

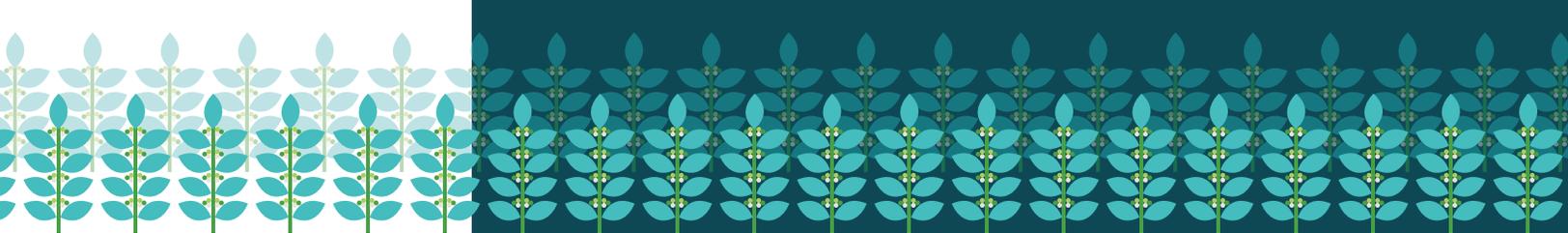
# THE CLIMATE PATHWAY PROJECT



# Development and evaluation of Mato Grosso's decarbonisation pathway

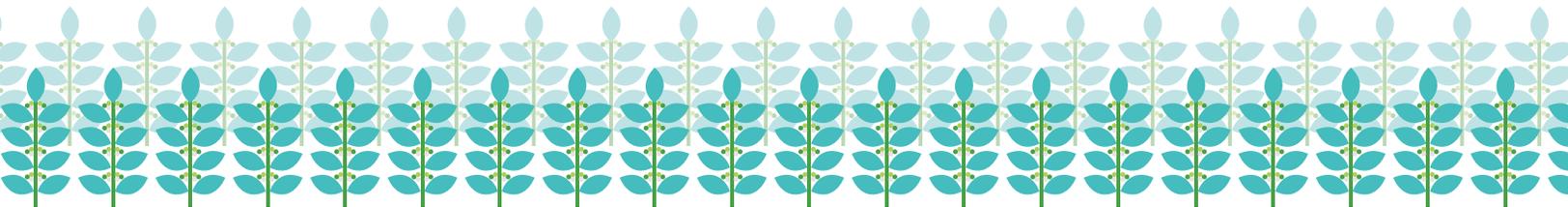
## FINAL REPORT

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# Abbreviations

<b>AFOLU</b>	Agriculture, forestry and other land use
<b>BAU</b>	Business as usual
<b>C</b>	Celsius
<b>CE</b>	Cost effectiveness
<b>CCS</b>	Center for Climate Strategies
<b>CO<sub>2</sub></b>	Carbon dioxide
<b>CO<sub>2</sub>e</b>	Carbon dioxide equivalent
<b>GHG</b>	Greenhouse gases
<b>GT</b>	Working group
<b>Ha</b>	Hectare
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>MCA</b>	Multi-Criteria Assessment
<b>MWh</b>	Megawatt hour
<b>NICFI</b>	Norway's International Climate and Forest Initiative
<b>GDP</b>	Gross Domestic Product
<b>PPCDIF-MT</b>	Action Plan for Prevention and Control of Deforestation and Forest Fires in the State of Mato Grosso
<b>RCI</b>	Residential, commercial, and institutional
<b>SEMA-MT</b>	Mato Grosso State Secretariat for the Environment
<b>TCG</b>	The Climate Group
<b>Tg</b>	Teragrams
<b>t</b>	Metric tonnes
<b>VKT</b>	Vehicle-kilometres travelled



# Executive Summary

This report includes a summary of the process of developing and assessing the priority actions of the decarbonisation pathway of the State of Mato Grosso, Brazil, as well as the results of the following main steps of the process:

