UNDER2°
Secretariat
°CLIMATE GROUP

THE CLIMATE
PATHWAY PROJECT

Development and evaluation of Amazonas' (Brazil) decarbonisation pathway

FINAL REPORT

Abbreviatons

AFOLU	Agriculture, forestry and other land use
BAU	Business as usual
C	Celsius
CE	Cost effectiveness
CCS	Center for Climate Strategies
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
GHG	Greenhouse gases
GT	Working group
Ha	Hectare
IPCC	Intergovernmental Panel on Climate Change
MCA	Multi-Criteria Assessment
MWh	Megawatt hour
NICFI	Norway's International Climate and Forest Initiative
GDP	Gross Domestic Product
PPCDQ-AM	State Plan for Prevention and Control of Deforestation and Burning in the State of Amazonas
RCI	Residencial, commercial, and institutional
SEMA	Amazonas State Secretariat for the Environment
TCG	The Climate Group
Tg	Teragrams
t	Metric tonnes
VKT	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 Amazonas, Brazil, as well as the results of the following main stages of the process:

1. Development 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 the actions on GHG emissions, in magnitude of costs and direct savings, and on the macroeconomy of the state.

A decarbonisation pathway is a transformational process that allows reducing greenhouse gas (GHG) emissions in the long term (2050) 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 Amazonas State government and a team of international technicians. The actions of the State government were led by the Secretary of Environment of the State of Amazonas (SEMA). The project team consisted of the Climate Group, Winrock International, the Center for Climate Strategies (CCS) and the Governors' Task Force on Forests and Climate (GCF Taskforce). Throughout the process, input and comments from the Inter-institutional Working Group (WG) and other important public and private sector actors 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, Amazonas' total greenhouse gas (GHG) emissions were 76 TgCO2e, and it was projected that these emissions would more than double and reach 165 TgCO2e by 2030, continuously increasing until 2050 and reaching 215 TgCO2e. The analysis highlights the importance of the agriculture, forestry and other land use (AFOLU) sector in Amazonas, which contributes to more than 91% of the emissions estimated in the BAU scenario of state planning, followed by 4% in the transportation sector, 1% in the waste management sector, and the remaining 4% distributed between energy supply; residential, commercial and institutional energy consumption; and industry.

It is worth emphasising that the availability of Amazonian data to develop the BAU planning scenario, especially in the non-AFOLU sectors, is quite scarce, and the development of sectoral data collection and monitoring systems can improve the accuracy of the estimates.

Decarbonisation target

The selection of a GHG emissions reduction target for the State of Amazonas was based on its commitment to limit emissions in 2050 to 2 tCO2e per capita. The State did not adopt interim targets for 2030 or 2040.

Selected priority actions

The priority actions selected to conform the pathway of Amazonas are in line with other policies already in place for the State, such as the State Plan for Prevention and Control of Deforestation and Burning (PPCDQ-AM). The WG listed seven priority actions considered by the project, all in the sector of agriculture, forestry and other land use (AFOLU):

Forest protection

Land use efficiency

Forestry expansion

Commercial reforestation

Reduction of forest burning

Sustainable forest management

Timber forest products

Expected impacts of implementing the actions

Expected impacts of action implementation on GHG emissions

With the implementation of the twelve actions, by 2030, GHG emissions reductions of 44 TgCO2e (i.e. 27% compared to BAU levels) are expected. By 2050, reductions of 209 TgCO2e (i.e. 97% compared to BAU levels) are expected.

Full implementation of the priority actions shown here points to a significant reduction in gross GHG emissions over the next decade, and the State's target by 2050 would be achieved. By 2030, the gross GHG emission reductions from the priority actions are estimated to be approximately more than half of the reductions needed to meet the 2030 target (44 TgCO2e of 75 TgCO2e needed).

