

Madhya Pradesh State Action Plan on Climate Change

Summary Policy Brief

Madhya Pradesh in facts and figures

- ▶ **Total population:** 72.6 million people.
- ▶ **Urban–rural split:** 20.1 million urban; 52.5 million rural.
- ▶ **Geography:** land-locked state with an area of 308,252 km²; challenging geology and topography; divided into 11 agro-climatic zones; mainly scattered human settlements.
- ▶ **Primary sources of livelihood:** agriculture, horticulture, forestry, livestock, poultry, fisheries.
- ▶ **Climate:** average annual rainfall is 1160 mm but varies greatly across the state; most rainfall received from South Asia monsoon between June–September; average temperatures range from 1°C in winter to 48°C in summer.
- ▶ **Socio-economic profile:** 38% live below the poverty line; literacy rate 70.6%.

Source: SAPCC (2012)

The climate change threat to Madhya Pradesh

Across India, climate change is adding socio-economic and environmental stresses to systems already under intense pressure from rapidly rising population, urbanisation and industrialisation. India's climate change concerns led the Central Government to publish the National Action Plan on Climate Change in 2008. This outlined eight major 'missions' around adaptation and mitigation.

Madhya Pradesh is highly vulnerable to the impacts of climate change. Although it is relatively industrialised, the majority of its population continues to earn a living from agriculture, horticulture and forestry. This high level of dependency on natural resources makes the state particularly susceptible to the changing weather patterns caused by climate change. As well as greater fluctuations in temperature and rainfall, climate change is linked to increased frequency and intensity of extreme events such as droughts, floods, storms and heatwaves.

Of course, Madhya Pradesh is not alone. Many other areas of India, and other parts of the world, face a similar challenge. Here, as elsewhere, the threat of climate change risks undoing all the good work on alleviating poverty and ensuring sustainable livelihoods that has already taken place. How the State Government of Madhya Pradesh responds to the challenge of climate change is critical for sustainable development. It is essential that mitigation and adaptation strategies are implemented locally as quickly as possible.

