Madhya Pradesh State Action Plan on Climate Change

Sector Policy Brief: ENERGY SECTOR

The production and use of energy is at the centre of the Madhya Pradesh State Action Plan on Climate Change (SAPCC) mission to address the national agenda of climate change through a low-carbon development model. Energy drives economic growth, and fast-developing Madhya Pradesh suffers a shortage of electricity. The challenge is to develop a cross-sectoral approach to energy generation and use which produces enough electricity to sustain economic growth. Burning fossil fuels for electricity generation is a major source of CO_2 in the atmosphere. Coal-based thermal power currently contributes 51.4% of electricity generation capacity in Madhya Pradesh, so enhancing the efficiency of this process is a key strategy in reducing emissions to slow climate change. But more efficient generation of electricity from conventional sources will not be enough. It will also be necessary to manage demand, improve industrial energy efficiency and increase the proportion of total power generated from renewable energy sources.

Energy in Madhya Pradesh: Challenges in supply and demand

Despite considerable expansion of electricity supply in recent years, there is a huge demand for energy in Madhya Pradesh which cannot be met by existing levels of supply.

The state is endowed with many energy sources, including abundant coal, several significant rivers and a sunny climate. Coal and large-scale hydropower plants currently generate 90% of total installed

capacity, with the remainder made up of nuclear, wind, biomass and small-scale hydro.

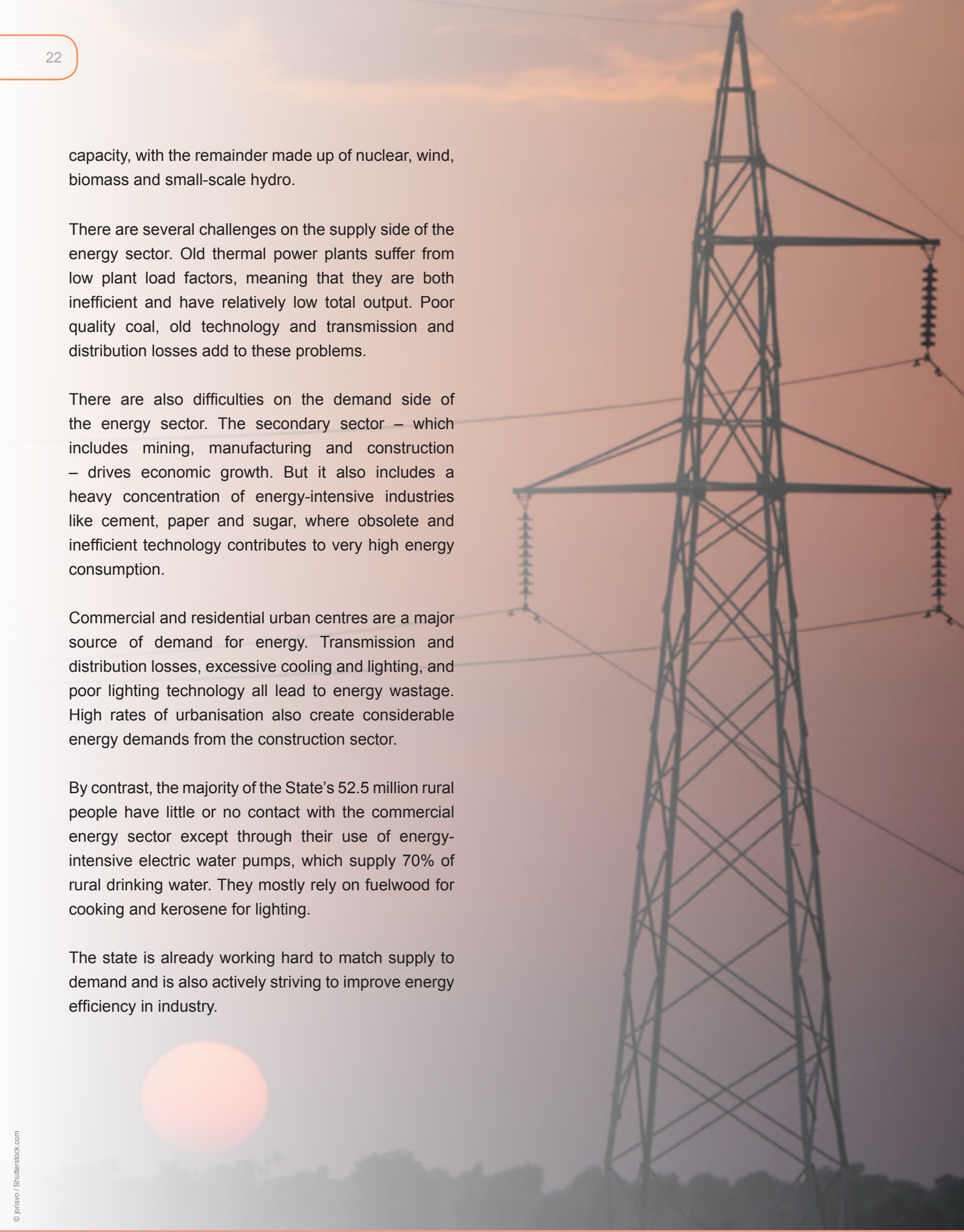
There are several challenges on the supply side of the energy sector. Old thermal power plants suffer from low plant load factors, meaning that they are both inefficient and have relatively low total output. Poor quality coal, old technology and transmission and distribution losses add to these problems.

