

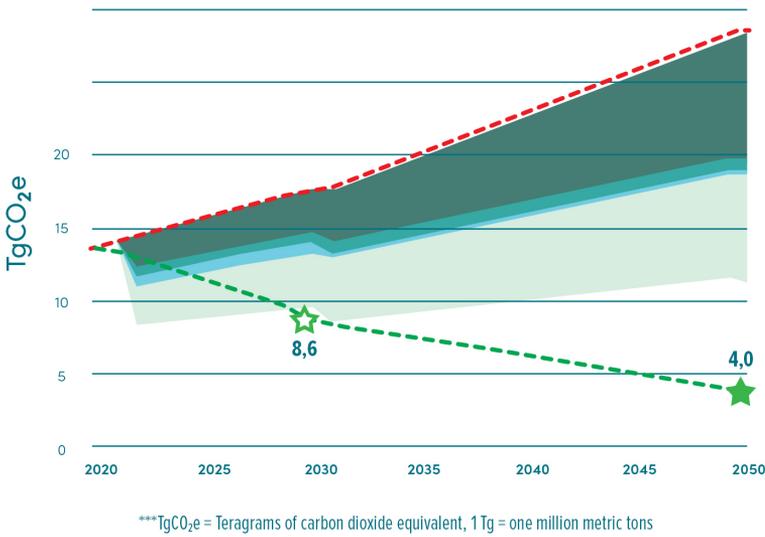
Portfolio of actions: Climate Pathway Project

The Government of Madre de Dios, Peru has completed a 2.5-year process to develop its decarbonisation pathway. The pathway is based on Madre de Dios' reduction targets* of 26% by 2030 and 66% by 2050.

As part of the process, the government prioritised the 11 mitigation actions shown below.

* Compared to the 2016 baseline.

Projected GHG emission reductions from prioritised actions in Madre de Dios



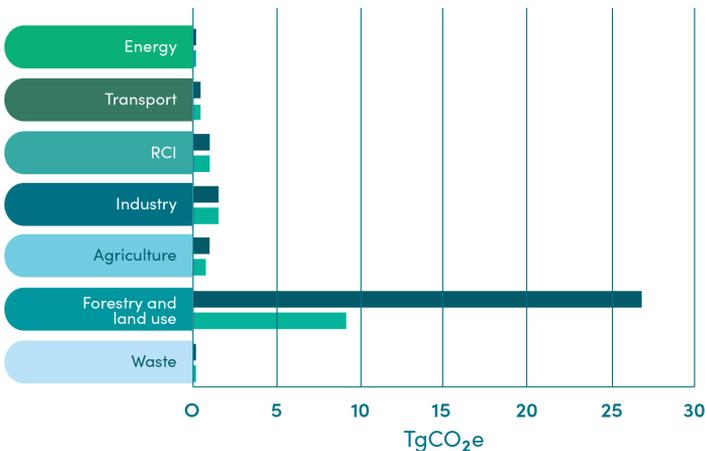
PRIORITY ACTIONS

- Conservation mechanisms in native community forests and community forest management
- Increasing the productivity and efficiency of agricultural activities
- Increasing the productivity and efficiency of livestock activities
- Forest plantations for protection/restoration purposes
- Commercial forestry plantations
- Promoting stakeholder participation through the management of natural protected areas and local forests
- Agroforestry systems for the recovery of degraded areas
- Reducing the risk of forest fires
- Reducing the conversion of forest land to mining areas
- Programme to combat illegal logging
- Sustainable forest management in forest concessions (timber)
- - - Baseline / BAU
- - - Decarbonisation targets
- ☆ 2030 target = 8.6 TgCO₂e
- ★ 2050 target = 4.0 TgCO₂e

As shown by the graph, the priority actions would amount to a 61% 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

