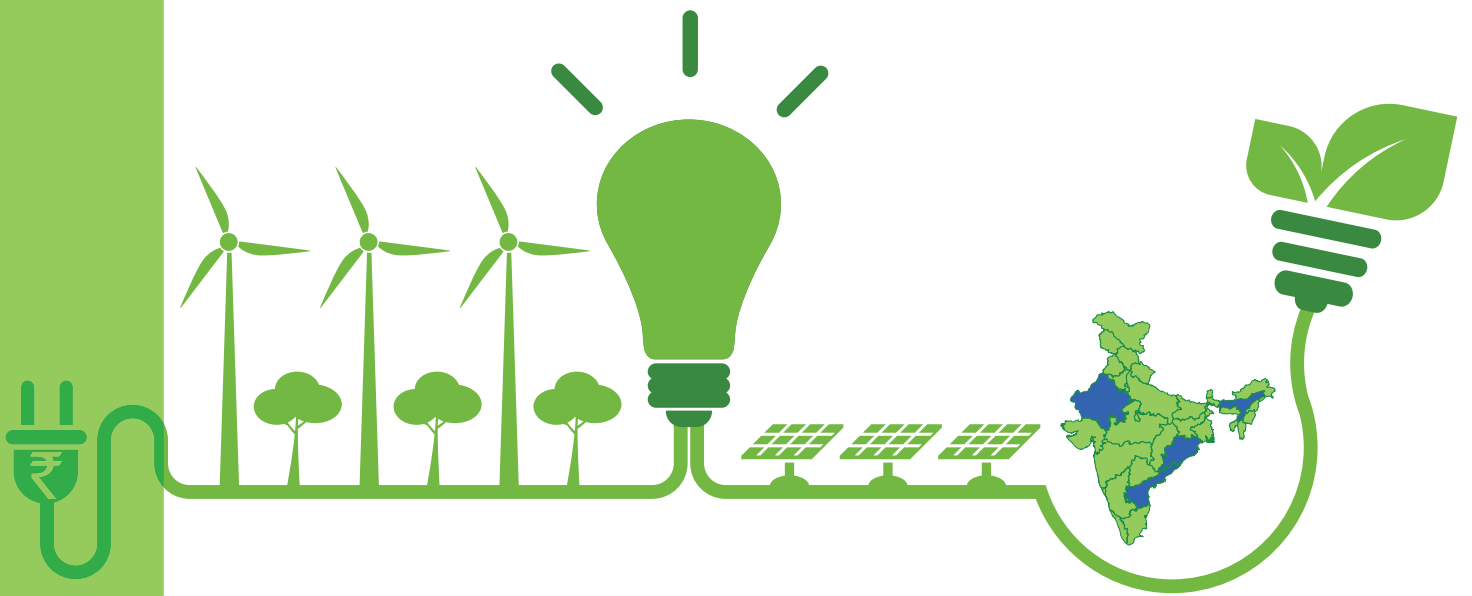


Consolidated Report

Climate Mitigation Financing Framework in Select States

July 2020



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Policy Briefs from four States

Climate Mitigation Financing Framework in Andhra Pradesh

Climate Mitigation Financing Framework in Assam

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Context

Climate Change is one of the biggest challenges facing humanity at the moment, and India has emerged as a major player internationally in the efforts to curb it. As India attempts to mitigate climate change and reduce its dependence on fossil fuels, energy sector is acquiring increasing prominence. India's energy sector is experiencing a transition with an increasing penetration of Renewable Energy (RE) in the energy mix. Focusing on RE has become an imperative to meet the energy demand spurred by rapid economic growth, rapid industrialisation, increasing urbanisation, and the need to provide energy access to one of the most energy deprived populations in the world. At the same time, to be mindful of the necessity of avoiding an increase of carbon emissions and also meeting India's Intended Nationally Determined Contributions (INDCs) to climate change.

The Indian government set a revised target in year 2015 of installing 175 GW of renewable energy capacity by 2022, which includes 100 GW from solar power, 60 GW from wind power, 10 GW from bio-power and 5 GW from small hydro-power projects. This endeavour has been supported through an increase in policy and institutional support by the Indian government. At present, energy generation in India is dominated by traditional coal-fired thermal plants. While the share of renewable energy in total generation has increased from 6 per cent in 2014-15 to 10 per cent in 2018-19, India still needs an added investment in renewable energy of more than US\$ 250 billion over the next decade in order to meet

its commitments.¹ One of the major impediments in the process of transition towards clean energy is securing the necessary finance. The Central and state governments are often constrained because of limited budgetary resources, conjugated with difficulties associated with mobilising private capital for the sector.

The nodal ministries at the Central level, the Ministry of New and Renewable Energy (MNRE) and the Ministry of Power have the mandate to strategise policies and finances to meet the targets. However, in practice, implementation of the Electricity Act 2003, happens in the states, and they are the ones grappling with limited budgetary resources. Within the framework of Cooperative Federalism laid down by the Constitution of India, states have a vital role to play in India's transformative goal to achieve its target of producing 175 gigawatts of renewables by 2022. The Electricity Act 2003 is the chief legislation that provides guidance in the development of renewable energy in India. It authorises the State Electricity Regulation Commission (SERC) to promote generation of electricity from renewable sources of energy within their area of jurisdiction by providing suitable measures for grid connectivity and sale of electricity to any person. The State Government has established various departments and designated State Owned Enterprises (SOEs) as counterparts of the Central Government ministries for the development of Renewable Energy capacity addition. These state agencies co-ordinate, regulate and enforce the provisions of the Electricity Act

¹ Sarangi, G.K., 2018. Green Energy Finance in India: Challenges and Solutions (No. 863). ADBI Working Paper Series

2003 in the states. The states are incentivising the RE sector by providing fiscal support through the budget, but a lot more needs to be done. It has also been argued that there is a need to achieve synergy between national priorities and state level strategies for more comprehensive action on RE, and thereby, on climate mitigation in India.

Due to the limited availability of public resources for the sector, it is important to mobilise private finance towards meeting India's RE goals in the stipulated time period. Over the years, greater participation of project developers in the RE sector has been promoted with expectations of improved efficiency and cost effectiveness, but this more of Central driven approach so far. The success of introducing innovative financing mechanisms and instruments depends on some necessary enabling pre-conditions at the state government level. The limited public funding available for the sector is largely being used to promote and incentivise a flow of private finance in to the sector.

One of the ways to leverage the engagement of the investor is by demystifying the existing base of public finance resources lying with the state governments for the implementation of climate change mitigation strategies. Sometimes due to an information vacuum with interested investors, even the best policy interventions may not yield the desired results. Information drives investment, and the financial flows required to achieve the target are unprecedented. The quality and nature of data made available to investors have to be at a level that is in sync with the scale of the ambitions.² Hence, there is a need to provide a lot more information on available public finance resources with state governments to enable decision makers and investors to plan more efficiently and facilitate new innovations in financing instruments.

It is within this backdrop, that the present study offers a granular understanding of public finance at the state level for various climate mitigations

actions. The state governments in various Indian states allocate funds for climate mitigation actions via the state budget, which forms a critical part of the RE financing framework at the state level, supplementing finances from Central Government sources. In line with INDCs for climate change, the state governments are making efforts to decarbonise both its demand and supply side through promotion of renewable energy and energy efficiency measures across the various sectors. Efforts are also being made to reduce fuel consumption in transport sector by promotion of electric based mobility.

Under this study, the state specific challenges in financing of climate mitigation actions were comprehensively analysed and presented through specific briefs for four select states, viz., Andhra Pradesh, Assam, Odisha and Rajasthan. These briefs present the policy, institutional and fiscal measures these states are undertaking to mitigate climate change, along with a reflection on the suitability of the budgetary provisions in meeting the State Action Plan on Climate Change (SAPCC).

These four state-wise policy briefs seek to achieve following objectives:

- I. Improving the understanding of the roles and responsibilities of state government institutions, and their coordination, in implementing state climate mitigation policies.
- II. Quantifying climate related expenditure through the budgetary system and extra-budgetary channels to the state government. These include, financial assistance from the centre and institutional finance, such as from Non-Banking Financial Institutions.
- III. Strengthening stakeholders' capacity to formulate more informed policy proposals with innovative financing instruments that efficiently deliver actions for climate change mitigation.

2 CEEW, C. (2020). How national renewable energy database will help policymakers and developers. Retrieved 22 June 2020, from <http://cef.ceew.in/masterclass/analysis/how-national-renewable-energy-database-will-help-policymakers-and-developers>

Structure of the Report

A complex policy, institutional and fiscal structure ensures RE financing at the Union government level. It will, therefore be instructive to develop a comprehensive understanding of these aspects to understand the RE financing framework at the state level. The present consolidation report encapsulates climate mitigation actions undertaken by the **Union Government such as Renewable Energy, Energy Efficiency and Conservation, and Low Carbon Transport (with a focus on electric mobility)**. This summarise cross sectoral analysis for various climate mitigation actions based **on the evidence generated from the state level analyses**. **This report also includes some key recommendations drawn from the state specific briefs. Four policy papers** providing a discussion on *“Climate Mitigation Financing Framework in Select State”* has been presented after this consolidated report.

This consolidated report has been divided into four sections. The first section delves into the RE financing framework at the Union government level in order to set a context for discussing the RE financing framework at the state level. The various sources of RE financing, the institutions involved, and financing instruments used to deliver RE finance are de-

tailed in this section. While renewables get added to the energy supply in India, the government is also laying emphasis on the demand side. Thus, while promoting Energy Efficiency and Energy Conservation (EE & EC), it is also focussing on reducing dependence on fossil fuels through the promotion of low carbon transport systems. **The second section** of this report discusses measures aimed at improving the efficiency with which energy is used across the various economic sectors, including state level efforts. **The third section** gives a summary of Central Government efforts for low carbon development in the Transport Sector, which largely focusses on electric mobility.

An attempt has also been made to answer questions on the suitability and appropriateness of state budgets for financing climate actions through an analysis of the State Action Plan on Climate Change (SAPCC) of all four states. **This is discussed in the fourth section of the report.** It presents a comprehensive reflection on how the current budgetary provisions in state budgets are finding suitable avenues with financial proposals that are aimed at meeting the requirements of the SAPCC.

Summary on Recommendations from Policy brief of States

A General Recommendations

1. While the financing support for the RE sector is available, it is still largely limited in size, reach and impact. It has been asserted that to incentivise private finance, the state governments need to provide fiscal incentives to the RE sector as well. This is possible since electricity is a concurrent subject of

legislation and both the centre and states can legislate on the subject. The states are incentivising the RE sector by providing fiscal support through the budget, but a lot more needs to be done. There is a need to achieve synergy between national priorities and state level strategies for more comprehensive action on RE and, therefore, climate mitigation in India.

2. As Indian Government navigates through Covid-19 crisis it should prioritise health and economic recovery, but, the clean energy transition can and should be reflected in coping strategies and support measures. At the time of writing this report, it is hard to predict the full impacts of Covid-19, but it seems likely they will be significant and prolonged. There will be increasing demand to support energy producers as profits fall, demand falters and perception of risk rises. Also, there will be increased demand for efficient and effective public services such as energy supply. Investment in clean energy sources can create new options for improving energy accessibility for poor population and allowing economic benefits to be clustered on those most in need. While India considers economic stimulus, it should carefully assess how different government intervention or financing support the energy project developers.

3. Central financial assistance to state government departments through subsidies and loans from central non-banking financing institutions, like the Indian Renewable Energy Development Agency Limited (IREDA), is critical to strengthening the financial foundations of state government departments and their SPVs/ SOEs. Central Non-Banking Financial Companies (NBFCs) take both development objectives and financial returns into consideration while designing financing instruments for climate financing. This allows the NBFCs to bridge financing gaps in certain sectors until they reach a stage where full market-based solutions exist. With a strong capital base from the government and networks with international donors and Development Financial Institutions (DFIs), NBFCs like IREDA can source funding on competitive terms. They can also raise debt financing in the financial market at a lower rate than their private sector peers. Hence, it is critical to track the NBFCs finances available to a state government at a disaggregated level, as currently there is a paucity of data in the public domain. National Financing Institutions should be involved in tracking initiatives to build a more complete picture of their climate efforts and encourage additional action.

4. There is need to direct public finance in the early stages of the project for addressing critical activities, as it is marked by higher uncertainties. Typical activ-

ities for beginning a RE project include resource assessment and pre-feasibility studies, setting of the tariff, land clearance for the project, incentivising local domestic manufacturing, providing a skilled workforce, initial land development, providing power supply to the project area, setting local grids etc. Depending on the scale of the project and type of technology, the cost of performing these activities requires funding out of the total project costs. It is vital, therefore, to ensure public financing for these early stage activities as it can help in addressing various uncertainties about the project's potential returns to an investor.

5. Within the framework of Cooperative Federalism laid down by the Constitution of India, states have a vital role to play in India's policy implementation of the energy efficiency sector. The State Designated Agencies (SDAs) have been established to co-ordinate, regulate and enforce the provisions of the Energy Conservation Act 2001 in states. They are state counterparts of the Government of India's central Bureau of Energy Efficiency (BEE). The SDAs have contributed significantly towards creating awareness on the efficient use of energy among consumers and manufacturers, implementing demonstration projects, and supporting the execution of BEE's programmes in states. The SDAs, under the mandate of the EC Act, should be further empowered to gather data on energy efficiency indicators across all demand sectors in the states. Currently scanty information is available on budget data on EE programmes since most of them are being operated through central government entities or by an Energy Service Company (ESCO) service provider, such as Energy Efficiency Services Limited (EESL). BEE provides a lump sum to SDAs for spending on the maintenance of a web-enabled updated data base. However, most of the states' online status on the updating of information on EE is either poor or not being refreshed at all. In this regard, the centralised entity EESL did a remarkable job by providing state-wise updated information on at least the number of equipment being installed. The scheme-wise dash board has been created by EESL. However, budget data information such as Central Financial Assistance (CFA) to states or a state's independent spending is not being maintained either by the state government or by the state-owned enterprises

or power utility agencies. States with strong SDAs, with robust energy data reporting and an excellent track record of state energy efficiency initiatives, are poised to attract more investments for energy efficiency projects, thus leading to the transformation of the energy efficiency landscape in India.

6. Development of the urban transport system is a state subject. The state budgets reflect expenditure for different kinds of transport systems to meet the requirements of a mass transit system. Most of these encourage the switching from a fossil fuel-based system to a cleaner fuel based transportation system. On budgetary provisions, state governments are providing budgetary outlays for the procurement of fuel-based buses in their respective transport systems. The Department for Road Transport in states is providing assistance to state transport undertakings (STUs) for providing road transport services, which mainly include means of public transport, such as buses. The newly formed state of Andhra Pradesh is spending on the purchase of buses and state transport through the Andhra Pradesh State Road Transport Corporation (APSRTC), which is being assisted in the acquisition of buses. A part of capital outlays under budgets can easily be directed in a phased manner towards the purchase of electric buses. This needs to be accompanied by the creation of an enabling ecosystem for the augmentation of an electric fleet in the state bus transport system, such as making provisions for charging infrastructure. There is a need to shift budgetary allocations from the procurement of fuel-based buses to electric ones at the state level.

7. The states are not reviewing their actions from the perspective of climate change and neither are they adjusting to market demands or changes in the policy environment in allocations. Many have repeated existing developmental and national policies and schemes in their SAPCCs, without properly reviewing them from a climate perspective. Some of these policies might already have failed to make a significant impact even in a business-as-usual scenario development model. There is a lack of clarity about available funding and how it is affecting the scope and extent of proposed action under the SAPCCs. Additionally, there is huge gap in the financial

requirement propounded under the SAPCC and the actual budgetary spending.

While, a common framework for the preparation of a SAPCC proposed by the Ministry of Environment, Forest and Climate Change (MOEF & CC), directs states to develop a Monitoring, Evaluation and Verification (MEV) system to monitor SAPCC execution, most of them still show a lack of clarity on MEV in their frameworks.

B

State Level Recommendations

B.1.

Need for Greater Transparency in State Finances

1. As a mitigation strategy, tracking finances for climate change mitigation across the states in the country is important in order to assess whether climate finance is flowing to those sectors and geographies that have high potential. This can therefore help in forming the basis for prioritising future investment, identifying common sources of financing among states, and tracking against national goals to identify gaps.

2. There is need to have greater transparency in state climate finance data. At times, it has been observed, that clarity on available state finances, their specific objectives and conditions increase investor confidence and thereby utilisation of available finances. State governments could create web-enabled dashboards on available state finances for climate change mitigation actions with their specific objectives and conditions. This will improve both the transparency and accountability in state finances for CC actions.

3. State governments could adopt a special statement on climate budgeting to report state finance for mitigation actions. This will accelerate more targeted financing for the sector. They can also incorporate development banks, SOEs, inter-alia depart-

ments with finances into tracking initiatives to build a more complete picture of their climate efforts and thereby encourage additional investment.

4. There is a need to have greater clarity on state climate policy objectives of the various states under study. It has been observed that clarity on state climate policies and state finances available to fund them increase investor confidence. The state governments' CCMA policies need to clearly spell out co-benefits and co-costs, distributional impacts and alignment with the economic structure. Equally, they need to unambiguously detail the feasibility of implementation, revenue generation measures and linkages with global development goals. The state governments could create a web-enabled dashboard on available state finances for climate change mitigation actions with their specific objectives and conditions. This will bring about more transparency and accountability in state finances for climate change actions and policy makers can think of innovations in financing instruments for an efficient utilisation of public finances.

B.2

Need for Blended Finance for Climate Mitigation Actions

1. State-owned Enterprises (SoEs) have the capacity to blend capital provided by the state and central government with external sources of capital; they also have the flexibility to develop financial instruments to meet the needs of renewable energy or energy efficiency projects. For example, the AP Solar Power Corporation Private Limited (APSPCL) has been instrumental in attracting private investment and generating demand of products by providing incentives, designing appropriate financing instruments and managing bidding process for large scale renewable energy projects. State and central capital investment to SOEs are critical to strengthening the financial foundations of these state-owned enterprises. Special Purpose Vehicles (SPVs) and SOEs, like APSPCL, have a high impact potential for the implementation of climate change mitigation actions, as a managing entity.

2. There are various relevant state government departments other than the Energy Department which are key in providing additional co-benefits in supporting climate mitigation actions. These include EE, low carbon development of transportation, waste to energy project development, and cleaner industrial production. State departments responsible for these climate change actions are channelising the financing through dedicated state-owned enterprises (SOEs) by making capital seeding investments. State-owned enterprises are following an operational framework based on the central and state policy frameworks for climate change mitigation actions. The tracking of finances available through SOEs is complex since these are not routed through the state budget documents and information is unavailable in the public domain. The information accessible in annual reports and the financing statement of these SOEs is project specific information and presented in brief.

3. Most of the off-grid and distributing systems of RE technologies, such as solar water heating systems, improved *chullahas* programme, agricultural solar pumps and other solar energy programmes etc. are mostly subsidy-driven programmes.

4. Over the years, the central government has evolved a feature in its policy of preferential implementation of government schemes through certified channel partners and local manufacturers for delivering quality products through the renewable energy technologies (RETs) system) to consumers or beneficiaries for off-grid projects. The state government is also involved in the certification of channel partners through a rigorous evaluation of their products. As per government sources, this has reportedly increased the reliability of products delivered under the state government schemes.

B.3

Need for providing Supporting Eco- system for de-risking Investors

1. Despite the state of Odisha having many skill-

ing programmes, there is non-availability of data on how many skilled workers have been trained for RE technology installation and operations, and the number of skilled personnel required. Further, there is no information on the government target specifically related to imparting skill or up gradation vis a vis the requirement for upcoming RE projects in the state. It is also critical to bear in mind, that although the staff requirement for off-grid technologies in remote areas is large, they do not always present full-time employment opportunities. Hence, retraining/upgrading the skill of the locally placed semi-skilled technician and service provider for off-grid RE technologies could be a way out for making available a trained workforce in remote areas. Currently, such programmes for retraining locally available labour are not considered under the Odisha Skill Development Programme and need to be included.

2. The state governments along with the central government are taking significant policy, regulatory and financial measures for de-risking private investment in RE and EE. These include multiple levels of payment security in renewable energy (RE) power purchase agreements (PPAs). It could be in the form of a letter of credit, a default escrow agreement, a payment security fund, a tripartite agreement and a state government guarantee. An important finding in this regard is that in many instances the private investors are not even aware of these measures, as for instance in Odisha. In order to alleviate the risk perception of private investors the state governments and the central government should take steps to publicise these measures in their request for proposals to investors. Apart from introducing innovative financing and policy instruments, the state government should also consider creating a conducive environment to minimise the associated risk factors, which will require collaboration. Collaborative efforts between a variety of stakeholders, such as governments - both at the centre as well as in provinces, financial institutions, investors, industrial agencies, and research organisations, can go a long way toward minimising the risks.

B.4

Need for mainstreaming Energy Efficiency across the sectors

1. In most states under study, it has been observed that the state governments have largely implemented central government RE and EE schemes and policies with some investment from their own budgets for their implementation. It will be helpful, therefore, if the state governments attempt to bring greater coherence between the state and central policies on RE and EE to consolidate their efforts towards actions in this regard. Also, the state governments must formulate and implement the State Energy Conservation Policy. As of now, most EE policies in the state are being implemented with BEE funding, with the state government formulating no autonomous programmes and allocating very little towards meeting EE objectives.

2. It has been observed that most of the State Designated Agencies (SDAs) have been given the portfolio of energy efficiency as an additional responsibility. This sometimes leads to digression of the SDA's focus from energy efficiency to the mainstream functioning of the parent department, which could be renewable energy development agencies or power departments of state governments or electricity inspectorate offices or electricity DISCOMs. It is worth noting here that only the SDA of Andhra Pradesh (State Energy Conservation Mission (SECM)) has been constituted with the sole mandate of promoting energy efficiency in the state. It is recommended that each state have a dedicated agency with adequate authority and budgetary allocations, and expertise for steering and upscaling energy efficiency implementation in the state. Till such time as a dedicated entity is instituted, the current SDAs, irrespective of the nature of their parent department are recommended to draft and subsequently adopt a State Energy Efficiency Policy.

3. Given the huge potential of EE measures in the

SME sector, it is rather disconcerting to observe that the governments under study are largely implementing the EE measures of the BEE, with no autonomous interventions. To realise the energy saving potential of the SME sector, the state governments must take appropriate and adequate policy, institutional and fiscal measures. A dedicated budget must be allocated towards implementing demonstration projects and organising awareness generation workshops and other such activities in energy intensive units in the SME sector.

B.5

Need for ramping up States' efforts for Electric Mobility Policy and Reorienting Budget Provisions

- 1.** While there is a policy thrust on introducing EVs in the states, most state governments have made little or no effort towards the objective, beyond the implementation of the GoI scheme 'FAME'. The state governments' efforts at procuring electric buses, incentivising the manufacture and sale of EVs by offering inducements to customers and establishing EV charging stations under the Phase I and II of FAME, have largely proceeded with the help of the central government's funds, with little or no allocations through state budgets. Andhra Pradesh is an exception in this regard and provides a useful example for other state governments to follow. The AP state government has articulated its own Electric Mobility Policy, 2017 – 18 through which it offers a range of incentives to improve the manufacture and uptake of EVs. The Rajasthan State Government has sought to address the situation through its new Industrial Policy. The draft of the policy which has been circulated and is available in the public domain indicates that the state government is planning to set up an EV research and manufacturing zone. The state will also offer financial incentives to encourage component manufacturing for EVs and bring in a dedicated policy to provide impetus to the sector. Further, the policy draft also calls for provisions for allotment of land on short-term leases. The government believes that the move will reduce the land cost for the entrepreneurs as the leases would be for three years. Moreover, the Government of Rajasthan (GoR) needs to ensure their effective implementation with dedicated budgetary allocations towards achieving them. While the GoR has also articulated the need for an Electric Mobility Policy, it has so far not formulated it, and the Industrial Policy has also not been adopted. Furthermore, it is important to focus on both the demand and the supply side of the EV chain. Currently, AP State EV Policy is highly focused on the supply side such as manufacturing rather than the demand side of the EV value chain. There is need for the government to play an indispensable and catalytic role in creating a favourable environment for generating a demand with the larger participation of all stakeholders at all stages of EV adoption.
- 2.** It also emerged from the study that state budgetary allocations for the transport sector suggest that the Assam government is financing the bus transport system, which is largely a conventional fuel-based system. Since the central government is making policy efforts towards shifting the cities' mobility towards cleaner fuel-based mobility, a part of the budgetary allocations currently being deployed for fuel-based buses, should be employed for the introduction of newer technologies. These include instituting an electric mobility system and creating an enabling ecosystem by setting up charging stations, and establishing manufacturing units. Budgetary provisions can also be made for adding connectivity through an inter-modal transport system for better efficiency.
- 3.** Another significant finding that emerges from these studies is the necessity of establishing a dedicated fund for financing the RE sector in various states. The modality of financing a fund of this

nature must be articulated clearly. It is an important recommendation that has emerged from the Rajasthan State Action Plan on Climate Change, which proposes the setting up of an infrastructure development fund, which would provide necessary finance for the RE sector. The fund is yet to be established. Allocations must be made for the fund jointly by the state and central government, through their respective budgets.

