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Rwanda Green Taxonomy: Annex I

CLIMATE CHANGE MITIGATION

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Rwanda is one of the most densely populated countries in Africa with 503 people per square kilometre[1]. In addition, Rwanda is facing high population growth of 2.4% per annum in 2014, with an average urbanization growth rate of 6.4% per year[2]. Urbanization and human settlements in Rwanda face a threat from climate change due to the increase in temperature and how it affects population health and the demand for essential services[3]. Green building design and construction offers an opportunity to use resources more efficiently, use locally sourced materials, improve construction techniques, and create job opportunities for a sector that plays an important role in the country's economy both in its contribution to the national economy and employment creation.

Being one of the key drivers in Rwanda's economy, the construction sector has several environmental impacts associated with its activities, related to the emissions of GHG from extraction, transport and building of materials, land use change for construction areas, misuse of built areas due to lack of urban planning and low preservation methods of existing green areas of surrounding buildings. The highest contributors of GHG emissions in the sector are city buildings due to the high density of human settlements and the related higher energy consumption levels. Therefore, energy efficient design is required for buildings in major and secondary cities in Rwanda, while considering local country factors in the design:

- Topography of each region.
- Two dominant seasons (the wet and dry).
- Local sources of rich minerals for green materials.
- Means to recycle the scarce resources.

Given the relevance and impact of the construction sector, decarbonizing it is essential to achieve the established climate commitments. In this sense, the ambition is to ensure zero net emissions throughout the life cycle of buildings and for this it will be necessary to address the emissions associated with the operation of the building (energy consumption in lighting, appliances, air conditioning, among others) and emissions during the life cycle of the project, including emissions associated with materials, its transport and construction processes (e.g. electrification through renewable sources).

This ambition must be achieved considering the regulations of the country and its corresponding jurisdictions: The National Green Growth and Climate Resilience Strategy for climate change and low carbon development adopted in 2011, followed by the National Urbanization Policy[4] (2015). The National Roadmap for Green Secondary City Development[5]

[1] MAIN INDICATORS: 5th Rwanda Population and Housing Census (PHC) | National Institute of Statistics Rwanda
[2] National-Roadmap-for-Green-Secondary-City-Development.pdf (gggi.org)
[3] undp-ndcsp-rwanda-ndc2-2020.pdf
[4] National Urbanization Policy.pdf (bpmis.gov.rw)
[5] Rwanda: National Roadmap for Green Secondary City Development — Global Green Growth Institute (gggi.org)

(2015), the National Urbanization Policy (2015) and the latter approved Rwanda Green Building Minimum Compliance System[6] (2019). The policies and strategies aim as well to support good urban development, enhance local and national economic growth, and ensure a good quality of life for all citizens.

The construction sector in Rwanda's Green Taxonomy aims to achieve green urbanisation and low-carbon urban settlements, and the ambition is to ensure net zero emissions for both building construction and operation. The International Energy Agency, the World Council for Sustainable Construction, and other scientific bodies have established roadmaps for the construction sector to align with the goals of the Paris Agreement. This involves ensuring that all new buildings achieve operational net zero emissions by 2030 and all building stock (new and existing buildings) achieve operational and embedded net zero emissions by 2050.

Climate change mitigation in buildings is directly associated with the energy efficiency of the asset, as operational emissions are linked to energy use for lighting, heating/air conditioning, domestic hot water, and home appliances, among others.

1.1.1. Construction of New Buildings

The construction of new buildings designed with sustainability criteria guarantees energy savings and minimises CO2 emissions during their life cycle. It also promotes the efficient use of natural resources and sustainable materials, as well as waste recycling. This activity can make a substantial contribution to climate change mitigation compared to buildings of conventional design, representing an opportunity also for the implementation of generation and storage systems of non-conventional energy sources.

ISIC Codes: 4100

Substantial Contribution Criteria

For the construction of new buildings[7], the activity must meet at least **one of the following Substantial Contribution Criteria** to make a substantial contribution to climate change mitigation:

- The new building has **one of the following** certifications:
  - LEED Gold or Platinum together with a 30% improvement above the levels in ASHRAE 90.1
  - EDGE (EDGE Certified, EDGE Advance, Zero Carbon)
  - Net zero & Living Building Challenge Certified
  - BCA Green Mark Certification - GoldPlus or Platinum level

Note 1: Any building that is certified under any of the proxies approved by the Climate Bonds Initiative (CBI) is eligible as well.

Note 2: Examples of methodologies for estimating the energy performance of buildings are:

[6] Annex 3 - Rwanda Green Building Minimum Compliance System (gggi.org)
[7] Applies to residential buildings as well as commercial and service buildings.

- IPMVP - International performance measurement and verification protocol: describes different methods to determine the water and energy savings of energy efficiency projects.
- Clean development mechanisms (CDM): definitions and calculation methods for the development of baselines, together with monitoring techniques. Focus on energy efficiency measures.
- ISO 50001 Energy Management Systems: Proposes a framework for implementing technical and management strategies to reduce energy consumption and GHG emissions.

- The activity must comply with the Rwanda Green Building Minimum Compliance System[8] and achieve a minimum score of **80 points** from the energy module. This is applicable for new Category 4 & 5 buildings as per the Ministerial Order Determining Urban Planning and Building Regulations[9]. The indicators are applicable for:
  - Commercial buildings (excluding warehouses and retail shops)
  - Public administrative and institutional buildings (excluding correctional services, police, fire department)
  - Social, cultural & assembly buildings
  - Health facilities
  - Educational buildings (excluding living areas for students)
  - Residential developments[10]
- The activity must demonstrate that operational emissions from buildings are below 23 kgCO2e/m2 by 2028. This threshold must be reviewed periodically to comply with decarbonisation trajectories for the construction sector (CRREM - The Carbon Risk Real Estate Monitor[11] - Intensity Pathways) **(transition activity**).

Note: Where applicable, please refer to existing national standards that may provide **useful guidance** and information in line with green construction. The list below are standards that may be referred to and provide additional guidance:

- RS ISO 15392: Sustainability in buildings and civil engineering works — General principles
- RS ISO 21929-1: Sustainability in building construction — Sustainability indicators — Part 1: Framework for the development of indicators and a core set of indicators for buildings

[8] Annex 3 - Rwanda Green Building Minimum Compliance System (gggi.org)
[9] rw-government-gazette-dated-2019-04-16-no-special.pdf (gazettes.africa)
[10] Although the green building minimum compliance system is not mandatory for residential developments, willing building owners and real estate developers are encouraged to adopt as applicable on a voluntary basis the green building minimum compliance system to meet sustainable development targets (Republic of Rwanda, 2019). Residential buildings that adopt this system are expected to comply with the defined threshold of a minimum score of 80 points from the energy module to be consider aligned with the Taxonomy.
[11] CRREM Project

- RS ISO 37101: Sustainable development in communities — Management system for sustainable development — Requirements with guidance for use
- RS ISO/TS 12720: Sustainability in buildings and civil engineering works — Guidelines on the application of the general principles in ISO 15392.
- ISO 23045, Building Environmental design: guidelines to assess the energy efficiency of new buildings.
- ISO 16817, Building Environment Design-Indoor Environmental design process for Visual environment.