1. **Developing the State's "business-as-usual" (BAU)/baseline planning scenario;**
2. **Setting State targets to reduce net GHG emissions for 2030 and 2050;**
3. **Selecting priority actions for the pathway and their technical designs;**
4. **Assessing the expected impacts of the implementation of actions on GHG emissions, in magnitude of costs and direct savings, and on the macro economy of the state.**

A decarbonisation pathway is a transformational process that allows long term (2050) reductions in greenhouse gas (GHG) emissions through a series of mitigation actions that will change the BAU scenario pathway of these GHG emissions through the adoption of new technologies and better management of natural resources.

This executive summary has been translated into English, please note that the full technical report is only available in Brazilian Portuguese.

## Pathway development and assessment process

This was a collaborative process between the Mato Grosso state government and a team of international technicians. The state government's actions were led by the Mato Grosso State Secretariat for the Environment (SEMA-MT). The project team consisted of the Climate Group, Winrock International, the Center for Climate Strategies (CCS) and the Governors' Climate and Forest Taskforce (GCF Taskforce). Throughout the process, input and comments from the Inter-institutional Working Group (WG) and other key public and private sector stakeholders were solicited and incorporated through face-to-face and virtual meetings and workshops.

## BAU emissions scenario/planning baseline

The BAU planning scenario developed by the project revealed that in the base year of 2015, Mato Grosso's total greenhouse gas (GHG) emissions were 242 TgCO<sub>2</sub>e, and it was projected that emissions would increase by 2030 to reach 257 TgCO<sub>2</sub>e, continuing to grow until 2050, reaching 316 TgCO<sub>2</sub>e. The analysis highlights the importance of the agriculture, forestry and other land use (AFOLU) sector in Mato Grosso, which contributes about 94% of the net emissions estimated in the BAU scenario of state planning, followed by about 3% in the transport sector, 1.5% in the industry sector, and the rest distributed between energy supply, residential, commercial and institutional energy consumption; and waste management.

## Decarbonisation target

The selection of a GHG emissions reduction target for the State of Mato Grosso was guided by the potential impact of the priority actions listed by this work for its decarbonisation pathway. This goal consists of neutralising the state's net emissions by 2050. The state did not adopt intermediate targets for 2030 or 2040.

## Selected priority actions

The priority actions selected to conform the pathway of Mato Grosso are in consonance with other policies already in place for the state, such as the Action Plan for Prevention and Control of Deforestation and Forest Fires in the State of Mato Grosso (PPCDIF-MT), and are concentrated in the sector that most contributes to its emissions; the agriculture, forestry and other land use (AFOLU):

- Maintenance of the State's forest assets, with socio-economic incentives for conservation
- Sustainable forest management
- Land tenure regularisation and consolidation of legal rights to the land
- Creation and expansion of boundaries and improved management of Protected Areas under the state's influence
- Commercial reforestations
- Restoration of the forest landscape
- Reduction of the risk of forest fires
- Increase the productivity of farming activities in already cleared areas by applying good agricultural management practices (GAP)
- Protection of secondary vegetation in areas subject to legal deforestation
- Recovery of degraded pastures
- Crop-Livestock-Forestry Integration
- Biofuel production and consumption