B.6

Need for Introducing State Climate Budgeting Statement with MEV indicators

1. Another recommendation emerging from the study is that there is a need for clearly establishing linkages between SAPCCs and public financial flows. In order to do so, the state governments could


adopt a special statement on climate budgeting to report state finances for mitigation actions. This will lead to a more targeted financing of the sector. An instructive example in this regard is that of the Odisha Government, which has introduced a dedicated “Odisha Budget” with an appraisal mechanism. This budget statement has identified priority climate actions based on their relevance and sensitivity. The aforementioned also provides a high level of transparency and visibility to a potential investor and improves investor confidence in government policies. Odisha is the first state in the country, which secured the first project with the Green Climate Fund (GCF), which indicates that the Odisha Climate Budget 2020-21, based on a climate impact appraisal framework, is definitely a pioneering move and a step in the right direction. While this Climate Budget could have been improved upon by providing monitoring and verification indicators against each identified priority action, it is still a step that needs to be emulated by other states.

Section I

Policy and Institutional Framework for Renewable Energy at the Union Government Level

1.1 What are the trends in renewable energy capacity addition in the country?

The current energy mix clearly points at India's policy focus on increasing the share of renewable energy in the energy basket. India has a total installed capacity of 370 GW to which coal and gas contribute 199 GW and 25 GW respectively³. Currently, the renewable energy capacity stands at 87 GW; up from 36.5 GW in March 2014. India has touched a new height with about 23 per cent share of renewable energy in the country's total electricity capacity. With the ambitious target of 175 GW by 2022, the government aims to increase the share of renewable energy to over one-third of the total installed capacity. A further analysis suggests that out of this installed capacity; almost 40 per cent of it is wind energy capacity and 37 per cent solar energy (ground-mounted) capacity. The rest are biomass, small hydro and waste to energy sources. The current installed capacity of solar and wind power stands at 37 GW and 32 GW respectively (**See Table 1.1**). Coal still remains a major source of power in the country - 53 per cent of the total capacity; however, the share of renewable capacity has been increasing overtime and has registered a sharp growth which stands at 23 per cent as on March 2020. It seems that renewable energy is occupying an increasingly larger space in the energy basket of the country.



This section covers how the Centre and the States are financing the Renewable Energy Sector. The following questions are answered:

- What are the trends in RE capacity addition in the country?
- What are the budgetary outlays for RE by its nodal ministry - the Ministry of New & Renewable Energy?
- What are the trends in MNRE Outlays for various Central Sector Schemes and IEBR?
- What are the trends in budgets for various Central Sector programmes for Renewable Energy?
- Which is the nodal institution for Renewable Energy at the Central level that investors can approach?
- What is the Policy Framework and Central Financial Assistance available to State Governments?
- What volume of Central Financial Assistance has been released to various states out of its various programmatic and institutional interventions?

³ CEA (2020). Retrieved 23 January 2020, from http://www.cea.nic.in/reports/monthly/installedcapacity/2020/installed_capacity-03.pdf

Table 1.1: Programme/Scheme-wise Physical Progress in 2019-20 & Cumulative up to March, 2020 (in MW)

Sector	FY- 2019-20		Cumulative Achievements (as on 31.3.2020)
	Target	Achievements	
I. GRID-INTERACTIVE POWER (CAPACITIES IN MWP)			
Wind Power	3,000	2,067.78	37,693.75
Solar Power – Ground-Mounted	7,500	5,728.19	32,112.49
Solar Power - Roof Top	1,000	718.95	2,515.30
Small Hydro Power	50	90.00	4,683.16
Biomass (Bagasse Cogeneration)	150	97.00	9,200.50
Biomass (non-Bagasse Cogeneration)/Captive Power	100	0.00	674.81
Waste to Power	2	9.34	147.64
Total	11,802	8,711.26	87,027.65
II. OFF-GRID/ CAPTIVE POWER (CAPACITIES IN MWEQ)			
Waste to Energy	10	19.09	198.20
SPV Systems	400	62.78	978.39
Total	410	81.87	1,176.59
III. OTHER RENEWABLE TECHNOLOGIES (CAPACITY IN NOS.)			
Biogas Plants	0.76	0.21	50.50

Source: MNRE

1.2 What are the budgetary outlays for RE by its nodal ministry – the Ministry of New & Renewable Energy

The budgetary provisions of ministries that deal with conventional sources of energy such as the Ministry of Power and the Ministry of Petroleum and Natural Gas have been much higher as compared to those of the Ministry of New and Renewable Energy (MNRE). The MNRE financing for Renewable Energy can be seen under two broad categories. These are:

1. Financing through the Union Government for Central Sector Schemes and Programmes accounted as Gross Budgetary Support (GBS); and
2. Financing through Public Sector Undertakings

which are outside the purview of the Union Budget, accounted as Internal and Extra Budgetary Resources (IEBR)

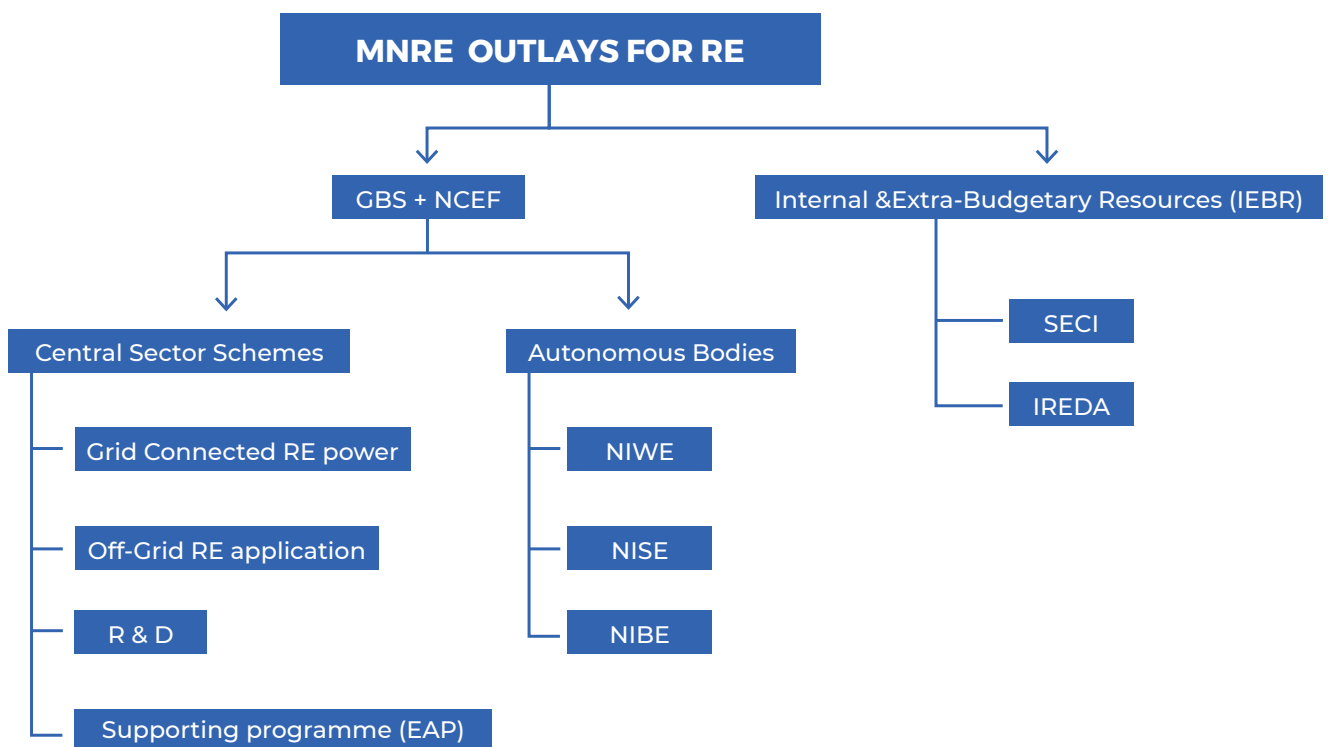
A review of the MNRE Detailed Demand for Grants document for various years reveals that the Gross Budgetary Support is mainly being provided for programmatic interventions for Renewable Energy. This involves supporting autonomous bodies such as the National Institute of Wind Energy (NIWE), the National Institute of Solar Energy (NISE) and the National Institute of Bio-energy (NIBE).

The Gross Budgetary Support has also been augmented with transfers from the National Clean Energy Fund (NCEF) (a fund constituted from the coal cess) till the 2017-18 budget of MNRE.⁴ Transfers from NCEF to MNRE were discontinued after being subsumed by the state GST Compensation Fund.

The Internal and Extra-Budgetary Resources (IEBR) component mainly supports Public Sector Undertakings, such as the Solar Energy Corporation of India (SECI) and Indian Renewable Energy Development Agency (IREDA). IEBR investments are meant

to increase equity inflows to the sector through financing instruments such as Viability Gap Funding and Generation-based Incentives in order to increase private investments.⁵

Figure 1.1: The Structure of MNRE Outlays



1.3 What are the trends in MNRE Outlays for various Central Sector Schemes and IEBR?

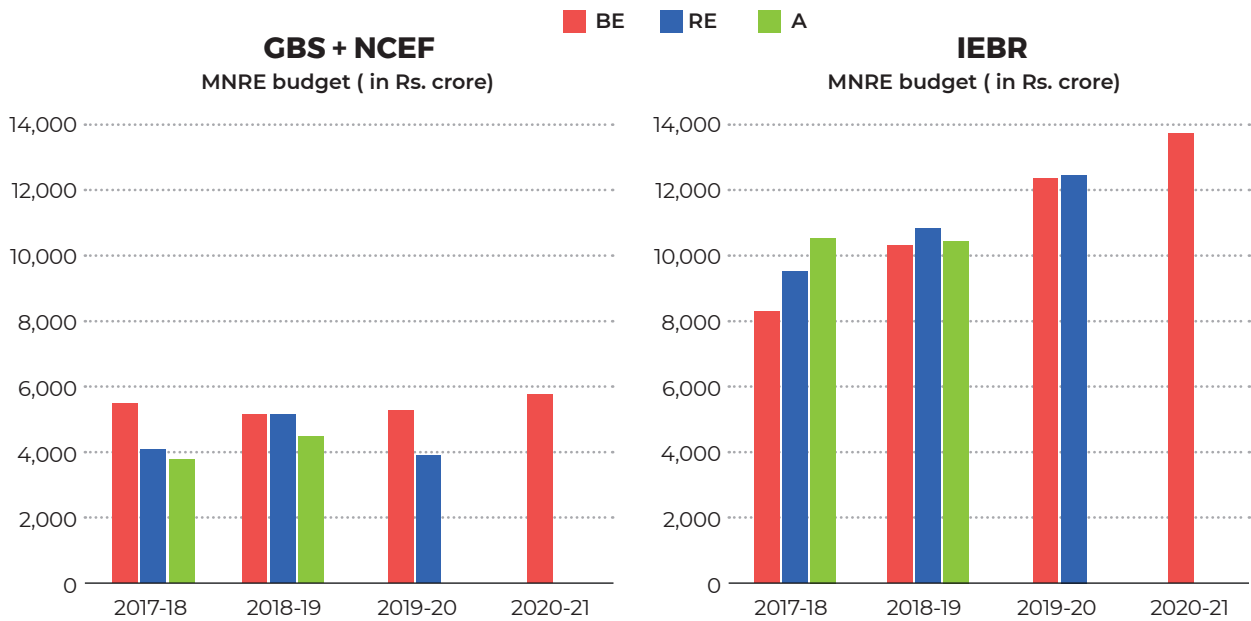
The trends reveal that there is a considerable in-

crease in the IEBR component over the GBS element in the past few years. The IEBR is approximately 2.5 times of the GBS component. This may be largely due to financing through IREDA for large scale RE projects with private investor participation (See Figure 1.2).

4 NCEF formed a substantial part of the MNRE budget but now the cess will be used to compensate the states for any loss in tax revenue they incur due to the implementation of GST. The pool was formed to fund the entrepreneurial and research ventures in the field of renewable energy and was operational since 2011-12. It was created by mobilising funds through the Clean Environmental Cess on coal at Rs. 400 per tonne.

5 The three most relevant incentive schemes are accelerated depreciation (AD), generation-based incentive (GBI) schemes, and viability gap funding (VGF). AD is essentially a tax-based incentive to the project developers. It provides financial incentives to the investors by relaxing its tax liability on the investment. This has been a significant support for wind power investments in the past. Generation-based incentive mechanisms (GBI) offer an incentive per kWh of grid interactive solar and wind energy generation. One of the main aims of this incentive mechanism was to mobilise a variety of independent power producers (IPP) with the focus on promoting the generation of energy rather than only setting up projects. VGF is a mechanism to finance economically justifiable infrastructural projects that are not financially viable. This is usually a one-time grant provided by government to make projects commercially viable. The Solar Energy Corporation of India (SECI) has widely used VGF to promote solar energy generation in the country.

Figure 1.2: Trends in MNRE Overall Outlays in IEBR Vs. GBS (in Rs. crore)

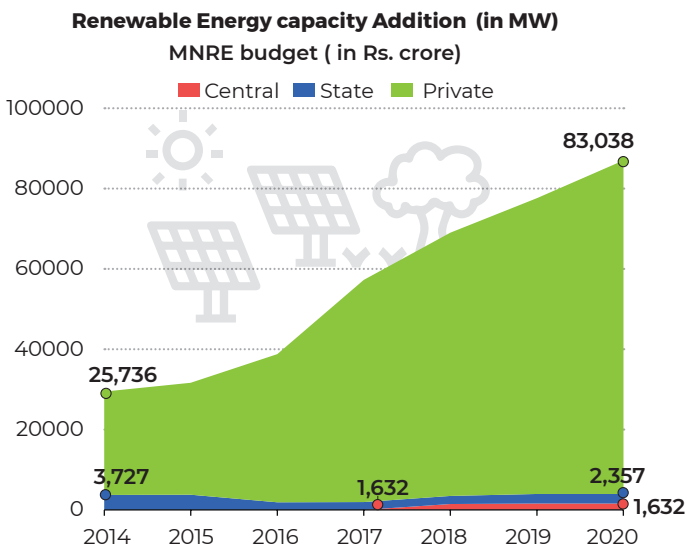


Source: Detailed Demand for Grants for MNRE for various years Note: NCEF support was only till 2017-18 budgets
 Abbreviations: A= Actuals, BE= Budget Estimates, RE= Revised Estimates.

A further bifurcation of the GBS and IEBR into various programmatic components reveals that within IEBR outlays, the allocation for IREDA is 2.5 times higher than for SECI. This is largely due to

Government push for larger private participation in the RE sectors, leading to an increase in outlays for Non-Banking Financial Institutions like IREDA, over the years. The country has the highest share of private owned RE capacities than the Central or state government owned RE capacities (See Figure 1.3). The Central Electricity Authority (CEA) report provides estimates on ownership of installed Renewable Energy capacity in the country in terms of Private, State and Central Government ownership. A comparison of data between year 2014 and 2020 (as on March 2020) reveals a steep increase in private ownership of renewable energy capacities in the country. This may be due to the stronger thrust being provided by government policy for the development of the Renewable Energy Sector through private participation.

Figure 1.3: Ownership of Centre, State and Private Sector in RE Capacity Addition (in MW) over the years



Data for each year as of March
 Source: CEA Progress Report on Power Installation (in MW), various years

GBS is being provided to various central sector schemes such as Grid Connected RE, off-Grid RE Power, Research and Development and Supporting Programmes. Allocations for grid interactive Renewable Power is around 4 times higher than off-grid applications (See Table 1.2).

Table 1.2: Budget Outlays for Central Sector Schemes on RE (in Rs. crore)

	2016-17		2017-18		2018-19			2019-20		2020-21
	BE	A	BE	A	BE	RE	A	BE	RE	BE
GROSS BUDGETARY SUPPORT										
Grid Interactive Renewable Power	3,419.00	2,824.23	4,034.50	2,555.52	3,762.50	3,963.14	3,621.71	4,272.15	3,089.60	4,350.00
Off-Grid/Distributive and Decentralised Renewable Power	983.00	689.44	918.20	990.10	1,036.48	940.01	669.59	688.00	550.36	1,184.20
Research, Development & International Cooperation	446.60	226.83	144.00	72.92	94.02	43.00	25.43	60.00	15.01	20.00
Supporting Programmes	-	-	196.60	73.37	132.20	97.02	87.08	111.30	88.69	92.30
IEBR										
Indian Renewable Energy Development Agency	9,118.85	12,212.60	8,043.31	10,324.07	10,099.41	10,557.81	10,119.37	12,053.57	12,084.00	13,351.85
Solar Energy Corporation of India Ltd (SECI)	173.98	188.92	250.00	217.20	243.00	277.33	339.78	300.24	382.24	374.89

Source: MNRE Budget for various years

Note: Detailed subcomponent of above schemes is given in Annexure 1

1.4 Which is the nodal institution for Renewable Energy at the central level that investors can approach?

Multiple agencies are involved in the renewable energy sector in India. At the national level, the Ministry of New and Renewable Energy (MNRE) is the nodal ministry for all matters related to renewable energy in India. It is the world's first exclusive ministry to be set up specifically for the development of renewable energy. The main aim of the ministry is to develop and encourage the deployment of renew-






able sources of energy to supplement the energy requirements of the country. There are various other institutions set up under MNRE, such as the National Institute of Solar Energy (NISE), and the Sardar Swaran Singh National Institute of Bio- Energy (SSS-NIBE), which serves as a specialised technical institute for solar, wind and other sources of energy (See **Table 1.3**).

There are some other government institutions whose mandate encompasses the renewable energy sector. The Ministry of Power is responsible for the National Electricity Policy (NEP) and the National Tariff Policy (NTP), both of which play a very important role in promoting the procurement of pow-

er generated from renewable sources of energy.⁶ The Ministry of Environment, Forest and Climate Change is responsible for providing environmental

clearances for renewable energy projects.

Table 1.3: Major Institutions under MNRE

Institution	Status	Responsibilities
 National Institute of Solar Energy (NISE)	Autonomous institution under MNRE	Apex national R&D institution in the field of solar energy. It was created to assist the Ministry in implementing the National Solar Mission and to coordinate research, technology and other related work. Before 2013, it was known as the Solar Energy Centre.
 National Institute of Wind Energy (NIWE)	Autonomous institution under MNRE	NIWE is an R&D institution, established in 1998. It is a knowledge-based institution of high quality and dedication, offers services and seeks to find complete solutions for various kinds of difficulties and improvements in the entire spectrum of the wind energy sector by carrying out further research.
 Sardar Swaran Singh National Institute of Bio- Energy (SSS-NIBE)	Autonomous institution under MNRE	The objective of the Institute is to carry out and facilitate research, design, development, testing, standardisation & technology demonstration. To eventually lead to commercialisation of RD&D output with a focus on bioenergy, biofuels & synthetic fuels in solid, liquid & gaseous forms for transportation, portable & stationary applications, development of hybrid / integrated energy systems; and to undertake & facilitate human resource development and training in the area of Bio-Energy.
 The Indian Renewable Energy Development Agency Ltd. (IREDA)	Non-Banking Financial Institution, under the administrative control of the MNRE	Providing term loans for renewable energy and energy efficiency projects.
 Solar Energy Corporation of India Ltd. (SECI)	CPSU under the administrative control of the MNRE. Initially incorporated under Section 25 of Companies Act, 1956, as a Company not for profit	The only CPSU dedicated to the solar energy sector. The main objective of SECI is to facilitate the implementation of JNNSM and achievement of its targets. The company is responsible for implementation of a number of schemes of MNRE. The major ones are the VGF schemes for large-scale grid-connected projects under JNNSM, the solar park scheme and grid-connected solar rooftop scheme. Besides, there are a host of other specialised schemes such as the defence scheme, canal-top scheme, Indo-Pak border scheme etc. In addition, SECI has ventured into solar project development on a turnkey basis for several PSUs. The company also has a power-trading license and is active in this domain through trading of solar power from projects set up under the schemes being implemented by it.

Source: Ministry of New and Renewable Energy

⁶ The Energy and Resources Institute. TERI-NFA Working Paper Series No. 14, Background Paper on Governance of Renewable Energy in India - Issues and Challenges, PR Krithika and Siddha Mahajan, March 2014 <http://www.gpgi.in/assets/governance-of-renewable-energy-in-india-issues-challenges.pdf>

1.5 What is the Policy Framework and Central Financial Assistance available to State Governments?

The Government of India has taken numerous policy measures to harness renewable energy in India. The energy outlook is determined by the direction that these policies at the national and state level take and the effectiveness with which they are implemented. The need for a coherent and consistent energy policy has been a long-standing priority in India. Some of the major policies in India regarding solar energy are as follows:

1.5.1. The National Solar Mission (NSM)

India is endowed with vast solar energy potential - estimated to be in excess of 750 GW per year. The National Solar Mission was launched in 2010 with the aim of achieving grid parity by 2022 and parity with coal-based thermal power by 2030. The main objective of this mission is to create an enabling environment for the penetration of solar technology in the country, both at the centralised and decentralised levels. It seeks to establish India as a global leader in solar energy, by creating the policy conditions for its diffusion across the country as soon as possible. The NSM is of immense importance to the country and is also one of the most active missions of the National Action Plan on Climate Change (NAPCC). India's target of 175 GW by 2022 relies heavily on the Jawaharlal Nehru National Solar Mission (JNNSM), which aims to install 100 GW of solar energy in the country.

Initially, the NSM under the Ministry of New and Renewable Energy planned to adopt a three phase approach — 2011-13 as Phase I, 2013-2017 as Phase II and 2017-22 as Phase III. The first phase focused on capturing the 'low-hanging' options in solar thermal energy – promoting off-grid systems to serve the population without access to commercial energy and modest capacity addition in grid-based sys-

tems. Phase II, after taking into account the experience of the previous years, was intended to achieve aggressive capacity addition to create conditions for increased and competitive solar energy penetration in the country. The objective of Phase-III is to create an enabling policy framework for the deployment of 20,000 MW of solar power by 2022.

1.5.2. Major Solar Energy Schemes under NSM



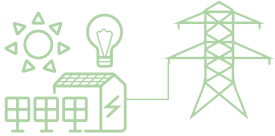
Details of existing solar energy schemes launched under the National Solar Mission:

- Solar Park Scheme for setting up of over 50 Solar Parks and Ultra Mega Solar Power Projects targeting over 40,000 MW of solar power projects.
- Scheme for setting up of Grid-Connected Solar PV Power Projects by the Central Public Sector
- Undertakings (CPSUs) and the Government of India organisations with Viability Gap Funding (VGF).
- VGF Scheme for setting up of 5000 MW of Grid-Connected Solar PV Power Projects through SECI, which has a separate component of 1000 MW for N-E states.
- Installation of Grid-Connected Solar Rooftop Power Plants.
- Off-Grid Solar PV Scheme.
- Pradhan Mantri – *Kisan Urja Suraksha evam Utthaan Mahabhiyan* (PM-KUSUM) Scheme to support farmers to set up small solar power projects and solar pumps for irrigation purposes, providing water security and promoting water conservation and EE.

