for the development of RE, the ministry itself does not have a proven track record of having effectively utilized significant resources. Therefore, it is imperative that while enhancing budget allocation to the MNRE, adequate attention is paid to the factors constraining the process of utilization of the funds. It is also essential that the budgetary allocation for the programmes where MNRE fares well (that is Grid-Interactive & Off-Grid renewable power generation and Renewable Energy for Rural Applications programmes) should be increased immediately. This is also supported by the fact that the MNRE has in fact always exceeded the physical targets set for these programmes.

B.3. Identify opportunities within government programmes and schemes to generate demand for renewable energy

The budgetary support for renewable energy need not be provided only through the interventions administered by MNRE. There are several possibilities, which can be further intertwined both at the Union and States level, in providing such budgetary support for RE through various socio-economic and general services. An independent

assessment²⁸ shows that the healthcare system in 95,000 villages are still to be electrified, and many other villages which were assured of electricity, have got poor quality of supply. The Government is providing assistance to supply power from back-up diesel generators (DG) to meet the guidelines of the Reproductive and Child Health (RCH-II) programme. Rather, supplying electricity to the 2 lakh health sub-centres, primary health centres and community health centres from renewable energy could be a better policy choice. Likewise, renewable energy can be used for distribution of piped water supply under the National Rural Drinking Water Supply Programme, being administered by the Ministry of Drinking Water and Sanitation. A similar initiative in this direction has been the allocation of Rs. 110 crore for installing solar energy based dual-pump piped water supply facilities, resources for which have been routed from the National Clean Energy Fund; this allocation of Rs. 110 crore for the water supply facilities was made in the Union Budget 2012-13. Similarly, in the programmes like Mid-Day Meal (MDM) scheme, Sarva Siksha Abhiyan (SSA) and the Pradhan Mantri Gram Sadak Yojana (PMGSY), there is a strong potential for utilizing renewable energy. For instance, solar powered street lights could be deployed under the PMGSY scheme.

Recommendation: *Allocating specific budget under energy components of many flagship schemes could generate demand for especially off-grid renewable energy. Further, there is a need for better convergence of efforts across ministries to mainstream renewables in social sector services.*

²⁸Read details in Climate Parliament's Renewable Energy Briefing Series Paper # 2 on "Promoting Renewable Energy : Co-benefits for India" available at http://www.climateparl.net/viewpage.do?category_id=16&tagName=India

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