Chapter 4
Technical Annex

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A4.1 Data Sources

Voluntary Carbon Market

Credit Projects and Volumes

The chapter aggregated and classified data on carbon credit volumes and projects (visualized in Figure 4.3, Table 4.2, Figure 4.4) from three major sources.

Database	Registry Coverage	Time Coverage	Scope
Offsets DB	Verra (VCS), Gold Standard (GS), American Carbon Registry (ACR), Climate Action Reserve (CAR), Architecture for REDD+ (ART)	01.01.2024-31.12.2025	(Mainly nature-based) credits issued and retired in 2024 and 2025
CDR.fyi	Puro, Isometric, Global C Sink (CSI), Carbon Standards (CSI), Rainbow, Gold Standard, nonregistered credits	01.01.2024-31.12.2025	CDR credits pre-purchased[i], issued, and retired in 2024 and 2025
NBS.CDR.fyi	Forward purchase agreements of nature based	01.01.2024-31.12.2025	Nature-based credits pre-purchased in 2024 and 2025

Table A4.1 *Data sources for VCM projects and credit volumes.*

- **OffsetDB** compiles carbon credit issuance, retirement, and cancellations data directly from major registries.
- **CDR.fyi** tracks binding purchases of novel CDR (MOU/LOIs are excluded), as well as issued and retired tonnes.
- **NBS.CDR.fyi** compiles novel CDR data from public sources (e.g. press releases), supplier and purchaser reports, marketplace reports and registry data.

[i] Pre-purchases are binding forward sales of not yet issued credits

Credit Prices

Data on prices (outlined in Table 4.3) were aggregated based on weighted average price per method for CDR.fyi data (novel CDR) and the average of price data by Ecosystem Marketplace and Allied Offsets (conventional CDR).

- **Ecosystem Marketplace** compiles average prices for conventional CDR for the year 2024 in their "State of the Voluntary Carbon Market" report.
- **Allied Offsets** provides average weekly prices for conventional CDR for the years 2024 and 2025.

Note: Prices for the category "Afforestation, reforestation and forest management" are the volume-weighted average of the categories "Afforestation/Reforestation" and "Improved Forest Management". Prices for these two categories were sourced from Ecosystem Marketplace and Allied Offsets, while the annual volume data used for weighting was taken from Climate Focus's reports "Carbon Markets: 2025 review and outlook" and "Carbon Market 2024 review".

Article 6

Data on Article 6.2 and 6.4 was obtained from the Article 6 Pipeline, hosted by the UNEP-CCC database (version updated: 15 January 2026).

Sub-Article	Database Tab	Scope
6.2	"Projects"	Projects with issued authorisation statements or letters, as well as pilot activities between countries
6.4	"Eligible CDM Activities"	Includes Project Activities (PA), Programmes of Activities (PoA), and Component Project Activities (CPA) that are eligible for transition to Article 6.4 or have applied for transition, regardless of whether approval has been granted yet
6.4	"Prior Consideration Notifications"	Notifications submitted to the secretariat demonstrating that the mechanism's benefits were considered prior to the decision to implement the activity

Table A4.2 *Data scope of Article 6 Pipeline.*

Values were made equivalent to represent tCO_2 when the raw data in Article 6 Pipeline was presented $ktCO_2$ to ensure consistency across columns in aggregating data from both the "Prior Consideration Notification" and "Eligible CDM Transitions" components under Article 6.4.

A4.2 Methods

Data collection

The chapter devised its own classification for methodologies according to the following rubrics.

Project Class	Methodological Description	Examples
Emission reductions	Activities that reduce emissions relative to an observed baseline	Renewable energy, cookstoves
Avoided emissions	Activities that avoid emissions that would occur under a counterfactual scenario	Avoided grassland conversion, avoided deforestation (REDD+)
Mixed (mainly avoided)	Activities that both avoid emissions and remove carbon, but primarily avoid emissions	Most forms of improved forest management, sustainable agriculture
Mixed (mainly CDR)	Activities that both avoid emissions and remove carbon, but primarily remove carbon	Sustainable grassland management, peatland restoration, some forms of improved forest management
Conventional CDR	Activities that remove carbon through land-based management of carbon stocks	Afforestation and reforestation
Novel CDR	Activities that remove carbon through technology-based approaches	Biochar, DACCS, BECCS

Table A4.3 *Overview of project classes.*

Voluntary Market Classifications

Classification approach: Projects were classified into *State of CDR* project classes based on the underlying methodology the project was certified by. Where a methodology maps unambiguously to a single class given its definition and typical application, it was classified directly. Cases where methodologies could not be directly mapped were handled as follows:

- **Unknown methodologies:** When the methodology used by a project was unknown (common for Gold Standard projects registered under project-specific protocols), classification relied on the OffsetDB project category and project type as a fallback.

