

Scopes & Types

Voluntary Registry Offsets Database, v11

This document describes all of the scopes (major project categories) and detailed types of projects on the major voluntary offset registries as categorized in the Berkeley Carbon Trading Project's [Voluntary Registry Offsets Database](#). We list key methodologies used under each project type.

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Agriculture

Projects reduce emissions from row crops, pastureland, and dairies by increasing soil carbon as well as capturing or reducing methane emissions. New agricultural protocols are in development which we add as new projects are implemented.

Bundled Compost Production and Soil Application

This project type encompasses both compost production, an activity categorized under Waste Management, and compost application to soils, an activity normally categorized as ‘Compost Addition to Rangelands’ or ‘Sustainable Agriculture.’

Carbon Mineralization

Activities that draw carbon out of the atmosphere by mineralization in soil.

VM0021 Soil Carbon Quantification Methodology

Compost Addition to Rangelands

Applying compost to rangelands, directly increasing soil organic carbon and indirectly increasing soil organic carbon through enhanced plant growth.

ACR Compost additions to grazed lands protocol

Feed Additives

Reducing enteric fermentation emissions (methane emissions from cattle) through feed additives.

VCS VM0041 Methodology for the reduction of enteric methane emissions from ruminants through the use of 100% natural feed supplement

Methodology under development by Gold Standard called Reducing methane emissions from enteric fermentation in dairy cows through application of feed supplements

Improved Irrigation Management

Installing irrigation equipment powered by renewable sources that would have otherwise been powered by fossil fuel sources.

CDM’s AMS-I.B. Mechanical energy for use with or without electrical energy methodology

AMS-II.F. Energy efficiency and fuel switching measures for agricultural facilities and activities

Gold Standard’s Drip irrigation methodology

Manure Methane Digester

Installing biodigesters to capture methane that would otherwise be released to the atmosphere from livestock waste.

ARB’s Livestock protocol

CDM protocols, including AMS-III.D. Methane recovery in animal manure, ACM0010

GHG emission reduction from manure, AMS-I.C. Thermal energy production with or without electricity

Gold Standard's Revised methodology for manure management systems and MSW methodologies
ACR Methane recovery in animal manure management systems
CAR Livestock protocol
CAR Organic waste digestion protocol

Nitrogen Management

Improving application efficiency of nitrogen fertilizer application on agricultural fields by reducing fertilizer application and revising the application timing.

CAR Nitrogen management protocol
ACR Methodology for quantifying nitrous oxide (N₂O) emissions reductions from reduced use of nitrogen fertilizer on agricultural crop
CDM's AMS-III.BF. Reduction of N₂O emissions from use of Nitrogen use efficient (NUE) seeds that require less fertilizer application
VCS VM0022 Quantifying N₂O Emissions Reductions in Agricultural Crops through Nitrogen Fertilizer Rate Reduction methodology

Rice Emission Reductions

Changing field management and flood irrigation timing to reduce methane, CO₂, and N₂O emissions from rice cultivation.

ACR Emission reductions in rice management systems protocol
CDM's AMS-III.AU. Methane emission reduction by adjusted water management practice in rice cultivation, and AMS-III.AO. Methane recovery through controlled anaerobic digestion methodologies
ARB's Rice Cultivation protocol

Solid Waste Separation

Removing volatile solids from agricultural waste streams thus avoiding methane emissions and decay from anaerobic decomposition. Mechanical separation systems are installed, isolating solids from farm manure slurries for processing, recycling, and selling off-site.

CDM's AMS-III.Y. Methane avoidance through separation of solids from wastewater or manure treatment systems methodology
VCS's VMR0003 Included use of organic bedding material in AMS-III.Y. methodology

Sustainable Agriculture

Increasing above- and below-ground carbon in agricultural areas, through a variety of practices including manure application, returning compost residuals to fields, cover crops, and introducing trees to landscapes.

VCS VM0017 Adoption of sustainable agricultural land management
VCS VM0021 Soil carbon quantification
VCS VM0042 Methodology for improved agricultural land management

CAR Soil enrichment protocol
Gold Standard's Soil organic carbon framework methodology

Carbon Capture & Storage

Projects capture CO₂ released in high concentrations from industrial processes for permanent storage underground or in manufactured products.

Carbon Capture & Enhanced Oil Recovery

Capturing carbon dioxide from industrial processes followed by compression, transport and injection for permanent storage underground while also enhancing oil recovery.

