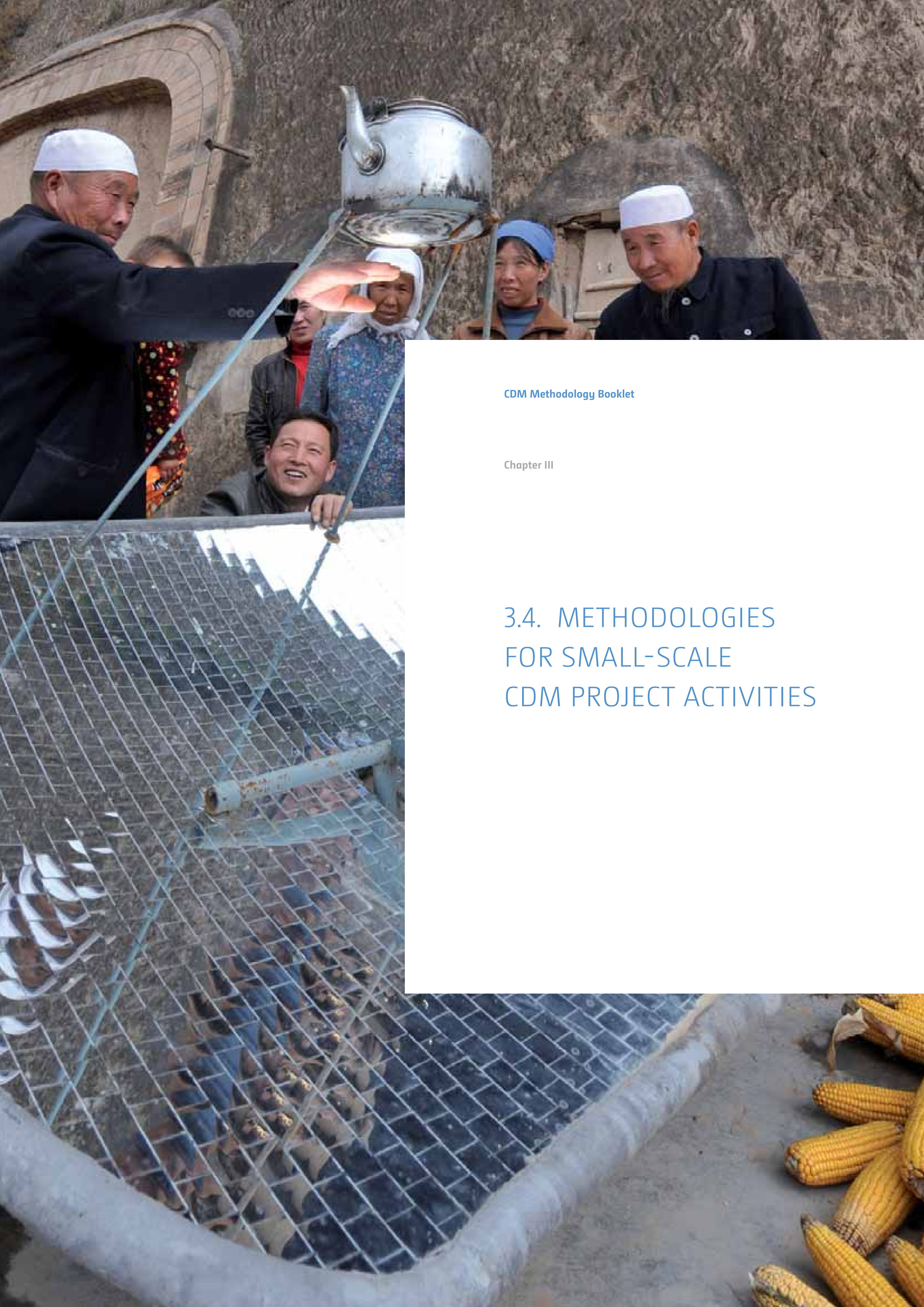
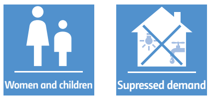
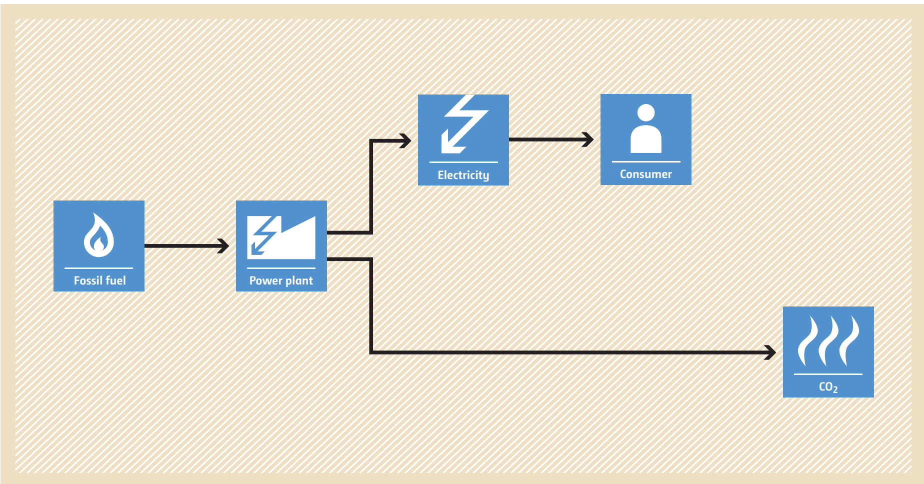
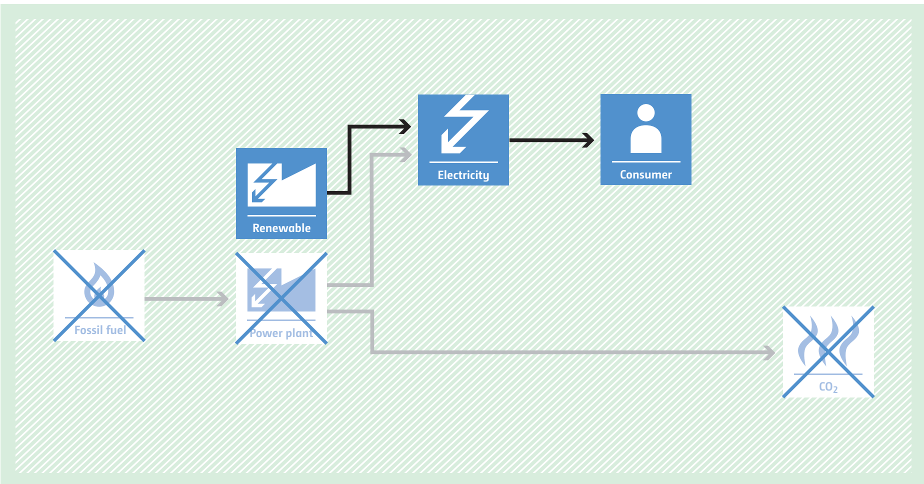


Chapter III

3.4. METHODOLOGIES FOR SMALL-SCALE CDM PROJECT ACTIVITIES

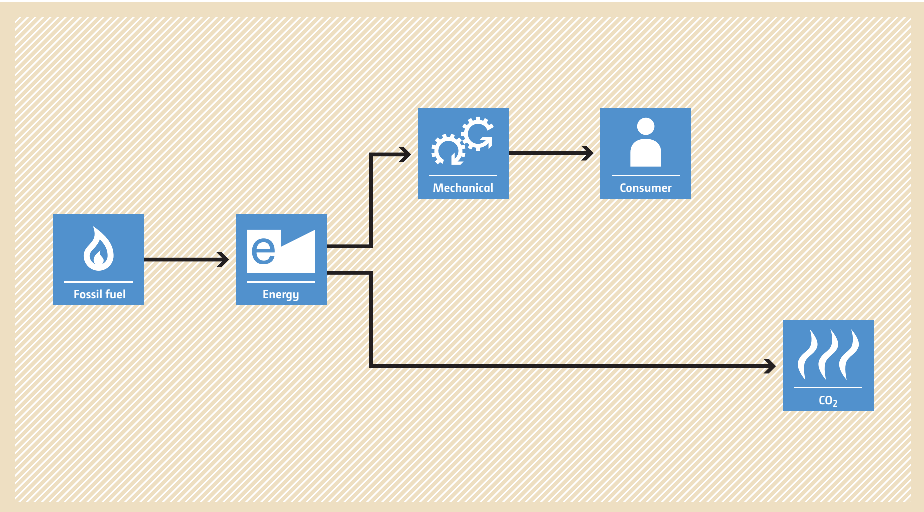
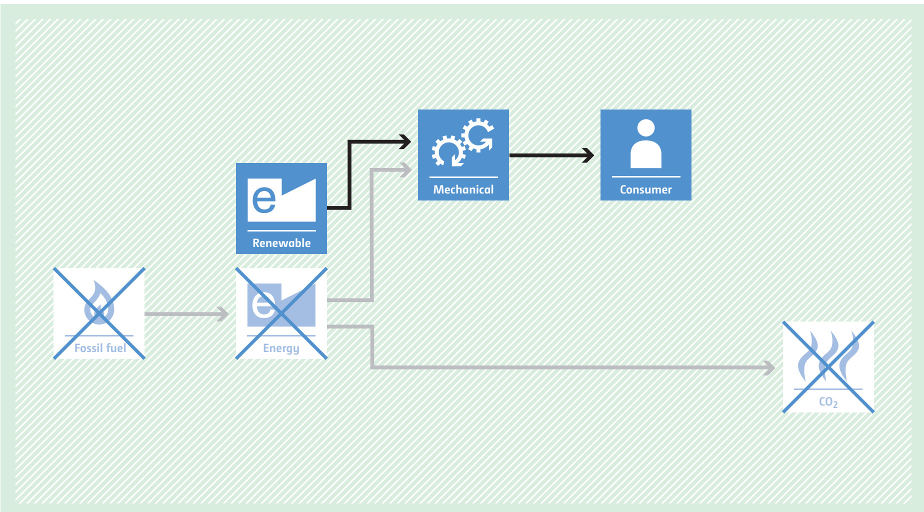
AMS-I.A. Electricity generation by the user



Typical project(s)	Renewable electricity generation such as solar, hydro, wind or biomass gasification are implemented by the users as new installations (greenfield) or replacement of existing onsite fossil-fuel-fired generation.
Type of GHG emissions mitigation action	• Renewable energy. Displacement of more-GHG-intensive service (e.g. refrigeration or lighting).
Important conditions under which the methodology is applicable	• Users are in off-grid locations, i.e. they do not have connection to a national/regional grid, unless exceptional situations, e.g. weak grids; • Users are included in the project boundary; • Conditions apply for reservoir-based hydro plants.
Important parameters	At validation: • Trend-adjusted projection of historical fuel consumption if an existing technology is replaced (for lighting, daily use duration can be applied).
	Monitored: • An annual check of all systems or a sample thereof to ensure that they are still operating, or metering of generated electricity; • If applicable, consumption of energy sources (e.g. biomass, fossil fuel); • If applicable, availability of connected grid.
BASELINE SCENARIO Services (e.g. lighting and refrigeration) are provided using fossil-fuel-based technologies (e.g. kerosene lamps and diesel generators).	
PROJECT SCENARIO Electricity is produced by users using renewable energy technologies (e.g. solar home systems for lighting, wind battery chargers for powering domestic appliances).	

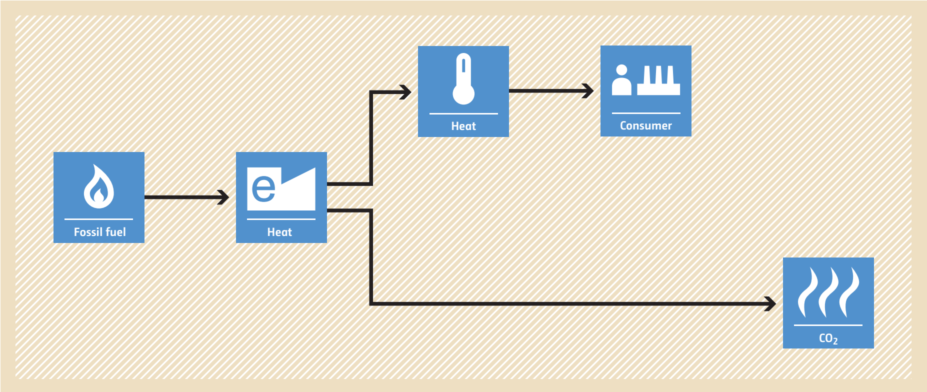
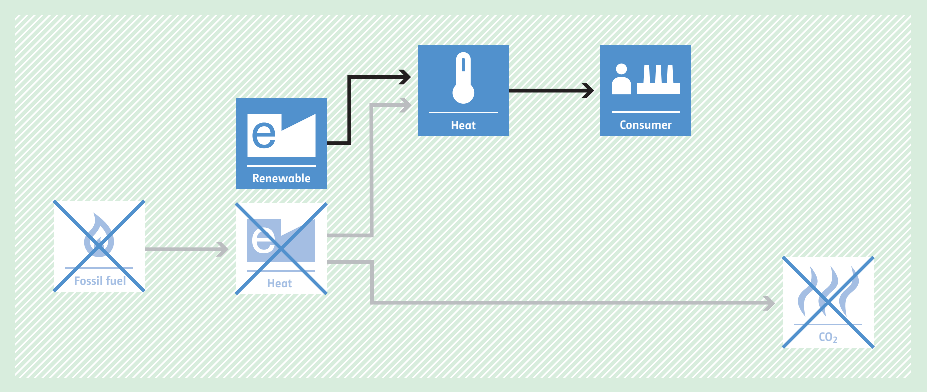
AMS-I.B. Mechanical energy for the user with or without electrical energy

Women and children

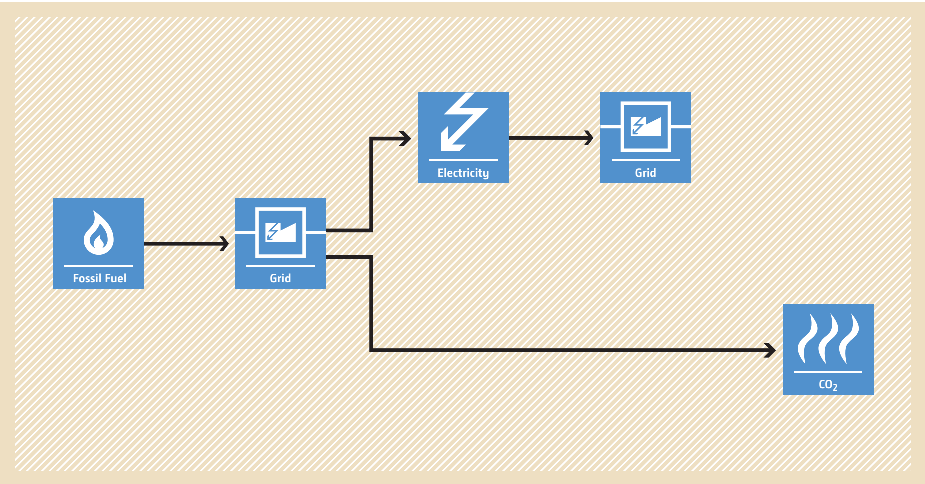
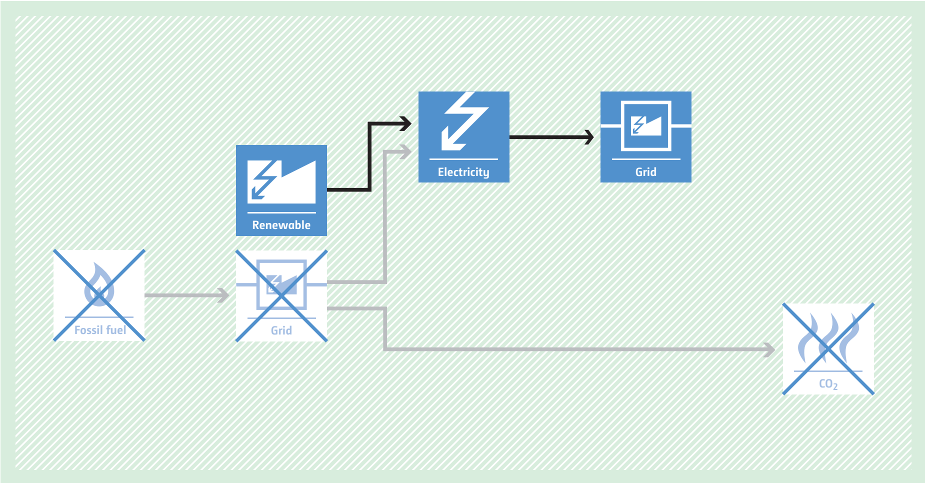
Typical project(s)	Installation of renewable energy technologies such as hydropower, wind power and other technologies that provide mechanical energy that otherwise would have been supplied with fossil-fuel-based energy. Mechanical energy is used on-site by individual household(s) or user(s). Typical applications are wind-powered pumps, water mills and wind mills. The project may also produce electricity in addition to mechanical energy.
Type of GHG emissions mitigation action	• Renewable energy. Displacement of more-GHG-intensive fossil-fuel-based generation of mechanical power.
Important conditions under which the methodology is applicable	• Operating characteristics of the project system (e.g. head vs. discharge and efficiency of irrigation pump) should be similar to or better than the system being replaced or that would have been replaced.
Important parameters	Monitored: • An annual check of all systems or a sample thereof to ensure that they are still operating; • Annual hours of operation can be estimated from total output (e.g. tonnes of grain milled); • If applicable: quantity of each type of energy sources consumed (e.g. biomass, fossil fuel). Net calorific value and moisture content of biomass.
BASELINE SCENARIO Mechanical energy would be produced using fossil-fuel-based technologies.	
PROJECT SCENARIO Mechanical energy is produced (with or without electricity) using renewable energy technologies.	

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

Women and children

Typical project(s)	Thermal energy production using renewable energy sources including biomass-based cogeneration and/or trigeneration. Projects that seek to retrofit or modify existing facilities for renewable energy generation are also applicable.
Type of GHG emissions mitigation action	• Renewable energy. Displacement of more-GHG-intensive thermal energy production, displacement of more-GHG-intensive thermal energy and/or electricity generation.
Important conditions under which the methodology is applicable	• Thermal energy and/or electricity production using biomass-based cogeneration and trigeneration system is eligible; • If solid biomass is used, it has to be demonstrated that solely renewable biomass is used. If charcoal or biomass fuel is used, all project or leakage emissions (e.g. release of methane) from the fuel production have to be considered; • If project equipment contains refrigerants, then the refrigerant used in the project case shall have no ozone depleting potential (ODP).
Important parameters	Monitored: • The moisture content of biomass of homogeneous quality may be fixed ex ante or monitored for each batch of biomass if the emission reductions are calculated based on energy input; • Thermal energy (mass flow, temperature, pressure for heat/cooling) delivered by the project and the amount of grid and/or captive electricity displaced; • Quantity of biomass and fossil fuel consumed; • Net calorific value of biomass shall be determined once in the first year of the crediting period; • The chilled water mass flow-rate for chiller(s); • Cooling output of baseline chiller displaced as a result of the installation of project activity; • Quantity of refrigerant used to replace refrigerant that has leaked.
BASELINE SCENARIO Energy generation (thermal heat and / or electricity) by more-carbon-intensive technologies based on fossil fuel. In case of retrofits or capacity addition, operation of existing renewable power units without retrofit and capacity addition.	
PROJECT SCENARIO Energy generation by installation of new renewable energy generation units, by retrofitting or replacement of existing renewable energy generation units as well as by switch from fossil fuel to biomass in modified existing facilities.	

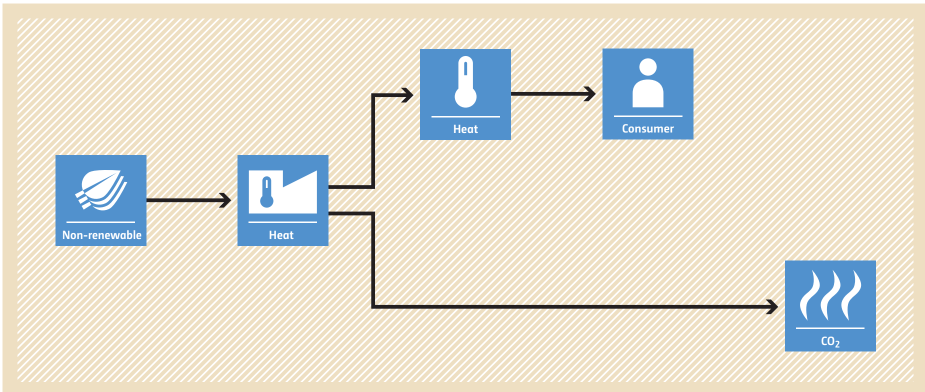
AMS-I.D. Grid connected renewable electricity generation

Typical project(s)	Construction and operation of a power plant that uses renewable energy sources and supplies electricity to the grid (greenfield power plant) or retrofit, replacement or capacity addition of an existing power plant that uses renewable energy sources and supplies electricity to the grid.
Type of GHG emissions mitigation action	• Renewable energy. Displacement of electricity that would be provided to the grid by more-GHG-intensive means.
Important conditions under which the methodology is applicable	• Combined heat and power generation is not eligible (AMS-I.C. can be used here); • Special conditions apply for reservoir-based hydro plants.
Important parameters	At validation: • Grid emission factor (can also be monitored ex post); • Moisture content of biomass of homogeneous quality shall be determined ex ante.
	Monitored: • Quantity of net electricity supplied to the grid; • Quantity of biomass/fossil fuel consumed; • Net calorific value of biomass shall be determined once in the first year of the crediting period.
BASELINE SCENARIO Electricity provided to the grid by more-GHG-intensive means.	
PROJECT SCENARIO Electricity is generated and supplied to the grid using renewable energy technologies.	

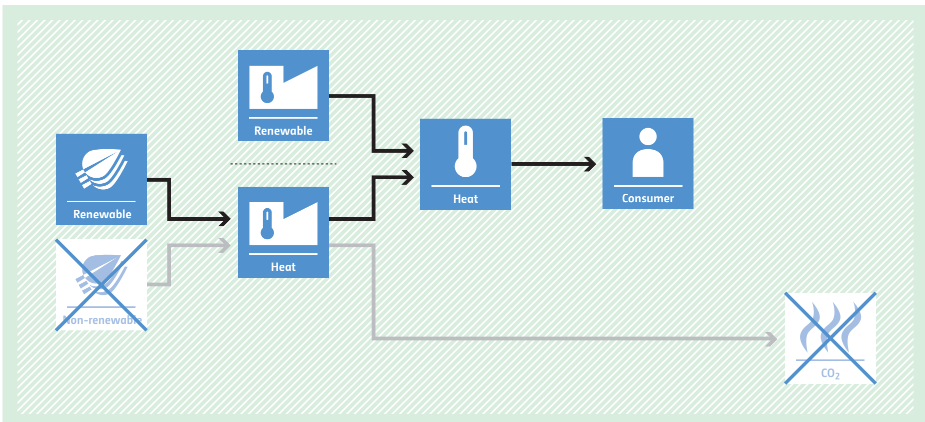
AMS-I.E. Switch from non-renewable biomass for thermal applications by the user

Typical project(s)	Generation of thermal energy by introducing renewable energy technologies for end-users that displace the use of non-renewable biomass. Examples of these technologies include, but are not limited to, biogas stoves, solar cookers or passive solar homes and safe drinking water applications.
Type of GHG emissions mitigation action	• Renewable energy. Displacement of more-GHG-intensive, non-renewable biomass-fuelled applications by introducing renewable energy technologies.
Important conditions under which the methodology is applicable	• It shall be demonstrated that non-renewable biomass has been used since 31 December 1989; • Project appliances are continuously operated or replaced by equivalent service appliances; • Project participants shall determine the share of renewable and non-renewable woody biomass in the quantity of woody biomass used in the absence of the project activity.
Important parameters	Monitored: • Biennial check of efficiency of the project appliances (e.g. by representative sample) and monitoring of the quantity of renewable biomass used by the project; • Leakage: the amount of woody biomass saved under the project that is used by non-project households/users (who previously used renewable energy sources) shall be assessed from surveys; • If applicable: volume of drinking water per person and day using survey methods and compliance of the water quality with relevant national or international (WHO, US-EPA) microbiological water quality guidelines/standards.

BASELINE SCENARIO
Thermal energy would be produced by more-GHG-intensive means based on the use of non-renewable biomass.

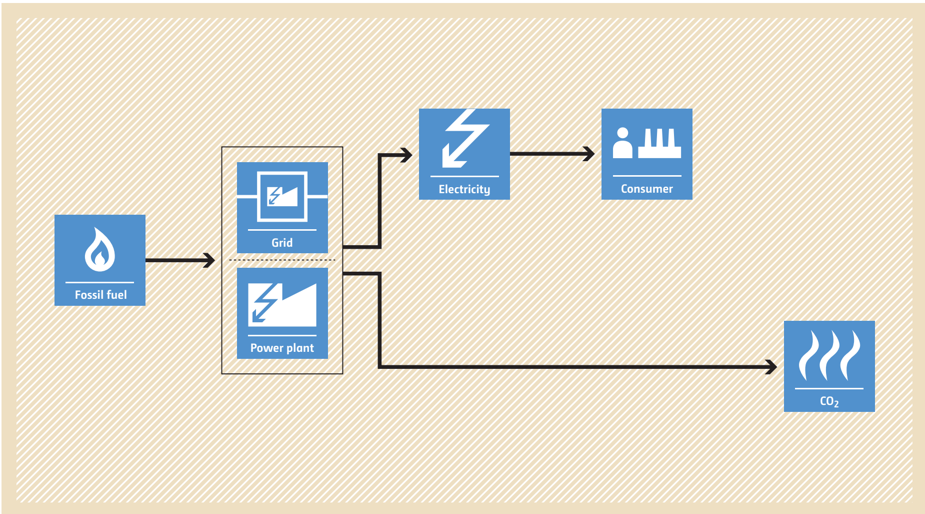
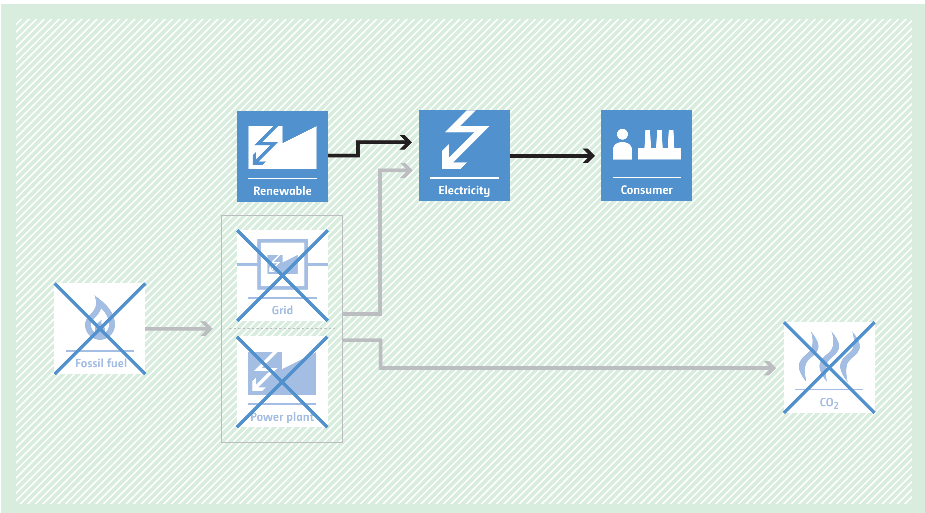


PROJECT SCENARIO
Use of renewable energy technologies for thermal energy generation, displacing non-renewable biomass use.



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

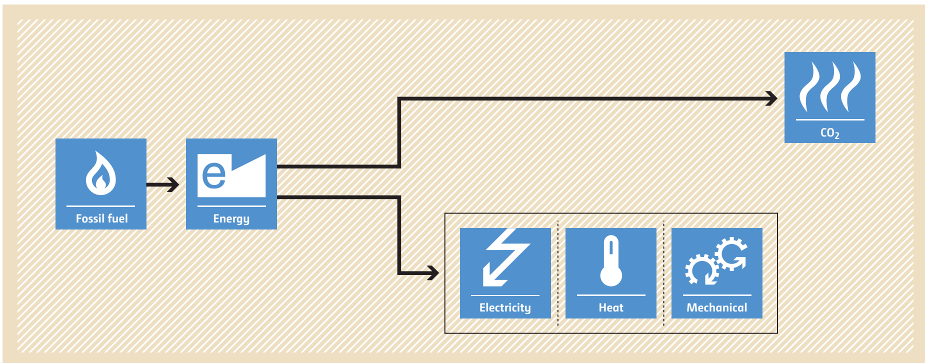
Women and children

Typical project(s)	Production of electricity using renewable energy technologies such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass that supply electricity to user(s).
Type of GHG emissions mitigation action	• Renewable energy. Displacement of electricity that would be provided to the user(s) by more-GHG-intensive means.
Important conditions under which the methodology is applicable	• The project will displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit; • Electricity is produced by installing a new power plant (greenfield) or by capacity addition/retrofit/replacement of (an) existing plant(s); • Special conditions apply for reservoir-based hydro plants; • Cogeneration projects are not eligible.
Important parameters	At validation: • If applicable: grid emission factor (can also be monitored ex post). Monitored: • Net electricity generation, quantity of fossil fuel and biomass consumption.
BASELINE SCENARIO Electricity would have been supplied by one or more energy sources such as a national or a regional grid or a fossil-fuel-fired captive power plant or a carbon-intensive mini-grid.	
PROJECT SCENARIO Electricity is supplied using renewable energy technologies.	

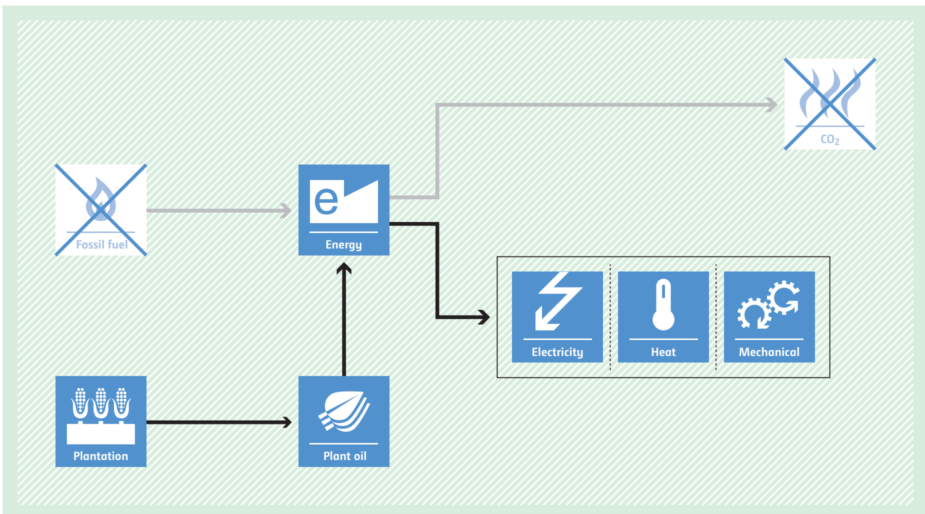
AMS-I.G. Plant oil production and use for energy generation in stationary applications

Typical project(s)	Plant oil production that is used for generation of thermal, mechanical and electrical energy in stationary equipment including cogeneration. The plant oil is produced from pressed and filtered oilseeds from plants that are cultivated on dedicated plantations.
Type of GHG emissions mitigation action	• Renewable energy. Displacement of more-GHG-intensive fossil fuel for combustion in stationary installations.
Important conditions under which the methodology is applicable	• The pure plant oil and its blends above 10% is used in specially built or modified equipment; • Export of produced plant oil is not allowed; • Oil crops are cultivated on area which is not a forest and has not been deforested during the last 10 years prior to the implementation of the project. Plantations established on peatlands are not eligible.
Important parameters	Monitored: • Energy consumption of the combustion processes (e.g. plant oil, fossil fuel); • Parameters to estimate project emissions from the cultivation of oil crops if the default values for jatropha and palm oil are not applied; • If applicable: leakage emissions due to a shift of pre-project activities and the competing uses of biomass; • Quantity of the electricity produced; of the thermal energy (mass flow, temperature, pressure for heat/cooling) generated by the project; • Project emissions from fossil fuel and electricity consumption as well as from the transport of oilseeds if distances of more than 200 km are covered.

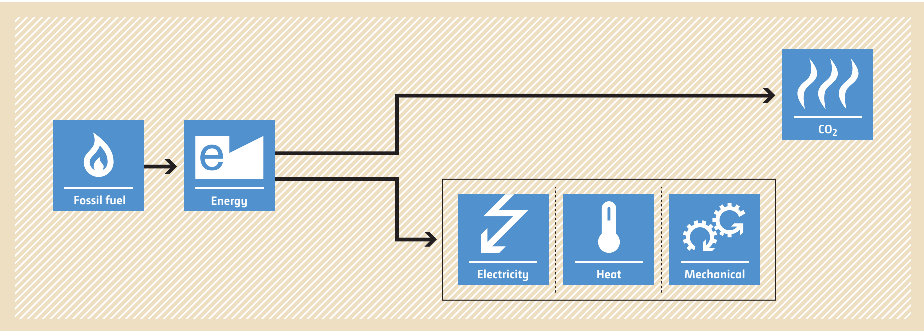
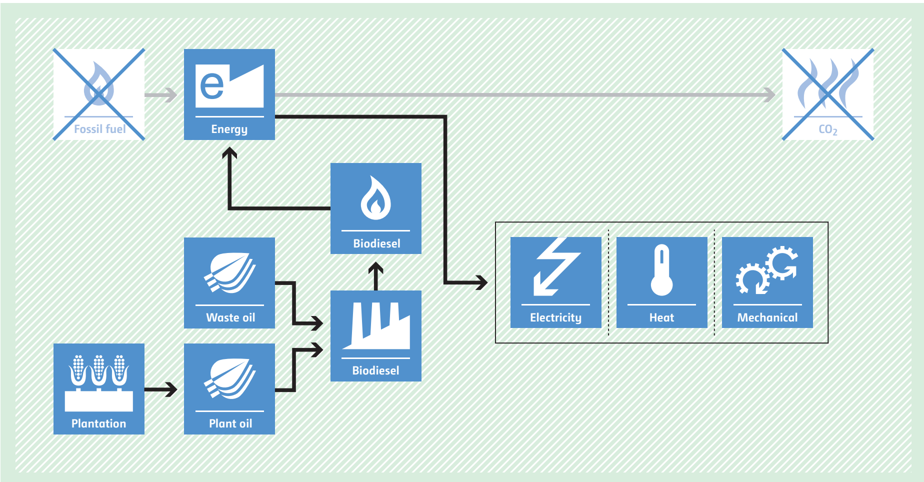
BASELINE SCENARIO
Services (e.g. electricity, thermal and mechanical energy supply) are provided using fossil-fuel-based technologies.



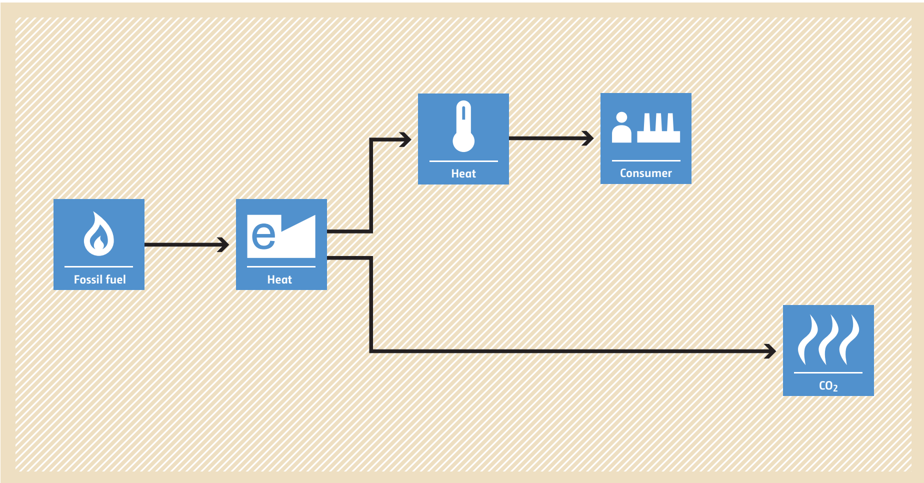
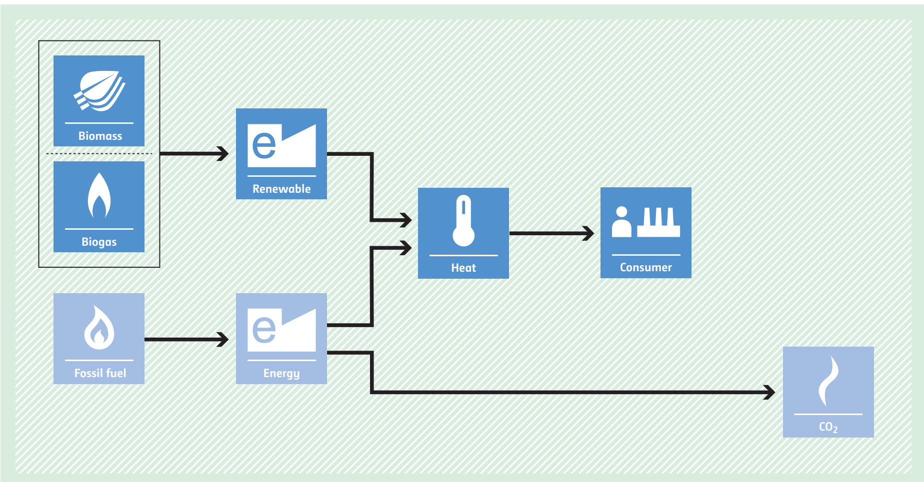
PROJECT SCENARIO
Oil crops are cultivated, plant oil is produced and used for the generation of electricity, thermal or mechanical energy displacing fossil fuel.



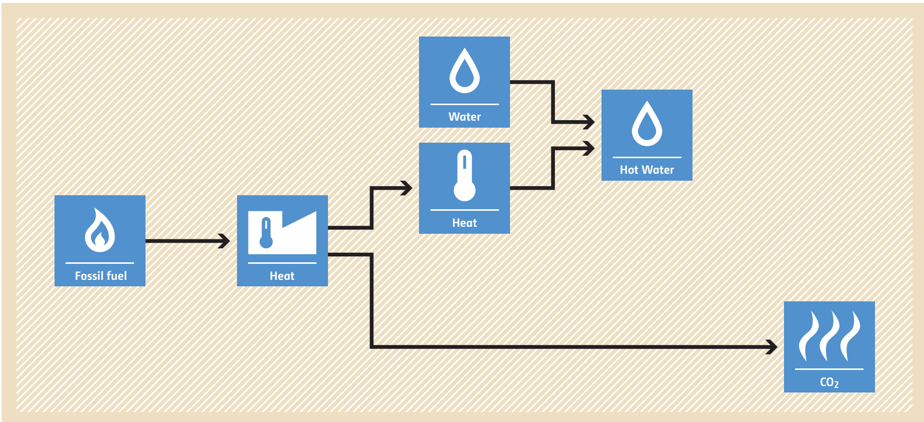
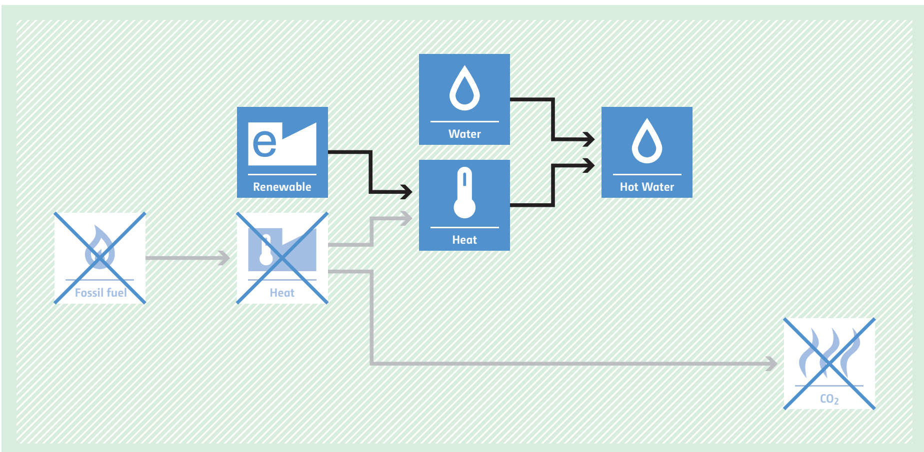
AMS-I.H. Biodiesel production and use for energy generation in stationary applications

Typical project(s)	Biodiesel is produced from oilseeds cultivated on dedicated plantations and from waste oil/fat and used to generate thermal; mechanical or electrical energy in equipment including cogeneration.
Type of GHG emissions mitigation action	• Renewable energy. Displacement of more-GHG-intensive fossil fuel for combustion in stationary installations.
Important conditions under which the methodology is applicable	• The pure biodiesel and its blends above 10% is used in specially built or modified equipment; • The alcohol used for esterification is methanol from fossil fuel origin; • Export of produced biodiesel is not allowed; • Oil crops are cultivated on area which is classified as degraded or degrading as per the “Tool for the identification of degraded or degrading lands for consideration in implementing CDM A/R project” or on area included in the project boundary of one or several registered A/R CDM project activities. Plantations established on peatlands are not eligible.
Important parameters	Monitored: • Energy consumption of the combustion processes (e.g. biodiesel, fossil fuel); • Parameters to estimate project emissions from the cultivation of oil crops if the default values for jatropha and palm oil are not applied; • If applicable: leakage emissions due to a shift of pre-project activities and the competing uses of biomass; • Quantity of the electricity produced; of the thermal energy (mass flow, temperature, pressure for heat/cooling) generated by the project; • Project emissions from fossil fuel and electricity consumption as well as from the transport of oilseeds if distances of more than 200 km are covered.
BASELINE SCENARIO Services (e.g. electricity, thermal and mechanical energy supply) are provided using fossil fuel based technologies.	
PROJECT SCENARIO Biodiesel is produced from cultivated oil crops or from waste oil/fat and used for the generation of electricity, thermal or mechanical energy displacing fossil fuel.	

AMS-I.I. Biogas/biomass thermal applications for households/small users

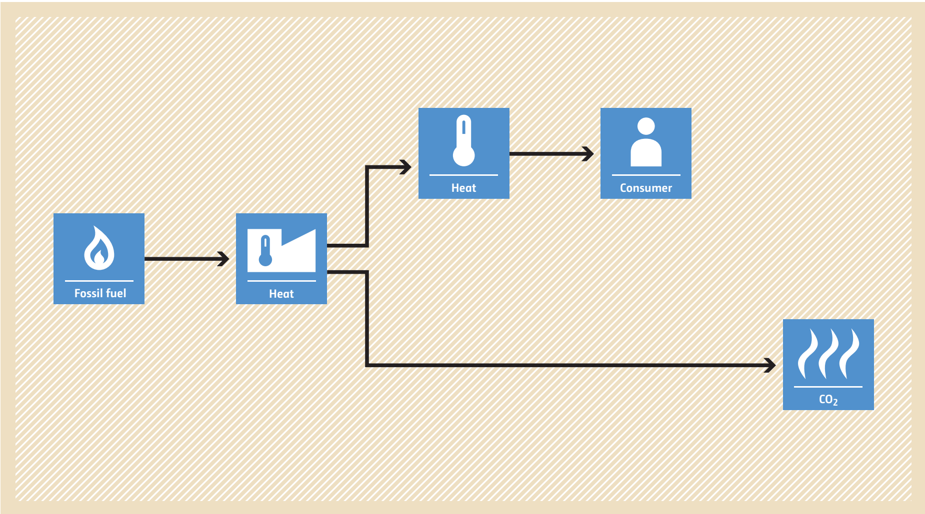
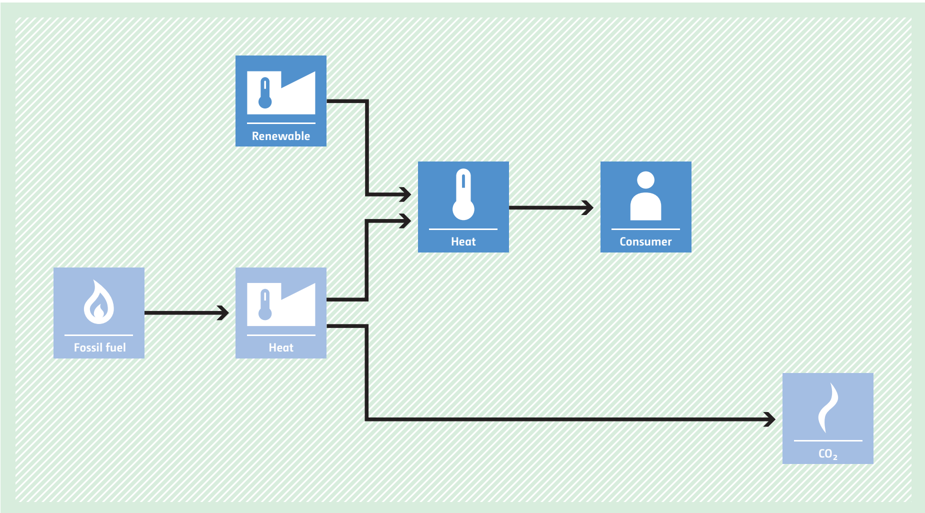
Typical project(s)	Activities for generation of renewable thermal energy using renewable biomass or biogas for use in residential, commercial and institutional applications. Examples of these technologies that displace or avoid fossil fuel use include, but are not limited to, biogas cook stoves, biomass briquette cook stoves, small-scale baking and drying systems, water heating, or space heating systems.
Type of GHG emissions mitigation action	• Renewable energy. Displacement of more-GHG-intensive thermal energy generation.
Important conditions under which the methodology is applicable	• Each unit (e.g. cook stove, heater) shall have a rated capacity equal to or less than 150 kW thermal.
Important parameters	Monitored: • Number of thermal applications commissioned; • Proportion of thermal applications that remain operating in year y; • Annual consumption of fossil fuel in the baseline and project; • The net quantity of renewable biomass or biogas consumed by the thermal application in year y; • Net calorific value of biomass type.
BASELINE SCENARIO Thermal energy production based on fossil fuel.	
PROJECT SCENARIO Thermal energy generation by renewable biomass or biogas. Fossil fuel may continue to be used.	

AMS-I.J. Solar water heating systems (SWH)

Typical project(s)	The installation of residential and commercial solar water heating (SWH) systems for hot water production.
Type of GHG emissions mitigation action	• Renewable energy. Displacement of electricity or fossil fuel that would otherwise have been used to produce hot water.
Important conditions under which the methodology is applicable	• Two types of projects included in this category: retrofits and new construction; • Commercial SWH systems shall include operational indicators that may be easily interpreted by the intended users of the systems and that indicate that water is being heated by solar energy.
Important parameters	At validation: • Emission factor of the baseline fuel and/or grid; • Where applicable: – Efficiency of the baseline unit which is consuming fossil fuel or electricity; – Solar insolation level; – Time of hot water demand.
	Monitored: • Where applicable, hot water consumption pattern, inlet/outlet temperature, characteristics/specifications of the project system; • Retention rate of the project system; • Collecting area of the solar panel; • Auxiliary fuel consumption by the project system, where applicable.
BASELINE SCENARIO Hot water production is based on fossil fuel/electricity consumption.	
PROJECT SCENARIO Hot water is produced by solar energy.	