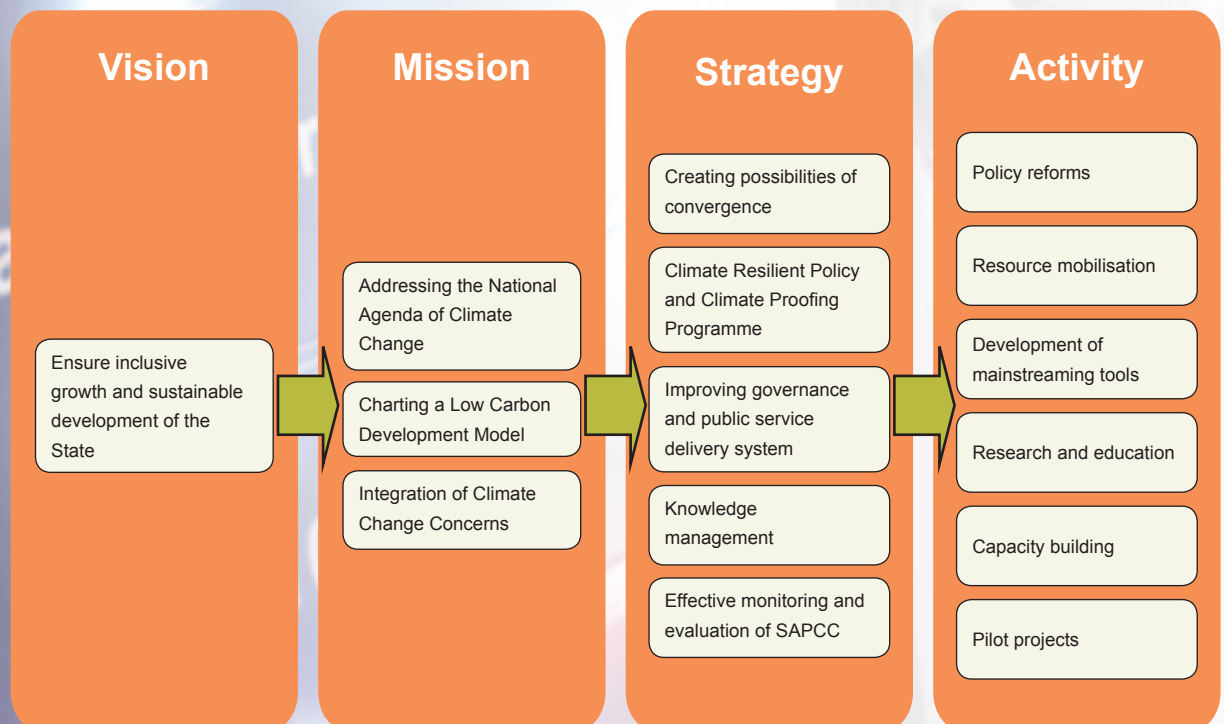
Key changes and impacts

- ▶ Increases in the maximum temperature of 1.8–2.0°C and the minimum temperature of 2.0–2.4°C above what it is today by the 2030s.
- ▶ Fewer rainy days with a decrease in winter rainfall; slight increase of monsoon rainfall.
- ▶ Increased incidence of droughts and floods.
- ▶ Groundwater depletion may reduce water supply for drinking water and irrigation.
- ▶ Lower yields of *rabi* crops and soybeans may threaten livelihoods and food security.
- ▶ Livestock productivity and health may be affected, and the viability of fisheries threatened.
- ▶ Negative impacts on human health.

State Action Plan on Climate Change

All the states of India have been directed by Central Government to prepare strategies for dealing with climate change that take into account their unique vulnerabilities. Accordingly, a State Action Plan on Climate Change (SAPCC) has now been formulated for Madhya Pradesh by the Climate Change Cell of the Environment Planning and Coordination Organisation (EPCO). The plan is based on in-depth consultations with departmental officers, researchers, farmers and other stakeholders in different sectors. It includes a chapter on vulnerability assessment.

The SAPCC now needs to be implemented, which involves integrating climate change into the respective policies and programmes of the State. It relies on people working across different disciplines and departments and with natural resource users to make a real difference. The vision, mission, strategy and activity needed to make this happen are shown in the diagram below.



Sector strategies

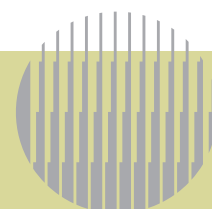
Each sector requires further research to understand in more detail the impact of climate change and devise appropriate responses. A review of existing plans from a climate-change perspective, pilot projects, capacity building, and better coordination

across sectors are also required of all the State Departments of Madhya Pradesh.

The following table summarises the key sector-specific statistics of Madhya Pradesh, along with the major climate change-related issues and some of the strategies needed to address them.