Ineligibility Criteria

- Buildings must not be used for the extraction, storage, transportation, or manufacture of fossil fuels.
- Energy for building operations must not come directly from fossil fuels (e.g., diesel-based power plants).

Note:

- Power generation plants as backup sources in case of failure of the electrical network and micro-cogeneration systems based on low-carbon energy (refer to the energy sector) can be part of the building services.
- Information may be requested from the responsible builder stating that the buildings will not be used for the extraction, storage, transport or manufacture of fossil fuels and that the energy for the operation of the building does not come directly from fossil fuels except for the cooking of food and power plants.

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Sustainable Use and Protection of Water Resources

- All water appliances (e.g., showers, sink and dishwasher faucets, toilets, urinals and flush cisterns, bathtubs, etc.) must comply with the water savings set out in related national regulations (if any). Alternately, the building must implement water-saving measures (e.g., use of rainwater, reuse of treated grey or black water, among others) that meet the savings requirements as prescribed in national standards or regulations. When applicable, refer to the standards for Sanitary Appliances for such specific requirements[12].

[12] *RS EAS 1017-1: Sanitary appliances (vitreous china) —Specification —Part 1: General requirements
*RS EAC 1017-2: Sanitary appliances (vitreous china) — Specification — Part 2: Wash down water closet pan
*RS EAC 1017-5: Sanitary appliances (vitreous china) —Specification —Part 5: Wall-hung urinal
*RS EAC 1017-6: Sanitary appliances (vitreous china) —Specification —Part 6: Flushing cisterns

- In case there is no relevant national regulation, water appliances should be used that ensure at least 20% savings in water consumption compared to the baseline of similar construction (e.g., climate, type of construction – residential, commercial, etc.). If relevant national standards provide a number below 20%, the 20% threshold should apply.
- All projects must comply with the mandatory indicators of the water efficiency module of the Green Building Minimum Compliance System. This module focuses on rainwater harvesting, the selection of water-efficient fittings, wastewater treatment and other features that would reduce the use of potable water during building operations (Republic of Rwanda, 2019).
- All projects must comply with LAW N°48/2018 OF 13/08/2018 ON. ENVIRONMENT (Section 2: Water resources)

Promotion of Circular Economy

- Ensure reuse or recycling of non-hazardous construction and demolition waste.
- Use local or recycled materials during construction when viable. Refer to the locally made construction materials standards developed for the Rwandan Standards Board[13] for guidance.
- All projects must comply with the mandatory indicators of the environmental protection module of the Green Building Minimum Compliance System. This category focuses on the design, practices and selection of materials and resources that would reduce the environmental impacts of built structures (Republic of Rwanda, 2019)

Pollution Prevention and Control

- All projects must comply with the **Sectoral Guidelines for the Environmental Impact Assessment (EIA) of Housing Projects in Rwanda**[14].
- All projects must comply with the Rwanda Building Control Regulations established by the Rwanda Housing Authority.

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*RS 484: 2022: Adobe blocks (Rukarakara) — Specification
*RS 510, Specification for stabilized soil blocks
*RS 511, Clay flooring tiles - Specification
*RS 512, Clay roofing tiles and ridges — specification
*RS 513, Compressed stabilized earth blocks — Requirements, production and construction
*RS 514-1, Definitions classifications specifications for compressed earth blocks
*RS 514-2, Compressed earth blocks — Earth mortars
*RS 514-4, Code of practice for production and construction of compressed earth blocks
*RS 516, Natural stone — Rough blocks — Requirements
*RS 517, Specification for Natural stone masonry units
*RS 518, Recommendations for dimensions and workmanship of natural building stones for masonry work
*RS 519, Natural stone products — Slabs for cladding — Requirements.
*RS 520, Slabs of natural stone for external paving — Requirements and test Methods
*RS 521, Sets of natural stone for external paving — Requirements and test methods
*RS 522, Natural stone products — Modular tiles — Requirements.
*RS 523, Natural stone products —Slabs for floors and stairs — Requirements

[14] Please refer to MINISTERIAL ORDER No 001/2019 OF 15/04/2019 which establishes the list of projects that must undergo environmental impact assessment, instructions, requirements and procedures to conduct environmental impact assessment.

- All materials used must ensure that they do not cause adverse impacts on human health or the environment.
- Ensure that the components and construction materials used do not contain asbestos or polluting substances identified in the REACH regulation[15] or its equivalent in national technical standards if available.
- If new construction is located on a potentially contaminated site, the site should be subject to an investigation of potential contaminants.

Protection of Biodiversity and Environment

- At least 15% of all wood products used in new construction for structures, cladding and finishes must have been recycled, reused, or sourced from sustainably managed forests, as certified by third-party audits conducted by accredited certification bodies (e.g. FSC and PEFC standards or equivalent). This is to ensure that there is no deforestation or significant indirect damage to forest ecosystems at the source of wood products.
- All projects must comply with LAW N°48/2018 of 13/08/2018 ON ENVIRONMENT (article 23), ensuring the integration of green spaces in the master plan as well as in individual construction plans.

Climate Change Adaptation & Resilience

- New buildings must implement measures to increase their resilience to extreme weather events (including flooding) and adaptation to climate change.
- New buildings must have drainage systems designed to account for high-intensity rainfall, if viable
- New buildings must have green spaces to reduce heat accumulation.
- Avoid construction in areas of high probability of flooding or forest fires or implement appropriate measures to mitigate such disasters.

1.1.2. Building Renovation

Building renovation is part of the sustainable solutions within the construction sector because, by its very vocation, an existing building is reused and improved in efficiency. The renovation can, in addition to improving efficiency, implement measures for the reduction of emissions, such as the implementation of energy generation systems, the installation of charging points for electric vehicles, and the integration of energy storage systems, among others. The existing buildings must adapt to the new regulations and thus align with the commitments and goals of the country to face climate change.