AMS-I.K. Solar cookers for households

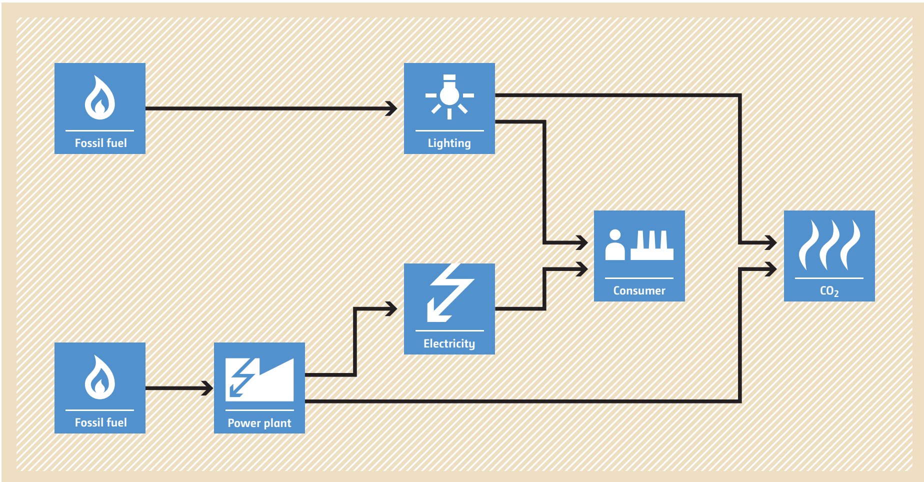
Women and children

Typical project(s)	Project activities that introduce solar cookers to individual households to be used for household cooking purpose.
Type of GHG emissions mitigation action	• Renewable energy. Use of solar cookers will reduce or displace use of fossil fuels or non-renewable biomass.
Important conditions under which the methodology is applicable	• Solar cookers shall be demonstrated to be designed and constructed according to the requirements of a relevant national or international standard; • A local organization shall be involved on an ongoing basis to assist in promoting and facilitating the continued use of the cookers.
Important parameters	At validation: • Annual consumption of baseline fossil fuel (can also be monitored).
	Monitored: • Number of households provided with solar cookers; • Proportion of provided solar cookers still operating.
BASELINE SCENARIO Fossil fuel(s) or non-renewable biomass are used for cooking purposes.	
PROJECT SCENARIO Fossil fuel(s) or non renewable biomass are replaced by solar energy.	

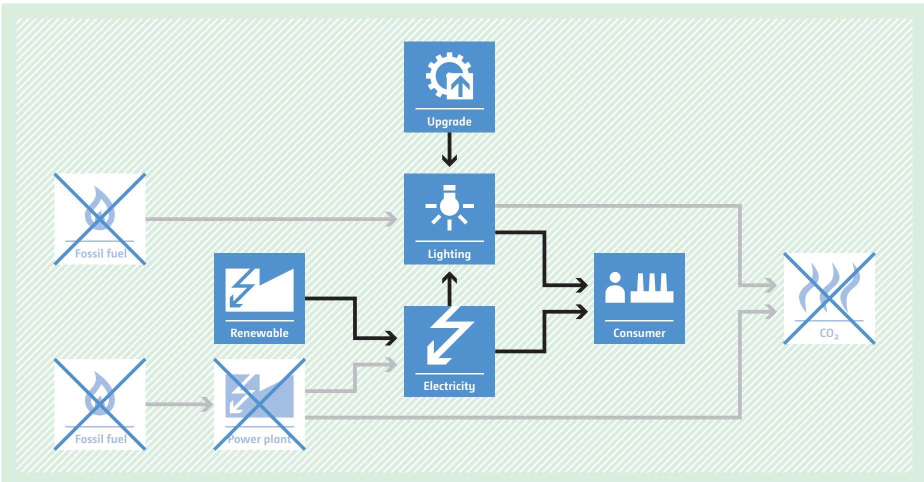
AMS-I.L. Electrification of rural communities using renewable energy

Typical project(s)	After the project implementation, rural communities are supplied with electricity from renewable-based systems (e.g. solar home systems, renewable mini-grid).
Type of GHG emissions mitigation action	• Renewable energy. Displacement of fossil fuel use.
Important conditions under which the methodology is applicable	• 75% (by numbers) of the end-users shall be households; • End-users were not connected to a national/regional grid; • Project equipment complies with international standards or comparable national, regional or local standards/guidelines.
Important parameters	At validation: • The number of facilities (e.g. households, SMMEs, public buildings) supplied with renewable electricity by the project activity.
	Monitored: • Measure or estimate the net amount of renewable electricity delivered to all the end-use facilities; • Installed capacity of renewable electricity generation systems.

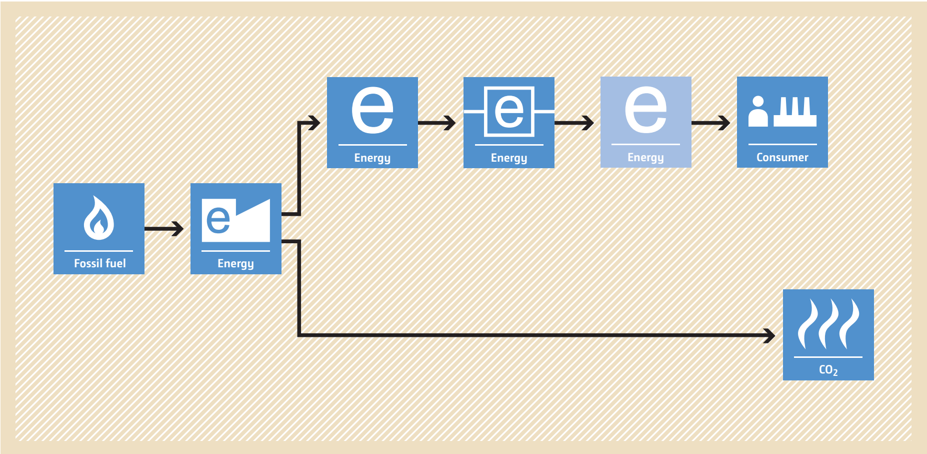
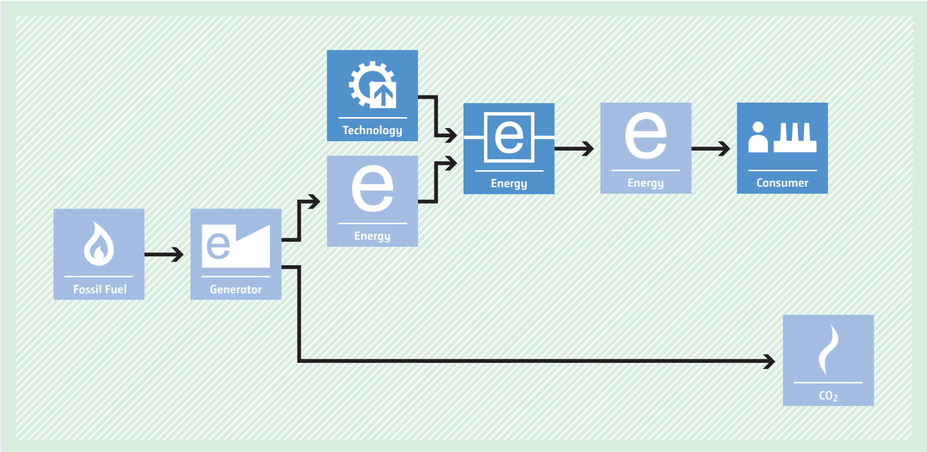
BASELINE SCENARIO
In the absence of the project activity, the end users would have used fossil fuel based lighting and stand-alone diesel electricity generators for appliances other than lighting (e.g. TV).



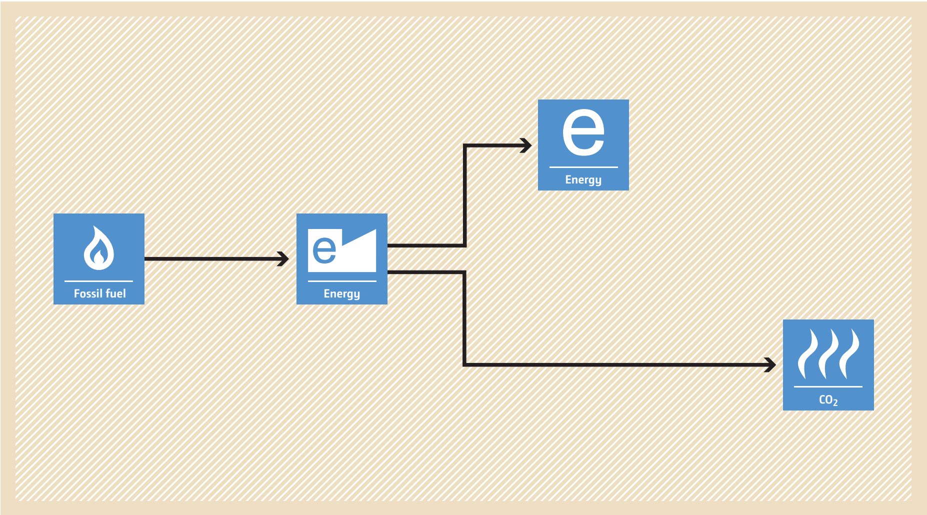
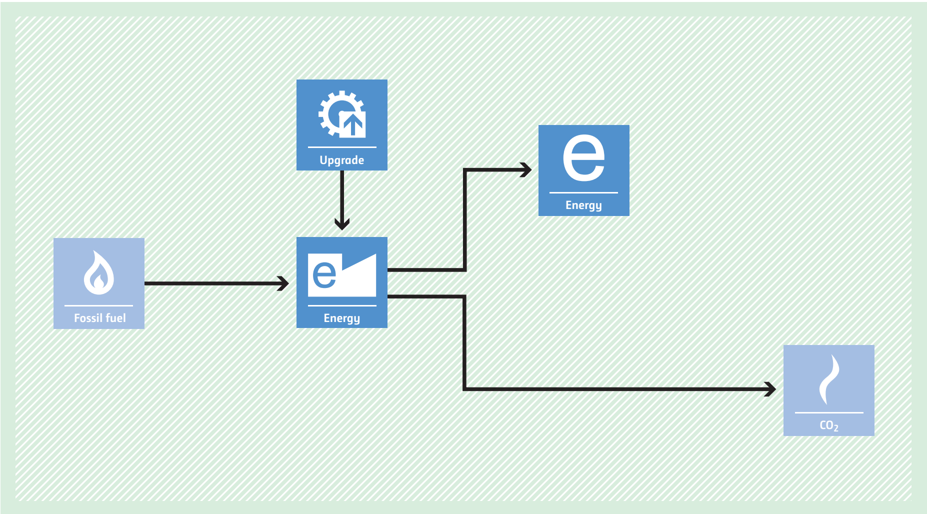
PROJECT SCENARIO
End users are supplied with electricity from renewable based energy systems (e.g. solar home systems or renewable mini-grid).



AMS-II.A. Supply side energy efficiency improvements – transmission and distribution

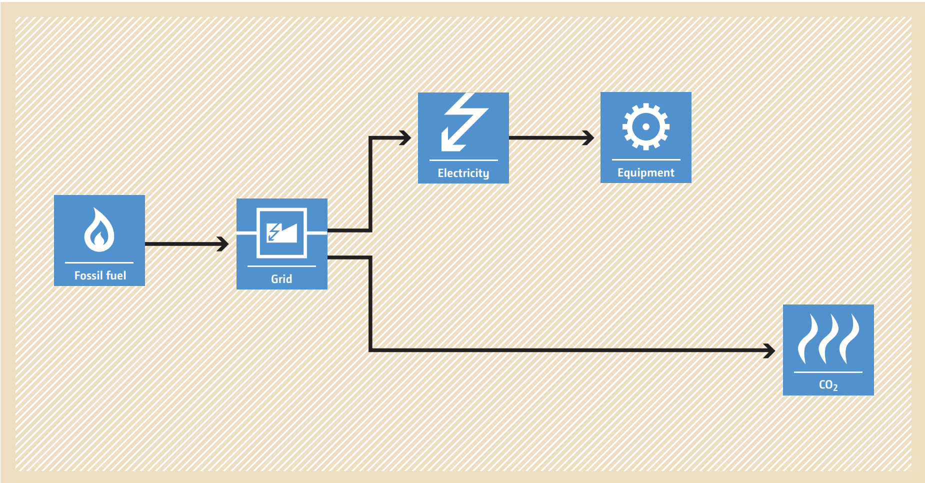
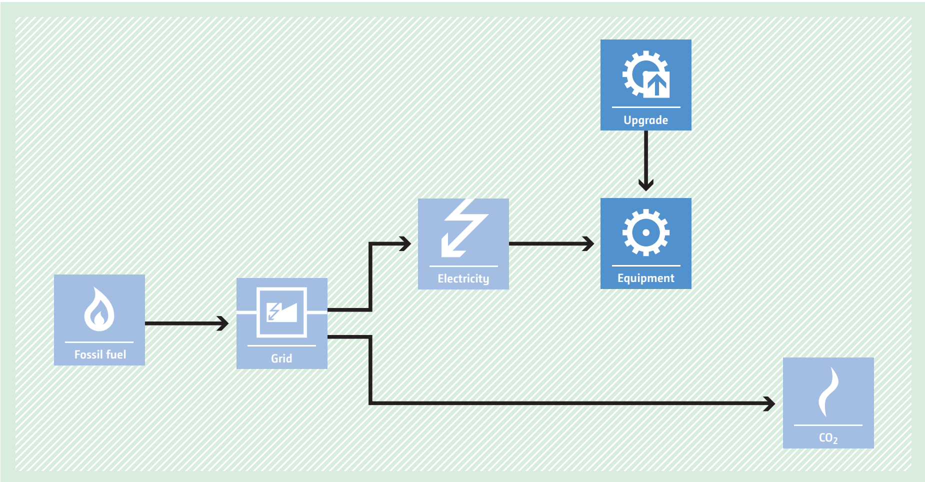
Typical project(s)	Technical energy losses are reduced through energy efficiency measures such as upgrading the voltage on a transmission/distribution system, replacing existing transformers with more efficient transformers (e.g. replacement of a silicon steel core transformer with an amorphous metal transformer) in electrical transmission/distribution system or improving pipe insulation in a district heating system. The project may be the upgrade/replacement of an existing distribution system or be part of an expansion of an existing system.
Type of GHG emissions mitigation action	• Energy efficiency. Technology with higher efficiency reduces electrical or thermal energy losses and thereby GHG emissions.
Important conditions under which the methodology is applicable	• Measures that reduce technical losses solely by improving operations and/or maintenance practices are not eligible; • Introduction of capacitor banks and tap changing transformers for reducing losses in an electricity distribution is not covered; • For retrofit projects, historical data is required to determine technical losses of the existing equipment.
Important parameters	Monitored: • Technical energy losses of the project equipment; • If applicable: for radial electricity distribution systems for which no performance-measuring standards are available, technical losses shall be determined by a peer reviewed method.
BASELINE SCENARIO Electrical/thermal energy is transmitted and distributed using less-efficient energy system.	
PROJECT SCENARIO Reducing technical losses and thereby GHG emissions through installation of a new energy-efficient distribution/transmission equipment/system and/or retrofit of the existing less-efficient equipment/system.	

AMS-II.B. Supply side energy efficiency improvements – generation

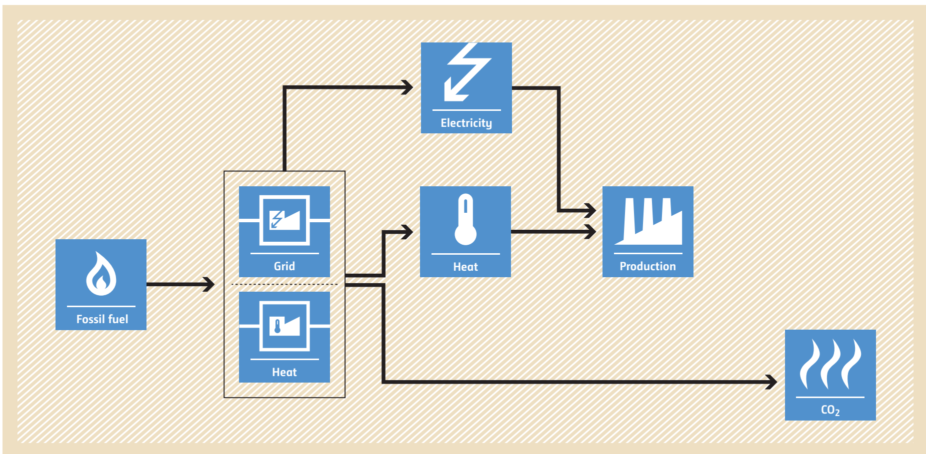
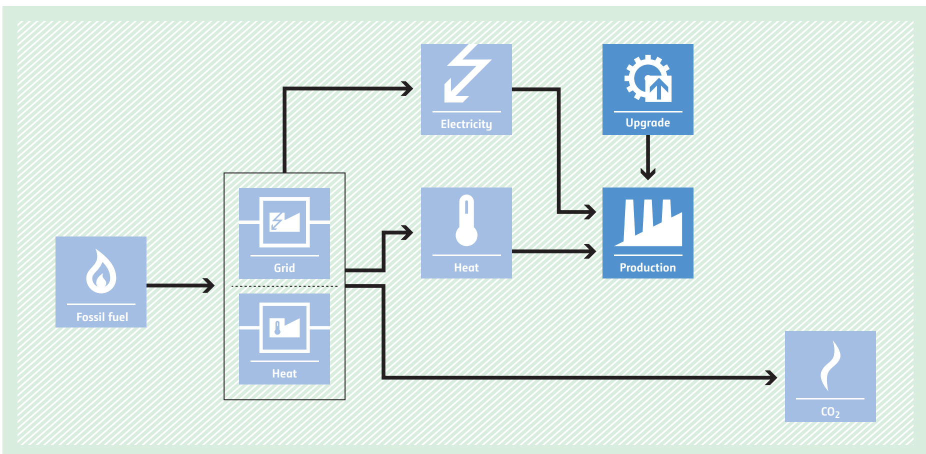
Typical project(s)	Introduction of more-efficient electricity and/or thermal energy generation units or complete replacement of existing power stations, district heating plants and cogeneration units by new equipment with a higher efficiency or retrofitting of existing fossil-fuel-fired generating units in order to increase their efficiency.
Type of GHG emissions mitigation action	• Energy efficiency. Technology with higher efficiency reduces fossil fuel consumption for energy generation and thereby reduces GHG emissions.
Important conditions under which the methodology is applicable	• Baseline and project technologies utilize fossil fuels to produce energy; • Renewable energy projects are not applicable (type I methodologies e.g. AMS-I.C. or AMS-I.D. may be explored).
Important parameters	Monitored: • Quantity of fuel used in the energy generating equipment; • Quantity of energy output.
BASELINE SCENARIO Continuation of the current situation; i.e. use of the existing fossil-fuel-fired energy generation equipment with lower efficiency.	
PROJECT SCENARIO Installation of more-efficient energy generation technology and/or complete replacement of existing less-efficient equipment and/or retrofitting of an existing energy generation system reduces fossil fuel consumption and GHG emissions.	

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

Women and children

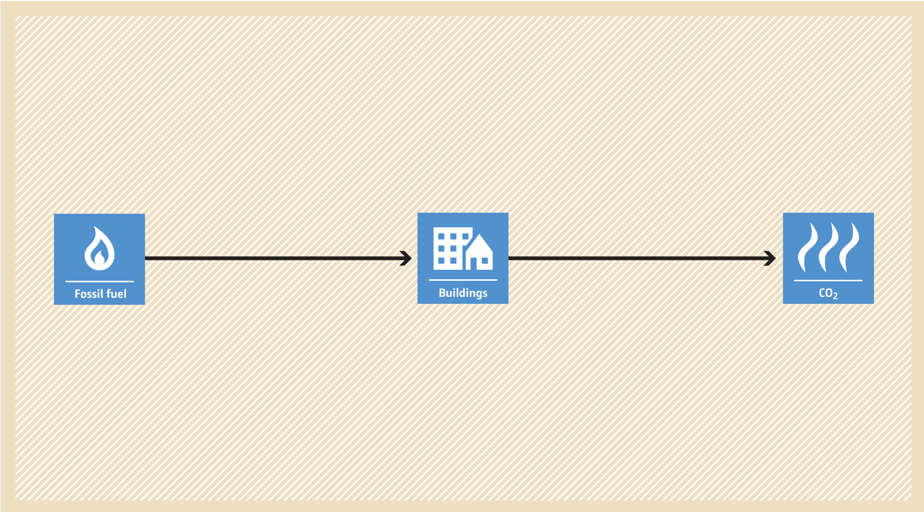
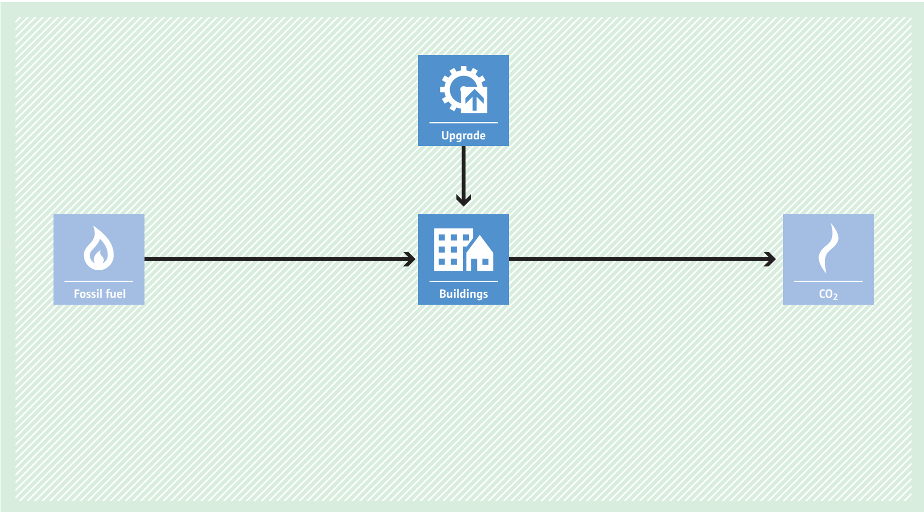
Typical project(s)	Installation of new energy-efficient equipment (e.g. lamps, ballasts, refrigerators, motors, fans, air conditioners, pumping systems and chillers) at one or more project sites, as retrofit or new construction (Greenfield) projects.
Type of GHG emissions mitigation action	• Energy efficiency. Displacement of more-GHG-intensive service by use of more-efficient technology.
Important conditions under which the methodology is applicable	• The service level (e.g. rated capacity or output) of the installed project energy-efficient equipment is between 90% and 150% of the service level of the baseline equipment; • If applicable: refrigerant used in the project activity shall have no ozone depleting potential (ODP).
Important parameters	At validation: • If applicable: grid emission factor (can also be monitored ex post).
	Monitored: • Monitoring shall include annual checks of a sample of non-metered systems to ensure that they are still operating; • Recording the "power" of the equipment installed and metering a sample of the units installed for their operating hours using run time meters; or metering the "energy use" of an appropriate sample of the equipment installed.
BASELINE SCENARIO Less-efficient equipment (e.g. lamps, refrigerators, motors, fans, air conditioners, pumping systems, chillers) consume more energy, thus resulting in higher GHG emissions.	
PROJECT SCENARIO More-efficient equipment (e.g. lamps, refrigerators, motors, fans, air conditioners, pumping systems, chillers) consume less energy, thus resulting in lower GHG emissions.	

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

Typical project(s)	• Process energy efficiency improvement(s) affecting either a single production step/element process (e.g. furnace, kiln) or a series of production steps/element processes (e.g. industrial process involving many machines); • Energy efficiency improvement in energy conversion equipment (e.g. boiler, motor) that supplies thermal/electrical/mechanical energy within a facility.
Type of GHG emissions mitigation action	• Energy efficiency. Increase in energy efficiency with, optionally, a switch to less-carbon-intensive fuel.
Important conditions under which the methodology is applicable	• Energy use within the project boundary can be directly measured or can be determined using national/international standards; • Improvements in efficiency by the project can be clearly distinguished from efficiency changes/improvements not attributable to the project; • The project output is equivalent to the output produced in the baseline.
Important parameters	At validation: • Energy consumption, emission intensity of energy types, output service level in the baseline; • Documenting of the technical specification of the equipment/systems.
	Monitored: • Metering the energy use of equipments; • Output; • In case the output parameter cannot be measured, the quantity of input material (feedstock).
BASELINE SCENARIO Consumption of electricity, heat and/or fossil fuel leads to CO2 emissions.	
PROJECT SCENARIO Consumption of less electricity, heat and/or fossil fuel leads to decreased CO2 emissions.	

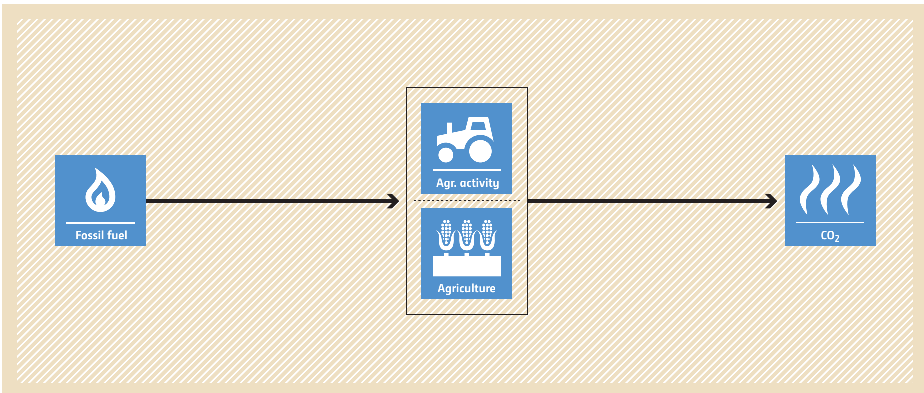
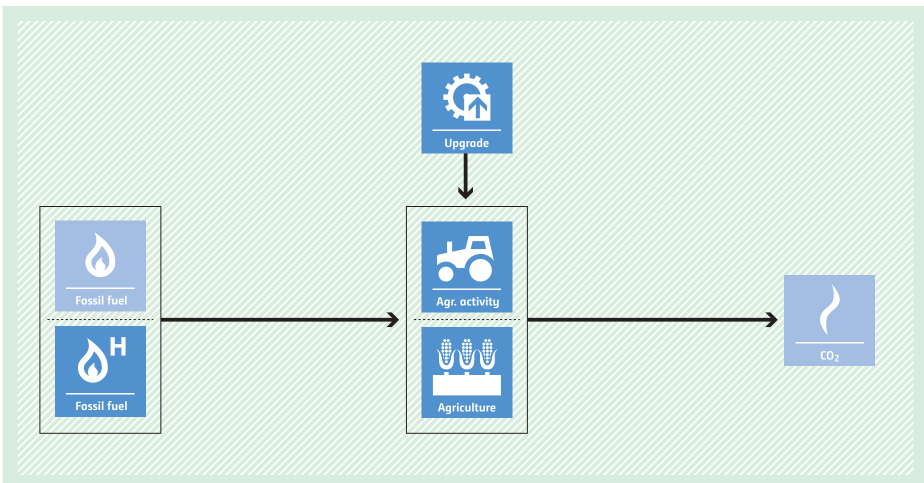
AMS-II.E. Energy efficiency and fuel switching measures for buildings

Women and children

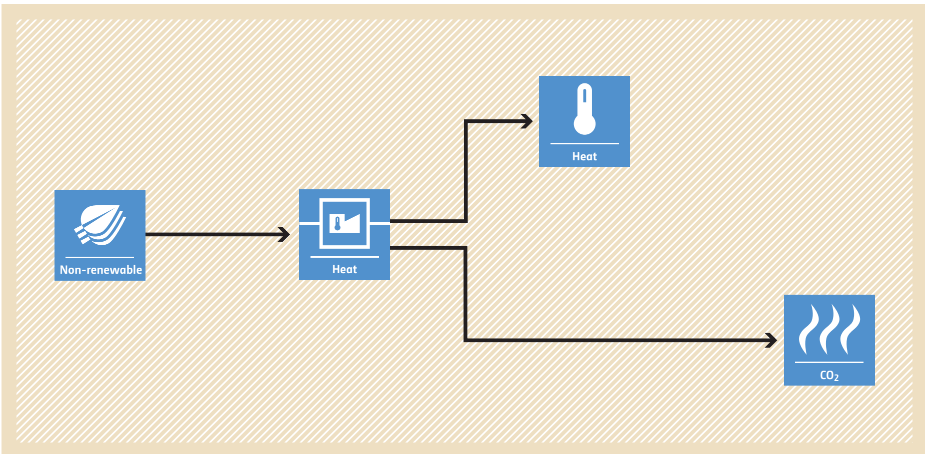
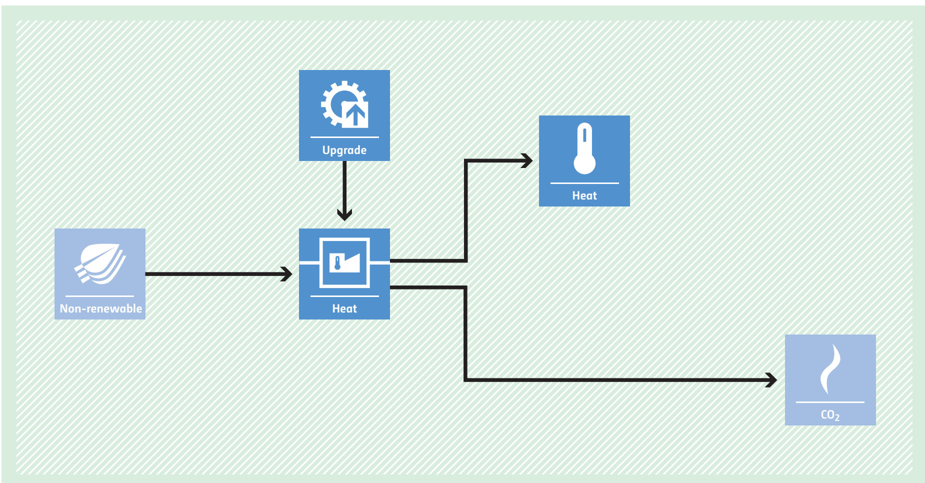
Typical project(s)	Installation of, or replacement or retrofit of, existing equipment with energy efficiency (e.g. efficient appliances, better insulation) and optional fuel switching (e.g. switch from oil to gas) measures in residential, commercial or institutional buildings.
Type of GHG emissions mitigation action	• Energy efficiency. Electricity and/or fuel savings through energy efficiency improvement. Optionally, use of less-carbon-intensive fuel.
Important conditions under which the methodology is applicable	• Energy use within the project boundary shall be directly measured; • The impact of the implemented measures (improvements in energy efficiency) can be clearly distinguished from changes in energy use due to other variables not influenced by the project.
Important parameters	At validation: • Energy use of buildings before the project implementation; • If grid electricity is consumed: grid emission factor (can also be monitored ex post).
	Monitored: • Specifications of the equipment replaced or retrofitted (only for replacement or retrofit projects); • Energy use of buildings after the project implementation.
BASELINE SCENARIO Use of less-efficient and/or more-carbon-intensive equipment in buildings.	
PROJECT SCENARIO Use of more-efficient and/or less-carbon-intensive equipment in buildings.	

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

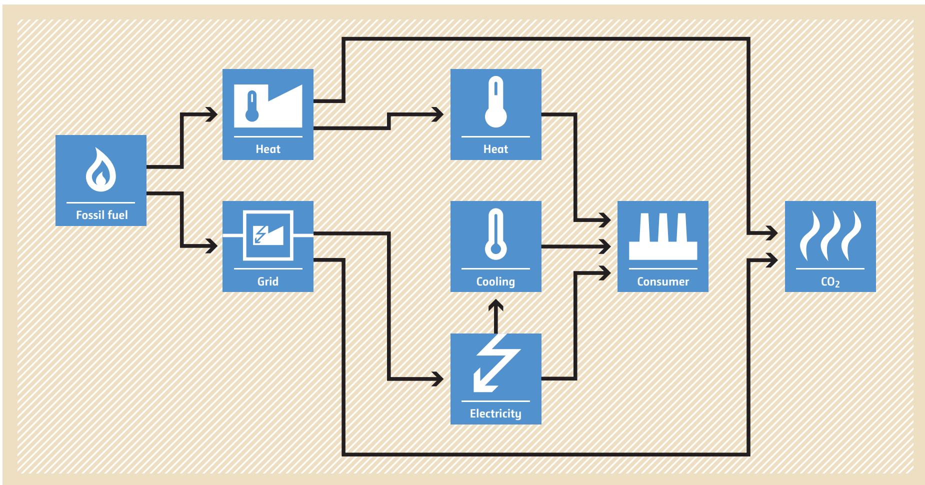
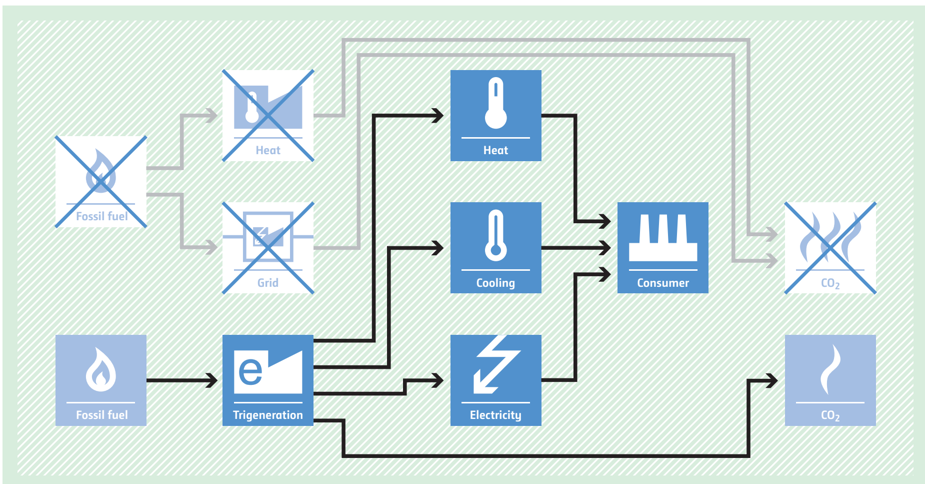
Women and children

Typical project(s)	Energy efficiency and fuel switching measures implemented in agricultural activities or facilities or processes. Examples for such measures are efficient irrigation (e.g. adoption of drip/sprinkler irrigation to substitute flood irrigation), measures leading to a reduced requirement of farm power per unit area of land, as well as reducing fuel consumption in agriculture, such as reduced machinery use through, (e.g. elimination of tillage operations).
Type of GHG emissions mitigation action	• Energy efficiency; • Fuel switch. Displacement of more-GHG-intensive agricultural service(s).
Important conditions under which the methodology is applicable	• Installation of new equipment and/or retrofit of existing equipment is eligible; • Baseline and project scenarios of fuel consumption shall be demonstrated against reference agriculture activities, including cultivated average and crop yield.
Important parameters	Monitored: • Applicable for retrofits: the energy use of the agriculture facility, processes or the equipment affected; • Applicable for installation of new equipment: the energy use of the agriculture facility, processes or the equipment installed; • The characteristics and scale of the agriculture activities such as number of ha cultivated, crop yield.
BASELINE SCENARIO Installation and use of less-efficient agriculture facilities, processes and equipment.	
PROJECT SCENARIO Due to retrofitting and/or new installations, more-efficient agriculture facilities, processes and equipment are utilized resulting in reduced GHG emissions.	

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

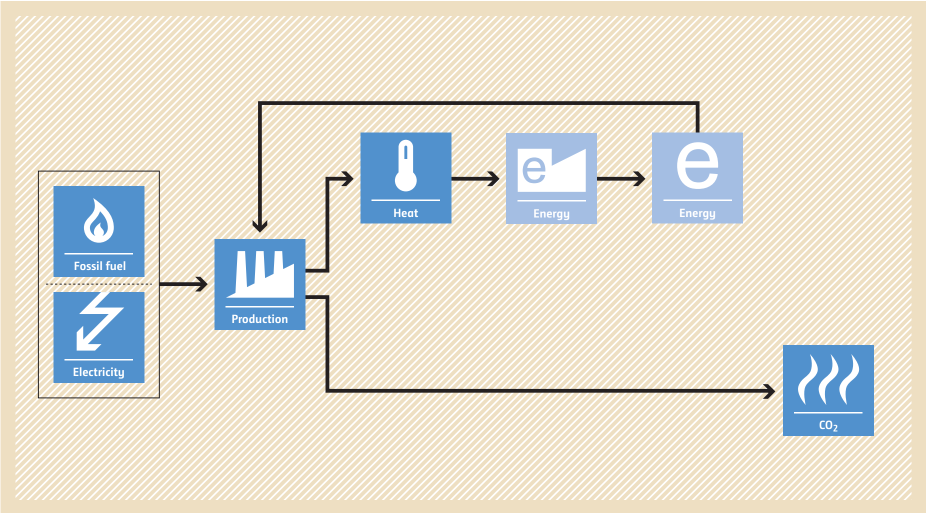
Typical project(s)	Introduction of high-efficient thermal energy generation units e.g. efficient biomass fired cook stoves or ovens or dryers to reduce the use of non-renewable biomass.
Type of GHG emissions mitigation action	• Energy efficiency. Displacement or energy efficiency enhancement of existing heat generation units results in saving of non-renewable biomass and reduction of GHG emissions.
Important conditions under which the methodology is applicable	• It shall be demonstrated that non-renewable biomass has been used since 31 December 1989; • Project participants shall determine the share of renewable and non-renewable woody biomass (fNRB) in the quantity of woody biomass used in the absence of the project. Default country specific fNRB values available on the CDM website may be used; • The methodology is applicable to single pot or multi pot portable or in-situ cook stoves with rated efficiency of at least 20 per cent.
Important parameters	Monitored: • Annual or biennial check of operation of the project appliances (e.g. by representative sample); • Annual check of the efficiency of the project appliances (e.g. by representative sample). Alternatively, the result of a sample survey of the first batch may be used as a proxy to subsequent batches; • Leakage: the amount of woody biomass saved under the project that is used by non-project households/users (who previously used renewable energy sources) shall be assessed from surveys.
BASELINE SCENARIO Continuation of the current situation; i.e. use of non-renewable biomass as fuel for the existing, less-efficient thermal applications.	
PROJECT SCENARIO Installation of more-efficient thermal energy generation units utilizing non-renewable biomass and/or complete replacement of existing less-efficient thermal applications and/or retrofitting of existing thermal energy generating appliances reduces GHG emissions by saving non-renewable biomass.	

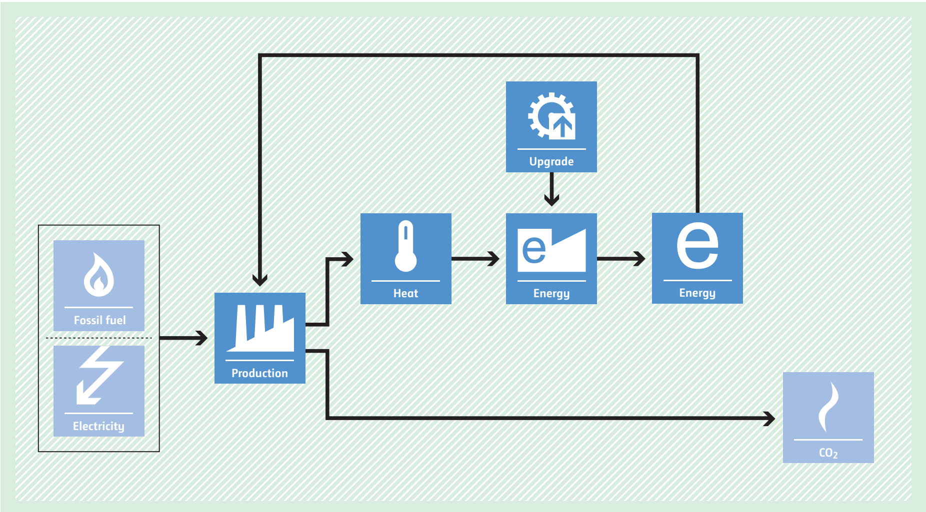
AMS-II.H. Energy efficiency measures through centralization of utility provisions of an industrial facility

Typical project(s)	Energy efficiency measures implemented through integration of a number of utility provisions into one single utility to produce power and heat and/or cooling (i.e. cogeneration/trigeneration systems) in an existing or new industrial facility.
Type of GHG emissions mitigation action	• Energy efficiency. Displacement of several more-GHG-intensive utilities by a single, centralized utility.
Important conditions under which the methodology is applicable	• Displacement of cogeneration or trigeneration systems is not allowed; • For existing system, three years of historical data is required; • Definition of natural gas applies; • Project equipment containing refrigerants shall have no global warming potential and no ozone depleting potential.
Important parameters	At validation: • Definition of a reference baseline plant that would have been built in absence of the project; • Grid emission factor (can also be monitored ex post).
	Monitored: • Amount of electricity supplied to the industrial facility and/or the grid; • Quantity of fossil fuel and grid electricity consumed by the project; • Electrical and thermal energy delivered by the project.
BASELINE SCENARIO Production of power/heat/cooling in separate element processes, e.g. grid and/or captive fossil-fuel-fired power plant, fossil-fuel-fired boiler for heat and electrical compression chillers for cooling.	
PROJECT SCENARIO Simultaneous production of power/heat/cooling energy using cogeneration/trigeneration system, thus saving energy and reducing GHG emissions.	

AMS-II.I. Efficient utilization of waste energy in industrial facilities

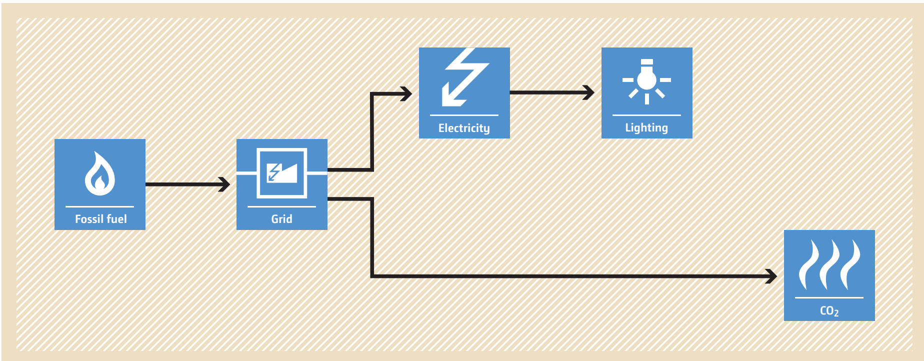
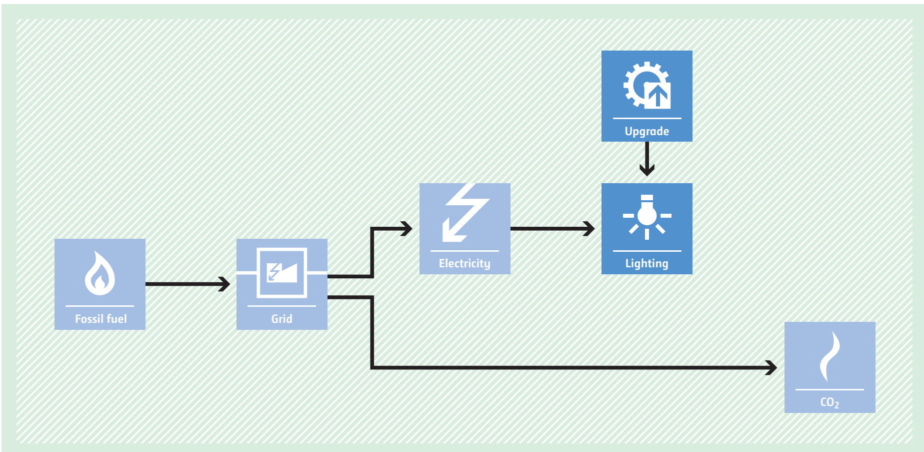
Typical project(s)	Energy efficiency improvement of an electricity or thermal energy generation unit, which is based on recovery of waste energy from a single source at an industrial, mining or mineral production facility.
Type of GHG emissions mitigation action	• Energy efficiency. Enhancement of waste energy recovery to replace more-GHG-intensive service.
Important conditions under which the methodology is applicable	• Production process and production outputs are homogenous in the baseline and project scenario; • Improvements in efficiency in the project are clearly distinguishable from other variables not attributable to the project; • There is no auxiliary fuel and/or co-firing for energy generation; • Methodology is not applicable to retrofitting of existing facilities to increase production outputs.
Important parameters	At validation: • Energy generation ratio of baseline equipment.
	Monitored: • Energy produced and consumed by the generating unit; • Production output of the facility.
BASELINE SCENARIO Continuation of the use of a less-efficient waste energy recovery system.	(see figure below)
PROJECT SCENARIO Use of a more-efficient waste energy recovery system, thus leading to higher energy gains and thereby replacement of energy provided by more-GHG-intensive means.	