The funds released by the MNRE under various schemes of solar power programmes in the country during the last four years are shown in Figure 1.4. According to MNRE, the total funds released to various state governments under Various Solar Schemes were to the tune of Rs. 1,513 crore in FY 2019-20 till October 2019.⁷

7 Generation of Solar Power. (2020). Retrieved 23 June 2019, from <https://pib.gov.in/PressReleasePage.aspx?PRID=1594085>

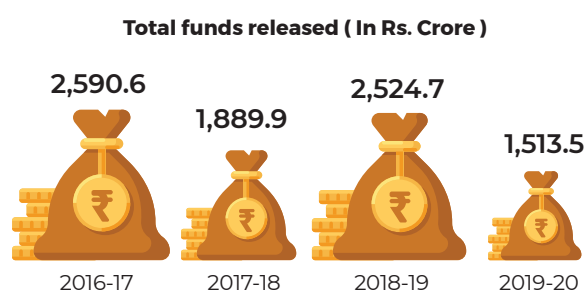
Table 1.4: Summary on Central Financial Assistance to the State Government under the National Solar Mission Phase - II

Scheme / Programme	Central Financial Assistance to the State Government
Solar Parks and Ultra Mega Solar Power Projects 	<ul style="list-style-type: none"> CFA @25 lakh per Solar Park for the preparation of Detailed Project Reports (DPRs), conducting surveys etc. Besides, CFA of up to Rs. 20 lakh per MW or 30% of the project cost, including Grid-Connectivity cost, whichever is lower, would be released to SECI on achieving the milestones of the scheme. The Grant will be managed and released by SECI, on behalf of MNRE for which SECI will be given a fund-handling fee of 1% of the grant released.
Schemes for Grid-Connected Rooftop 	<p>Domestic category:</p> <ul style="list-style-type: none"> CFA is 40% of the benchmark cost for 1 to 3 KW and CFA up to 20% of the benchmark cost above 3KW to 10 KW. Group Housing Society / RWA up to 500 KW system, CFA up to 20% of the benchmark cost. <p>Social/Institutional/ Govt./Commercial & Industrial category:</p> <p>No CFA will be provided.</p> <p>For increasing involvement of DISCOMs:</p> <p>Performance-based incentives to DISCOMs based on solar rooftop capacity achieved in a financial year, over and above base capacity.</p>
State Specific Viability Gap Funding Scheme for installing Grid-Connected Solar PV Power Projects under Phase-II 	<ul style="list-style-type: none"> Batch-I (750 MW) – VGF is limited to 30% of a project's cost or Rs. 2.5 crore/MW. Batch-III (2000 MW) – The upper limit for VGF is kept at Rs. 1.0 crore/MW for the open category and Rs. 1.31 crore/MW for projects in the Domestic Content Requirement (DCR) category. Batch-IV (5000 MW) – The upper limit for VGF is kept at Rs. 1.0 crore/MW for the open category and Rs. 1.25 crore/MW for projects in the DCR category. Batch-V (1000 MW) – for Central Public Sector Undertakings (CPSUs).

1.5.3. Development of Solar Parks and Ultra Mega Solar Power Projects

The scheme for the “Development of Solar Parks and Ultra Mega Solar Power Projects” was rolled out by the Ministry of New and Renewable Energy in December 2014 to facilitate the establishment of solar power projects, which are otherwise faced with a multitude of difficulties. These include issues of transmission losses, expenses involved in site development, drawing of transmission lines, procuring

Figure 1.4: Funds Released by MNRE to Various States / UTs under Solar Schemes in the Last Four Years (in Rs. Crore)



Source: PIB release ID No. 1594085 by MNRE
 Note: Figures for 2019-20 till 1.10.2019

water, the creation of necessary infrastructure, and clearances and permissions. Under this scheme, it was proposed to set up at least 25 Solar Parks and Ultra Mega Solar Power Projects targeting over 20,000 MW of solar power installed capacity within a span of 5 years starting from 2014-15. Subsequently, the capacity of the scheme has been enhanced from 20,000 MW to 40,000 MW. The scheme envisages supporting the states/UTs in setting up solar parks at various locations in the country with a view to creating the required infrastructure for the setting up of solar power projects. The solar parks

provide suitable developed land with all clearances, transmission system, water access, road connectivity, communication network, etc. They are developed in collaboration with the state governments and their agencies, CPSUs, and private entrepreneurs. Under the scheme, the MNRE provides Central Financial Assistance (CFA) of up to Rs. 25 lakh per solar park for the preparation of a Detailed Project Report (DPR).

In the four select states under our study, the Central Financial Assistance reveals that large amounts

Figure 1.5a: Central Funds Released for Development of Solar Parks in Andhra Pradesh (in Rs.crore)

	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20
Ananthpurmu-I Solar Park	0.10	-	-	-
Kurnool Solar Park	0.25	17.94	-	-
Kadapa Solar Park	6.25	14.00	34.00	-
Ananthpurmu-II Solar Park	3.25	7.00	41.00	-
Hybrid Solar Wind Park	-	-	-	-
Ext Trans PGCIL -AP-I	-	60.00	-	49.56
Ext Trans APTRANSCO -AP-II	-	-	20.00	-
Ex Trans- APTRANSCO-Kurnool	-	67.03	-	6.97
Sub- Total	9.85	166.22	95.00	56.52

Source: PIB release ID No. 1594085 by MNRE Note: Figures for 2019-20 are till 31.10.2019

Figure 1.5b: Central Funds Released for Development of Solar Parks in Rajasthan (in Rs. crore)

	FY 2016-17	FY 2017-18	FY 2018-19
Bhadla -III Solar Park	4.50	17.62	28.28
Bhadla-IVSolar Park	15.25	36.00	-
Phalodi-Pokarn Solar Park	0.25	-	18.00
Fatehgarh Phase-1 B Solar Park	0.25	-	-
Nokh Solar Park	-	0.25	-
RVPN (Bh-II, Bh-III, Bh-IV , Phalodi- Pokarn, Fatehgarh Ph-1 B solar parks)	-	50.27	-
PGCIL (Bh-II, Bh-III, Bh-IV, Phalodi-Pokarn, Fatehgarh Ph-1B solar parks)	-	30.00	30.00
Sub-total	20.25	134.14	76.28

Source: PIB release ID No. 1594085 by MNRE Note: Figures for 2019-20 are till 31.10.2019

Figure 1.6: CFA to Select States under Viability Gap Funding (in Rs. crore)

VGF Category	States (RE capacity)	State wise releases (in Rs. crore)			
		2016-17	2017-18	2018-19	2019-20
750 MW Category	Rajasthan (575 MW)	66.23	29.06	82.77	4.55
2000 MW Category	Andhra Pradesh (300 MW)			96.87	96.87
5,000 MW Category	Odisha (270 MW)				14.77

Source: PIB release ID No. 1594085 by MNRE

Note: Figures for 2019-20 are till 31.10.2019

were released in the development of Solar Parks in Andhra Pradesh and Rajasthan (See Figures 1.5a & b).

1.5.4. Setting up of over 5000 MW Grid-Connected SPV Power Projects under Batch IV of Phase II of JNNSM through Viability Gap Funding

Under the Viability Gap Funding (VGF) Scheme, support of Rs. 5050 crore is to be provided for the setting up of at least 5000 MW Grid-Connected Solar PV Power Projects by solar power developers on Build-Own-Operate basis. The SECI selects projects through competitive e-bidding based on minimum VGF sought. It then signs Power Purchase Agreements (PPAs) with developers and a Power Sale Agreement with buying DISCOMs/State Utilities/bulk consumers.

Under this scheme, the central fund is released to various states under three categories, namely, 700 MW, 2000 MW and 5000 MW. The CFA to select states for RE capacity addition through the VGF scheme are listed in Figure 1.6 showing trends.

1.5.5 Grid-Connected Solar Rooftop Programme

This programme is aimed at achieving a cumulative

capacity of 40,000 MW from Rooftop Solar (RTS) Projects by the year 2022. The Central Financial Assistance is provided in the following format:

- CFA @ 40% for capacity up to 3 kWp
- CFA @ 20% for capacity beyond 3 kWp and up to 10 kWp
- CFA @ 20% for GHS/RWA capacity up to 500 kWp (limited to 10 kWp per house and total up to 500 kWp)

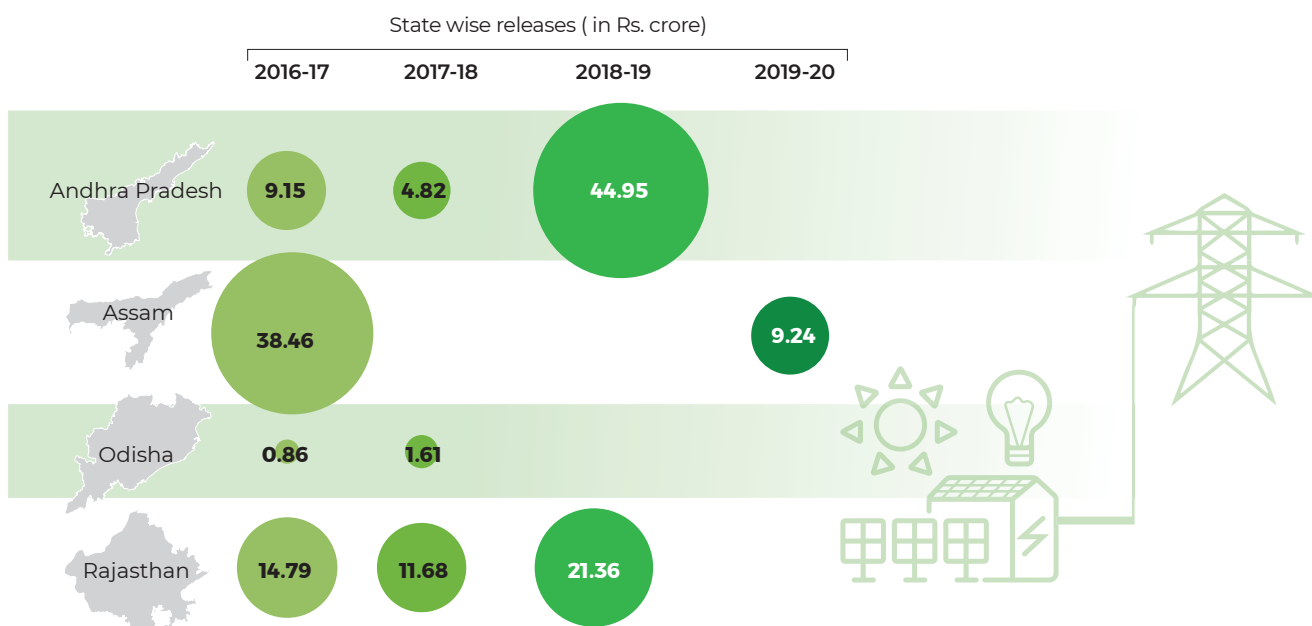
1.5.6 Off-Grid and Decentralised Solar PV Applications Programme Phase III

This scheme entails the installation of an additional off-grid solar capacity of 118 MWp by 2020 by following application-wise targets:

1. 3,00,000 solar street lights
2. 25,00,000 solar study lamps
3. 100 MWp of off-grid solar power plants

Under the scheme, the Central Government will provide CFA of 30% of the benchmark cost of the system or the tender cost, whichever is lower, for solar street lights and solar power plants in the General Category States; and CFA of 90% of the benchmark cost or tender cost, whichever is lower, in the North Eastern States, including Sikkim, Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Lakshadweep and the Andaman and Nicobar Islands. For Solar Study

Figure 1.7: State-wise Release under the Grid-Connected Solar Rooftop Scheme (in Rs.crore)



Source: PIB release ID No. 1594085 by MNRE

Note: Figures for 2019-20 are till 25.11.2019, Assam data is not available

Lamps, CFA of 85% of the lamp cost will be provided with the balance 15% of the lamp cost being borne by the beneficiary student. The programme will be implemented through State Nodal Agencies (SNAs).

1.5.7 PM KUSUM Scheme

The scheme aims to add solar and other renewable energy capacity of 25,750 MW by 2022 with total central financial support of Rs. 34,422 crore. The scheme has three components:

Component A: 10,000 MW of Decentralised Ground-Mounted Grid-Connected Renewable Power Plants of individual plant size up to 2 MW.

Component B: Installation of 17.50 lakh Standalone Solar Powered Agriculture Pumps of individual pump capacity up to 7.5 HP.

Component C: Solarisation of 10 Lakh Grid-Connected Agriculture Pumps of individual pump capacity up to 7.5 HP.

In the Union budget 2020, Rs. 300 crore and Rs. 700 crore were released respectively, under grid-connected and off-grid RE power plants for the implementation of the KUSUM scheme.

1.5.8 Other Sources of RE

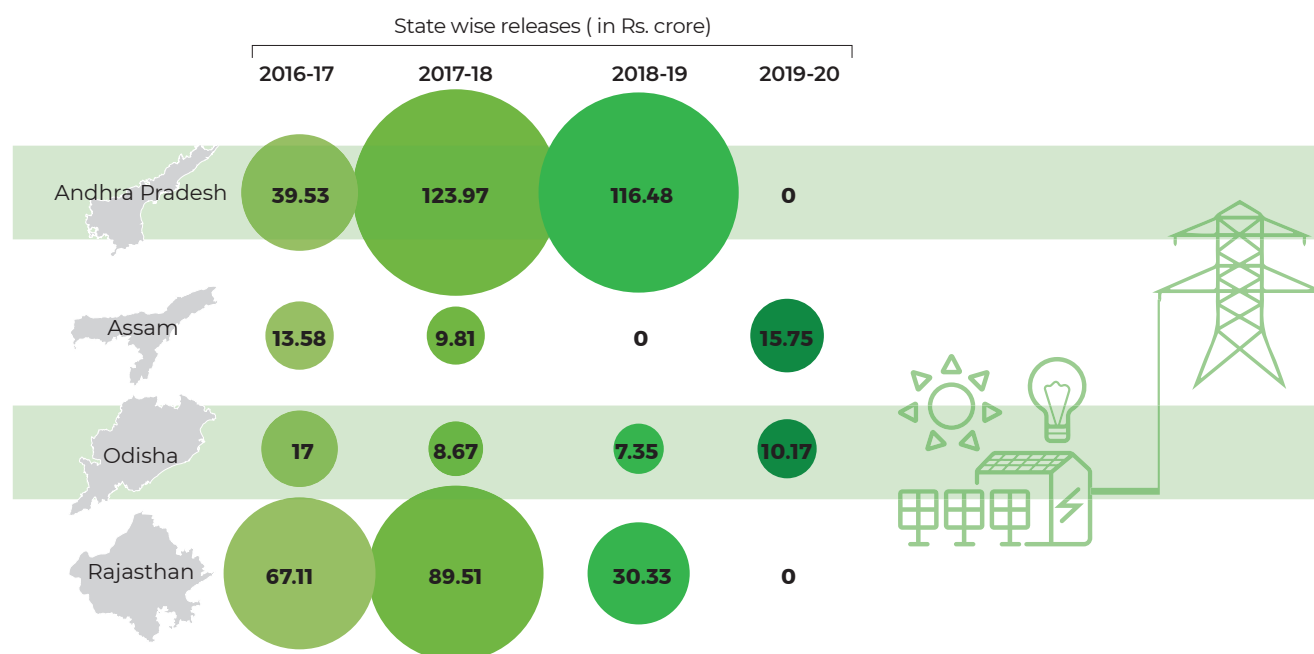
1.5.8.1. Wind Energy

India's wind energy sector is led by an indigenous wind power industry, which has shown consistent progress. The expansion of the wind industry has resulted in a strong ecosystem, project operation capabilities and manufacturing base of about 10,000 MW per annum. The Government of India is promoting wind power projects in the entire country through private sector investment by providing various fiscal and financial incentives such as an Accelerated Depreciation Benefit and a concessional customs duty exemption on certain components of wind electric generators. In order to facilitate inter-state sale of wind power, the inter-state transmission charges and losses have been waived off for wind and solar projects to be commissioned by March 2022.

1.5.8.2. Hydro Power

Hydro power projects are classified as large and small based on their size. The MNRE has taken a se-

Figure 1.8: CFA to states' for Off-Grid and Decentralized Solar PV Applications Programme Phase III (in Rs.crore)



Source: PIB release ID No. 1594085 by MNRE

Note: Figures for 2019-20 are till 31.10.2019

ries of steps to promote the development of Small Hydro Power (SHP) projects in a planned manner designed to improve their reliability and quality. By giving various physical and financial incentives in addition to subsidies, investments have been attracted in commercial SHP projects. The Small Hydro Power Programme is a step in this direction. The objective of the SHP scheme is to encourage state government entities and Independent Private Producers (IPPs) to set-up new SHP projects in order to realise the entire 21,000 MW potential in a phased manner.

1.5.8.3. Biogas Power Generation Programme

This programme aims to promote biogas-based Decentralised Renewable Energy Sources for power generation (off-grid), in the capacity range of 3 kW to 250 kW or thermal energy. This could be for heating/ cooling applications from the biogas genera-

tion produced from biogas plants of 30 m³ to 2500 M³ in size. The programme also aims to establish biogas plants as a source of RE using cattle dung/ animal waste, food and kitchen waste etc. for biogas production.

The applicable rates of CFA/ subsidy for the setting up of Biogas-based Power Generation (Off-grid) and Thermal application projects are provided in three slabs of sizes of Biogas Plants and corresponding Power generation/ Thermal Energy generation capacity. This varies from Rs. 25,000/- to Rs. 40,000/- per KW for Power and Rs. 12,500/- per KWe to Rs.20,000/- per KWe of Thermal Energy. The CFA is given on a reimbursement basis after successful commissioning and completion of the project in all respects.

Annexure I: Detailed Subcomponents under Various Central Sector Schemes by MNRE (in Rs. crore)

	2016-17		2017-18		2018-19		2019-20		2020-21	
	BE	A	BE	A	BE	A	BE	RE	BE	BE
GRID INTERACTIVE RENEWABLE POWER										
Transfer to National Clean Energy Fund (NCEF)	3,419	2,824	4,035	3,688	-	950	920	1,026	1,299	
Wind Power	365	489	400	750	750	136.8	182.9	92.1	100	
Small Hydro Power	112	112	121.5	114.02	207	6.83	25	4.68	75	
Bio Power	30	16.3	33	13.29	25	1,904	2,480	1,789	2,150	
Solar Power	2,350	1,992	2,661	1,001	2,045					
Kisan Urja Suraksha evam Utthaan Mahabhiyan (KUSUM)										300
Green Energy Corridors	500	200	500	500	600	500	500	52.61	300	
Information, Education and Communication	5	12.7	-	-	-					
Demonstration of Renewable Energy Applications	2	1.96	-	-	-					
Energy Storage	16	-	-	-	0.01					
Externally Aided Project (EAP) - Component	39	-	39	0.45	7.25	...	40	0.41	1	
Interest Payment and Issuing Expenses on the Bonds	-	-	280	126.45	128	124.39	124.35	124.35	125	
Less - Amount met from National Clean Energy Fund	-3,419.0	-2,824.2	-4,034.5	3,637.8						
Total-Grid Interactive Renewable Power	3,419	2,824.23	4,034.50	2,555.52	3,762.5	3,621.71	4,272.15	3,089.64	4,350	
OFF-GRID/DISTRIBUTIVE AND DECENTRALISED RENEWABLE POWER										
Transfer to National Clean Energy Fund (NCEF)	983	689.84	918.2	...	...			
Wind Power	7.0	2.38	8.0	4.39	7.43	1.6	...	...	3.01	
Small Hydro Power	10	10	13	6.39	11.5	0.92	8	2.04	2	
Bio Power	30.0	15.16	43	13.22	23	3.35	50	6.03	53	
Solar Power	700	548.83	700	888.64	848.5	620.89	525	491.02	366.14	
Kisan Urja Suraksha evam Utthaan Mahabhiyan (KUSUM)										700
Remote Village Electrification (RVE)	50	24.13	...	...	0.01	...	...	...	...

Annexure I: Detailed Subcomponents under Various Central Sector Schemes by MNRE (in Rs. crore)

	2016-17		2017-18		2018-19		2019-20		2020-21	
	BE	A	BE	A	BE	A	BE	RE	BE	BE
Biogas Programme	97	78.64	134	67.69	135	42.72	100	51	60	
Others including Cook Stoves	16	0.45	...	...	0.01					
Other Renewable Energy Applications (Solar Cities, Green Buildings, Support to States, Demonstration of Renewable Energy Applications, Cookstoves, etc.)	20	4.25	14.2	3.8	11.01	0.11	5	0.27	0.05	
Externally Aided Projects (EAP) - Component	6	6	6	5.97	...					
Energy Storage	2	...	...	...	0.01					
Central Plan Schemes	45	...	...	...	0.01					
Less-Amount met from National Clean Energy Fund (NCEF)	-983	-689.84	-918.2		...					
Total-Off-Grid/Distributed and Decentralized Renewable Power	983	689.84	918.2	990.1	1,036.48	669.59	688	550.36	1,184.2	
RESEARCH, DEVELOPMENT AND INTERNATIONAL COOPERATION										
Transfer to National Clean Energy Fund(NCEF)	445	221.94	144		...					
Research and Development	...	...	144	72.92	94					
Bio Energy	8	4.26	...	...	...		
Solar Energy	90	49.43	...	...	...		
Small Hydro Power	3	2.7	...	...	...		
New Technologies	20	3.64	...	...	...		
Wind Energy	3	0.76	...	...	...		
International Relations - International Co-operation including Investment Promotion and Assistance to International Solar Alliance	221.6	123.28	...	...	...		