ISIC Codes: 4100

Substantial Contribution Criteria

[15] REACH Certification in Rwanda | REACH Consultants in Rwanda (certvalue.com)

Building renovation[16] is eligible if it meets at least **one of the following Substantial Contribution Criteria**:

- The renovation provides operational emissions intensity reduction of no less than 20% CO2Kg/sqm per annum over the baseline calculated at the beginning of the project.
- The building has a sustainable building certification: LEED Gold or Platinum together with a 30% improvement above the levels in ASHRAE 90.1; EDGE (Certified, Advance, Zero Carbon); Net zero & Living Building Challenge Certified.
- The building complies with the **Rwanda Green Building Minimum Compliance System** and has a minimum **energy module** score of **80 points.**
- **Transition activity:** Renovation projects involving a switch to use energy with emissions below 100gCO_2e/kWh **OR** installation of renewable energy generation systems allowing operational emissions below 23 kgCO_2e/m2 until 2028.

Ineligibility Criteria

Renovated buildings cannot be used for the extraction, storage, transport, or manufacture of fossil fuels.

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

The renovation of low-carbon and efficient buildings is subject to compliance with the compliance requirements established for building construction and the requirements below.

Promotion of Circular Economy

- Ensure reuse or recycling of non-hazardous construction and demolition waste.
- Use local or recycled materials during construction when viable. Refer to the locally made construction materials standards developed for the Rwandan Standards Board[17] for guidance.

[16] Applies to residential buildings as well as commercial and service buildings.
[17] *RS 484: 2022: Adobe blocks (Rukarakara) — Specification
*RS 510, Specification for stabilized soil blocks
*RS 511, Clay flooring tiles - Specification
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*RS 521, Sets of natural stone for external paving — Requirements and test methods
*RS 522, Natural stone products — Modular tiles — Requirements.
*RS 523, Natural stone products —Slabs for floors and stairs — Requirements

- All projects must comply with the mandatory indicators of the environmental protection module of the Green Building Minimum Compliance System. This category focuses on the design, practices and selection of materials and resources that would reduce the environmental impacts of built structures (Republic of Rwanda, 2019).

Pollution Prevention and Control

- All projects must comply with the **Sectoral Guidelines for the Environmental Impact Assessment (EIA) of Housing Projects in Rwanda**[18].
- Before renovation works begin, an inspection of the building must be carried out in accordance with national legislation, carried out by a specialist trained in asbestos removal and in the identification of other materials containing substances of environmental and harm concern.
- Any activity for removal of cladding that contains or may contain asbestos (such as removal or modification of insulation panels, shingles and other materials containing asbestos) must be carried out by trained personnel, with sanitary surveillance before, during and after the works, and in accordance with the applicable regulations.

Sustainable Use and Protection of Water Resources

- All relevant water appliances (e.g., showers, sink and dishwasher faucets, toilets, urinals and flush cisterns, bathtubs, etc.) must enable compliance with the water savings set out in related national regulations (if any). Alternatively, the building must implement some water-saving measures (e.g., use of rainwater, reuse of treated grey or black water, among others) that meet the savings requirements imposed by local laws. When applicable, refer to the standards about Sanitary Appliances that can be referred to in complimenting these specific requirements[19].
- In case there is no relevant national regulation, the water appliances used must ensure at least 20% savings in water consumption compared to the baseline of similar construction (e.g., climate, type of construction – residential, commercial, etc.)
- All projects must comply with the mandatory indicators of the water efficiency module of the Green Building Minimum Compliance System. This module focuses on rainwater harvesting, the selection of water-efficient fittings, wastewater treatment and other features that would reduce the use of potable water during building operations (Republic of Rwanda, 2019).
- All projects must comply with LAW N°48/2018 OF 13/08/2018 ON ENVIRONMENT (Section 2: Water resources)

[18] Please refer to MINISTERIAL ORDER No 001/2019 OF 15/04/2019 which establishes the list of projects that must undergo environmental impact assessment, instructions, requirements and procedures to conduct environmental impact assessment.

[19] *RS EAS 1017-1: Sanitary appliances (vitreous china) —Specification —Part 1: General requirements
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1.1.3. Individual Measures and Professional Services

The inclusion of individual measures and professional services is a fundamental and a transversal support activity in the construction and renovation of new buildings. These measures are necessary to achieve the minimum percentages of energy savings indicated for the activities in the Taxonomy. The proposed measures tend to take advantage of the environmental conditions of the environment, maximising the sources of thermal control, ventilation, and natural energy reduction to create comfortable conditions for its occupants, as well as promote the use of mechanical and electrical systems to create comfortable conditions inside buildings, such as boilers and air conditioning, mechanical ventilation, electric lighting, among others.

Individual measures and professional services are enabling activities that contribute to improving energy performance and decarbonisation of buildings. The list should be updated periodically. Professional services are necessary for the proper assessment of building conditions and energy efficiency potential. These activities can help save energy through construction operations better designed for efficiency.

ISIC Codes: various codes

Substantial Contribution Criteria

The individual measures at the building or the urban level are listed below. The measures must comply with corresponding criteria for activities in other sectors of the Taxonomy, if available (e.g., energy generation systems must comply with the corresponding criteria for the activity under the energy sector).

At Building Level

Individual measures that can substantially contribute directly at the building level include installation, maintenance and repair of the following:

1. Addition of insulation to existing envelope components, such as external walls, roofs (including green roofs), lofts, basements and ground floors (including measures to ensure tightness and to reduce the effects of thermal bridges and scaffolding, among others), and products for the application of insulation to the building envelope (e.g. mechanical fixings, adhesives, etc.). The impact on energy efficiency due to such measures must be disclosed.
2. Replacement of existing windows with new energy-efficient windows. It is necessary to disclose the reduction of energy consumption of the building.
3. Replacement of external doors with new energy-efficient ones.
4. Application of reflective paints on the roof to reduce thermal loads, thereby reducing the energy consumption of the building and improving the thermal comfort of the space.
5. Installation and replacement of heating, cooling and ventilation systems and domestic hot water systems, including district heating and cooling equipment. All installed equipment must provide energy savings with respect to existing systems in the building.
6. Replacement of water heating systems with highly efficient systems or solar water heating systems.
7. Replacement of existing pumps for efficient circulation pumps.