8.4 million

tonnes of avoided emissions by

2030

And more than

18 million

tonnes of avoided emissions by

2050

WITH THE SUPPORT OF ——— MAIN PARTNER ——— PARTNERS ———



AFOLU-1. CONSERVATION MECHANISMS IN NATIVE COMMUNITY FORESTS AND COMMUNITY FOREST MANAGEMENT



DESCRIPTION: Through the implementation of forest conservation mechanisms, this action aims to reduce deforestation rates of land from native communities and natural protected areas. These mechanisms will involve co-management techniques, as seen with the case of Amarakaeri Communal Reserve. At the national level, two mitigation measures are considered:

- Promoting and implementing forest conservation mechanisms in native communities through Conditional Direct Transfers (TDC; in Spanish) and/or Amazonian Indigenous REDD projects (RIA; in Spanish).
- The sustainable use of forest resources in communal territories through community forest management duly planned through a General Forest Management Plan and authorised by the Regional Forestry and Wildlife Management.

LEVEL OF EFFORT AND TIMING OF IMPLEMENTATION:

Forest conservation mechanisms

- 2030 target: 300,000 hectares of forests sustainably managed through TDC and/or RIA - 74,671 hectares in addition to those included in the baseline.
- 2050 target: 800,000 hectares of forests sustainably managed through TDC and/or RIA - 500,000 hectares in addition to the 2030 target hectares

Community forestry

- Target 2030: 60,000 hectares of forest sustainably managed and certified through Forest Stewardship Council (FSC) or organic certification.
- Target 2050: 75,000 hectares of forest sustainably managed and certified through FSC or organic certification.

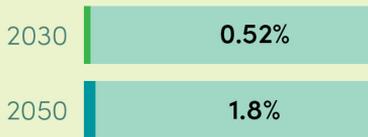
Impact on GHG emissions reduction

Cumulative GHG emission reductions:
(2020-2050)

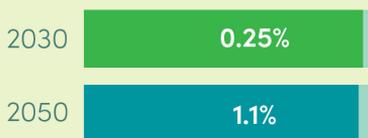
6.7 TgCO₂e

AFOLU-1 has a low mitigation potential of **1.1%** of total 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. Conservation mechanisms in native community forests and community forest management.

Co-benefits



Costs and savings

Moderate direct costs, the net costs of implementing this action will depend mainly on the level of Conditional Direct Transfer (TDC) payments and their use. The hectare area of interest for the community forest management mechanism is small compared to that of the TDC.



AFOLU-2. INCREASE IN PRODUCTIVITY AND EFFICIENCY OF AGRICULTURAL ACTIVITIES

DESCRIPTION: This action aims to reduce deforestation rates which result from the expansion of agricultural land into forest land in the region. It will focus on identifying and implementing best crop practices (intensification) in order to increase agricultural production and decrease expansion into forested lands. A key component is increasing soil carbon stocks on agricultural land.

LEVEL OF EFFORT AND TIMING OF IMPLEMENTATION:

- By 2030, the conversion of forest land to agricultural land avoided will be 40,000 hectares, a 61% reduction of this kind of conversion projected in the baseline from 2022 to 2030.
- By 2050, the conversion of forest land to agricultural land avoided will be 250,000 hectares, a 71% reduction of this kind of conversion projected in the baseline from 2022 to 2050.

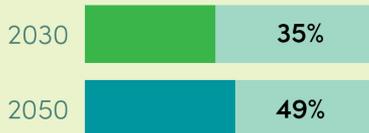
Impact on GHG emissions reduction

Cumulative GHG emission reductions:
(2020 - 2050)

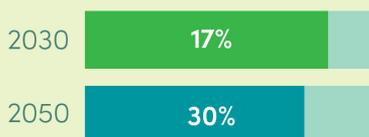
144 TgCO₂e

AFOLU-2 has a moderate/high mitigation potential of **24.78%** of total 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. Increase in productivity and efficiency of agricultural activities

Co-benefits

STRENGTHENING HOUSEHOLD INCOME	REDUCED EXPENDITURE ON SYNTHETIC INPUTS	SOIL REMEDIATION AND EROSION REDUCTION	REDUCED RURAL EXODUS	INCREASED VALUE FOR LAND, QUALITY OF LIFE FOR FARMERS
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Costs and savings

Moderate direct costs for the state. While the cost per tonne of CO₂e emissions reduced is not higher than the cost of other priority actions considered, the estimated emission reductions for this action are quite high, resulting in a higher overall cost.