ACR Carbon capture and storage protocol

Carbon Capture in Concrete

Capturing carbon dioxide from industrial waste gas to facilitate mineralization into concrete during the concrete manufacturing process. This project type can also involve reducing the proportion of carbon-intensive cement in concrete. [Note that the mineralization of CO₂ from biogenic sources is considered *Carbon-Absorbing Concrete* in the *Industrial & Commercial* scope.](#)

VCS VM0043 Methodology for CO₂ utilization in concrete production

Carbon Capture in Plastic

Capturing carbon dioxide and methane from industrial processes for permanent sequestration in plastics.

VCS VM0040 Methodology for greenhouse gas capture and utilization in plastic materials

Chemical Processes

Projects reduce, capture, and/or reuse high potency gasses from manufacturing, consumer goods, and chemical and fuel production.

N₂O Destruction in Adipic Acid Production

Transforming N₂O emissions via catalytic decomposition at high temperatures into harmless nitrogen and oxygen. Nitrous oxides generated during adipic acid production (a key component for manufacturing nylon) are diverted into this destruction technology.

ACR Destruction of ozone depleting substances and high-GWP foam

CAR Adipic acid production

N₂O Destruction in Nitric Acid Production

Installing abatement measures and catalytic reduction units to destroy N₂O emissions from nitric acid factories and caprolactam production plants. Nitric acid (HNO₃) and caprolactam are crucial components of fertilizer and synthetic fiber production, respectively.

CDM methodologies: ACM0019 N₂O abatement from nitric acid production, AM0028 N₂O

destruction in the tail gas of Caprolactam production plants, AM0034 Catalytic reduction of N₂O inside the ammonia burner of nitric acid plants
CAR Nitric acid production protocol

Propylene Oxide Production

Synthesizing propylene oxide (a globally predominant intermediate chemical for manufacturing polyurethanes across many industries from textiles to aerospace) out of hydrogen peroxide through a new process coined HPPO technology, with reduced energy consumption and waste generation. Compared to traditional propylene oxide production, there are significantly fewer GHG-intensive reagents involved and reduced process energy requirements.

VCS's VM0023 Reduction of GHG emissions in propylene oxide production protocol

SF6 Replacement

Avoiding SF₆ emissions by full/partial replacement of SF₆ cover gas to alternate cover gasses (also known as shielding gasses, which insulate molten metals from rapid oxidation and thus hazardous combustion). Substitute gasses include HFC134a, Perfluoro-2-methyl-3-pentanone and SO₂. Additional activities include combustion or thermal destruction of SF₆ emissions and reuse of recaptured SF₆.

CDM methodologies: AM0035 SF₆ Emission reductions in electrical grids, AM0065 Replacement of SF₆ with alternate cover gas in the magnesium industry, and AM0079 Recovery of SF₆ from gas insulated electrical equipment in testing facilities

***** Refrigerant-related project types *****

Advanced Refrigerants

Utilizing low global warming potential refrigerants like carbon dioxide, ammonia & propane.
ACR Advanced refrigerator systems protocol

HFC Refrigerants Reclamation

Replacing virgin hydrofluorocarbon (HFC) refrigerants with refrigerants that are reclaimed and reused.

ACR Certified reclaimed HFC refrigerants protocol

HFC Replacement in Foam Production

Replacing the use of blowing agents that contain HFCs in foam manufacturing with alternative lower impact foam manufacturing processes.

ACR Transition to advanced formulation blowing agents in foam manufacturing and use protocol

HFC23 Destruction

Capturing and destroying HFC23 produced as a byproduct of refrigerant manufacturing. This

project type produced a large share of credits under the Clean Development Mechanism.

CDM AM0001 Decomposition of fluorocarbon (HFC-23) waste streams methodology

Ozone Depleting Substances Recovery & Destruction

Collecting and destroying refrigerants that are ozone depleting substances with high GWPs from discarded equipment, particularly air conditioners, refrigerators, and insulation foam.

ARB Ozone Depleting Substances (ODS) protocol

CAR Mexico halocarbon protocol

CAR Ozone depleting substances protocol

ACR Destruction of ozone depleting substances and high-global warming potential foam protocol

VCS VM0016 Recovery and destruction of ozone-depleting substances (ODS) from products methodology

Refrigerant Leak Detection

Utilizing infrared real-time leak detection systems to reduce leaks of hydrofluorocarbon refrigerants from commercial refrigeration systems in the United States.