8. Installation of efficient LED lighting devices and systems.
9. Installation of low-flow cookers and sanitary taps that allow to match or exceed the parameters of water saving.
10. Assembly and operation of electric heat pumps that use refrigerant with GWP ≤ 675 and that comply with the energy efficiency requirements stipulated in the relevant regulations.
11. Zonal thermostats, smart thermostat systems, and sensing equipment (e.g., motion and daylight control systems).
12. Building Management Systems and Energy Management Systems.
13. Charging stations for electric vehicles.
14. Smart meters for gas and electricity.
15. Facade and roof elements with solar protection or control function, including those that support vegetation growth.
16. Photovoltaic solar systems (and auxiliary technical equipment), both for self-consumption and for discharge for the electricity grid.
17. Solar panels for water heating (plus its auxiliary technical equipment).
18. Other energy generation systems from non-conventional renewable sources (that are aligned with the criteria under the energy sector).
19. Heat pumps that contribute to renewable energy targets in heating and cooling (and the necessary auxiliary technical equipment)—installation of new pumps or the updated change of existing ones.
20. Wind turbines (and auxiliary technical equipment).
21. Transpired solar collectors (including auxiliary technical equipment).
22. Thermal or electrical energy storage units (plus auxiliary technical equipment).
23. High-efficiency micro-CHP (combined heat and power) plant.
24. Heat exchangers/recovery systems.

The following professional services are always eligible:

25. Accredited energy audits and building performance evaluations.
26. Energy management services and contracts, including services provided by Energy Service Companies (ESCO).
27. Technical consultations (energy consultations, energy simulations, project management, production of energy performance contracts, dedicated trainings) linked to the improvement of energy performance of buildings.
28. Energy performance contracts

At City, Municipality, or Locality Level

Initiatives and projects at the urban or district level contribute substantially to the mitigation of GHG emissions. The implementation of clean technologies (low carbon) or urban development strategies makes it possible to make the management of cities more efficient. Low-carbon

urban growth helps increase density in cities with a lower environmental impact and reduces the use of natural resources required to obtain the services offered by these areas.

Individual measures that are directly eligible at the city, municipality or locality leve:

Energy

- Independent public lighting systems that avoid the construction of power transmission networks.
- Automation of operations of public lighting management systems (e.g., based on the presence of people and predetermined schedules, in such a way that the misuse of energy is prevented at times when the lighting of the sector is not required).
- On-site power generation systems (Distributed Energy Resources that comply with the criteria defined under the energy sector).

Mobility

- Electric vehicle charging points in urban areas.
- Interventions at the urban level that favour the reduction of emissions by mobility (adjustment of routes, modal shift, among others).

Waste

- Projects for generation of energy or compost from waste at neighbourhood or building scale.
- Waste transfer centres that promote recycling and reuse, avoiding the transport and disposal of waste in landfills or waste disposal centres.

Water

- Sustainable Urban Drainage Systems, which demonstrate 100% retention of runoff water in the urbanised area without causing harm to the aquifer or ecosystem.
- Wastewater treatment plants (grey and black), which prevent the disposal of wastewater in the treatment systems of the city or municipality.
- Micro cogeneration systems for the treatment of wastewater or waste, both commercial and residential.

ICT

- Sensor networks and integrated systems to make urban development management more efficient, optimise infrastructure operation, articulate different services (e.g., energy + mobility + construction) and facilitate the creation of intelligent advanced metering systems.

1.1.4. Acquisition or Ownership of Buildings

Acquisition of buildings designed to minimise energy consumption and carbon emissions can make a substantial contribution to climate change mitigation goals. It sends a clear signal to the market that purchasing such buildings can help reduce future climate change-related risks

and increase the demand and generating incentives for owners to construct and renovate buildings with high levels of energy efficiency.

ISIC Codes: 6810, 5510, 5520, 5590

Substantial Contribution Criteria

The acquisition or ownership of buildings is eligible if the building meets at least one of the criteria specified under the Construction of New Building activity.

Ineligibility Criteria

The acquisition and ownership of buildings that are dedicated to the extraction, storage, transportation, or manufacture of fossil fuels are not eligible.

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

The acquisition and ownership of low-carbon and efficient buildings are subject to compliance with the compliance requirements established for the renovation of buildings above.

1.1.5. Research and Development – Professional Services

ISIC code: NA

This activity includes the research, applied research and experimental development of solutions, processes, technologies, business models and other products dedicated to the reduction, avoidance or removal of GHG emissions. These solutions must demonstrate their ability to contribute significantly to the mitigation objective of the Construction sector activities.

Substantial Contribution Criteria

The creation of intangible assets, research, development and innovation activities that have the objective of promoting compliance with the **Substantial Contribution Criteria** of the Taxonomy in the Construction sector are considered enabling to substantial contribution to climate change mitigation objective.

Some of the intangible assets, research, development and innovation activities that enable substantial contribution to climate change mitigation are:

- Energy management services
- Creation and implementation of comprehensive operation and maintenance (O&M) protocols services
- Supervisory control and data acquisition systems, which track energy usage at the component/equipment level.
- Smart Material: Designed materials with controllable and adjustable properties depending on external stimuli, such as stress, temperature, and moisture
- Internet of Things (IoT), 3D printing, Drones, VR and AR, Building information modelling, to enable energy efficient construction, operation and maintenance.

- Big Data, AI and Smart Management: Smart construction management software equipped with big data/AI technology can store a vast amount of business and construction data to help automate operational and construction processes.[20].
- Green building strategies and construction using low-carbon materials like engineered timber, recycled steel, and low-carbon concrete.

Generic Compliance Requirements

- The economic activity must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

[20] Insight-report-June-2022.pdf (cca-acc.com)

1.2. Energy

Rwanda's energy sector contributes 6% of GDP[21] and is the second largest contributor to the country's GHG emissions equivalent with 31% represented in 1.68 Mt CO2e; this places the energy sector at the forefront in the reduction target determined to achieve GHG emission reduction of 38% by 2030.

Rwanda has one of the region's lowest electricity consumption per capita, positioning the country as eligible to be self-sufficient in domestic energy production. Biomass-derived primary energies constitute 92% of the energy consumed[22] and have the largest supply, mainly wood, charcoal, and biomass; other available energy sources are fossil fuels, peat, methane gas, hydropower, and solar energy. According to previous studies, Rwanda may host two geothermal zones in the western branch of the East African Rift valley with a potential for electricity generation, estimated as high as 700 MW[23]. Studies on wind energy potential in Rwanda were carried out in the early 2010s and found that, in general, the Eastern Province of the country (especially the Akanyaru River area) is the most favourable for wind energy. The constant winds above 5.5 metres per second there make it reasonable and cost-effective to locate wind power capacity[24].

Rwanda's electricity matrix for 2022[25] was composed of 50.6% of renewable sources such as hydroelectric and in minor proportion solar energy; the remaining 18.5% came from methane gas, 16.2% from fuel oil, and 11.9% from peat. For 2021, energy production reached 1.06 bn kWh, contrasting with the 1.01 bn kWh it consumes, however, generation capacity is low and represents an opportunity for improvement and investment in energy policy aims.