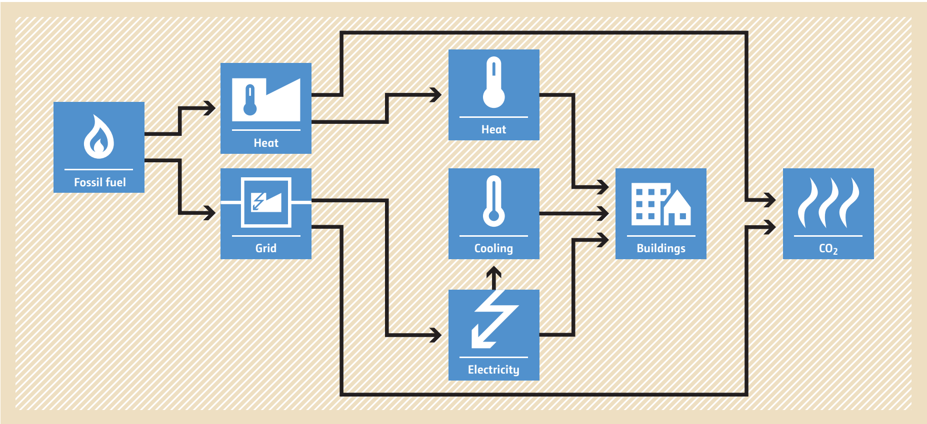
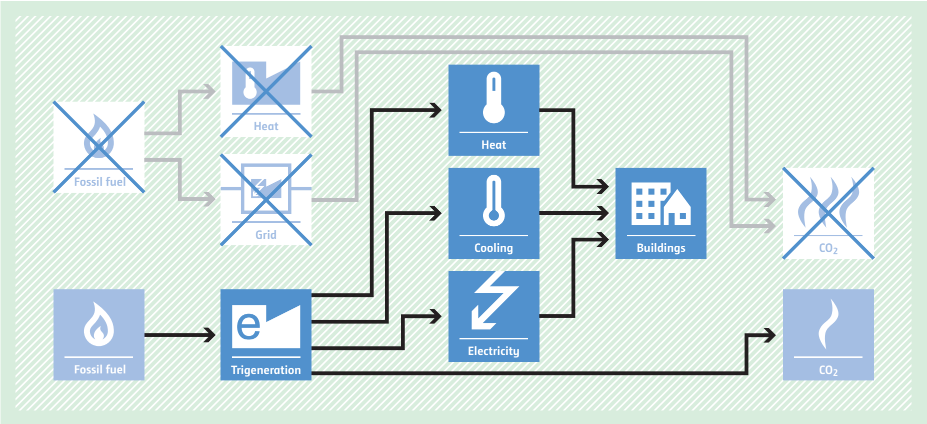


AMS-II.J. Demand-side activities for efficient lighting technologies

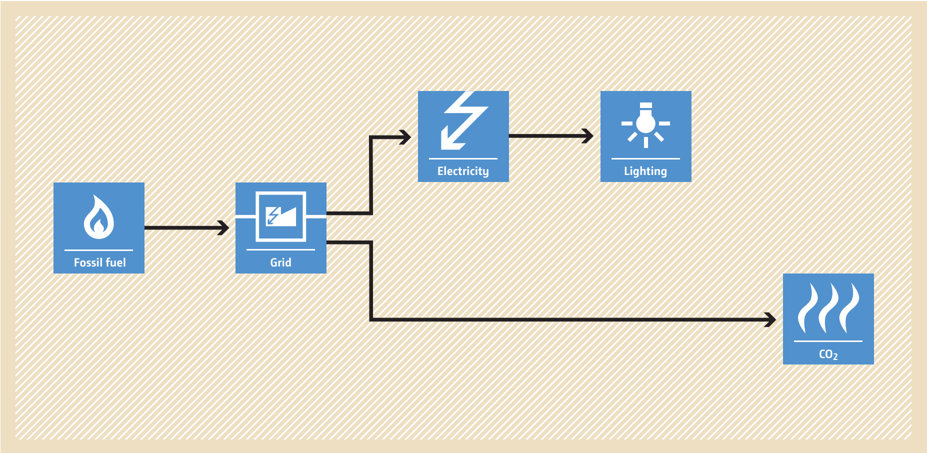
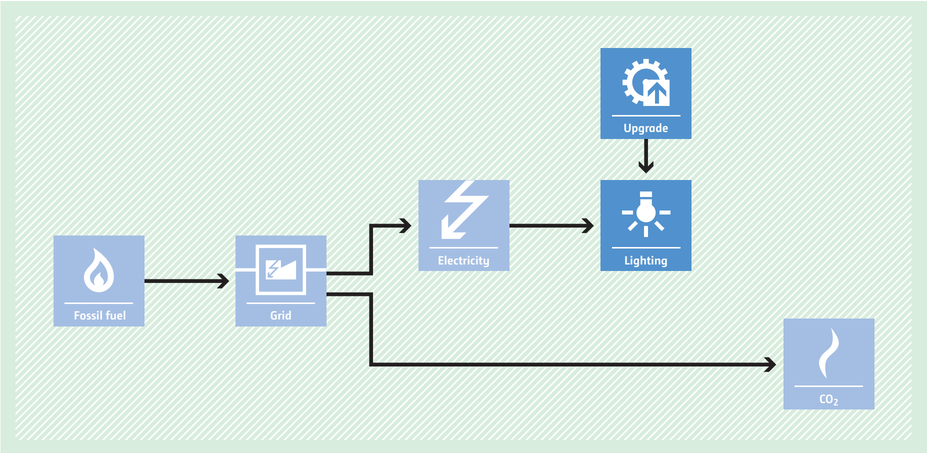
Women and children

Typical project(s)	Activities for adoption of self-ballasted compact fluorescent lamps (CFLs) to replace incandescent lamps (ICLs) in residential applications.
Type of GHG emissions mitigation action	• Energy efficiency. Displacement of more-GHG-intensive lighting by technology switch.
Important conditions under which the methodology is applicable	• Total lumen output of the CFL should be equal to or more than that of the ICL being replaced and CFLs shall, in addition to the standard lamp specifications, be marked for clear unique identification for the project; • Average life or rated average life of the CFLs shall be known ex ante. IEC 60969 (Self Ballasted Lamps for General Lighting Services - Performance Requirements) or an equivalent national standard shall be used to determine the average life; • If cumulative failure of CFLs exceeds 50% of total number of CFLs installed by the project, then the project ceases to issue CERs not issue anymore CERs; • Determination of daily operating hours: either default value of 3.5 hours or measured value.
Important parameters	At validation: • Average life time of the CFL (can also be monitored ex post); • The number and power of the replaced ICLs; • Number of ICLs distributed under the project, identified by the type of ICL and the date of supply; • Grid emission factor (can also be monitored ex post).
	Monitored: • If applicable: measurement of average daily operating hours; • Lamp failure rate surveys.
BASELINE SCENARIO Incandescent lamps (ICLs) are used for lighting in households.	
PROJECT SCENARIO CFLs for lighting in households replace ICLs thus reducing electricity consumption and GHG emissions.	

AMS-II.K. Installation of co-generation or tri-generation systems supplying energy to commercial buildings

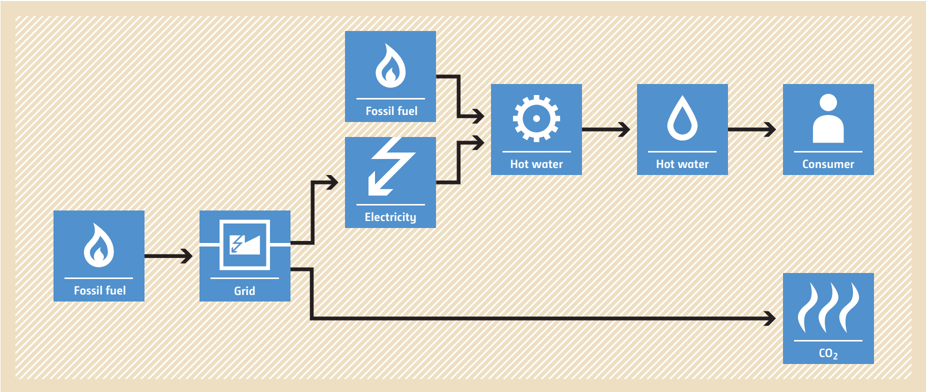
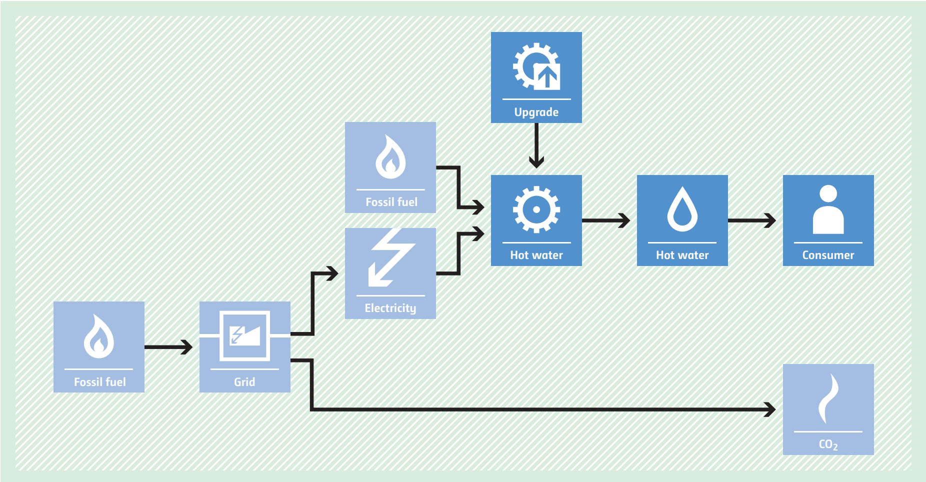
Typical project(s)	Installation of fossil-fuel-based cogeneration or trigeneration systems. Generated electricity and cooling, and/or heating are supplied to commercial, non-industrial buildings.
Type of GHG emissions mitigation action	• Energy efficiency. Electricity and/or fuel savings through energy efficiency improvement.
Important conditions under which the methodology is applicable	• Applicable to installation of new systems that replace or supplement existing systems that supply electricity (grid or on-site generation) and cooling (e.g. chillers) and/or heating systems (e.g. boilers) or electricity and cooling and/or heating systems that would have been built and utilized; • Not applicable to the replacement of existing cogeneration or trigeneration systems; • If it is identified that the baseline situation is the continued use of an existing system then the existing system must have been in operation for at least the immediately prior three years; • If project equipment contains refrigerants, these refrigerants shall have no ozone depleting potential.
Important parameters	At validation: • Grid emission factor (can also be monitored ex post) and/or baseline captive power plants; • Coefficient of Performance (COP) of baseline chillers; • Efficiency of baseline steam generation systems.
	Monitored: • Amount of grid and/or captive power supplied by the project; • Amount of cooling and/or heating energy supplied by the project.
BASELINE SCENARIO Separate generation of power/heat/cooling supplied to commercial, non-industrial buildings.	
PROJECT SCENARIO Simultaneous production of power/heat/cooling using a co- or trigeneration system for supplying commercial, non-industrial buildings.	

AMS-II.L. Demand-side activities for efficient outdoor and street lighting technologies

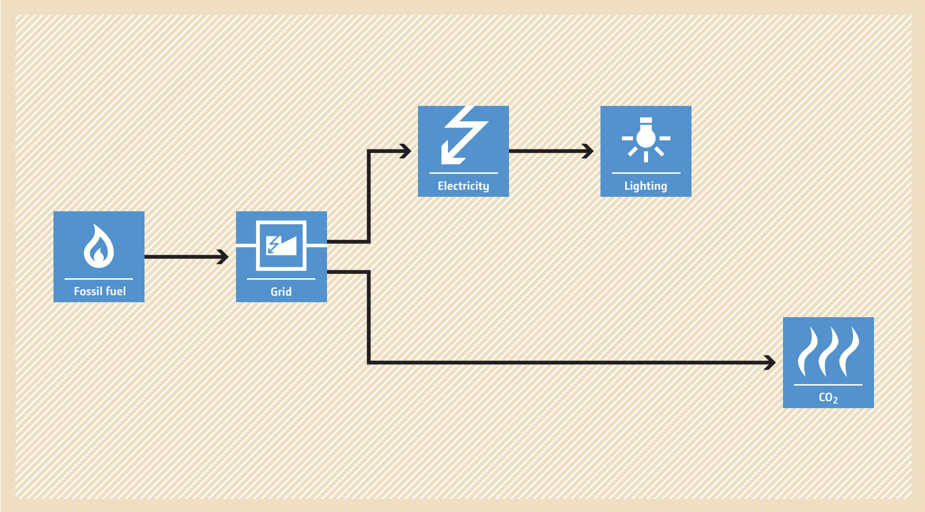
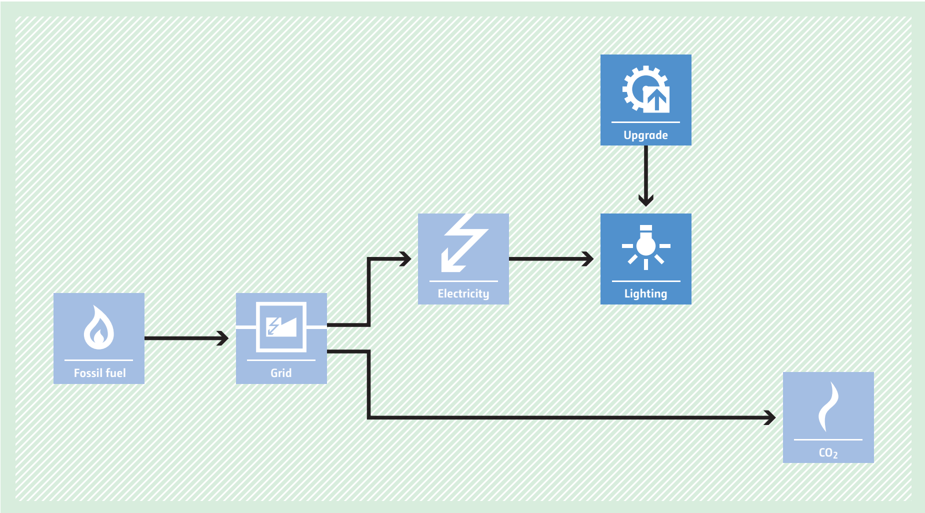
Typical project(s)	Adoption of energy efficient lamps and/or fixture combinations to replace less efficient lamps and/or fixture combinations in public- or utility-owned street lighting systems.
Type of GHG emissions mitigation action	• Energy Efficiency. Displacement of less-efficient lighting by more-efficient technology.
Important conditions under which the methodology is applicable	• Limited to public- or utility-owned street lighting systems; • Allows multiple-for-multiple lamps replacements; • Requires continuous replacement of failed lamps; • Includes new construction (Greenfield) installations; • Identify baseline technology for Greenfield, using the data from the region • Ensure that lighting performance quality of project lamps be equivalent or better than the baseline or applicable standard; • No mandatory destruction of replaced lamps required.
Important parameters	Monitored: • Average time elapsed between failure of luminaires and their replacement; • Annual failure rate; • Average annual operating hours; • Average project equipment power; • Number of project luminaires placed in service and operating under the project activity.
BASELINE SCENARIO Less efficient lamps are used in street lighting systems.	
PROJECT SCENARIO Efficient lighting replaces less efficient lighting thus reducing electricity consumption and GHG emissions.	

AMS-II.M. Demand-side energy efficiency activities for installation of low-flow hot water savings devices

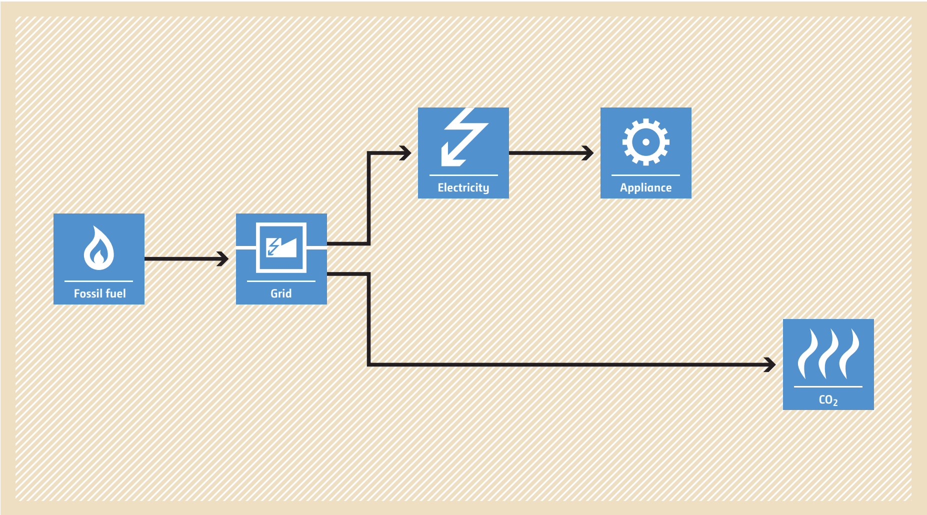
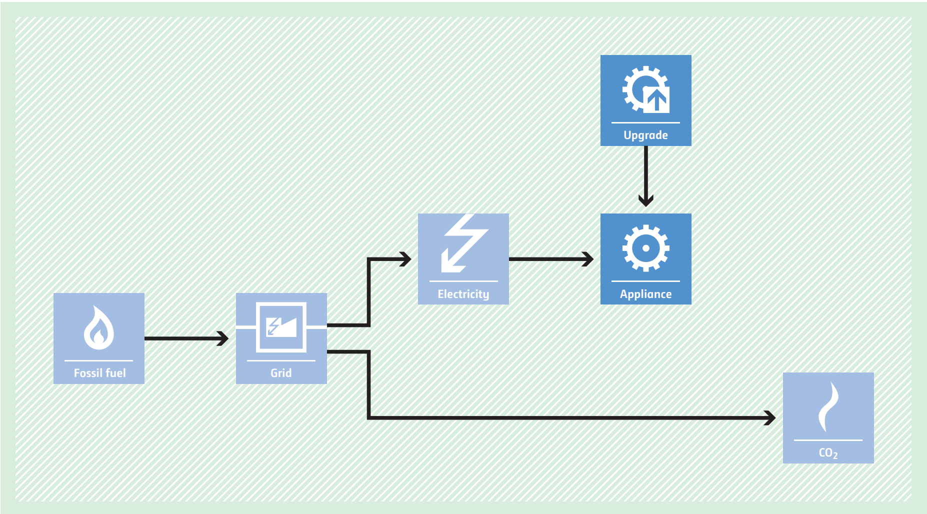
Women and children

Typical project(s)	Activities for direct installation of low-flow hot water savings devices used in residential buildings e.g. low-flow showerheads, kitchen faucets and bathroom faucets.
Type of GHG emissions mitigation action	Energy Efficiency. • Fuel or electricity savings through the installation of low-flow hot water savings devices.
Important conditions under which the methodology is applicable	• The project devices (PD) must contain integral, non-removable flow restrictions; • Only retrofit projects are allowable; • One year warranty of the PD; • Compliance to applicable standards of the PD; • Equivalent level of service (functional comfort and cleaning performance); • PD are directly installed and tested to be functional; • PD are marked for clear unique identification; • Method for collection, destruction and/or recycling of baseline devices; • Procedures to eliminate double counting are explained.
Important parameters	At validation: • Measured flow rate of baseline device (litres/minute).
	Monitored: • Measured flow rate of project device (litres/minute); • Measured amount of water used by project device (litres); • Temperature of hot water (Maximum 40°C); • Temperature of cold water (Minimum 10°C); • Determine the number of low-flow devices installed and operating.
BASELINE SCENARIO Less efficient hot water devices are used in residential buildings. More water, that requires heating by electricity or fossil fuel, is consumed.	
PROJECT SCENARIO Efficient (low-flow) hot water devices replace less efficient hot water devices thus reducing the amount of water that requires heating by electricity or fossil fuel.	

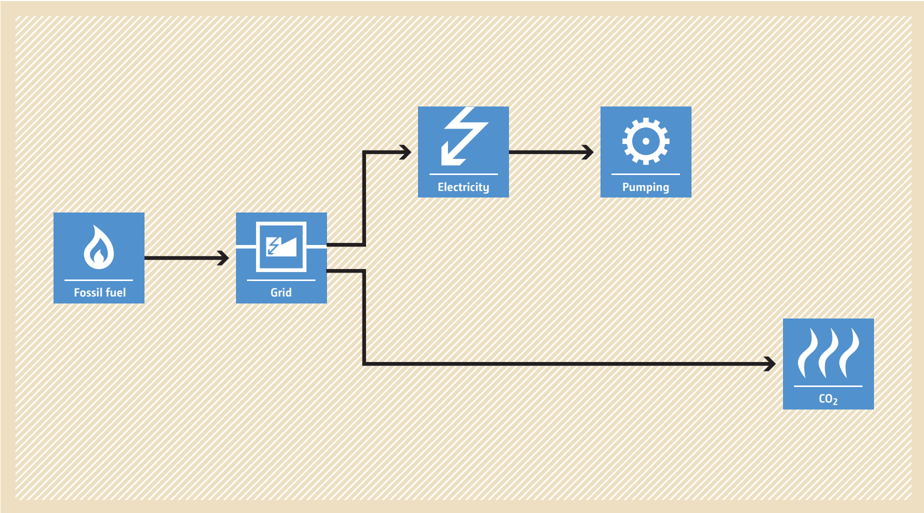
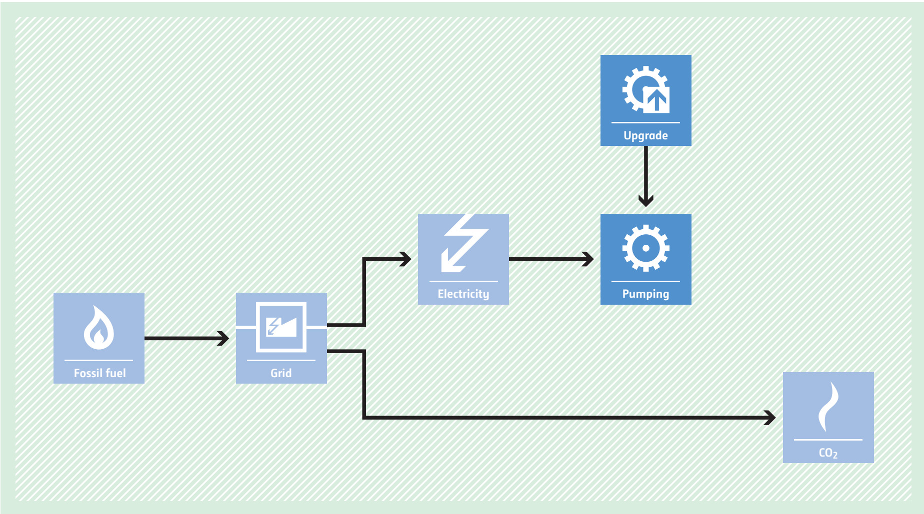
AMS-II.N. Demand-side energy efficiency activities for installation of energy efficient lighting and/or controls in buildings

Typical project(s)	• Retrofits of existing electric lighting fixtures, lamps, and/or ballasts with more energy-efficient fixtures, lamps, and/or ballasts; • Installation of lighting controls.
Type of GHG emissions mitigation action	• Energy efficiency. Displacement of more-GHG intensive service.
Important conditions under which the methodology is applicable	• Only retrofit projects involving direct installation (or delamping) of equipment are allowable; • This methodology is applicable to non-residential and multi-family residential buildings supplied with grid electricity; • Collection, destruction and/or recycling of baseline devices are required.
Important parameters	Monitored: • Number, type and wattage of project fixtures/lamps/ballasts/ballast factors and/or control systems installed under the project activity; • Grid emission factor.
BASELINE SCENARIO Electricity is used for inefficient commercial lighting.	
PROJECT SCENARIO Installation of energy efficient lighting and/or controls in commercial buildings.	

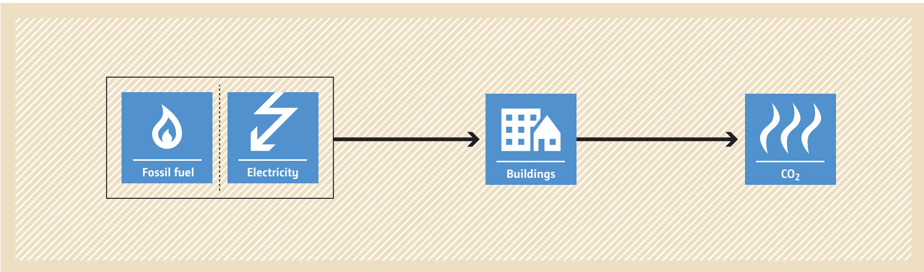
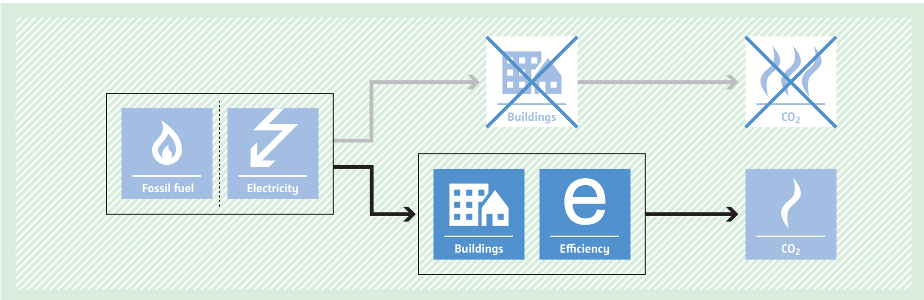
AMS-II.O. Dissemination of energy efficient household appliances

Typical project(s)	Project activities that increase sales dissemination of new household appliances, specifically refrigerating appliances (refrigerators) that have very high efficiencies.
Type of GHG emissions mitigation action	• Energy efficiency. Displacement of more-GHG intensive service.
Important conditions under which the methodology is applicable	• Only appliance models utilising refrigerants and foam blowing agents having no ozone depleting potential (ODP) and low global warming potential (GWP <15); • The project refrigerators are designed to run on electricity; • The manufacturers of the project refrigerators are ISO 9001 certified at the time of validation to ensure data reliability.
Important parameters	• Number of refrigerators of each model type disseminated, and their serial and model numbers; • Electricity consumption of each refrigerator model disseminated; • Historical sales of the project appliances.
BASELINE SCENARIO Electricity is consumed by inefficient household appliances.	
PROJECT SCENARIO Installation of energy efficient household appliances in households consuming less electricity.	

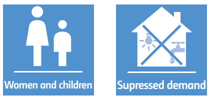
AMS-II.P. Energy efficient pump-set for agriculture use

Typical project(s)	Project activities that adopt energy efficient pump-sets that run on grid electricity at one or more agricultural sites.
Type of GHG emissions mitigation action	• Energy efficiency Electricity (and fossil fuel) savings through energy efficiency improvement.
Important conditions under which the methodology is applicable	• The project pump-set efficiency shall be higher than the baseline pump-set for the whole range of operating conditions; • The methodology is not applicable for retrofitting pump-sets (e.g. replacement of impellers); • Water output corresponding to the initial head shall be higher or at least equal to that of the baseline pump-set water output at the initial head.
Important parameters	At validation: • Water flow rate and head of replaced pump-sets; • Performance curves of replaced pump-sets.
	Monitored: • Number of pump-sets installed and remain operating; • Performance curves of project pump-sets; • Operating hours of project pump-sets.
BASELINE SCENARIO Inefficient pump-sets are used for agricultural irrigation.	
PROJECT SCENARIO Introduction of efficient pump-set for agricultural irrigation.	

AMS-II.Q. Energy efficiency and/or energy supply projects in commercial buildings

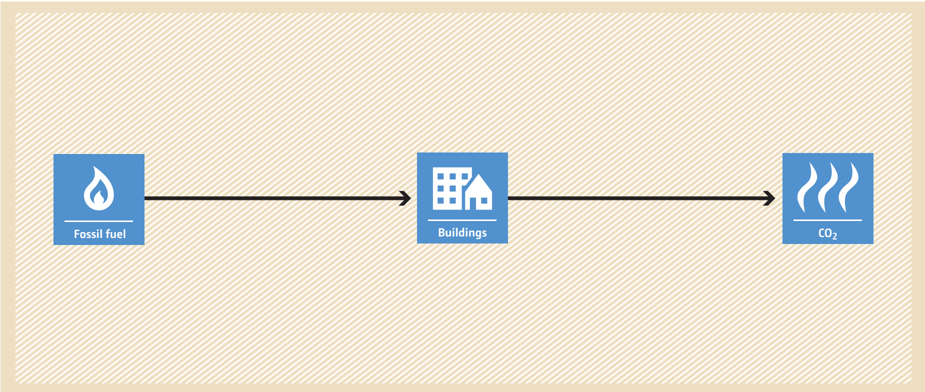
Typical project(s)	On-site building energy supply and whole building energy efficiency projects whose associated emission reductions can be determined with a whole building computerized simulation tool.
Type of GHG emissions mitigation action	• Energy efficiency Electricity (and fossil fuel) savings through energy efficiency improvement.
Important conditions under which the methodology is applicable	• The methodology is applicable to commercial buildings only (retrofit or new construction); • This methodology is not applicable to project activities that affect off-site district heating and/or cooling plants and distribution networks; • If the energy efficient equipment contains refrigerants, then the refrigerant used in the project case shall have no Ozone Depleting Potential (ODP); • All technologies (e.g. equipment or appliances) used in the project activity shall be new and not transferred from another project activity.
Important parameters	At validation: • Ex ante baseline building data; • Historical energy consumption (in case of retrofits); • Information documenting the calibration process.
	Monitored: • Weather data; • Energy consumption of the project building(s) on at least a monthly basis; • Base building setting changes and occupancy or tenancy-related setting change.
BASELINE SCENARIO Inefficient building construction and operation.	
PROJECT SCENARIO On-site building energy supply and/or whole building energy efficiency measures are reducing consumption of electricity and/or fuel.	

AMS-II.R. Energy efficiency space heating measures for residential buildings

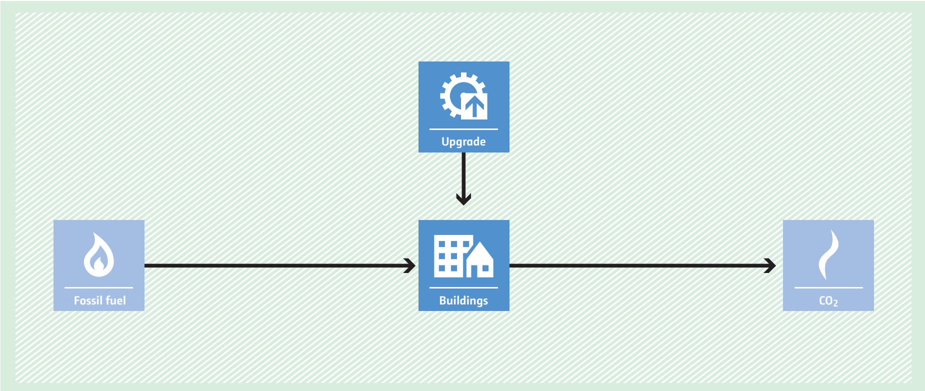


Typical project(s)	Energy efficiency and fuel switching measures implemented within residential buildings to improve the space heating, for example: improving building insulation, enhancing glazing of windows, improving efficiency of heating equipment.
Type of GHG emissions mitigation action	• Energy efficiency; • Fuel switch. Reduction of fossil fuel use and corresponding emissions through energy efficiency improvements.
Important conditions under which the methodology is applicable	• This methodology is applicable to fuel-switching only when it results from the implementation of the energy efficiency measures; • Technology/measures implemented in existing residential buildings; • The impact of the measures implemented by the project activity can be clearly distinguished from changes in energy use due to other variables not influenced by the project activity.
Important parameters	At validation: • Fuel consumption before implementation of project; • Conditions for suppressed demand if applicable.
	Monitored: • Specifications of the equipment replaced or retrofitted; • Energy use in the buildings after the project implementation; • Fuel consumption.

BASELINE SCENARIO
Inefficient heating in residential buildings.



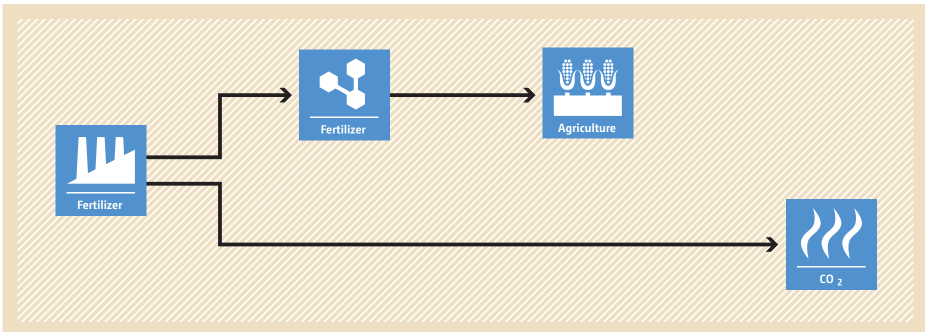
PROJECT SCENARIO
Use of more-efficient and/or less-carbon-intensive equipment in buildings.



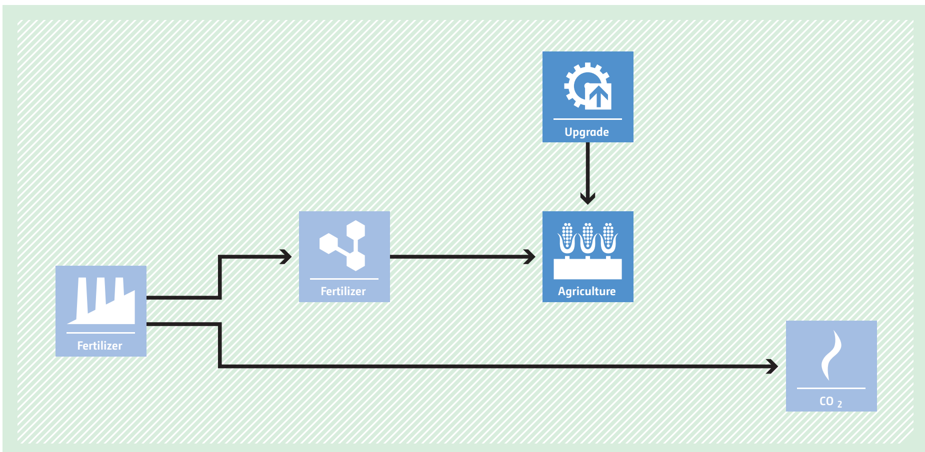
AMS-III.A. Offsetting of synthetic nitrogen fertilizers by inoculant application in legumes-grass rotations on acidic soils on existing cropland

Typical project(s)	Application of inoculant on legumes in a legumes-grass rotation cropping on acidic soils on existing cropland substitutes and reduces the production and use of synthetic nitrogen fertilizer use.
Type of GHG emissions mitigation action	• GHG emission avoidance. Application of inoculant displaces more-GHG-intensive production of synthetic nitrogen fertilizers.
Important conditions under which the methodology is applicable	• The farmers participating have grown legumes and grass in a legumes-grass rotation in the previous three complete rotations without using any inoculant as a fertilizer for legumes, but have used synthetic nitrogen fertilizer for fertilizing legumes; • Only the legume-rhizobia bacteria (inoculant) combinations specied in the methodology are eligible; • For each farmer taking part in the project, reliable and veriable data on the amount of synthetic nitrogen fertilizer used, separately for each crop type, in the previous three complete rotations of legumes and grass cropping, shall be available; • No change in the types of crop cultivated takes place. In both the baseline and project situation legumes and grass are cultivated in rotations. No other changes in farming practices affecting fertilizer application, except the change in application of inoculant and synthetic nitrogen fertilizer, are taking place during the crediting period.
Important parameters	Monitored: • Hectare of crop planted; • Quantity of inoculant (number of rhizobia bacteria), urea and other fertilizers applied (chemical fertilizers as well as organic fertilizers); • Crop yield per crop per hectare; • Independent third party field visits are also required at different stages (e.g. at planting, right before owering etc.).

BASELINE SCENARIO
Production and use of synthetic nitrogen fertilizer results in GHG emissions.



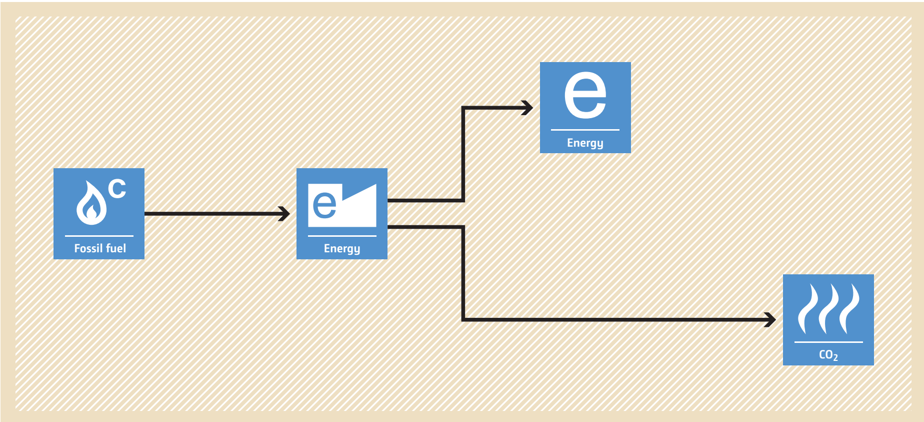
PROJECT SCENARIO
Use of legume-rhizobia bacteria (inoculant) substitutes/reduces the use of synthetic nitrogen fertilizer reducing GHG emissions in the fertilizer production process.



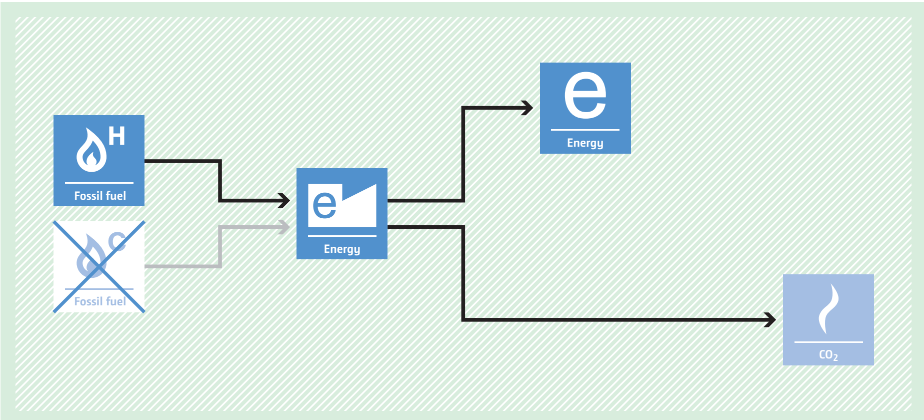
AMS-III.B. Switching fossil fuels

Typical project(s)	The fossil fuel switching in new or existing industrial, residential, commercial, institutional or electricity generation applications.
Type of GHG emissions mitigation action	• Fuel switch. Switch to fuel with a lower GHG intensity (in greenfield or retrofit or replacement activities).
Important conditions under which the methodology is applicable	• Switch of fossil fuel used in a process with a single output (e.g. electricity, steam or heat); • Project is limited to fuel switching measures which require capital investments; • Projects including biomass or waste gas/energy are not eligible; • Switch of fossil fuel in facilities connected to an isolated grid (s) system is eligible; • Only energy efficiency increase related to the fuel switch is eligible; • Only retrofitting and replacements without integrated process change are eligible; • For project activities where the estimated annual emission reductions of each element process are more than 600 tCO_2e per year the energy use/output should be directly measured, otherwise it is not required.
Important parameters	At validation: • Baseline emission factor; • Historical net energy output where the estimated annual emission reductions of each of the element processes are more than 600 tCO_2e.
	Monitored: • Quantity of fossil fuel use; • Net energy output where the estimated annual emission reductions of each element process is more than 600 tCO_2e • Output of element process for electricity/thermal energy exported to other facilities shall be monitored at the recipient end.

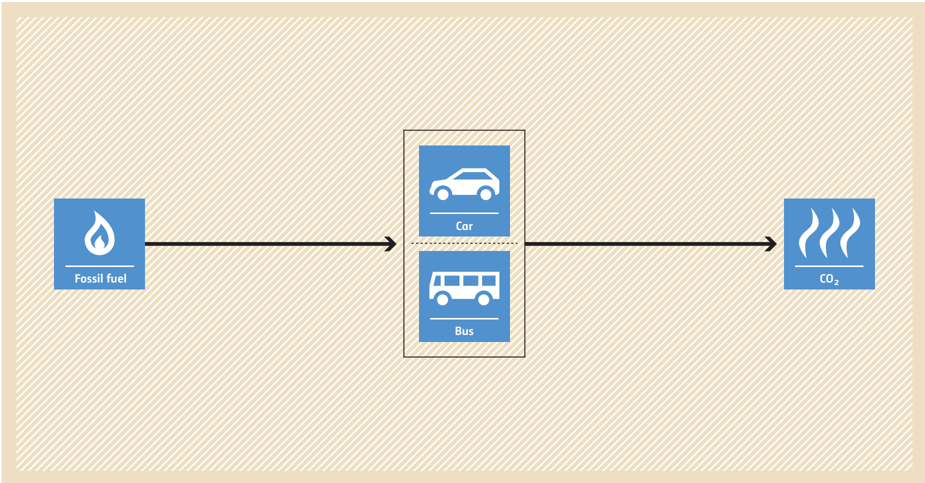
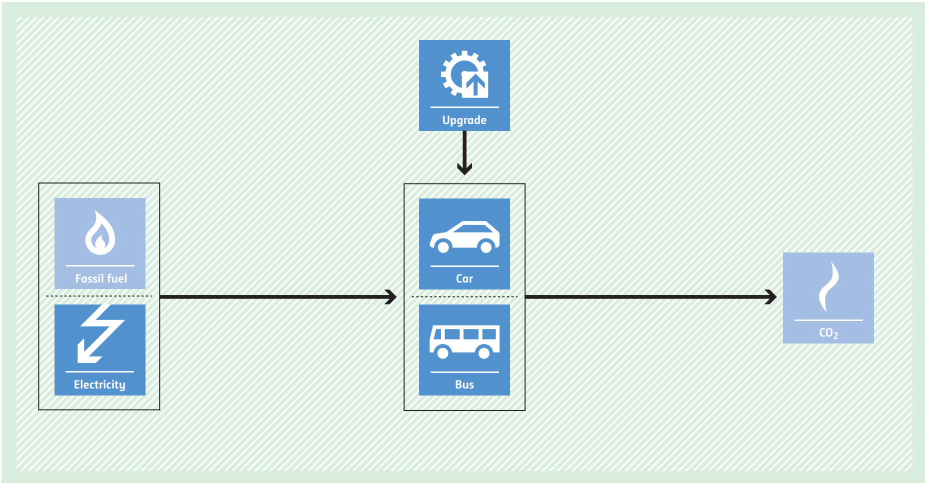
BASELINE SCENARIO
Continuation of the current practice, i.e. use of more-carbon-intensive fossil fuel for energy generation equipment.



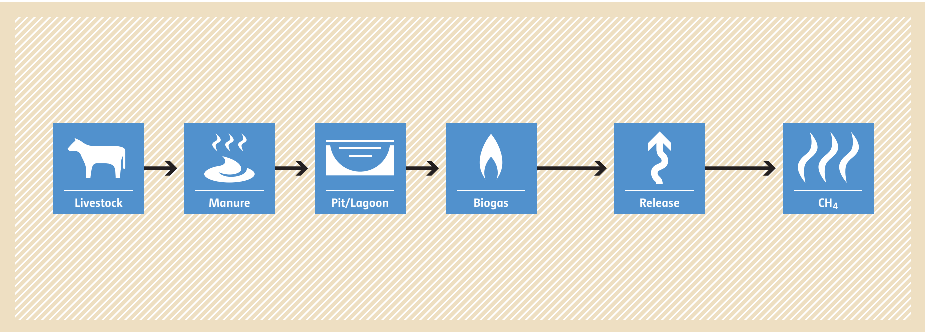
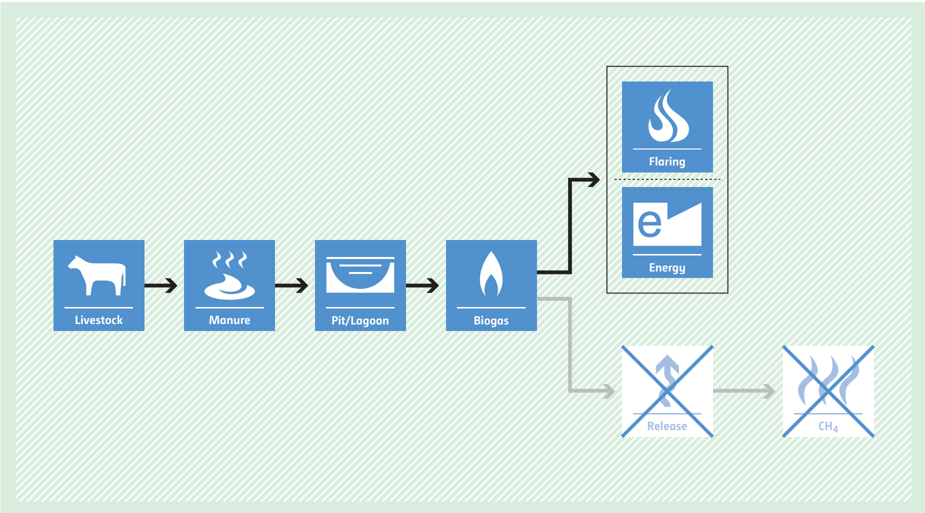
PROJECT SCENARIO
Switch of fuel to less-carbon-intensive fossil fuel in energy generation equipment.



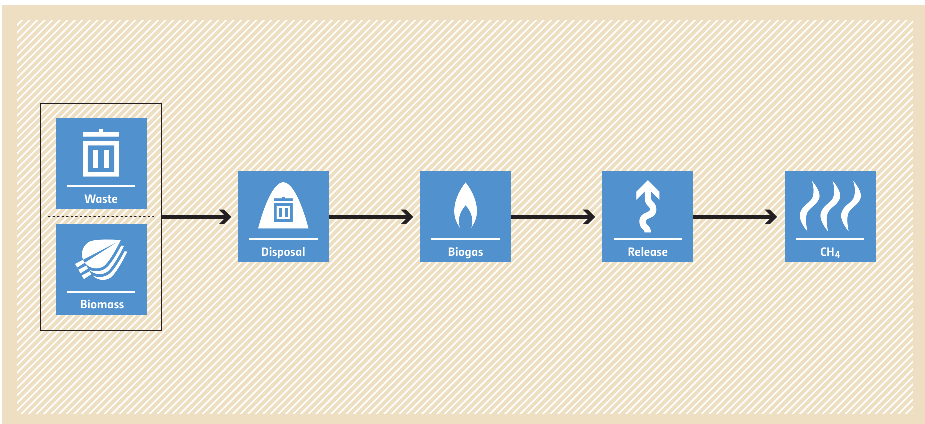
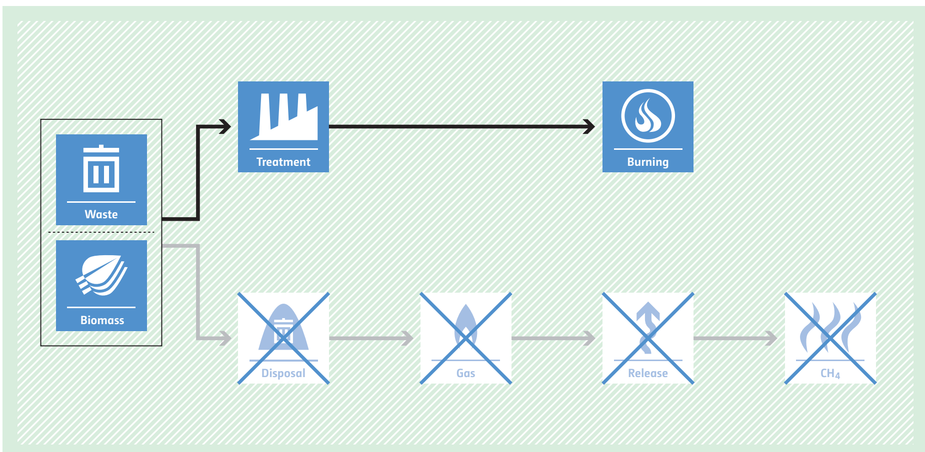
AMS-III.C. Emission reductions by electric and hybrid vehicles

Typical project(s)	Operation of electric and hybrid vehicles for providing transportation services.
Type of GHG emissions mitigation action	• Fuel switch. Displacement of more-GHG-intensive vehicles.
Important conditions under which the methodology is applicable	• Project and baseline vehicles should belong to the same vehicle category. Vehicles under a category have comparable passenger/load capacity and power rating with variation of no more than +/-20%; • The prevailing regulations pertaining to battery use and disposal shall be complied with.
Important parameters	At validation: • If applicable: grid emission factor (can also be monitored ex post).
	Monitored: • Number of electric/hybrid vehicles operated under the project; • Quantity of fossil fuel used e.g. for hybrid vehicles and electricity consumption for all electric and hybrid vehicles to determine specific electricity/fossil fuel consumption per km; • Annual average distance driven by project vehicles.
BASELINE SCENARIO Operation of more-GHG-emitting vehicles for providing transportation services.	
PROJECT SCENARIO Operation of less-GHG-emitting vehicles with electric/hybrid engines for providing transportation services.	