- **Mixed methodologies:** When a methodology is applied across projects that span multiple classes, most relevant for forestry, sustainable agriculture, and carbon capture methodologies, methodologies were labelled as case by case and classified at the project level, using the Berkeley Voluntary Registry Offsets Database. Based on the Berkeley terminology:

  - *Reduction* projects were classified as avoided emissions (for forestry and sustainable agriculture) and emission reductions (for carbon capture).

  - *Mixed* projects were conservatively classified as mixed (mainly avoided), except for the IFM methodology "CAR Mexico Forest Protocol", which were classified as mixed (mainly CDR) (see IFM section below for reasoning).

  - *Impermanent* removal projects were classified as conventional CDR (for forestry).

  - *Long-duration* removal projects were classified as novel CDR (for carbon capture).

Improved Forest Management (IFM): IFM projects account for a substantial share of forestry credits across project classes. Given the methodological complexity of classifying IFM activities, we provide further clarification on the distinction between project classes and its limitations.

- **IFM crediting mechanism:** IFM projects generate credits through two distinct mechanisms: (1) avoided harvest emissions, where the project prevents carbon losses that would have occurred under a business-as-usual harvest baseline; and (2) carbon stock enhancement, where active management results in higher standing carbon stocks than the baseline trajectory.

- **Classifying IFM methodologies:** Most IFM methodologies credit both mechanisms simultaneously, and which component dominates is determined by project-level baseline

construction and counterfactual harvest rates – not by the methodology itself. We reviewed the primary methodology documents for all active IFM protocols to assess whether a partial distinction is possible based on the primary credited mechanism, leading to the following classification:

- **Avoidance-dominant methodologies:** Projects certified under IFM methodologies with a clear dominance of avoidance activities (VM0010, VM0012) were classified as mixed (mainly avoided). Those are "Logged to Protected Forest" methodologies, which credit the prevention of planned selective logging.

- **Unclear activity dominance:** Projects certified under IFM methodologies where the avoidance/removal split is unclear (acr-ifm-nonfed, car-forest, VM0005) were conservatively classified as mixed (mainly avoided) and, as a result, excluded from CDR credit and project shares.

- **Removal-dominant methodologies:** Projects certified under IFM methodologies with a clear dominance of removal activities (car-forest-mx) were classified as mixed (mainly CDR). The protocol explicitly credits carbon enhancements (the growth of carbon stocks above a business-as-usual management baseline) and not avoided harvest emissions.

Methodology	Title	Project Class	CDR Project Type[ii]
ACM0001	Flaring or use of landfill gas	Emission reductions	–
ACM0002	Grid-connected electricity generation from renewable sources	Emission reductions	–
ACM0003	Partial substitution of fossil fuels in cement or quicklime manufacture	Emission reductions	–
ACM0006	Electricity and heat generation from biomass	Emission reductions	–
ACM0007	Conversion from single cycle to combined cycle power generation	Emission reductions	–
ACM0008	Abatement of methane from coal mines	Emission reductions	–
ACM0009	Fuel switching from coal or petroleum fuel to natural gas	Emission reductions	–
ACM0010	GHG emission reductions from manure management systems	Emission reductions	–
ACM0011	Fuel switching from coal and/or petroleum fuels to natural gas in existing power plants for electricity generation	Emission reductions	–
ACM0012	Waste energy recovery	Emission reductions	–
ACM0014	Treatment of wastewater	Emission reductions	–
ACM0016	Mass rapid transit projects	Emission reductions	–
ACM0017	Production of biofuel	Emission reductions	–
ACM0018	Electricity generation from biomass in power-only plants	Emission reductions	–
ACM0022	Alternative waste treatment processes	Emission reductions	–
ACR-abandoned-wells	Plugging orphaned oil and gas wells in the United States and Canada	Emission reductions	–
ACR-affor-refor	Afforestation and reforestation of degraded lands	Conventional CDR	Afforestation, reforestation, forest management