VCS VM0001 Infrared automatic refrigerant leak detection efficiency project methodology

Forestry & Land Use

Afforestation/Reforestation

Planting trees and reducing barriers to natural regeneration in non-urban areas.

Large and small-scale CDM afforestation and reforestation methodologies, including AR-AMS0007 Afforestation and reforestation project activities implemented on lands other than wetlands

Gold Standard's Afforestation/reforestation (A/R) GHG emissions reduction & sequestration methodology

ACR Afforestation and reforestation of degraded land protocol

CAR Forest Projects protocol (version 4.0 and earlier)

CAR Urban tree planting protocol

ARB Forest Projects offset protocol

Avoided Forest Conversion

Preserving forests and preventing conversion to other land uses like agriculture or development.

Avoided conversion is similar to REDD+ which also focuses on reducing forest conversion but generally is applied to projects in the global south. We distinguish the two by location; avoided forest conversion projects use protocols focused mainly on avoiding forest conversion in the global north.

ARB Forest protocol

CAR Forest protocol

Avoided Grassland Conversion

Preserving grasslands and shrublands to avoid conversion to row crops or other types of agricultural production.

CAR Canada and US Grassland protocol

ACR Avoided conversion of grasslands and shrublands to crop production protocol

Improved Forest Management

Applying practices which increase above and below ground carbon stocks including reducing timber harvest levels, extending timber harvest rotations, designating reserves, fuel load treatments, enrichment planting, and stand irrigation or fertilization.

ARB Forest protocol

ACR Improved forest management on non-federal U.S. land protocol

CAR Improved forest management protocol

CAR Mexico forest protocol

VCS VM0003 Methodology for improved forest management through extension of rotation age,

VCS VM0005 Methodology for improved forest management: conversion of low productive to high productive forest

VCS VM0010 Methodology for improved forest management: conversion from logged to protected forest

VCS VM0012 Improved forest management in temperate and boreal forests

VCS VM0045 Methodology for Improved Forest Management Using Dynamic Matched Baselines from National Forest Inventories

REDD+ (Reducing Emissions from Deforestation and Forest Degradation)

Reducing deforestation and forest degradation in the global south. Many REDD+ projects bundle several activities that together reduce deforestation and forest degradation, expand forests, and increase stocks in existing forests, including improved forest management, afforestation/ reforestation, re-vegetation, alternative livelihood programs, and clean cookstoves. The “+” in REDD+ refers to the many project co-benefits in addition to climate mitigation including biodiversity protection and livelihood betterment.

VCS VM0006 Carbon accounting for mosaic and landscape-scale REDD projects

VCS VM0007 REDD+ methodology framework

VCS VM0009 Avoided ecosystem conversion

VCS VM0015 Avoided unplanned deforestation

VCS VM0037 Implementation of REDD+ activities in landscapes affected by mosaic deforestation and degradation

REDD+ Jurisdictional

REDD+ projects which monitor and credit changes in carbon stocks across an entire national or subnational jurisdiction, focusing on governmental policies and programs that address drivers of deforestation and protect forests. ART TREES has issued jurisdictional REDD+ credits, but these are not yet included in the VROD database.

Sustainable Grassland Management

Applying practices which increase above and below ground carbon stocks by optimizing grazing rotation, protecting degraded land from grazing until regrowth, restoring severely degraded pasture through replanting, and reducing fire frequency through prescribed burns.

VCS VM0026 Methodology for sustainable grassland management (SGM)

VCS VM0032 Methodology for the adoption of sustainable grasslands through adjustment of fire and grazing

VCS VM0042 Methodology for improved agricultural land management

Wetland Restoration

Restoring deltaic and coastal wetlands, including mangrove ecosystems. Restoration can include switching from row crops to rice cultivation designed for deltaic areas and tidal wetland creation.

CDM AR-AM0014 Afforestation and reforestation of mangrove habitats protocol

VCS VM0007 REDD+ Methodology Framework

VCS VM0033 Methodology for tidal wetland and seagrass restoration

VCS VM0036 Methodology for Rewetting Drained Temperate Peatlands

ACR Restoration of California Deltaic and Coastal Wetlands

ACR Restoration of Degraded Deltaic Wetlands of the Mississippi Delta

ACR Restoration of Pocosin Wetlands

Household & Community

Biodigesters

Collecting organic material, such as animal waste, in household and community-scale biodigesters to use in cooking and other local applications such as heating and effluent as crop fertilizer.