AMS-III.D. Methane recovery in animal manure management systems

Typical project(s)	Replacement or modification of existing anaerobic manure management systems in livestock farms, or treatment of manure collected from several farms in a centralized plant to achieve methane recovery and destruction by flaring/combustion or energetic use of the recovered methane.
Type of GHG emissions mitigation action	• GHG destruction. GHG destruction and displacement of more-GHG-intensive service.
Important conditions under which the methodology is applicable	• Manure or the streams obtained after treatment are not discharged into natural water resources (e.g. river or estuaries); • In the baseline scenario the retention time of manure waste in the anaerobic treatment system is greater than one month, and in case of anaerobic lagoons in the baseline, their depths are at least 1 m; • Final sludge must be handled aerobically; • The storage time of the manure after removal from the animal barns, including transportation, should not exceed 45 days before being fed into the anaerobic digester, unless it can be demonstrated that the dry matter content of the manure when removed from the animal barns is more than 20%.
Important parameters	Monitored: • Amount of biogas recovered and fuelled, flared or used gainfully; • The annual amount of fossil fuel or electricity used to operate the facility or auxiliary equipment; • Fraction of the manure handled in the manure management system; • Proper soil application (not resulting in methane emissions) of the final sludge must be monitored.
BASELINE SCENARIO Animal manure is left to decay anaerobically and methane is emitted into the atmosphere.	
PROJECT SCENARIO Methane is recovered and destructed or gainfully used due to replacement or modification of existing anaerobic manure management systems.	

AMS-III.E. Avoidance of methane production from decay of biomass through controlled combustion, gasification or mechanical/ thermal treatment

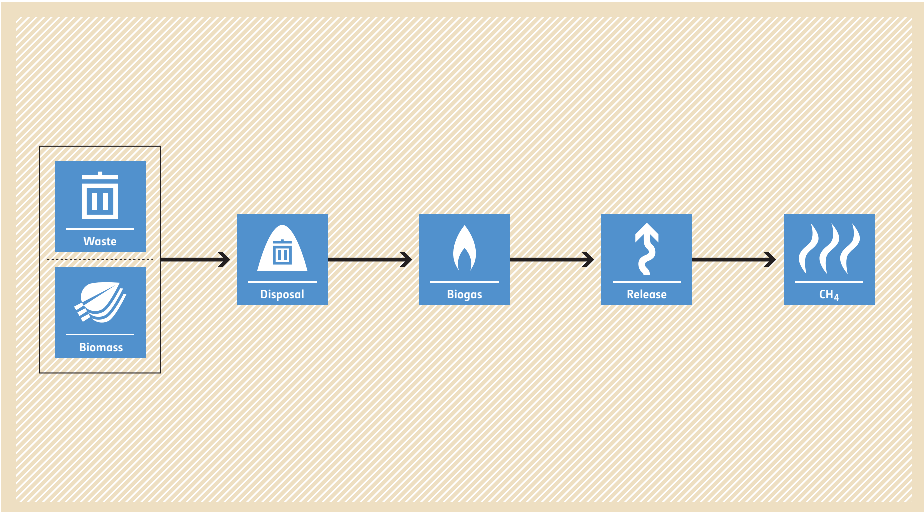
Typical project(s)	Decay of the wastes that would have been left to decay or are already deposited in a waste disposal site is prevented through controlled combustion; or gasification to produce syngas/producer gas; or mechanical/thermal treatment to produce refuse-derived fuel (RDF) or stabilized biomass (SB).
Type of GHG emissions mitigation action	• GHG emission avoidance; Avoidance of methane emissions due to prevention of anaerobic decay of biomass in waste. Use of biomass in waste as energy source.
Important conditions under which the methodology is applicable	• The produced RDF/SB shall be used for combustion either onsite or off-site; • In case of RDF/SB production, no GHG emissions occur other than biogenic CO_2, due to chemical reactions during the thermal treatment process for example limiting the temperature of thermal treatment to prevent the occurrence of pyrolysis and/or the stack gas analysis; • In case of gasification, all syngas produced shall be combusted and not released unburned into the atmosphere; • During the mechanical/thermal treatment to produce RDF/SB no chemical or other additives shall be used.
Important parameters	Monitored: • Amount of waste combusted, gasified or mechanically/thermally treated by the project, as well as its composition through representative sampling; • Quantity of auxiliary fuel used and the non-biomass carbon content of the waste or RDF/SB combusted; • Electricity consumption and/or generation.
BASELINE SCENARIO Organic waste is left to decay and methane is emitted into the atmosphere.	
PROJECT SCENARIO Methane emissions will be avoided through controlled combustion, gasification or mechanical/thermal treatment of the wastes. In case of energetic use of organic waste, displacement of more-GHG-intensive energy generation.	

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

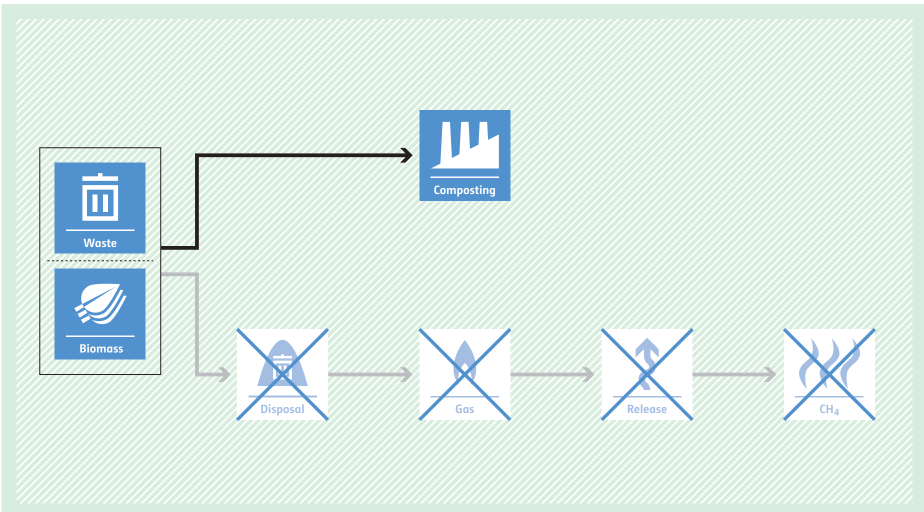
Women and children | Supressed demand

Typical project(s)	Controlled biological treatment of biomass or other organic matter is introduced through aerobic treatment by composting and proper soil application of the compost.
Type of GHG emissions mitigation action	• GHG emission avoidance. Avoidance of GHG emissions by alternative treatment process.
Important conditions under which the methodology is applicable	• Recovery and combustion of landfill gas is not eligible; • Identified landfill(s) should be able to accommodate the waste to be used for the project for the duration of the crediting period; or it is common practice in the region to dispose of the waste in solid waste disposal sites (landfills).
Important parameters	Monitored: • Quantity of waste biologically treated and its composition through representative sampling; • When project includes co-treating of wastewater, the volume of co-treated wastewater and its COD content through representative sampling; • Annual amount of fossil fuel or electricity used to operate the facilities or auxiliary equipment.

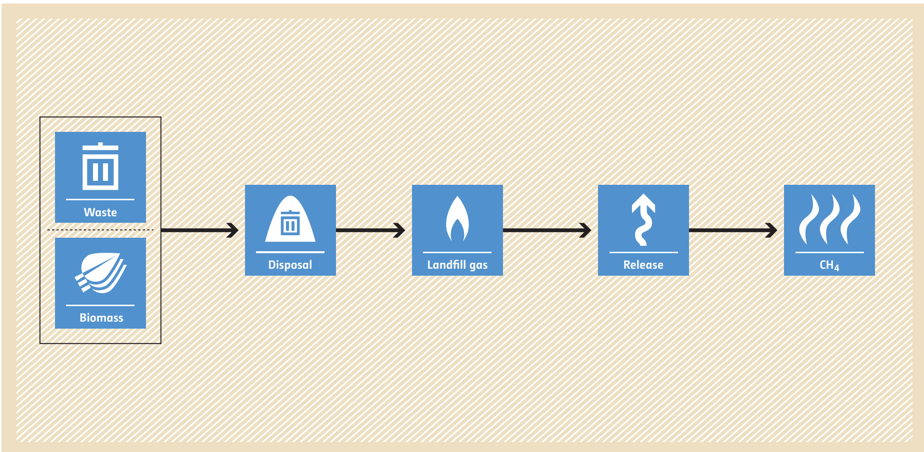
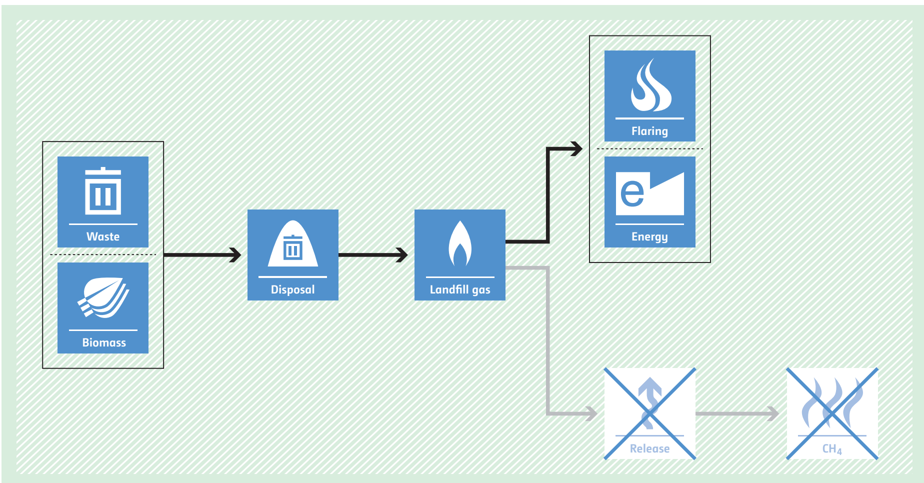
BASELINE SCENARIO
Biomass and other organic matter (including manure where applicable) are left to decay and methane is emitted into the atmosphere.



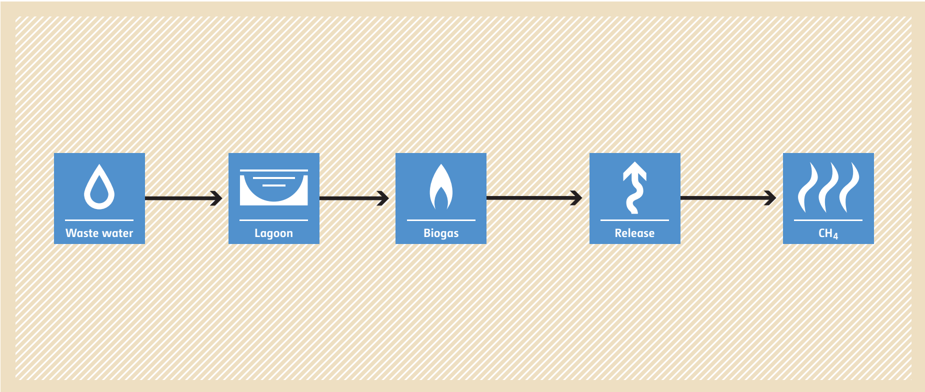
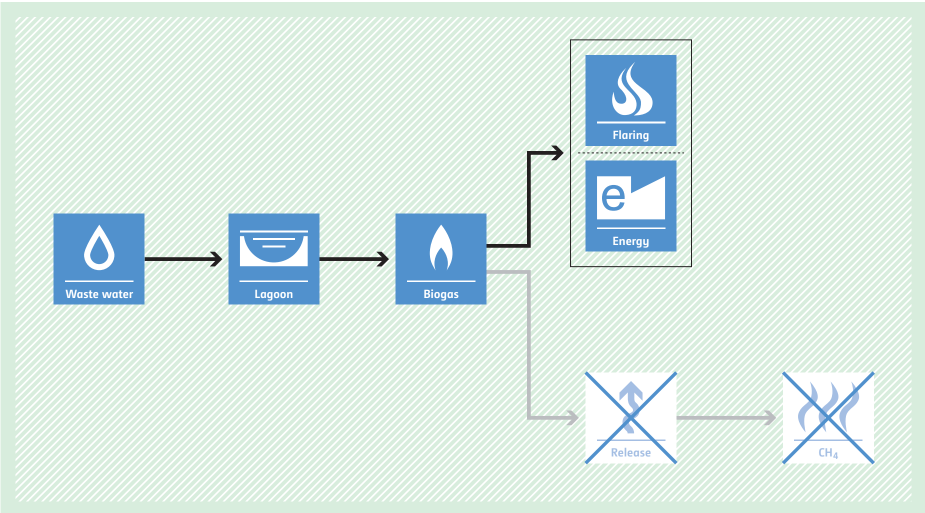
PROJECT SCENARIO
Methane emissions are avoided through composting.



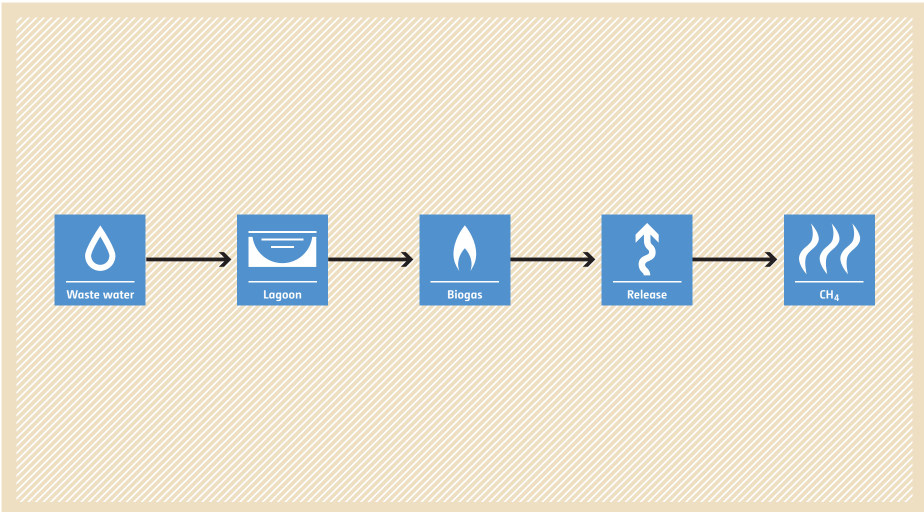
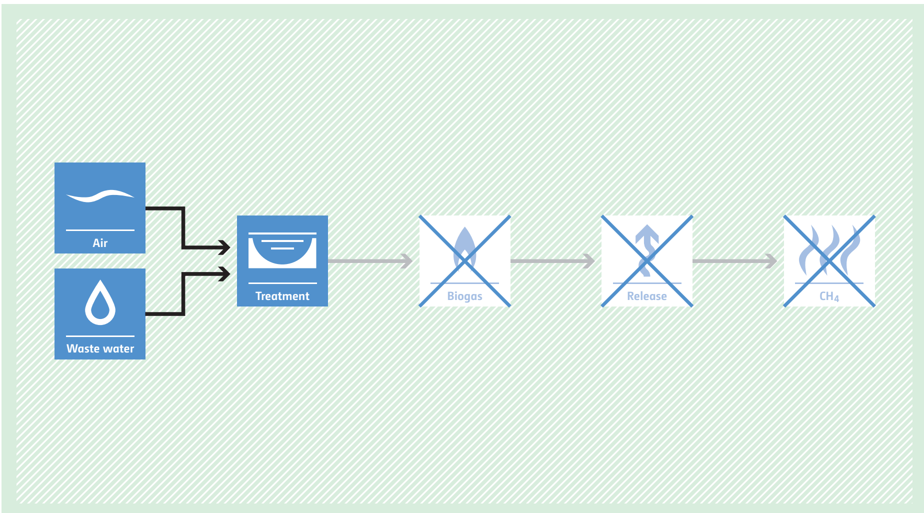
AMS-III.G. Landfill methane recovery

Typical project(s)	Capture and combustion of methane from landfills used for disposal of residues from human activities including municipal, industrial and other solid wastes containing biodegradable organic matter.
Type of GHG emissions mitigation action	• GHG destruction. Destruction of methane and displacement of more-GHG-intensive energy generation.
Important conditions under which the methodology is applicable	• The project activity does not reduce the amount of organic waste that would have been recycled in its absence; • The management of the solid waste disposal site in the project activity shall not be changed deliberately to increase methane generation compared to the situation prior to the implementation of the project activity; • Baseline emissions shall exclude methane emissions that would have to be removed to comply with national or local safety requirement or legal regulations; • The effect of methane oxidation that is present in the baseline and absent in the project activity shall be taken into account.
Important parameters	Monitored: • The amount of methane recovered and gainfully used, fuelled or flared shall be monitored ex post, using continuous flow meters; • Fraction of methane in the landfill gas; • Flare efficiency; • Electricity generation (only for project activities utilizing the recovered methane for power generation).
BASELINE SCENARIO Biomass and other organic matter in waste are left to decay and methane is emitted into the atmosphere.	
PROJECT SCENARIO Methane in the landfill gas is captured and destroyed or used. In case of energetic use of landfill gas, displacement of more-GHG-intensive energy generation.	

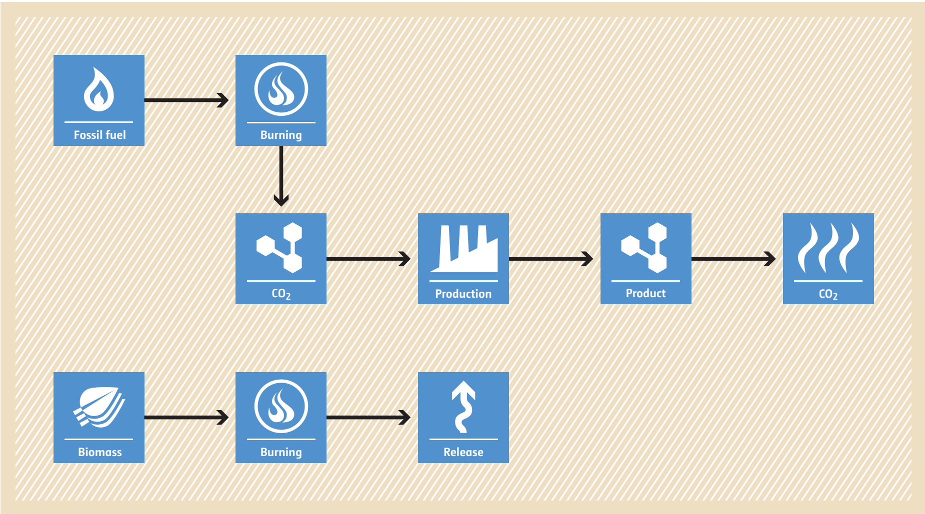
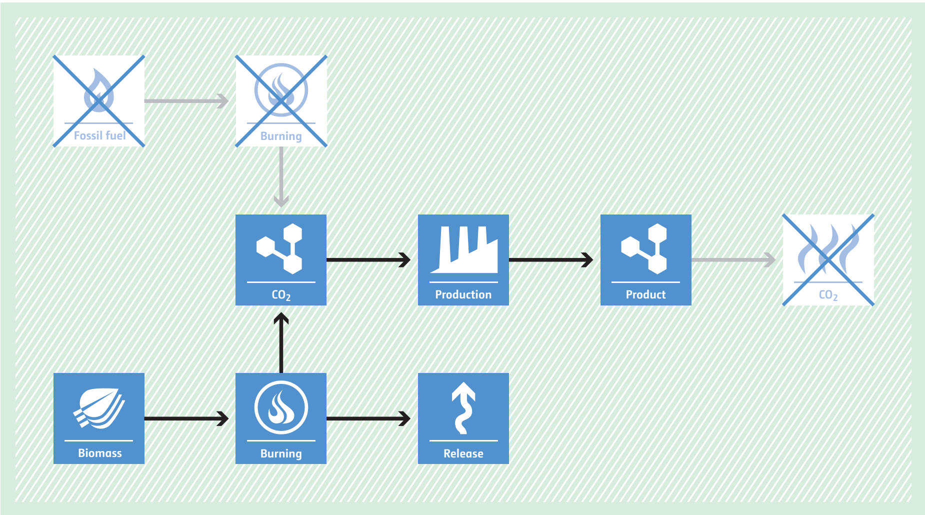
AMS-III.H. Methane recovery in wastewater treatment

Typical project(s)	Recovery of biogas resulting from anaerobic decay of organic matter in wastewaters through introduction of anaerobic treatment system for wastewater and/or sludge treatment.
Type of GHG emissions mitigation action	• GHG destruction. Destruction of methane emissions and displacement of more-GHG-intensive service.
Important conditions under which the methodology is applicable	• Anaerobic lagoons should be deeper than 2 metres, without aeration, ambient temperature above 15°C, at least during part of the year, on a monthly average basis. The minimum interval between two consecutive sludge removal events shall be 30 days; • In determining baseline emissions, historical records of at least one year prior to the project implementation shall be available. Otherwise, a representative measurement campaign is required.
Important parameters	At validation: • COD removal efficiency of the baseline system.
	Monitored: • Flow of wastewater; • Chemical oxygen demand of the wastewater before and after the treatment system; • Amount of sludge as dry matter in each sludge treatment system; • Amount of biogas recovered, fuelled, flared or utilized (e.g. injected into a natural gas distribution grid or distributed via a dedicated piped network).
BASELINE SCENARIO Methane from the decay of organic matter in wastewater or sludge is being emitted into the atmosphere.	
PROJECT SCENARIO Methane is recovered and destroyed due to the introduction of new or modification of existing wastewater or sludge treatment system. In case of energetic use of biogas, displacement of more-GHG-intensive energy generation.	

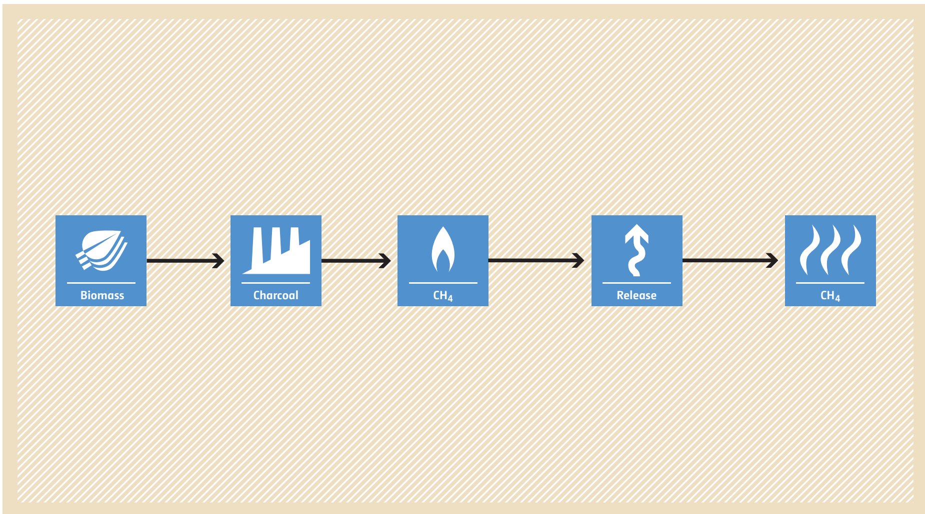
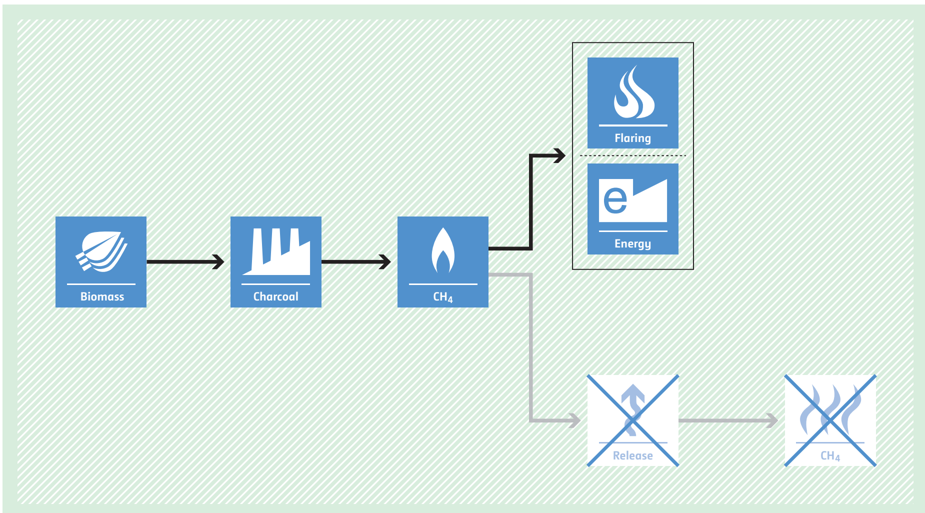
AMS-III.I. Avoidance of methane production in wastewater treatment through replacement of anaerobic systems by aerobic systems

Typical project(s)	Avoidance of production of methane from organic matter in wastewater being treated in anaerobic systems. Due to the project, the anaerobic systems (without methane recovery) are substituted by aerobic biological systems.
Type of GHG emissions mitigation action	• GHG emission avoidance. Avoidance of methane emissions from anaerobic decay of organic matter in wastewater.
Important conditions under which the methodology is applicable	• In order to determine baseline emissions, at least one year of historical data is required. Otherwise, a 10-day measurement campaign should be carried out.
Important parameters	At validation: • COD removal efficiency of the baseline system.
	Monitored: • Amount of COD treated in the wastewater treatment plant(s), amount of wastewater entering and/or exiting the project; • Amount of sludge produced and sludge generation ratio; • Amount of fossil fuel and electricity used by the project facilities; • Use of the final sludge will be monitored during the crediting period.
BASELINE SCENARIO Organic matter in wastewaters is being treated in anaerobic systems and produced methane is being released into the atmosphere.	
PROJECT SCENARIO Anaerobic wastewater treatment systems, without methane recovery, are substituted by aerobic treatment systems.	

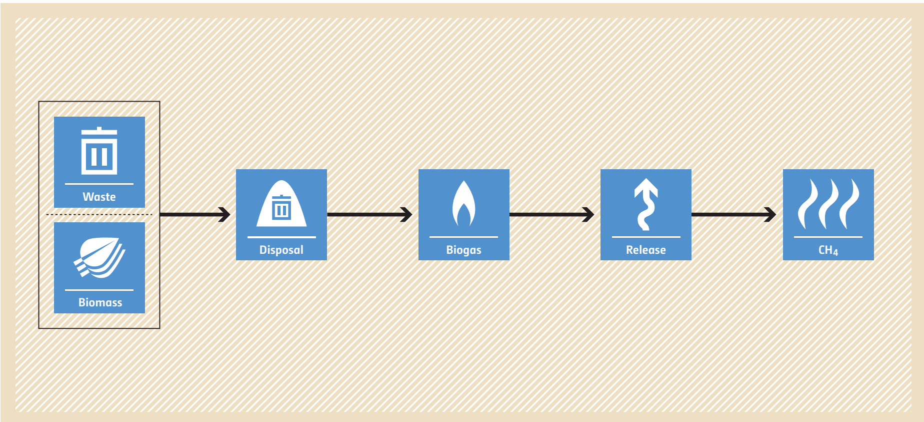
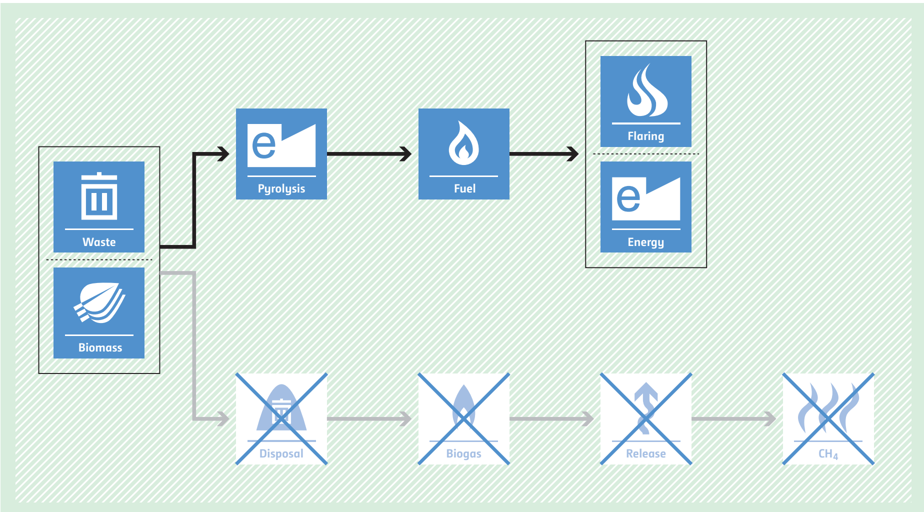
AMS-III.J. Avoidance of fossil fuel combustion for carbon dioxide production to be used as raw material for industrial processes

Typical project(s)	Switch from CO_2 of fossil origin to a source of CO_2 from renewable origin.
Type of GHG emissions mitigation action	• Feedstock switch. Avoidance of fossil fuel combustion to provide CO_2 by the use of CO_2 that is generated from renewable sources.
Important conditions under which the methodology is applicable	• CO_2 from combustion of renewable biomass would have been emitted into the atmosphere and not otherwise used; • The generation of CO_2 from fossil or mineral sources in the baseline is only for the purpose of CO_2 production to be used for the production of inorganic compounds; • CO_2 from fossil or mineral sources that is used for the production of inorganic compounds prior to the project will not be emitted into the atmosphere when the project is in place.
Important parameters	At validation: • Historical specific fuel consumption per tonne of output.
	Monitored: • Amount of the final product produced on a monthly basis.
BASELINE SCENARIO Fossil fuels are used to produce CO_2 which is used as raw material; CO_2 from a renewable source is vented into the atmosphere.	
PROJECT SCENARIO Fossil fuels are no longer used to produce CO_2. The CO_2 stream from renewable sources is used as raw material for a production process.	

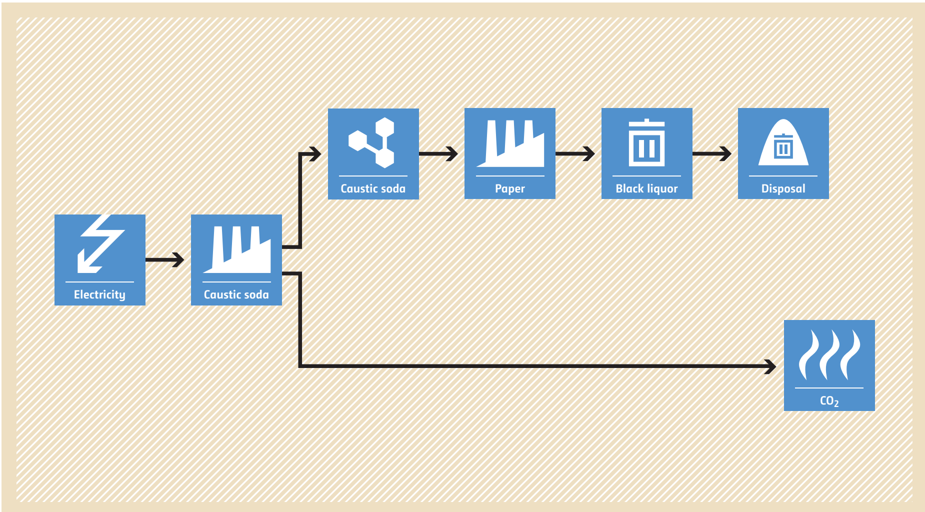
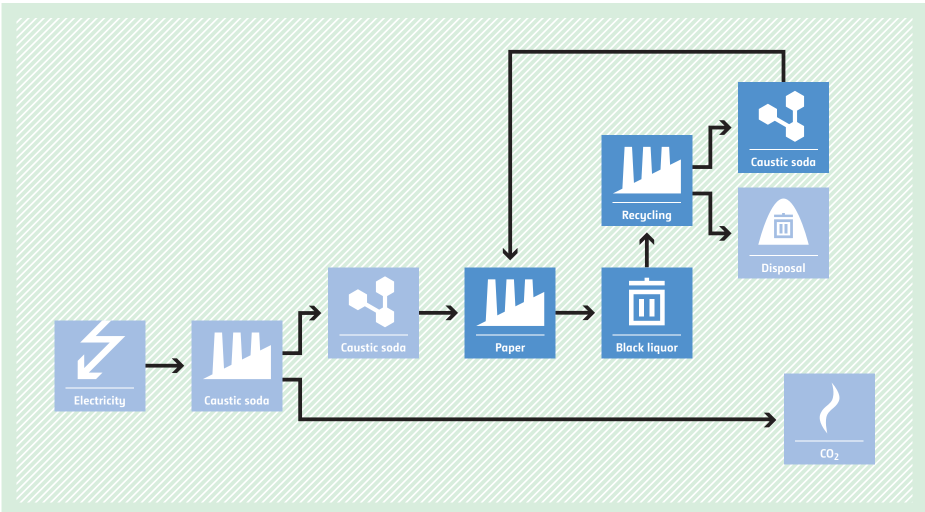
AMS-III.K. Avoidance of methane release from charcoal production

Typical project(s)	Construction of a new charcoal production facility with recovery and flaring/combustion of methane or retrofitting of existing production facilities.
Type of GHG emissions mitigation action	• GHG destruction. Use of a technology that destructs or recovers methane generated during the production of charcoal.
Important conditions under which the methodology is applicable	• Laws restricting methane emissions from charcoal production either do not exist or are not enforced; • No relevant changes in greenhouse gas emissions other than methane occur as a consequence of the project and/or need to be accounted for; • No changes in the type and source of biomass used for charcoal production.
Important parameters	At validation: • Methane emission factor in the baseline. Monitored: • Quantity of raw material used and its moisture content; • Quantity of charcoal produced and its moisture content; • Amount of methane generated, fuelled or flared; • Power and auxiliary fuel consumption of the facility.
BASELINE SCENARIO Biomass is transformed into charcoal. Methane is emitted in the process.	
PROJECT SCENARIO Biomass is transformed into charcoal. Methane is recovered and combusted. In case of energetic use of methane, displacement of more-GHG-intensive energy generation.	

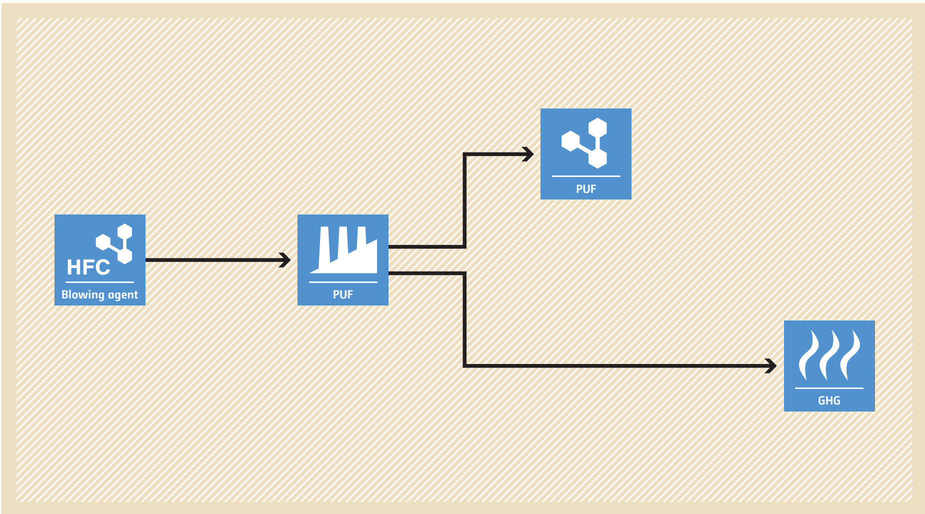
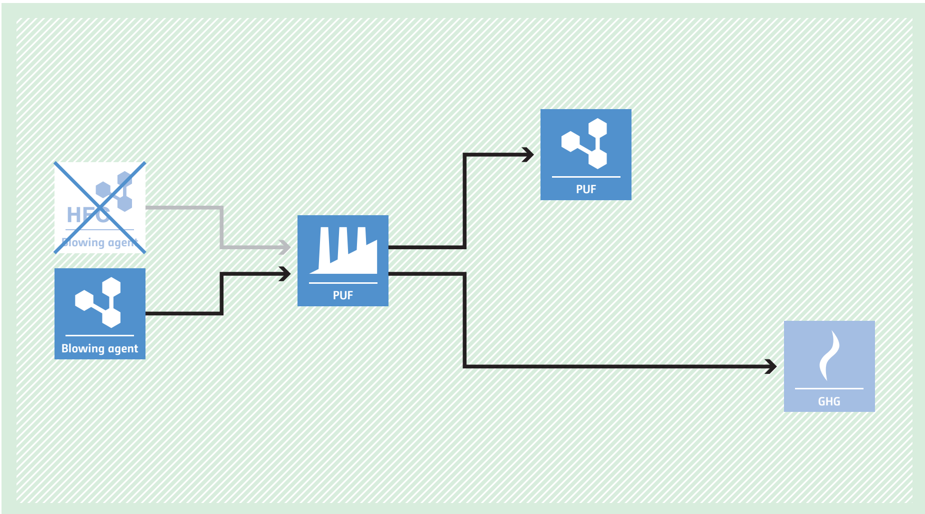
AMS-III.L. Avoidance of methane production from biomass decay through controlled pyrolysis

Typical project(s)	Avoidance of the production of methane from organic matter that would have otherwise been left to decay under anaerobic conditions in a solid waste disposal site without methane recovery. Due to the project, decay is prevented through controlled pyrolysis.
Type of GHG emissions mitigation action	• GHG emission avoidance. GHG emission avoidance and replacement of more-GHG-intensive service by pyrolysis of organic matter.
Important conditions under which the methodology is applicable	• The pyrolysed residues are no longer prone to anaerobic decomposition; • Measures shall include recovery and combustion of non-CO greenhouse gases produced during pyrolysis; • The location and characteristics of the disposal site in the baseline condition shall be known, in such a way as to allow the estimation of its methane emissions.
Important parameters	Monitored: • Percentage composition of volatile carbon, fixed carbon, ashes and moisture in the waste processed by pyrolysis (by a representative number of samples); • Amount and composition (weight fraction of each waste type) of waste processed by pyrolysis; • Quantity of non-biogenic waste processed by pyrolysis; • Quantity of auxiliary fuel used and power consumption of the project facilities and/or power generation by the project.
BASELINE SCENARIO Organic matter will decay under clearly anaerobic conditions in a solid waste disposal site and the produced methane is being released into the atmosphere.	
PROJECT SCENARIO Methane production due to anaerobic decay of organic matter will be avoided through controlled pyrolysis. In case of energetic use of products (e.g. pyrolysis gas or oil), displacement of more-GHG-intensive energy generation.	

AMS-III.M. Reduction in consumption of electricity by recovering soda from paper manufacturing process

Typical project(s)	Recovery of caustic soda from waste black liquor generated in paper manufacturing.
Type of GHG emissions mitigation action	• GHG emission avoidance. Reduction of production of caustic soda and thereby reduction of electricity consumption by recovery of caustic soda from black liquor.
Important conditions under which the methodology is applicable	• Not applicable.
Important parameters	At validation: • Historical electricity intensity of soda production (including imports); • Grid emission factor (can also be monitored ex post).
	Monitored: • Quantity of caustic soda recovered per year; • Electricity consumption, consumption of fossil fuel and auxiliary fuel in the caustic soda recovery plant; • Quantity of residues produced, portion of residue used for the production of lime and portion of residue that is disposed in a solid waste disposal site.
BASELINE SCENARIO Black liquor from paper production is wasted. Much electricity is needed to produce caustic soda that is consumed in the paper mill.	
PROJECT SCENARIO Caustic soda is recovered from black liquor to displace equivalent quantity of purchased caustic soda. Less electricity is required for recovery.	

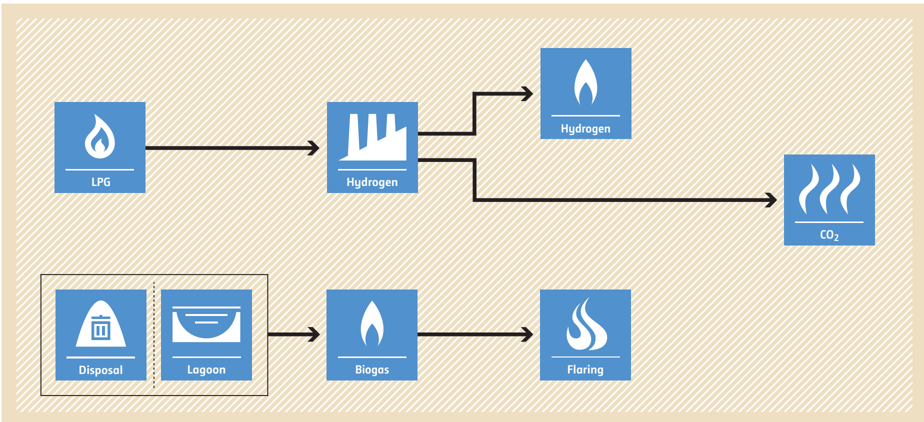
AMS-III.N. Avoidance of HFC emissions in poly urethane foam (PUF) manufacturing

Typical project(s)	Use of a non-GHG blowing agent (e.g. pentane) to replace HFC gases used as a blowing agent (e.g. HFC-134a, HFC-152a, HFC-365mfc and HFC-245fa) during the production of PUF in an existing or a new manufacturing facility.
Type of GHG emissions mitigation action	• Feedstock switch. Avoidance of fugitive emissions of HFC gases through the use of a non-GHG blowing agent.
Important conditions under which the methodology is applicable	• In case a project is implemented at an existing facility, only HFC blowing agent was used in PUF production for at least three years prior to the project implementation; • There are no local regulations that constrain the use of HFC and hydrocarbon (e.g. pentane) as blowing agents; • PUF produced with a non-GHG blowing agent will have equivalent or superior insulating properties than the PUF produced using a HFC blowing agent; • Emission reductions can be claimed only for domestically sold PUF and excludes export of the manufactured PUF.
Important parameters	At validation: • The first year and annual losses of HFC blowing agent.
	Monitored: • Total quantity of PUF production (in m) on daily basis.
BASELINE SCENARIO Production of PUF using HFC blowing agents.	
PROJECT SCENARIO Production of PUF using pentane blowing agents.	

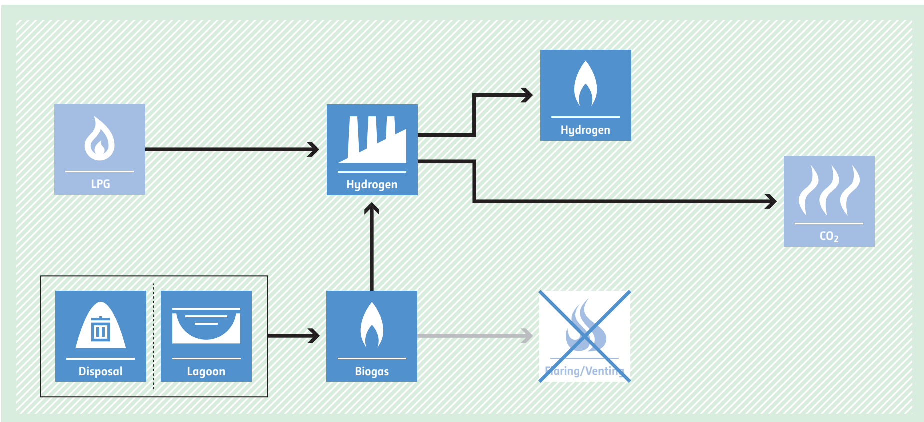
AMS-III.O. Hydrogen production using methane extracted from biogas

Typical project(s)	Installation of biogas purification system to isolate methane from biogas for the production of hydrogen displacing LPG as both feedstock and fuel in a hydrogen production unit. Examples are the installation of a biogas purification system to isolate methane from biogas which is being flared in the baseline situation or installation of a biogas purification system in combination with installation of new measures that recover methane from organic matter from waste water treatment plants or landfills, using technologies/measures covered in AMS-III.H. or AMS-III.G.
Type of GHG emissions mitigation action	• Fuel and feedstock switch. Fuel and feed stock switch to reduce consumption of fossil fuel.
Important conditions under which the methodology is applicable	• This methodology is not applicable to technologies displacing the production of hydrogen from electrolysis; • The methodology is only applicable if it can be ensured that there is no diversion of biogas that is already being used for thermal or electrical energy generation or utilized in any other (chemical) process in the baseline.
Important parameters	Monitored: • Continuous metering of produced hydrogen on volumetric basis; • Continuous metering of LPG used as feedstock to hydrogen production unit; • Continuous monitoring of specific fuel consumption of LPG when biogas is not available in sufficient quantity; • Continuous measurement of electricity and fuel used by the biogas purification system; • Continuous measurement of biogas produced by the waste water treatment system, landfill gas capture system or other processes producing biogas.

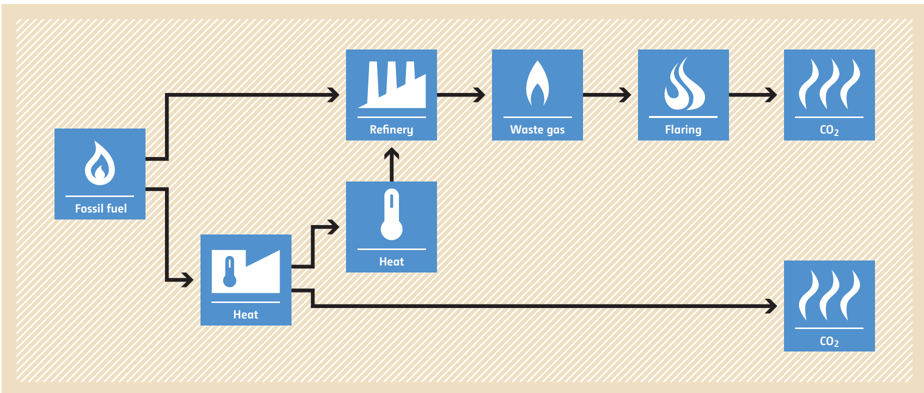
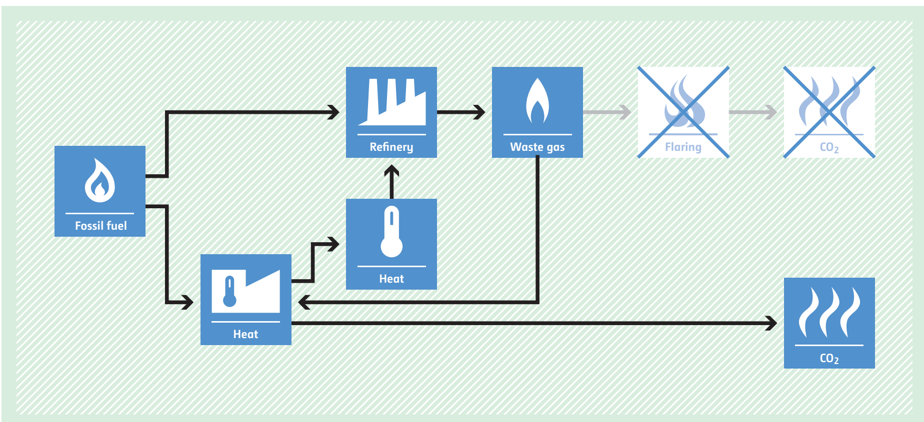
BASELINE SCENARIO
LPG is used as feedstock and fuel for hydrogen production.