By 2020, only 46.6% of the average population had access to electricity, with a shortfall in access for rural populations of 61.8%; the 100% access to electricity and non-solid fuels are also part of the Rwanda government's 2030 goals. The country adopted and developed several regulations for the energy sector such as the Rwanda Energy Policy, Biomass Energy Strategy, the RURA Guidelines promoting Energy Efficiency Measures, Regulation No. 02/ENERGY/EL/RURA/2013 for electricity licensing regulations, Regulation No. 03/R/EL-EWS/RURA/2019 for Electricity Licensing Framework for Rural Electrification in Rwanda, RURA Compliance and Enforcement Guidelines, etc; These regulations are articulated with adopted climate change policies in response to NDC commitments under regulations like the National Environment and Climate Change Policy, and the National Green Growth and Climate Resilience strategy for climate change.

Rwanda's government has been developing several energy efficiency programs including the 'SolaRwanda' Solar Water Heaters (SWH) project, Mount Jali in Kigali Solar Plant (250KWp), Rwamagana Solar Power Plant (8.3 MW), Kinigi/Karisimbi electricity generation test from geothermal resources, the replacement of high-pressure sodium lamps with LEDs in streetlights, etc.

The energy sector in Rwanda's Green Taxonomy aims to increase investment in **generating capacity** and improving access to **clean electricity**. To achieve this, all the screening criteria

[21] GDP National Accounts, 2022 | National Institute of Statistics Rwanda
[22] Rwanda | AFREC (au-afrec.org)
[23] BGR - Rwanda (bund.de)
[24] FULLTEXT01.pdf (diva-portal.org)
[25] Rwanda Utilities Regulatory Authority: Electricity (rura.rw)

for the energy sector are aligned with the decarbonisation trajectory of the International Energy Agency, ensuring that the life cycle emissions are considered and the feedstock or sources used to generate energy (e.g., biomass) are sustainable. The ambition of the energy sector is to reach **net zero by 2050** by establishing CO_2 intensity thresholds that decrease periodically from the starting point of **100 gCO_2/kWh**[26].

1.2.1. Electricity Generation Using Solar Photovoltaic Energy

Power plants are mainly dedicated to the generation of electrical energy from solar radiation. Photovoltaic cells or solar concentrators are used to produce electricity. The production of electricity from solar photovoltaic energy is a **substantial contribution** to **climate change mitigation** compared to the generation of electricity from fossil fuels, as it does not generate direct emissions in its operational process. Depending on the technology, life-cycle emissions of electricity from PV systems can vary between 26 and 42 g CO_2/kWh.

ISIC Codes: 3510

Substantial Contribution Criteria

Solar photovoltaic power generation is directly eligible without additional criteria.

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Promotion of Circular Economy

- Ensure that the photovoltaic panels and associated components have been designed and manufactured for durability[27], ease of disassembly, reconditioning and recycling.
- A waste management plan must be in place covering the different phases of the project, estimating the waste volume that could be generated. The purpose of this component is to ensure that the types of waste generated at all stages of the project are properly managed by waste management companies. The main focus must be on the recovery and use of waste, as well as the proper treatment of hazardous waste by certified companies.
- Ensure compliance with national standards and regulations on the waste management of electrical and electronic components: *RS 276-1: Electrical and electronic waste — Handling, collection, transportation and storage — Requirements and RS 276-2: Electrical and electronic waste —Treatment and disposal — Code of Practice.*
- Based on the estimated lifetime of the project, a programme for decommissioning and abandonment should be in place, including procedures, handling and disposal of materials and equipment, and programmes for rehabilitation or restoration of the sites.

Protection of Biodiversity and Environment

[26] The evolution of the average CO_2 intensity in Africa between 2019-2025 is expected to be between 400 - 900 g CO_2/kWh (IEA, 2023). Electricity_Statistics_Report_as_of_the_Fourth_Quarter_2022.pdf (rura.rw)
[27] Durability depends on the technology. Crystalline silicon photovoltaic panels, which account for almost 90% of the photovoltaic panels used on the market, have a lifetime of about 30 years

- If applicable, have a wildlife rescue and relocation plan in place when there is significant evidence of the presence of wildlife in terms of quantity and variety of species.
- All projects must comply with the **C (ESIA) and enforce the Environmental and Social Management Plan (ESMP) that was embedded in the ESIA study[28].**

1.2.2. Electricity Generation Using Concentrated Solar Power Technology

Construction and operation of facilities using solar thermal power to generate electricity. Concentrated Solar Thermal Power (CSP), also called solar thermal power, produces electricity by concentrating the sun's rays that heat a medium to drive a steam or gas turbine to drive an electric generator. Depending on the technology, life-cycle emissions of electricity from PV systems can vary between 26 and 42 g CO2/kWh.

ISIC Codes: 3510

Substantial Contribution Criteria

Concentrated solar power generation is directly eligible.

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the generic compliance requirements (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Promotion of Circular Economy

- Ensure that the photovoltaic panels and associated components have been designed and manufactured for durability, ease of disassembly, reconditioning and recycling.
- Ensure that a waste management plan is in place covering the different phases of the project, estimating the waste volume that could be generated. The purpose of this component is to ensure that the types of waste generated at all stages of the project are properly managed by waste management companies. The main focus must be on the recovery and use of waste, as well as the proper treatment of hazardous waste by certified companies.
- Ensure compliance with national standards and regulations on the waste management of electrical and electronic components: *RS 276-1: Electrical and electronic waste — Handling, collection, transportation and storage — Requirements and RS 276-2: Electrical and electronic waste —Treatment and disposal — Code of Practice.*
- Based on the estimated lifetime of the project, a programme for decommissioning and abandonment should be in place, including procedures, handling and disposal of materials and equipment, and programmes for rehabilitation or restoration of the sites.

Protection of Biodiversity and Environment

[28] Please refer to MINISTERIAL ORDER No 001/2019 OF 15/04/2019 which establishes the list of projects that must undergo environmental impact assessment, instructions, requirements and procedures to conduct environmental impact assessment.

- All projects must comply with the **Environmental and Social Impact Assessment (ESIA) and enforce the Environmental and Social Management Plan (ESMP) that was embedded in the ESIA study[29].**
- Avoid possible negative impacts on birdlife due to the high temperatures generated by the plants in this activity.

Sustainable Use and Protection of Water Resources

- Avoid possible negative impacts of the cooling system on water resources.