AFOLU-3. INCREASING THE PRODUCTIVITY AND EFFICIENCY OF LIVESTOCK ACTIVITIES

DESCRIPTION: This action aims to reduce deforestation rates which result from the increased expansion of livestock grazing area in the region. It will focus on identifying and implementing methods to increase livestock productivity per hectare, thereby reducing the expansion of grassland into forest land and increasing the carbon stock of that hectare.

LEVEL OF EFFORT AND TIMING OF IMPLEMENTATION:

Number of cattle head per hectare

- By 2030, the number of cattle head per hectare will be 2 considering units of 500 kg.
- By 2050, the number of cattle head per hectare will be 4 considering units of 500 kg.

Deforestation rates

- By 2030, conversion of forest land to grassland will be avoided on 16,000 hectares, a 71% reduction of this kind of conversion projected in the baseline from 2022 to 2030.
- By 2050, conversion of forest land to grassland will be avoided on 60,000 hectares, an 83% reduction of this kind of conversion projected in the baseline from 2022 to 2030.

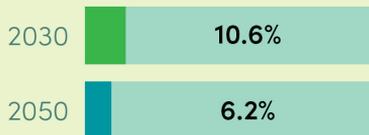
Impact on GHG emissions reduction

Cumulative GHG emission reductions:
(2020 - 2050)

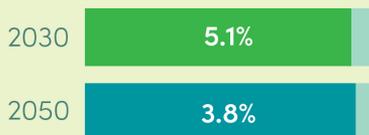
30 TgCO₂e

AFOLU-3 has a low mitigation potential of **5.1%** of total 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. Increasing the productivity and efficiency of livestock activities

Co-benefits

STRENGTHENING HOUSEHOLD INCOME	COMMUNITY BUILDING	POTENTIAL FOR RECOVERY OF DEGRADED AREAS	POTENTIAL FOR CONFLICT REDUCTION	INCREASED VALUE FOR LAND, QUALITY OF LIFE FOR FARMERS
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Costs and savings

Moderate direct costs for the state, depending on the specific costs of pasture restoration and maintenance.





AFOLU-4. FOREST PLANTATIONS FOR PROTECTION / RESTORATION PURPOSES

DESCRIPTION: This action aims to increase the carbon stock in the region through the installation and maintenance of forest plantations for protection and restoration purposes. This will be achieved through enabling land titling for timber and non-timber forest concessions, agricultural land leases, on lands that are deforested and degraded and, above all, with the capacity to be restored in the region, particularly native community and local community lands. The restoration will include planting a variety of native species to promote the establishment of new forests.

LEVEL OF EFFORT AND TIMING OF IMPLEMENTATION:

- By 2030, a total of 3000 hectares of new forest ecosystems will have been established in the region, including 500 hectares of native community forests (CCNN).
- By 2050, a total of 6,000 hectares of new forest ecosystems will have been established in the region, including 1,500 hectares of forest belonging to CCNN.

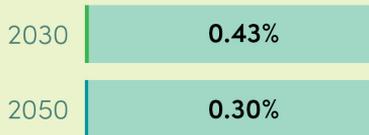
Impact on GHG emissions reduction

Cumulative GHG emission reductions:
(2020 - 2050)

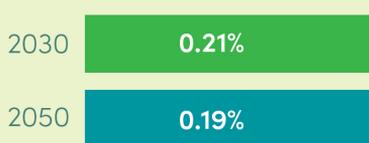
1.3 TgCO₂e

AFOLU-4 has a very low mitigation potential of **0.22%** of total emissions in the AFOLU sector (agriculture, forestry and other land use).