Annexure I: Detailed Subcomponents under Various Central Sector Schemes by MNRE (in Rs. crore)

	2016-17		2017-18		2018-19		2019-20		2020-21	
	BE	A	BE	A	BE	RE	BE	RE	BE	RE
Human Resource Development and Training	55	42.76	-	-	-	-	-	-	-	-
Energy Storage	2	-	-	-	0.01	-	-	-	-	-
New and Innovative Projects, National Centre for New Energy and Innovation (NCNEI), National University of Renewable Energy (NURE), World Renewable Energy Museum (WREM)	44	-	-	-	0.01	-	-	-	-	-
Less-Amount met from National Clean Energy Fund (NCEF)	-445	-221.94	-144	-	-	-	-	-	-	-
Total-Research, Development and International Cooperation	446.6	226.83	144	72.92	94.02	25.43	60	15.01	20	
SUPPORTING PROGRAMMES										
Transfer to National Clean Energy Fund (NCEF)	-	-	195	-	-	-	-	-	-	-
Monitoring/Evaluation and Other Studies	-	-	15	-	0.3	0.07	0.3	0.03	0.3	0.3
Information Technology/e-Governance and other Initiatives	-	-	0.1	0.06	0.1	0.1	1	0.55	-	-
Information, Education and Communications	-	-	20.0	13.25	15.0	5.15	10	7.21	10	10
International Relations - International Co-operation including Investment Promotion and Assistance to International Solar Alliance	-	-	76.6	16.62	56.6	24.37	30	16.9	22	22
Human Resources Development and Training	-	-	70.0	43.44	60	57.39	70	64	60	60
New & Innovative Projects, National Centre for New Energy and Innovation (NCNEI), National University of Renewable Energy (NURE), World Renewable Energy Museum (WREM)	-	-	14.9	-	0.2	-	-	-	-	-
Less Amount met from National Clean Energy Fund (NCEF)	-	-	-195	-	-	-	-	-	-	-
Total-Supporting Programmes	-	-	196.6	73.37	132.2	87.08	111.3	88.69	92.3	
Total-Central Sector Schemes/Projects	4,848.6	3,740.9	5,293.3	3,691.91	5,025.2	4,403.81	5,131.45	3,743.7	5,646.5	

Annexure II: National Solar Mission – Major Phases and Schemes

Phase or scheme	Time period	Target (MW)	Capacity under construction / operational (Dec 31, 2017) (MW)	Means of achieving Target
NATIONAL SOLAR MISSION TARGET SET AT 20 GW, TO BE ACHIEVED BY 2022				
Phase I NTPC Vidyut Vyapar Nigam Ltd. (NVVN) Batch I	2010-13	150	140	Allocated capacity by reverse bidding
NVWN Batch I Solar Thermal		470	200	
NVWN Batch II		350	330	
Phase II Batch I	2013	750	680	Implemented by SECI with support from National Clean Energy Fund (NCEF); reverse auction of VGF; Tariff set at Rs 5.45/kW
NATIONAL SOLAR MISSION TARGET INCREASED TO 100 GW, TO BE ACHIEVED BY 2022				
Batch II Tranche I	2015-18	3000	PPA: 2,750 MW Commissioned: 2050 MW	Solar parks through state-specific bundling scheme; NVVN the implementing agency. Capacity allocated by reverse bidding of tariffs
Batch III	2015-19	2000	PPA: 2,295 MW PSA: 2,425 MW Commissioned: 300 MW	Implemented by SECI; state specific projects auctioned by reverse bidding of VGF with benchmark tariff of Rs 4.43/Kw
Batch IV	2017-19	5000	PPA: 970 MW PSA: 1,720 MW Commissioned: 250 MW	Implemented by SECI; projects auctioned by reverse bidding of VGF with benchmark tariff of 4.43/Kwh; Negative VGF allowed as reflected by tariffs lower than the benchmark
Inter-state Transmission System (ISTS)	2018-19	7000	Auctioned 2,000 (NTPC) 3,000 (SECI)	Implemented by SECI and NTPC; open auction; projects can be located anywhere and power sold to any buyer
Central Public Sector Undertaking (CPSU)	2017	1000	Sanctioned: 986 Commissioned: 765	PSUs granted VGF of Rs 1 crore/MW to develop capacity; projects expected to use indigenous cells/modules. If imported cells, VGF reduced by half

Source: CSE Report: Status of Renewable Energy 2019

Annexure III (Part I to VI): Central Financial Assistance Released to State/UT-wise by Central Government for Promotion of Solar Energy

Part I. Pilot-cum-demonstration projects for development of Grid-connected Solar PV Power Plants on Canal Banks (CB) and Canal Tops (CT) (in Rs. crore)

State	Implementing Agency	Project Type	Capacity (MW)	Central Financial Assistance Released		
				FY 2016-17	FY 2017-18	FY 2018-19
Andhra Pradesh	New & Renewable Energy Development Corporation of Andhra Pradesh Ltd. (NREDCAP)	CT	1	0.32	0	1.27
Andhra Pradesh	NREDCAP (Andhra Pradesh Power Generation Corporation - APGENCO)	CB	5	1.5	0	4.5
Gujarat	Sardar Sarovar Narmada Nigam Limited (SSNNL)	CT & CB	10 & 15	10.32	0	31.22
Karnataka	Krishna Bhagya Jala Nigam Ltd (KBJNL)	CT	10	3.39	0	14.68
Kerala	Kerala State Electricity Board (KSEB)	CT & CB	2&1	1.21	0	4
Punjab	Punjab Energy Development Agency (PEDA)	CT	20	3	0	6.15
Uttar Pradesh	Irrigation Dept.	CT	3.5 & 2.5	0	0	3.26
Uttarakhand	Uttarakhand Jal Vidyut Nigam Limited (UJVNL)	CT & CB	1&19	6.3	0	17.7
West Bengal	WBSEDCL	CB	10	4.8	0	7.2

Part II. Development of Solar Parks and Ultra Mega Solar Power Projects (in Rs. lakh)

Solar Parks	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20
ANDHRA PRADESH				
Ananthapuramu-I Solar Park	9.77	0.00	0.00	0.00
Kurnool Solar Park	25.00	1,793.81	0.00	0.00
Kadapa Solar Park	625.00	1,400.00	3,400.00	0.00
Ananthapuramu-II Solar Park	325.00	699.80	4,100.00	0.00
Solar- Wind Hybrid Park	0.00	25.00	0.00	0.00
Ext Trans PGCIL -AP-I	0.00	6,000.00	0.00	4,955.54
Ext Trans APTRANSCO -AP-II	0.00	0.00	2,000.00	0.00
Ex Trans- APTRANSCO-Kurnool	0.00	6,703.00	0.00	696.50
Sub- Total	984.77	16,621.61	9,500.00	5,652.04
CHHATTISGARH				
Rajnandgaon Solar Park	15.00	0.00	0.00	0.00
GUJARAT				
EX Trans PGCIL Raghanesda Solar Park	0.00	413.00	2,387.00	0.00
KARNATAKA				
Pavagada Solar Park	7,980.00	0.00	0.00	0.00
Ext Trans PGCIL Pavagada	0.00	4,000.00	4,000.00	4,000.00
Sub - Total	7,995.00	4,413.00	6,387.00	4,000.00
KERALA				
Kasargod Solar Park	200.00	0.00	0.00	0.00
MADHYA PRADESH				
Rewa Solar Park	0.00	3,883.51	0.00	0.00
Neemuch Mandsaur Solar Park	25.00	0.00	2,523.50	0.00
Ext Trans Power Grid Corporation of India Limited (PGCIL) Rewa	0.00	3,000.00	0.00	3,000.00
Sub Total	225.00	6,883.51	2,523.50	3,000.00
MAHARASHTRA				
Sai Guru Mega Solar Park (Pragat)	435.00	0.00	0.00	0.00
Patoda Solar Park (Paramount)	25.00	0.00	0.00	0.00
Dondaicha Solar Park	25.00	0.00	600.00	0.00
Latur Solar Park	0.00	0.00	10.00	0.00
Washim Solar Park	0.00	0.00	15.00	0.00
Yavatmal Solar Park	0.00	0.00	10.00	0.00
Kacharala Solar Park	0.00	0.00	15.00	0.00
Sub total	485.00	0.00	650.00	0.00

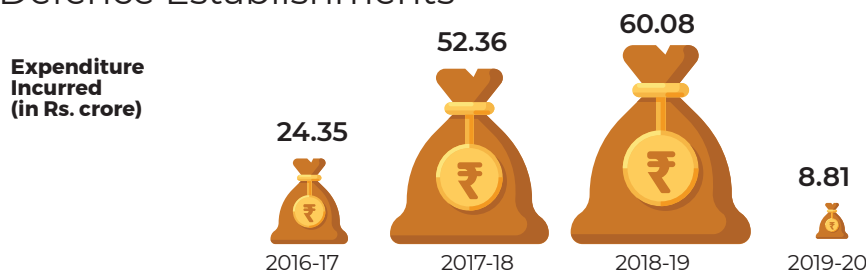
Part II (continued). Development of Solar Parks and Ultra Mega Solar Power Projects (in Rs. lakh)

Solar Parks	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20
MANIPUR				
Bukpi Solar Park	0.00	0.00	0.00	10.00
MIZORAM				
Vankal Solar Park	0.00	0.00	0.00	10.00
RAJASTHAN				
Bhadla - III Solar Park	450.00	1,761.51	2,827.65	0.00
Bhadla - IV Solar Park	1,525.00	3,600.00	0.00	0.00
Phalodi-Pokaran Solar Park	25.00	0.00	1,800.00	0.00
Fatehgarh Phase-1B Solar Park	25.00	0.00	0.00	0.00
Nokh Solar Park	0.00	25.00	0.00	0.00
RVPN (Bh-II, Bh-III, Bh-IV , Phalodi-Pokaran, Fatehgarh Ph-1B Solar Parks)	0.00	5,027.10	0.00	5,720.00
PGCIL (Bh-II, Bh-III, Bh-IV, Phalodi-Pokaran, Fatehgarh Ph-1B Solar Parks)	0.00	3,000.00	3,000.00	0.00
Sub total	2,025.00	13,413.61	7,627.65	5,720.00
TAMIL NADU				
Kadaladi Solar Park	0.00	0.00	25.00	0.00
UTTAR PRADESH				
Ext TRANS Uttar Pradesh Power Transmission Corporation Limited (UPPTCL)	0.00	1,719.15	0.00	0.00
UTTARAKHAND				
Solar Park in Uttarakhand	8.25	0.00	0.00	0.00
WEST BENGAL				
Solar Park in West Bengal	25.00	0.00	0.00	0.00
Total	11,748.02	43,050.88	26,713.15	18,392.04

Part IV. Grid-Connected Solar Rooftop, Amount Released in Rs. crore

S.No.	State /UTs	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20
1	Andhra Pradesh	9.15	4.82	44.95	
2	Assam	38.46	0.00		9.24
3	Andaman & Nicobar Islands	0.53	7.00		
4	Chhattisgarh	5.50	3.30		2.67
5	Delhi	19.47	21.40		
6	Gujarat	17.43	23.18	169.19	12.10
7	Goa				
8	Haryana	16.22	0.00	11.74	13.06
9	Jammu & Kashmir	3.68	0.00		6.53
10	Jharkhand	12.71	0.00		
11	Kerala	4.05	9.41		
12	Karnataka	2.52	0.00		
13	Lakshadweep	0.46	0.00		
14	Madhya Pradesh	31.96	3.14		
15	Maharashtra	23.18	0.00	77.13	
16	Odisha	0.86	1.61		
17	Puduchery	1.10	0.00	0.10	
18	Punjab	4.50	0.00	10.71	
19	Rajasthan	14.79	11.68	21.36	
20	Tamil Nadu	69.67	0.00		
21	Telangana	20.12	2.72	18.25	
22	Tripura	0.00	0.70		
23	Uttarakhand	25.97	27.09		7.67
24	Uttar Pradesh	1.16	2.32	7.52	
25	West Bengal	0.17	6.30	4.08	13.38
26	Chandigarh	6.72	1.73	18.76	
27	Manipur	8.11	0.00		3.78
28	Himachal Pradesh	5.43	0.00	9.76	
29	Arunachal Pradesh	0.00	14.06		
30	Mizoram	0.00	4.54		
31	Meghalaya				3.47
	Sub Total	343.92	145	393.55	71.9
32	PSU/Govt Department	74.74	16.75	19.67	20.83
33	SECI	250	3.68	33.56	81.81
34	NISE	0	2.38		
	Total	668.66	167.81	446.78	174.54

Part III. Funds under 300 MW Defence Scheme Released to Defence Establishments



Part V. Off-Grid SPV Scheme: State-wise Details of Funds Released for Solar Off-Grid Applications (in Rs. Lakhs)

States/ UTs	2016-17	2017-18	2018-19	2019-20
Andhra Pradesh	3,953	12,397	11,648	0
Arunachal Pradesh	694	770	0	1,701
Assam	1,358	981	0	1,575
Bihar	0	0	526	37
Chhattisgarh	6,549	15,486	9,113	0
Delhi	0	0	0	0
Gujarat	2,608	2,622	0	0
Haryana	0	0	65	0
Himachal Pradesh	2,650	1,339	1,829	809
Jammu & Kashmir	2,466	0	1,053	0
Jharkhand	0	555	0	499
Karnataka	3,901	0	1,484	959
Kerala	2,359	779	150	0
Lakshadweep	0	397	0	0
Madhya Pradesh	66	6,917	2,847	0
Maharashtra	0	0	613	3,477
Manipur	442	652	0	1,231
Meghalaya	1,354	816	157	0
Mizoram	1,354	1,633	0	0
Nagaland	1,501	884	206	1,325
Odisha	1,700	867	735	1,017
Puducherry	0	0	0	0
Punjab	0	0	1,323	713
Rajasthan	6,711	8,951	3,033	0
Sikkim	282	0	274	0
Tamil Nadu	207	0	0	0
Telangana	0	2,337	0	0
Tripura	1,372	203	0	0
Uttarakhand	373	555	0	1,087
Uttar Pradesh	1,896	2,670	2,554	4,517
West Bengal	0	0	0	0
Chandigarh	0	0	0	0
Others *	11,266	26,614	22,784	0
Total (in Rs lakh)	55,062	88,425	60,394	18,947

* (Central Electronics Ltd [CEL] , Rajasthan Electronics & Instruments Ltd [REIL], NABARD, Regional Rural Banks , NGOs etc.) and other Channel Partners

Part VI: Viability Gap Funding Released under VGF Scheme

VI a. Viability Gap Funding Released under VGF Scheme (a) 750 MW in Rs. crore

States	Capacity	2016-17	2017-18	2018-19	2019-20
Gujarat	50	6.08	1.04	2.08	
Karnataka	10				10.48
Madhya Pradesh	370	43.01	12.72	51.47	6.60
Maharashtra	45	1.40	0.67	11.17	2.70
Rajasthan	575	66.23	29.06	82.77	4.55
Tamil Nadu	10			1.34	1.35
Total	1,060	116.72	43.49	148.83	25.68

VI b. Viability Gap Funding Released under VGF Scheme (b) 2000 MW in Rs. crore

States	Capacity	2018-19	2019-20
Andhra Pradesh	300	96.87	96.87
Chhattisgarh	100	29.50	5.90
Karnataka	150	55.12	55.12
Maharashtra	270	53.38	31.23
Uttar Pradesh	165	38.74	31.59
Total	985	273.61	220.71

VI c. Viability Gap Funding Released under VGF Scheme (c) 5000 MW in Rs. crore

States	Capacity	2018-19	2019-20
Gujarat	250	191.60	
Maharashtra	210		25.50
Odisha	270		14.77
Total	730	191.63	40.27

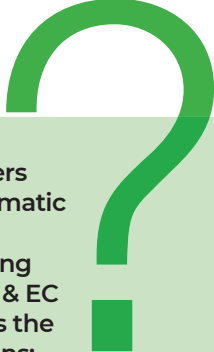
Source: PIB release ID No. 1594085 by MNRE Note: Figures for 2019-20 are till 31.10.2019

Section II

Financing for Energy Efficiency and Energy Conservation

2.1. What are the major sector specific Energy Efficiency and Conservation programmes that have emanated from the Energy Conservation Act 2001?

The Government of India is taking a number of demand side measures to ensure that energy is utilised more efficiently. These are being undertaken under the aegis of the Energy Conservation (EC) Act, 2001. In 2015, India had set the target of reducing its emissions intensity of its GDP by 33-35 per cent by 2030 from the 2005 level. The EC Act has been enacted to achieve this objective and the Bureau of Energy Efficiency (BEE) has been established to enable the implementation of the EC Act. The Act mandates among other things, standards and labelling of appliances, energy conservation codes for commercial and residential buildings, and norms for energy conservation in energy efficient industries. The overall size of the energy efficiency market in India is estimated to be US\$22.81 billion⁸. Realising the potential, the Government of India with BEE in the lead undertook a number of schemes for promoting energy efficiency in various sectors across India. (See Figure 2.1 on Sector Specific Energy Efficiency Schemes)

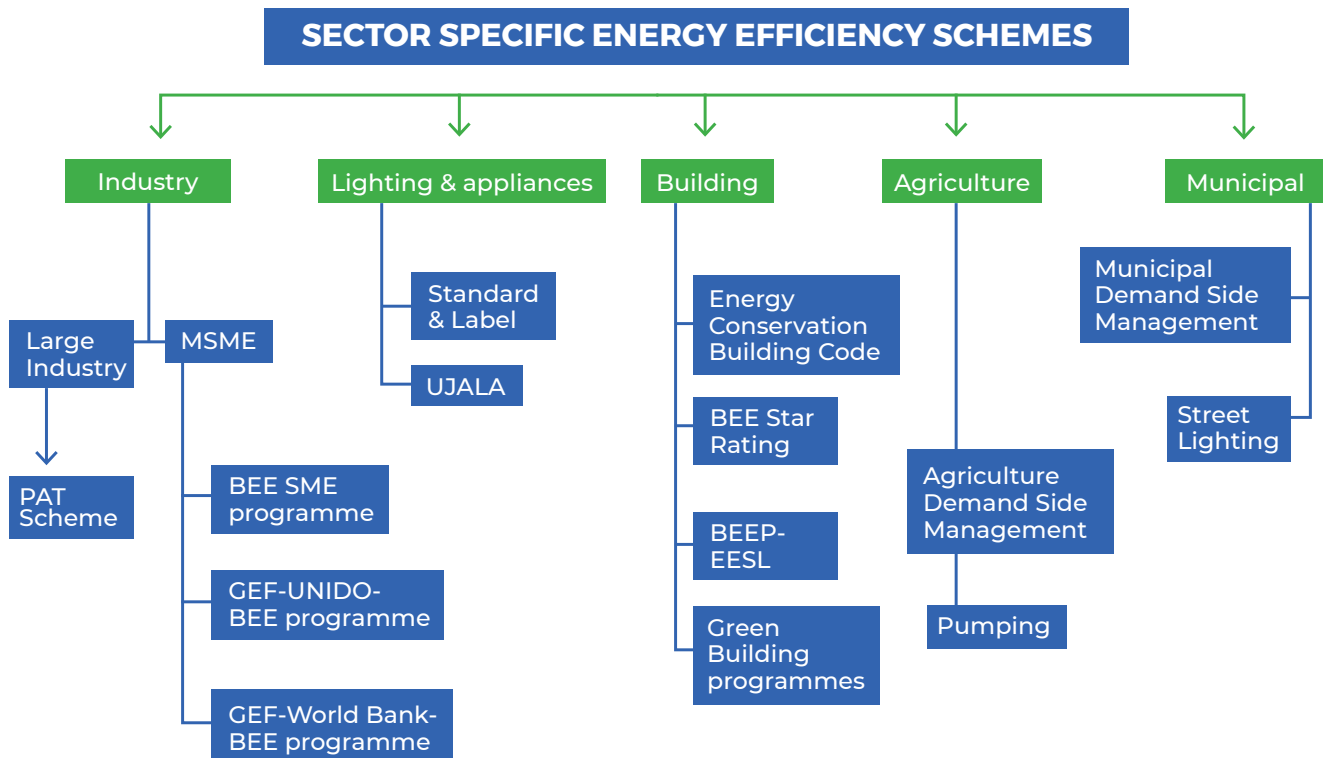


This section covers aspects of Programmatic and Financing interventions being followed for the EE & EC sector and answers the following questions:

- What are major sector specific EE & EC programmes that have emanated from the EC Act 2001?
- What are the Central Government funding mechanisms for EE & EC programmes in states?
- What are the trends in budget allocations by the Ministry of Power for Energy Efficiency Programmes and what measures being taken for capacity building of states' government?
- What are the Select States' Budgeted Programmes that promote EE and EC?

8 Energy Efficiency Services Limited (EESL's Business Plan, 2016-2021)

Figure 2.1: Sector Specific Energy Efficiency Schemes



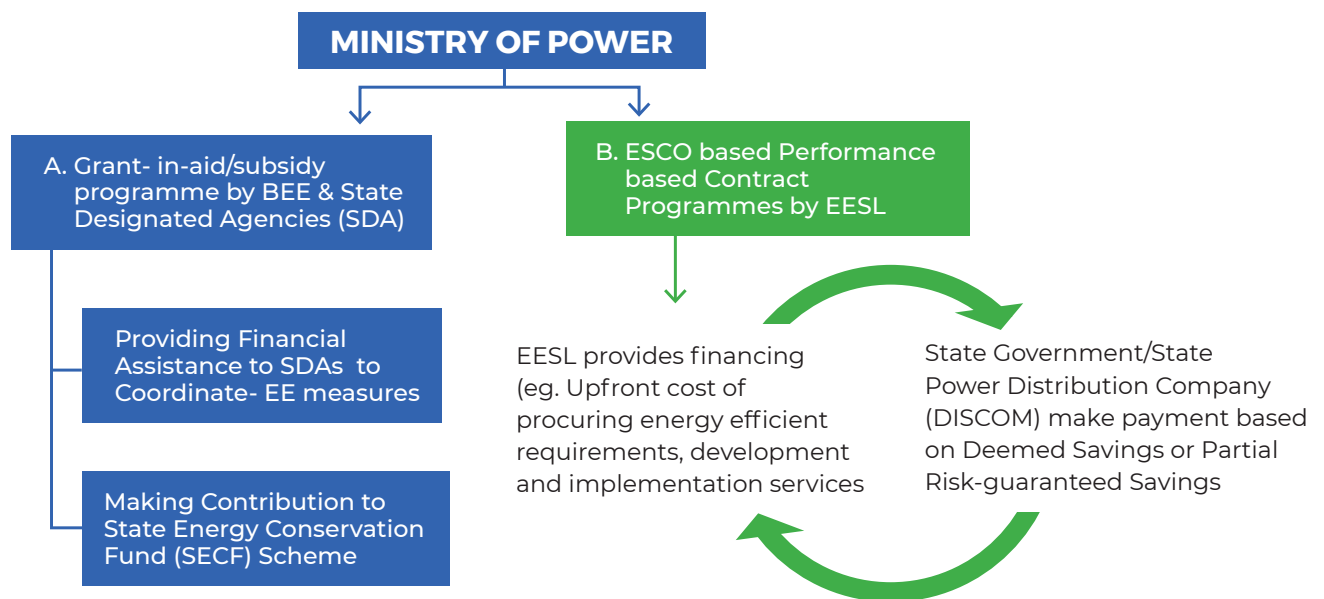
2.2. What are the Central Government funding mechanisms for EE and EC programmes in states?

The Bureau of Energy Efficiency (BEE) is providing grant-in-aid to the State Designated Agencies of states for EE & EC programmes. However, in order to manage a non-subsidised energy efficiency portfolio across sectors and to transform a market based on performance, a Super-Energy Service Company (ESCO) was established under the aegis of the Ministry of Power, namely, the Energy Efficiency Services Limited (EESL). Some of the underlining principles

behind the business model of EESL (ESCO), is that the Industry or the Host firm⁹ (firms who will be deploying EE technologies in residential clusters, MSMEs, Municipal Corporations, and DISCOMs etc.) is only responsible for paying for this investment from the actual savings it realises from the implemented Energy Efficiency Projects (EEPs). EESL engages with a Host firm through a performance-based contract to implement measures which reduce energy consumption and costs in a technically and financially viable manner. This mechanism provides an impetus for Host firms to adopt EE & EC projects as they generally do not have funds to make payments for upfront capital costs for the EEPs.

⁹ Project Hosts are the commercial, industrial, residential, municipal and institutional organisations that use energy in various forms and for various activities in their facilities. They are the owners or operators of facilities (Project Host) where an end use Energy Efficiency Project is installed and can be classified into the following major categories, each of which have different financing requirements to be considered: a. Private Sector – Buildings b. Private Sector – Industries c. Public Sector – Central Government (Power Utility) d. Public Sector - Local Government

Figure 2.2: Ministry of Power (MoP) Financing Mechanism for EE & EC Programmes in States

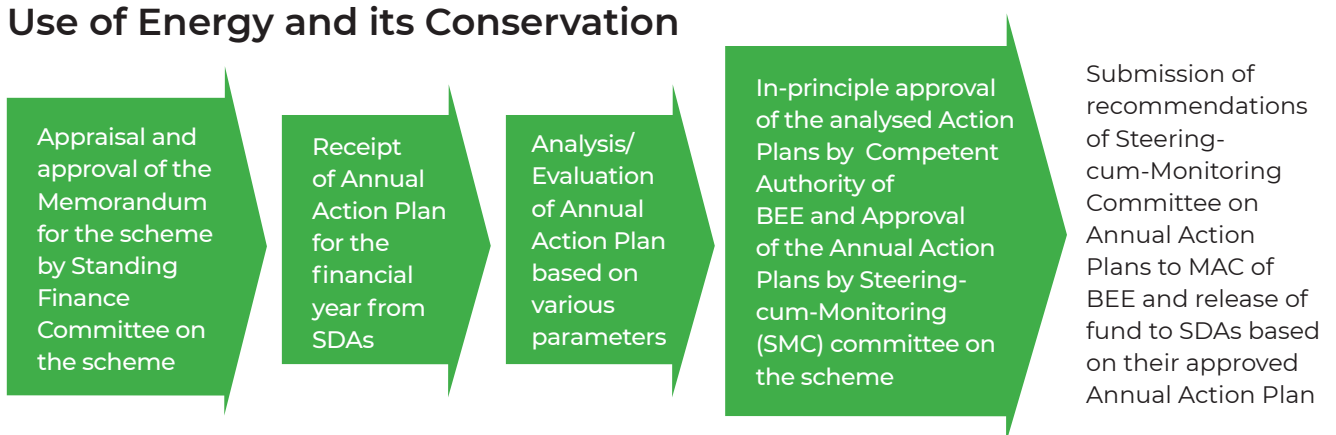


2.2.1. Subsidies model: Fund Flow Mechanisms to State Designated Agency

Subsidies Model: In order to avail the grant-in-aid (subsidy) under the BEE-run EE & EC programmes, the State Designated Agency has to submit an Annual Action Plan (AAP).¹⁰ These AAPs are analysed and subsequently, approved by the Competent Authority of the BEE. They are then presented to the Steering-cum-Monitoring Committee on

the scheme “Strengthening of State Designated Agencies (SDAs) to promote efficient use of energy and its conservation”. The BEE issues a sanction order against each scheme / programme for a particular financial year to the SDAs along with the respective operational guidelines to be followed by them, in keeping with their approved AAP for that financial year. The BEE releases funds to the SDAs every financial year as per their approved AAP for that financial year (See Figure 2.3: Approach Adopted by BEE for Release of Grants-in-Aid to State Governments).