Methodology	Title	Project Class	CDR Project Type[ii]
ACR-canada-forest	Improved forest management (IFM) on Canadian forestlands	Mixed (mainly avoided)	Afforestation, reforestation, forest management
ACR-ccs	Carbon capture and storage projects	Case by case	Mineral products
ACR-foam	Transition to advanced formulation blowing agents in foam manufacturing and use	Emission reductions	–
ACR-grasslands	Avoided conversion of grasslands and shrublands to crop production	Avoided emissions	–
ACR-hfc	Certified reclaimed HFC refrigerants, propellants, and fire suppressants	Emission reductions	–
ACR-idling	Improved efficiency of vehicle fleets	Emission reductions	–
ACR-ifm-nonfed	Improved forest management (IFM) on non-federal US forestlands	Mixed (mainly avoided)	Afforestation, reforestation, forest management
ACR-international-ods	Destruction of ozone depleting substances from international sources	Emission reductions	–
ACR-landfill	Landfill gas destruction and beneficial use projects	Emission reductions	–
ACR-mine-methane	Capturing and destroying methane from coal and trona mines in North America	Emission reductions	–
ACR-ods	Destruction of ozone depleting substances and high-GWP foam	Emission reductions	–
ACR-refrige	Advanced refrigeration systems	Emission reductions	–
ACR-transformer-oil	Reduction in emissions from the recycling of transformer oil	Emission reductions	–
AM0001	Decomposition of fluoroform (HFC-23) waste streams	Emission reductions	–
AM0009	Recovery and utilization of gas from oil fields that would otherwise be flared or vented	Emission reductions	–
AM0014	Fossil fuel based cogeneration for identified recipient facility(ies)	Emission reductions	–

Methodology	Title	Project Class	CDR Project Type[ii]
AM0019	Renewable energy projects replacing part of the electricity production of one single fossil fuel fired power plant that stands alone or supplies to a grid, excluding biomass projects	Emission reductions	–
AM0023	Leak detection and repair in gas production, processing, transmission, storage and distribution systems and in refinery facilities	Emission reductions	–
AM0025	Alternative waste treatment processes	Emission reductions	–
AM0026	Methodology for zero-emissions grid-connected electricity generation from renewable sources in Chile or in countries with merit order based dispatch grid	Emission reductions	–
AM0029	Baseline methodology for grid connected electricity generation plants using natural gas	Emission reductions	–
AM0036	Use of biomass in heat generation equipment	Emission reductions	–
AM0065	Replacement of SF^6 with alternate cover gas in the magnesium industry	Emission reductions	–
AM0072	Fossil fuel displacement by geothermal resources for space heating	Emission reductions	–
AM0073	GHG emission reductions through multi-site manure collection and treatment in a central plant	Emission reductions	–
AM0080	Mitigation of greenhouse gases emissions with treatment of wastewater in aerobic wastewater treatment plants	Emission reductions	–
AM0110	Modal shift in transportation of liquid fuels	Emission reductions	–
AMS-I.A.	Electricity generation by the user	Emission reductions	–
AMS-I.B.	Mechanical energy for the user with or without electrical energy	Emission reductions	–
AMS-I.C.	Thermal energy production with or without electricity	Emission reductions	–
AMS-I.D.	Grid connected renewable electricity generation	Emission reductions	–
AMS-I.E.	Switch from non-renewable biomass for thermal applications by the user	Emission reductions	–

