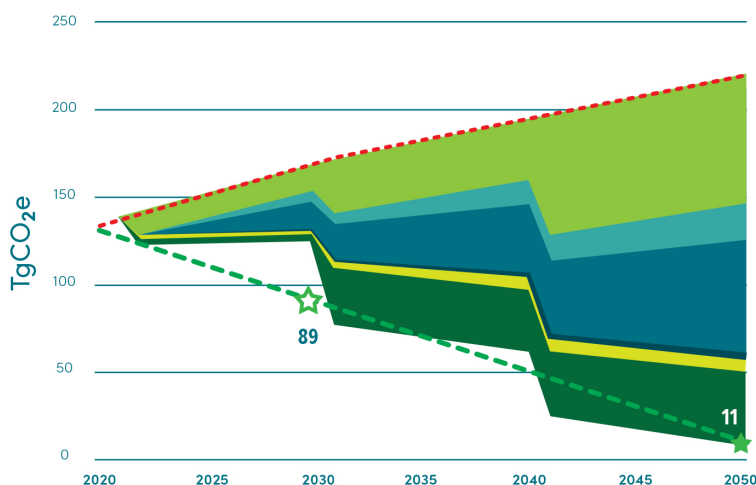


Portfolio of actions : Climate Pathway Project

The Government of Amazonas, Brazil has completed a 2.5 year process to develop its decarbonisation pathway. The pathway is based on Amazonas' target of limiting emissions to 2 tCO₂e per capita by 2050. As part of the process, the government prioritised the 7 mitigation actions shown below.

Projected GHG emission reductions from prioritised actions in Amazonas



**TgCO₂e = Teragrams of carbon dioxide equivalent, 1 Tg = one million metric tons

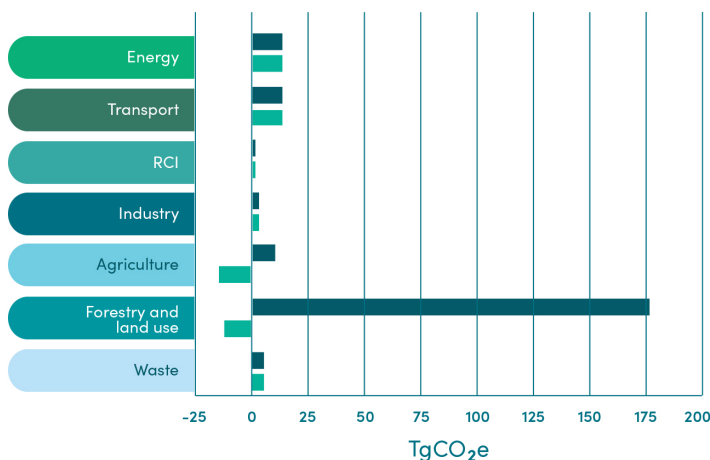
PRIORITY ACTIONS

- Forest protection
- Land use efficiency
- Forest expansion
- Commercial reforestation
- Reduction of forest fires
- Sustainable forest management
- Timber forest products
- Baseline / BAU
- Decarbonisation targets
- 2030 target = 89 TgCO₂e
- 2050 target = 11 TgCO₂e

As shown in the graph, the priority actions would amount to a 97% reduction in BAU emissions by 2050.

SECTORAL BREAKDOWN

REMAINING DIRECT EMISSIONS IN 2050 AFTER IMPLEMENTATION OF PRIORITY ACTIONS



Expected impact of priority actions on GHG emissions

The implementation of these actions would add up to approximately

44
million
tonnes of avoided
emissions for
2030

And more than

209
million
tonnes of avoided
emissions for
2050

WITH THE SUPPORT OF — MAIN PARTNER — PARTNERS —



AFOLU-1: FOREST PROTECTION

DESCRIPTION: The main objective of this action is to ensure the effective conservation and preservation of the land use class "Forest" on public lands (protected areas: federal, state, municipal conservation units and indigenous lands), private properties and rural settlements. The expected result of this action is the reduction of the state's illegal deforestation rate (conversion of forest areas to other land uses) the main driver of GHG emissions in the state. In addition, the action ensures the permanence of the largest reservoir and respective forest carbon stock in Brazil, and above all ensures the storage and absorption of atmospheric CO₂ due to the photosynthetic process of healthy forest vegetation in the long term.

LEVEL OF EFFORT AND TIMING OF IMPLEMENTATION:

- By 2030, increase the 2019-2022 deforestation reduction target of the PPCDQ-AM* (State Plan for the Prevention and Combat of Deforestation and Fires - Amazonas) to 7.5%/yr.
- As of 2031 and until 2040, double the ambition of the previous period for a deforestation reduction equivalent to 15%/year.
- As of 2041 and until 2050, double again the ambition of the previous period for a deforestation reduction equivalent to 30%/year.