Statistics	Issues	Strategies
Agriculture and Horticulture		
70% of the rural population of Madhya Pradesh engaged in this sector 30% contribution to the state's Net Domestic Product 65% of holdings belong to small-scale farmers 26% of cultivable land occupied by farms 3.25% of total cropped area taken up by horticulture	- Some agricultural activities add greenhouse gases (GHGs), mainly methane and nitrogen oxides, to the atmosphere - Rising temperatures can lead to the emergence of new pests and diseases - Extreme events such as frost, excessive rain and high temperatures result in loss of crop productivity - Hail and storms damage crops at the critical flowering and grain-filling stages - Heavy rain causes damage to fruit trees and plants - Lack of water constrains the expansion of horticulture - Changing rainfall patterns affect cropping plans - Mono-cropping reduces system resilience and adversely affects soil health	- Promote soil and water conservation - Promote dry land agriculture and horticulture - Plan crops suitable for each agro-climatic zone - Ensure better agriculture information management, including climate projections - Improve access to markets - Create rural business hubs - Increase the knowledge and skills of communities in sustainable cropping, water harvesting, the use of organic fertilisers and other practices.
Animal Husbandry and Fisheries		
40.6 million cattle (14% of India's total cattle population) 7.3 million poultry 3.14 lakh hectares used as fisheries	- Increase in vector-borne diseases - Reduced productivity - Heat and water stress - Indigenous livestock species now underused by communities - Changing feed, fodder and shelter requirements according to climate - Rising temperatures will affect the viability of fish enterprises, leading e.g., to restricted growth and changed breeding patterns	- Plan for the supply of feed and water for livestock in drought/flood conditions - Improve disease surveillance, forecasting, monitoring and management - Ensure adequate shelter and water for livestock to avoid heat stress - Promote indigenous species that can adapt to the changing climate - Create a climate resilient infrastructure for processing, storing and transporting livestock products - Practise fish-rearing suitable for different agro-climatic zones - Create fish seed banks
Energy		
58% of energy from thermal sources 42% of energy from renewable sources (mainly hydro-electric power) 4537.92 MW state contribution to India's total power generation	- Meeting rising demand for energy from thermal sources will increase GHG emissions - Plant load factors and poor quality coal a serious concern at old thermal power plants with ageing technology - High transmission and distribution losses - Poor energy efficiency practices by end users	- Improve energy efficiency in production and use of energy - Assess the feasibility of new technologies - Incentivise the production of clean energy (e.g. green tariffs) - Ensure energy-efficient street lighting, public buildings and water pumping systems - Use energy-efficient pumps for irrigation - Implement India's Energy Conservation Building Code - Clean Development Mechanism
Forestry		
31% of Madhya Pradesh is forest, rich in biodiversity 9 national parks 25 wildlife sanctuaries 2 biosphere reserves 5 tiger reserves	- Villagers depend heavily on the forest, lacking alternative livelihoods - Composition and distribution of the forest likely to change, putting lives and livelihoods at risk - Increased temperatures and prolonged dry spells may increase desertification - Invasive alien species may threaten indigenous species - Wild animals may be forced to migrate	- Develop forest management (working) plans for different forest types - Enhance forest conservation - Prioritise sustainable forest management - Reduce the over-dependence on forests for energy - Strengthen the mechanism for managing forest fires - Create corridors for species migration - Develop links to market for forest-based products

Statistics	Issues	Strategies
Human Health		
- Madhya Pradesh is 1 of 6 states that contribute to 65% of India's malarial incidence 30 districts in the top 100 across India for the highest infant mortality rates	- Climate change likely to have a greater health impact on India due to its geography, population characteristics and dependence on carbon-related energy - Lack of data on health concerns at state level (an Integrated Diseases Surveillance Programme is being carried out) (http://www.idsp.nic.in/) - Monovalent rapid diagnostic kits are available in remote villages to detect <i>P. falciparum</i> malaria infections, but lack of trained medical professionals to apply bivalent kits. - Other vector-borne diseases and infections may become prevalent with higher temperatures and humidity levels and increased flooding - Respiratory diseases and allergies predicted to increase due to rising pollution levels - Risk of increased malnutrition and hence disease susceptibility, especially in poorest households	- Develop disease profiles of communities - Create weather-based early warning systems - Upscale disaster management preparedness - Early case detection and rapid control, particularly in areas where coverage is low/non-existent - Strengthen systems for environmental management - Develop effective supply chain management and infrastructure for drugs storage - Introduce stringent bio-medical waste management rules
Industry		
21% of India's total carbon dioxide emissions come from industry 1.75 lakh people employed in industry in Madhya Pradesh - Limestone, coal, bauxite, iron ore and silica are all mined in Madhya Pradesh 733 medium to large industrial units found across the state - The state's public sector manufacturers include BHEL, National Fertilisers Ltd., Ordinance Factory, Currency Printing Press	- How to curb industry's substantial contribution to GHG levels - Obsolete and energy-inefficient technology still used in many industries - The needs of industry and business currently come before those of society and the environment - Many industries don't comply with environmental standards - Fertile land given over for industrial use	- Review the Madhya Pradesh Industrial Promotion Policy 2010 and implement where necessary - Introduce Perform, Achieve and Trade measures - Make better use of the carbon market for mitigation - Create an integrated water management plan for clusters of industrial units - Ensure effective industrial waste management and pollution control - Build a network for voluntary action on reuse and recycling
Panchayat and Rural Development		
54,903 villages in Madhya Pradesh - Majority of people depend on agriculture and natural resources for their livelihoods	- Unsustainable practices in cropping, irrigation, forest management etc. exacerbate the impacts of climate change - Changing crop patterns, rainfall and vegetation cover affect food production - Increased health hazards include malaria, dengue, chikungunya, heat stress, jaundice and cholera - Lack of education and information on climate change among rural communities - Lack of alternative sources of income	- Inter-departmental coordination of programmes and activities required - Review state government initiatives to ensure they are climate-proof - Train rural communities in soil and water conservation, sustainable cropping and animal husbandry - Build climate change measures into the annual plans of Panchayat systems - Develop a stronger rural infrastructure to reduce climate vulnerabilities - Explore the possibility of making villages carbon neutral
Urban Administration and Transport		
34% of India's population expected to live in urban areas by 2026 - Transportation accounts for 8% of India's GHGs - Road transport makes up 94.5% of this 74,000 km of road across Madhya Pradesh 80 registered vehicles per 1,000 people (compared to national average of 68) - Near total lack of public transport	- How to curb urban consumption of energy - Waste management is a major challenge - Loss of green space adds to rising city temperatures, leading to urban heat islands - Increased threat of malaria and dengue due to a lack of sanitation and air conditioning	- Improve energy efficiency - Develop an urban storm water management system - Ensure an efficient water supply and introduce wise water practices - Ensure efficient solid-waste and wastewater management - Build sustainable urban transport systems and better rail connectivity - Regulate urban expansion through land use planning - Build climate change measures into city planning
Water		
1160 mm of rain per year on average 10 rain-fed rivers 81.5 lakh hectares of surface water per year 35.53 billion cubic meters of groundwater available per year	- River flows highly susceptible to variations in rainfall since most are seasonal - Reductions in run-off will hamper irrigation and hydropower projects - Increased rainfall will exert pressure on storage and distribution systems - Lack of awareness among people leads to pollution and wastage of limited natural resources	- Develop a comprehensive water database - Find better ways of collecting, storing and using groundwater - Allow groundwater to replenish - Plan efficient water supply and management systems - Encourage good management practices, such as water auditing and recycling - Review and improve water storage structures (traditional and modern)