CONTRIBUTION TO TOTAL REDUCTIONS (%)



REDUCTION FROM BAU (%)



Macroeconomic impacts

POSITIVE NULL NEGATIVE



AFOLU-4. Forest plantations for protection / restoration purposes

Co-benefits



Costs and savings

Low direct costs for the state, larger in 2030 than in 2050, because the annual reforestation rate is higher in the 2022-2030 period than in the 2031-2050 period. Costs of reforestation actions tend to occur earlier in the implementation period as trees are planted, while carbon sequestration is higher at the end of the implementation period when the cumulative area of reforested land is larger.





AFOLU-5. COMMERCIAL FOREST PLANTATIONS

DESCRIPTION: This action aims to increase carbon sequestration and reduce pressure from land use change in the region, through the promotion of the establishment and maintenance of forest plantations for commercial purposes on land that has been deforested. These forests will be established on agricultural land, reforestation concessions in the process of establishment, and for areas of native communities.

LEVEL OF EFFORT AND TIMING OF IMPLEMENTATION:

- By 2030, a total of 2,000 hectares of new commercial forest plantations will have been established in the region including:
 - 1000 hectares of plantations on private agricultural land.
 - 700 hectares of plantations in forestry concessions for reforestation, currently in the process of adaptation.
 - 300 hectares of plantations on native community lands.
- By 2050, a total of 3,000 hectares of new forest plantations will have been established in the region, including:
 - 1500 hectares of plantations on private agricultural land.
 - 1000 hectares of plantations in forestry concessions for reforestation, currently in the process of adaptation.
 - 500 hectares of plantations on native community lands.

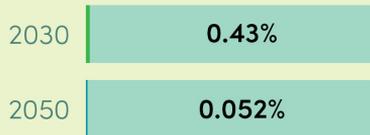
Impact on GHG emissions reduction

Cumulative GHG emission reductions:
(2020 - 2050)

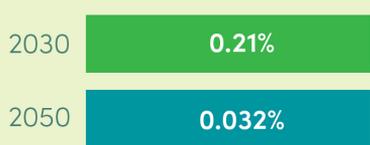
0.5 TgCO₂e

AFOLU-5 has a very low mitigation potential of **0.09%** of total 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. Commercial forest plantations

Co-benefits

BOOST LOCAL ECONOMY AND EMPLOYMENT	POTENTIAL FOR CONFLICT REDUCTION	SOIL REMEDIATION AND EROSION REDUCTION	PRESERVATION OF DIFFERENT RAW MATERIALS	HABITAT AND BIODIVERSITY ENHANCEMENT
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Costs and savings

Small to moderate direct savings for the state. 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 land not converted into forest.





AFOLU-6. PROMOTING STAKEHOLDER PARTICIPATION IN THE MANAGEMENT OF NATURAL PROTECTED AREAS AND LOCAL FORESTS

DESCRIPTION: This action aims to improve the management and conservation of forests in the different Natural Protected Areas (all categories established by SINANPE) and their buffer zones, thus reducing illicit and illegal activities that lead to deforestation in and around these protected areas. This action includes measures that involve the direct participation of the regional government of Madre de Dios, as well as local stakeholders such as indigenous peoples through mechanisms like RIA.

LEVEL OF EFFORT AND TIMING OF IMPLEMENTATION:

Hectares of avoided deforestation (it is assumed that 100% of these areas would be deforested without the action):

- By 2030: 9,789.85 hectares of protected natural areas and local forests preserved according to their management plans.
- By 2050: 11,747.82 (+20% over the 2030 target) hectares of forests preserved or managed through conservation schemes recognised by the National Service of Natural Protected Areas (SERNANP) or by the Forestry Law.

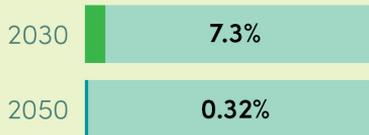
Impact on GHG emissions reduction

Cumulative GHG emission reductions:
(2020 - 2050)

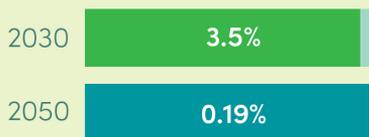
6.6 TgCO₂e

AFOLU-6 has a low mitigation potential of **1.1%** of total emissions in the AFOLU sector (agriculture, forestry and other land use).