CDM AMS-I.E. Switch from non renewable biomass for thermal applications

CDM AMS-I.F. Renewable electricity generation for captive use

CDM AMS-I.C. Thermal energy production with or without electricity

CDM AMS-III.AO. Methane recovery through controlled anaerobic digestion

CDM AMS-III.R. Methane recovery in agricultural activities at household/small farm level

Bundled Energy Efficiency

Installing multiple energy efficient technologies in residential and non-industrial buildings including weatherization, lighting, refrigeration, air conditioning, heating, pumping, etc.

Projects may use the same protocols as lighting and weatherization including:

CDM AMS-II.J. Demand side activities for efficient lighting
CDM AMS-II.E. Energy efficiency and fuel switching for buildings
VCS VM0008 Weatherization of single family and multi-family buildings

Clean Water

Providing safe drinking water through purification technologies like water filtration and access to centralized water systems, which reduces the need for firewood to boil/purify water. Most community borehole projects are categorized under the Community Borehole category, but some borehole projects are included here if they are combined with other forms of clean water provision.

GS Water access and WASH methodology

GS TPDDTEC Technologies and practices to displace decentralized thermal energy consumption

CDM AMS-III.AV. Low greenhouse emitting safe drinking water production systems

CDM AMS-III.BG. Emission reduction through sustainable charcoal production and consumption methodologies

Community Boreholes

Building or rehabilitating community boreholes for clean drinking water. The carbon benefits are realized from emissions avoided from the harvest and burning of non-renewable firewood to boil drinking water.

GS TPDDTEC Technologies and practices to displace decentralized thermal energy consumption methodology

Cookstoves

Building improved cookstoves to replace or minimize the use of dung or firewood for cooking. Carbon benefits are realized in the form of reduced emissions from burning biomass as well as reducing deforestation. Stoves generally lessen smoke during cooking, leading to additional health benefits. Cookstoves type includes equipment distribution of residential solar-powered cooking systems, which are not grid-connected.

GS Methodology for Metered & Measured Energy Cooking Devices

GS TPDDTEC Technologies and practices to displace decentralized thermal energy consumption

GS Simplified methodology for efficiency cookstoves

GS Methodology for improved cook stoves and kitchen regimes

CDM AMS-II.G. Energy efficiency measures in thermal applications of non-renewable biomass

CDM AMS-I.E. Switch from non-renewable biomass for thermal applications by the user

CDM AMS-I.C. Thermal energy production with or without electricity

VCS VMR0006 Methodology for installation of high efficiency firewood cookstoves

Lighting

Installing new, energy efficient lighting systems in residential and other non-industrial buildings.

CDM AMS-II.C. Demand-side energy efficiency activities for specific technologies

AMS-II.J. Demand side activities for efficient lighting methodologies

Weatherization

Installing heating appliances and insulation in residential and other non-industrial buildings.

CDM AMS-II.E. Energy efficiency and fuel switching measures for buildings

VCS VM0008 Weatherization of single family and multi-family buildings

GS Thermal performance improvements in low-income dwelling structures methodology

Industrial & Commercial

Projects include industrial energy efficiency, fuel substitution, manufacturing process improvement, and waste recovery, and efficiency in commercial and municipal building infrastructure.

Aluminum Smelters Emission Reductions

Reducing PFC emissions from aluminum smelting manufacturing through computerized controls, implementation of anode effect mitigation and upgraded algorithm automation of smelting pots.

Equipment efficiency improvements and avoided PFC emissions lower energy consumption.

CDM AM0030 PFC emission reductions from anode effect mitigation at primary aluminum smelting facilities

CDM AM0059 Reduction in GHGs emission from primary aluminum smelters methodologies

Brick Manufacturing Emission Reductions

Reducing energy consumption in brick manufacturing with lower carbon intensity fuels, such as transitioning from fossil fuels to renewable biomass/less-carbon-intensive fossil fuel/non-renewable biomass. Manufacturing improvements include improved composition, kiln upgrades, chemistry design and electricity from renewable sources. Primarily implemented greenfield or replacement.

Note that one way this type differs from Lower Carbon cement & Concrete is these projects typically replace clay bricks instead of more intensive concrete.