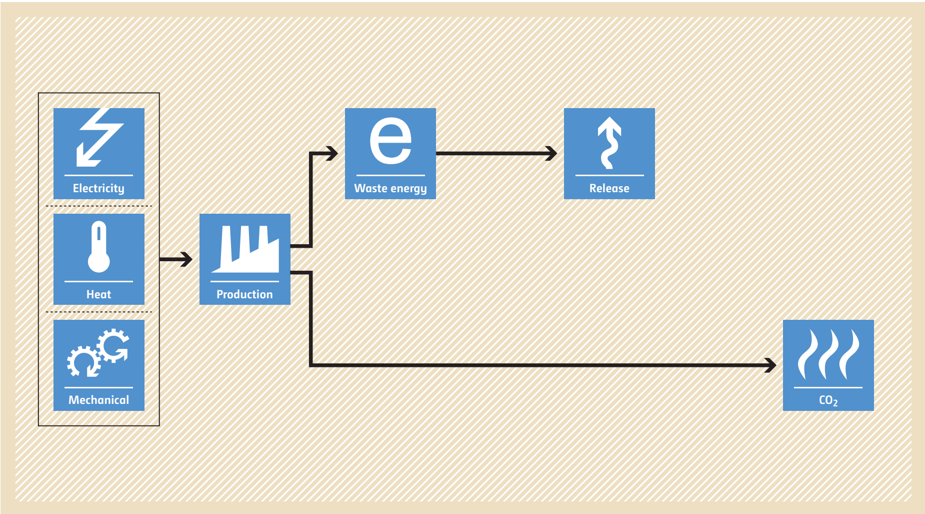
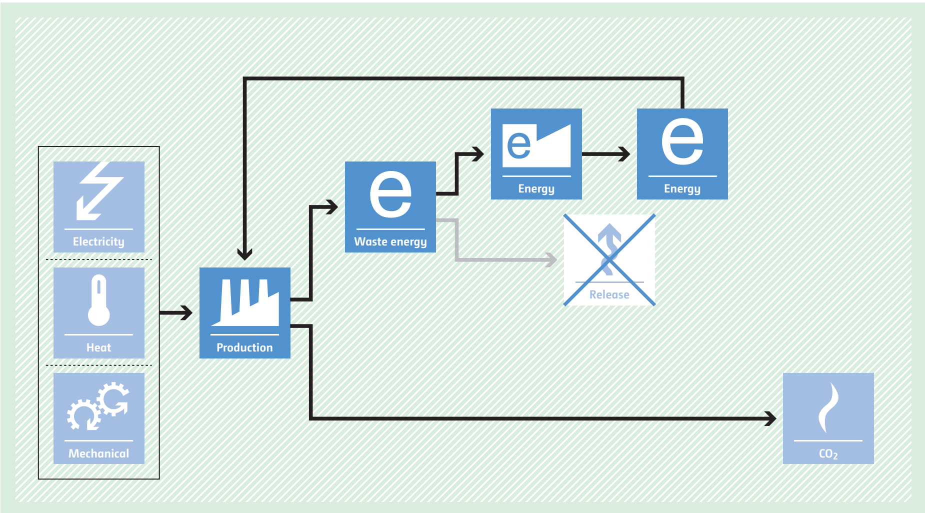
PROJECT SCENARIO
LPG is displaced by methane extracted from biogas for hydrogen production.



AMS-III.P. Recovery and utilization of waste gas in refinery facilities

Typical project(s)	Implementation of waste gas recovery in an existing refinery, where waste gas is currently being flared, to generate process heat in element process(es).
Type of GHG emissions mitigation action	• Energy efficiency. Displacement of more-GHG-intensive heat production.
Important conditions under which the methodology is applicable	• Proof that the recovered waste gas in the absence of the project was flared (evidence for the last three years). Baseline emissions are capped either at the historical three-year average or its estimation; • Waste gas is not combined with additional fuel gas or refinery gas between recovery and its mixing with a fuel-gas system or its direct use; • The project does not lead to an increase in production capacity of the refinery facility; • The recovery of waste gas may be a new initiative or an incremental gain in an existing practice. If the project is an incremental gain, the difference in the technology before and after implementation of the project should be clearly shown.
Important parameters	At validation: • Historical annual average amount of waste gas sent to flares; • Efficiencies of the process heating device using the recovered waste gas compared to that using fossil fuel.
	Monitored: • Data needed to calculate the emission factors of electrical energy consumed by the project, either from the captive power plant or imported from grid as well as the amount and composition of recovered waste gas (e.g. density, LHV) and data needed to calculate the emission factors from fossil fuels used for process heating and steam generation within the refinery.
BASELINE SCENARIO Element process(es) will continue to supply process heat, using fossil fuel. The waste gases from the refinery are flared.	
PROJECT SCENARIO Element process(es) will be fuelled with waste gas, replacing fossil fuel usage.	

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

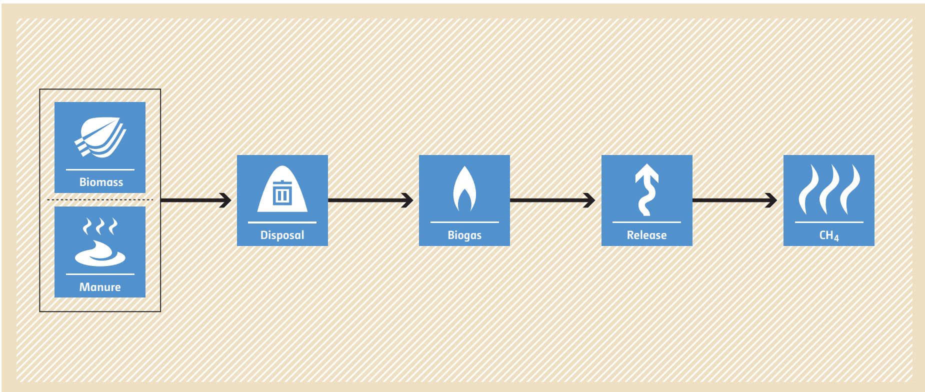
Typical project(s)	Utilization of waste gas and/or waste heat at existing facilities and convert the waste energy into useful energy, which may be for cogeneration, generation of electricity, direct use as process heat, generation of heat in an element process or generation of mechanical energy.
Type of GHG emissions mitigation action	• Energy efficiency. Reduction of GHG emissions by energy recovery.
Important conditions under which the methodology is applicable	• If the project activity is implemented at an existing facility, demonstration of the use of waste energy in the absence of the project activity shall be based on historic information; • It shall be demonstrated that the waste energy utilized in the project activity would have been flared or released into the atmosphere in the absence of the project activity.
Important parameters	Monitored: • Thermal/electrical/mechanical energy produced; • Amount of waste gas or the amount of energy contained in the waste heat or waste pressure.
BASELINE SCENARIO Energy is obtained from GHG-intensive energy sources (e.g. electricity is obtained from a specific existing power plant or from the grid, mechanical energy is obtained by electric motors and heat from a fossil-fuel-based element process) and some energy is wasted in the production process and released.	
PROJECT SCENARIO Waste energy is utilized to produce electrical/thermal/mechanical energy to displace GHG-intensive energy sources.	

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

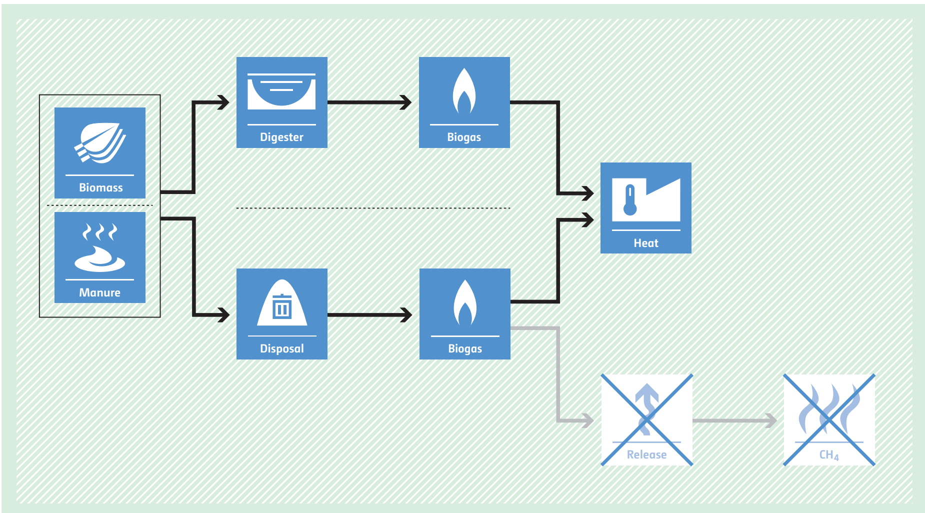
Women and children

Typical project(s)	Recovery and destruction of methane from manure and wastes from agricultural activities through: Installation of a methane recovery and combustion system to an existing source of methane emissions; or, change of the management practice of an organic waste or raw material in order to achieve controlled anaerobic digestion that is equipped with methane recovery and combustion system.
Type of GHG emissions mitigation action	• GHG destruction; • Fuel switch. Destruction of methane and displacement of more-GHG-intensive energy generation.
Important conditions under which the methodology is applicable	• Limited to measures at individual households or small farms (e.g. installation of a domestic biogas digester); • The sludge shall be handled aerobically; • All the methane collected by the recovery system shall be destroyed; • Applicable only in combination with AMS-I.C., and/or AMS-I.I. and/or AMS-I.E.
Important parameters	Monitored: • Inspection of the project systems; • Number of systems operating; • Annual average animal population; • Amount of waste/animal manure generated on the farm and the amount of waste/animal manure fed into the system e.g. biogas digester; • Proper soil application (not resulting in methane emissions) of the final sludge verified on a sampling basis.

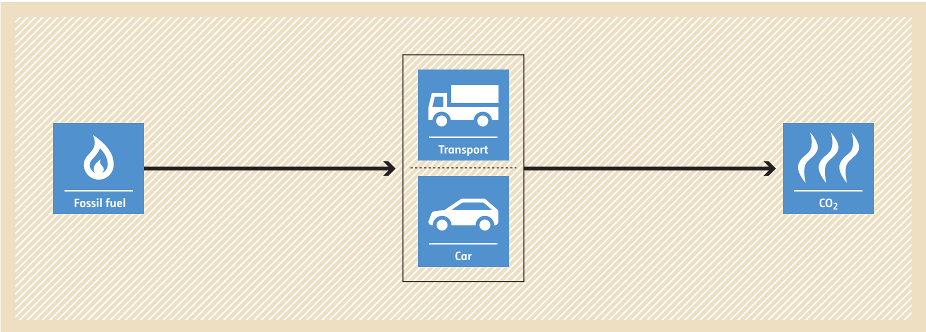
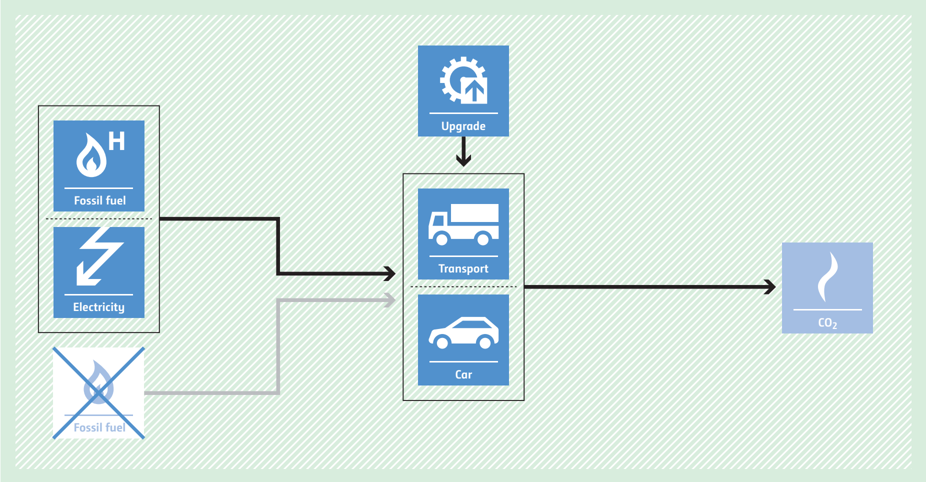
BASELINE SCENARIO
Biomass and other organic matter are left to decay anaerobically and methane is emitted into the atmosphere.



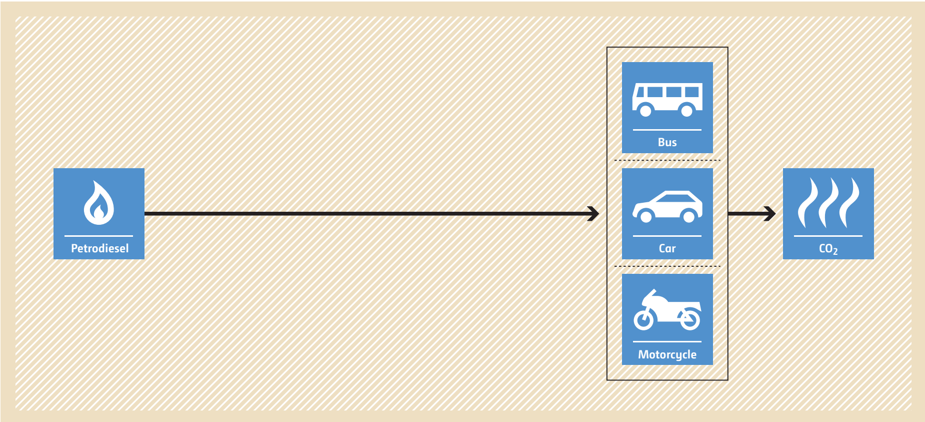
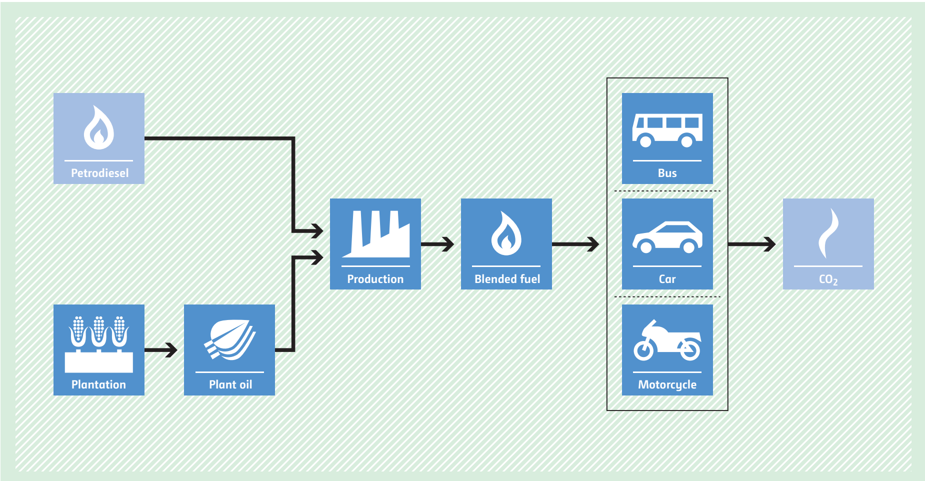
PROJECT SCENARIO
Methane is recovered and destroyed or used. In case of energetic use of biogas, displacement of more-GHG-intensive energy generation.



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

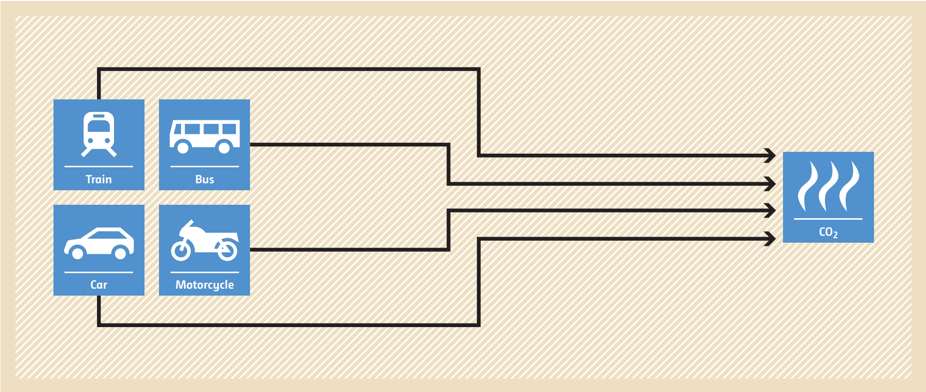
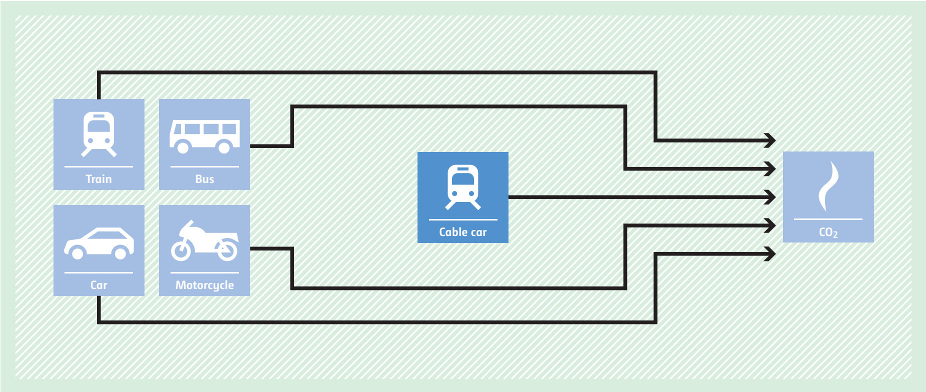
Typical project(s)	Introduction and operation of new less-greenhouse-gas-emitting vehicles (e.g. CNG, LPG, electric or hybrid) for commercial passengers and freight transport, operating on routes with comparable conditions. Retrofitting of existing vehicles is also applicable.
Type of GHG emissions mitigation action	• Fuel switch. Displacement of more-GHG-intensive vehicles.
Important conditions under which the methodology is applicable	• The overall level of service provided on comparable routes before project implementation shall remain the same and a modal shift in transport is not eligible; • There is no significant change in tariff discernible from their natural trend, which could lead to change in patterns of vehicle use; • The frequency of operation of the vehicles is not decreased; • The characteristics of the travel route – distance, start and end points and the route itself and/or the capacity introduced by the project is sufficient to service the level of passenger/freight transportation previously provided.
Important parameters	At validation: • Efficiency of baseline vehicles (can also be monitored ex post).
	Monitored: • Total annual distance travelled and passengers or goods transported by project and baseline vehicles on route; • Annual average distance of transportation per person or tonne of freight per baseline and project vehicle; • Service level in terms of total passengers or volume of goods transported on route before and after project implementation.
BASELINE SCENARIO Passengers and freight are transported using more-GHG-intensive transportation modes.	
PROJECT SCENARIO Passengers and freight are transported using new less-greenhouse-gas-emitting vehicles or retrofitted existing vehicles on routes.	

AMS-III.T. Plant oil production and use for transport applications

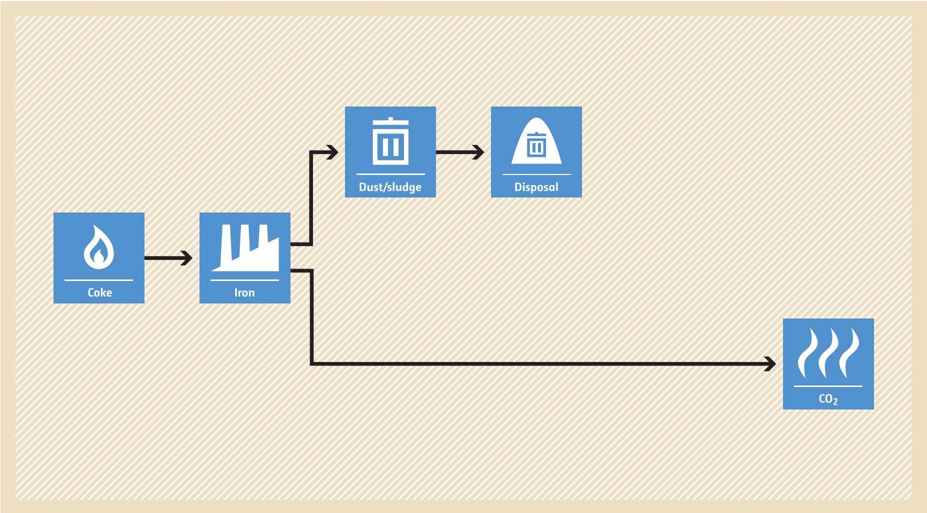
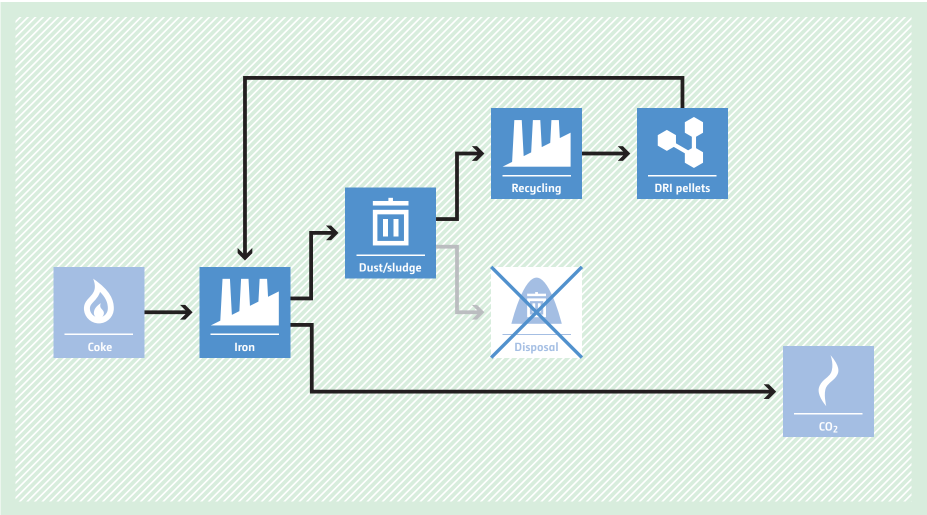
Typical project(s)	Plant oil production that is used for transportation applications, where the plant oil is produced from pressed and filtered oilseeds from plants that are cultivated on dedicated plantations.
Type of GHG emissions mitigation action	• Fuel switch. Displacement of more-GHG-intensive petrodiesel for transport.
Important conditions under which the methodology is applicable	• Oil crops are cultivated on area that is not a forest and has not been deforested during the last 10 years prior to the implementation of the project; • The establishment of dedicated plantations on peatlands is not allowed; • The plant oil is used in blends with pure petrodiesel of up to 10% by volume only or use of pure plant oil in converted vehicles; • Baseline vehicles use petrodiesel only; • No export of produced plant oil to Annex 1 countries allowed.
Important parameters	Monitored: • Crop harvest and oil content of the oilseeds as well as net calorific value and amount of plant oil produced by the project per crop source; • Energy use (electricity and fossil fuel) for the production of plant oil; • Use default values or alternatively monitor amount of fertilizer applied for the cultivation of plant oil per crop source; • Leakage emissions due to a shift of pre-project activities and the competing uses of biomass; • In case of use of pure plant oil it shall be monitored and verified by random sampling that the vehicles have carried out engine conversions.
BASELINE SCENARIO Petrodiesel would be used in the transportation applications.	
PROJECT SCENARIO Oil crops are cultivated, plant oil is produced and used in the transportation applications displacing petrodiesel.	

AMS-III.U. Cable Cars for Mass Rapid Transit System (MRTS)

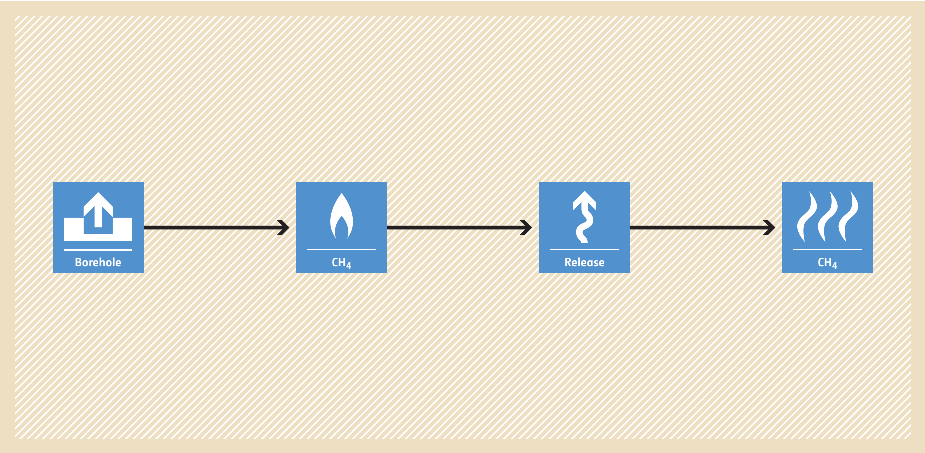
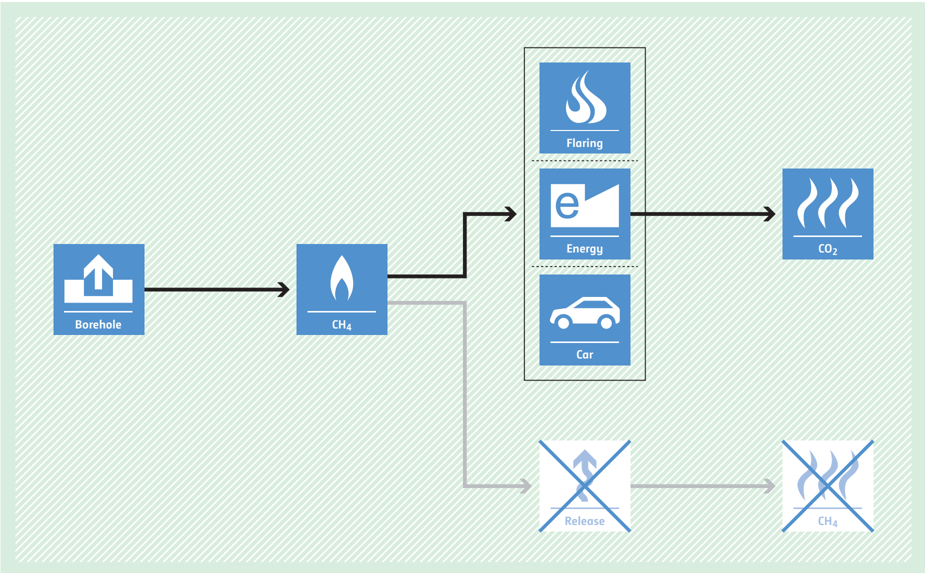
Women and children

Typical project(s)	Construction and operation of cable cars for urban transport of passengers substituting traditional road-based transport trips. Extensions of existing cable cars are not allowed.
Type of GHG emissions mitigation action	• Energy efficiency; • Fuel switch. Displacement of more-GHG-intensive vehicles.
Important conditions under which the methodology is applicable	• The origin and final destination of the cable cars are accessible by road; • Fuels used in the baseline and/or the project are electricity, gaseous or liquid fossil fuels. If biofuels are used, the baseline and the project emissions should be adjusted accordingly; • The analysis of possible baseline scenario alternatives shall demonstrate that a continuation of the current public transport system is the most plausible baseline scenario.
Important parameters	At validation: • Occupancy rate of vehicles category; • If applicable: grid emission factor (can also be monitored ex post).
	Monitored: • Total passengers transported by the project; • By survey: trip distance of passengers using the baseline mode and the trip distance of passengers using the project mode from their trip origin to the project entry station and from project exit station to their final destination; • By survey: share of the passengers that would have used the baseline mode; • Share of the passengers using the project mode from trip origin to the project entry station and from project exit station to their final destination; • Quantity of electricity consumed by the cable car for traction.
BASELINE SCENARIO Passengers are transported under mixed traffic conditions using a diverse transport system involving buses, trains, cars, non-motorized transport modes, etc.	
PROJECT SCENARIO Passengers are transported using cable cars, thus reducing fossil fuel consumption and GHG emissions.	

AMS-III.V. Decrease of coke consumption in blast furnace by installing dust/sludge recycling system in steel works

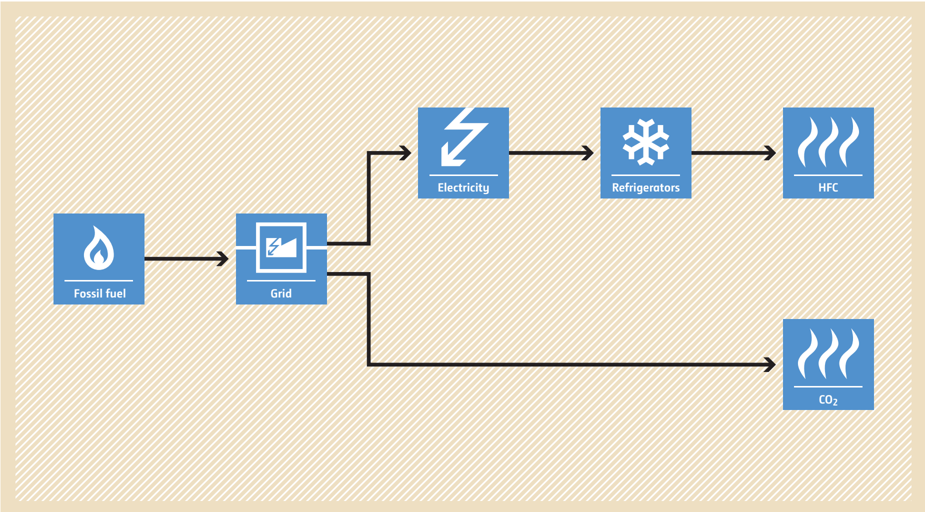
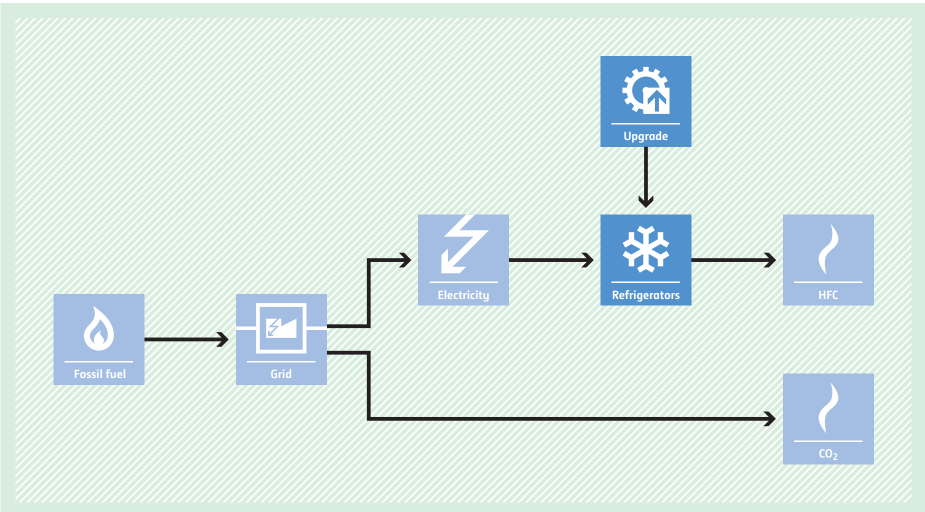
Typical project(s)	Introduction of dust/sludge-recycling system such as Rotary Hearth Furnace (RHF), Waelz, and Primus to produce DRI pellet, which is fed into the blast furnace of steel works in order to reduce coke consumption.
Type of GHG emissions mitigation action	• Energy efficiency. Decreased use of coke as reducing agent by recycling dust/sludge in the form of DRI pellets.
Important conditions under which the methodology is applicable	• The dust/sludge is not currently utilized inside the works but sold outside and/or land filled; • “Alternative material” that can be used by the “outside user” instead of the dust/sludge is abundant in the country/region; • Only steel works commissioned before September 26, 2008 are eligible.
Important parameters	At validation: • Historical average of pig iron production and coke consumption.
	Monitored: • Annual quantity of pig iron production, coke consumption; • Quantity and iron content of DRI pellet fed into the blast furnace; • Fuel and electricity use; • Fraction of carbon in coke fed into the blast furnace (tonnes of C per tonne of coke).
BASELINE SCENARIO High amounts of coke are used to produce pig iron, thus leading to high CO_2 emissions. Dust/sludge from steel works is sold to outside user and/or land-filled.	
PROJECT SCENARIO Less coke is used to produce pig iron. This leads to lower CO_2 emissions. Dust/sludge is transformed into DRI pellets which are reused as input in this pigiron production.	

AMS-III.W. Methane capture and destruction in non-hydrocarbon mining activities

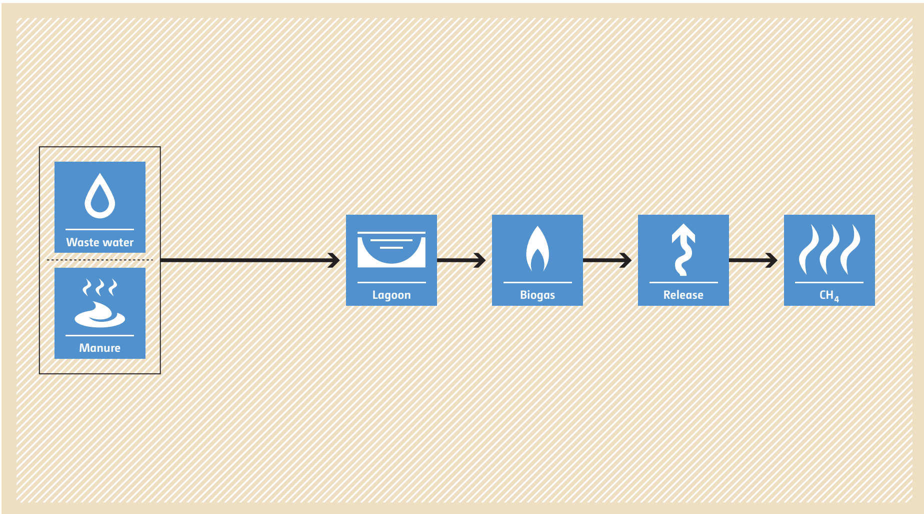
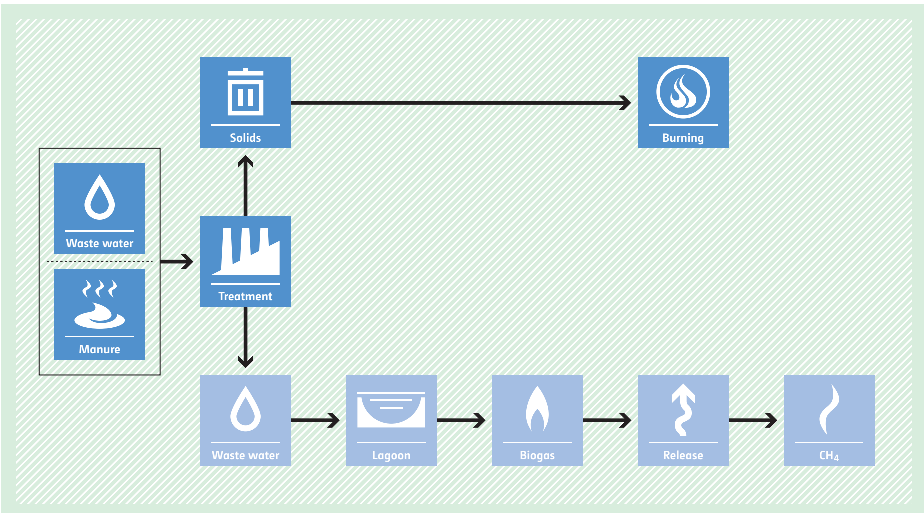
Typical project(s)	This methodology comprises activities that capture delete methane released from holes drilled into geological formations specifically for mineral exploration and prospecting.
Type of GHG emissions mitigation action	• GHG destruction. Capture and combustion/utilization of methane released from boreholes.
Important conditions under which the methodology is applicable	• Abandoned or decommissioned mines, as well as open cast mines are excluded. Coal extraction mines or oil shale, as well as boreholes or wells opened for gas/oil exploration or extraction do not qualify under this methodology; • This methodology is applicable for structures installed, or boreholes drilled before end of 2001, or for structures installed, or boreholes drilled after 2001, where it can be demonstrated that the structures or the boreholes were part of an exploration plan; • Maximum outside diameter of the boreholes should not exceed 134 mm; • This methodology excludes measures that would increase the amount of methane emissions from the boreholes beyond the natural release as would occur in the baseline.
Important parameters	Monitored: • Vehicle fuel provided by the project activity; • Amount of methane actually flared; • Electricity and/or heat produced by the project activity; • Consumption of grid electricity and/or fossil fuel by the project.
BASELINE SCENARIO Methane is emitted from boreholes into the atmosphere.	
PROJECT SCENARIO Capture and destruction of methane from boreholes.	

AMS-III.X. Energy efficiency and HFC-134a recovery in residential refrigerators

Women and children

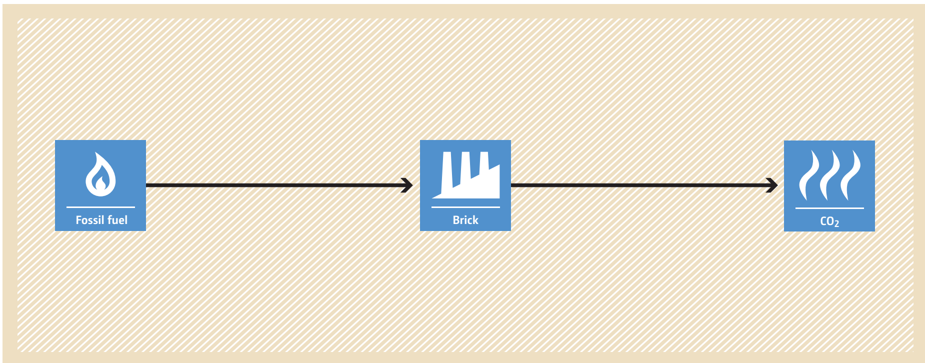
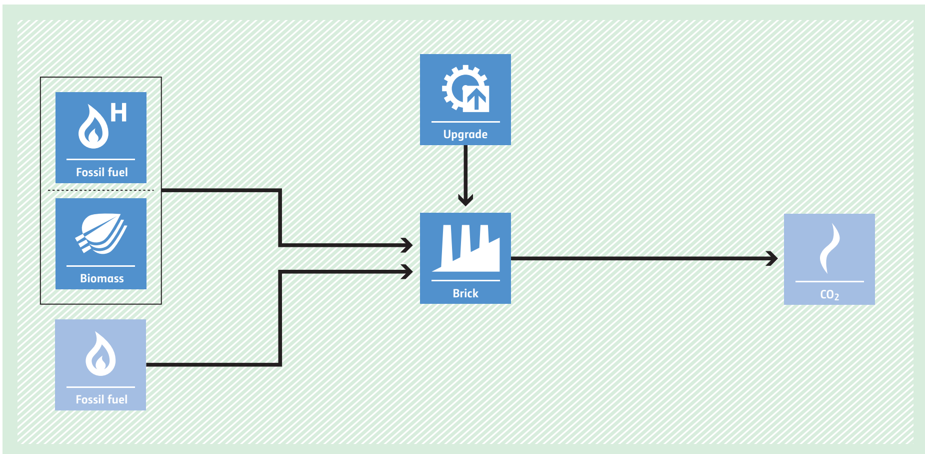
Typical project(s)	Replacement of existing, functional domestic refrigerators by more-efficient units and recovery/destruction of HFCs from the refrigerant and the foam.
Type of GHG emissions mitigation action	• Energy efficiency; • GHG emission avoidance; • GHG destruction. GHG emission avoidance by re-use of refrigerant or GHG destruction combined with an increase in energy efficiency.
Important conditions under which the methodology is applicable	• Project refrigerants and foam-blowing agents have no ozone depleting potential ozone depleting potential and a global warming potential lower than 15; • All refrigerator replacements take place within just one year of project start; • Project and baseline refrigerators are electrically driven; • Project refrigerators have an average volume capacity of at least 80% of the baseline refrigerators.
Important parameters	Monitored: • Number of refrigerators distributed and their electricity consumption; • Quantity of HFC reclaimed; • Specific electricity consumption from replaced refrigerators.
BASELINE SCENARIO Use of large amounts of electricity by refrigerators and HFC emissions from the refrigerators.	
PROJECT SCENARIO Use of lower amounts of electricity by refrigerators and reduced HFC emissions from refrigerators.	

AMS-III.Y. Methane avoidance through separation of solids from wastewater or manure treatment systems

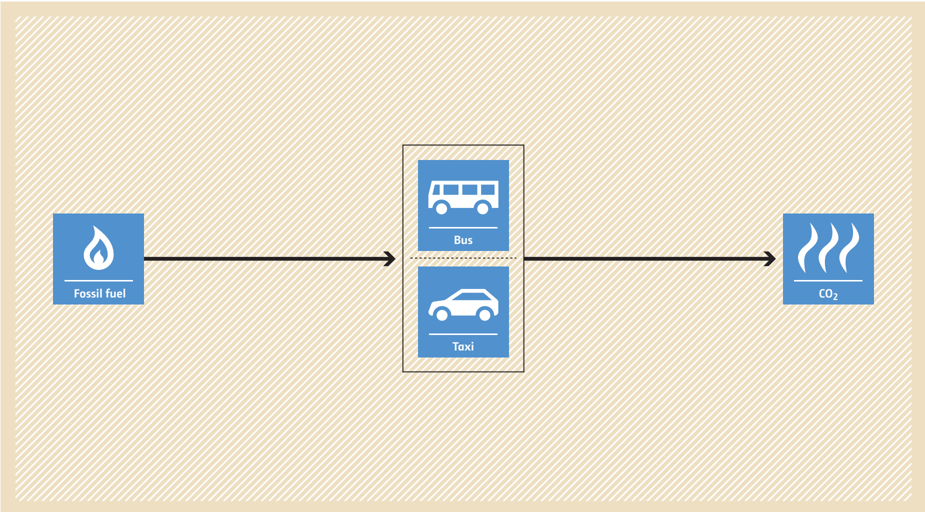
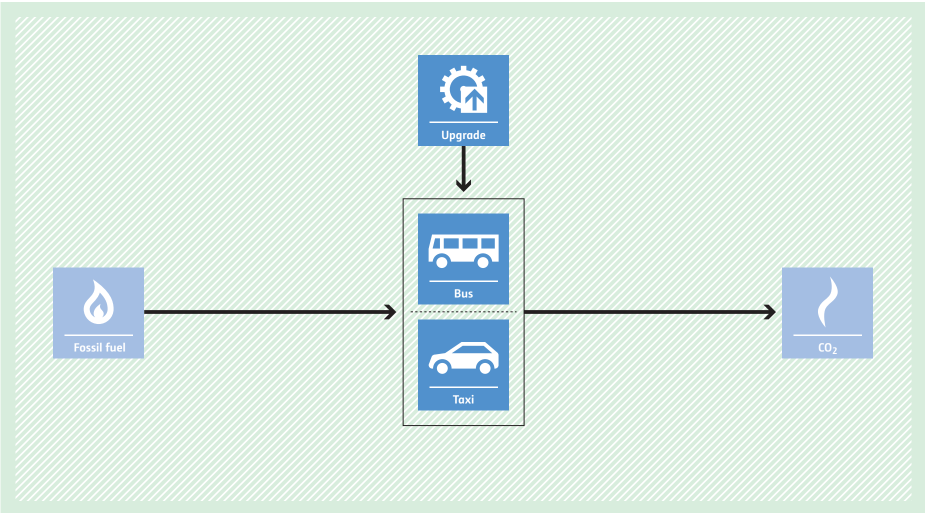
Typical project(s)	Avoidance or reduction of methane production from anaerobic wastewater treatments systems and anaerobic manure management systems where the volatile solids are removed and the separated solids are further treated/used/disposed to result in lower methane emissions.
Type of GHG emissions mitigation action	• GHG emission avoidance. Avoidance of methane emissions.
Important conditions under which the methodology is applicable	• The project does not recover or combust biogas; • Technology for solid separation shall be one or a combination of mechanical solid/liquid separation technologies and thermal treatment technologies, and not by gravity; • Dry matter content of the separated solids shall remain higher than 20% and separation shall be achieved in less than 24 hours; • The liquid fraction from the project solid separation system shall be treated either in a baseline facility or in a treatment system with lower methane conversion factor than the baseline system.
Important parameters	Monitored: • For manure management systems, number of animals, their type and their individual volatile solids excretion; • For wastewater systems, the flow of wastewater entering the system and the COD load of the wastewater.
BASELINE SCENARIO Solids in manure or wastewater would be treated in a manure management system or wastewater treatment facility without methane recover, and methane is emitted into the atmosphere.	
PROJECT SCENARIO Less methane is emitted due to separation and treatment of solids.	

AMS-III.Z. Fuel switch, process improvement and energy efficiency in brick manufacture

Women and children

Typical project(s)	Switch to a more-energy-efficient brick production process and/or switch from fossil fuel to renewable biomass or less-carbon-intensive fossil fuel.
Type of GHG emissions mitigation action	• Energy efficiency; • Renewable energy; • Fuel or feedstock switch. Reduction of emissions from decreased energy consumption per brick produced and from the use of fuels with lower carbon intensity, either at an existing brick kiln or at a new facility.
Important conditions under which the methodology is applicable	• Quality of the project bricks should be comparable to or better than the baseline bricks; • No renewable biomass has been used in the existing project facility during the last three years immediately prior to the start of the project activity; • For project activities involving changes in raw materials, the raw materials to be utilized shall be abundant in the country/region; • For project activities using crops from renewable biomass origin as fuel, the crops shall be cultivated at dedicated plantations; • Exemption of demonstration of debundling is allowed under certain conditions.
Important parameters	At validation: • Historical brick output and fuel consumption.
	Monitored: • Production output; • Quantity and type of fuels used; • Quantity of raw and additive materials; • Quality of the project bricks.
BASELINE SCENARIO Brick production using more-carbon-intensive fuel and energy-intensive technology.	
PROJECT SCENARIO Brick production using less-carbon-intensive fuel or biomass in a more-efficient facility.	