1.2.3. Electricity Generation from Wind Energy

Construction or operation of electricity generation facilities that produce electricity from wind power. Wind energy is a renewable energy source obtained from the kinetic energy of the wind that moves the blades of a wind turbine, which in turn operates a turbine that converts it into electrical energy. Life cycle GHG emission of wind energy can vary between 15 and 50 g CO2/kWh.

ISIC Codes: 3510

Substantial Contribution Criteria

Wind energy generation is directly eligible.

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the generic compliance requirements (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Promotion of Circular Economy

- Ensure that the equipment and components are of high durability and recyclability, which are easy to dismantle and recondition.
- Ensure that a waste management plan is in place covering the different phases of the project, estimating the waste volume that could be generated. The purpose of this component is to ensure that the types of waste generated at all stages of the project are properly managed by waste management companies. The main focus must be on the recovery and use of waste, as well as the proper treatment of hazardous waste by certified companies.
- Ensure compliance with national standards and regulations on the waste management of electrical and electronic components: *RS 276-1: Electrical and electronic waste — Handling, collection, transportation and storage — Requirements and RS 276-2: Electrical and electronic waste —Treatment and disposal — Code of Practice.*

[29] Please refer to MINISTERIAL ORDER No 001/2019 OF 15/04/2019, which establishes the list of projects that must undergo environmental impact assessment, instructions, requirements and procedures to conduct environmental impact assessment.

- Based on the estimated lifetime of the project, a programme for decommissioning and abandonment should be in place, including procedures, handling and disposal of materials and equipment, and programmes for rehabilitation or restoration of the sites.

Protection of Biodiversity and Environment:

- All projects must comply with the **Environmental and Social Impact Assessment (ESIA) and enforce the Environmental and Social Management Plan (ESMP) that was embedded in the ESIA study[30].**
- Comply with Law No. 48/2018 of 13/08/2018 on Environment (CHAPTER III: conservation and protection of natural environment)
- Avoid possible disturbance, displacement, or collision of birds due to the construction and operation of wind farms.
- Avoiding the possible visual impacts generated by the change in landscape caused by the installation of wind turbines.
- In the case of offshore wind energy construction, the activity must not hinder the achievement of good environmental status of the marine ecosystem and biodiversity.
- Comply with regulations related to environmental impact studies.

Pollution Prevention and Control:

- Ensure that the waste generated at the end of life is managed in accordance with the waste management hierarchy.
- Ensure proper disposal of lubricants and coolants used by wind turbine systems.
- Avoid or control underwater noise created by the installation of offshore wind turbines.
- For soil contamination, control of liquid waste must be kept by means of records detailing origin, state, chemical properties, the quantity of waste taken at the place of origin, and quantity arriving at the plant. Measures must be undertaken to treat such waste.

1.2.4. Electricity Generation from Ocean Energy

Construction or operation of electricity generation facilities that produce electricity from ocean energy, including marine tidal energy, wave energy, tidal current energy and other resources. A comprehensive review of lifecycle assessment (LCA) studies published since 1980 suggests that lifecycle GHG emissions from wave and tidal energy systems are less than 23 g CO2eq/kWh, with a median estimate of lifecycle GHG emissions of around eight gCO2eq/kWh for wave energy (IPCC, 2011).

Note: This activity can be applied to mobilise investments in other jurisdictions. Rwanda will need to establish the necessary frameworks and regulations for the development of such projects.

ISIC Codes: 3510

[30] Please refer to MINISTERIAL ORDER No 001/2019 OF 15/04/2019, which establishes the list of projects that must undergo environmental impact assessment, instructions, requirements and procedures to conduct environmental impact assessment.

Substantial Contribution Criteria

Ocean energy generation is directly eligible.

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the generic compliance requirements (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Promotion of Circular Economy

- Ensure that the equipment and components are of high durability and recyclability, which are easy to dismantle and recondition.
- Ensure that a waste management plan is in place covering the different phases of the project, estimating the waste volume that could be generated. The purpose of this component is to ensure that the types of waste generated at all stages of the project are properly managed by waste management companies. The main focus must be on the recovery and use of waste, as well as the proper treatment of hazardous waste by certified companies.
- Ensure compliance with national standards and regulations on the waste management of electrical and electronic components: *RS 276-1: Electrical and electronic waste — Handling, collection, transportation and storage — Requirements and RS 276-2: Electrical and electronic waste —Treatment and disposal — Code of Practice.*

Protection of Biodiversity and Environment:

- Avoid potential negative impacts on marine ecosystems and biodiversity.
- All projects must comply with the **Environmental and Social Impact Assessment (ESIA) and enforce the Environmental and Social Management Plan (ESMP) that was embedded in the ESIA study[31].**

Pollution Prevention and Control:

- Avoid possible contamination by lubricants and antifouling paints.

1.2.5. Electricity Generation from Hydropower

Construction or operation of electricity generation facilities that produce electricity from hydropower. Hydropower is one of the largest sources of low-carbon electricity and provides an essential foundation for transitions (IEA, 2023). The IPCC classifies hydropower into three main categories:

- Run-of-river: a run-of-river hydropower facility converts energy and draws the energy for electricity production mainly from the available flow of the river. Generation depends

[31] Please refer to MINISTERIAL ORDER No 001/2019 OF 15/04/2019 which establishes the list of projects that must undergo environmental impact assessment, instructions, requirements and procedures to conduct environmental impact assessment.

on precipitation and runoff and may have substantial daily, monthly or seasonal variations.

- Storage (reservoir): Hydropower projects with a reservoir are also called storage hydropower since they store water for later consumption. The reservoir reduces the dependence on the variability of inflow. The generating stations are located at the dam toe or further downstream, connected to the reservoir through tunnels or pipelines.
- Pumped storage: Pumped storage plants are not energy sources but are instead storage devices. In such a system, water is pumped from a lower reservoir into an upper reservoir.

ISIC Codes: 3510

Substantial Contribution Criteria

The activity must meet **any of the following criteria**:

- Hydropower installations with a power density above 5 W/m^2 are currently exempted from the PCF[32] life cycle assessment and are directly eligible. In any case, this activity is subject to a periodic review in accordance with the current threshold.
- The electricity generation facility of the run-of-river plant is eligible and does not have an artificial reservoir.
- Those hydropower installations with a power density of less than 5 W/m2 must demonstrate, using the ISO 14067 standard, EIA Hydro-framework or GHG protocol product such as the PCF, that they operate with lifecycle emissions of less than 100 gCO2e/kWh.
- Pumped storage facilities are eligible if they meet the above requirements. It is important to ensure that installations will be charged with energy that has emissions of less than 100gCO /kWh.