Figure 2.3: Approach Adopted by BEE for Release of Grants for Strengthening of State Designated Agencies to Promote Efficient Use of Energy and its Conservation



Source: BEE document – “Scheme for Strengthening of SDAs” Operational Guidelines

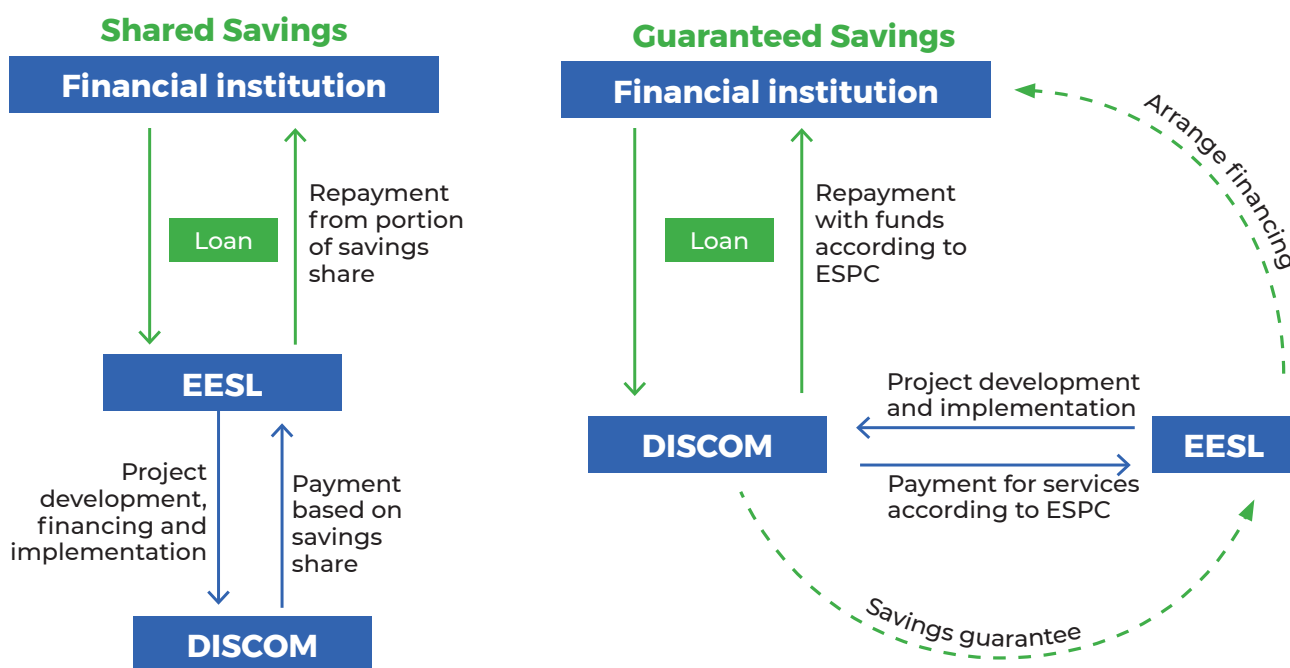
¹⁰ BEE document – “Scheme for Strengthening of SDAs” Operational Guidelines. Retrieved 8 March 2019, from https://beeindia.gov.in/sites/default/files/Guidelines%20SDA%20Book%20PRINTED%20ONE_0.pdf

2.2.2. Performance Contracting Model by EESL: Fund Flow Mechanisms with State Governments

Non-subsidised ESCO Model: EESL signs a performance contract with the State Power Distribution Company or the state government for implementation of EE projects through a Performance Contract Agreement via a **Shared Saving Model**. Under this model, Performance contracting is essentially a loan from the EESL that is paid out of the savings or benefits of the energy efficiency project. EESL arranges the financing, and the state governments or the Distribution Company pays the EESL through reduced energy bills. The

energy cost savings are thus shared over a pre-determined length of time, after which all of the energy savings revert to the company. The UJALA scheme is based on this model. Another business model is the **Guaranteed Savings Model** where EESL guarantees a certain level of energy savings to the customer. In this model, the EESL assumes the performance risk, but usually not the credit risk, since the State Utility/ DISCOM has to provide funding itself (from their own funds or from banks). This is therefore based on end user or third party financing. It has the advantage of having a much lower interest rates than usual, thereby encouraging more investments in energy efficiency. In contrast, in the shared savings model, the ESCO – EESL assumes both the performance and the credit risk.

Figure 2.4: Shared Savings and Guaranteed Savings Model for State-run EESL Programmes



Source: Adapted From ECEEE 2012¹¹

¹¹ ECEEE.ORG(2012), Available at: https://www.eceee.org/library/conference_proceedings/eceee_Industrial_Summer_Study/2012/6-the-role-of-financing-to-improve-industrial-efficiency-global-perspective/energy-efficiency-financing-the-role-of-public-programmes/2012/6-148-12_Voita.pdf/

2.3. What are the trends in budget allocations by the Ministry of Power (through BEE) for Energy Efficiency Programmes and how Ministry of Power is taking measures for capacity building of states' government?

The budget allocation by the Ministry of Power for the execution of the Energy Conservation Act 2001 suggests that there is an increase of 34 per cent in the 2019-20 Budget over the 2018-19 Budget Estimates for energy efficiency and conservation schemes. A vast amount of allocated budgets have not been utilised over the years. Most of the budget of Budget Allocation has been done as Grant-in-Aid or subsidies to SDAs for the implementation of various programmes as listed in Figure 2.5.

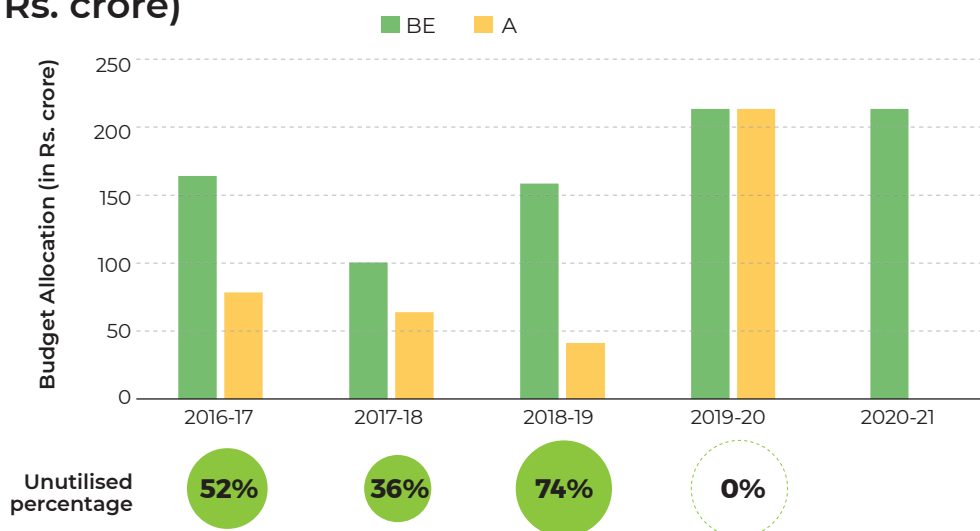
At the central level, the nodal ministry, the Ministry of Power through its established institution, the Bureau of Energy Efficiency (BEE) had initiated energy conservation activities at the state level with an emphasis on building institutional capacities of the SDAs. The BEE had approved the scheme of providing financial assistance to the State Designated

Agencies for strengthening their institutional capacities and capabilities. Some of the measures taken by the Ministry of Power for capacity building of state governments involve the following:

2.3.1. Providing Financial Assistance to the State Designated Agencies to Coordinate, Regulate and Enforce Efficient Use of Energy and its Conservation at the State Level

The SDAs in coordination with the BEE have been carrying out capacity building activities, such as organising workshops and training programmes, involving the Energy Managers, Energy Auditors and Designated Consumers, and appraising their roles as per the mandate of the EC Act 2001. All the SDAs have established a dedicated website highlighting energy efficiency measures undertaken in their respective states. The websites are linked with Bureau of Energy Efficiency and other SDAs to facilitate information exchange. These are updated regularly to incorporate recent developments and latest information pertaining to energy efficiency advancements within the states and the country,

Figure 2.5: Budget Allocation by MoP for Execution of EC Act 2001 (in Rs. crore)



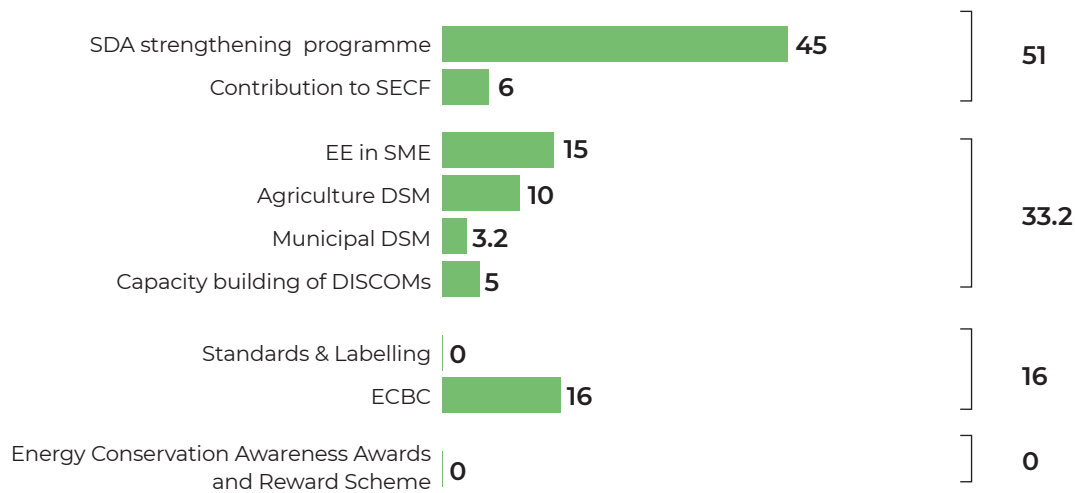
Source: Detailed Demand for Grants (DDGs) for Ministry of Power & BEE of various years

Note: Unutilised percentage is calculated on balance amount left after spending Actual Expenditure (A) Vs. Allocated Budget (BE) as $((BE-A)/BE)*100$.

Table 2.1: BEE's Allocation for Subsidy-based Schemes for the Promotion of Energy Efficiency in Different Sectors of the Indian Economy (in. Rs. crore)

Allocation for EE & EC Programmes including EAPs in 2019-20 (BE) (in. Rs. crore)

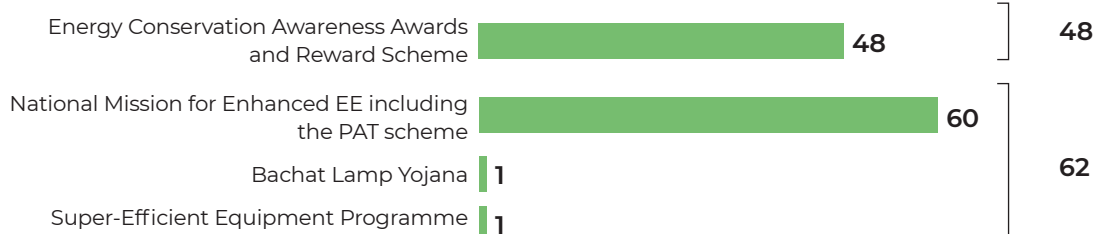
A. Schemes for the Promotion of Energy Efficiency in Different Sectors of the Indian Economy



B. BEE - GEF - WB MSME project (Externally Aided Project) from 2010-11



C. Energy Conservation Programme



Grand Total	213.4
-------------	-------

Source: RTI reply by BEE on "The Budget allocated to each of its agencies, indicating the particulars of all plans, proposed expenditures and reports on disbursements made"¹²

as whole. Some of the major subcomponents of the programme include:

- State Partnership for Energy Efficiency Demonstrations (SPEED) for implementation of energy efficiency demonstration projects and energy efficiency activities in Government schools
- Model Energy Efficient Village Campaigns
- Institutionalisation of enforcement machinery at state level
- Personnel support to SDAs
- State Energy Efficiency Research & Outreach Programme
- Workshops / capacity building of energy professionals
- Maintenance and updating of Internet Platform and other databases created on energy efficiency
- Analysis and survey of the impact of energy conservation activities by SDAs

12 BEE RTI reply (2019) Available at <https://beeindia.gov.in/sites/default/files/11%281%29.pdf>

2.3.2. Making a Contribution to the State Energy Conservation Fund (SECF) Scheme

Section 16(1) of the EC Act, 2001 requires state governments / UT administrations to constitute a State Energy Conservation Fund (SECF) for the promotion of efficient use of energy and its conservation within the state. The SECF is used as an instrument to facilitate the implementation of energy efficiency projects through market transformation. For undertaking energy efficiency projects, the major part of the fund disbursed under SECF is to be earmarked separately as a Revolving Investment Fund (RIF). This may be used to finance the implementation of various energy efficiency projects. Until now, 31 states have constituted a SECF, out of which about 25 states have also provided a matching contribution.

BEE allocations for the above interventions were around Rs. 213 crore in the 2019-20 Budget.

2.4. What are the Select States' Budgeted Programmes that promote EE and EC?

By powers conferred by section 15(d) of EC Act 2001, 36 State Governments/ UT administrations have designated a State Designated Agency (SDA) to coordinate, regulate and enforce the provisions of this Act within the state. This is done either by assigning additional responsibilities to an existing department of the state government or by establishing a dedicated Stand-Alone SDA for energy efficiency. These agencies differ from state to state and are as follows: the Renewable Energy Development Agency (44%), Electrical Inspectorate (25%), Distribution Companies (12%), Power Departments (16%) and others (3%).¹³ For example, in Andhra Pradesh, a Special Purpose Vehicle or State Owned Enterprise has been established for EE programmes, namely, the AP State Energy Efficiency Development Corporation Limited (AP-SEEDCO); while in Rajasthan, the State Renewable Energy Corporation Limited acts as the State Designated Agency for EE initiatives (See Table 2.2).

Table 2.2: State Designated Agency for four Select Study States and programmes as documented in the EESL Annual Report and Budgets

State	Nodal Agency	State-run EESL Scheme and BEE Programmes under Grant-in-Aid
Andhra Pradesh	BEE SDA-NREDCAP (New & Renewable Energy Development Corporation of A.P. Ltd) EESL – AP SEEDCO (AP State Energy Efficiency Development Corporation) & AP DISCOMs	Capital works under Street Light LED in Rajasthan and Agricultural DSM through EESL investment Programmes under AP State Energy Conservation Mission – BEE Grant-in-Aid
Assam	BEE SDA - The Chief Electrical Inspector-cum-Adviser (Assam SDA) Guwahati SMART City Limited for LED Street Light Programme	SMART LED street lighting programme by Guwahati SMART City Limited
Odisha	BEE SDA - Engineer-in-Chief Electricity-cum- Principal Chief Electrical Inspector, Govt. of Odisha	Ama Ghare LED scheme- BEE subsidy LED street lighting programme – through EESL investment by creation of Special Purpose Vehicle - NEESL Private Limited
Rajasthan	BEE SDA - Rajasthan Renewable Energy Corporation Limited (RRECL) ¹⁴	Capital works under Street Light LED in Rajasthan and Agricultural DSM through EESL investment DISCOM led DSM programme with BEE subsidy

¹³ BEE (2020). List of SDA Available at <https://beeindia.gov.in/sites/default/files/SDA%20List%281%29.pdf>
In Rajasthan State Energy Efficiency Programs are being implemented by nodal agency Responsible for Renewable Energy Programmes. While in Odisha SDA operating for EE programme is Electrical Inspectorate

¹⁴ See AP and Rajasthan State Report - Climate Mitigation Financing Framework

2.5. Findings and Conclusion

Within the framework of Cooperative Federalism laid down by the Constitution of India, states have a vital role to play in the policy implementation of India's energy efficiency sector. The State Designated Agencies (SDAs) have been established to co-ordinate, regulate and enforce the provisions of the Energy Conservation Act 2001 in states, and are counterparts of the Government of India's Bureau of Energy Efficiency (BEE). The SDAs have contributed significantly towards creating awareness on the efficient use of energy among consumers and manufacturers, implementing demonstration projects, and supporting the execution of BEE's programmes in states. The SDAs, under the mandate of the EC Act 2001, should be further empowered to gather data on energy efficiency indicators across all demand sectors in the states. Currently, scanty information is available on budget data on EE programmes since most of the programmes are being operated through EESL. Though BEE provides a lump sum of

money for the maintenance of a web-enabled updated database; the spending is by the SDAs. However, most of the states' online status on the updating of EE information is poor or not being refreshed. In this regard, the centralised entity EESL did a remarkable job by providing state-wise updated information on at least the number of equipment that installed until now. The scheme-wise dash board has been created by EESL. However, the budget data or finances being provided through EESL information, such as the Central Financial Assistance to states or a state's independent spending is not being maintained, either by the state government or by the state owned enterprises or power utilities.

States with strong SDAs, with robust energy data reporting and an excellent track record of state energy efficiency initiatives, are poised to attract more investments for energy efficiency projects. These will undoubtedly lead to the transformation of the energy efficiency landscape in India.

Annexure IV: Summary on Select Four States' Initiatives and Budgeted Data for EE & EC

Andhra Pradesh

State Institutions & Budgetary Allocation for EE

Andhra Pradesh State Designated Agency for EC Act 2001

In 2014, the newly formed state of Andhra Pradesh set up a State Designated Agency, namely, the AP State Energy Conservation Mission (SECM) to coordinate, regulate and enforce the provisions of the EC Act, and also to implement the schemes under the Act¹⁵

Various Key EE & EC programmes with Central / BEE Grant-in-Aid

- LED bulb distribution in villages
- EE pump set by Department of Rural Water Supply and Sanitation with 50 per cent contributions from SDA – SECM under National Rural Drinking Water Supply Programme¹⁶
- BEE programmes for strengthening and capacity building of SDA Contribution to SECF

Other programme being implemented with EESL investment with DISCOMs / State Owned Enterprises

- Constitution of Andhra Pradesh State Energy Efficiency Development Corporation Limited (APSEEDCO Ltd) a joint venture/ Special Purpose Vehicle with APTRANSCO, APGENCO, APDISCOMS, EESL and Government of Andhra Pradesh, exclusively for energy efficiency activities in the state under EESL/ ESCO model¹⁷
- Installation of LED Street Lights in all Municipalities and Panchayats
- Unnat Jyoti by Affordable LEDs for All (UJALA)
- Distribution of Energy Efficient Ceiling Fans and Tube Lights
- Agriculture DSM Pumps with EESL
- Energy Efficiency measures in Govt. & Commercial Buildings' adoption of Energy Conservation Building Code (ECBC)¹⁸
- National E-Mobility Programme with Govt. Departments
- Smart Meter National Programme

State Institution & Budget Data & EESL Investments

	Budgeted Programme (in Rs. crore)				
	2017-18 BE	2017-18 RE	2018-19 BE	2018-19 RE	2019-20 BE
2801 - Assistance to APSEEDCO for managing EESL programmes	1.45	1.03	-	-	-
2515 - Electrification of villages under LED programme	--	--	15	7.5	5
EESL Investments (in Rs. crore) Capital Work in Progress as on 31st March 2018 *					
Agricultural DSM	-	-	-	0.12	-
LED Street Light Programme	-	-	-	119.2	-
Buildings Energy Efficiency Programme (BEEP) with focus on retrofitting of existing buildings towards energy efficiency	-	-	-	0.32	-

Note:

(-) No data available (*) EESL investment data from its Annual Report; these are net figures after addition/deduction of recoveries

15 AP Government Order No. MS 31 dated 4.07.2017 Energy Conservation Act 2001 – State Energy Conservation Mission (SECM) in Andhra Pradesh nominated as "State Designated Agency" for implementation of Schemes in Andhra Pradesh under Energy Conservation Act, 2001 – Notification Available at: <https://goir.ap.gov.in/>

16 AP Government Order No. G.O.RT. No. 15 Dated: 04-01-2018 Rural Water Supply and Sanitation - Providing Energy Efficient Pump Sets in place of age old pump sets with 50:50 contribution from RWS&S and State Energy Conservation Mission (SECM). Head of Account: 4215-01-102-12-14-530-531 towards contribution from RWS&S Department Available at : <https://goir.ap.gov.in/>

17 AP G.O. MS 18 dated 01.06.2016 Constitution of Andhra Pradesh State Energy Efficiency Development Corporation Limited (APSEEDCO Ltd) a joint venture/ Special Purpose Vehicle with APTRANSCO, APGENCO, APDISCOMS, EESL and Government of Andhra Pradesh, exclusively for energy efficiency activities in the state Available at : <https://goir.ap.gov.in/>

18 AP G.O.RT.No. 142 Dated: 12-02-2018 Municipal Administration & Urban Development Department – Energy Conservation Building Code (ECBC) – Adoption in Andhra Pradesh Available at : <https://goir.ap.gov.in/>

Annexure IV: Summary on Select Four States' Initiatives and Budgeted Data for EE & EC

ASSAM

State Institutions & Budgetary Allocation for EE & EC

State Designated Agency for EC Act 2001	The Chief Electrical Inspector-cum-Adviser is the Assam State Designated Agency
Various Key EE & EC Programmes with Central / BEE Grant-in-Aid	BEE grants for strengthening Assam SDA
Other programme being implemented with EESL investment with DISCOMs / State Owned Enterprises	UJALA scheme for LED distribution with APDCL (DISCOM) and AHECL(Assam Hydrocarbon and Energy Company Limited) AJAY scheme of MNRE for Solar LED street lights in remote areas Solar Study Lamp Scheme of MNRE

State Budget Data *

	Budgeted Programme (in Rs. crore)						
	2017-18 A	2018-19 BE	2018-19 RE	2018-19 A	2019-20 BE	2019-20 RE	2020-21BE
Smart Street Lighting Project in Identified Urban Area (1585)	-	-	-	0	1.42	1.42	0
Solar Street Lights to ULBs (0103)	-	-	-	0	0	2	36
Solar Street Lights to ULBs (5903)	9.9	0	14	61.97	-	-	-

Note:

(-) No data available

(*) EESL investment data from its Annual Report; these are net figures after addition/deduction of recoveries

Annexure IV: Summary on Select Four States' Initiatives and Budgeted Data for EE & EC

ODISHA

State Institutions & Budgetary Allocation for EE & EC

Odisha State Designated Agency	Engineer-in-Chief (Electricity)-cum-Principal Chief Electrical Inspector (PCEI) Odisha has been notified as the State Designated Agency for the state of Odisha for implementation of EC Act 2001
BEE Assisted Programmes	BEE programmes for strengthening SDA
Some key EESL invested programmes	<ul style="list-style-type: none"> ● Atal Jyoti Yojana for solar LED street lights (AJAY) ● UJALA LED Scheme ● Solar Study Lamp Scheme ● ECBC , Perform, Achieve and Trade (PAT) Scheme ● Buildings Energy Efficiency Programme (BEEP) with focus on retrofitting of existing buildings towards energy efficiency

State Budget Data & EESL Investments

	State Budget (in Rs. crore)						
	2017-18 A	2018-19 BE	2018-19 RE	2018-19 A	2019-20 BE	2019-20 RE	2020-21BE
Energy Conservation under Reform and Restructuring Projects - Establishment (1170)	1.2	3	0.94	3	3	3	1.2
"Ama Ghare LED Light" Karyakram (3305)	-	-	125	225	10	10	1
EESL Investments (in Rs. crore, Capital Work in Progress as on 31st March 2018)*							
LED Street Light Programme	-	-	-	14.21	-	-	-

Note:

(-) No data available

(*) EESL investment data from its Annual Report; these are net figures after addition/deduction of recoveries

Annexure IV: Summary on Select Four States' Initiatives and Budgeted Data for EE & EC

RAJASTHAN

State Institutions & Budgetary Allocation for EE & EC

Rajasthan State Designated Agency	Rajasthan Renewable Energy Corporation Ltd (RRECL) is the State Designated Agency under the EC Act 2001
Rajasthan State Designated Agency	<ul style="list-style-type: none"> ● Contribution to State Energy Conservation Fund and state expenditure rule for SECF 2010¹⁹ ● BEE programmes for strengthening SDA ● National Programme on Energy Efficiency and Technology Upgradation in SMEs²⁰ ● EE Pump Set
Some key EESL invested programmes	<ul style="list-style-type: none"> ● Unnat Jyoti by Affordable LEDs for All (UJALA) ● Installation of LED Street Lights in all Municipalities and Panchayats ● DISCOM led DSM programmes in domestic lighting, fans, tube lights, and Agriculture Pumps ● ECBC & PAT cycle industries

EESL Investments (in Rs. crore, Capital Work in Progress as on 31st March 2018) *

	State Budget (in Rs. crore)						
	2017-18 A	2018-19 BE	2018-19 RE	2018-19 A	2019-20 BE	2019-20 RE	2020-21BE
Agricultural DSM	-	-	-	0.17	-	-	-
LED Street Light Programme	-	-	-	98.27	-	-	-

Note:

(--) No data available

* No budget data for EE & EC programmes available at disaggregated level in Rajasthan State Budget Document

19 Rajasthan State Energy Conservation Fund Rules, 2010 Available at : <https://energy.rajasthan.gov.in/content/dam/raj/energy/common/Notification%20dated%2014th%20July%202010.pdf>

20 See detail in CBGA policy paper: Climate Mitigation Financing Framework in the state of Rajasthan


Section III

State Financing for Low Carbon Transport

The development of the transport system is a state subject. State budgets reflect expenditure for different kinds of transport systems to meet the requirement of a mass transit system. These mainly include the road transport system, which are buses under state undertakings and establishing a Metro rail system in cities. Besides these, a few states like Assam and Odisha, which have the advantage of natural waterways, are also investing in the development of an Inland Water Transport (IWT) system. Most of these encourage the switching from a fossil fuel-based system to a cleaner fuel-based transportation system. Over the years, financing of the transport system has set norms for improving the participation of the private sector. The Central Government is providing financial assistance to the states, either for the creation of demand by reducing upfront establishment costs, such as the procurement cost; or by the creation of an ecosystem with greater participation from the private sector. For example, in the road transport segment, the Central Government is providing assistance to states for the creation of demand for Electric Vehicles under the National Mission for Enhanced Electric Mobility.