CDM AMS-III.Z. Fuel Switch, process improvement, and energy efficiency in brick manufacture methodology

Carbon-Absorbing Concrete

The production and use of concrete that absorbs carbon dioxide from the ambient air or by exposing the material to air with high concentrations of biogenic CO₂. Projects commonly also reduce the emissions associated with concrete production such as by reducing the proportion of carbon-intensive cement. Note that projects that mineralize concentrated CO₂ from non-biogenic

sources, such as industrial waste gas from fossil fuel combustion, fall under the *Carbon Capture & Storage* scope.

VCS VM0043 Methodology for CO₂ utilization in concrete production

GS Carbon sequestration through accelerated carbonation of concrete aggregate (v1.0 of this methodology specifies that any concentrated CO₂ used should be from biogenic sources.)

Energy Efficiency

Increasing energy efficiency in a variety of industrial processes. Improvements in energy efficiency span from mechanical upgrades of energy conversion equipment (e.g. boiler, motor) to process improvements affecting singular production elements (e.g. furnace, kiln) or multi-step production series.

CDM AMS-II.B. Supply side energy efficiency improvements

CDM AMS-II.D. Energy efficiency and fuel switching measures for industrial facilities

CDM AMS-II.E. Energy efficiency and fuel switching measures for buildings

CDM AMS-III.M. Reduction of energy consumption by recovering soda from paper production methodologies

Fuel Switching

Switching from higher GHG-intensity fuels to lower GHG-intensity non-biomass fuels, primarily through equipment retrofit and replacement, such as from coal/petroleum to natural gas.

CDM AMS-III.B. Switching fossil fuels

CDM ACM0009 Fuel switching from coal or petroleum fuel to natural gas

CDM ACM0003 Partial substitution of fossil fuels in cement or quicklime manufacture

Grid Expansion & Mini-Grids

Expansion of electricity service through grid extension and the construction of new mini-grids.

CDM AMS-III.BB. Electrification of communities through grid extension or construction of new mini-grids

CDM AMS-III.AW. Electrification of rural communities by grid extension

CDM AMS-I.F. Renewable electricity generation for captive use and mini-grid

Leak Detection & Repair in Gas Systems

Identifying and repairing natural gas/refinery gas leaks affecting above-ground process equipment in natural gas production, processing, transmission, storage, distribution systems and refinery facilities.

CDM's AM0023 Leak detection and repair in gas production, processing, transmission, storage and distribution systems and in refinery facilities methodology.

Lower Carbon Cement & Concrete

Lowering the GHG intensity of cement and concrete, including by replacing Portland cement with lower-GHG materials.

CAR's Low-Carbon Cement protocol

Mine Methane Capture

Capturing and destroying or using mine methane that would otherwise be released to the atmosphere from active and abandoned coal, trona, and precious and base metal mines.

CDM ACM0008 Abatement of methane from coal mines

CDM AM0064 Capture and utilization or destruction of mine methane

VCS VM0014 Interception and destruction of fugitive methane from coal bed methane (CBM) Seeps

VCS VMR0001 Revisions to ACM0008 to include pre-drainage of methane from an active open cast mine as a methane emission reduction activity methodology

VCS VMR0002 Revisions to ACM0008 to include methane capture and destruction from abandoned coal mines methodology

ACR Capturing and destroying methane from coal and trona mines in North America

ARB Mine Methane Capture protocol

Natural Gas Electricity Generation

Constructing new natural gas fired grid-connected electricity generation plants replacing higher greenhouse gas intensity fuels like coal. The fuel sources for the plants are fossil fuel natural gas, distinctly different from renewable natural gas harvested through decomposition processes.

CDM AM0029 Methodology for grid connected electricity generation plants using natural gas

CDM ACM0011 Fuel switching from coal and/or petroleum fuels to natural gas in existing power plants for electricity generation

Oil Recycling

Reclaiming transformer oil and re-refining used lubricant oils to virgin-quality. Emissions are avoided from baseline operation associated with the traditional disposal of waste oil through incineration.

ACR Re-refining used lubricating oils protocol

ACR Recycling of transformer oil protocol

Plugging Oil & Gas Wells

Plugging oil and gas wells to prevent methane release.