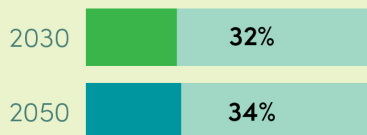
Impact on GHG emissions reduction

Cumulative GHG emission reductions:
(2020-2050)

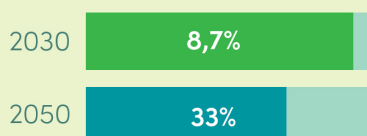
1,123 TgCO₂e

AFOLU-1: Moderate mitigation potential of **23%** of emissions in the AFOLU sector (agriculture, forestry, and other land use).

CONTRIBUTION TO TOTAL REDUCTIONS (%)



REDUCTION FROM BAU (%)



Macroeconomic impacts

POSITIVE NULL NEGATIVE

LOWER NET COSTS	CHANGE IN ENERGY AND RESOURCE CONSUMPTION	CHANGE IN ENERGY AND MATERIALS SOURCING	CHANGE IN LOCAL SUPPLY CHAINS	JOB CREATION	CHANGE IN SOURCES OF INVESTMENT AND INCOME
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AFOLU-1: Forest protection

Co-benefits

INCREASED HABITAT AND BIODIVERSITY



REGULATION OF THE WATER CYCLE



COMMUNITY BUILDING



EXTREME HEAT CONTROL



CULTURAL, SOCIAL AND RECREATIONAL SERVICES



Costs and savings

Low direct costs to the state compared to typical spending levels in the forestry, fisheries and aquaculture production sector. The net costs of implementing this action will depend on the level of incentives and their use.



* The deforestation reduction target of the PPCDQ-AM stipulated for 2019-2022 is 15%, equivalent to a reduction of 5%/year. Available at: <http://meioambiente.am.gov.br/wp-content/uploads/2020/06/PPCDQ-AM-LOGO-CI-ALTERADA.pdf>



AFOLU-2: LAND USE EFFICIENCY

DESCRIPTION: The main objective of this action is to promote the intensification of agricultural and livestock production through the implementation of integrated systems as an alternative to monoculture farming. Through the use of Integrated Crop-Livestock-Forestry System (ICLFS) and agroforestry systems (AFS) in areas already occupied by agricultural and livestock activities, adapting to the forestry and biodiversity vocation of the state and limiting the expansion of the productive sector over areas of native forests.

LEVEL OF EFFORT AND TIMING OF IMPLEMENTATION:

- By 2030, simulating a gradual implementation of ICLF systems in the order of 50,000 ha/year, and implement a total of 450,000 hectares of intensive ICLF systems in pasture areas of the state.
- By 2030, expand the area of family farming production through the implementation of AFS to a total of 30,000 hectares.
- By 2050, maintain the gradual implementation rate of ICLF systems in the order of 50,000 ha/year, and implement a total of 1,500,000 hectares, also in pasture areas of the state.
- By 2050, continue to promote family farming production through the implementation of AFS, expanding the total area of these systems to 100,000 hectares in the state.

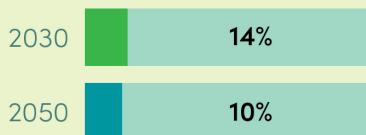
Impact on GHG emissions reduction

Cumulative GHG emission reductions:
(2020-2050)

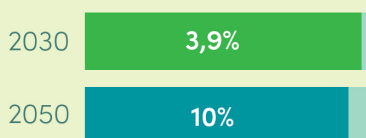
319 TgCO₂e

AFOLU-2: Low mitigation potential of **7%** of emissions in the AFOLU sector (agriculture, forestry, and other land use).

CONTRIBUTION TO TOTAL REDUCTIONS (%)



REDUCTION FROM BAU (%)



Macroeconomic impacts

POSITIVE NULL NEGATIVE

LOWER NET COSTS	CHANGE IN ENERGY AND RESOURCE CONSUMPTION	CHANGE IN ENERGY AND MATERIALS SOURCING	CHANGE IN LOCAL SUPPLY CHAINS	JOB CREATION	CHANGE IN SOURCES OF INVESTMENT AND INCOME
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AFOLU-2: Land use efficiency

Co-benefits

INCREASED FARM INCOME	RECOVERY OF LANDSCAPE VALUE	SOIL RESTORATION	INCREASED FARM RESILIENCE	DECREASE IN RURAL EXODUS
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Costs and savings

Small direct savings for the state. Agricultural management practices in this action require implementation of an initial investment, but these costs can be offset by revenue from increased productivity. The costs to implement this action will depend on the specific agroforestry crops and ICLF systems found in the farming systems in the BAU scenario.