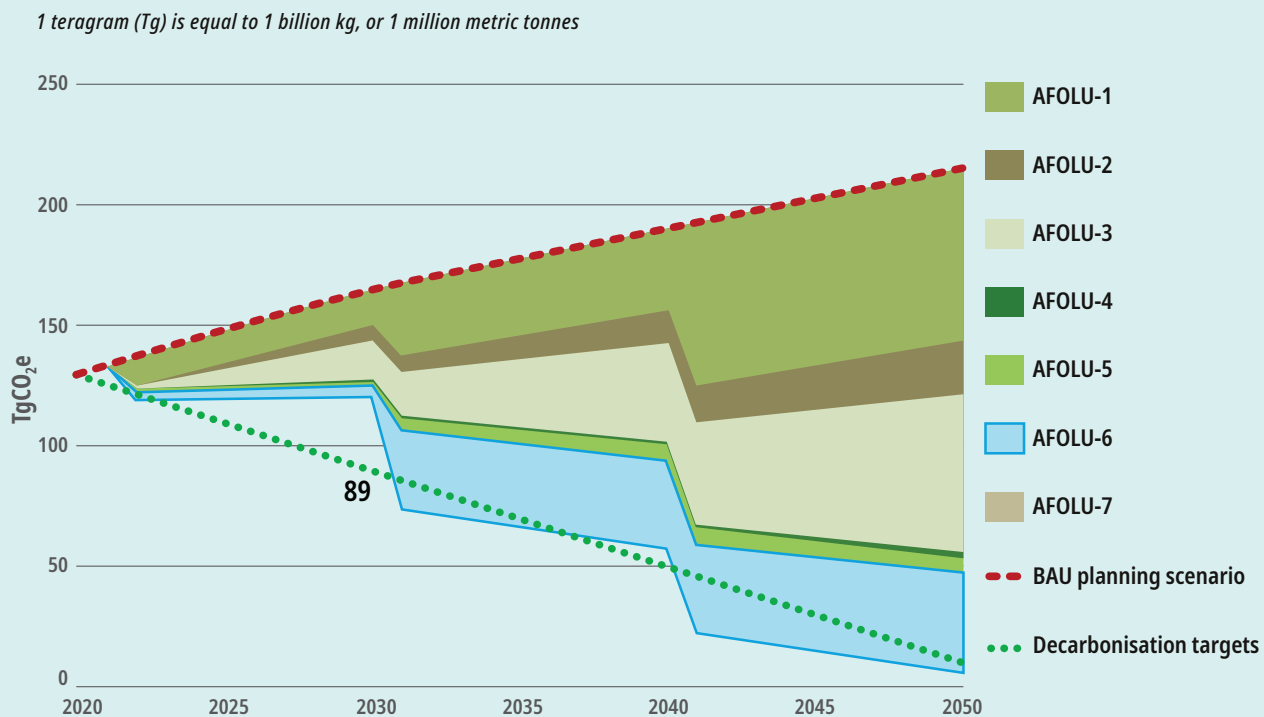*1 teragram (Tg) is equal to 1 billion kg, or 1 million metric tonnes*

FIGURE 1. EXPECTED GHG REDUCTIONS FROM PRIORITY ACTIONS SELECTED BY AMAZONAS
Note: AFOLU: agriculture, forestry and other land use.

By 2050, the GHG gross emission reductions from the priority actions are estimated to be somewhat greater than the level of GHG gross emission reductions needed to meet the 2050 target (209 TgCO2e out of 204 TgCO2e needed).

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

Through this project, Amazonas has set a very ambitious and transformative decarbonisation goal, 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 (5 out of 7) is expected to generate net costs over time. These net costs are expected to be of small magnitude for almost all of these actions (4 out of 5) compared to the expenditure levels of the reference sectors, and the implementation of AFOLU-2 (Land use efficiency) and AFOLU- 4 (Commercial reforestation) is estimated to generate net savings for the State.

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

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 34 out of 42 total indicators (81%) and negative indicators in 8 out of 42 (19%). Negative indicators do not dominate any action. For example, six (6 out of 7) of the actions have only one negative indicator and only one (1 out of 7) of the actions has two negative indicators out of the possible six.

Conclusion

Through the development of this decarbonisation pathway, the State of Amazonas moves forward with an important step in its goals to mitigate climate pollution caused by the GHGs of its economy. Amazonas has set an ambitious and transformative decarbonisation goal to limit gross emissions per capita to 2 tCO2 e by 2050, and the seven priority actions listed on this paper, and currently embedded in its pathway, represent a significant effort by the State to achieve it.

With the implementation of the seven priority actions, Amazonas will achieve GHG emission reductions of 44 TgCO2 e by 2030, i.e. 27% compared to BAU levels. In 2050, reductions of 209 TgCO2e, or 97% compared to BAU levels, are expected.

Most GHG emission reductions will come from deforestation control, expansion of forest cover, and sustainable forest management, which together will contribute 82% of emission reductions. Implementation of most of the priority actions generate small net costs over time.

Two priority actions (AFOLU-2 and AFOLU-4 generate net savings). In addition to their GHG reductions, these actions can also promote macroeconomic benefits for the State, as they include the potential for increased overall economic activity in the State and/or increased employment. In this sense most of the priority actions will generate a positive macroeconomic impact for Amazonas' economy if implemented to capitalise on key drivers of macroeconomic gain.

As next steps, the State should identify the specific implementation mechanisms in addition to quantifying in detail the costs and benefits to map and secure possible funding sources for each of the actions, thus maximising their mitigation potential and generation of socioeconomic benefits.

Likewise, the State must establish monitoring, reporting and verification systems that make it possible to track 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 seven 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 Amazonas to become a cleaner economy focused on its forest vocation.

With this, the State of Amazonas positions itself as a leader and example of sustainable forest economies taking firm steps towards achieving its 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.