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the generic compliance requirements (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Protection of Biodiversity and Environment

- All projects must comply with the **Environmental and Social Impact Assessment (ESIA) and enforce the Environmental and Social Management Plan (ESMP) that was embedded in the ESIA study[33].**
- Prior to construction, an impact assessment of the project must be carried out to evaluate all potential impacts on the status of water bodies within the same river basin and on protected habitats and species directly dependent on water, considering in

[32] Product Carbon Footprint
[33] Please refer to MINISTERIAL ORDER No 001/2019 OF 15/04/2019 which establishes the list of projects that must undergo environmental impact assessment, instructions, requirements and procedures to conduct environmental impact assessment.

particular migration corridors, free-flowing rivers or ecosystems close to undisturbed conditions.

- Avoid potential negative impacts on biodiversity associated with ecosystem fragmentation and habitat changes, hydrological and hydrogeological regimes, water characteristics and interference with species migration pathways as a result of the establishment, installation and operation of hydropower plants.
- Comply with regulations related to environmental impact studies.

Pollution Prevention and Control

- Avoid discharges to water bodies and waste generation during plant construction.
- Apply appropriate engineering techniques and practices for noise and vibration reduction as determined by the competent authorities.
- Establish a river basin management plan.

Sustainable Use and Protection of Water Resources

- Comply with the principles of the United Nations Economic Commission for Europe (UNECE) Convention on the Protection and Use of Transboundary Watercourses and International Lakes.
- Ensure minimum ecological flow (including mitigation of rapid, short-term variations in flow or hydrology operations) and sediment flow.
- Ensure fish migration downstream and upstream (such as fish-friendly turbines, fish guidance structures, fully functional fish passages and measures to stop or minimise operation and spills during migration or spawning).
- Ensure that the plant does not compromise the good status/potential in any of the water bodies in the same river basin.

1.2.6. Electricity Generation from Geothermal Energy

Construction or operation of electricity generation facilities that produce electricity from geothermal energy. Electricity generation from bioenergy can result in climate change mitigation benefits, but when done incorrectly, it can result in land use changes (biomass), deforestation (biofuels) or methane leakage (biogas) with negative environmental impacts.

ISIC Codes: 3510

Substantial Contribution Criteria

- Life cycle GHG emissions from electricity generation from geothermal energy must be less than **100 gCO2e/kWh**[34]. Life cycle GHG emissions are calculated using ISO 14067:2018 and ISO 14064-1:2018. Quantified life cycle GHG emissions are verified by an independent third party.

[34] For geothermal energy systems the results of life cycle emissions analysis range from 6 to 79 gCO2eq/kWh, however, there is still a lack of transparent information on geothermal life cycle emissions in the literature. Geothermal can also exceed 100gCO2eq/kWh when installed in wetland or carbon sequestered areas.

Note: combined heat and power generation is covered in a separate activity of construction and operation of an installation used for combined heat/cold and power generation from geothermal energy.

Note: Examples of methodologies for the calculation of emissions for this activity are GEOENVI LCA Toolkit and S4CE - University College London & TWI.

Ineligibility Criteria

Geothermal projects are not allowed to be installed in wetland areas and geologic carbon sequestration areas[35].

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the generic compliance requirements (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Protection of Biodiversity and Environment

- All projects must comply with the **Environmental and Social Impact Assessment (ESIA) and enforce the Environmental and Social Management Plan (ESMP) that was embedded in the ESIA study[36].**

Pollution Prevention and Control

- Control and prevent emissions of non-condensable geothermal gases with specific environmental threats, such as H2S, CO2 and CH4, which are released from flash steam and dry steam power plants.
- Avoid harmful emissions to surface and groundwater.
- Prevent thermal anomalies associated with waste heat discharge, which should not exceed 3°K (-270,1 °C) for groundwater environments or 1.5°K (-271 °C) for surface water environments.
- Air emissions: High enthalpy geothermal power system operations must ensure that adequate abatement systems are in place to meet international standards and guidelines (e.g. IFC Environmental, Health and Safety Guidelines for Geothermal Power Generation).

[35] Geologic carbon sequestration is the process of storing carbon dioxide (CO_2) in underground geologic formations. The CO_2 is usually pressurized until it becomes a liquid, and then it is injected into porous rock formations in geologic basins

[36] Please refer to MINISTERIAL ORDER No 001/2019 OF 15/04/2019 which establishes the list of projects that must undergo environmental impact assessment, instructions, requirements and procedures to conduct environmental impact assessment.

1.2.7. Electricity Generation from Bioenergy (Biomass, Biogas and Biofuels)

Power plants are mainly dedicated to the generation of electricity from bioenergy, i.e. biomass, biogas, and bioenergy in general.

- Biomass: Organic, non-fossil material of biological origin (plants and animals) that is used as feedstock to produce biofuels. It may also be referred to as biomass feedstock or energy crops. It includes a wide range of materials collected from nature or from the biological part of waste.
- Biogas: Biogas is produced by the fermentation product of organic waste from forests, agricultural fields and livestock waste. The methane extracted is used to produce thermal, mechanical or simply electrical energy.

ISIC Codes: 3510

Substantial Contribution Criteria

- All installations must demonstrate that they operate with life cycle emissions below the current threshold of 100 gCO2e/kWh[37], using methodologies such as ISO 14067 or a GHG protocol product such as the PCF.

Note: Biomass Environmental Assessment Tool (BEAT2) is a product of the GHG Protocol, developed for the Environment Agency and Defra (Department for Environment, Food and Rural Affairs), which assesses the potential environmental impacts of biomass energy projects, including life cycle emissions results. Reference can also be made to the UNFCCC methodology ACM0018 for Biomass Electricity Generation in Power Plants. Also, please refer to ISO 23590: Household biogas system requirements: design, installation, operation, maintenance, for the requirements on the utilisation of biogas systems.

Additionally, the biomass used must meet **one of the following criteria**:

- All types of feedstocks are eligible, including residues, energy crops and lignocellulosic biomass such as straw, with three exceptions:
  - Wood (and all woody biomass)
  - Algae
  - Food crops, fruits and vegetables that could otherwise be supplied to the local food market
- The feedstock used for bioenergy production must comply with sustainability certifications such as:
  - Forest Stewardship Council (FSC)
  - Voluntary Biomass Biofuels Scheme (2BSvs)
  - Bonsucro - International Sustainability and Carbon Certification (ISCC Plus)
  - Roundtable on Sustainable Biomaterials (RSB)
  - Roundtable on Responsible Soy (RTRS)

[37] Wood wastes and forest residues have the lowest GHG emission rates (11 and 34 g CO2eq/kWh) Herbaceous crops have the highest (75 g CO2eq/kWh). Agricultural residue and short-rotation woody crop combustion lead to 60 and 45 gCO2eq/kWh

Where installations are based on anaerobic digestion of organic material, the digestate produced must be used as compost, fertiliser and raw material for composting. Activities that facilitate the use and utilisation of biogas (such as dewatering, compression or similar) are also considered.