Methodology	Title	Project Class	CDR Project Type[ii]
AMS-I.F.	Renewable electricity generation for captive use and mini-grid	Emission reductions	–
AMS-I.I.	Biogas/biomass thermal applications for households/small users	Emission reductions	–
AMS-I.J.	Solar water heating systems (SWH)	Emission reductions	–
AMS-I.L.	Electrification of rural communities using renewable energy	Emission reductions	–
AMS-II.C.	Demand-side energy efficiency activities for specific technologies	Emission reductions	–
AMS-II.E.	Energy efficiency and fuel switching measures for buildings	Emission reductions	–
AMS-II.G.	Energy efficiency measures in thermal applications of non-renewable biomass	Emission reductions	–
AMS-II.J.	Demand-side activities for efficient lighting technologies	Emission reductions	–
AMS-III.AJ.	Recovery and recycling of materials from solid wastes	Emission reductions	–
AMS-III.AK.	Biodiesel production and use for transport applications	Emission reductions	–
AMS-III.AO.	Methane recovery through controlled anaerobic digestion	Emission reductions	–
AMS-III.AR.	Substituting fossil fuel based lighting with LED/CFL lighting systems	Emission reductions	–
AMS-III.AS.	Switch from fossil fuel to biomass in existing manufacturing facilities for non-energy applications	Emission reductions	–
AMS-III.AU.	Methane emission reduction by adjusted water management practice in rice cultivation	Emission reductions	–
AMS-III.AV.	Low greenhouse gas emitting safe drinking water production systems	Emission reductions	–
AMS-III.BA.	Recovery and recycling of materials from e-waste	Emission reductions	–
AMS-III.BG.	Emission reduction through sustainable charcoal production and consumption	Emission reductions	–

Methodology	Title	Project Class	CDR Project Type[ii]
AMS-III.BL.	Integrated methodology for electrification of communities	Emission reductions	–
AMS-III.BM.	Lightweight two and three wheeled personal transportation	Emission reductions	–
AMS-III.C.	Emission reductions by electric and hybrid vehicles	Emission reductions	–
AMS-III.D.	Methane recovery in animal manure management systems	Emission reductions	–
AMS-III.F.	Avoidance of methane emissions through composting	Emission reductions	–
AMS-III.G.	Landfill methane recovery	Emission reductions	–
AMS-III.H.	Methane recovery in wastewater treatment	Emission reductions	–
AMS-III.Q.	Waste energy recovery (gas/heat/pressure)	Emission reductions	–
AMS-III.Y.	Methane avoidance through separation of solids from wastewater or manure treatment systems	Emission reductions	–
AMS-III.Z.	Fuel switch, process improvement and energy efficiency in brick manufacture	Emission reductions	–
AR-ACM0001	Afforestation and reforestation of degraded land	Conventional CDR	Afforestation, reforestation, forest management
AR-ACM0002	Afforestation or reforestation of degraded land without displacement of pre-project activities	Conventional CDR	Afforestation, reforestation, forest management
AR-ACM0003	Afforestation and reforestation of lands except wetlands	Conventional CDR	Afforestation, reforestation, forest management
AR-AM0003	Afforestation and reforestation of degraded land through tree planting, assisted natural regeneration and control of animal grazing	Conventional CDR	Afforestation, reforestation, forest management

Methodology	Title	Project Class	CDR Project Type[ii]
AR-AM0005	Afforestation and reforestation project activities implemented for industrial and/or commercial uses	Conventional CDR	Afforestation, reforestation, forest management
AR-AM0014	Afforestation and reforestation of degraded mangrove habitats	Mixed (mainly CDR)	Peatland & coastal wetland restoration
AR-AMS0001	Simplified baseline and monitoring methodologies for small-scale A/R CDM project activities implemented on grasslands or croplands with limited displacement of pre-project activities	Conventional CDR	Afforestation, reforestation, forest management
AR-AMS0005	Simplified baseline and monitoring methodology for small-scale afforestation and reforestation project activities under the clean development mechanism implemented on lands having low inherent potential to support living biomass	Conventional CDR	Afforestation, reforestation, forest management
AR-AMS0006	Simplified baseline and monitoring methodology for small-scale silvopastoral - afforestation and reforestation project activities under the clean development mechanism	Conventional CDR	Afforestation, reforestation, forest management
AR-AMS0007	Afforestation and reforestation project activities implemented on lands other than wetlands	Conventional CDR	Afforestation, reforestation, forest management
ARB-forest	ARB Compliance Offset Protocol: US forest projects	Case by case	Afforestation, reforestation, forest management
ARB-livestock	Capturing and destroying methane from manure management systems	Emission reductions	–
ARB-mine-methane	Mine methane capture projects	Emission reductions	–
ARB-ozone	Ozone depleting substances projects	Emission reductions	–
ART-trees	TREES – The REDD+ Environmental Excellence Standard	Avoided emissions	–
CAR-adipic	US Adipic Acid Production Protocol	Emission reductions	–