3.1. What is the central policy and financing available for Electric Mobility and how are these being reflected as budgeted programmes?

India has seen increasing policy and industry momentum towards accelerating EV adoption. The



This section on State Financing for Low Carbon Transport answers the following questions:

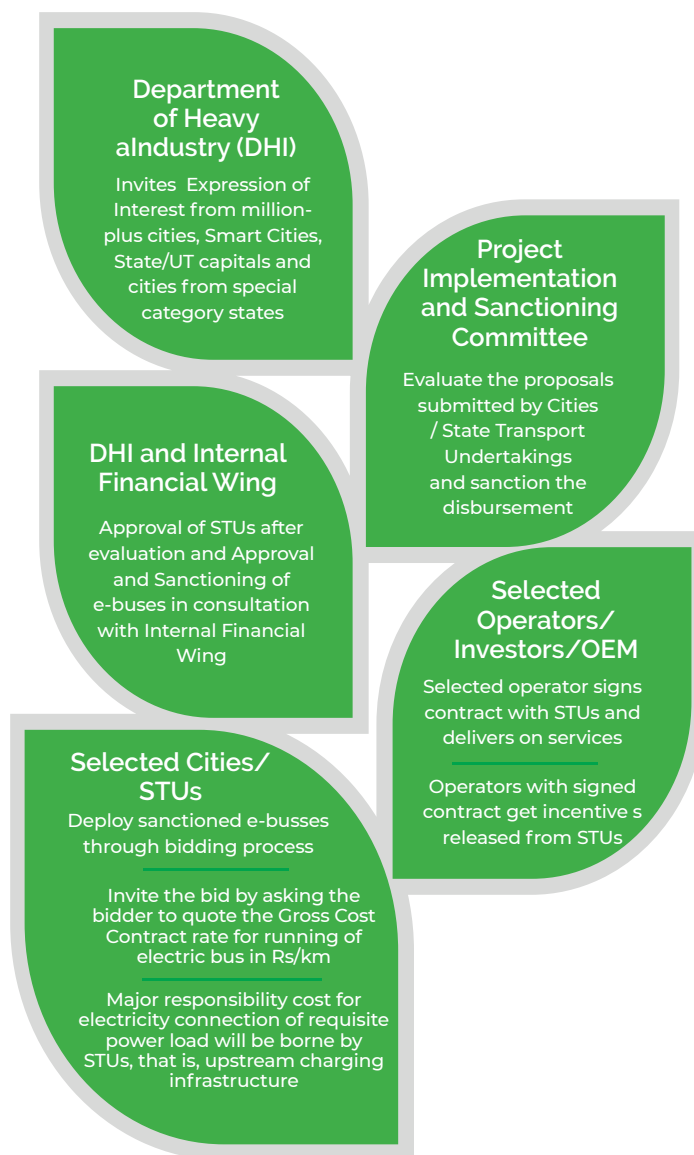
- What is the central policy & financing assistance available for Electric Mobility and how are these being reflected as budgeted programmes?
- How can investors participate in the EV programme- FAME II Scheme and who can they approach?
- What are the eligibility criteria for the states to participate in the central programme for EVs?
- How are the state governments deploying various policy and financing instruments & budgets for Electric Mobility?
- What are the central policy and financing mechanisms for other low carbon transport such as metro rails and inland water transport in states?

Department of Heavy Industry, Ministry of Heavy Industries & Public Enterprises, GoI, formulated the Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles in India (FAME India) Scheme in 2015. This sought to promote the manufacturing of electric and hybrid vehicle technology and to ensure their sustainable growth. The government

offers incentives for electric buses, three-wheelers and four-wheelers to be used for commercial purposes. The implementation of the FAME I Scheme provided useful insights for the design of future interventions. The Phase-I of this scheme was initially launched for a period of 2 years, commencing from 1st April 2015, which was subsequently extended till 2018. FAME I provided direct subsidies and incentives for the purchase of e-buses on an upfront cost basis. However, this limited the efficacy of the programme, as very few buses could be procured through the limited available funding. The recent phase of the scheme called FAME II will have the Centre investing in setting up charging stations, with the active participation of public sector units and private players.

The Phase-II of the programme that has been launched is based on a concessionaire model that draws upon the procurement of e-buses on a Gross Cost Contracting (GCC) basis. This allows STUs to finance e-buses based on their lower total cost of ownership relative to their diesel counterparts (See **Table 3.1: Central Policy Interventions and their Reflection as Budgeted Programmes?**).²¹ & ²² The Department of Heavy Industry (DHI) under the Ministry of Heavy Industries and Public Enterprises is responsible for managing the FAME-II Scheme. FAME-II also encourages the interlinking of renewable energy sources with charging infrastructure. Most state governments have been taking steps to promote e – mobility under the broader framework of the FAME Scheme. The first Expression of Interest (EOI) was issued under the FAME-II programme in June 2019 for the selection of operators.²³ Following the submission of an EOI and the proposal, the DHI along with the Project Implementation and Sanc-

Figure 3.1: Investor Participation in FAME-II Scheme and Process of Project Approval



21 While bidding the operator will take into account all expenses like purchase cost of vehicles, cost of operation, electricity, drivers, management of fleet, charging infrastructure, replacement of battery, maintenance of vehicle etc. required to run the buses for the contract period and quote a certain amount as Rs/km as the GCC rate. The operator who quotes the minimum rate will be the selected bidder.

22 Procurement mechanisms to scale up electric busses. Available at : <https://shaktifoundation.in/wp-content/uploads/2020/01/Procurement-mechanisms-to-scale-up-electric-buses.pdf>

23 June & August 2019 EOI issued by DHI for EV and charging station Available at <https://dhi.nic.in/writereaddata/UploadFile/Final%20EOI%2004%20June%202019%20Published.pdf> and <https://dhi.nic.in/writereaddata/UploadFile/Revised-%20Expression%20of%20Interest.pdf>

tioning Committee (PISC) evaluates the proposals and the Internal Financial Wing of DHI sanctions incentives to the selected STUs/ cities / bidders. (**See Figure 3.1: How can investors participate in the FAME-II Scheme and who can they approach?**). Incentives offered under the scheme are as follows:

(i) Maximum demand incentive available from DHI under Phase II of the FAME India Scheme will be as given below:

- a. Standard Bus (length > 10 m to 12 m): **Rs. 55 Lakhs**
- b. Midi Bus (length > 8 m to 10 m): **Rs. 45 Lakhs**
- c. Mini Bus (length > 6 m to 8 m): **Rs. 35 Lakhs**

(ii) **Demand incentive available under the FAME-II Scheme will be 40% of the estimated cost of the bus. The calculation of the cost of the bus is based on the lowest GCC quoted by the selected bidder.** However, this demand incentive will be further limited to the maximum incentive applicable for the bus as mentioned above.

(iii) Flexibility of funding for the establishment of charging infrastructure at the state level will be to the extent of 100 per cent of the cost, depending upon the project proposal by the State Transport Undertakings (STUs).

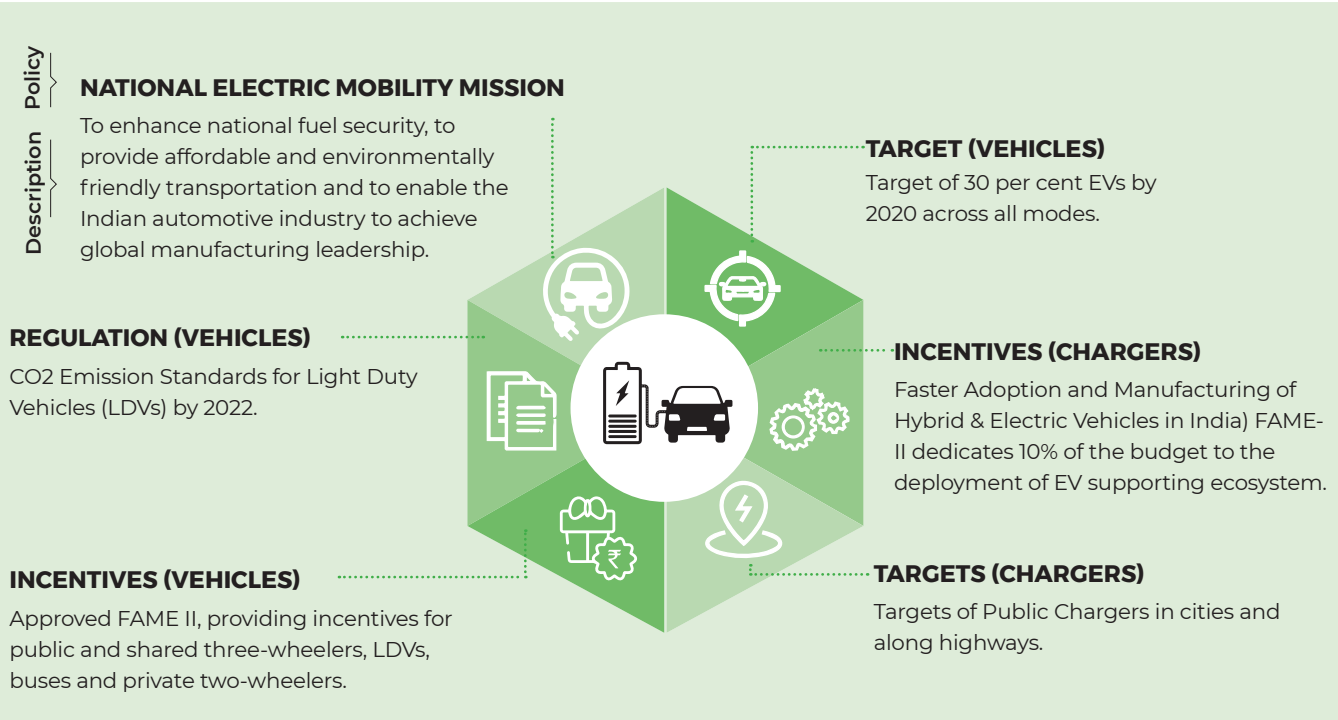
(iv) Upstream infrastructure i.e. electricity connection of the requisite power load will be borne by the STUs. Every STU has to develop an online platform for monitoring the performance of the electric buses deployed under this scheme.

The Central Budgetary Estimates, offered incentives and eligibility criteria for the FAME-II Scheme are listed in the table below.

3.2. What are the eligibility criteria for the states to participate in the central programme for EVs?

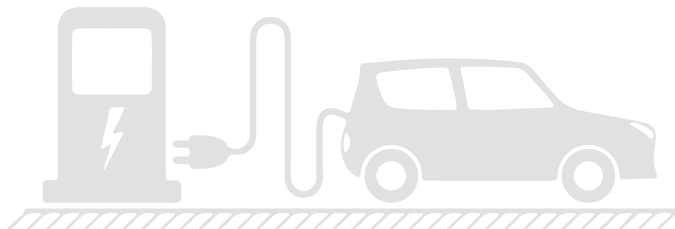
Most state governments have been taking steps to promote e – mobility under the broader framework of the FAME Scheme. SMART cities identified under the states are eligible to seek incentives under the FAME – II Scheme. Many cities and State Transport Undertakings are participating in the EOI issued by the DHI under the FAME-II programme. (**See Table 3.2: Criteria that states/ cities have to fulfill to seek Demand Incentives under FAME-II**)

Table 3.1: Central Policy Interventions for Electric Mobility and their Reflection as Budgeted Programmes

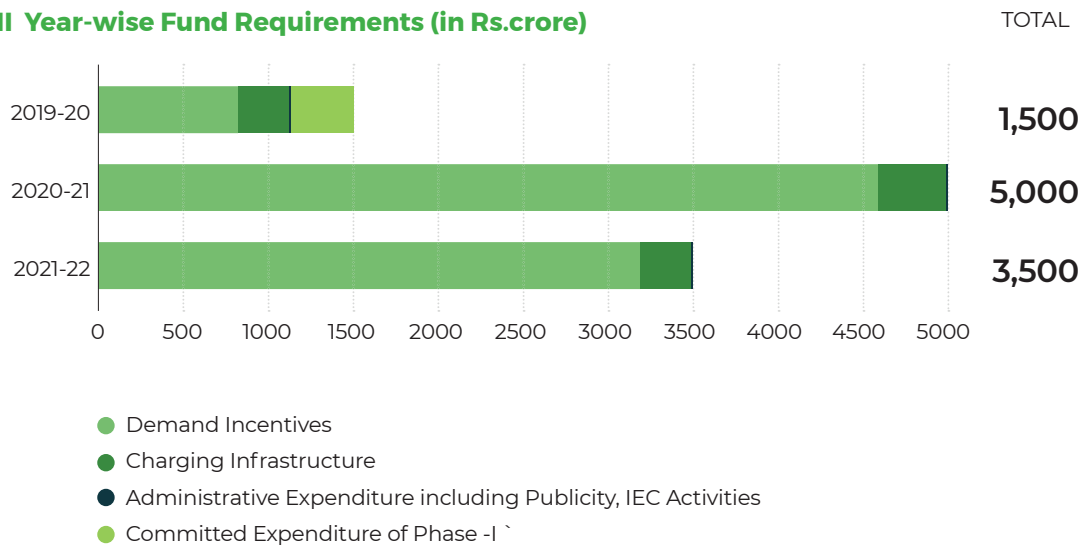


FAME-II meant for three Verticals

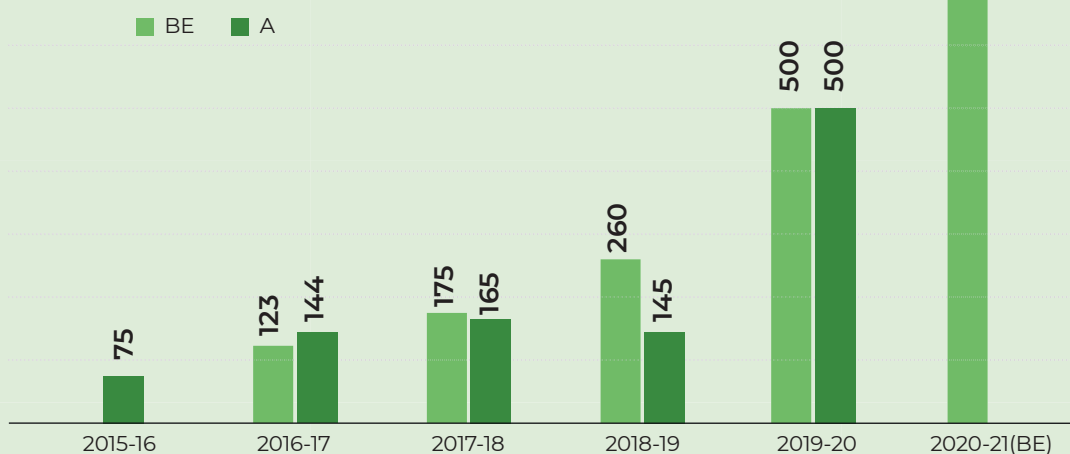
- Demand Incentives
- Establishment of Network of Charging Stations
- Administration of Schemes including Publicity



FAME- II Year-wise Fund Requirements (in Rs.crore)



Budgetary Support (in Rs. crore)

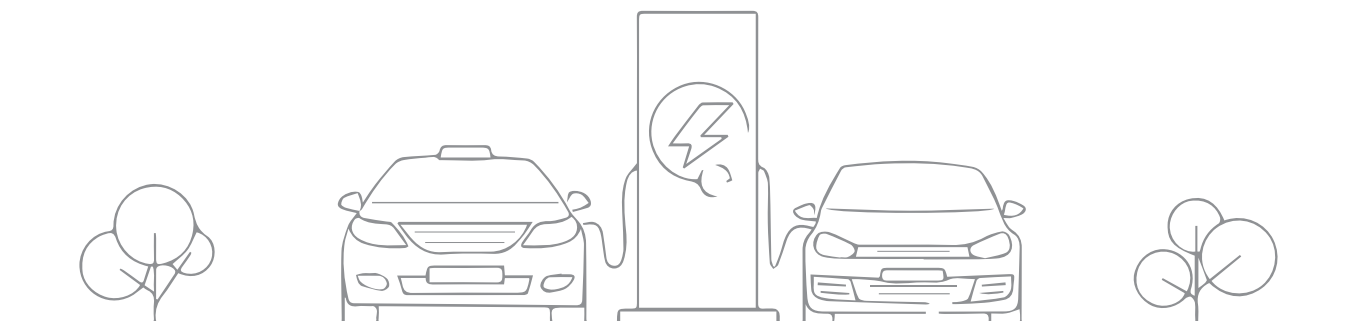


FAME Phase -I: 2015-16 to 2018-19
FAME Phase -II: 2019-20 to 2020-21

Source: Budget documents of Ministry of Heavy Industries & Public Enterprises for various years.

Progress so far under FAME-II²⁴

The first EOI for cities was issued only in June - August 2019. This led to the sanctioning of 5595 electrical buses amounting to Government incentives are sanctioned to various states (City Transport Undertakings) under Phase-II of the Scheme. The Department of Heavy Industry has also sanctioned 2,636 Electric Vehicles (EVs) amounting to Rs. 500 crore (Approx.) Charging Stations in 62 cities across 24 States/UTs under FAME India -II have been set up. However, many selected STUs/ cities have defaulted on the procurement of EVs. The GOI is issuing the second round of EOI under FAME-II. Defaulters will not be allowed to participate in the forthcoming bids.²⁵



²⁴ Singh, S. (2020). Govt to invite bids for reallocation of subsidy for 2,000 e-buses in February. Retrieved 23 June 2020, from <https://m.economictimes.com/industry/auto/lcv-hcv/govt-to-invite-bids-for-reallocation-of-subsidy-for-2000-e-buses-in-february/articleshow/73500181.cms>

²⁵ About 30 cities have awarded contracts for 2,000 electric buses under the scheme as the deadline expired on January 15, while another 20 cities are at various stages of finalisation of contracts for about 1,900 e-buses. The cities that have not initiated the tendering process under Fame II include Hyderabad, Agartala, Shimla, Srinagar, Jammu and Raipur. Available at : https://economictimes.indiatimes.com/industry/auto/lcv-hcv/govt-to-invite-bids-for-reallocation-of-subsidy-for-2000-e-buses-in-february/articleshow/73500181.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

Table 3.2: Criteria that states/ cities have to fulfill to seek Demand Incentives under FAME-II

<p>Maximum demand incentive per bus</p>	<p>Maximum demand incentive available from DHI under FAME India Scheme Phase II will be as given below:</p> <ol style="list-style-type: none"> Standard Bus (length > 10 m to 12 m): Rs. 55 Lakhs Midi Bus (length > 8 m to 10 m): Rs. 45 Lakhs Mini Bus (length > 6 m to 8 m): Rs. 35 Lakhs
<p>Coverage of cities</p>	<p>Cities that fulfill any one of the following criteria:</p> <ol style="list-style-type: none"> Million plus cities as per 2011 Census Smart cities as notified by MoHUA (Ministry of Housing and Urban Affairs) Satellite towns connected to 7 major metros (Delhi, Mumbai, Kolkata, Chennai, Hyderabad, Bangalore and Ahmedabad) Major cities of Special Category states/UTs The capital city of all states/UTs not covered in the above categories Intercity bus operations connecting these cities <p>Cities and states are encouraged to aggregate the demand of different cities within the state and opt for single bidding for all sanctioned buses for the state. Even cities across states or different states may join together.</p>
<p>Eligibility criteria for states</p>	<ol style="list-style-type: none"> Separate EV Policy for state Registration charges/Road Tax applicable for EVs Information on Parking Fee/ Toll Tax for EVs State level policy for preferential permit regime for commercial EVs Any other measures taken by the state to promote EVs, if any
<p>Eligibility criteria for cities</p>	<ol style="list-style-type: none"> Population of city Road density (road length per 100 sq. km.) Vehicular density (number of buses per 10,000 persons) The average level of PM 2.5 pollutant for the city during 2018 The number of Electric 3W and 4W expected to be registered by offering different fiscal/non-fiscal measures in 2019-2020 for last mile connectivity. (the more the number, the more the weight) Experience of running of Diesel/CNG buses on a wet lease model The number of Electric Buses rolled out by the city from its resources The number of charging stations installed in the city from its resources Availability of exclusive depot for parking of Electric Buses and installation of charging points Availability of high voltage electricity connection at the depot
<p>Eligibility criteria for operator /automotive manufacturer</p>	<ol style="list-style-type: none"> Original Equipment Manager (OEM) shall be an Indian manufacturer of the electric bus having a manufacturing facility in India OEM should have completed testing and certification requirement under the Central Motor Vehicle Rules 1989 (CMVR) of at least one (1) Mini/Midi/Standard electric bus (100% battery operated) from a designated testing centre in India. i.e., CMVR type-approval of at least one model of electric bus OEM should ensure that at the time of supply of buses, all of them should satisfy the minimum technical eligibility criteria notified under FAME India Scheme Phase II and also the criteria of the Phased Manufacturing Programme (Localisation) as notified by DHI from time to time

Source: EOI Notification under FAME-II

State governments are promoting electric mobility through various measures such as providing an EV policy, offering fiscal and non-fiscal measures for EV manufacturing and an enabling ecosystem for EV deployment. Currently, a budgetary allocation for electric mobility from state governments is at a na-

scient stage and they are dependent on Central Government incentives. Andhra Pradesh is among the first states in India, which has a dedicated EV policy with the goal of procuring 10 lakh EVs by 2024.