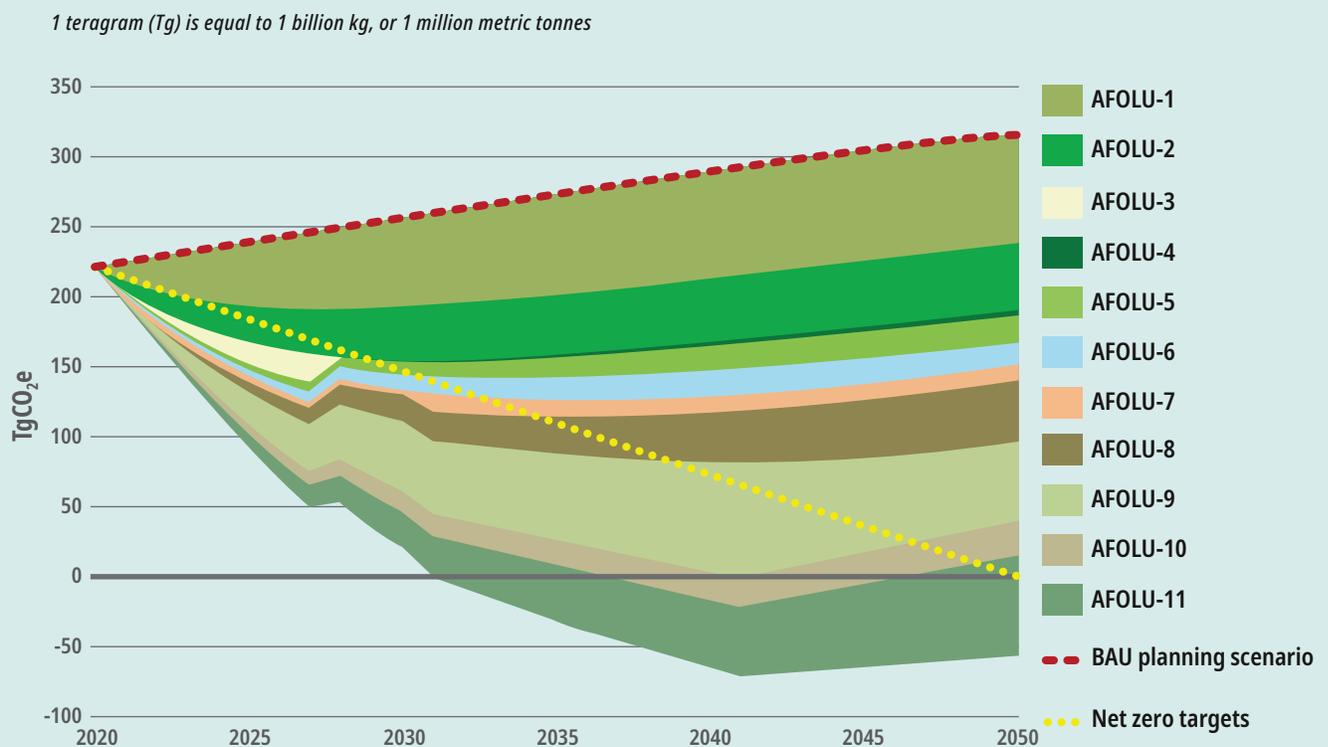


FIGURE 1. EXPECTED GHG REDUCTIONS FROM PRIORITY ACTIONS SELECTED BY MATO GROSSO

Note: AFOLU: agriculture, forestry and other land use.

## Expected impacts from the implementation of the actions

### Expected impacts of action implementation on GHG emissions

With the implementation of the priority actions, by 2030, GHG emissions reductions of 236 TgCO<sub>2</sub>e (i.e. 92% compared to BAU levels) are expected. By 2050, reductions of 373 TgCO<sub>2</sub>e (i.e. 118% compared to BAU levels) are expected.

Full implementation of the priority actions presented here points to a significant reduction in net GHG emissions over the next decade and beyond; exceeding the 2050 target set by the State. By 2030, the net GHG emissions reductions from the priority actions are estimated to be nearly twice the reductions needed to meet the 2030 target (236 TgCO<sub>2</sub>e from 110 TgCO<sub>2</sub>e needed). By 2050, the net GHG emission reductions from the priority actions are estimated to be 20% more than the level of reductions needed to achieve the 2050 target (373 TgCO<sub>2</sub>e from 316 TgCO<sub>2</sub>e needed).

After the expected implementation of the priority actions in 2050, most emissions will remain in the transport and industry sectors.

Through this project, Mato Grosso established a very ambitious and transformative decarbonisation target, and the priority actions represent a significant effort by the state to achieve it.