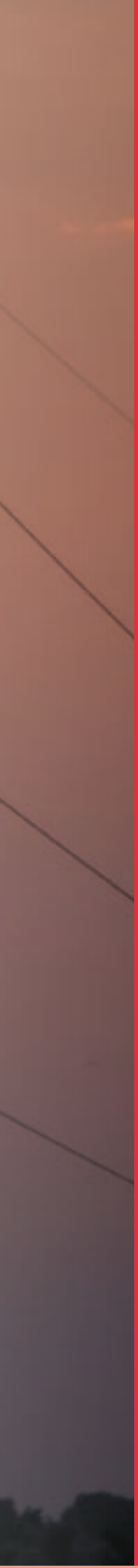
There are also difficulties on the demand side of the energy sector. The secondary sector – which includes mining, manufacturing and construction – drives economic growth. But it also includes a heavy concentration of energy-intensive industries like cement, paper and sugar, where obsolete and inefficient technology contributes to very high energy consumption.

Commercial and residential urban centres are a major source of demand for energy. Transmission and distribution losses, excessive cooling and lighting, and poor lighting technology all lead to energy wastage. High rates of urbanisation also create considerable energy demands from the construction sector.

By contrast, the majority of the State's 52.5 million rural people have little or no contact with the commercial energy sector except through their use of energy-intensive electric water pumps, which supply 70% of rural drinking water. They mostly rely on fuelwood for cooking and kerosene for lighting.

The state is already working hard to match supply to demand and is also actively striving to improve energy efficiency in industry.





Bachat Lamp Yogana – promoting energy-efficient lighting through the Clean Development Mechanism

The goal of the Bachat Lamp Yogana is to deliver energy-efficient Compact Fluorescent Lamps (CFLs) at the cost of ordinary light bulbs, approximately Rs. 15. This national programme is a public–private partnership between the Government of India, private sector CFL suppliers and State electricity distribution companies. It distributes and sells cheap CFLs in exchange for incandescent lamps, which use five times more energy but are normally ten times cheaper. It proposes to use the CDM to recover the cost differential between the market price of the CFLs and their selling price.

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

Climate change and the energy sector: A two-way relationship

The energy sector has a two-way relationship with climate change. On one hand, the commercial energy sector is the largest emitter of greenhouse gases in the economy. On the other, climate change will have an impact on both supply of and demand for energy. There are several key dynamics in this relationship.

- **Increased climate variability will lead to higher demand for electricity.** For example, use of air conditioning is likely to substantially increase as temperatures rise. Higher demand will increase the need for efficient energy use across all sectors.

- **Burning coal contributes to climate change.** This requires a stronger focus on lower-carbon technologies in coal-fired power stations and a greater emphasis on renewables in the commercial energy sector.

- **Hydroelectric power generation is susceptible to variability in the pattern and distribution of rainfall.** Changes in quantity and timing of river runoff, together with increased reservoir evaporation, will affect the ability of the electricity supply system to meet demands. This strengthens the imperative to fully exploit wind, solar and biomass as alternative sources of energy.

- **Relying on fuelwood for domestic energy threatens forest resources.** Preventing deforestation mitigates climate change through protecting carbon stocks.

Reducing reliance on fuelwood would reduce deforestation. This demands the development and promotion of affordable renewable energy sources for rural domestic use.

Alongside these challenges to the energy sector, climate change creates some opportunities. These include the Program of Activities and the Clean Development Mechanism (CDM), introduced under the Kyoto Protocol, which can provide payment for reduction in emissions. The CDM offers a potential route to promote the uptake of a range of energy-saving technologies.

Adaption and mitigation strategies set out in the SAPCC

The SAPCC is proposing a two-pronged approach to reducing greenhouse gas emissions from the energy sector: increasing the efficiency of electricity generation and increasing the contribution of renewable sources to the total of power generated in Madhya Pradesh. In addition, it includes several commitments to promoting energy efficiency in other sectors. The key strategies are to:

- Enhance the efficiency of power generation through renovating and maintaining existing power plants.
- Explore new technologies using conventional fuel.
- Structure a 'green tariff' for incentivising the production of clean energy.
- Improve demand-side management in street lighting, public buildings and water pumping.
- Develop and promote a mechanism for use of energy efficient irrigation pumps.
- Campaign for the full implementation of energy conservation and building codes.
- Explore and tap the potential of the CDM options available as of now to finance sustainable energy efficiency initiatives.

Writing, editing and design: Green Ink (www.greenink.co.uk)

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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

Climate & Development Knowledge Network

This document is an output from a project funded by the UK Department for International Development (DFID) and the Netherlands Directorate-General for International Cooperation (DGIS) for the benefit of developing countries. However, the views expressed and information contained in it are not necessarily those of or endorsed by DFID or DGIS, who can accept no responsibility for such views or information or for any reliance placed on them.This publication has been prepared for general guidance on matters of interest only, and does not constitute professional advice. You should not act upon the information contained in this publication without obtaining specific professional advice. No representation or warranty (express or implied) is given as to the accuracy or completeness of the information contained in this publication, and, to the extent permitted by law, the entities managing the delivery of the Climate and Development Knowledge Network do not accept or assume any liability, responsibility or duty of care for any consequences of you or anyone else acting, or refraining to act, in reliance on the information contained in this publication or for any decision based on it. Management of the delivery of CDKN is undertaken by PricewaterhouseCoopers LLP, and an alliance of organisations including Fundación Futuro Latinoamericano, INTRAC, LEAD International, the Overseas Development Institute, and SouthSouthNorth.