AFOLU-3: FORESTRY EXPANSION

DESCRIPTION: The main objective of this action is to promote the expansion of forest cover through the conservation of natural regeneration of secondary forests in previously deforested areas, and implementing mechanisms to avoid their cyclical suppression. This action is aligned with the implementation of the Forest Code and the Environmental Regularisation Programme (PRA), which aims to restore native forest cover in areas of environmental liabilities in the state.

LEVEL OF EFFORT AND TIMING OF IMPLEMENTATION:

- By 2030, expand the environmental regularisation target of the PPCDO-AM (State Plan for the Prevention and Combat of Deforestation and Fires - Amazonas) beyond the priority municipalities, encompassing the whole of Amazonas, and promote a 50% increase in the conservation of regenerating forests in the state.
- By 2050, promote a 100% increase in the conservation of regenerating forests in the state, aiming to support the full regularisation of the state environmental liabilities.

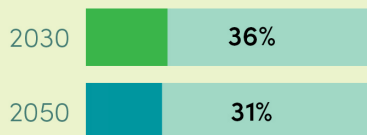
Impact on GHG emissions reduction

Cumulative GHG emission reductions:
(2020-2050)

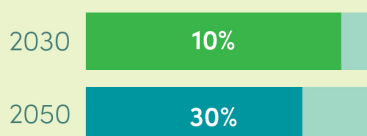
914 TgCO₂e

AFOLU-3: Moderate mitigation potential of **19%** of emissions in the AFOLU sector (agriculture, forestry, and other land use).

CONTRIBUTION TO TOTAL REDUCTIONS (%)



REDUCTION FROM BAU (%)



Macroeconomic impacts

POSITIVE NULL NEGATIVE

LOWER NET COSTS	CHANGE IN ENERGY AND RESOURCE CONSUMPTION	CHANGE IN ENERGY AND MATERIALS SOURCING	CHANGE IN LOCAL SUPPLY CHAINS	JOB CREATION	CHANGE IN SOURCES OF INVESTMENT AND INCOME
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AFOLU-3: Forestry expansion

Co-benefits

INCREASED HABITAT AND BIODIVERSITY	REGULATION OF WATER CYCLE	PROTECTED SOURCE OF DIFFERENT RAW MATERIALS	TOURISM PROMOTION	CULTURAL, SOCIAL AND RECREATIONAL SERVICES
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Costs and savings

Moderate direct costs to the state compared to typical spending levels in the agriculture, livestock, forestry, and fisheries sectors. The net costs of implementing this action will depend on the type of restoration activities employed and the specific land uses under the BAU scenario.





AFOLU-4: COMMERCIAL REFORESTATION

DESCRIPTION: The main objective of this action is to promote the expansion of reforestation for commercial purposes, with native and exotic species of rapid growth and high commercial value. The focus of this action will be to implement forests for industrial production (pulp and paper, lumber, and wood panels), in anthropized areas outside Permanent Preservation Areas and Legal Reserves, and even if in the short term there is no technology for some of the crops proposed below, foster long-term consideration for the use of native and non-native species that are viable and adaptable in the state.

LEVEL OF EFFORT AND TIMING OF IMPLEMENTATION:

- By 2030, 40.000 hectares of commercial reforestation will be established in pasture areas of the state. Planting 10.000 hectares with eucalyptus (*Eucalyptus* sp.) 15.000 hectares with teak (*Tectona grandis*), 7.500 hectares with paricá (*Schizolobium amazonicum*), and 7.500 hectares with mulateiro (*Calycophyllum spruceanum*).
- By 2050, a total of 120.000 hectares of commercial reforestation will be established in pasture areas of the state, planting 20.000 hectares of eucalyptus (*Eucalyptus* sp.), 30.000 hectares of teak (*Tectona grandis*), 15.000 hectares of paricá (*Schizolobium amazonicum*), and 15.000 of mulateiro (*Calycophyllum spruceanum*).

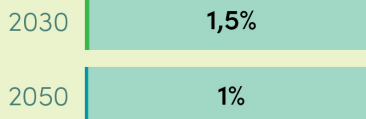
Impact on GHG emissions reduction

Cumulative GHG emission reductions:
(2020-2050)

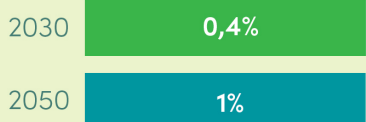
31 TgCO₂e

AFOLU-4: Very low mitigation potential of **0,7%** of emissions in the AFOLU sector (agriculture, forestry, and other land use).