Figure 3.2: State Government Support Framework for Electric Mobility



Table 3.3: State Government Support Framework for Electric Mobility

State	Nodal agency	Key elements /targets/ Progress
Andhra Pradesh	State Transport Department	<ul style="list-style-type: none"> ● Goal of 10 lakh EVs by 2024 ● Goal of 1 lakh slow and fast EV Charging Stations by 202
	Andhra Pradesh State Road Transport Corporation	<ul style="list-style-type: none"> ● Government plans to stop registration of petrol and diesel cars by 2024 in the upcoming capital city of Amravati ● All Government vehicles, including Corporation Boards and government ambulances to be electric by 2024 ● Participated in FAME-I & II programme ● Issued Bidding Document for 300 e- buses
Assam	State Roads & Transport Department	<ul style="list-style-type: none"> ● No dedicated EV Policy. Intends to formulate policy
	Assam State Road Transport Corporation	<ul style="list-style-type: none"> ● Participated in FAME –I & II programme (sanctioned 15 e-buses for Kamakhya City Temple, & Guwahati)
Odisha	Department of Commerce & Transport	<ul style="list-style-type: none"> ● Under process of drafting EV policy. Key policy proposal under consideration includes road tax ,GST exemption²⁶
	Housing & Urban Development Department for Urban Transport	<ul style="list-style-type: none"> ● Bhubaneswar participated in FAME-I & II as eligible city under Smart City Mission ● Provides other incentives
	Bhubaneswar Development Authority	
Rajasthan	State Road & Transport Department	<ul style="list-style-type: none"> ● No dedicated state EV policy ● Draft Industrial Policy offers incentives for manufacturing EVs ● Solar Policy 2019 intends using solar power for EV charging infrastructure
	Rajasthan State Road Transport Corporation	<ul style="list-style-type: none"> ● Participated in FAME –I & II programme for Jaipur city (150 e-buses sanctioned); more smart cities eligible to participate

²⁶ In a bid to promote eco-friendly and non-motorised mode of public transport, the State Commerce and Transport Department has initiated the process for drafting an Electric Vehicle (EV) Policy. Information available at : State moots policy for electric vehicles - OrissaPOST. (2020). Retrieved 23 June 2019, from <https://www.orissapost.com/state-moots-policy-for-electric-vehicles/>

Fiscal and Non-fiscal Incentives Offered under State EV Policy

Andhra Pradesh Policy on EV Manufacturing

- Complete reimbursement of road tax, no registration fee for development of Electric Vehicle (EVs) manufacturing parks
- 10 per cent of Fixed Capital Investment (FCI) up to a maximum of Rs. 20 crore for first two units under the mega category, in each segment of EV Policy (2 wheelers, 3 wheelers, 4 wheelers, buses), battery and charging equipment, hydrogen storage and fueling equipment manufacturing
- Stamp duty reimbursement for purchase or lease of land and state GST reimbursements

Assam – Under Formulation²⁷

Odisha EV Policy Proposal under Consideration

- 100 per cent exemption of road tax, exemption from vehicle registration fees, SGST paid on the sale of EVs manufactured
- 15 per cent subsidy (maximum Rs 5,000 for two-wheeler, Rs 12,000 for three-wheeler, and Rs one lakh for four-wheeler) on the base price will be paid to buyers
- GST waiver and incentives like tax credits and exemptions to the manufacturers for setting up units in dedicated zones
- Interest subsidy of five per cent per annum for five years with maximum limit up to Rs 10 lakh for micro enterprises, Rs 20 lakh for small enterprises, Rs 40 lakh for medium enterprises and Rs one crore for non-MSME units
- A subsidy of 25 per cent or Rs 10 lakh will be extended to the first 250 charging stations that will be set up near bus depots, petrol pumps, and public parking zones

Rajasthan Draft Industrial Policy Proposals for EV Industry²⁸

- Setting up of EV research and manufacturing zone
- Financial assistance to encourage EV industry
- A dedicated EV policy will be formulated

Budgetary Provisions by States

A few states governments have started making budgetary provisions for electric mobility as reflected in 2019 – 20 state budgets. However, currently, state financing for e-mobility is miniscule in terms of volume. This reflects the nascent nature of the market for this segment. Here are some interesting insights from the state budgets:



Odisha, for the first time, introduced a new budget line “e- mobility programme” under its Urban Development programme with a budget estimate of Rs. 1000 only



Assam introduced an “e – Bikes Programme for Senior Secondary Girls” providing electric bikes to girls with an allocation of Rs. 25 crore

²⁷ Assam government’s slogan of ‘pollution-free Assam’ looks like a hollow dream when you consider the fact that the policy makers have still not able to design a clear-cut policy for the emission-free Electric Vehicle (EV) industry. Information available at <https://www.guwahatiplus.com/daily-news/lack-of-electric-vehicle-policy-hampers-its-growth-in-assam>

²⁸ Rajasthan’s Draft industrial policy proposals for EV industry, Information available at: <http://www.industries.rajasthan.gov.in/content/dam/industries/pdf/riico/policies/Rajasthan%20Industrial%20Policy/Rajasthan%20Industrial%20Development%20Policy%202019.pdf>

3.3. Conclusion and Findings from an Analysis on States' Support for the Road Transport System

3.3.1. Need for shifting budgetary allocation from procurement of fuel-based buses to electric buses at the state level

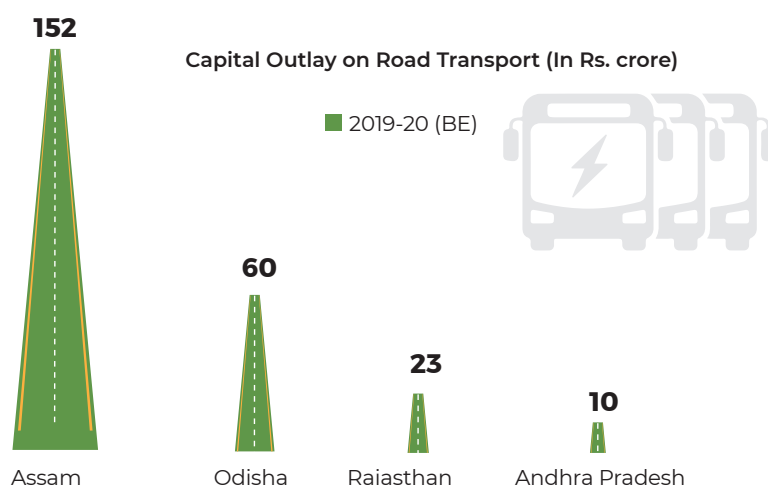
In terms of budgetary provisions, state governments are providing budgetary outlays for the procurement of a fuel-based bus system. The state departments for road transport are providing assistance to State Transport Undertakings for the provision of road transport services, which mainly includes public transport, such as buses. Capital outlays from the state transport department budgets are meant for the creation of capital assets such as the purchase of buses, construction of transport infrastructure such as bus terminals, their buildings etc. While the revenue expenditure is meant for the salaries of employ-

ees, maintenance and repair of equipment and bus terminals, training of staff, undertaking road safety measures, including raising general awareness. The budget data on capital outlays indicates that how the state governments are investing on the purchase of fuel-based buses.²⁹ The newly formed state of Andhra Pradesh is spending exorbitantly on the purchase of buses. The State Transport Undertaking, i.e., the Andhra Pradesh State Road Transport Corporation (APSRTC) has been provided with loan assistance of Rs. 1000 crore for procurement of buses.³⁰ **A part of capital outlays under budgets can be easily directed in a phased manner towards the purchase of electric-based buses and the creation of an enabling ecosystem for the augmentation of the electric fleet in the state bus transport system (for example making provisions for charging infrastructure).**³¹

3.3.2. Need for Demand Aggregation in All identified SMART Cities at the State Level

Many cities in the select studied states are recognised as Smart Cities under the National Smart

Figure 3.3: Budget Estimates (2019-20) for Road Transport Buses in the Select Four States (in Rs.crore)



Source: States' Transport Services Department Budget

²⁹ See State-wise Case Study and Annexure on State Budget Data for Transport

³⁰ See Case Study – AP State Financing For Climate Mitigation Actions

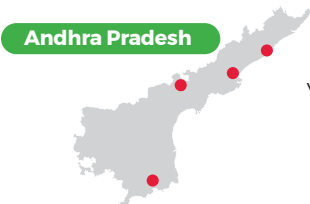


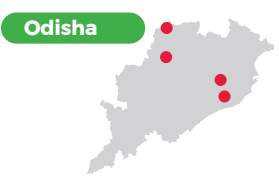


³¹ See Recommendation Section in Andhra Pradesh Case Study

³² To improve electric vehicle infrastructure in the country, the government has sanctioned 2,636 electric vehicle charging stations, Jan 2020 <https://www.opengovasia.com/indian-government-sanctions-2636-ev-charging-stations/>

Cities Mission. As discussed earlier, Smart Cities are eligible to avail grants from the FAME- II Scheme for electric vehicles. The departments for urban development in states or dedicated State Purpose Vehicles, such as Smart City Limited along with State Transport Undertakings are submitting EOI for availing incentives under the FAME – II Scheme for electric mobility. A few Smart Cities are also availing

incentives under the same scheme for electric mobility.³² However, to improve the economies of cities under states, they should be encouraged to aggregate the demand of different cities within the state and opt for a single EOI to bid for all sanctioned buses in the state. Even cities across states or different states should join together to achieve demand aggregation in the procurement of buses.

Table 3.4: State Initiatives for Electric Mobility

	Identified SMART Cities	Initiatives by Cities for e – Mobility	
 <p>Andhra Pradesh</p>	<p>Amaravati Visakhapatnam Kakinada Tirupati</p>	<p>Greater Visakhapatnam Municipal Corporation (GVMC) and the Visakha region of Andhra Pradesh Road Transport Corporation (APSRTC) has submitted a proposal under FAME-II[1] 33</p>	
 <p>Assam</p>	<p>Guwahati *</p>	<p>Assam State Transport Corporation procured E-buses under FAME-II</p>	
 <p>Odisha</p>	<p>Bhubaneswar* Cuttack Rourkela Sambalpur</p>	<p>Capital Region Urban Transport (CRUT) with Bhubaneswar Smart City Limited launched electric rides in buses, motorbike segment and rides in EVs</p>	
 <p>Rajasthan</p>	<p>Jaipur* Udaipur Kota Ajmer</p>	<p>Jaipur Smart City Limited launched a tender under FAME-II for EV buses</p>	

Note: * Cities submitted proposal under FAME-II

32 To improve electric vehicle infrastructure in the country, the government has sanctioned 2,636 electric vehicle charging stations, Jan 2020 <https://www.opengovasia.com/indian-government-sanctions-2636-ev-charging-stations/>

33 The Greater Visakhapatnam Municipal Corporation (GVMC) and the Visakha region of Andhra Pradesh Road Transport Corporation (APSRTC) have shown interest in purchasing electric buses for operation in the city, and have submitted Expression of Interest (EOI) to the Centre. Under the FAME scheme phase 2, a subsidy of 40% can be availed on the purchase of electric vehicles. October 2019 <https://www.yovizag.com/electric-buses-fame-scheme-2-visakhapatnam/>

3.4. What are the central policy and financing mechanisms for low carbon transport systems, such as metro rails & inland water transport in states?

In order to enable the realisation of growing metro rail aspirations of a large number of cities with a high urban population, the central government released the Metro Rail Policy 2017. The Policy supports the metro rail project under a public private partnership mode in states. Private participation for complete provisioning of metro rail is an essential requirement for all metro rail projects where state proposals are seeking central financial assistance. The policy envisages private sector participation in the operation and maintenance (O&M) of metro services. States can take up metro projects exercising any of the following options for availing central assistance. Under all these options, private participation, however, is mandatory. These options include:

- PPP with central assistance under the Viability Gap Funding Scheme, for example, the Delhi Airport Line

- Grant by Government of India under which 10 per cent of the project cost will be given as lump sum central assistance, for example, the Jaipur Metro Rail and the Mumbai Monorail
- 50:50 equity sharing model between the central and state government, for example, the Delhi Metro
- 100 per cent private funding, for example, the Gurugram Rapid Metro

The Ministry of Housing and Urban Development is the nodal Ministry for funding the metro rail projects in cities. The budgetary allocation for this segment in the recent budget 2020-21 is around Rs. 20,000 crore (See Table 3.5). State governments have established joint venture companies for availing Central Grants. For example: the Odisha Government is going through a DPR preparation under the Bhubaneswar – Cuttack Rapid Metro Rail project; Rajasthan is establishing metro rails in its identified SMART cities such as Jaipur and Kota; and Assam is preparing the feasibility study for a metro rail project in the city of Guwahati.³⁴

Table 3.5: Central Government Budgetary Trend for Metro Urban Transport System in Cities (in Rs. crore)

Mass Rapid Transit System and Metro Projects	2018-2019 (A)	2019-2020(BE)	2019-2020(RE)	2020-2021(BE)
Grants to Delhi Metro Rail Corporation	50.00	414.70	414.70	0
Metro Projects				
Equity Investment	2,341.00	3,815.00	3,713.06	3,256.00
Subordinate Debt	1,550.00	1,684.00	1,684.00	1,152.00
Pass-Through Assistance	10,373.60	12,214.93	12,214.93	13,074.00
Total- Metro Projects	14,264.60	17,713.93	17,611.99	17,482.00
Transport Planning and Capacity Building in Urban Transport	55.62	49.11	39.12	30.60
National Capital Region Transport Corporation	100.00	974.25	824.25	2,487.40
Global Environment Facility	0.02	0.01	...	...
Total-MRTS and Metro Projects	14,470.24	19,152.00	18,890.06	20,000.00

Source: Budget Documents of Ministry of Urban Development for various years.

34 See Rajasthan State Report for Metro Rail Project in Jaipur

Table 3.6: Ministry of Shipping Budgetary Allocations for Inland Water Transport Systems (in Rs. crore)

Inland Water Transport	2018-19 (A)	2019-20 (BE)	2019-20 (RE)	2020-21 (BE)
Grants to Inland Waterways Authority of India	364.95	450.00	236.51	301.80
IWAI Projects:				
EAP Components	370.54	200.00	200.00	270.00
Programme Component	50.00	30.00	30.00	30.00
Interest under EBR	76.51	77.00	76.40	76.50
Total - IWAI Projects	497.05	307.00	306.40	376.50

Source: Ministry of Shipping Budget 2020-21 for IWT project

Assam and Odisha are making efforts for the development of an Inland Water Transport system in their respective states. The Assam Government is

investing in IWT development in the state in collaboration with the World Bank.³⁵

³⁵ See Assam Policy Brief: Climate Mitigation Financing Framework in Assam

Section IV


Financing for State Action Plan on Climate Change

4.1 What are the Central Funding Sources for State Action Plans on Climate Change (SAPCC)?

Broadly, the Central Government funding for the implementation of the SAPCC is mainly being transferred through four major channels. These are:

- National Action Plan on Climate Change (NAPCC) - specific allocation to state governments, for example, the National Solar Mission
- Climate relevant sectoral funding through Centrally Sponsored or Central Sector Schemes, such as FAME-II for Electric Mobility
- Dedicated funds for climate adaptation programmes, which pose co-benefits for climate mitigation, such as the National Adaptation Fund for Climate Change Scheme by MOEF & CC
- Central programme designed for accelerating the state planning process for climate actions, such as the Climate Change Action Programme.

Various sections of this report have discussed funding under the National Solar Mission and various climate relevant sectoral funding under central sector or centrally sponsored schemes. The MOEF&CC implements central sector schemes, such as the National Adaptation Fund for Climate Change (NAFCC) in association with the National Bank for Agriculture and Rural Development (NABARD). This aims to



This section on SAPCC provides answers on the following:

- How is the Central Government funding the SAPCC?
- What are the Central Government Guidelines to states regarding estimation of financial requirements?
- What are the focus areas, magnitude, and trends proposed for financing under SAPCC?
- What is the impact of SAPCC or its gaps in identifying financial needs and planning for climate mitigation?

support concrete adaptation activities which mitigate the adverse effects of climate change. Most of the state governments are seeking funding under the programme for mainly adaptation projects.³⁶ The projects related to adaptation in sectors such as agriculture, animal husbandry, water, forestry, tourism etc. are all eligible for funding under the NAFCC. It may be noted that often these adaptation projects also present co-benefits for climate miti-

³⁶ Press Information Bureau Government of India Ministry of Environment, Forest and Climate Change Available at : <https://pib.gov.in/newsite/PrintRelease.aspx?relid=176178>

gation. For example, the adaptation projects under the programme on “Climate Smart Villages” in Bihar and Madhya Pradesh also include the development of an ecosystem for the promotion of alternative sources of energy in villages, such as deploying solar agricultural pumps, solar streetlights, solar lamp distributions, etc.³⁷ In addition, the MOEF & CC is implementing another programme viz., the Climate Change Action Programme (CCAP), which aims to build institutional capacity at state levels in areas of climate change. These include support for carrying

out an initial assessment required for the preparation of State Action Plans for Climate Change.³⁸ It incorporates financial assistance of Rs. 20 lakh for the preparation of the SAPCC by states/UTs.

The budgetary allocation for the above programme supporting state action on climate change and assistance for preparing the SAPCC are given in Figure 4.2. This shows a declining trend in scheme allocations over the years.

Figure 4.1: Central Government Funding for Implementation of SAPCC

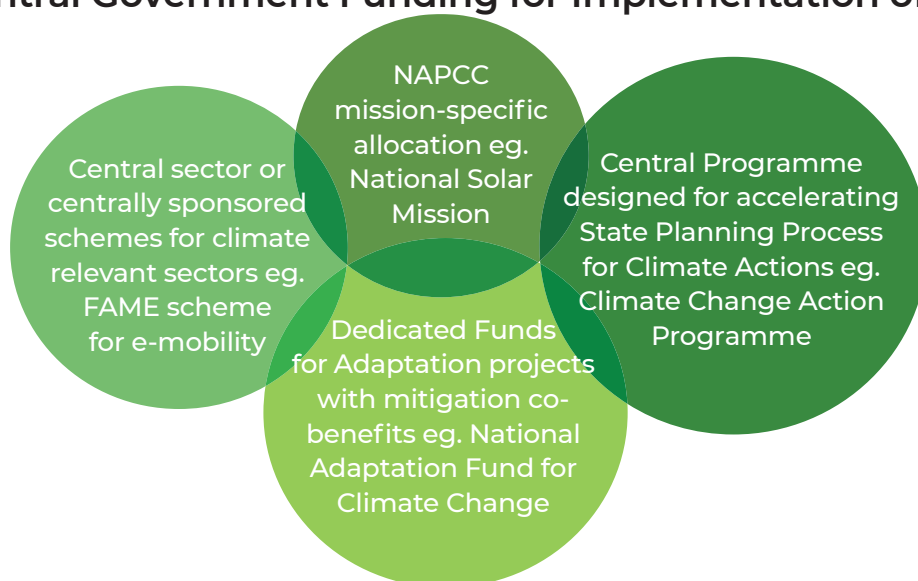
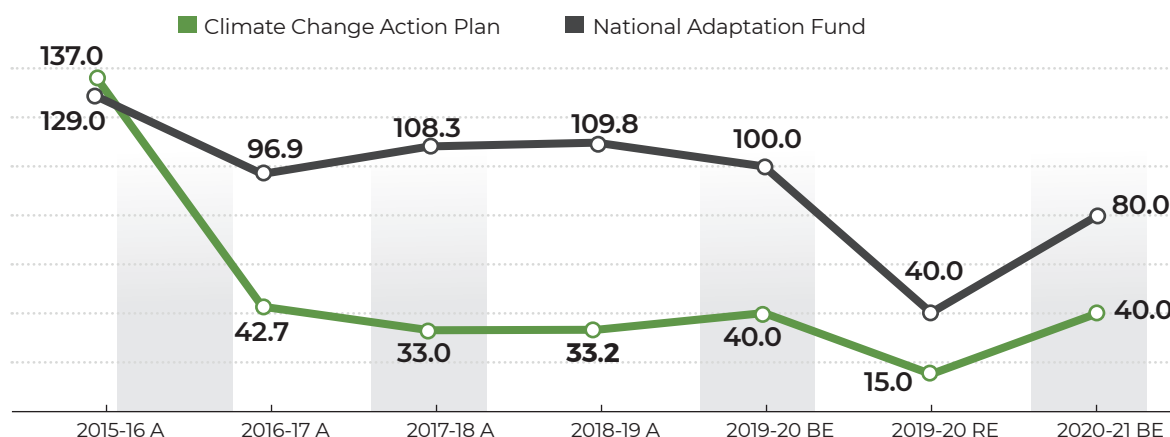


Figure 4.2: MOEFCC’s Allocation for Programmes Designated to Support SAPCC - CCAP & NAF (in Rs. crore)



Source: Union Budget for various years for MoEF & CC

37 Madhya Pradesh Climate Change Knowledge Portal(2020) Available at : <http://www.climatechange.mp.gov.in/en/knowledge-bank/ongoing-projects/climate-smart-village>

38 The CCAP grant component under the scheme is used for funding demonstration projects proposed by the States/ UTs, assistance for revisions of SAPCC, projects on Long Term Ecological Observatories for Climate Change Studies (LTEO) and National Carbonaceous Aerosols Programme (NCAP)

4.2 What is the Central Guidance framework on identifying financial requirement under State Action Plans on Climate Change?

With the formulation of the National Action Plan on Climate Change (NAPCC) in 2008 with eight missions, it became imperative to achieve coherence between the strategies and actions at the national and sub-national levels. Therefore, the Ministry of Environment, Forest and Climate Change motivated the state governments to prepare their State Action Plans on Climate Change (SAPCC) based on the broad objectives of the NAPCC. While the NAPCC provides a roadmap that can guide states to prioritise a set of strategies for the state, the Ministry of Environment, Forest and Climate Change (MoEF & CC), also developed a common framework in 2010; this sought to facilitate the states in preparing their

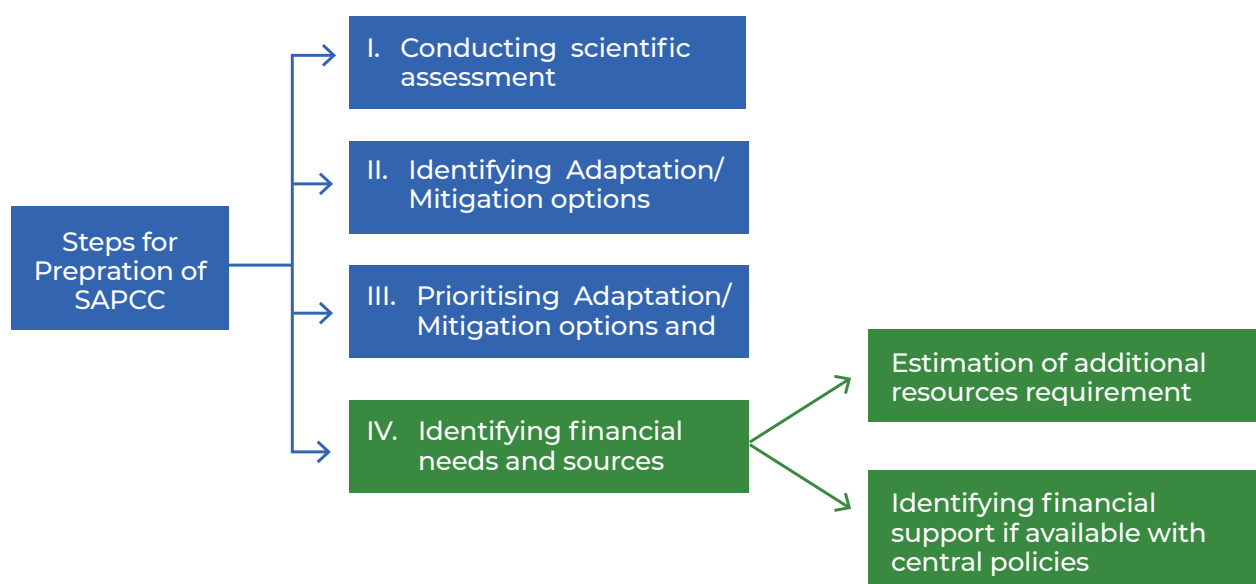
respective State Action Plans in line with the broad objectives of the NAPCC.³⁹ The major steps recommended under the common framework developed by the MOEF & CC for the preparation of the SAPCC include:

- Conducting a scientific assessment
- Identifying adaptation/mitigation options
- Prioritising adaptation/mitigation options; and
- Identifying financial needs and sources.

With particular regard to the step for **“Identifying financial needs and sources”**, the following guiding principles were described under the Ministry’s recommended framework:

- Estimating additional resource requirements and exploring existing new and additional carbon finance potential
- Linking up with national policies and programmes for consistency and identifying financial or policy support that may be available

Figure 4.3: MOEF & CC Common Framework for Preparation of SAPCC, 2010



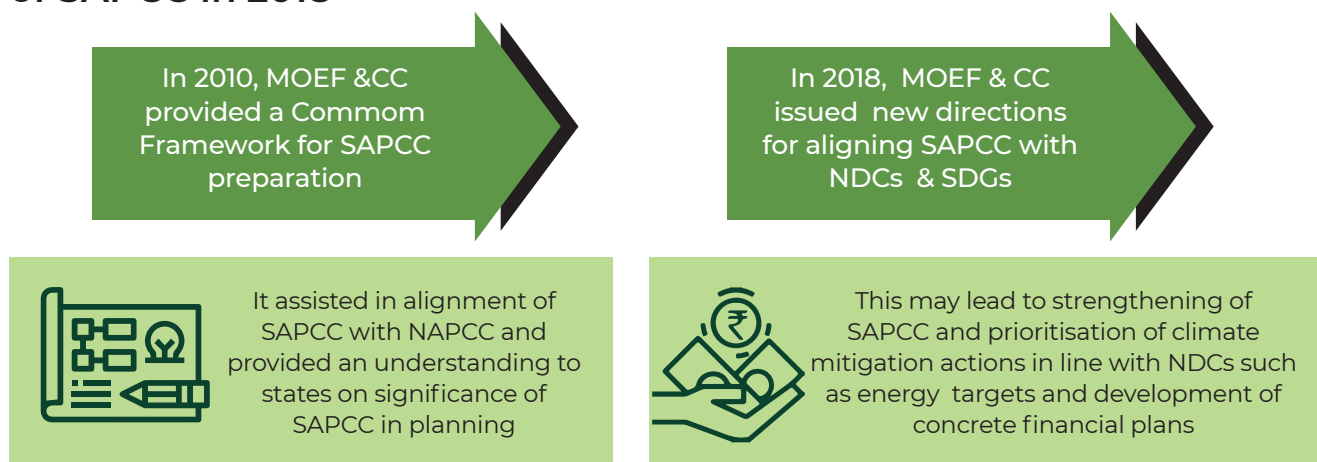
³⁹ Ministry of Environment and Forests, GoI. 2010. A framework for the preparation of the state level action plans on climate change. New Delhi: GoI. Rajasthan SAPCC available at: <http://moef.gov.in/wp-content/uploads/2017/09/Rajasthan.pdf> and MOEF workshop summary available at <http://moef.gov.in/wp-content/uploads/2018/01/SAPCC-workshop-summary-2010.pdf>

In 2018, the states/UTs were requested to revise their SAPCCs and reorient their ongoing Action Plans to facilitate the achievement of the country's Post 2020 targets in alignment with the objectives of the Nationally Determined Contributions (NDCs) and SDGs.⁴⁰

This opportunity for a revision in the SAPCC should

not be missed and ought to be fully utilised for a directional shift on the way development is being approached in various states. The states are now in a better position to move forward because of their previous experience of formulating their State Action Plans for Climate Change as new climate research is available and there is a better understanding of expectations.