CONTRIBUTION TO TOTAL REDUCTIONS (%)



REDUCTION FROM BAU (%)



Macroeconomic impacts

POSITIVE NULL NEGATIVE



AFOLU-6. Promoting stakeholder participation in the management of natural protected areas and local forests

Co-benefits



Costs and savings

Moderate to small direct costs for the state. The magnitude of direct costs is higher in 2030 (moderate) than in 2050 (small) due to the annual rate of implementation being higher in the 2022-2030 period compared to the 2031-2050 period. The net costs of implementing this action will depend on the specific implementation mechanisms used to manage protected areas. Costs include increases in staff, infrastructure, equipment and monitoring systems, and possibly payments for environmental services.



AFOLU-7. AGROFORESTRY SYSTEMS FOR THE RECOVERY OF DEGRADED AREAS



DESCRIPTION: This action aims to increase carbon stock through the establishment and maintenance of agroforestry systems. These agroforestry systems consist of the associated management of forest and agricultural species on the same parcel of land at the same time. It includes the practices of integration, preservation and management of perennial woody species in annual and perennial agricultural production systems.

LEVEL OF EFFORT AND TIMING OF IMPLEMENTATION:

- By 2030: 1,000 hectares of new agroforestry systems will have been established in the jurisdiction, including 510 hectares converted from monoculture agricultural land to defined agroforestry systems.
- By 2050: 5,000 hectares of new agroforestry systems will have been established in the jurisdiction, including 1,000 hectares converted from monoculture agricultural land to defined agroforestry systems.

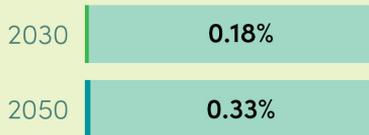
Impact on GHG emissions reduction

Cumulative GHG emission reductions:
(2020 - 2050)

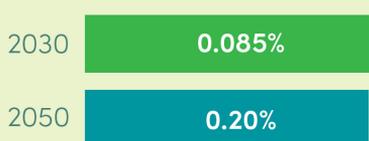
0.9 TgCO₂e

AFOLU-7 has a very low mitigation potential of **0.15%** of total emissions in the AFOLU sector (agriculture, forestry and other land use).

CONTRIBUTION TO TOTAL REDUCTIONS (%)



REDUCTION FROM BAU (%)



Macroeconomic impacts

POSITIVE NULL NEGATIVE



AFOLU-7. Agroforestry systems for the recovery of degraded areas.

Co-benefits



Costs and savings

Unknown. Savings or costs depend on the specific types of crops and agroforestry systems implemented and the land use in the implementation area in the BAU scenario. The level of detail in the design of this action does not allow identifying the specific types of crop and agroforestry system and in this sense, there is uncertainty whether this action generates costs or savings of small magnitude.





AFOLU-8. FOREST FIRE RISK REDUCTION

DESCRIPTION: This action aims to reduce the occurrence and/or severity of forest fires and the resulting greenhouse gas emissions, through reducing the loss of forest cover. This action comprises measures associated with the implementation of different practices, for example: Forest fire prevention and suppression, fire management, risk reduction programmes. In addition, this action includes measures involving the direct participation of the Regional Government of Madre de Dios.

LEVEL OF EFFORT AND TIMING OF IMPLEMENTATION:

- By 2030, forest fires will be prevented in 33% (294 ha) of the areas expected to experience forest fires.
- By 2050, forest fires will be prevented in 67% (2103 ha) of the areas expected to experience forest fires.