Methodology	Title	Project Class	CDR Project Type[ii]
CAR-forest	US Forest Protocol	Case by case	Afforestation, reforestation, forest management
CAR-forest-mx	Mexico Forest Protocol	Case by case	Afforestation, reforestation, forest management
CAR-grassland	US Grassland Protocol	Avoided emissions	–
CAR-landfill	US Landfill Protocol	Emission reductions	–
CAR-landfill-mx	Mexico Landfill Protocol	Emission reductions	–
CAR-livestock	US Livestock Protocol	Emission reductions	–
CAR-nitric-acid	US Nitric Acid Production Protocol	Emission reductions	–
CAR-organic-composting	US Organic Waste Composting Protocol	Emission reductions	–
CAR-soil	US. Soil Enrichment Protocol	Case by case	Soil carbon sequestration in croplands and grasslands
CAR-waste-digestion	US Organic Waste Digestion Protocol	Emission reductions	–
ECY-forest	ECY Compliance Offset Protocol: US forest projects	Case by case	Afforestation, reforestation, forest management
ECY-ozone	Ozone depleting substances offset project data report	Emission reductions	–
GS-biodigester	Methodology for animal manure management and biogas use for thermal energy generation	Emission reductions	–
GS-ms-microscale-electrification	Suppressed demand methodology micro-scale electrification and energization	Emission reductions	–
GS-ss-biomass	Ecologically sound fuel switch to biomass with reduced energy requirement	Emission reductions	–

Methodology	Title	Project Class	CDR Project Type[ii]
GS-drinking-water	Emission reductions from safe drinking water supply	Emission reductions	–
GS-kitchen-cookstoves	Methodology for improved cook stoves and kitchen regimes	Emission reductions	–
GS-metered-cookstoves	Methodology for metered & measured energy cooking devices	Emission reductions	–
GS-reforest	Afforestation – reforestation GHG emission reductions & sequestration methodology	Conventional CDR	Afforestation, reforestation, forest management
GS-shipping	Reducing vessel emissions through the use of advanced hull coatings	Emission reductions	–
GS-simplified-cookstoves	Simplified methodology for clean and efficient cookstoves	Emission reductions	–
GS-tpddtec	Reduced emissions from cooking and heating – technologies and practices to displace decentralised thermal energy consumption (TPDDTEC)	Emission reductions	–
CAR-low-carbon-cement	US low carbon cement	Emission reductions	–
CAR-ozone	Ozone depleting substances offset project data report	Emission reductions	–
VM0001	Refrigerant leak detection	Emission reductions	–
VM0003	Methodology for improved forest management through extension of rotation age	Mixed (mainly avoided)	Afforestation, reforestation, forest management
VM0004	Methodology for avoided planned land use conversion in peat swamp forests	Avoided emissions	–
VM0005	Methodology for conversion of low-productive forest to high-productive forest	Case by case	Afforestation, reforestation, forest management
VM0006	Methodology for carbon accounting for mosaic and landscape-scale REDD projects	Avoided emissions	–
VM0007	REDD+ methodology framework (REDD+MF)	Case by case	Afforestation, reforestation, forest management

Methodology	Title	Project Class	CDR Project Type[ii]
VM0008	Weatherization of single family and multi-family buildings	Emission reductions	–
VM0009	Methodology for avoided ecosystem conversion	Avoided emissions	–
VM0010	Methodology for improved forest management: conversion from logged to protected forest	Mixed (mainly avoided)	Afforestation, reforestation, forest management
VM0011	Methodology for calculating ghg benefits from preventing planned degradation	Avoided emissions	–
VM0012	Improved forest management in temperate and boreal forests (LtPF)	Mixed (mainly avoided)	Afforestation, reforestation, forest management
VM0015	Methodology for avoided unplanned deforestation	Avoided emissions	–
VM0016	Reducing vessel emissions through the use of advanced hull coatings	Emission reductions	–
VM0017	Adoption of sustainable agricultural land management	Case by case	Soil carbon sequestration in croplands and grasslands
VM0018	Energy efficiency and solid waste diversion activities within a sustainable community	Emission reductions	–
VM0025	Campus clean energy and energy efficiency	Emission reductions	–
VM0026	Methodology for sustainable grassland management (SGM)	Mixed (mainly CDR)	Soil carbon sequestration in croplands and grasslands
VM0032	Methodology for the adoption of sustainable grasslands through adjustment of fire and grazing	Mixed (mainly CDR)	Soil carbon sequestration in croplands and grasslands
VM0033	Methodology for tidal wetland and seagrass restoration	Mixed (mainly CDR)	Peatland & coastal wetland restoration
VM0034	Canadian forest carbon offset methodology	Mixed (mainly avoided)	Afforestation, reforestation, forest management