Cross-cutting issues

Environmental issues cut across all sectors of society: from agriculture and industry, through human health and animal well-being, to urban life and rural livelihoods. This interconnectivity will redouble the impact of climate change on each and all of these areas. Poor people will be the most vulnerable to its effects, as they have the least resources to cope.

A better balance between development and the environment must be found. Environmental conservation has always been high on the agenda of the Madhya Pradesh State Government, but it has now become vital to integrate climate change into the policies and programmes of the state departments. This requires activities that also cut across sectors, including more climate change research and development, technological development, and awareness-raising among policymakers, the business community and the public.

Key environmental strategies

The main cross-cutting activities proposed by Madhya Pradesh to tackle climate change are as follows:

- ▶ Establish a State Climate Change Knowledge Management Centre
- ▶ Develop state-of-the-art evaluation tools
- ▶ Conduct a State Vulnerability Assessment
- ▶ Assess development programmes for climate resilience and suggest measures to make them climate proof
- ▶ Build climate change into planning processes
- ▶ Increase policymakers' knowledge of climate change issues
- ▶ Commission baseline studies from which to develop sectoral criteria and indicators to monitor and evaluate the SAPCC

Monitoring and evaluation

A monitoring and evaluation framework will be put in place to measure the effectiveness of the SAPCC. This will be implemented by the State Climate Change Knowledge Management Center of EPCO, which will then work with the State Departments to make any necessary adjustments to the mitigation and adaptation strategies listed in the action plan. The overarching aim will be to meet the challenge of sustaining economic growth while ensuring environmental conservation.

Looking ahead

The SAPCC now needs to be implemented. The Vulnerability Assessment provides new insight into where and how Madhya Pradesh is vulnerable to the impacts of climate change. The SAPCC provides the sector strategies for how to respond. The challenge now is to turn policy into action.



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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 designed to give an overview to stakeholders about the strategies and commitments established in the SAPCC. Further information can be found in the full SAPCC, available at http://www.epco.in/pdf/Draft_MP_SAPCC.pdf



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