ACR Plugging Orphan Oil and Gas Wells in the U.S. and Canada

Pneumatic Retrofit

Installing or upgrading high-bleed and low-bleed pneumatic controllers (mechanical devices for automatic industrial gas processing like pressure, temperature, & flow regulation) to circumvent methane leaks from gas systems. Encompasses leak monitoring and repairs to further reduce methane leakage.

ACR Emission reduction measurement and monitoring methodology for the conversion of

high-bleed pneumatic controllers in oil and natural gas systems protocol

Road Construction Emission Reductions

Reducing emissions from road construction using alternative lower GHG materials and processes.

VCS VM0039 Methodology for Use of Foam Stabilized Base and Emulsion Asphalt Mixtures in Pavement Application

University Campus Emission Reductions

Increasing energy efficiency and renewable energy deployment on college, university, or school campuses in the United States.

VCS VM0025 Campus clean energy and energy efficiency protocol

Waste Gas Recovery

Collecting and processing byproduct gas from cement and cogeneration plants for reuse, most often for electricity generation.

CDM ACM0012 Waste energy recovery and due to repurposing of energy recaptured into electricity

CDM AM0009 Recovery and utilization of gas from oil fields that would otherwise be flared or vented

CDM ACM0002 Grid-connected electricity generation from renewable sources

Waste Heat Recovery

Installing waste heat recapture systems capturing byproduct heat from thermal power plants and centralized boilers to supply continuous heat, hot water, and climate control to regional residential, commercial and institutional buildings.

CDM ACM0012 Waste energy recovery

CDM AMS-III.Q. Waste energy recovery (gas/heat/pressure) projects

CDM AM0024 Baseline methodology for greenhouse gas reductions through waste heat recovery and utilization for power generation at cement plants

CDM AM0058 Introduction of a new primary district heating system

Renewable Energy

Biomass

Generating heat, electricity (grid connected or direct use), and/or biogas from renewable biomass, commonly utilizing agricultural waste biomass. These projects can involve biomass combustion or anaerobic digestion to produce biogas.

CDM AM0036 Fuel switch to renewable biomass for thermal applications

CDM ACM0006 Electricity and heat generation from biomass

CDM ACM0018 Electricity generation from biomass in power-only plants

CDM ACM0022 Alternative waste treatment processes

CDM AMS-I.A. Electricity generated by the user
CDM AMS-I.C. Thermal energy production with or without electricity
CDM AMS-I.D. Grid connected renewable electricity generation
CDM AMS-I.E. Switch from non-renewable biomass for thermal applications by user
CDM AMS-III.E. Avoidance of methane production from decay of biomass through controlled combustion, gasification or mechanical/thermal treatment
CDM AMS-III.AQ. Introduction of Bio-CNG in transportation applications
CDM AMS-III.AS. Switch from fossil fuel to biomass in existing manufacturing facilities for non-energy applications
GS Ecologically sound fuel switch to biomass with reduced energy requirement

Geothermal

Installing geothermal energy plants. Primarily utilizes gas-steam combined cycle turbines in cogeneration plants, which may be natural gas fired.

CDM AMS-I.D. Grid connected renewable electricity generation
CDM ACM0002 Grid-connected electricity generation from renewable sources
CDM AM0072 Fossil fuel displacement by geothermal resources for space heating

Hydropower

Installing large and small-scale hydroelectric power plant (HEPP) turbines to generate electricity through regular dam flow operations or hydropower additions to multipurpose reservoirs.

CDM AMS-I.D. Grid connected renewable electricity generation
CDM ACM0002 Grid-connected electricity generation from renewable sources methodologies

RE Bundled (Bundled Renewables)

Multiple forms of renewable energy involved/grouped within a single project, typically a combination of wind & solar. Geothermal energy may be grouped in.

CDM AMS-I.D. Grid connected renewable electricity generation
CDM ACM0002 Grid-connected electricity generation from renewable sources methodology
CDM ACM0006 Electricity and heat generation from biomass
CDM ACM0012 Waste energy recovery/Consolidated baseline methodology for GHG emission reductions for waste gas or waste heat or waste pressure based energy system
CDM AMS-I.L. Electrification of rural communities using renewable energy
CDM AMS-I.F. Renewable electricity generation for captive use and mini-grid.
*Due to the grouped nature of these projects, there are often multiple methodologies listed for these projects

Solar - Centralized

Installing solar modules as electricity production for grid-connected large scale energy.