Methodology	Title	Project Class	CDR Project Type[ii]
VM0038	Methodology for electric vehicle charging systems	Emission reductions	–
VM0039	Methodology for use of foam stabilized base and emulsion asphalt mixtures in pavement application	Emission reductions	–
VM0041	Methodology for the reduction of enteric methane emissions from ruminants through the use of feed ingredients, v2.0	Emission reductions	–
VM0042	Improved agricultural land management	Case by case	Soil carbon sequestration in croplands and grasslands
VM0043	CO_2 Utilization in concrete production	Case by case	Mineral products
VM0044	Biochar utilization in soil and non-soil applications	Novel CDR	Biochar
VM0045	Improved Forest management using dynamic matched baselines from national forest inventories	Mixed (mainly avoided)	Afforestation, reforestation, forest management
VM0050	Energy efficiency and fuel-switch measures in cookstoves	Emission reductions	–
VMR0006	Energy efficiency and fuel switch measures in thermal applications	Emission reductions	–
VMR0007	Revision to AMS-III.AJ.: recovery and recycling of materials from solid wastes	Emission reductions	–

Table A4.4 *Classification of project class and CDR type by VCM methodologies.*

[ii] The CDR project type is only indicated for CDR-related methodologies, as only projects certified under these methodologies contribute to the CDR volume breakdowns reported in Chapter 4.

Article 6 Classifications

Clean Development Mechanism

Projects that originated from the Clean Development Mechanism that have requested to transition from the CDM into the Article 6.4 mechanism were classified accordingly.

Methodology	Methodological Description	Project Class	CDR Project Type
ACM0001	Flaring or use of landfill gas	Emission reductions	–
ACM0002	Grid-connected electricity generation from renewable sources	Emission reductions	–
ACM0003	Emissions reduction through partial substitution of fossil fuels with alternative fuels or raw materials in cement manufacture	Emission reductions	–
ACM0004	Waste gas and/or heat for power generation	Emission reductions	–
ACM0006	Electricity and heat generation from biomass	Emission reductions	–
ACM0008	Abatement of methane from coal mines	Emission reductions	–
ACM0012	Consolidated baseline methodology for GHG emission reductions from waste energy recovery projects	Emission reductions	–
ACM0014	Treatment of wastewater	Emission reductions	–
ACM0016	Mass rapid transit projects	Emission reductions	–
ACM0018	Electricity generation from biomass residues	Emission reductions	–
ACM0019	N_2O abatement from nitric acid production	Emission reductions	–
ACM0022	Alternative waste treatment processes	Emission reductions	–
ACM0025	Construction of a new natural gas power plant	Emission reductions	–
AM0001	Incineration of HFC-23 waste streams	Emission reductions	–

Methodology	Methodological Description	Project Class	CDR Project Type
AM0002	Greenhouse gas emission reductions through landfill gas capture and flaring where the baseline is established by a public concession contract	Emission reductions	–
AM0003	Simplified financial analysis for landfill gas capture projects	Emission reductions	–
AM0009	Recovery and utilization of gas from oil wells that would otherwise be flared or vented	Emission reductions	–
AM0010	Landfill gas capture and electricity generation projects where landfill gas capture is not mandated by law	Emission reductions	–
AM0011	Landfill gas recovery with electricity generation and no capture or destruction of methane in the baseline scenario	Emission reductions	–
AM0015	Bagasse-based cogeneration connected to an electricity grid	Emission reductions	–
AM0021	Baseline methodology for decomposition of N_2O from existing adipic acid production plants	Emission reductions	–
AM0023	Leak detection and repair in gas production, processing, transmission, storage and distribution systems and in refinery facilities	Emission reductions	–
AM0025	Avoided emissions from organic waste through alternative treatment	Emission reductions	–
AM0026	Methodology for zero-emissions grid-connected electricity generation from renewable sources in Chile or in countries with merit order based dispatch grid	Emission reductions	–
AM0027	Substitution of CO_2 from fossil or mineral origin by CO_2 from biogenic residual sources in the production of inorganic compounds	Emission reductions	–
AM0028	N_2O destruction in the tail gas of caprolactam production plants	Emission reductions	–
AM0029	Baseline methodology for grid connected electricity generation plants using natural gas	Emission reductions	–
AM0034	Catalytic reduction of N_2O inside the ammonia burner of nitric acid plants	Emission reductions	–
AM0048	New cogeneration project activities supplying electricity and heat to multiple customers	Emission reductions	–

