



Madhya Pradesh State Action Plan on Climate Change

Sector Policy Brief: **RENEWABLE ENERGY**

A secure supply of energy is a core requirement of sustainable development. Madhya Pradesh is currently heavily dependent on coal-fired power plants to fuel economic growth. These plants not only produce carbon dioxide (CO₂) emissions that contribute to climate change, but also cannot meet the increasing energy demands of the State. As the pace of development increases, this situation will worsen.

To achieve sustainable development, the Madhya Pradesh State Action Plan on Climate Change (SAPCC) prioritises the promotion of renewable energy. While it is important to increase the contribution of renewables to total production in the large-scale commercial energy sector, it is also essential to consider the role of small-scale, off-grid renewable energy initiatives. Furthermore, climate change is a cross-cutting issue, and strategies for adapting to it by using renewable energy sources are needed in many sectors, and across all levels of government from the national to the Panchayat.

Renewable energy in Madhya Pradesh

Renewable energy is high on India's development agenda. The National Solar Mission is one of the eight elements of the National Action Plan on Climate Change, and has set an ambitious target of providing 20 GW of grid-connected solar power by 2022.

Madhya Pradesh has a rich natural resource base with enormous possibilities for renewable energy generation. In particular, the topographic and climatic conditions of the State favour the development of wind and solar energy, but small hydroelectric and biomass initiatives are also likely to be important. At present, renewable energy sources make up only 2.95% of the total installed capacity of the State, but Table 1 illustrates the potential capacities of each of the four main renewable energy sources.

The Madhya Pradesh State Government is already actively promoting the development of renewable energy. It provides favourable investment conditions through concessional rates for land and commercial tax, capital subsidies, and exemptions from entry tax and electricity duty. Realising the potential of renewable energy in Madhya Pradesh, the State Government has implemented policies for solar, biomass and wind energy and has taken steps to promote renewable energy and to attract investment.

Table 1. Installed and potential capacities of renewable energy technologies, Madhya Pradesh

Renewable energy technology	Installed capacity (MW)	Potential capacity (MW)
Wind	213.79	1200
Biomass	32.04	1242.4
Solar	0.80 MW/km ²	20 MW/km ²
Small-scale hydroelectric	86.16	803.64

Source: Ministry of New and Renewable Energy and Madhya Pradesh UrjaVikas Nigam

Renewable Purchase Obligations (RPOs), which mandate power distribution companies to purchase a proportion of their supply from renewable sources, are another important way of proactively supporting renewable energy. The Madhya Pradesh State Government is in the process of implementing an RPO rate considerably higher than the national target of 0.8%, with particular emphasis on wind-generated power. Supported by this strategy, current levels of wind power capacity will be more than doubled over the next three years, and a further 400 MW will be produced by other projects still in the pipeline.

Despite these important steps, there is still a long way to go. The unit cost of energy generation from renewable sources remains much higher

than conventional sources, and the technology costs are also high. There is also a low level of public awareness about renewable energy sources and energy conservation.

Renewable energy and climate change

Reducing CO₂ emissions is at the foundation of strategies to mitigate climate change. Renewable energy generation provides a low-carbon alternative to that based on fossil fuels. It can provide a means of adapting to climate change:

- ▶ **In the commercial energy sector**, by providing a substitute for some of the energy produced by coal-fired and large hydroelectric power plants.
- ▶ **In the agricultural sector**, by utilising biodegradable resources – such as animal manure and crop residues – to create usable energy rather than damaging emissions.
- ▶ **In the rural development sector**, by providing small-scale, off-grid energy solutions, especially for lighting.

In some cases, investments in renewable energy are being state-funded. In others, the Clean Development Mechanism (CDM) has been used to generate income from reduction in emissions of CO₂ and methane (see box).

Biogas from buffalo manure in Jabalpur District, Madhya Pradesh

A partnership between the Government of India and RDM Care Ltd, a private energy company, has resulted in a renewable energy CDM project in Pariyat village. The project is generating energy from dairy buffalo manure. It relies on a systematic anaerobic treatment plant which captures, stores and utilises methane for electricity production. It contributes to climate change mitigation by reducing methane emissions through improved dairy manure management as well as providing an alternative to fossil fuel-based power sources. Revenue from the sale of carbon credits is one factor that makes the project economically viable.

Source: CDM Registry, <http://cdm.unfccc.int>



Strategies to support climate change mitigation through renewable energy

The International Panel on Climate Change's Special Report on Renewable Energy Sources, published in 2011, notes that "government policies play a crucial role in accelerating the deployment of renewable technologies. Under most conditions, increasing the share of renewable energy in the energy mix will require policies to stimulate changes in the energy system". Under the SAPCC, the Government of Madhya Pradesh will reinforce its existing policy initiatives by:

- ▶ Ensuring that draft policies for promoting investment in solar, wind and biomass energy are implemented and that RPO targets are met.
- ▶ Building stakeholder capacity on generating, handling and maintaining renewable energy, and on the CDM.
- ▶ Promoting research into new technologies for renewable energy, particularly when they show declining cost trends.
- ▶ Promoting the inclusion of biogas and solar energy applications in panchayat annual plans.
- ▶ Promoting renewable alternatives to fuelwood in forest villages.



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The Madhya Pradesh State Action Plan on Climate Change (SAPCC) has been prepared by the Climate Change Cell, Environmental Planning and Coordination Organisation (EPCO), Housing & Environment Department, Government of Madhya Pradesh. The Plan outlines the strategies required to strengthen development planning and build a more climate-resilient State. It aims to promote the integration of appropriate adaptation/mitigation strategies into the State's development policies and programmes. It is based on secondary data and promotes 'no regret' measures.

In order to share the results of the Madhya Pradesh SAPCC and begin to address climate change concerns through development policies and programmes, the Climate Change Cell of EPCO commissioned a series of policy briefs. CDKN was tasked with producing these, based on the Madhya Pradesh SAPCC, as a Communications Project. This brief is one of a series of ten sector policy briefs, designed to inform stakeholders about the strategies and commitments established in the SAPCC that are of relevance to their sector. Further information can be found in the full SAPCC, available at http://www.epco.in/pdf/Draft_MP_SAPCC.pdf



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