CDM ACM0002 Grid-connected electricity generation from renewable sources
CDM AM0026 Methodology for zero-emissions grid-connected electricity generation from renewable sources
CDM AMS-I.F. Renewable electricity generation for captive use and mini-grid
CDM AMS-I.D. Grid-connected renewable electricity generation

Solar - Distributed

Installing small-scale, independent solar modules for residential production and consumption, including solar home systems and bundled solar programs that involve multiple end uses (e.g. lighting, cooking).

CDM AMS-I.A. Electricity generation by the user
CDM AMS-I.D. Renewable energy for captive use
CDM AMS-I.F. Renewable electricity generation for captive use and mini-grid

Solar Lighting

Distributing small-scale PV panels to charge residential lights and distribution of solar-powered lighting modules for transitions away from carbon-emissive traditional light sources like firewood and kerosene. [This category is distinct from Household & Community > Lighting which credits efficient lighting systems like LEDs.](#)

CDM AMS-III.AR. Substituting fossil fuel based lighting with LED/CFL lighting systems
CDM AMS-I.A. Electricity generation by the user
CDM AMS-I.L. Electrification of rural communities using renewable energy
VCS ACM0002 Grid connected renewable energy methodologies

Solar Water Heaters

Disseminating solar water heaters.

CDM AMS-I.J. Solar water heaters protocol
CDM AMS-I.C. Thermal energy production with or without electricity

Wind

Installing wind turbines for grid-connected electricity generation replacing traditional, fossil-fuel or natural gas combustion for electricity production.

CDM AMS-I.D. Grid connected renewable electricity generation
CDM ACM0002 Grid-connected electricity generation from renewable sources methodology
CDM AM0019 Renewable energy project activities replacing part of the electricity production of one single fossil-fuel-fired power plant that stands alone or supplies electricity to a grid

Transportation

Projects include transportation-related initiatives such as mass transit system implementation, fleet efficiency improvements like route or vehicle upgrades, infrastructure for pedal-driven two wheel vehicles, electrification of truck stops, streamlined fuel transport, and expanded electric vehicle charging.

Bicycles

Expanding bicycle lanes, deployment of bike/e-bike sharing programs, and establishing bike parking as well as repair modules around a metropolitan area to promote alternative transportation modes over fossil-fuel based vehicles.

CDM AMS-III.BM. Lightweight two and three wheeled personal transportation methodology

AMS-III.C. Emission reductions by electric and hybrid vehicles methodology

VCS Methodology for determining GHG emission reductions through bicycle sharing projects

Electric Vehicles & Charging

Concentrating deployment of EV charging stations around a metropolitan area to support electric vehicle driving range/accessibility and incentivize acquisition of EVs over fossil-fuel based vehicles.

VCS VM0038 Electric vehicle charging systems methodology

CDM AMS-III.C. Emission reductions by electric and hybrid vehicles

CDM AMS-III.S. Introduction of low-emission vehicles/technologies to commercial vehicle fleets methodologies

Fleet Efficiency

Installing upgrades/improvements to fleet infrastructure, vehicle design, accessibility, fuel sources, route expansion, modal shift of cargo transport, substitution to biogas (CNG/LNG) powered fleets, etc.

CDM AMS-III.C. Emission reductions by electric and hybrid vehicles

CDM AMS-III.S. Introduction of low-emission vehicles/technologies to commercial vehicle fleets

CDM AM0090 Modal shift in transportation of cargo from road transportation to water or rail transportation

VCS VM0019 Fuel Switch from Gasoline to Ethanol in Flex-Fuel Vehicle Fleets methodology

ACR Transport & fleet efficiency protocol

Fuel Transport

Constructing liquid fuel pipelines for improved efficiency in fuel transportation, which provides reductions of GHG incurred from existing liquid fuel transportation via diesel combustion trucks.

CDM AM0110 Modal shift in transportation of liquid fuels methodology

Mass Transit

Establishing Mass Rapid Transit (MRT) systems replacing more carbon-intensive personal alternatives like automobiles.

CDM ACM0016 Mass rapid transit projects methodology

CDM AM0031 Bus rapid transit projects

CDM AMS-III.C. Emission reductions by electric and hybrid vehicles

CDM AMS-II.E. Energy efficiency and fuel switching measures for buildings methodology (applicable to infrastructure upgrades)

Shipping

Retrofitting ships with energy efficiency upgrades/improvements, such as applying low-resistance ship hull coatings, installing high-flow propeller ducts, and fuel switching, which reduce fuel consumption for ship propulsion.