Methodology	Methodological Description	Project Class	CDR Project Type
AM0050	Feed switch in integrated ammonia-urea manufacturing industry	Emission reductions	–
AM0065	Replacement of SF_6 with alternate cover gas in the magnesium industry	Emission reductions	–
AM0067	Methodology for installation of energy efficient transformers in a power distribution grid	Emission reductions	–
AM0070	Manufacturing of energy efficient domestic refrigerators	Emission reductions	–
AM0073	GHG emission reductions through multi-site manure collection and treatment in a central plant	Emission reductions	–
AM0074	Methodology for new grid connected power plants using permeate gas previously flared and/or vented	Emission reductions	–
AM0080	Mitigation of greenhouse gases emissions with treatment of wastewater in aerobic wastewater treatment plants	Emission reductions	–
AM0102	Greenfield cogeneration facility supplying electricity and steam to a greenfield industrial consumer and exporting excess electricity to a grid and/or project customer(s)	Emission reductions	–
AMS-I.A.	Electricity generation by the user	Emission reductions	–
AMS-I.B.	Mechanical energy for the user with or without electrical energy	Emission reductions	–
AMS-I.C.	Thermal energy production with or without electricity	Emission reductions	–
AMS-I.D.	Grid-connected renewable electricity generation	Emission reductions	–
AMS-I.E.	Switch from non-renewable biomass for thermal applications	Emission reductions	–
AMS-I.F.	Renewable electricity generation for captive use	Emission reductions	–
AMS-I.I.	Biogas/biomass thermal applications for households/small users	Emission reductions	–
AMS-I.L.	Electrification of rural communities using renewable energy	Emission reductions	–

Methodology	Methodological Description	Project Class	CDR Project Type
AMS-II.B.	Supply side energy efficiency improvements – generation	Emission reductions	–
AMS-II.C.	Demand-side energy efficiency activities for specific technologies	Emission reductions	–
AMS-II.D.	Energy efficiency and fuel switching measures for industrial facilities	Emission reductions	–
AMS-II.E.	Energy efficiency and fuel switching in buildings	Emission reductions	–
AMS-II.F.	Energy efficiency and fuel switching measures for agricultural facilities and activities	Emission reductions	–
AMS-II.G.	Energy efficiency measures in thermal applications of non-renewable biomass	Emission reductions	–
AMS-III.AO.	Methane recovery through controlled anaerobic digestion	Emission reductions	–
AMS-III.AR.	Substituting fossil fuel based lighting with LED/CFL lighting systems	Emission reductions	–
AMS-III.AU.	Methane emission reduction by adjusted water management practice in rice cultivation	Emission reductions	–
AMS-III.AV.	Low greenhouse gas emitting safe drinking water production systems	Emission reductions	–
AMS-III.B.	Switching fossil fuels	Emission reductions	–
AMS-III.BB.	Electrification of communities through grid extension or construction of new mini-grids	Emission reductions	–
AMS-III.BD.	GHG emission reduction due to supply of molten metal instead of ingots for aluminium castings	Emission reductions	–
AMS-III.BF.	Reduction of N_2O emissions from use of nitrogen use efficient (NUE) seeds that require less fertilizer application	Emission reductions	–
AMS-III.BG.	Emission reduction through sustainable charcoal production and consumption	Emission reductions	–
AMS-III.BI.	Flare gas recovery in gas treating facilities	Emission reductions	–