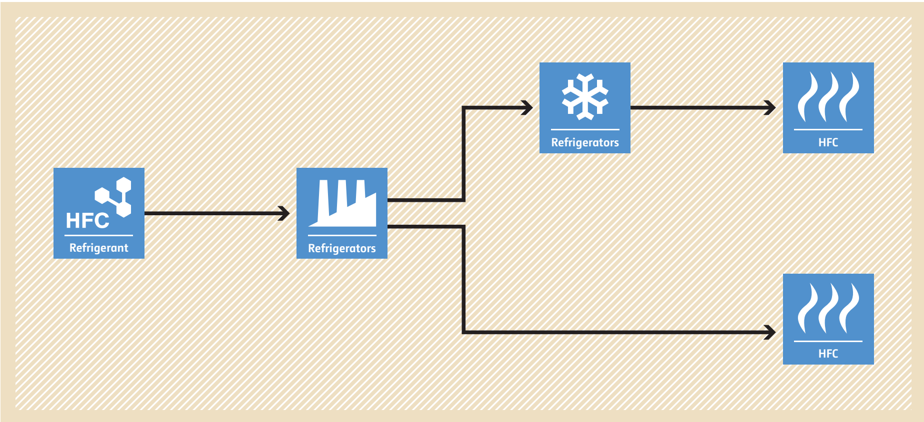
AMS-III.AA. Transportation energy efficiency activities using retrofit technologies

Typical project(s)	Retrofit of the engine of existing/used vehicles for commercial passengers transport (e.g. buses, motorized rickshaws, taxis) which results in increased fuel efficiency of the vehicles.
Type of GHG emissions mitigation action	• Energy efficiency. Energy efficiency measures in transportation reduce GHG emissions due to decreased fuel consumption.
Important conditions under which the methodology is applicable	• The vehicles for passenger transportation are of the same type, use the same fuel and single type of retrofit technology; • The methodology is not applicable to brand new vehicles/technologies (e.g. CNG, LPG, electric or hybrid vehicles); • The vehicles shall operate during the baseline and project on comparable routes with similar traffic situations.
Important parameters	At validation: • Determination of the remaining technical lifetime of the retrofitted vehicles.
	Monitored: • Fuel efficiency of the baseline and project vehicle; • Annual average distance travelled by project vehicles; • Number of theoretically operating project vehicles; • Share of project vehicles in operation.
BASELINE SCENARIO Passengers are transported using less-fuel-efficient vehicles.	
PROJECT SCENARIO Passengers are transported using retrofitted more-fuel-efficient vehicles.	

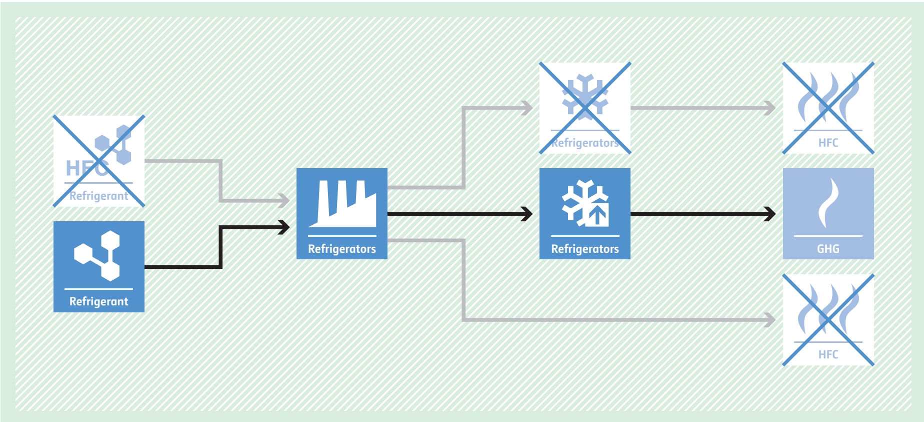
AMS-III.AB. Avoidance of HFC emissions in standalone commercial refrigeration cabinets

Typical project(s)	Introduction of new commercial standalone refrigeration cabinets using refrigerants with low global warming potential (GWP).
Type of GHG emissions mitigation action	• GHG emission avoidance; • Feedstock switch. Avoidance of fugitive emissions of refrigerants with high GWP (e.g. HFC-134a) through the use of refrigerants with low GWP.
Important conditions under which the methodology is applicable	• Cabinets in the project case utilize one type of refrigerants and foam blowing agents having no ozone depleting potential (ODP) and low GWP; • The cabinets introduced by the project are equally or more energy efficient than the cabinets that would have been used in the absence of project; • The project proponent has been producing or managing commercial refrigeration cabinets charged with refrigerants with high GWP for at least three years and has not been using refrigerants with a low GWP in significant quantities prior to the start of the project.
Important parameters	At validation: • Nameplate initial refrigerant charge for each refrigeration cabinet model; • Fugitive emissions of refrigerants during manufacturing, servicing/maintenance, and disposal of refrigeration cabinets.
	Monitored: • Number of refrigeration cabinets that are manufactured, put into use, under servicing/maintenance, and decommissioned and disposed.

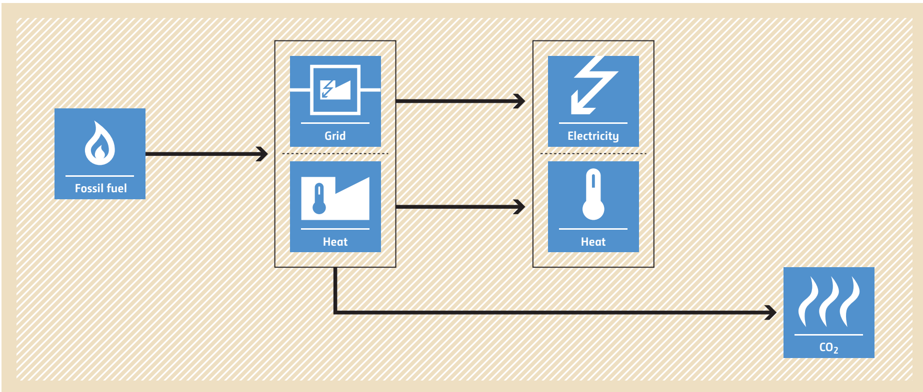
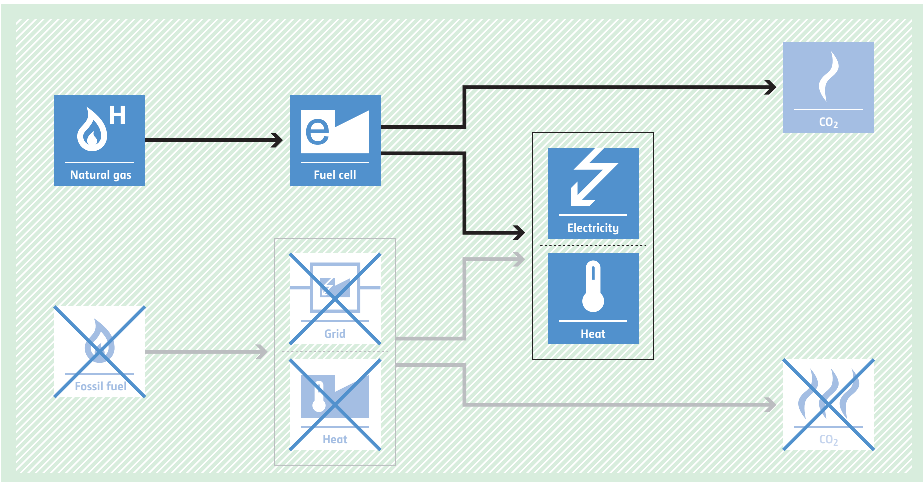
BASELINE SCENARIO
Fugitive HFC emissions with high GWP during manufacturing, usage and servicing, and disposal of refrigeration cabinets.



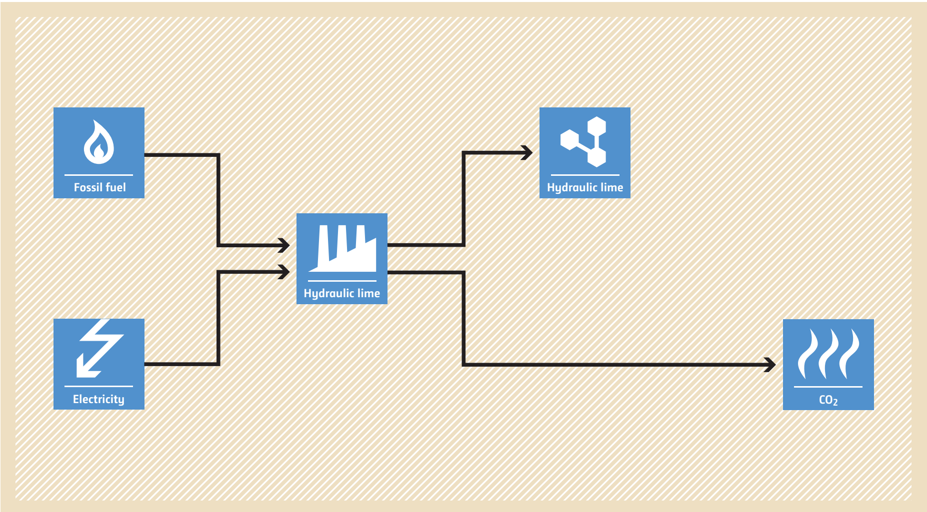
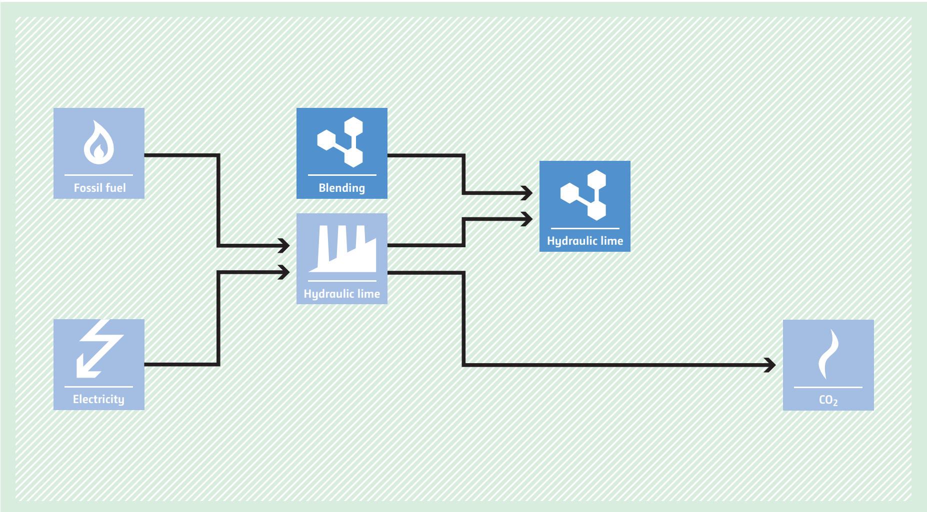
PROJECT SCENARIO
Fugitive emissions of refrigerants with low GWP during manufacturing, usage and servicing, and disposal of refrigeration cabinets.



AMS-III.AC. Electricity and/or heat generation using fuel cell

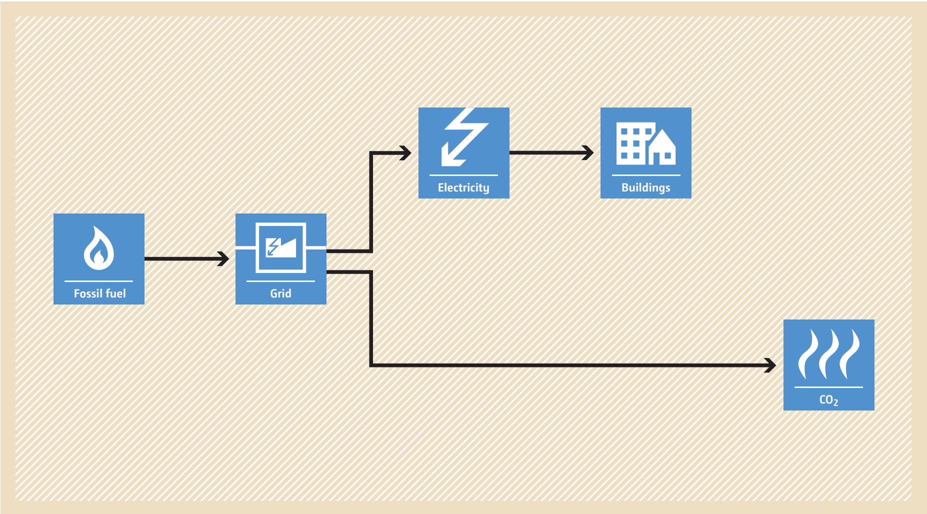
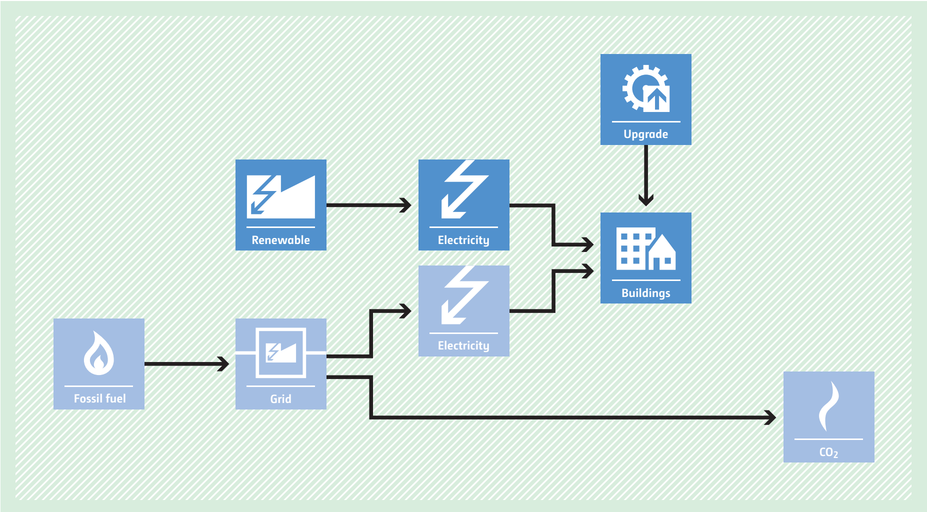
Typical project(s)	Generation of electricity and/or heat using fuel cell technology using natural gas as feedstock to supply electricity to existing or new users or to a grid.
Type of GHG emissions mitigation action	• Energy efficiency. Displacement of more-GHG-intensive electricity or electricity and heat generation.
Important conditions under which the methodology is applicable	• Not applicable where energy produced by fuel cell is used for transportation application; • Electricity and/or steam/heat delivered to several facilities require a contract specifying that only the facility generating the energy can claim CERs; • Natural gas is sufficiently available in the region or country; • If the project includes the replacement of the cell or any part of it (the molten carbonate, the electrodes, etc.) during the crediting period, there shall be no significant changes in the efficiency or capacity of the fuel cell technology used in the project due to the replacement. The lifetime of the fuel cell shall be assessed in accordance with the procedures described in General Guideline to SSC methodologies.
Important parameters	At validation: • If applicable: grid emission factor (can also be monitored ex post).
	Monitored: • Monitoring of energy (heat/power) generation and consumption of the project; • Consumption and composition of feedstock (e.g. natural gas) used for hydrogen production.
BASELINE SCENARIO Other technologies that would have been used in absence of the project and/or grid imports are supplying electricity and/or heat to new users or to a grid.	
PROJECT SCENARIO Natural gas as feedstock is used for hydrogen production which is then used in a fuel cell technology to produce heat/electricity displacing alternative technologies and therefore reducing baseline emissions.	

AMS-III.AD. Emission reductions in hydraulic lime production

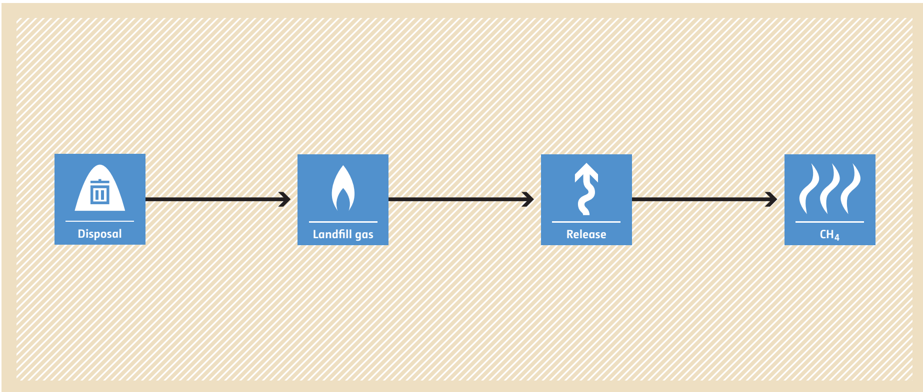
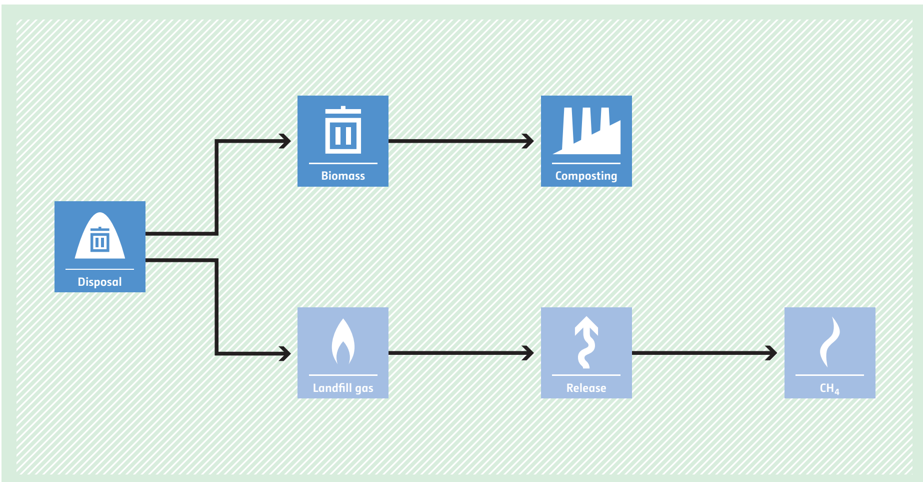
Typical project(s)	Production of alternative hydraulic lime for construction purposes by blending a certain amount of conventional hydraulic lime with alternative material and additives.
Type of GHG emissions mitigation action	• Feedstock switch. Reduction of production of hydraulic lime and thereby reduction of fossil fuel use and electricity consumption during the production process.
Important conditions under which the methodology is applicable	• Quality of alternative hydraulic lime is the same or better than the hydraulic lime; • There is no other allocation or use for the amount of alternative material used by the project and there is sufficient availability; • The project is in an existing plant; • This methodology is limited to domestically sold output of the project plant and excludes export of alternative hydraulic lime.
Important parameters	• Alternative hydraulic lime meets or exceeds the quality standards of the baseline hydraulic lime; • Total production of alternative lime and hydraulic lime (intermediate product) consumption of alternative lime and additives; • Fuel and electricity consumption.
BASELINE SCENARIO Production of hydraulic lime using conventional process consuming high amount of energy.	
PROJECT SCENARIO Reduced fossil fuel input in hydraulic lime production due to blending with additives.	

AMS-III.AE. Energy efficiency and renewable energy measures in new residential buildings

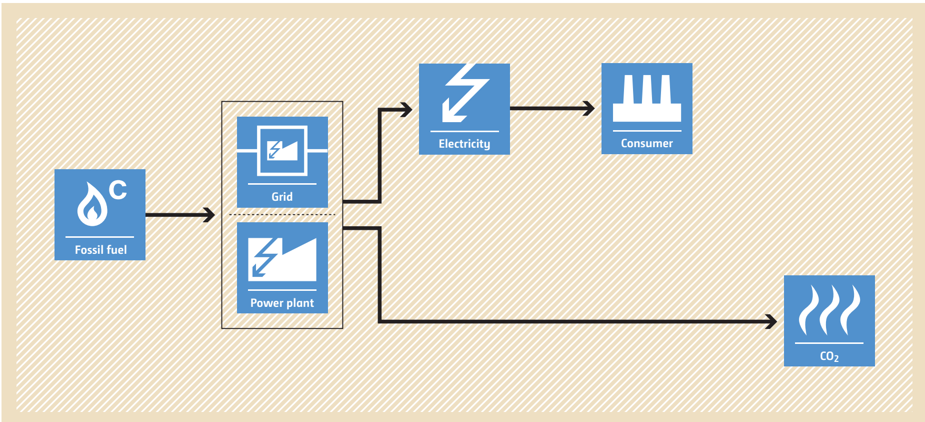
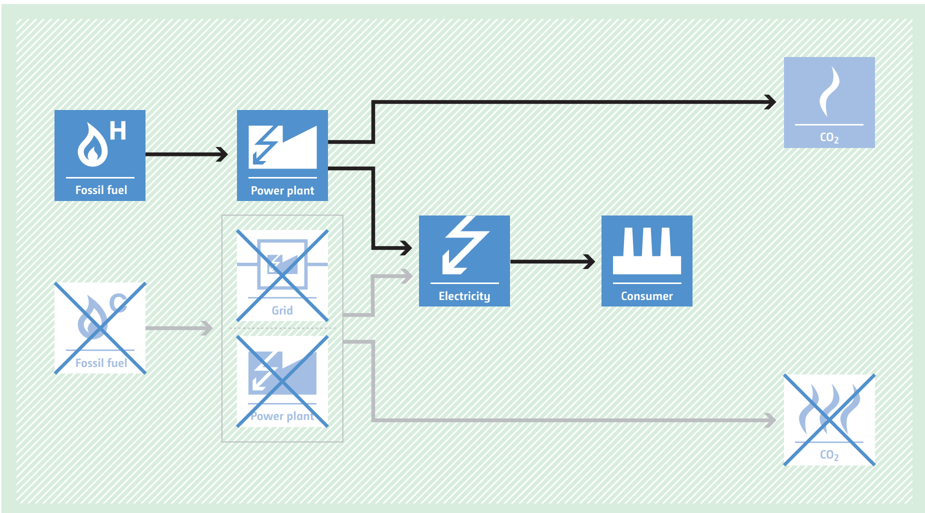
Women and children

Typical project(s)	Installation of energy efficiency and optional renewable power generation measures in new, grid-connected residential buildings.
Type of GHG emissions mitigation action	• Energy efficiency; • Renewable energy. Electricity savings through energy efficiency improvement and optional use of renewable power.
Important conditions under which the methodology is applicable	• Emission reductions shall only be claimed for grid electricity savings; • Emission reductions through biomass energy supply cannot be claimed; • Project buildings must be newly constructed residential buildings, and shall not use fossil or biomass fuels for space heating or cooling; • Refrigerant used in energy-efficient equipment under the project, if any, shall be CFC-free.
Important parameters	At validation: • Monthly electricity consumption of baseline and project residences; • Grid emission factor (can also be monitored ex post); • Monthly HDD and CDD for baseline and project residences; • Baseline and project residence characteristics.
	Monitored: • Update of the parameters provided for validation; • Annual records of project residence occupancy.
BASELINE SCENARIO Less-efficient use of electricity in buildings.	
PROJECT SCENARIO More-efficient use of electricity and optional use of renewable power in buildings.	

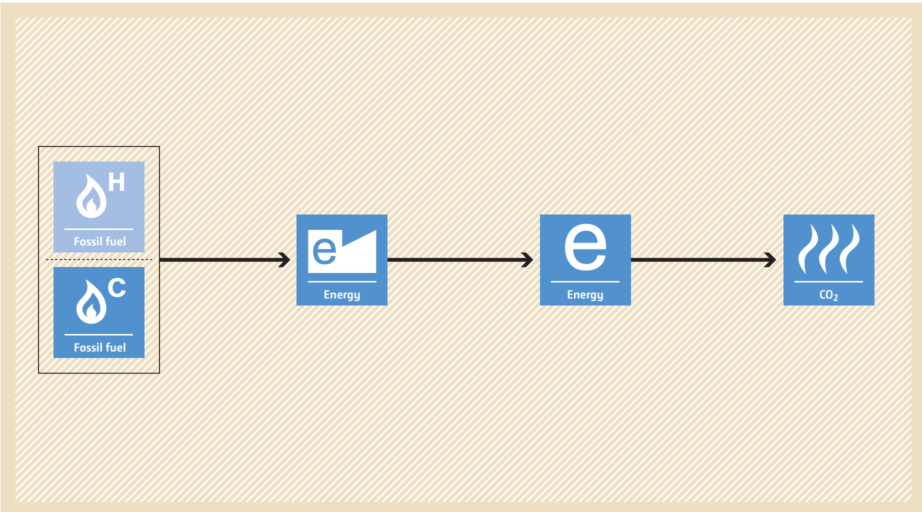
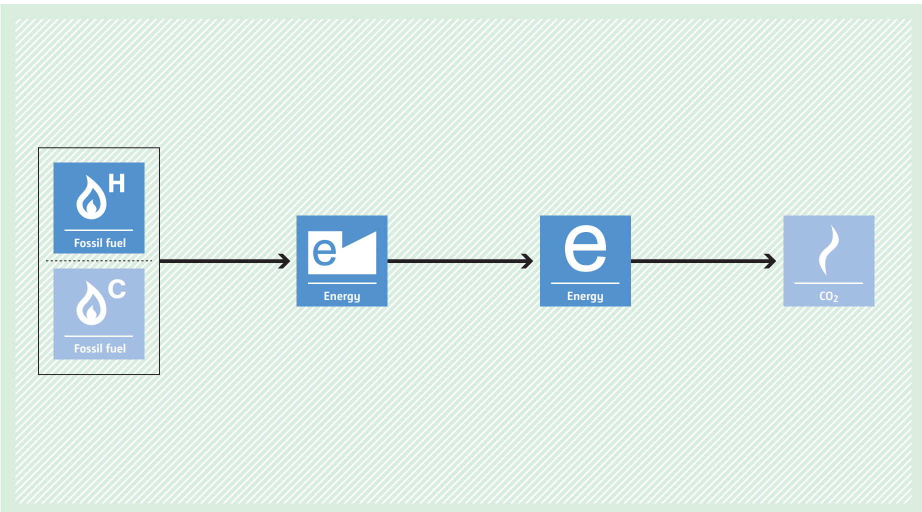
AMS-III.AF. Avoidance of methane emissions through excavating and composting of partially decayed municipal solid waste (MSW)

Typical project(s)	Avoidance of methane emissions from MSW that is already deposited in a closed solid waste disposal site (SWDS) without methane recovery. Due to the project, non-inert material will be composed through pre-aeration, excavation and separation of the MSW in the closed SWDS, so that methane emissions will be avoided.
Type of GHG emissions mitigation action	• GHG emission avoidance. Methane emissions from anaerobic decay of organic matter in municipal solid waste is avoided by alternative waste treatment (i.e. composting).
Important conditions under which the methodology is applicable	• This methodology is applicable if the aerobic pre-treatment is realized either through high pressure air injection enriched with oxygen (20-40% vol.) or low pressure aeration using ambient air; • The existing regulations do not require the capture and flaring of landfill gas of closed SWDS; • The composting process is realized at enclosed chambers or roofed sites, outdoor composting is not applicable.
Important parameters	Monitored: • Quantity of raw waste removed and quantity of compost produced; • Parameters related to transport, e.g. truck capacity; • Parameters related to methane generation potential of the non-inert fraction of the partially decayed, separated MSW; • Amount of non-inert waste excavated and aerobically composted; • Annual amount of fossil fuel or electricity used to operate the facilities or power auxiliary equipment.
BASELINE SCENARIO MSW is left to decay within the SWDS and methane is emitted into the atmosphere.	
PROJECT SCENARIO Methane emissions will be avoided by applying pre-aeration and excavation of existing SWDS, followed by separation and composting of non-inert materials.	

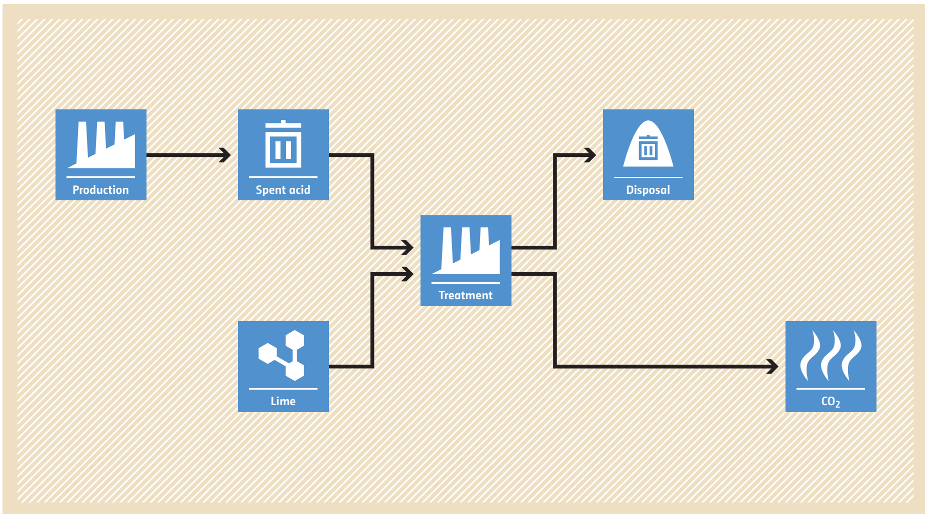
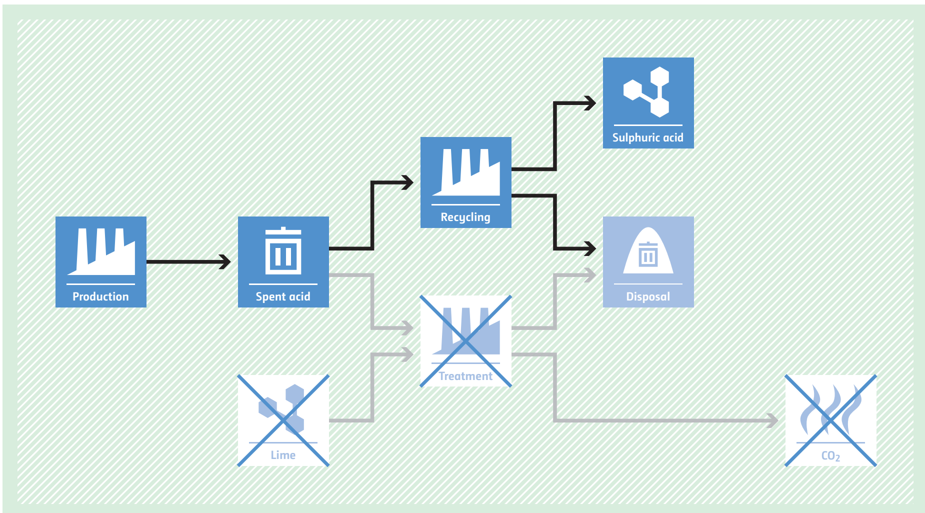
AMS-III.AG. Switching from high carbon intensive grid electricity to low carbon intensive fossil fuel

Typical project(s)	Switch from high carbon grid electricity to electricity generation using less-carbon-intensive fossil fuel such as captive natural-gas-based power generation.
Type of GHG emissions mitigation action	• Fuel switch. Switch to a less-carbon-intensive fuel for power generation.
Important conditions under which the methodology is applicable	• The project is primarily the switch from fossil-fuel-based electricity generation, supplied partly or entirely by the grid, to a single, low-GHG fossil fuel at greenfield or existing facilities; • Cogeneration (e.g. gas turbine with heat recovery) is allowed provided that the emission reductions are claimed only for the electricity output; • Export of electricity to a grid is not part of the project boundary; • Project does not result in integrated process change.
Important parameters	At validation: • Historical power generation for existing baseline plants; • Quantity of fossil fuels for existing baseline plants; • Grid emission factor can also be monitored ex post.
	Monitored: • Quantity of fossil fuel use; • The output of element process for electricity exported to other facilities shall be monitored in the recipient end.
BASELINE SCENARIO Use of carbon-intensive fuel to generate electricity.	
PROJECT SCENARIO Use of a less-carbon-intensive fuel to generate electricity, which leads to a decrease in GHG emissions.	

AMS-III.AH. Shift from high carbon intensive fuel mix ratio to low carbon intensive fuel mix ratio

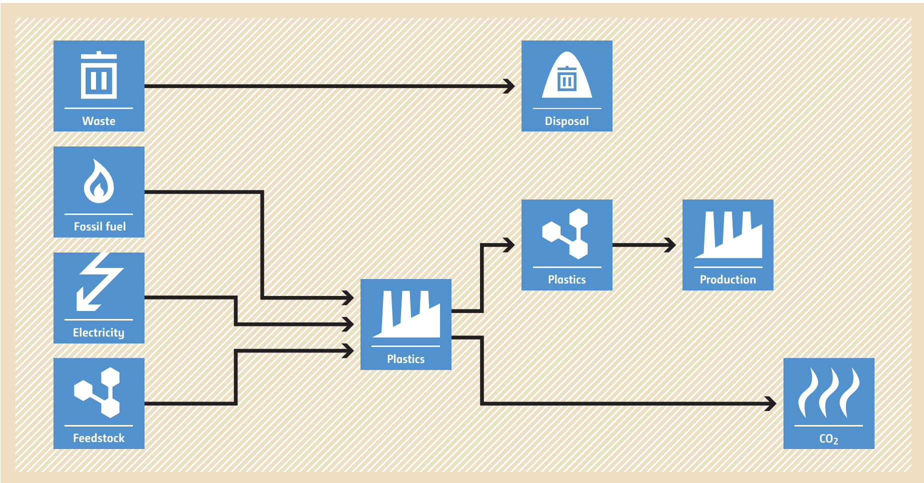
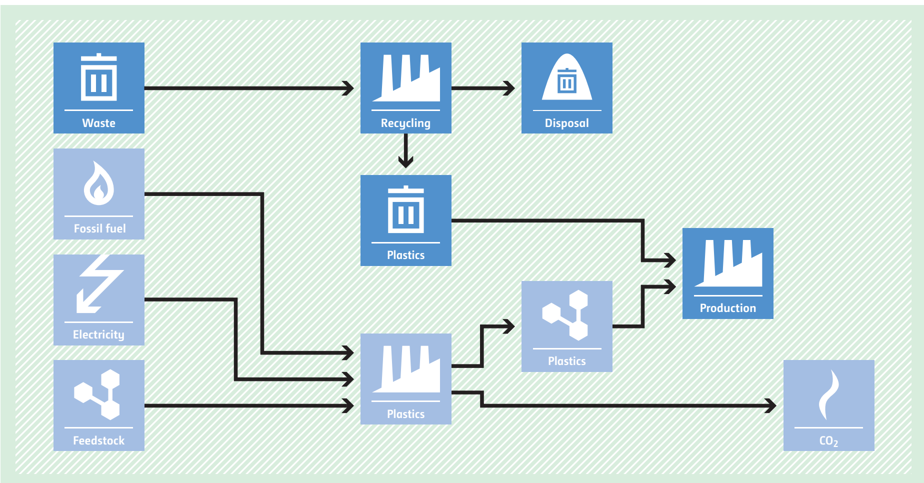
Typical project(s)	Replacement or retrofit in order to increase the share of less-carbon-intensive fossil fuels in an element process of industrial, residential or commercial applications.
Type of GHG emissions mitigation action	• Fuel switch. Switch to less-carbon-intensive fuel in energy conversion processes.
Important conditions under which the methodology is applicable	• Increase in the share of less-carbon-intensive fuel other than biomass or waste gas/energy; • Only energy efficiency improvements related to the fuel switch are eligible; • Only retrofit and replacements without capacity expansion and/or integrated process change are eligible.
Important parameters	At validation: • Quantity of fossil fuel use; • The output and efficiency of element process (e.g. heat or electricity); • Availability of all baseline fossil fuels.
	Monitored: • Fossil fuel and energy input to the element process; • Output of the element process and exported to the recipient end.
BASELINE SCENARIO Production of energy using more-carbon-intensive fossil fuel mix.	
PROJECT SCENARIO Production of energy using less-carbon-intensive fossil fuel mix.	

AMS-III.AI. Emission reductions through recovery of spent sulphuric acid

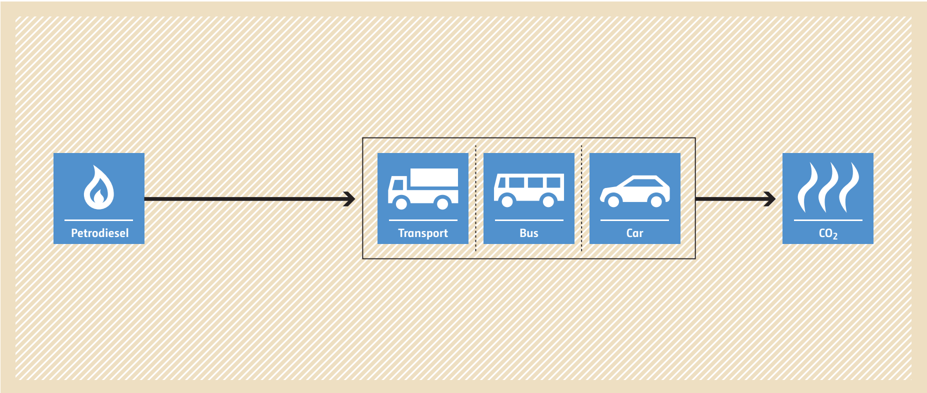
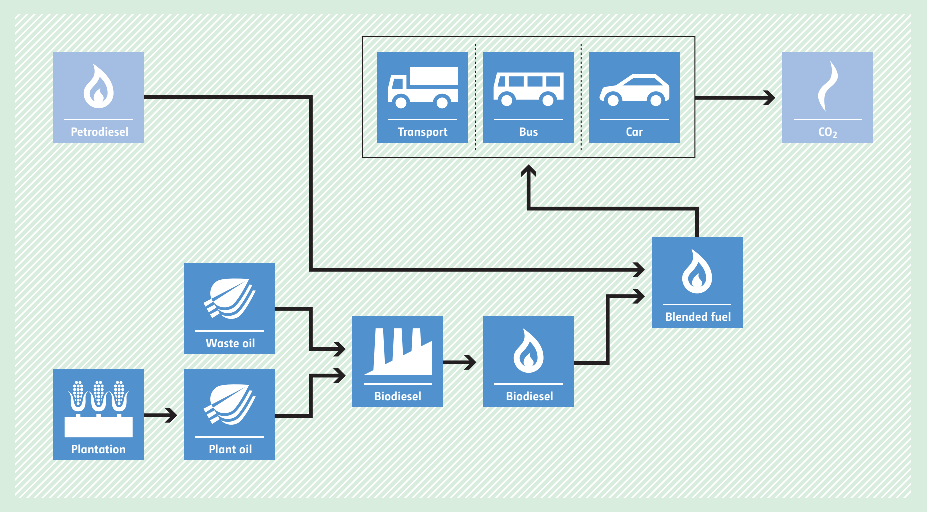
Typical project(s)	Recovery of sulphuric acid from 'spent sulphuric acid' where the neutralization of spent acid with hydrated lime or lime stone and the associated CO_2 emissions in the existing facility are avoided.
Type of GHG emissions mitigation action	• GHG emission avoidance. Avoidance of neutralization of spent acid and of related GHG emissions.
Important conditions under which the methodology is applicable	• The project is a new sulphuric acid recovery facility; • The concentration of the spent sulphuric acid ranges from 18% w/w to 80% w/w (weight percentage); • Specific spent sulphuric acid recovery procedures are applied.
Important parameters	At validation: • Historical data on the quantity of spent sulphuric acid neutralized.
	Monitored: • Quantity and acidity of sulphuric acid recovered; • Historic energy (electricity/steam) self-generated by a neighbouring facility that will be replaced by supply of an equivalent energy by the project; • Energy displaced by the project by supply of energy to a neighbouring facility that displaces an equivalent amount of energy usage in the baseline or supplied to the grid.
BASELINE SCENARIO The spent sulphuric acid is neutralized using hydrated lime, leading to CO_2 emissions.	
PROJECT SCENARIO No hydrated lime is used to neutralize the spent sulphuric acid. The associated CO_2 emissions are avoided.	

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

Women and children

Typical project(s)	HDPE, LDPE and PET/PP plastic materials are recycled from municipal solid wastes (MSW) and processed into intermediate or finished products (e.g. plastic bags).
Type of GHG emissions mitigation action	• Energy efficiency. Reduction of production of HDPE, LDPE and PET/PP from virgin materials, thus reducing related energy consumption.
Important conditions under which the methodology is applicable	• Recycling process may be accomplished manually and/or using mechanical equipment and includes washing, drying, compaction, shredding and pelletizing; • Emission reductions can only be claimed for the difference in energy use for the production of HDPE/LDPE/PET/PP products from virgin inputs versus production from recycled material; • Contractual agreement between recycling facility and manufacturing facility guarantees that only one of them claims CERs; • Three years historical data show that displaced virgin material is not imported from an Annex I country; • For recycling of PET/PP, the chemical equivalence of the recycled PET/PP to that of PET/PP made from virgin input shall be proved.
Important parameters	Monitored: • Quantity of each type of recycled materials sold to a manufacturing facility; • Electricity and fossil fuel consumption of the recycling facility; • Intrinsic viscosity of PET/PP.
BASELINE SCENARIO HDPE, LDPE and PET/PP are produced from virgin raw material resulting in high energy consumption.	
PROJECT SCENARIO Production of HDPE, LDPE and PET/PP based on virgin raw material is reduced. Use of recycled material results in less energy consumption.	

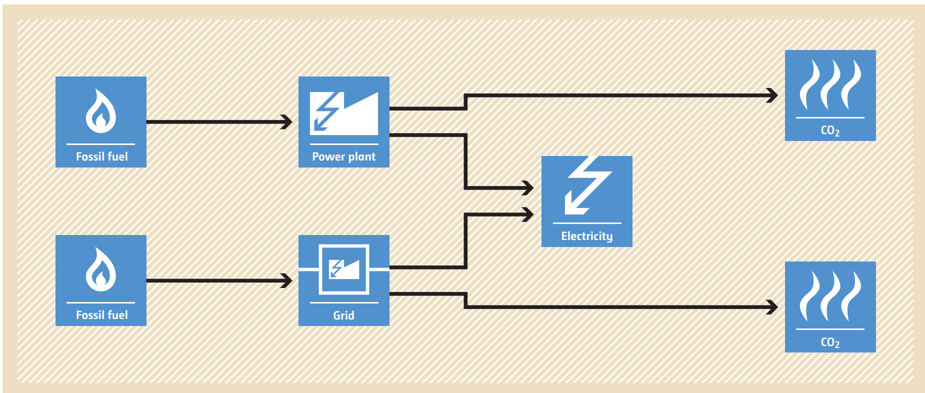
AMS-III.AK. Biodiesel production and use for transport applications

Typical project(s)	Biodiesel production that is used for transportation applications, where the biodiesel is produced from oilseed cultivated on dedicated plantations and from waste oil/fat.
Type of GHG emissions mitigation action	• Renewable energy. Displacement of more-carbon-intensive fossil fuel for combustion in vehicles/ transportation applications by use of renewable biomass.
Important conditions under which the methodology is applicable	• Oil crops are cultivated on area which is classified as degraded or degrading as per the "Tool for the identification of degraded or degrading lands for consideration in implementing CDM A/R project activities" or on area included in the project boundary of one or several registered A/R CDM project activities. Plantations established on peatlands are not eligible; • Export of produced biodiesel is not allowed; • The biodiesel is used in blends with diesel of up to 20 % by volume; • The biodiesel and its blends are end-used in a captive fleet of vehicles; • The alcohol used for esterification is methanol of fossil fuel origin.
Important parameters	Monitored: • Quantity of biodiesel produced in the project plant and consumption of biodiesel and its blends by the captive users; • Quantity of fossil fuel and electricity consumption for processing the oilseeds and the waste fat/oil to produce biodiesel; • Parameters to estimate project emissions from the cultivation of oil crops if the default values for jatropha and palm oil are not applied.
BASELINE SCENARIO Petrodiesel would be used in the transportation applications.	
PROJECT SCENARIO Oil crops are cultivated, blended biodiesel is produced and used in the transportation applications.	

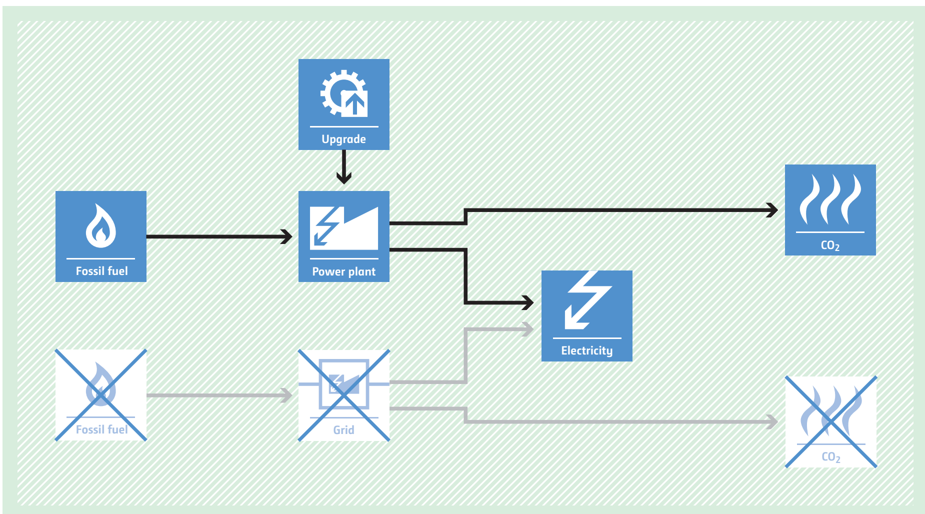
AMS-III.AL. Conversion from single cycle to combined cycle power generation

Typical project(s)	Conversion of an existing single-cycle gas turbine(s) or internal combustion engine(s) with or without cogeneration system to a combined-cycle system with or without cogeneration to produce additional electricity for captive use and/or supply to a grid.
Type of GHG emissions mitigation action	• Energy efficiency. Fuel savings through energy efficiency improvement.
Important conditions under which the methodology is applicable	• The project utilizes excess heat (e.g. gas turbine/engine exhaust heat) that was previously unused for at least three years before the start of the project; • Useful thermal energy produced in the baseline and project is for captive use only; • The project does not involve any major overhauls to the existing single-cycle gas turbine/engine system (no increase of the lifetime or capacity of the system).
Important parameters	At validation: • Grid emission factor (can also be monitored ex post); • Average net annual electricity generation of the existing system in the three years immediately prior to the project start; • Average annual fuel consumption of the existing system in the three years immediately prior to the project start.
	Monitored: • Net electricity generated by the project; • Fuel and electricity consumed by the project; • Net thermal energy consumed by the project.