Figure 4.4: Direction Shift in MOEFCC Guidance for Preparation of SAPCC in 2018



Currently, some states are deliberating upon revising their SAPCCs. Maharashtra had recently issued a Terms of Reference (ToR) for revision in its SAPCC.⁴¹ (See Box 1). During its revision, the state has decided to include additional sectors, which are in line with the NDCs:

- Inclusion of two cross-cutting sectors, viz., Finance and Planning in revised SAPCC
- Inclusion of key sectors from climate mitigation such Transport and Industry

Currently, some states are deliberating on revising their State Action Plans on Climate Change, based on the new guidelines of MOEFF & CC, 2018 suggesting revisions. Technical and funding agencies like GIZ, UNDP etc. are helping states to initiate the process. This opportunity should not be missed and needs to be fully utilised to bring about a directional

shift in the way development is being approached in these respective states.

4.3. What are the focus areas, magnitude, and trends proposed for financing under SAPCC?

Energy is a key sector identified by the State Action Plans on Climate Change for climate mitigation. They have identified climate adaptation and mitigation actions and most of these are mainstreaming within existing programmes by the state. **Table 4.1 provides a summary on focus areas and respective financial needs identified under the State Action Plans for Climate Change for the next five years till 2020.** Each state has recognised specific project activities under various focus areas, in line with missions under the National Action Plan on Climate

⁴⁰ MOEF&CC, Annual Report, 2018-19. Available at : <http://moef.gov.in/wp-content/uploads/2019/08/Annual-Report-2018-19-English.pdf>

⁴¹ Maharashtra's ToR for strengthening of SAPCC, 2019. Available at : <http://mahenvis.nic.in/Pdf/other/ToR's%20for%20Maharashtra%20SAPCC.pdf>

Change (NAPCC). These consist of a set of climate actions which qualify either as adaptation posing co-benefits for climate mitigation or purely mitigation. For example, the agriculture sector in Odisha proposes solar-based energy efficient models for irrigation; and the horticulture sector in Assam proposes tapping biogas from collected dung, promoting clean energy as substitution for wood in the forest sector etc.

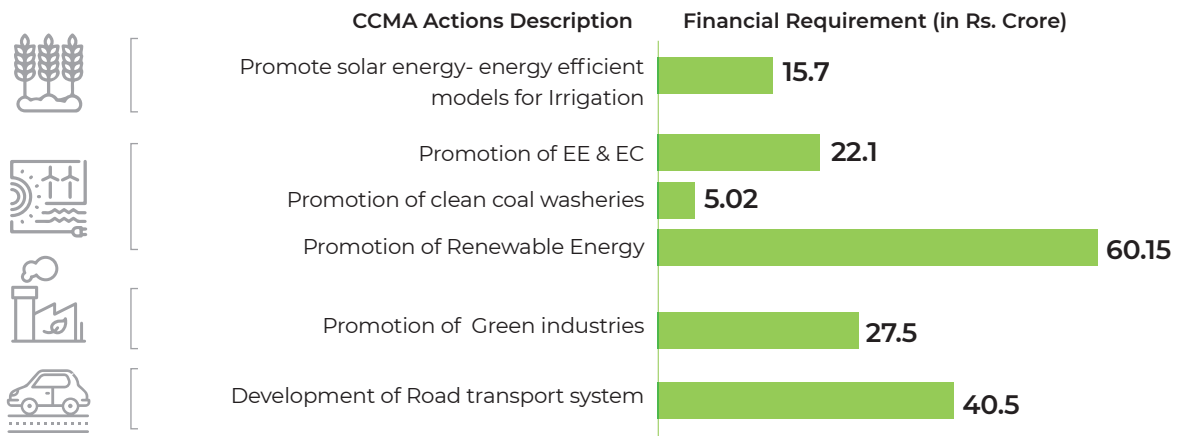
The promotion of Renewable Energy (RE) is considered as the highest investment sector in the Odisha and Assam State Action Plans for Climate Change.

The Rajasthan SAPCC proposed RE and the enhancement of energy efficiency (EE) as the focus area with a set of climate mitigation actions. It does not present a financial assessment for most of its climate mitigation actions and looks upon the MNRE and private investment as major sources of finance.

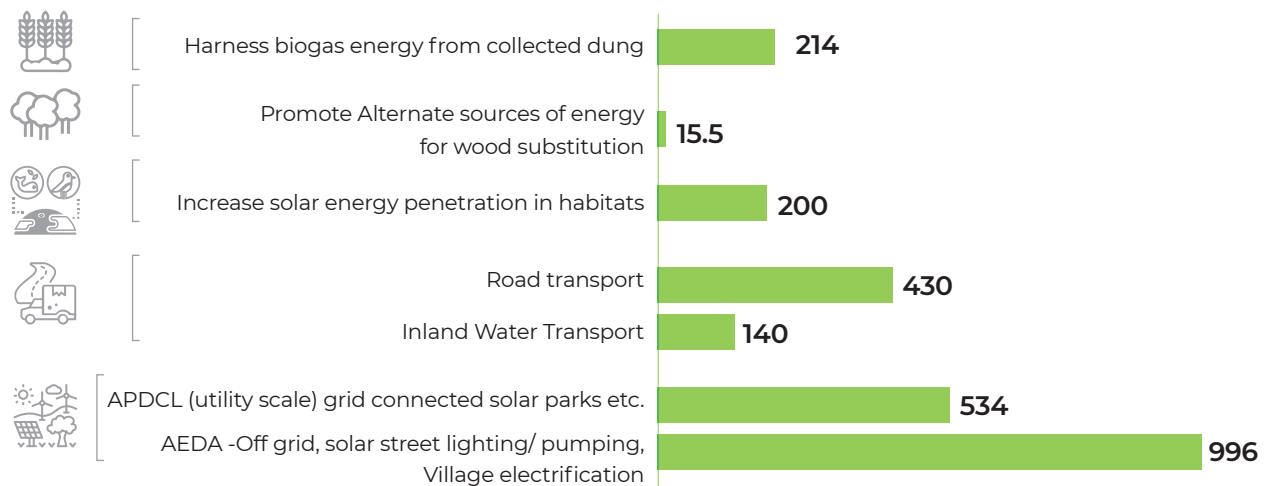
(See Figures 4.5a & 4.5b: Odisha and Assam SAPCC allocations for various climate mitigation actions and Annexure III which provides a description of various climate mitigation actions under various focus areas and their specific financial requirements for the states of Odisha and Assam).

Figure 4.5 a & b: Odisha and Assam SAPCC Proposed Financial Requirement for Various Climate Mitigation Actions (in Rs. crore)

Odisha SAPCC 's Focus Areas



Assam SAPCC's focus Area



Source: Odisha and Assam SAPCC

Box 1: Maharashtra's ToR for strengthening and revision of SAPCC, June 2019

The Paris Agreement came into being in 2015, which committed to containing the global temperatures between 1.5 to 2o C to ensure sustainable life on earth. India, along with other countries that ratified the Agreement, drafted its Nationally Determined Contributions (NDCs) and submitted them to the United Nations Framework Convention on Climate Change (UNFCCC) in 2016. In order to achieve the NDCs of India, each state would have to align its activities and SAPCC to the objectives of the NDCs. It has to identify the key

actions that it would implement to meet these objectives and identify financing opportunities while building its capacities to adapt to climate change. Considering this need, the Ministry of Environment, Forest and Climate Change (MoEF&CC) has requested all states to revise their SAPCC. The Government of Maharashtra has therefore decided to update the existing SAPCC as per the guidance framework provided by the MoEF &CC in May 2019. In line with the objectives of the NDCs and SDGs, **the State has decided to include four additional sectors (Industries, Transport, Tribal Development and Tourism) and two cross-cutting sectors (Finance and Planning) during the revision of its SAPCC.**

Table 4.1: Summary on Focus Areas under Select States' SAPCC and their Respective Financial Needs & proposed MEV system

	Andhra Pradesh	Assam	Odisha	Rajasthan
Status of SAPCC	SAPCC not yet prepared	Assam SAPCC, 2015-2020	Odisha SAPCC, 2015-2020	Rajasthan Action Plan on Climate Change (RAPCC) 2015-2017
Earlier Frameworks, if any	State GHG inventory prepared in 2014	Not available	Odisha SAPCC 2010-2014	Climate Change Agenda for Rajasthan (2010-2014)
Nodal department involved in preparation of SAPCC	Not identified	Department of Environment and Forests, Government of Assam	Climate Change Cell, Forest and Environment Department, Government of Odisha	Government of Rajasthan
Technical supporting External Agency for SAPCC	--	DFID & MOEF& CC under Climate Change Innovation Programme	World Bank	German Development Agency - GIZ
Focus areas for climate mitigation actions in SAPCC	--	Habitat includes Waste/ sewage management, Transport including Inland Water Transport Energy includes, improving access, Renewable Energy, & Energy Efficiency	Energy Industry Mining, Transport, Urban Habitat	Promoting Solar Energy and Enhancing Energy Efficiency
Total Financial Requirement for SAPCC implementation (including adaptation) (in Rs. crore)	--	58,415	31,664 (17,000 for CCAP-2010-2015)	262**
Finance requirement for key sectors for climate mitigation actions (in Rs. crore)	--	Energy | 1,530 Transport | 578 Habitat | 725 Industry | 30	Energy | 749 Transport | 21 Habitat | 1475 Industry | 32.5	Rs. 150000 crore for Solar Energy addition for next three years (till 2017)

Table 4.1: Summary on Focus Areas under Select States' SAPCC and their Respective Financial Needs & proposed MEV system

	Andhra Pradesh	Assam	Odisha	Rajasthan
Long term financial projections & identification of financial sources	-	Funding only through integrating planning with budgeted programmes Innovative financing instruments need to be designed by concerned state departments	Pressure on state budget should be reduced SAPCC presumed that two-thirds of the climate budget will be from state sources and balance one third will be mobilised from the Centre and other Climate Funds	No financial projections and source identification yet. Rajasthan is strategising for preparation of SAPCC as announced in 2019 budget speech ⁴²
Monitoring, Evaluation & Verification Framework suggested	-	MEV framework yet to be developed SAPCC proposes establishing the Assam Climate Change Management Society for monitoring & evaluation of progress of projects	Major 3 goals of MEV framework: <ul style="list-style-type: none"> To understand current levels of state emissions To measure impact of mitigation programmes To develop a system of accountability for emission-reducing activities SAPCC elaborates on: <ul style="list-style-type: none"> Managing climate change cell MEV systems MEV reporting and communication 	Monitoring of SAPCC implementation will be done by the Rajasthan Environment Mission Steering Committee of the Environment Mission Monitoring of SAPCC implementation will be done by the Rajasthan Environment Mission and Steering Committee of the Environment Mission

Source: Authors' compilation from select states' SAPCC

Note: **Rajasthan provides partial estimates; does not cover financial estimates for all SAPCC actions

In terms of financing, the majority of states have given rough estimates on finances. Most of the State Action Plans on Climate Change laid emphasis on integrating climate concerns in their budgets. Observation from “Financial needs” presented by states' SAPCC suggests that the Budget is considered as a key financial source for funding of the SAPCC (See Box 2).

4.4. What is the impact of SAPCC or its gaps in identifying financial needs and planning for climate mitigation?

Some key observations from the financial needs requirement presented in the states' SAPCC reflect that they are “not yet ready to use plan”.

⁴² Chief Minister Ashok Gehlot announced restructuring of the DOE as Directorate of Environment and Climate Change (DOECC) in the budget for 2019-20 on July 10. He also announced drafting a new state action plan for climate change with Central government funding. Available at :<https://www.hindustantimes.com/jaipur/rajasthan-to-focus-on-climate-change-with-new-action-plan/story-X8owvGpMm9a7SmrxhbAv2N.html>

Box 2: Excerpts from Chapter on 'Financial Requirements' under Select States' SAPCC

The Odisha SAPCC presumed that two-thirds of the climate budget will be from state sources and the balance one third will be mobilised from the Centre and other Climate Funds. It recognises that pressure on the state budget should be reduced. Any estimation of the cost of climate change adaptation activities and even some mitigation activities is difficult, because of the

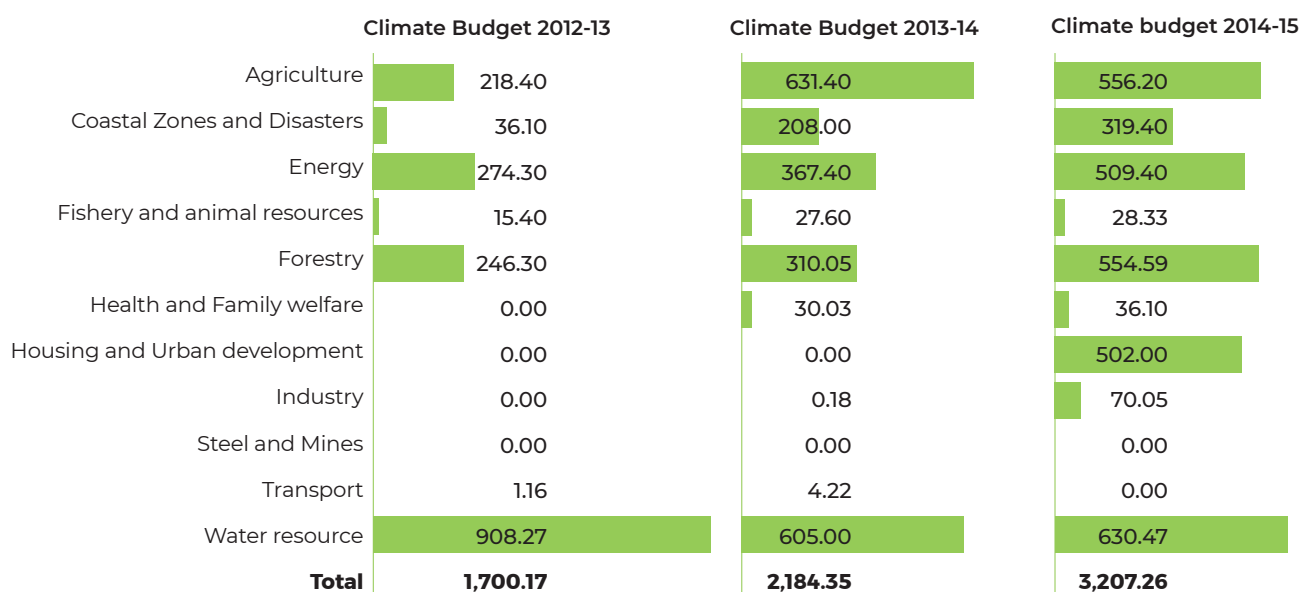
externalities and uncertainties associated with their implementation.

The Assam SAPCC has provided a larger thrust to funding through integrating planning with budgeted programmes and recommends the designing of new financing instruments. The Rajasthan SAPCC provides only a partial assessment on finance requirement. It acknowledges that the state has to design and explore new financial resources, besides budgets for state financing of climate actions.

States are not reviewing their actions from the perspective of climate change and not adjusting to market demands or changes in the policy environment in allocations. Many states have repeated existing developmental and national policies and schemes in their State Action Plans for Climate Change, without properly reviewing them from a climate perspective. Some of these policies might

have already failed to make a significant impact even in the business-as-usual development model. Further, implementing policies and programmes that have been prepared in alignment with the NAP-CC but without looking at different perspectives at the local level can also result in a poor outcome of the SAPCC. For example, various allocations for diverse sectors in the Odisha Budget follows a similar

Figure 4.6: Trends in Budgetary Allocations for Diverse Sectors Identified under Climate Budget for Various Years: Case of Odisha (in Rs. crore)



Source: Climate change cell Odisha ⁴³

⁴³ Government of Odisha (2015). Progress Report on Implementation of SAPCC. Available at: http://climatechangeodisha.org/pdf/PROGRESS_REPORT_ON_IMPLEMENTATION_OF%20SAPCC.pdf

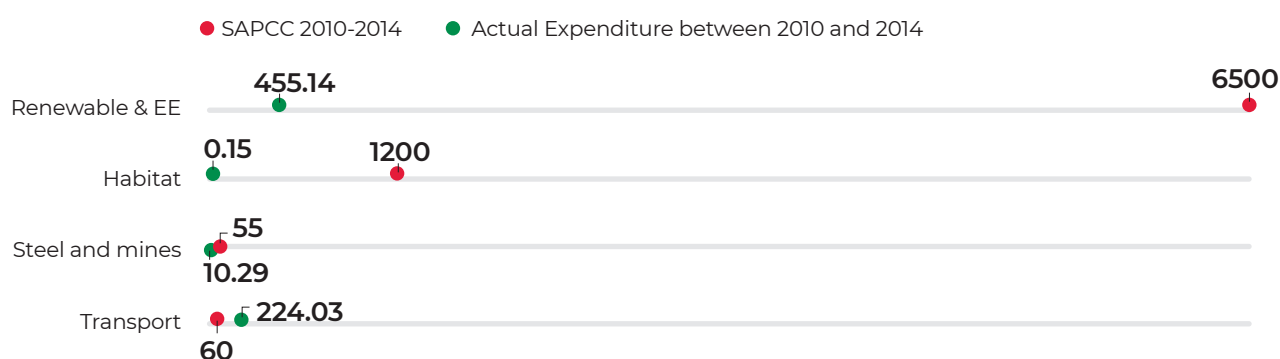
percent share in the total budget for 3 consecutive years 2012-13 to 2014-15 (See Figure 4.6).

There is a lack of clarity about available funding and how it is affecting the scope and extent of proposed action under the State Action Plans on Climate Change. For example, in the case of Odisha, the prioritised activities in 12 sectors for the second SAPCC period 2015–20 is proposed as Rs. 31,664 crore, which is about Rs 14,000 crore more than estimated in the previous SAPCC for the period 2010-2014. If inflation of about 5-6 per cent is assumed, the amount seems to be in the same order of magnitude.⁴⁴ There is an incremental increase in the overall budget for the SAPCC of Odisha for the period 2015-2020 from the previous budget to adjust the inflation of 6%⁴⁵. The case of Assam is the same, where the budgets reflect a similar incremental trend without any cognisance of changes in scale and nature required over the years. This is the reason for a huge gap in the financial requirement posed under the SAPCC and the actual budgetary spending. (See Figure 4.7: Gaps in SAPCC Financial Needs and Actual Spending (in Rs. crore)

Introducing outcome budgeting on a regular basis may provide a solution in terms of the monitoring process. It is difficult to monitor the actual budget executed out of a proposed financial requirement in the SAPCC since quite often programmes are converged due to administrative reasons or the unavailability of disaggregated data on budgets in state budget documents.

Discontinuity or merging of programmes and non-availability of disaggregated data is a major reason for not being able to evaluate whether the SAPCC proposals on financial requirements are actually being implemented or not. While, the common framework for the preparation of the SAPCC proposed by MOEF & CC, directs states to develop a Monitoring, Evaluation and Verification (MEV) system to track SAPCC execution, most of them still lack in providing clarity on MEV frameworks. (See Table 4.1: Summary on Focus Areas under Select States' SAPCC and their Respective Financial Needs & Proposed MEV System). Introducing outcome budgeting on a regular basis may provide a solution in terms of the monitoring process.⁴⁶

Figure 4.7: Gaps in Odisha SAPCC Financial Needs and Actual Spending (in Rs. crore)







Source: Odisha SAPCC 2015-20: Table 9.1 Summary Budget, Climate Change Activities, 2015-20
Actual expenditure data for Industry not available

44 Odisha SAPCC 2015-2020 Available at: http://climatechangecellodisha.org/pdf/Odisha_SAPCC_2016-2020.pdf

45 See for more details in Policy Brief - Climate Mitigation Financing Framework for Odisha

46 Ibid






Annexure V: Financial Requirements Posed Under Various Climate Mitigation Actions under Various Focus Areas of SAPCC

Focus Area	Climate Mitigation Actions under Focus Area	Budget Requirement (Rs. Crore)		
		Required Budget	Budget	External Sources
Agriculture 	Promote solar energy and energy efficient models for irrigation			
	Reduce Transmission & Distribution (T&D) losses	577.99	577.99	
	Promotion of EE & EC	22.1	19.75	1.6
	ECBC, PAT	0.3	0.2	0.1
	DSM & EE	11	11	
	EE Awareness	2.1	1.85	
	Implement Odisha Energy Conservation Building Code (OECBC)	4	3.5	
	Training of Energy Auditors	4.7	3.2	1.5
	EE in Water Pumping			
	Promotion of clean coal washeries & approaches	5.02		5.02
	Promotion of Renewable Energy	60.15	0	60.15
	Assistance to GEDCOL	--	--	--
	Use fly ash effectively	--	--	--
	Promote small and medium hydel plants	15.7		15.7
	Maximum and harness biomass potential	--	--	--
	Promote biogas and manure management	--	--	--
	Promote grid-connected wind power	--	--	--
Maximise solar energy generation potential	44.45		44.45	
Energy 				
	Total	27.5	5.5	22
	Biomethanation in food processing clusters	15	5	10
	Centralised solar heating for food processing clusters	10	0	10
	EMP for industrial clusters	1	0	1
	Heat Island Study	0.5		0.5
Training of officials on CC	1	0.5	0.5	
Industry 				
	Total	40.5	20	280.5
	Enact policy for phasing out old vehicles	20	0	20
	Ensure fuel efficiency through driver training	20	20	10
	Strengthen the enforcement and emission check-up system	0	0	250
	Use LPG	--	--	--
	Use e-rickshaws	0.5		0.5
Transport 				

Source: CBGA compilation from state SAPCC

Annexure V: Financial Requirements Posed Under Various Climate Mitigation Actions under Various Focus Areas of SAPCC

Assam

Focus Area	Climate Mitigation Actions under Focus Area	Budget Requirement (Rs. Crore)
 Agriculture (Horticulture)	Harness energy from dung collected at community centres – produce 1000 cubic metre of biogas, one in each of the 219 Blocks	214
 Forests	Promote alternate sources of energy for wood substitution as fuel-energy plantations, solar plants, biogas, LPG	15.5
 Habitats	Increase solar energy penetration and reduce load on conventional source	200
 Transport	Promote road transport through CNG-based buses, training of staff	430
	Promote Inland Water Transport	140
 Renewable Energy	Assam Power Distribution Company (APCPDCL) projects (utility scale) grid-connected solar parks etc.	534
	Off-grid, solar street lighting, solar pumping, irrigation, village electrification	996

Source: CBGA compilation from state SAPCC

Consolidated Report on Climate Mitigation Financing Framework in Select States

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About the Project

The project studies policy, institutional and fiscal measures which four select states, viz., Andhra Pradesh, Assam, Odisha and Rajasthan are undertaking as climate change mitigation actions. It reflects on the suitability of the budgetary provisions in meeting their State Action Plan on Climate Change (SAPCC).



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CBGA is an independent, non-profit policy research organisation based in New Delhi. It strives to inform public discourse through rigorous analysis of government budgets in India; it also tries to foster people's participation on a range of policy issues by demystifying them.

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Shakti Sustainable Energy Foundation works to facilitate India's transition to a cleaner energy future by aiding the design and implementation of policies that promote clean power, energy efficiency, sustainable transport, climate policy and clean energy finance.

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