Methodology	Methodological Description	Project Class	CDR Project Type
AMS-III.BL.	Integrated methodology for electrification of communities	Emission reductions	–
AMS-III.C.	Emission reductions by electric and hybrid vehicles	Emission reductions	–
AMS-III.D.	Methane recovery in animal manure management systems	Emission reductions	–
AMS-III.E.	Avoidance of methane production from biomass decay through controlled combustion	Emission reductions	–
AMS-III.F.	Avoidance of methane emissions through controlled biological treatment of biomass	Emission reductions	–
AMS-III.G.	Landfill methane recovery	Emission reductions	–
AMS-III.H.	Methane recovery in wastewater treatment	Emission reductions	–
AMS-III.I.	Avoidance of methane production in wastewater treatment through replacement of anaerobic systems by aerobic systems	Emission reductions	–
AMS-III.P.	Recovery and utilization of waste gas in refinery facilities	Emission reductions	–
AMS-III.Q.	Waste energy recovery	Emission reductions	–
AMS-III.Z.	Fuel switch, process improvement and energy efficiency in brick manufacture	Emission reductions	–
AR-ACM0001	Afforestation and reforestation of degraded land	Conventional CDR	Afforestation, reforestation, forest management
AR-ACM0003	Afforestation and reforestation of lands except wetlands	Conventional CDR	Afforestation, reforestation, forest management
AR-AM0004	Reforestation or afforestation of land currently under agricultural use	Conventional CDR	Afforestation, reforestation, forest management
AR-AM0005	Afforestation and reforestation project activities implemented for industrial and/or commercial uses	Conventional CDR	Afforestation, reforestation, forest management

Methodology	Methodological Description	Project Class	CDR Project Type
AR-AM0014	Afforestation and reforestation of degraded mangrove habitats	Conventional CDR	Afforestation, reforestation, forest management
AR-AMS0001	Simplified baseline and monitoring methodologies for small-scale A/R CDM project activities implemented on grasslands or croplands with limited displacement of pre-project activities	Conventional CDR	Afforestation, reforestation, forest management

Table A4.5 *Classification of project class and CDR type by CDM methodologies.*

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Projects that had registered prior consideration of the PACM did not disclose methodologies for the most part so were classified on an activity basis accordingly.

Type	Project Class	CDR Project Type
Afforestation/Reforestation	Conventional CDR	Afforestation, reforestation, forest management
Agriculture	Case by case	–
Biochar	Novel CDR	Biochar
Bioenergy	Emissions reductions	–
Carbon capture	Emissions reductions	–
Cleaner cooking	Emissions reductions	–
Composting	Emissions reductions	–
Efficient appliances	Emissions reductions	–
Electric vehicles	Emissions reductions	–
Energy storage	Emissions reductions	–
Forest management	Case by case	–
Fossil gas leaks	Emissions reductions	–
Geothermal	Emissions reductions	–
Green ammonia	Emissions reductions	–
Green hydrogen	Emissions reductions	–
Grid efficiency	Emissions reductions	–
Heat recovery	Emissions reductions	–
Hydropower	Emissions reductions	–
Industrial efficiency	Emissions reductions	–
Landfill gas	Emissions reductions	–
Mixed renewables	Emissions reductions	–

Type	Project Class	CDR Project Type
Nitric acid	Emissions reductions	–
Oil field gas recovery	Emissions reductions	–
Public transit	Emissions reductions	–
Reforestation and ecosystem restoration	Conventional CDR	Afforestation, reforestation, forest management
Rewilding	Conventional CDR	Afforestation, reforestation, forest management
Rice cultivation	Emissions reductions	–
Solar	Emissions reductions	–
Tree plantation	Conventional CDR	Afforestation, reforestation, forest management
Waste management	Emissions reductions	–
Waste to energy	Emissions reductions	–
Wastewater treatment	Emissions reductions	–
Water purification	Emissions reductions	–
Wind	Emissions reductions	–

Table A4.6 *Classification of project class and CDR type by PACM project type.*

A4.3 Caveats and Limitations

The presence of mixed methodologies means there is considerable uncertainty pertaining to the precise volume of removals on the VCM. Presently, the serialised attributes of an individual carbon credit do not disclose its atmospheric contribution as avoidance, reduction or removal. Attribution on a methodological basis resolves this quandary for most carbon credits. However, the presence of mixed methodologies means that exact quantification of removal deployment is impossible. While some project design descriptions and reporting for projects do disclose exact volumes, this is not true for all. Our classification framework seeks to strike a balance between adding more detail than a 'mixed' category and being able to classify projects consistently irrespective of the differing qualities and availability of their underlying documentation. More precise estimates may be possible in the future.