CONTRIBUTION TO TOTAL REDUCTIONS (%)



REDUCTION FROM BAU (%)



Macroeconomic impacts

POSITIVE NULL NEGATIVE

LOWER NET COSTS	CHANGE IN ENERGY AND RESOURCE CONSUMPTION	CHANGE IN ENERGY AND MATERIALS SOURCING	CHANGE IN LOCAL SUPPLY CHAINS	JOB CREATION	CHANGE IN SOURCES OF INVESTMENT AND INCOME
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AFOLU-4: Commercial reforestation

Co-benefits

DECREASE IN RURAL EXODUS	REGULATION OF WATER CYCLE	RECOVERY OF DEGRADED AREAS	ECONOMIC GROWTH	LOCAL ECONOMIC BENEFITS AND INCREASED EMPLOYMENT
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Costs and savings

Small direct savings for the state compared to typical spending levels in the agriculture, livestock, forestry and fisheries sectors (i.e. spending on materials and labour in agriculture and livestock). The net costs of implementing this action will depend on the specific costs and revenues for established plantations and the opportunity costs for other uses of the land not converted into forests.





AFOLU-5: REDUCTION OF FOREST FIRES

DESCRIPTION: The main objective of this action is to reduce illegal burning resulting in forest fires by reducing the emissions caused by fires for deforestation.

This action aims to promote better forest management in the surrounding areas, with particular regards to reducing the capacity of forest fires escaping into forest areas, in turn also reducing GHG emissions which result from forest fires

LEVEL OF EFFORT AND TIMING OF IMPLEMENTATION:

- By 2030, the state will reduce 30% of emissions from forest fires that result in deforestation
- By 2050, the state will reduce 80% of emissions from forest fires that result in deforestation

Impact on GHG emissions reduction

Cumulative GHG reductions:
(2020-2050)

138 TgCO₂e

AFOLU-5: Low mitigation potential of **2,9%** of emissions in the AFOLU sector (agriculture, forestry, and other land use).

CONTRIBUTION TO
TOTAL REDUCTIONS (%)



REDUCTION
FROM BAU (%)



Macroeconomic impacts

POSITIVE NULL NEGATIVE

LOWER NET COSTS	CHANGE IN ENERGY AND RESOURCE CONSUMPTION	CHANGE IN ENERGY AND MATERIALS SOURCING	CHANGE IN LOCAL SUPPLY CHAINS	JOB CREATION	CHANGE IN SOURCES OF INVESTMENT AND INCOME
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AFOLU-5: Reduction of forest fires

Co-benefits

PROTECTION OF HABITAT AND BIODIVERSITY	REGULATION OF WATER CYCLE	RECOVERY OF DEGRADED AREAS	REDUCTION OF ECONOMIC LOSSES	HEALTH (reduction of air Pollution)
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Costs and savings

Low direct costs to the state compared to typical spending levels in the agriculture, livestock, forestry, and fisheries sectors (i.e., spending on materials and labor in agriculture and livestock). This estimate does not include the potential savings from avoided economic losses due to the fire.





AFOLU-6: SUSTAINABLE FOREST MANAGEMENT

DESCRIPTION: The main objective of this action is to promote multiple-use Sustainable Forest Management (SFM) in forest areas under a selective harvest regime (e.g. forest concessions, extractive reserves, etc.) for the extraction of timber and non-timber forest products as an alternative to uses that generate deforestation or degrade the forest. The action focuses on fostering a forest vocation in the state of Amazonas, which promotes a reduced impact of forest management for commercial and community activities, in order to generate socioeconomic benefits throughout the state.

LEVEL OF EFFORT AND TIMING OF IMPLEMENTATION:

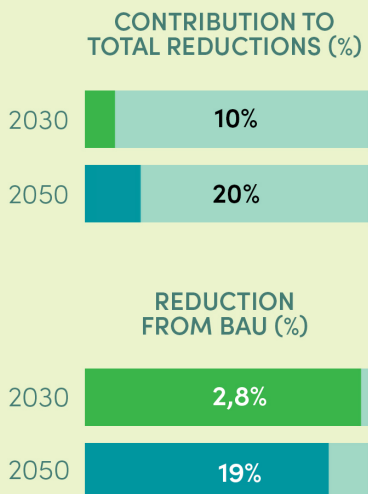
- By 2030, the state goal is to promote SFM and expand the area of managed native forest by 1 million hectares. The proposed goals are linked to areas under state domain and supervision as practiced in the PPCDQ-AM.
- By 2050, the state goal is to triple the area of managed forest to a total of 3 million hectares of native forests under SFM. The proposed goals are linked to areas under state domain and inspection as practiced in the PPCDQ-AM.