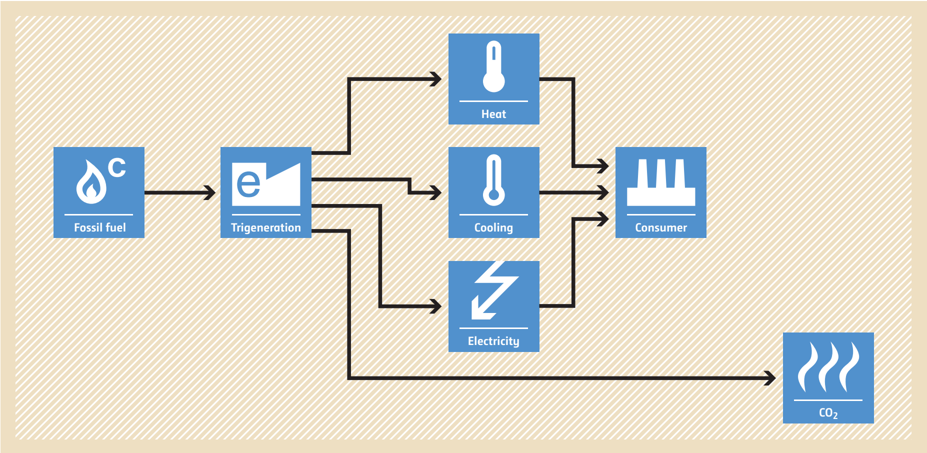
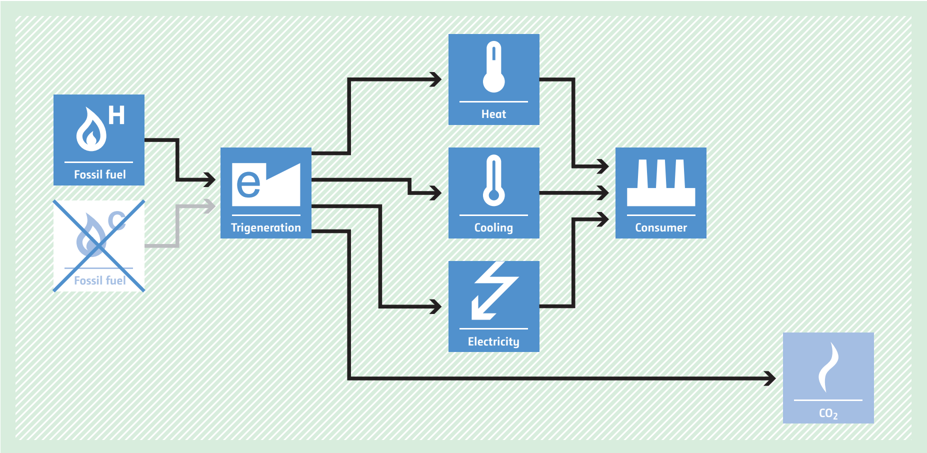
BASELINE SCENARIO
Electricity is generated by a single-cycle gas turbine(s)/engine(s) with or without simultaneous generation of thermal energy (steam or hot water).



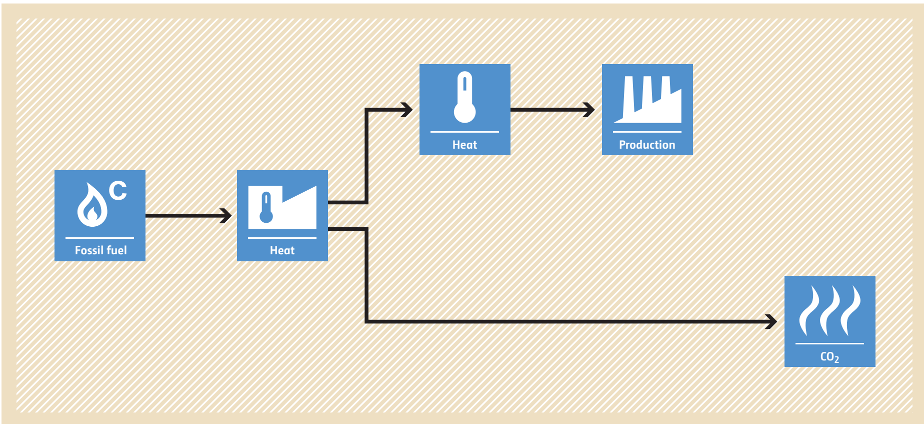
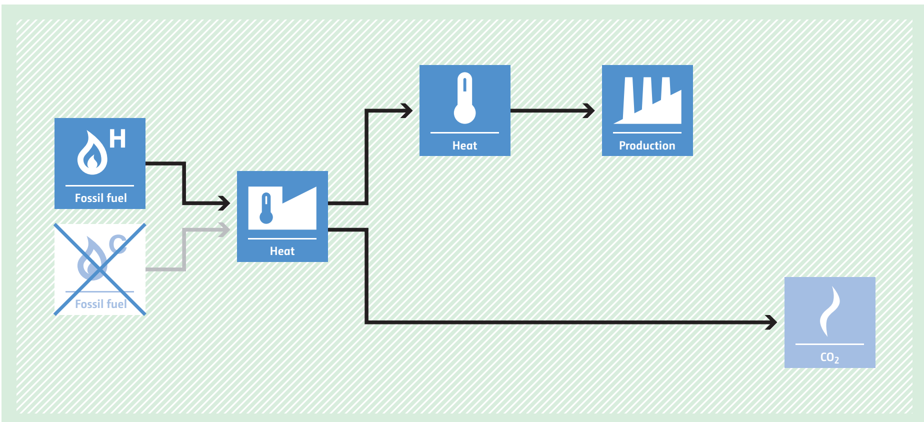
PROJECT SCENARIO
The existing single-cycle gas turbine(s) is converted to a combined-cycle gas turbine(s)/engine(s) for more efficient electricity generation with or without simultaneous generation of thermal energy (steam or hot water).



AMS-III.AM. Fossil fuel switch in a cogeneration/trigeneration system

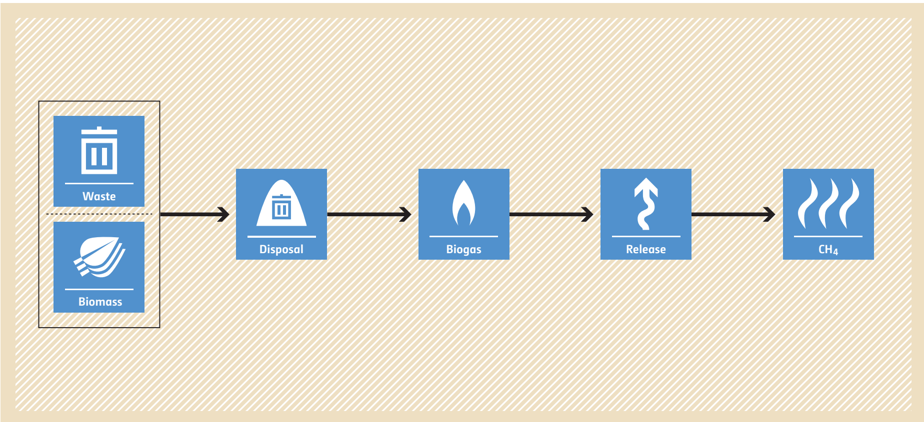
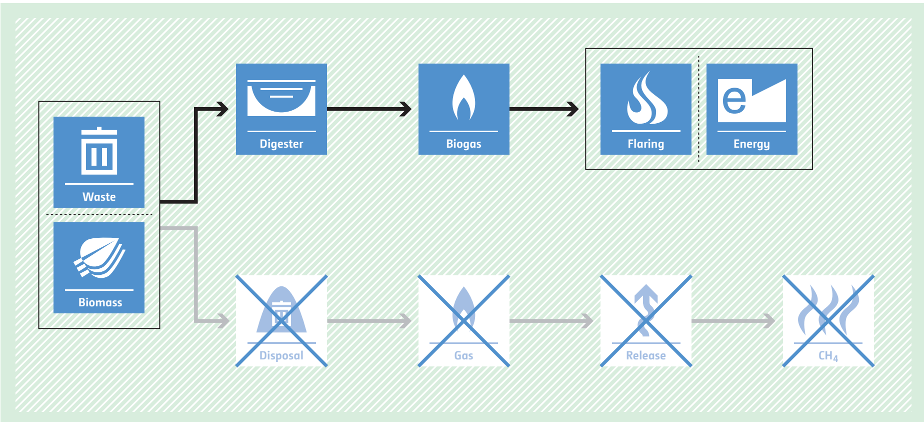
Typical project(s)	Fossil fuel switching from a carbon-intensive fossil fuel to a low-carbon-intensive fossil fuel in a new or existing cogeneration/trigeneration system(e.g. switching from coal to natural gas in a cogeneration/trigeneration unit).
Type of GHG emissions mitigation action	• Fuel switch. Displacement of a more-GHG-intensive service.
Important conditions under which the methodology is applicable	• Fuel input efficiency (thermal and electricity output/fuel input) is better (or at least equal) to the baseline one; • Specific auxiliary energy consumption does not change more than +/-10%; • For existing cogeneration/trigeneration systems at least three years of historical data prior to the start of the project (one year if less than three years operational history); • If installations of cooling equipment use refrigerants, such refrigerants must have no or negligible global warming potential (GWP) and no or negligible ozone depleting potential (ODP); • The project does not impact any production processes or other level of service provided.
Important parameters	• Amount of net electricity produced; • Quantity of fossil fuel consumed; • Thermal energy (mass flow, temperature, pressure for heat/cooling) delivered by the project.
BASELINE SCENARIO Use of carbon-intensive fossil fuel in cogeneration/trigeneration system for production of power/heat/cooling.	
PROJECT SCENARIO Switch from from carbon-intensive fossil fuel to a low-carbon-intensive fossil fuel in cogeneration/trigeneration system for production of power/heat and cooling.	

AMS-III.AN. Fossil fuel switch in existing manufacturing industries

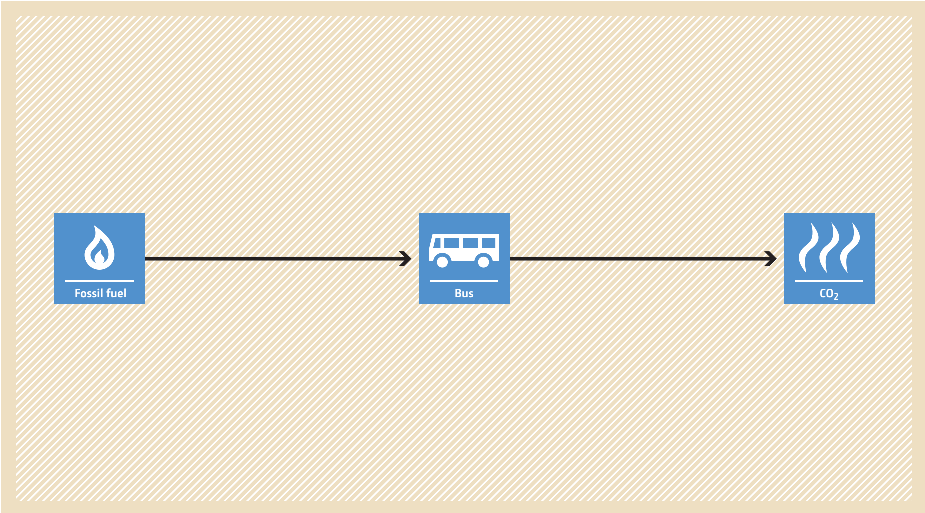
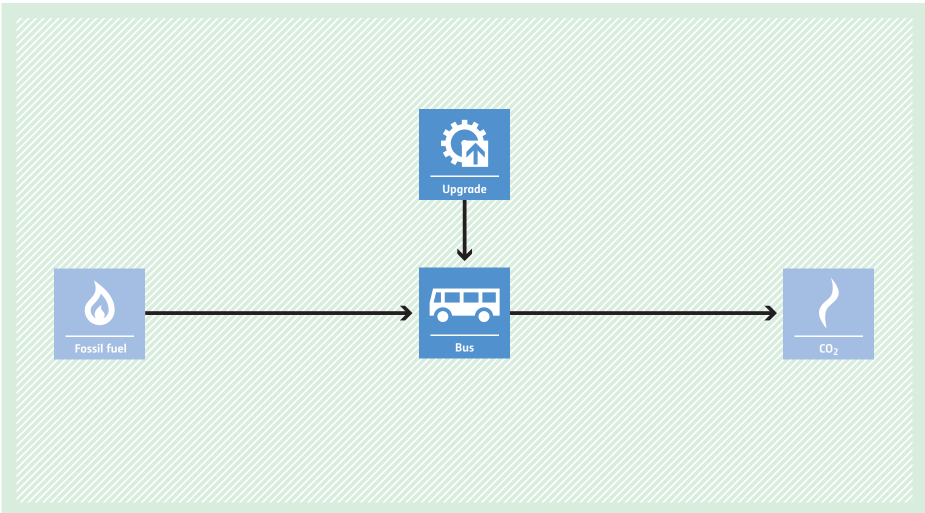
Typical project(s)	Switching from a carbon-intensive fossil fuel to either a less-carbon-intensive fossil fuel or electricity with lower carbon intensity.
Type of GHG emissions mitigation action	• Fuel switch. Switch to a fuel/energy source with a lower GHG intensity.
Important conditions under which the methodology is applicable	• The fuel switch occurs at a manufacturing facility with three years of historical data; • The type of inputs and products are equivalent (outputs with same or better service level as compared to the baseline); • The fuel switch at each element manufacturing process is from a single fossil fuel to less-carbon-intensive single fossil fuel or grid electricity; • The fuel switch does not lead to a decrease in energy efficiency; • Elemental process or other down stream/upstream processes do not change as a result of the fossil fuel switch.
Important parameters	At validation: • Quantity of fossil fuel use or amount of the grid electricity consumed; • Baseline raw material consumption and product output.
	Monitored: • Quantity of fossil fuel use or amount of the grid electricity consumed; • The annual net project production of the element process or in cases where product output cannot be measured (e.g. hot/fused metal) annual net project raw material consumption should be monitored.
BASELINE SCENARIO Continued use of a carbon-intensive fossil fuel for the heat generation in a manufacturing process.	
PROJECT SCENARIO Switch of fuel to a less-carbon-intensive fuel or low-carbon grid electricity for the heat generation in a manufacturing process.	

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

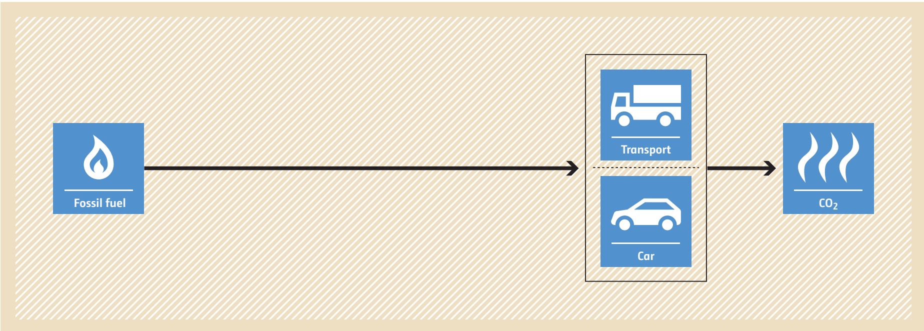
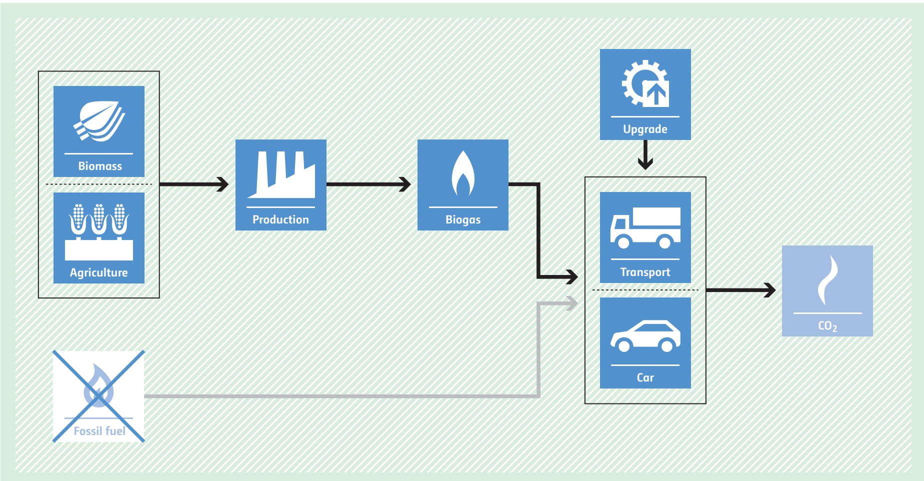
Women and children

Typical project(s)	The project activity is the controlled biological treatment of biomass or other organic matters through anaerobic digestion in closed reactors equipped with biogas recovery and a combustion/flaring system.
Type of GHG emissions mitigation action	• GHG formation avoidance. Methane formation avoidance.
Important conditions under which the methodology is applicable	• If for one or more sources of substrates, it can not be demonstrated that the organic matter would otherwise been left to decay anaerobically, baseline emissions related to such organic matter shall be accounted for as zero; • Project activities treating animal manure as single source substrate shall apply AMS-III.D., similarly projects only treating wastewater and/or sludge generated in the wastewater treatment works shall apply AMS-III.H.; • The project activity does not recover or combust landfill gas from the disposal site (unlike AMS-III.G.), and does not undertake controlled combustion of the waste that is not treated biologically in a first step (unlike AMS-III.E.).
Important parameters	At validation: • The location and characteristics of the disposal site of the biomass used for digestion, in the baseline condition.
	Monitored: • Quantity of solid waste (excluding manure); • Parameters for calculating methane emissions from physical leakage of methane; • Parameters related to emissions from electricity and/or fuel consumption.
BASELINE SCENARIO Biomass or other organic matter would have otherwise been left to decay anaerobically.	
PROJECT SCENARIO Biological treatment of biomass or other organic matters through anaerobic digestion in closed reactors equipped with biogas recovery and a combustion/flaring system.	

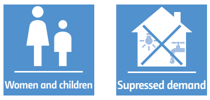
AMS-III.AP. Transport energy efficiency activities using post – fit Idling Stop device

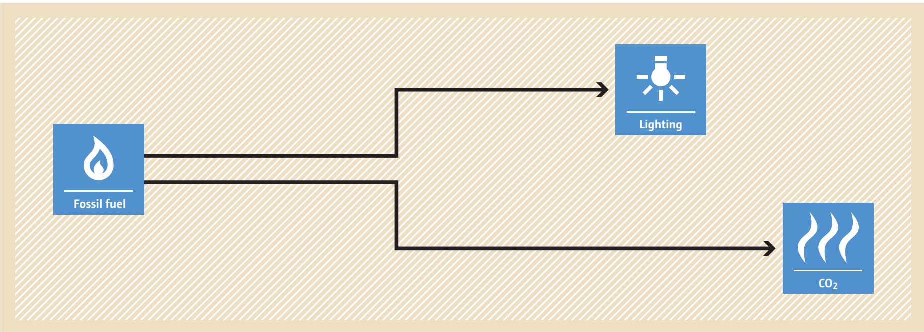
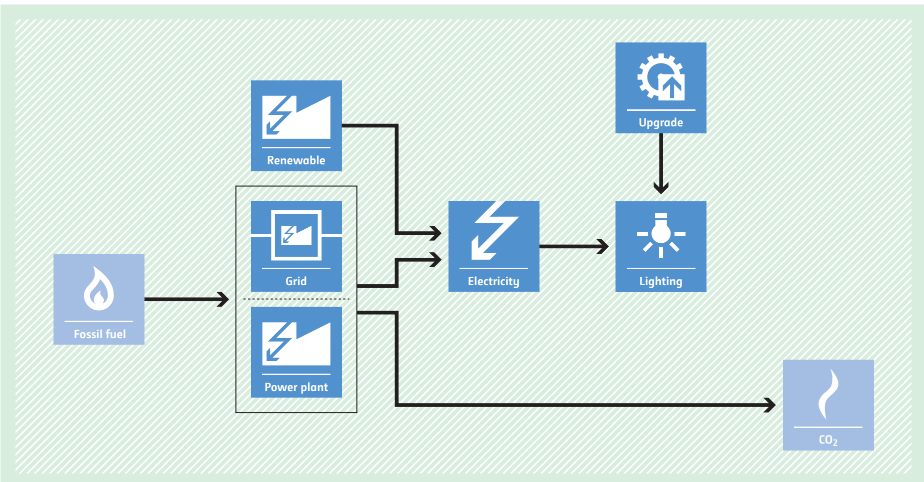
Typical project(s)	Demand side activities associated with the installation of post-fit type Idling Stop devices in passenger vehicles used for public transport (e.g. buses).
Type of GHG emissions mitigation action	• Energy Efficiency. Reduction of fossil fuel use and corresponding emissions through energy efficiency improvements.
Important conditions under which the methodology is applicable	• Vehicles used for public transportation; • Vehicles using gasoline or petrodiesel as fuel; • Vehicles in which it is possible to install post-fit Idling Stop device.
Important parameters	Monitored: • Cumulative Idling Period of all vehicles of type i in year y; • Total number of times of Idling Stop of vehicle i in the year y.
BASELINE SCENARIO Vehicles used for public transportation continue idling.	
PROJECT SCENARIO Vehicles used for public transportation using a post-fit type Idling Stop device that will turn off the vehicle engine and prevent idling.	

AMS-III.AQ. Introduction of Bio-CNG in transportation applications

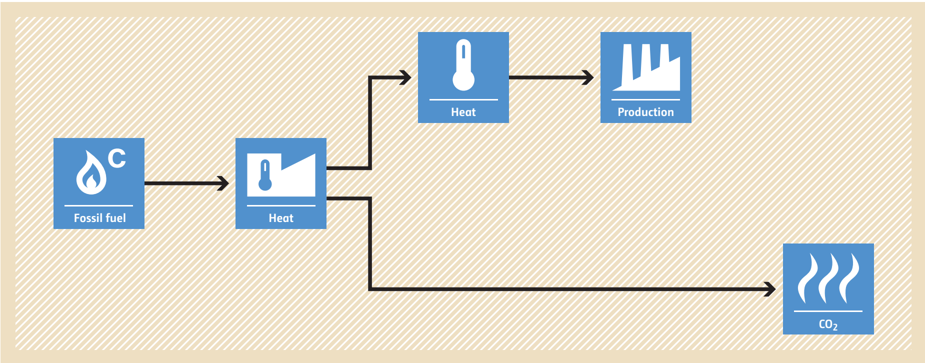
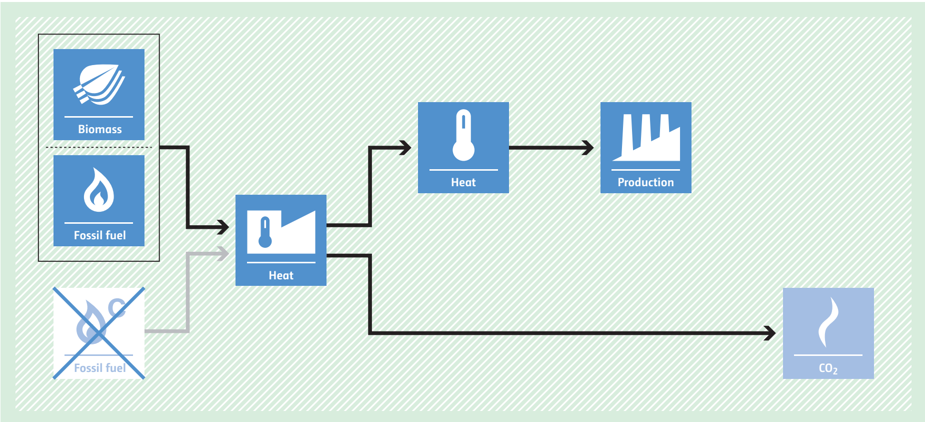
Typical project(s)	Production of Biogenic Compressed Natural Gas (Bio-CNG) from renewable biomass and use in transportation applications. The Bio-CNG is derived from various sources such as biomass from dedicated plantations; waste water treatment; manure management; biomass residues.
Type of GHG emissions mitigation action	• Renewable Energy. Displacement of more-GHG-intensive fossil fuel for combustion in vehicles.
Important conditions under which the methodology is applicable	• Bio-CNG is used in Compressed Natural Gas (CNG) vehicles, modified gasoline and/or diesel vehicles; • Methane content of the Bio-CNG meets relevant national regulations or a minimum of 96 per cent (by volume); • Conditions apply if the feedstock for production of the Bio-CNG is derived from dedicated plantation; • Export of Bio-CNG is not allowed; • Only the producer of the Bio-CNG can claim emission reductions.
Important parameters	At validation: • Determine fraction of gasoline (on mass basis) in the blend where national regulations require mandatory blending of the fuels with biofuels; • Amount of gasoline consumption in the baseline vehicles ex ante.
	Monitored: • Amount of Bio-CNG produced/distributed/sold/consumed directly to retailers, filling stations; • Parameters for calculating methane emissions from physical leakage of methane; • Parameters for determining project emissions from renewable biomass cultivation.
BASELINE SCENARIO Gasoline or CNG are used in the baseline vehicles.	
PROJECT SCENARIO Only Bio-CNG are used in the project vehicles.	

AMS-III.AR. Substituting fossil fuel based lighting with LED/CFL lighting systems

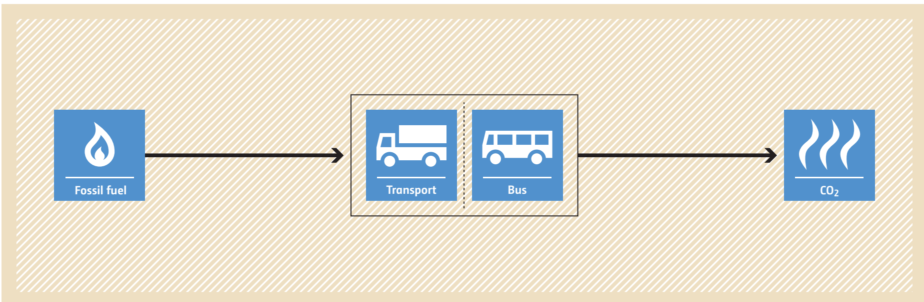
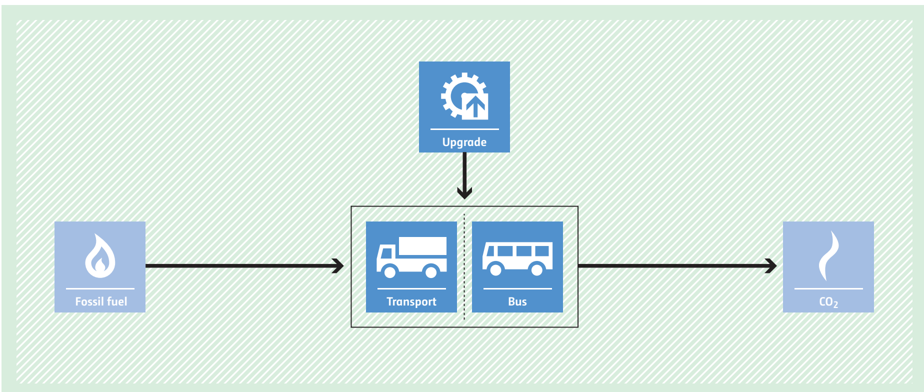


Typical project(s)	Activities that replace portable fossil fuel based lamps (e.g. wick-based kerosene lanterns) with battery-charged LED or CFL based lighting systems in residential and/or non-residential applications (e.g. ambient lights, task lights, portable lights).
Type of GHG emissions mitigation action	• Renewable energy; • Energy efficiency. Displacement of more-GHG-intensive service (lighting).
Important conditions under which the methodology is applicable	• Project lamps whose batteries are charged using one of the following options: (a) Charged by a renewable energy system (e.g. a photovoltaic system or mechanical system such as a hand crank charger); (b) Charged by a standalone distributed generation system (e.g. a diesel generator set) or a mini-grid; (c) Charged by a grid that is connected to regional/national grid; • At a minimum, project lamps shall be certified by their manufacturer to have a rated average life of at least: – 5,000 hours for Option 1, as per paragraph 16 of the methodology; – 10,000 hours for Option 2, as per paragraph 17 of the methodology; • Project lamps shall have a minimum of one year warranty; • The replaced baseline lamps are those that directly consume fossil fuel.
Important parameters	Monitored: • Recording of project lamp distribution data; • In some cases ex post monitoring surveys to determine percentage of project lamps distributed to end users that are operating and in service in year y.
BASELINE SCENARIO Use of fossil fuel based lamps.	
PROJECT SCENARIO Use of LED/CFL based lighting systems.	

AMS-III.AS. Switch from fossil fuel to biomass in existing manufacturing facilities for non-energy applications

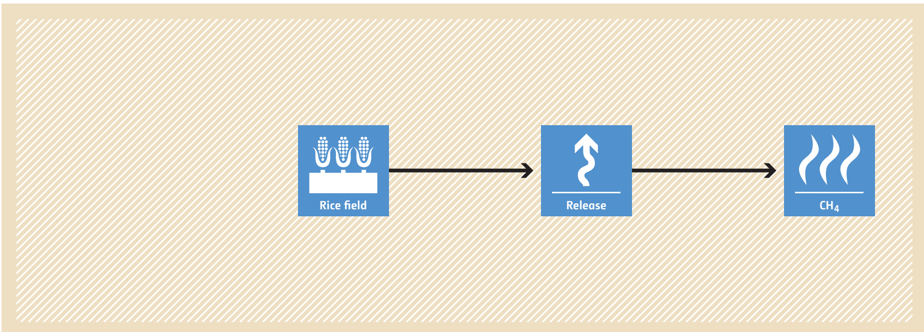
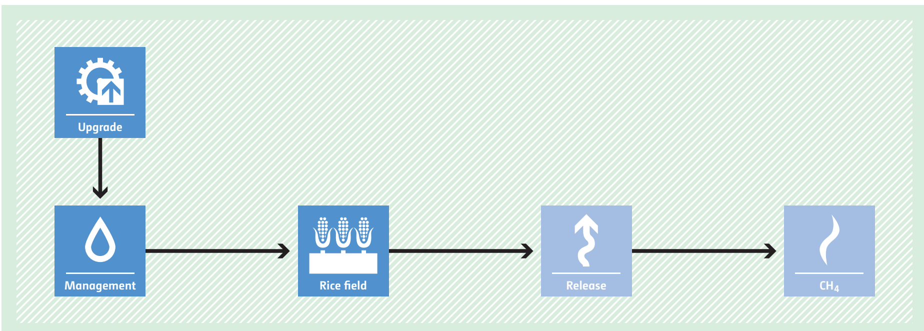
Typical project(s)	Activities for fuel switching (complete or partial) from the use of carbon intensive energy source (or a mix of energy sources) of fossil origin to renewable biomass or a mix of renewable biomass and fossil fuel in existing manufacturing facilities (e.g. steel, ceramics, aluminium, lime, clinker production).
Type of GHG emissions mitigation action	• Fuel Switch. Complete or partial switch from fossil fuel to biomass in non-energy applications.
Important conditions under which the methodology is applicable	• The switch occurs at a manufacturing facility with three years of historical data; • The type of inputs and products are equivalent (outputs with same or better service level as compared to the baseline); • Crops from renewable biomass origin are cultivated on an area which is classified as degraded or degrading as per the "Tool for the identification of degraded or degrading lands for consideration in implementing CDM A/R project activities" or on an area included in the project boundary of one or several registered A/R CDM project activities. Plantations established on peatlands are not eligible; • Syngas derived from renewable energy source is eligible; • Renewable biomass utilized by the project activity shall not be chemically processed.
Important parameters	At validation: • Quantity of fossil fuel use; • Baseline raw material consumption and product output.
	Monitored: • The annual production output of the process or in cases where product output can not be measured annual net project raw materials consumption; • Net quantity of biomass; • Quantity of fossil fuel or amount of electricity consumed; • Net calorific value/ Moisture content of biomass.
BASELINE SCENARIO Use of fossil in manufacturing production process.	
PROJECT SCENARIO Use of renewable biomass or mix of biomass/fossil fuel in manufacturing production process.	

AMS-III.AT. Transportation energy efficiency activities installing digital tachograph systems or similar devices to transport fleets

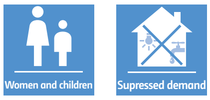
Typical project(s)	Project activities that install digital tachograph systems or another device that monitors vehicle and driver performance and provides real-time feedback to drivers in freight vehicles and/or commercial passenger vehicles.
Type of GHG emissions mitigation action	• Energy Efficiency. Reduction of fossil fuel use and corresponding emissions through energy efficiency improvements.
Important conditions under which the methodology is applicable	• This methodology applies to freight vehicle fleets and/or passenger vehicle fleets that are centrally controlled and managed by a single entity; • The project activity is unlikely to change the level of service of the vehicle fleet provided before the project activity; • The project activity does not involve a fuel switch in existing vehicles; • This methodology is not applicable to project activities in locations where the installation of the device is mandatory by law; • For freight vehicle fleets, project participants shall identify the traceable routes along which the vehicles operate, the characteristics of those routes, the level of service on each route, the vehicles that are in use on each traceable route before and after project implementation.
Important parameters	Monitored: • Total distance travelled by each vehicle; • The vehicles are identified based on the age, characteristics and load capacity and availability of historical data; • Annual average distance of transportation per tonne of freight by each project vehicle; • Consumption of fuel by vehicle; • Total annual goods transported by each project vehicle; • Annual monitoring to check if devices have become a mandatory practice, or that highly-enforced anti-idling policies or legislation have been put into place; • Monitoring to ensure that all device and feedback systems including fuel flow sensors (meters) are operating correctly and have not been disabled.
BASELINE SCENARIO Fossil fuel consumption due to inefficient driving.	
PROJECT SCENARIO A digital tachograph system or similar device reduces fossil fuel consumption in vehicles by providing to the driver feedback against inefficient driving, and thus encouraging efficient driver behaviour which results in improved vehicle fuel efficiency.	

AMS-III.AU. Methane emission reduction by adjusted water management practice in rice cultivation

Women and children

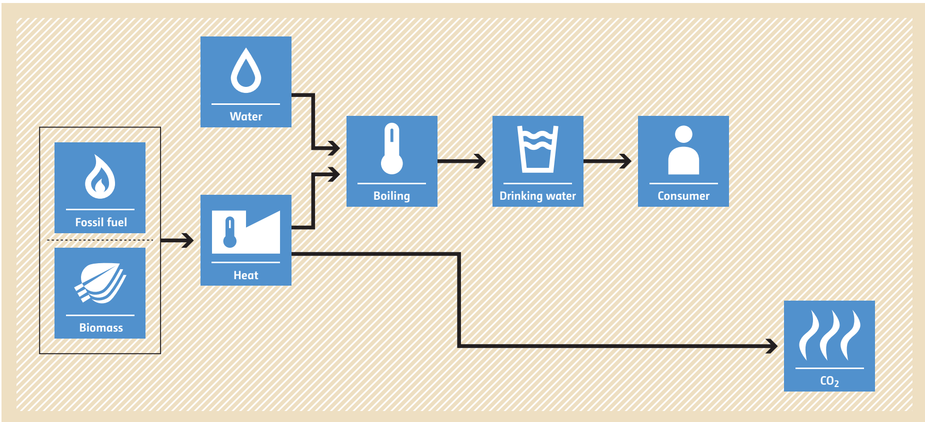
Typical project(s)	The following project activities are included: a) Rice farms that change the water regime during the cultivation period from continuously to intermittent flooded conditions and/or a shortened period of flooded conditions; b) Alternate wetting and drying method and aerobic rice cultivation methods; and c) Rice farms that change their rice cultivation practice from transplanted to direct seeded rice.
Type of GHG emissions mitigation action	• GHG emission avoidance. Reduced anaerobic decomposition of organic matter in rice cropping soils.
Important conditions under which the methodology is applicable	• Rice cultivation in the project area is predominantly characterized by irrigated, flooded fields for an extended period of time during the growing season; • The project rice fields are equipped with controlled irrigation and drainage facilities; • The project activity does not lead to a decrease in rice yield. Likewise, it does not require the farm to switch to a cultivar that has not been grown before; • Training and technical support during the cropping season is part of the project activity; • The introduced cultivation practice, including the specific cultivation elements, technologies and use of crop protection products, is not subject to any local regulatory restrictions; • If not using the default value approach, project participants shall have access to infrastructure to measure CH_4 emissions from reference fields using closed chamber method and laboratory analysis.
Important parameters	Monitored: • Baseline emission factor and project emission factor ($kgCH_4$/ha per season), or the parameters specified in the default value approach; • Aggregated project area; • Monitoring of farmers' compliance with project cultivation practice.
BASELINE SCENARIO Generation of methane due to anaerobic decomposition of organic matter in rice cropping soils.	
PROJECT SCENARIO Methane emission avoidance, for example, by changing the water regime during the cultivation period from continuously to intermittent flooded conditions and/or a shortened period of flooded conditions.	

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

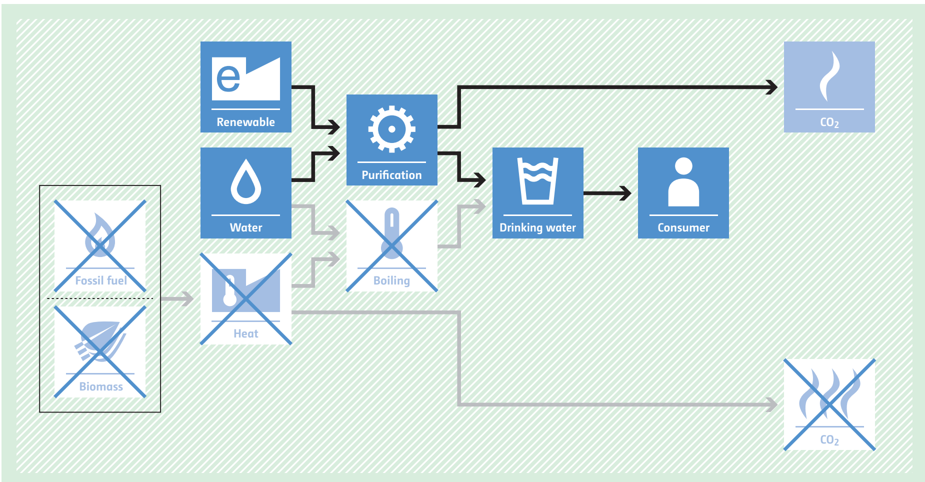


Typical project(s)	Project activities that introduce low GHG emitting water purification systems to provide safe drinking water and displace water boiling using non-renewable biomass or fossil fuels. Water kiosks that treat water using one or more of the following technologies: chlorination, combined flocculant/disinfection powders and solar disinfection are also eligible.
Type of GHG emissions mitigation action	Displacement of a more-GHG-intensive output.
Important conditions under which the methodology is applicable	• Prior to the implementation of the project activity, a public distribution network supplying safe drinking water to the project boundary does not exist; • The application of the project technology/equipment shall achieve compliance either with: (i) at a minimum the performance target as per “Evaluating household water treatment options: Health based targets and microbiological performance specifications” (WHO, 2011); or (ii) an applicable national standard or guideline; • In cases where the life span of the water treatment technologies is shorter than the crediting period of the project activity, there shall be documented measures in place to ensure that end users have access to replacement purification systems of comparable quality.
Important parameters	Monitored: • Checking of appliances to ensure that they are still operating or are replaced by an equivalent; • Quantity of purified water; • Annual check if a safe drinking water public distribution network is installed; • Number of persons supplied with purified water; • Safe drinking water quality; • Total electricity and fossil fuel consumption by the project activity.

BASELINE SCENARIO
Fossil fuel/non-renewable biomass consumption for water boiling as a mean for water purification.

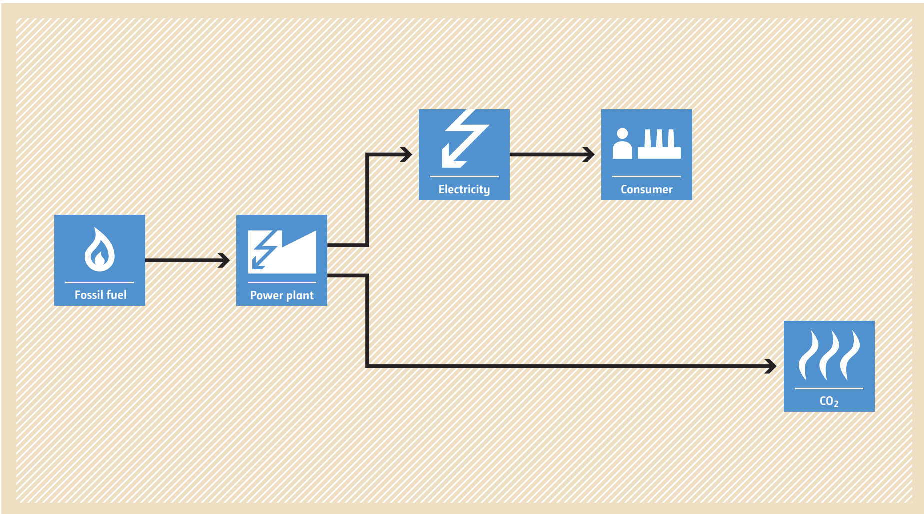
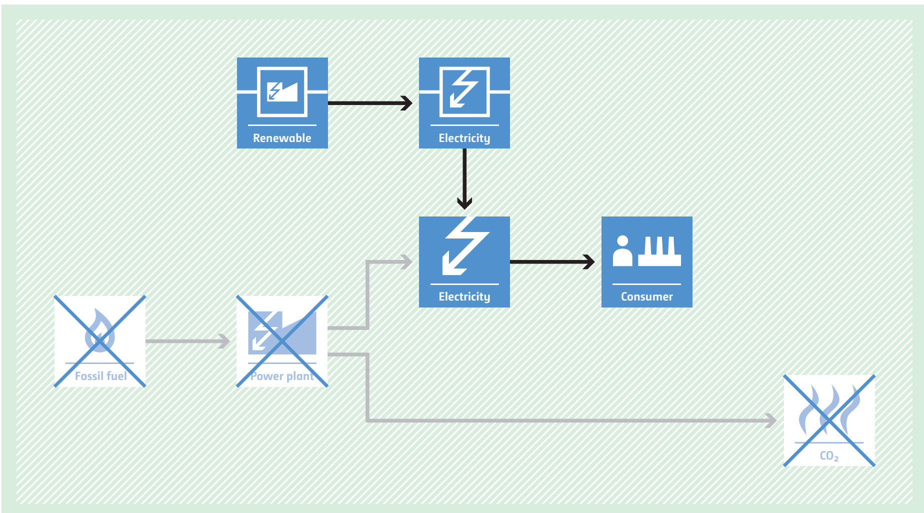


PROJECT SCENARIO
Low greenhouse gas emitting water purification system ensures safe drinking water supply.

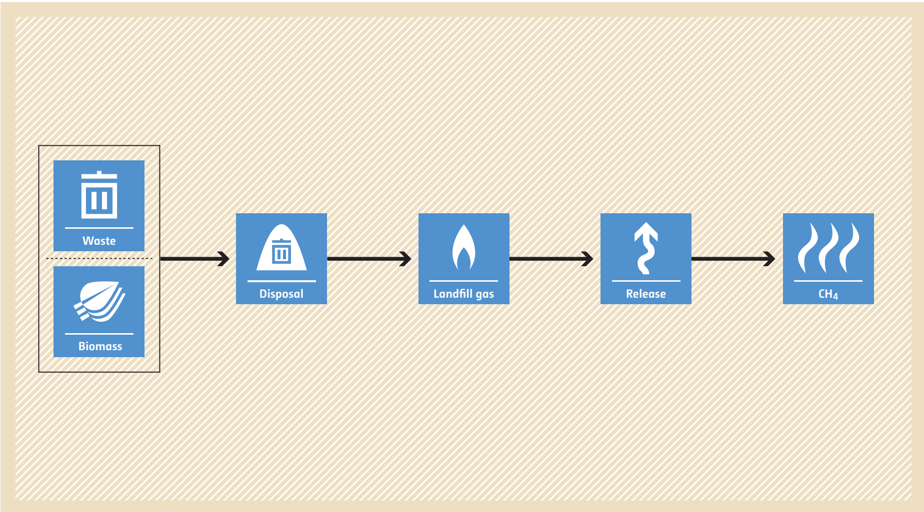
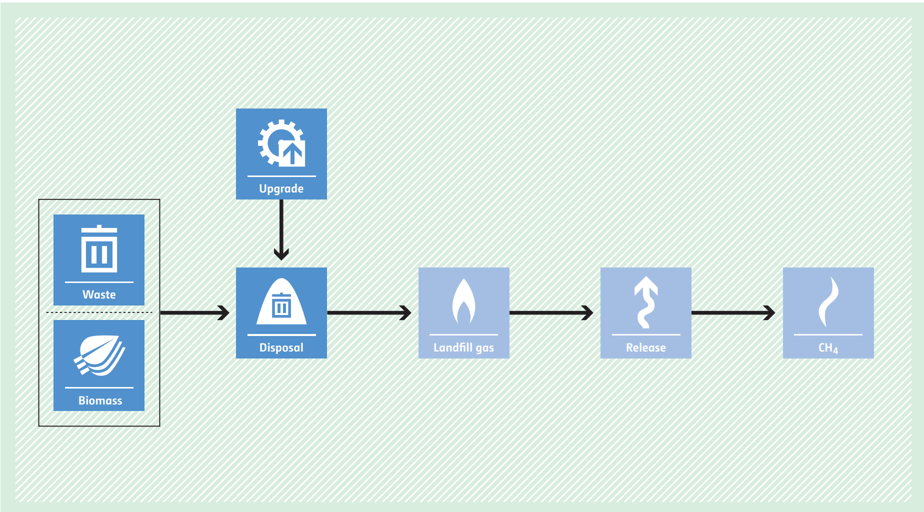


AMS-III.AW. Electrification of rural communities through grid extension

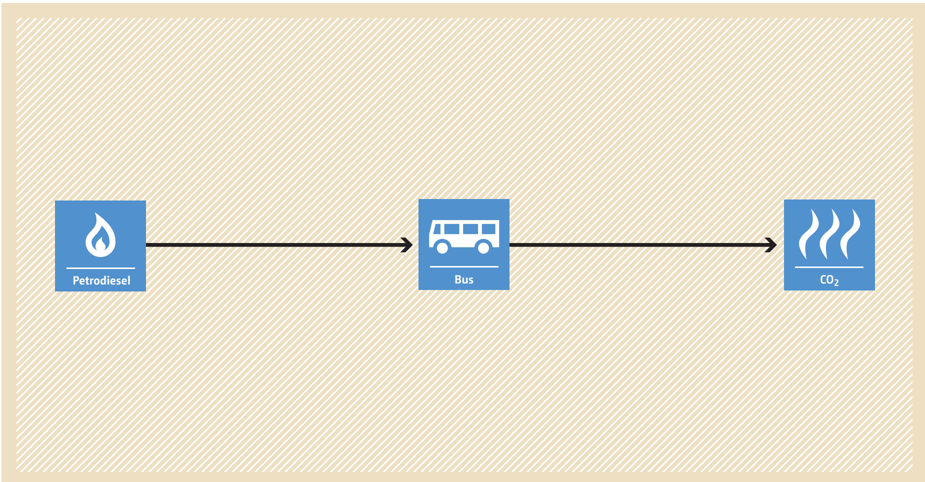
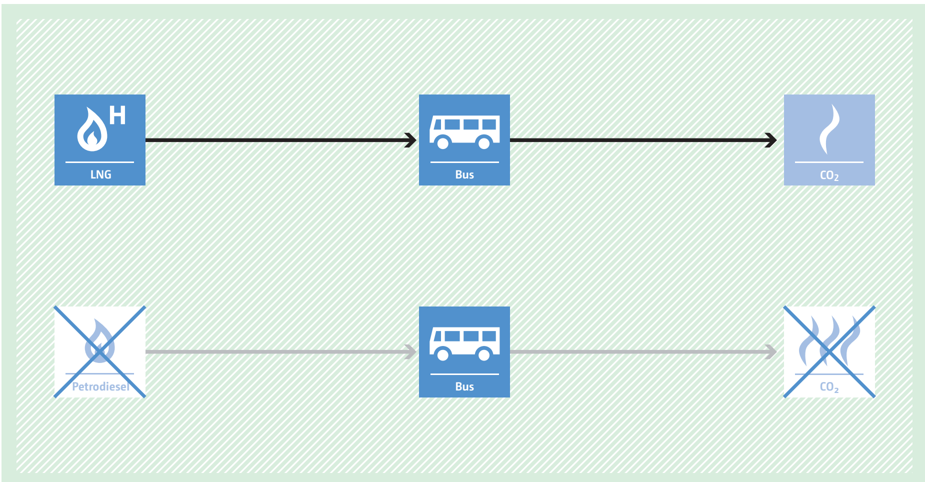
Women and children

Typical project(s)	Rural communities which were not connected to a grid prior to project implementation are supplied with electricity by connection to a national or regional grid.
Type of GHG emissions mitigation action	• Renewable energy. Displacement of electricity that would be provided by more-GHG-intensive means.
Important conditions under which the methodology is applicable	• End-users are not connected to a grid prior to the project; • Existing renewable mini-grid electricity is not displaced by the project; • Emission reductions can only be claimed, if the renewable electricity generation in the grid is greater than or equal to 99% of the total electricity generation.
Important parameters	At validation: • In case of a diesel-based mini-grid, fuel consumption and electricity generation of mini-grid connected plants (the most recent data from the last three years).
	Monitored: • Net amount of renewable electricity delivered to the project area.
BASELINE SCENARIO In the absence of the project activity, the end users would have used diesel generator to generate electricity.	
PROJECT SCENARIO End users are supplied electricity with a grid with high shares of renewable generation (i.e. 99%).	