### Expected impacts on cost magnitude and direct savings

The implementation of most of the priority actions (7 out of 12 modeled) is expected to generate net costs over time. These net costs are expected to be small for almost all of these actions (5 out of 7) compared to the expenditure levels of the benchmark sectors, and two of them (AFOLU-4 and AFOLU-10) are almost neutral in relation to the estimated costs. The remaining actions generate a net saving for the State of Mato Grosso.

Actions that generate direct costs (for all actions of small magnitude) should not be considered a negative result. In addition to their GHG reductions, these actions can also promote indirect/macro-economic benefits to the state, as they include the potential to increase overall economic activity in the state and/or increase employment.

### Expected macroeconomic impacts

The assessment of the six indicators for each of the priority actions shows that most indicators are positive. Positive indicators are present in 55 out of 66 total indicators (83%) and negative indicators in 11 out of 66 (17%). Negative indicators do not dominate any action. For example, seven (7 out of 12) of the actions have only one negative indicator, while two actions have two negative indicators out of a possible six.

### Conclusion

Through the development of this decarbonisation pathway, the State of Mato Grosso advances with an important step in its climate pollution mitigation goals caused by the GHGs of its economy. Mato Grosso has established an ambitious and transformative decarbonisation goal, to neutralise its net emissions by 2050, and the priority actions listed here, and currently inserted in its pathway, allow the state to go beyond the goal

With the implementation of the seven modelled priority actions, Mato Grosso will achieve GHG emission reductions of 236 TgCO<sub>2</sub>e by 2030, i.e. 92% compared to BAU levels. By 2050, reductions of 373 TgCO<sub>2</sub>e, or 118% compared to BAU levels, are expected. Most GHG emission reductions will come from the control of deforestation, intensification of agricultural and livestock production, and expansion of forest cover, which together will contribute to 95% of the reduction of net emissions in the state. Implementation of most of the priority actions generates small net costs over time, with two of these actions being very close to neutral in relation to the net costs generated. The remaining four actions generate net savings.

For the actions that generate net costs, it is important to note that in addition to their GHG emissions reductions, these actions can also promote macroeconomic benefits for the State as they include the potential to increase overall state economic activity and/or increase jobs. In this sense, most of the priority actions will generate a positive macroeconomic impact for Mato Grosso's economy if implemented to capitalise on key macroeconomic gain drivers.

As next steps, the state should identify specific implementation mechanisms and quantify in detail the costs and benefits to map and secure possible funding sources for each of the actions, thus maximising its mitigation potential and generation of socioeconomic benefits. Within this line of reasoning, it is recommended that the state finalises the technical design elements of the AFOLU-12 action, which was not fully designed within the scope of this project and consequently does not present expected impact results. In order to follow up on the effective implementation, the State must establish monitoring, reporting and verification systems that make it possible to follow up on the effectiveness of the implementation of the actions, and measure their real impacts.

It is important to highlight that, as shown in this report, the priority actions included in the pathway effectively contribute to the State's decarbonisation goal. Therefore, the project leaves a clear legacy of transformational potential for Mato Grosso to become a cleaner and more sustainable productive economy. This transformation is expected to optimise the use and management of natural resources in the state. It fosters an increase in agricultural and livestock production and breaks down barriers of access to increasingly demanding markets, especially international ones. With this, Mato Grosso is positioned as a leader and example of a productive primary sector economy taking firm steps towards achieving their climate objectives.

### Additional information

All the intermediate products of this project are included in a folder attached to this report. Annexes I-VIII are summaries of the sectoral baselines; Annex IX is the proposed in-depth State decarbonization target; Annex X includes the sectoral catalogues of mitigation actions; Annex XI is the definition of the criteria employed in the multi-criteria assessment; Annexes XII to XXIII are the design documents and analyses for each priority action included in the pathway; Annexes XXV to XXXI are the Excel tools to calculate the baseline of the different sectors and the impacts of the actions on these sectors; and Annexes XXXII to XXXIV are the modules that show the detailed methodologies for assessing the impacts of the actions.