Impact on GHG emissions reduction

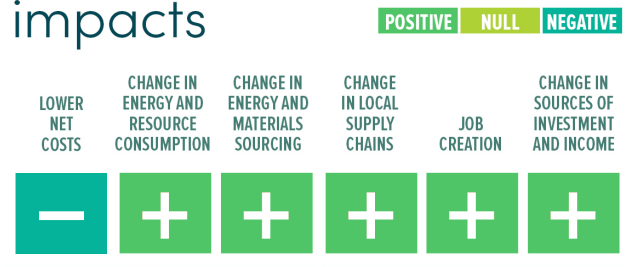
Cumulative GHG emission reductions:
(2020-2050)

775 TgCO₂e

AFOLU-6: Moderate mitigation potential of 16,1% of emissions in the AFOLU sector (agriculture, forestry, and other land use).



Macroeconomic impacts



AFOLU-6: Sustainable forest management

Co-benefits



Costs and savings

Low direct costs to the state compared to typical spending levels of the agriculture, livestock, forestry and fisheries sectors (i.e., spending on materials and labor in agriculture and livestock). Costs will depend on specific implementation mechanisms used for forest management and opportunity costs of other land uses.





AFOLU-7: TIMBER FOREST PRODUCTS

DESCRIPTION: The main objective of this action is to promote greater transparency in the state's production chain of timber originating from Sustainable Forest Management (SFM) plans, and consequent reduction in the volume of illegally sourced timber. The focus aims to make the process of petitioning and approval of sustainable forest management plans more effective and cost-efficient, thus combating illegality in the forest sector. Investments will be needed to implement traceability systems for the marketing of native woods in the state as SISFLORA / SINAFLOR, in addition to allowing for great transparency, SFM aims to encourage Forest Certification to national and international markets, increasing the profitability of the Amazon forest producer.

LEVEL OF EFFORT AND TIMING OF IMPLEMENTATION:

- By 2030, the goal is to reduce the illegal volume of wood produced in the state by 30%.
- From 2031 until 2040, the goal is to reduce the illegal volume of timber produced in the state by 80%. The proposed goals are related to areas under state domain and inspection as practiced in the PPCDQ-AM (State Plan for the Prevention and Combat of Deforestation and Fires - Amazonas).
- By 2050, the goal is to eliminate illegal timber production. The proposed goals are related to areas under state domain and inspection as practiced in the PPCDQ-AM (State Plan for the Prevention and Combat of Deforestation and Fires - Amazonas).

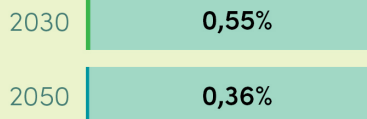
Impact on GHG emissions reduction

Cumulative GHG emission reductions:
(2020-2050)

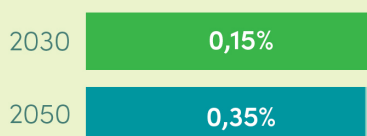
16 TgCO₂e

AFOLU-7: Very low mitigation potential of **0,3%** of emissions in the AFOLU sector (agriculture, forestry, and other land use).

CONTRIBUTION TO TOTAL REDUCTIONS (%)



REDUCTION FROM BAU (%)



Macroeconomic impacts

POSITIVE NULL NEGATIVE

LOWER NET COSTS	CHANGE IN ENERGY AND RESOURCE CONSUMPTION	CHANGE IN ENERGY AND MATERIALS SOURCING	CHANGE IN LOCAL SUPPLY CHAINS	JOB CREATION	CHANGE IN SOURCES OF INVESTMENT AND INCOME
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AFOLU-7: Timber forest products

Co-benefits

INVESTMENT ATTRACTION AND COMPETITIVENESS	COMBATING ILLEGAL DEFORESTATION	LOCAL ECONOMIC BENEFITS AND INCREASED EMPLOYMENT	PROTECTION OF THE SOURCE OF DIFFERENT RAW MATERIALS	DECREASE IN RURAL EXODUS
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Costs and savings

Low direct costs to the state compared to typical spending levels in the agriculture, livestock, forestry and fisheries sectors (i.e. spending on materials and labour in agriculture and livestock). Costs will depend on specific implementation mechanisms used to manage the forest supply chain and prevent illegal harvesting.