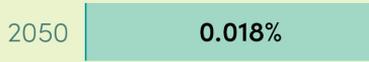
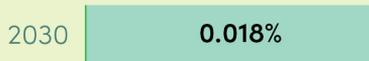
Impact on GHG emissions reduction

Cumulative GHG emission reduction:
(2020 - 2050)

0.01 TgCO₂e

AFOLU-8 has a very low mitigation potential of **0.01%** of total 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-8. Forest fire risk reduction

Co-benefits

HEALTH (reduction of air pollution)	COMMUNITY BUILDING	ENHANCING ECOSYSTEM SERVICES	REDUCING DIRECT DAMAGE CAUSED BY FOREST FIRES	HABITAT AND BIODIVERSITY PROTECTION
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Costs and savings

Small, almost null, savings, for the state, considering the costs of fire suppression and the savings from avoided losses.



AFOLU-9. REDUCING THE CONVERSION OF FOREST LAND TO MINING AREAS



DESCRIPTION: This action aims to reduce deforestation rates caused by the expansion of mining areas. It will focus on promoting efforts such as rigorous law enforcement to control illegal mining and have better planning, management and intensification of activities within existing and planned mining areas to reduce deforestation.

LEVEL OF EFFORT AND TIMING OF IMPLEMENTATION:

- By 2030, the conversion of forest land to mining land will be avoided on 50,000 hectares.
- By 2050, the conversion of forest land to mining land will be avoided on 250,000 hectares.

Impact on GHG emissions reduction

Cumulative GHG emission reductions:
(2020 - 2050)

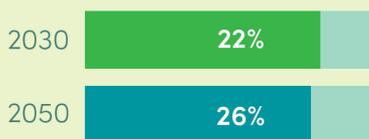
149.1 TgCO₂e

AFOLU-9 has a high mitigation potential of **26%** of total 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-9. Reducing the conversion of forest land to mining areas.

Co-benefits

HABITAT AND BIODIVERSITY PROTECTION	PRESERVATION OF DIFFERENT RAW MATERIALS	SOIL REMEDIATION AND EROSION REDUCTION	WATER SECURITY	IMPROVING THE LEGITIMACY OF THE MINING SECTOR IN THE REGION
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Costs and savings

Moderate direct costs for the state that will depend on the specific implementation mechanisms used to manage protected areas and promote better mining practices.



AFOLU-10. PROGRAMME TO COMBAT ILLEGAL LOGGING

DESCRIPTION: This action aims to reduce forest degradation due to illegal logging. Illegal logging is defined here as unauthorised logging, that is, logging of unauthorised species or logging in unauthorised areas.

There were insufficient data records to estimate the magnitude of illegal logging that has occurred historically in Madre de Dios and to project its magnitude in the future. As a result, it was not included in the Madre de Dios emissions baseline and it was impossible to define the levels of effort and timeframe for implementation of this action. However, it remains a priority action in Madre de Dios.

Co-benefits

IMPROVING THE LEGITIMACY OF THE TIMBER SECTOR IN THE REGION



WATER SECURITY



SOIL REMEDIATION AND EROSION REDUCTION



PRESERVATION OF DIFFERENT RAW MATERIALS



HABITAT AND BIODIVERSITY PROTECTION



AFOLU-11. SUSTAINABLE FOREST MANAGEMENT IN FOREST CONCESSIONS (TIMBER)

DESCRIPTION: This action aims to improve the management and harvesting of timber in concessioned permanent production forests (PPFs) as a mechanism to avoid deforestation and GHG emissions within these areas.

Levels of effort and implementation times were not identified for this action because the relationship between changes in the area of sustainably managed forest concessions and changes in deforestation rates was not clear (i.e. if you increase the area of these concessions by 1000 hectares, you do not know by how much it will reduce deforestation). At the national level, a multi-sectoral working group had estimated the expected emissions reductions due to avoided deforestation from the implementation of this action at the national level. However, insufficient information was available to replicate these estimates at the regional level within the timeframe of the project. Nonetheless, it remains a priority action in Madre de Dios.

Co-benefits

ECOSYSTEM SERVICES ENHANCEMENT



DEFORESTATION REDUCTION.



LOCAL ECONOMIC BENEFITS AND INCREASED EMPLOYMENT



STRENGTHENING PARTICIPATION OF LOCAL STAKEHOLDERS



TOURISM PROMOTION