GS Retrofit energy efficiency measures in shipping

GS Reducing vessel emissions through the use of advanced hull coatings

GS Installation of flow improvement equipment on ships

Truck Stop Electrification

Reducing direct GHG emissions from diesel engine idling of long-haul trucks, through the installation/use of single-system Truck Stop Electrification (TSE) technologies and must singularly use grid-connected electrical power.

ACR Truck Stop Electrification protocol

Waste Management

Biochar

The production of biochar and application on soils or other uses.

VCS VM0044 Methodology for Biochar Utilization in Soil and Non-Soil Applications

Composting

Reducing methane emissions by composting biomass or other organic material that would have otherwise been left to decay anaerobically in a traditional waste management system (solid waste, animal waste, or wastewater). [Projects that combine compost production with compost application to soils are categorized under Agriculture > Bundled Compost Production and Soil Application.](#)

CDM AMS-III.F. Avoidance of methane through composting

CDM ACM0022 Alternative waste treatment processes methodologies

CAR Composting protocol

Landfill Methane

Reducing and destroying methane from landfills. Destruction can be through flaring, and/or use including through pipeline injection, on-site use for electricity and heat, and production of vehicle fuel.

- CDM ACM0001 Flaring or use of landfill gas
- CDM AMS-III.G. Landfill methane recovery methodologies
- CAR US and Mexico Landfill protocols
- ACR Landfill gas destruction & beneficial use projects protocol

Methane Recovery in Wastewater

Treating wastewater to capture and flare methane, process with anaerobic digesters, and/or dewater sludge by drying before disposal.

- CDM ACM0014 Treatment of wastewater
- CDM AM0080 Mitigation of greenhouse gasses emissions with treatment of wastewater in aerobic wastewater treatment plants
- CDM AMS-III.I. Avoidance of methane production in wastewater treatment through replacement of anaerobic systems by aerobic systems methodologies
- CDM AMS-III.H. Methane recovery in wastewater treatment
- CAR Organic waste digestion protocol

Waste Diversion

Diverting waste from landfills that do not fit into one of the other waste categories.

- CDM AMS-III.AO. Methane recovery through controlled anaerobic digestion
- CDM AMS-I.I. Biogas/biomass thermal applications for households/small users
- CDM AMS-I.F. Renewable electricity generation for captive use and mini-grid

Waste Incineration

Incinerating waste and controlled pyrolysis at a waste management facility to avoid methane emissions produced from biomass decay and to displace fossil fuel electricity and heat generation. [This activity differs from Renewable Energy > Biomass in that the combusted waste also includes non-organic material.](#)

- CDM AMS-III.L. Avoidance of methane production from biomass decay through controlled pyrolysis
- CDM AM0025 Avoided emissions from organic waste through alternative waste treatment processes
- CDM ACM0022 Alternative waste treatment processes

Waste Recycling

Diverting non-virgin/recycled materials originally destined for waste disposal to recycling plants. Currently includes process recycling of glass, PET, etc.

- CDM AMS-III.AJ. Recovery and recycling of materials from solid wastes

CDM AMS-III.BA. Recovery and recycling of materials from E-waste
CDM ACM0022 Alternative waste treatment processes

Waste Reduction

Activities that reduce waste by increasing use other than materials recycling, such as activities that reduce food waste.

VCS VM0046 Methodology for Reducing Food Loss and Waste

Note: combustion or anaerobic digestion of organic waste is categorized as Renewable Energy > Biomass.

Index of Methane-related Project Types

For reference, below are all of the project types that primarily reduce methane emissions:

- Agriculture > Manure Methane Digesters
- Agriculture > Rice Emission Reductions
- Agriculture > Solid Waste Separation
- Household & Community > Biodigesters
- Industrial & Commercial > Leak Detection & Repair in Gas Systems
- Industrial & Commercial > Mine Methane Capture
- Industrial & Commercial > Plugging Oil & Gas Wells
- Industrial & Commercial > Pneumatic Retrofit
- Renewable Energy > Biomass (including biomass combustion and biogas)
- Waste Management > Composting
- Waste Management > Landfill Methane
- Waste Management > Methane Recovery in Wastewater
- Waste Management > Waste Incineration