AMS-III.AX. Methane oxidation layer (MOL) for solid waste disposal sites

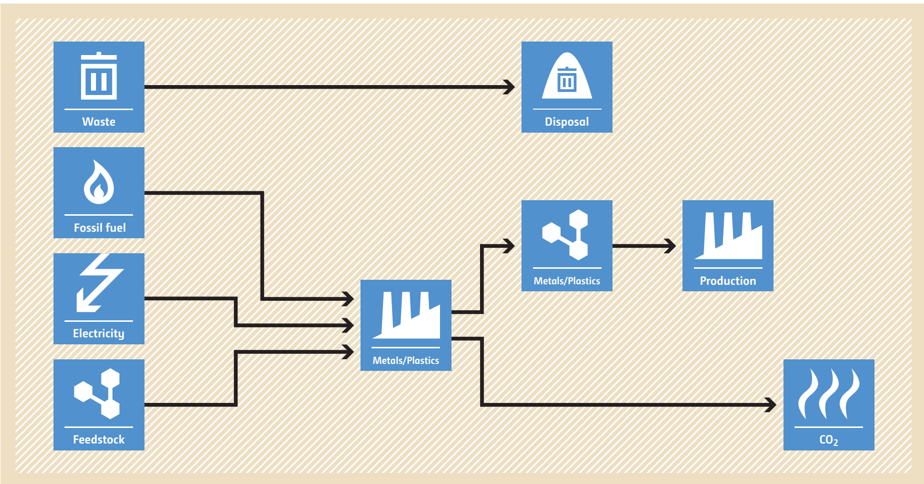
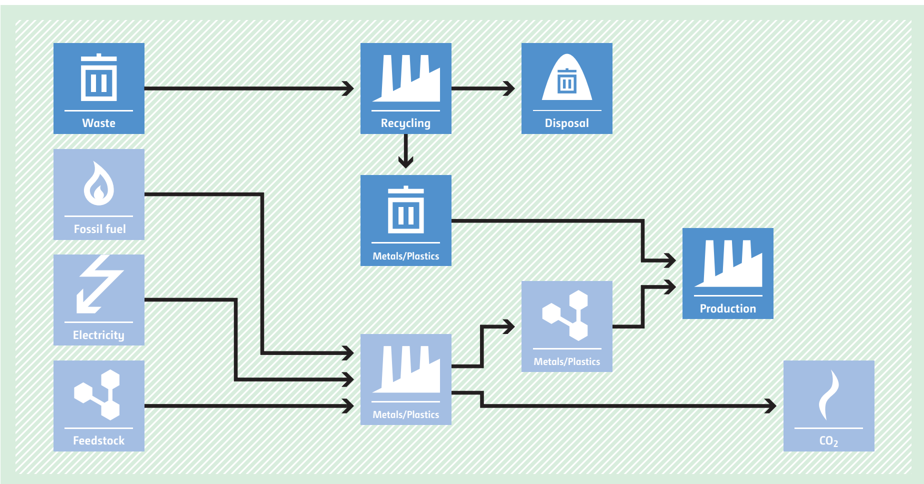
Typical project(s)	Project activities involving the construction of a methane oxidation layer (MOL) on top of a municipal solid waste disposal site (SWDS) to avoid the release of methane through biological oxidation in the MOL.
Type of GHG emissions mitigation action	• GHG destruction. Avoidance of methane emissions from solid waste disposal sites.
Important conditions under which the methodology is applicable	• It is applicable where landfill gas collection and treatment is not applicable due to low concentration of landfill gas (less than 4 L $CH_4 \cdot m^{-2} \cdot h^{-1}$) or other reasons; • It is not applicable at SWDS with an active gas extraction system, or that are still receiving wastes for disposal or where a MOL is required by legal regulation.
Important parameters	Monitored: • Parameters related to methane oxidising material quality such as TOC, ammonium and nitrite have to be analyzed; • Parameters related to MOL construction properties, e.g. thickness of MOL and gas distribution layer/balancing layer during application; • Parameters related to methane oxidation performance, e.g. measured volume fraction of methane in the middle of the distribution layer.
BASELINE SCENARIO Biomass and other organic matter in waste are left to decay and methane is emitted into the atmosphere.	
PROJECT SCENARIO Methane that would have been released is oxidized in the MOL.	

AMS-III.AY. Introduction of LNG buses to existing and new bus routes

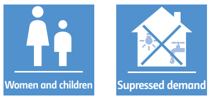
Typical project(s)	Introduction and operation of new LNG buses for passengers transportation to existing and new routes.
Type of GHG emissions mitigation action	• Fuel switch. Displacement of more-GHG-intensive vehicles.
Important conditions under which the methodology is applicable	• The existing and new routes are fixed; • On each route only one type of bus and fuel are used; • For the new routes it should be demonstrated that these new routes have been planed prior to the start date of the project activity and serviced by fossil fuel busses; • The project and baseline frequency of operation of the buses should be the same; • The project and baseline buses should be with comparable passengers capacity and power rating.
Important parameters	At validation: • Baseline fuel data (NCV and emission factor).
	Monitored: • Specific fuel consumption of baseline buses; • Total annual distance travelled by baseline buses; • Fuel consumption of the project buses.
BASELINE SCENARIO Buses use diesel or comparable fossil fuel.	
PROJECT SCENARIO Buses use LNG only.	

AMS-III.BA. Recovery and recycling of materials from E-waste

Women and children

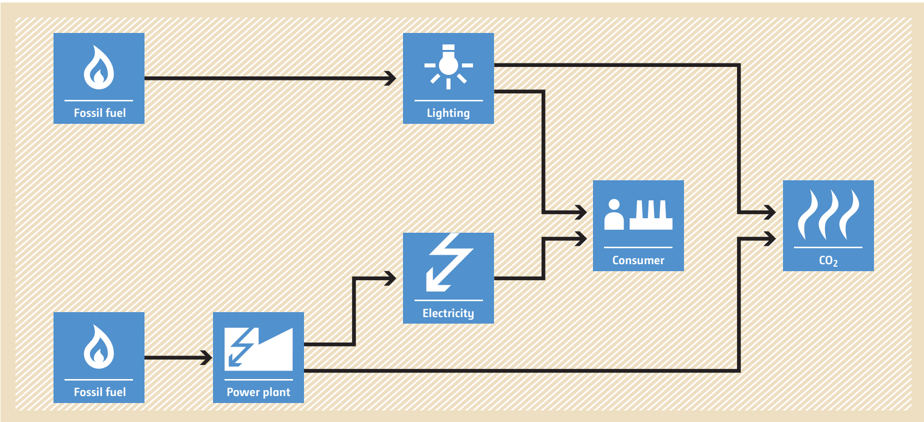
Typical project(s)	Collection and recycling activities of E-waste, comprising of end-of-life, discarded, surplus, obsolete, or damaged electrical and electronic equipment, performed in dedicated facilities with the aim of recovering materials such as ferrous metals, non-ferrous metals, plastics.
Type of GHG emissions mitigation action	• Energy efficiency. Reduction of production of metals and plastics from virgin materials, thus reducing related energy consumption.
Important conditions under which the methodology is applicable	• This methodology applies to the recycling of the following materials: aluminium, steel, copper, gold, silver, palladium, tin, lead; Acrylonitrile Butadiene Styrene (ABS), High Impact Polystyrene (HIPS); • Materials recycled under the project activity are recovered only from end-of-life E-wastes; • The properties of the metals and plastics produced from E-waste recycling are the same as those of the metals and plastics from virgin materials; • The ex ante baseline recycling rate of E-waste is equal to or smaller than 20% of the total amount of E-waste. Where the baseline recycling rates exceed 20%, the project activity has to lead to significantly higher rates of recycling in the region/country.
Important parameters	Monitored: • Quantity of material recycled and sent to a processing or manufacturing facility; • Electricity and fossil fuel consumption at the recycling facility; • Evidence that the materials recycled under the project activity are recovered only from end-of-life E-wastes.
BASELINE SCENARIO Metals and plastics are produced from virgin raw materials resulting in high energy consumption.	
PROJECT SCENARIO Production of metals and plastics based on virgin raw material is reduced. Use of recycled material results in less energy consumption.	

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

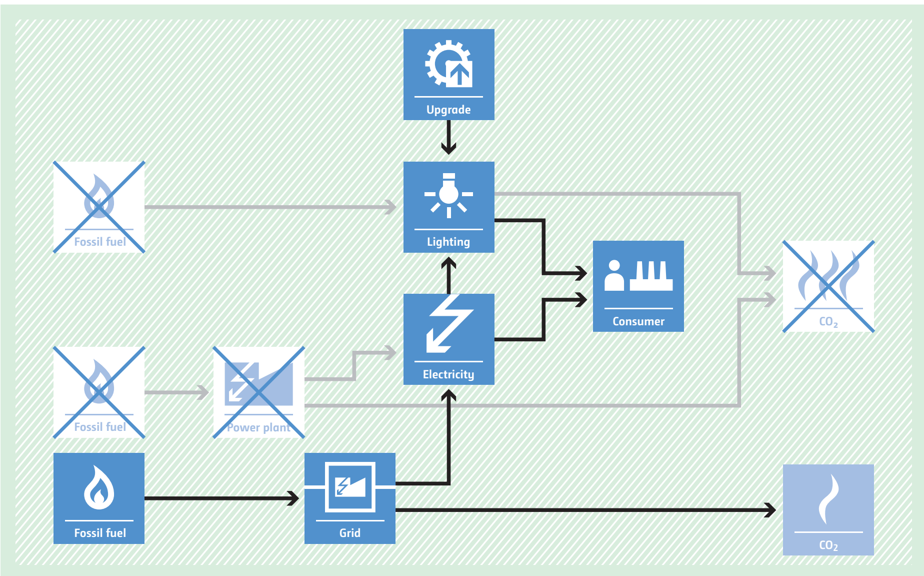


Typical project(s)	The project activity supplies electricity to consumers who, prior to project implementation, were not connected to a national/regional grid and were supplied by a high-carbon-intensive mini-grid or stand-alone power generators. Also fuel-based lighting systems might have been used before the project implementation.
Type of GHG emissions mitigation action	• Displacement of more-GHG-intensive output. Low-carbon-intensive grid/mini-grid electricity displaces high-carbon-intensive electricity or lighting services.
Important conditions under which the methodology is applicable	• Limited to communities with no access to a national or regional grid; • At least 75% of the end users (by number) shall be households.
Important parameters	At validation: • The physical location of each consumer and the anticipated connected load and usage hours of each consumer.
	Monitored: • Metering of total electricity delivered to consumers (e.g. at a substation); • Metering of electricity consumption of all non-household end users (e.g. commercial consumers, SMMEs, public institutions, street lighting, irrigation pumps) and household end-users expected to consume more than 1000 kWh/year.

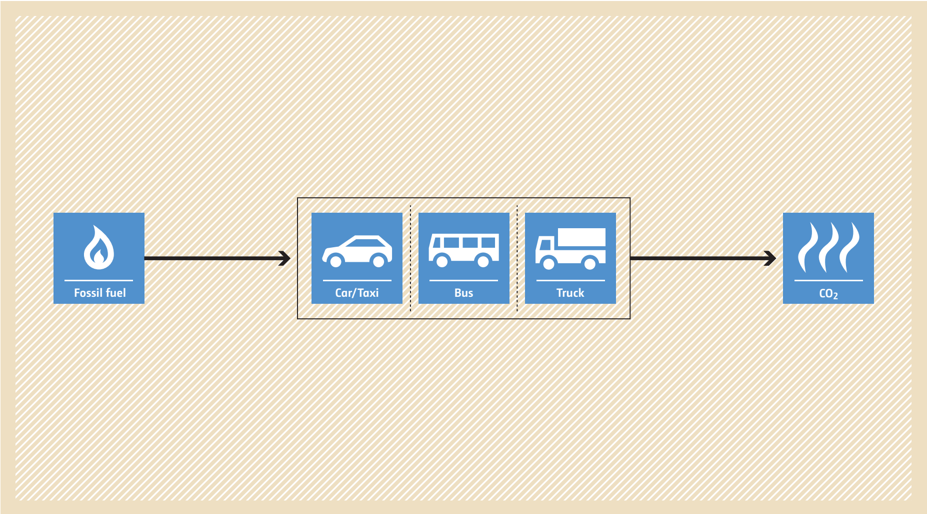
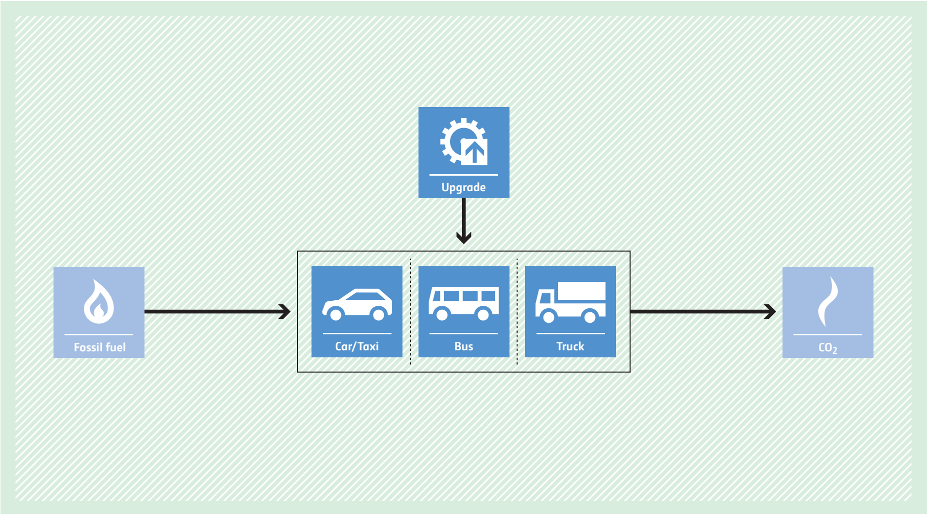
BASELINE SCENARIO
In the absence of the project activity, the end users would have used fossil fuel based lighting, stand-alone diesel electricity generators for appliances other than lighting (e.g. TV) or would have been supplied by fossil-fuel-based mini-grid.



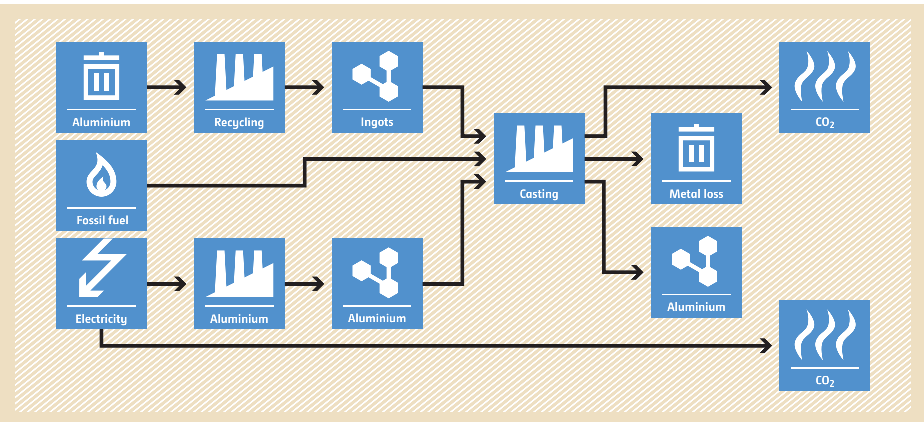
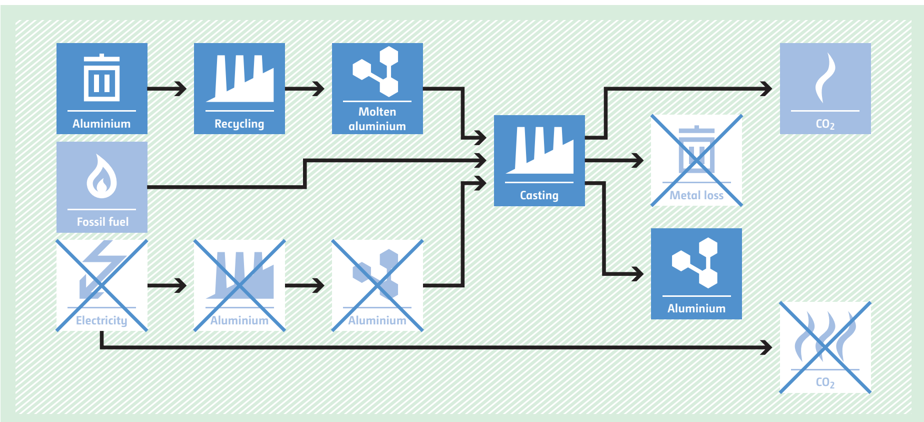
PROJECT SCENARIO
Consumers are supplied with electricity by connection to a national or regional or mini grid or by a new mini-grid.



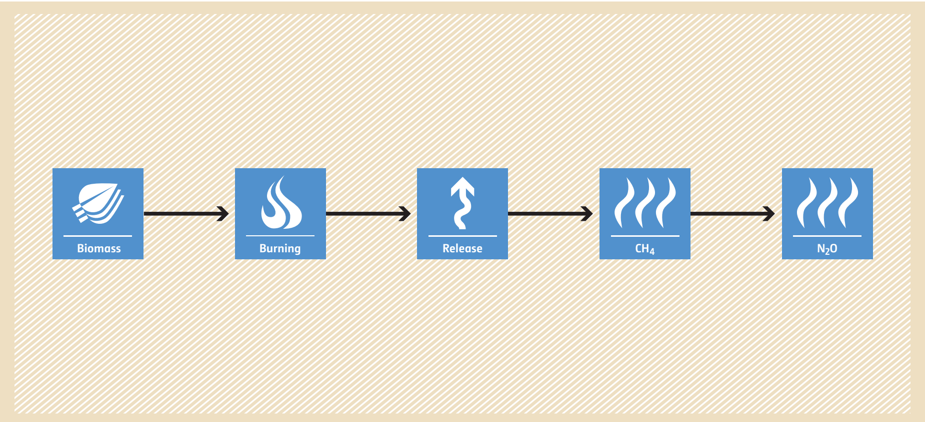
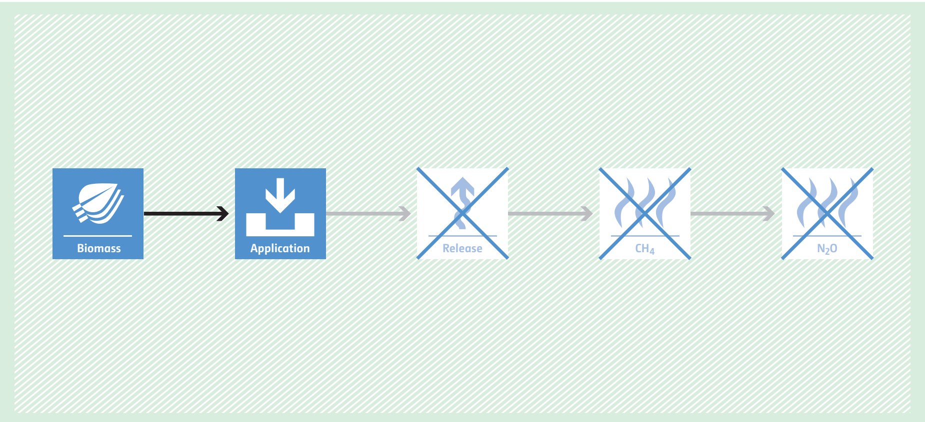
AMS-III.BC. Emission reductions through improved efficiency of vehicle fleets

Typical project(s)	Improvement of the operational efficiency of vehicle fleets (e.g. fleets of trucks, buses, cars, taxis or motorized tricycles).
Type of GHG emissions mitigation action	• Energy efficiency. Fossil fuels savings through various equipment and/or activity improvement.
Important conditions under which the methodology is applicable	• Implementation of idling stop device, eco-drive systems, tire-rolling resistance improvements, air-conditioning system improvements, use of low viscosity oils, aerodynamic drag reduction measures and/or transmission improvements, retrofits that improve engine efficiency; • Vehicle fleets shall be centrally owned and managed by a single entity and driven by contractors or employees of the central entity; • Technologies employed to improve combustion efficiency without improvements in engine efficiency are not applicable.
Important parameters	Monitored: • Specific baseline and project fuel consumption of the vehicle categories; • Average gross weight per vehicle of the vehicle categories; • Activity levels (travelled distance) of the project vehicle categories.
BASELINE SCENARIO Fossil fuel consumption due to inefficient operation of vehicle fleets.	
PROJECT SCENARIO Reduced fossil fuel consumption due to improved operational efficiency of vehicle fleets.	

AMS-III.BD. GHG emission reductions due to supply of molten metal instead of ingots for aluminium castings

Typical project(s)	Construction and operation of scrap aluminium recycling units to directly supply molten aluminium instead of ingots to casting units, thereby reducing GHG emissions on the account of avoided use of energy tore-melt aluminium ingots and produce equivalent quantity of primary aluminium due to metal loss during re-melting of aluminium ingots.
Type of GHG emissions mitigation action	• Feedstock switch; • Energy efficiency. Displacement of a more-GHG-intensive output. Savings of energy due to direct supply of molten aluminium to casting units.
Important conditions under which the methodology is applicable	• For project implemented in existing facilities, both recycling and casting units have a history of operation for at least three years prior to the start of the project activity; • Mandatory investment analysis for baseline determination if the project size is greater than 600 t CO_2 per year per casting unit; • Hot metal transport between the recycling facility and casting unit is undertaken in closed ladle; • Contractual agreement between the recycling facility and casting unit to avoid double counting of emission reductions; • Production outputs in baseline and project scenarios remain homogenous and within a range of ±10% with no change in installed capacity.
Important parameters	At validation: • Percentage loss of aluminium due to oxidation during the process of re-melting of ingots; • Efficiency of the furnace at the casting unit to which the molten metal is being supplied.
	Monitored: • Quantity of molten aluminium supplied; • Energy consumption associated to the transportation of molten metal.
BASELINE SCENARIO Supply of aluminium ingots to the casting units from the aluminium metal recycling facilities. The casting units melt the ingots using fossil fuel and/or electricity before being moulded. During the melting of ingots, some aluminium metal is lost because of oxidation.	
PROJECT SCENARIO Direct supply of molten aluminium from aluminium recycling units avoids the remelting of ingots in the casting units and thus reduces the energy use for the production of aluminium.	

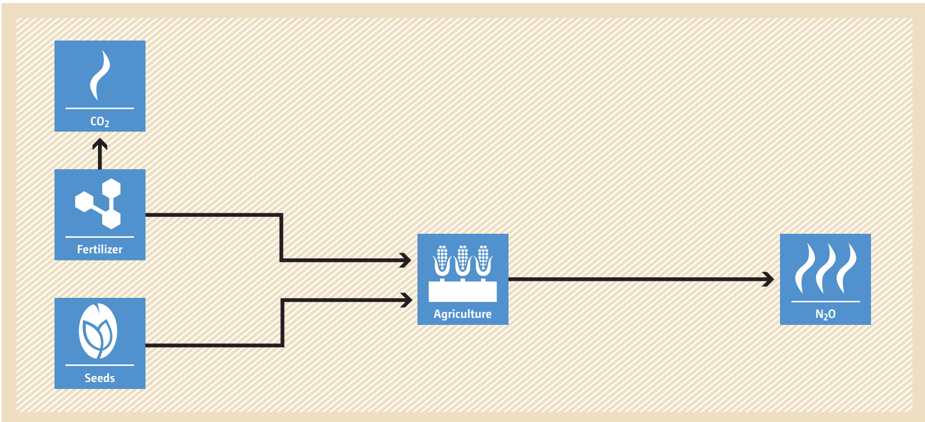
AMS-III.BE. Avoidance of methane and nitrous oxide emissions from sugarcane pre-harvest open burning through mulching

Typical project(s)	Aerobic treatment of biomass from sugarcane harvesting by mulching.
Type of GHG emissions mitigation action	• GHG emission avoidance. Methane and nitrous oxide emissions avoidance by replacing pre-harvest open burning of sugarcane biomass with mulching of sugarcane biomass.
Important conditions under which the methodology is applicable	• It shall be established ex ante at the beginning of the project activity that open burning is not legally prohibited in the project region and it is the common practice; • It can be demonstrated that the participating farms have been cultivating only sugarcane or, have been cultivating sugarcane as well as other crops on the same land in the immediate three years prior to the starting date of the project activity; • If sugarcane biomass is stored before the mulching process, the storage time shall be less than 7 days.
Important parameters	At validation: • Cultivation of sugarcane in the farms; • Open burning status before the implementation of project activity.
	Monitored: • Mulching process of sugarcane biomass residues; • Status of open burning after the project activity; • Sugarcane yield and raw sugar production.
BASELINE SCENARIO Sugarcane biomass residues are burnt in open fire.	
PROJECT SCENARIO Sugarcane biomass residues are collected and applied in the field by mulching.	

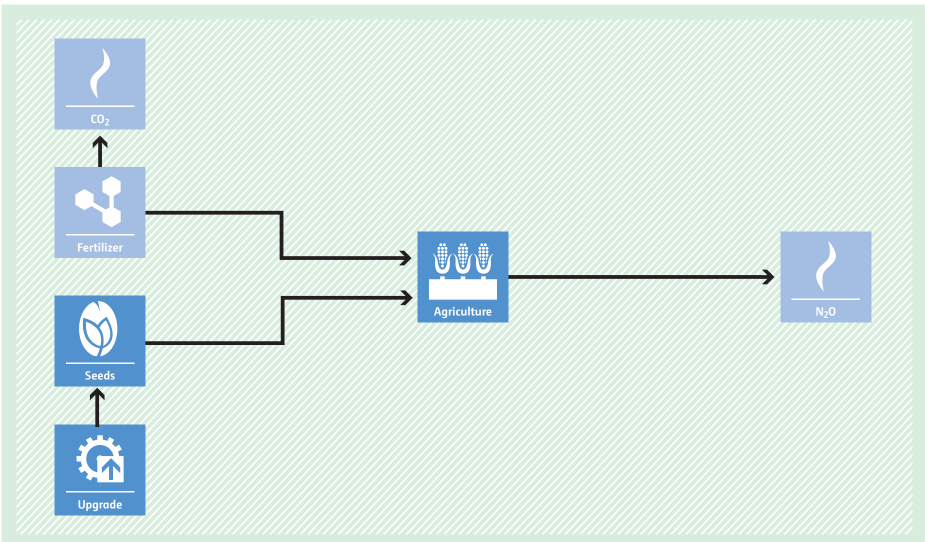
AMS-III.BF. Reduction of N2O emissions from use of Nitrogen Use Efficient (NUE) seeds that require less fertilizer application

Typical project(s)	Use of a genetically distinct type of seed for crops that will utilize nitrogen more efficiently.
Type of GHG emissions mitigation action	• GHG emission avoidance. Avoidance of N2O emissions from agricultural activity by reducing the amount of fertilizer used by the crop.
Important conditions under which the methodology is applicable	• The seeds have been genetically engineered to modify genes in nitrogen assimilation and metabolic pathways in ways that significantly increase the quantity of crop output per unit of nitrogen available for plant use; • The containers of NUE seed must be clearly marked as such and always remain segregated from other seed; • Technologies/measures where the savings in synthetic nitrogen fertilizer applications are attributable in total or in part to enhanced biological fixation (e.g. by rhizobia activity) are not applicable.
Important parameters	At validation: • Historic data for synthetic nitrogen fertilizer, crop yield, and management practices.
	Monitored: • Amount of crop produced by the project activity; • Cultivated area; • Total quantity of nitrogen fertilizers utilized by the farms/fields utilizing the baseline and project technology; • Area cultivation efficiency (productivity) in the project scenario.

BASELINE SCENARIO
Use of traditional seeds and nitrogen fertilizer rates, in order to achieve the same crop output as in the project scenario.



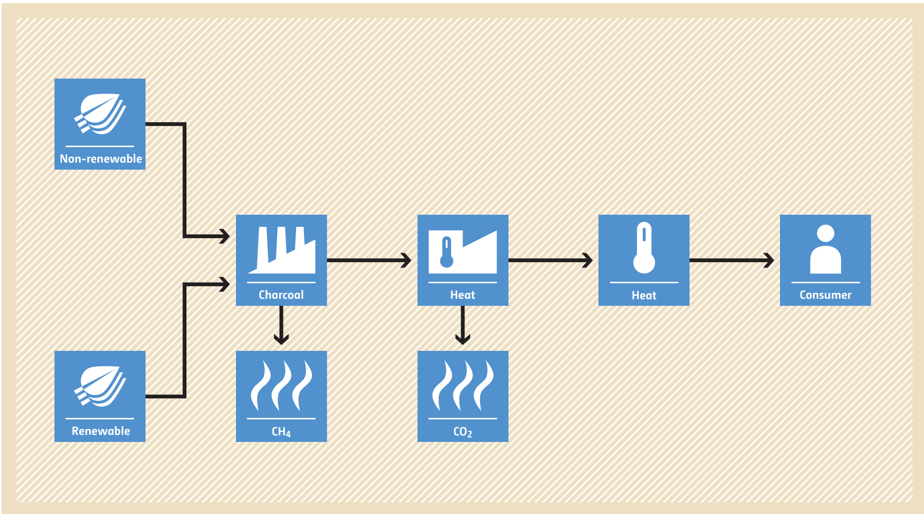
PROJECT SCENARIO
Use of NUE seeds and reduced nitrogen fertilizer rates, in order to achieve the same crop output as in the baseline scenario.



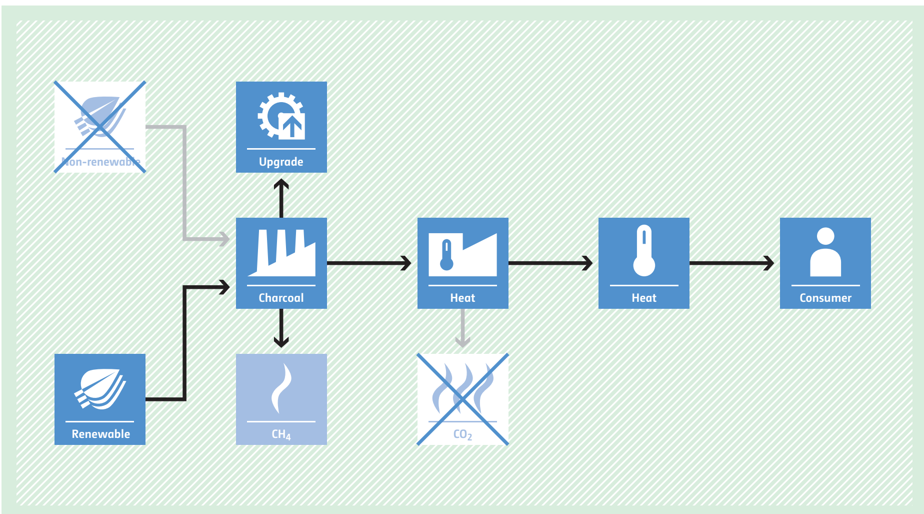
AMS-III.BG. Emission reduction through sustainable charcoal production and consumption

Typical project(s)	Project activities that displace the use of non-renewable biomass in the production of charcoal supplied to identified consumers.
Type of GHG emissions mitigation action	• Fuel or feedstock switch; • Energy efficiency. Displacement of more GHG intensive, non-renewable biomass fuelled applications by introducing more efficient technologies.
Important conditions under which the methodology is applicable	• End users of charcoal shall be: (i) households; or (ii) small and medium enterprises (SME); or (iii) a group of households served by a charcoal market; • The project activity shall introduce efficient charcoal production technologies, including micro gasifier stoves.
Important parameters	At validation: • Kiln used in the baseline scenario; • Feedstock used in the baseline kiln.
	Monitored: • Produced quantity of charcoal; • Energy consumption; • End-user of charcoal produced in project activities.

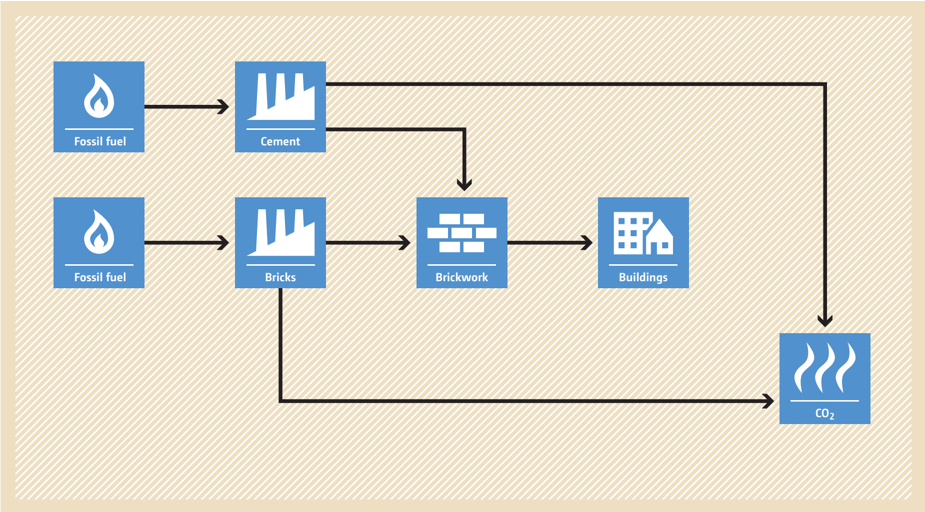
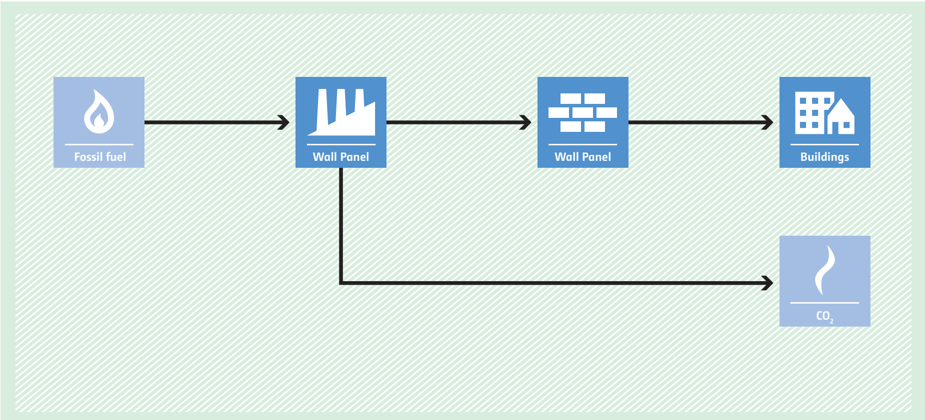
BASELINE SCENARIO
Production of charcoal by using non-renewable and renewable biomass.



PROJECT SCENARIO
Production of charcoal by using renewable biomass in a more efficient way.



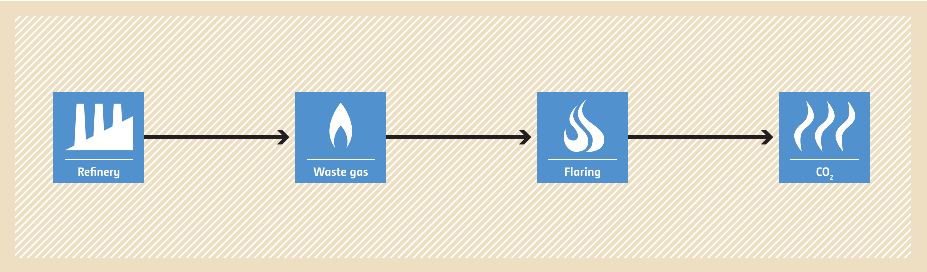
AMS-III.BH. Displacement of production of brick and cement by manufacture and installation of gypsum concrete wall panels

Typical project(s)	Replacement of brickwork with less GHG intensive gypsum concrete wall panels in construction of walls.
Type of GHG emissions mitigation action	• GHG emission avoidance. Displacement of a more GHG intensive construction material.
Important conditions under which the methodology is applicable	• Domestically produced gypsum concrete wall panel shall be used for applications such as non load-bearing walls, load-bearing walls and fencing (compound/security walls) in greenfield building projects or expansion of existing buildings; • The proportion of imported cement is less than 10% of the cement produced within the host country where the projects are hosted; • A declaration from the panel buyers and or final users stating that they would not claim CERs for the panels used by them is required to avoid double counting.
Important parameters	At validation: • Type of applications of gypsum concrete wall panels; • Gypsum concrete composition; • Number of bricks and quantity of cement used per square meter of wall in the baseline scenario.
	Monitored: • Area of wall panel sold and used by final consumers; • Quantity of raw material consumed in the production of gypsum concrete wall panel. • End-user of charcoal produced in project activities.
BASELINE SCENARIO Use of traditional construction material such as brick and cement in brickwork for construction of walls.	
PROJECT SCENARIO Use of gypsum concrete wall panel for construction of walls which will provide same or better service and performance level when compared with base scenario.	

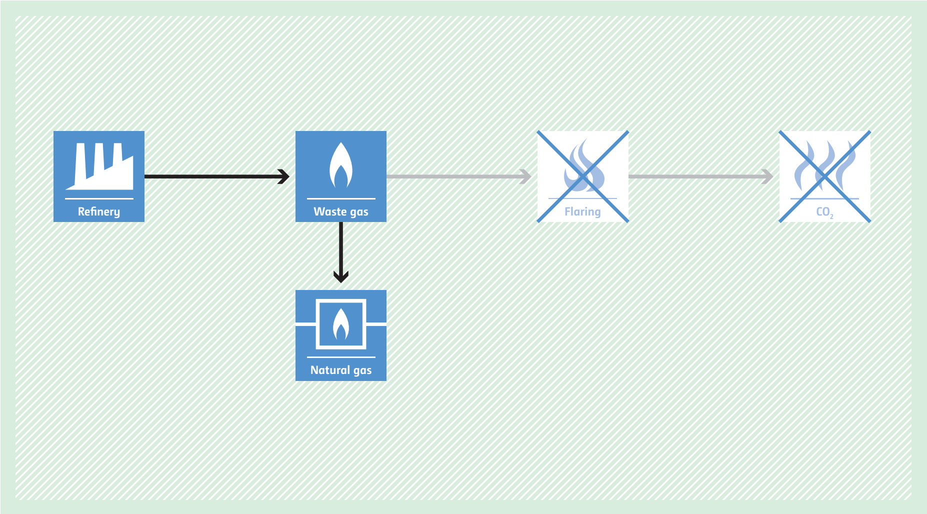
AMS-III.BI. Flare gas recovery in gas treating facilities

Typical project(s)	Off-spec gas is captured and injected into a gas sales line for transportation to the market after cleaning/processing and compressing in dedicated project facilities.
Type of GHG emissions mitigation action	• Energy efficiency. Recovering the waste off-spec gas and utilizing for useful applications.
Important conditions under which the methodology is applicable	• Off-spec gas from gas processing facilities (GPF), used by the project activity, totally or partially was flared (not vented) for at least three years, prior to the start date of the project; • Recovered off-spec gas in the project activity should be captured, compressed, and cleaned/processed in the GPF before being injected into a gas sales line for transportation to the market; • Off-spec gas volume, energy content and composition are measurable; • There shall not be any addition of fuel gas or dry gas into the off-spec gas pipeline between the point of recovery and the point where it is fed into the GPF.
Important parameters	At validation: • Quantity and composition of off-spec gases. Monitored: • Quantity and composition of off-spec gases utilised; • Electricity and fuel used.

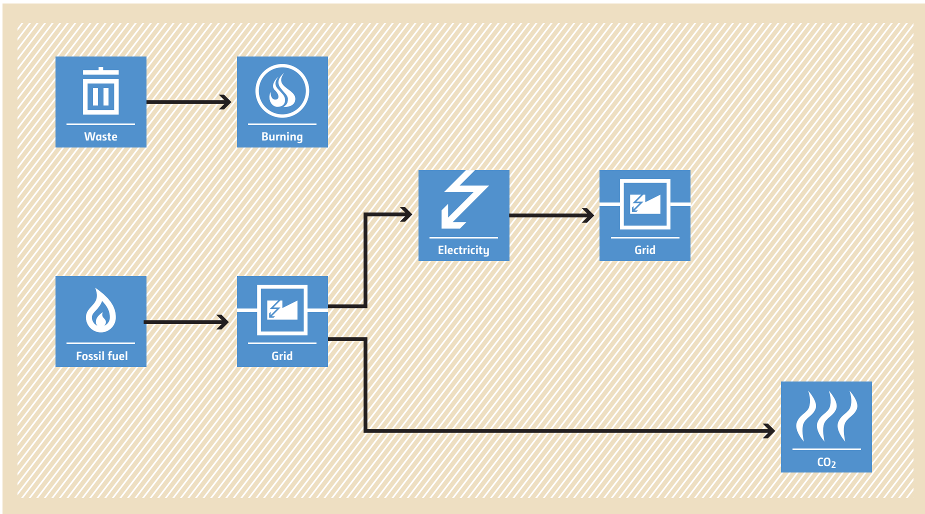
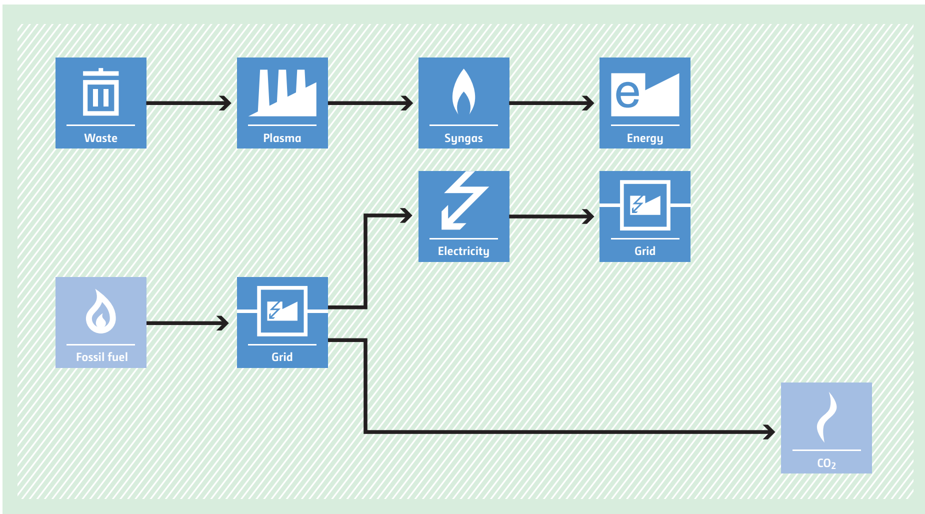
BASELINE SCENARIO
The off-spec gas is flared.



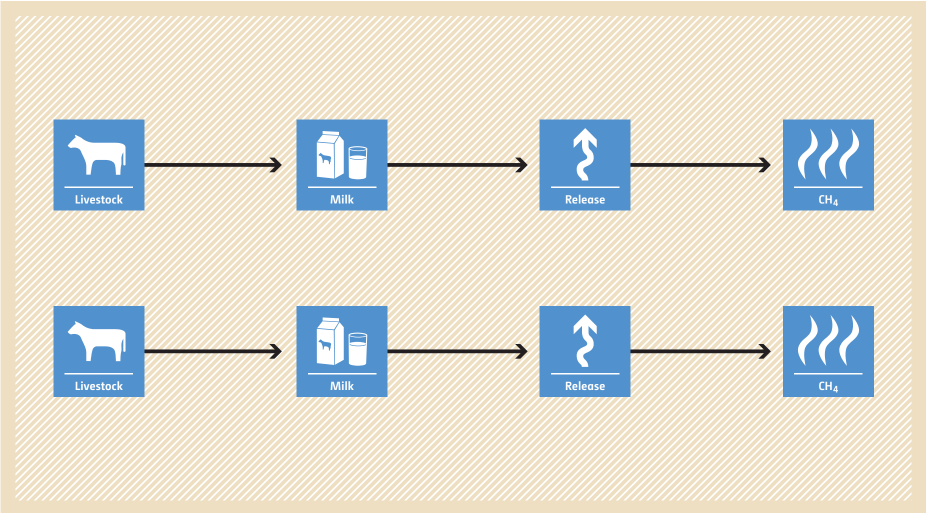
PROJECT SCENARIO
Off-spec gas is captured and injected into a gas sales line for transportation to the market after cleaning/processing and compressing in dedicated project facilities.



AMS-III.BJ. Destruction of hazardous waste using plasma technology including energy recovery

Typical project(s)	Gasification of hazardous waste, using plasma technology, to produce syngas. Electricity and heat are generated by the syngas produced.
Type of GHG emissions mitigation action	• Renewable energy. The syngas produced by the project activity is used as a renewable energy source.
Important conditions under which the methodology is applicable	• The project incinerates only hazardous waste; • The regulation requires incineration of hazardous waste; • No existing hazardous waste incinerators produce heat or electricity.
Important parameters	At validation: • Historical waste incineration; • Fuel and electricity consumption for historical waste incineration.
	Monitored: • Project waste incineration; • Project fuel and electricity consumption; • Compliance rate with incineration regulations; • Heat and/or electricity generated.
BASELINE SCENARIO Hazardous waste is incinerated without energy generation.	
PROJECT SCENARIO Hazardous waste is gasified using plasma technology with energy generation.	

AMS-III.BK. Strategic feed supplementation in smallholder dairy sector to increase productivity

Typical project(s)	Provision of strategic supplementation to large ruminants (e.g. cows), which reduces the level of methane emissions per unit of milk produced.
Type of GHG emissions mitigation action	• Methane avoidance and displacement of a more-GHG-intensive output. Methane emission avoidance from large ruminants due to improved productivity by using strategic supplementation to improve digestibility.
Important conditions under which the methodology is applicable	• The population of lactating animals maintained in the participating smallholders shall be equal or less than 100; • The gross energy (GE) content of the supplement consumed does not exceed 10% of the total GE of the basal ration.
Important parameters	At validation: • Number of lactating animals in the farm and their milk production.
	Monitored: • Number of lactating animals in the farm and their milk production; • Amount of supplement used for the lactating animals.
BASELINE SCENARIO High specific methane emission per unit of milk production due to the poor nutritional conditions of lactating animals in the baseline.	
PROJECT SCENARIO Reduced specific methane emission per unit of milk production due to improved nutritional conditions of lactating animals in the project