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the generic compliance requirements (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Promotion of Circular Economy

If the feedstock is industrial bio-waste (including from food industries) or municipal bio-waste:

- Solid bio-waste used in the manufacturing process must come from non-hazardous and source-separated waste streams.
- Bio-waste must comply with the waste regulatory framework and with national, regional and local waste management plans, in particular with the proximity principle[38].
- Where municipal biowaste is used as feedstock, the project is complementary and does not compete with the existing municipal biowaste management infrastructure.

Protection of Biodiversity and Environment

- All projects must comply with the **Environmental and Social Impact Assessment (ESIA) and enforce the Environmental and Social Management Plan (ESMP) that was embedded in the ESIA study.**

Please refer to **MINISTERIAL ORDER No 001/2019 OF 15/04/2019,** which establishes the list of projects that must undergo environmental impact assessment, instructions, requirements and procedures to conduct environmental impact assessment.

- A forest management plan must be in place, if applicable, taking into account the following aspects: species selection: selection of species that are suitable for the project type (e.g. conservation, restoration or sustainable forest management), ensuring that there is no disruption to genetic diversity or that are suitable for current or projected future ecological conditions; Biodiversity management: the management plan must include provisions for managing and maintaining biodiversity; Forest protection: protection and monitoring measures must be in place to prevent and monitor for illegal logging and illegal land conversion.

[38] The proximity principle refers to the fact that management facilities should be located as close as possible to the generators, thus avoiding unnecessary relocations leading to higher environmental impacts (e.g., increased carbon footprint scope 3) and associated risks.

1.2.8. Energy Generation Using Biomass Cookstoves

Cookstove installations in which the direct combustion of solid, liquid or gaseous fuels takes place and where the chemical energy of the fuels is converted into thermal energy. There are several types of cookstoves: i) combustion cookstoves, biomass cookstoves, gas cookstoves, Kerosene cookstoves, charcoal cookstoves and their variants. Ii) non-combustion cookers: solar or electrical energy is converted into thermal energy.

In Rwanda, the reliance on traditional fuels for cooking and slow progress towards cleaner cooking solutions has been problematic, especially for health outcomes and deforestation (MECS, 2021). In rural areas, firewood represents the most fuel used for cooking (93%), while in urban areas, charcoal accounts for 65% of total cooking fuel used, and firewood still represents 26.3% (MECS, 2021).

ISIC Codes: no code

Substantial Contribution Criteria

The activity must meet **one of the following Substantial Contribution Criteria**:

- Cookstoves that include the use of renewable energy, such as Hybrid Solar- Biomass[39] Cookstoves, Electric Hot Plate stoves or Electric Infrared stoves, are eligible.
- Cookstoves that are designed to use solid biofuels like briquettes and pellets replacing conventional solid fuels (fuelwood, charcoal, and coal). Provision of financial and technical support to pellet and briquette producers is also eligible.
- The introduction of biogas digesters in institutional facilities and households is eligible.
- Bioenergy produced from waste (e.g., agricultural, municipal) is eligible.
- Biomass where full traceability of the feedstock supply is ensured. The feedstock used complies with the criteria for the relevant activities in the agriculture or feedstock sectors (agriculture and feedstock waste) used must comply with at least one of the sustainability certifications such as:
    - Forest Stewardship Council (FSC)
    - Voluntary Biomass Biofuels Scheme (2BSvs)
    - Bonsucro
    - International Sustainability and Carbon Certification (ISCC Plus)
    - Roundtable on Sustainable Biomaterials (RSB)
    - Roundtable on Responsible Soy (RTRS)

Note!: Please refer to the compliance requirements for biomass cookstoves, guided by **RS 290: 2016, Solid biomass cookstoves — Specification** and also to Ministerial guidelines for clean cooking technologies as of 28th December 2022, whose objective is to ensure a more sustainable supply of biomass energy (e.g., firewood and charcoal) and to promote access to

[39] This hybrid prototype combines the effect of solar and biomass in cooking. It consists of solar reflectors that trap heat from the sun, thereby improving the thermal performance of the stove and reducing fuel consumption.

modern fuels as well as to efficient biomass combustion technologies for households and small enterprises.

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the generic compliance requirements (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Promotion of Circular Economy

If the feedstock is industrial bio-waste (including from food industries) or municipal bio-waste:

- Solid bio-waste used in the manufacturing process must come from non-hazardous and source-separated waste streams.
- Bio-waste must comply with the waste regulatory framework and with national, regional and local waste management plans, in particular with the proximity principle[40].
- Where municipal biowaste is used as feedstock, the project is complementary and does not compete with the existing municipal biowaste management infrastructure.

Protection of Biodiversity and Environment

- All projects must comply with the **Environmental and Social Impact Assessment (ESIA) and enforce the Environmental and Social Management Plan (ESMP) that was embedded in the ESIA study[41].**
- A forest management plan must be in place, if applicable, taking into account the following aspects: species selection: selection of species that are suitable for the project type (e.g. conservation, restoration or sustainable forest management), ensuring that there is no disruption to genetic diversity or that are suitable for current or projected future ecological conditions; Biodiversity management: the management plan must include provisions for managing and maintaining biodiversity; Forest protection: protection and monitoring measures must be in place to prevent and monitor for illegal logging and illegal land conversion.

1.2.9. Electricity Transmission and Distribution

Economic units principally engaged in the operation of electricity transmission systems and the physical control (regulating voltages) of the transmission network from the generating source to distribution centres or other electrical installations through lines, substations, and other transformer elements. By enabling more users to be connected to renewable energy sources, the decarbonisation of electricity is advanced.

[40] The proximity principle refers to the fact that management facilities should be located as close as possible to the generators, thus avoiding unnecessary relocations leading to higher environmental impacts (e.g., increased carbon footprint scope 3) and associated risks.
[41] Please refer to MINISTERIAL ORDER No 001/2019 OF 15/04/2019 which establishes the list of projects that must undergo environmental impact assessment, instructions, requirements and procedures to conduct environmental impact assessment.

ISIC Codes: 3510

Substantial Contribution Criteria

The activity is eligible if it meets **one of the following criteria**:

- All electricity transmission and distribution infrastructure or equipment in systems that are on a full decarbonisation pathway* are eligible, except for infrastructure that is dedicated to creating a direct connection or expanding an existing direct connection between a power plant whose emissions exceed 100 gCO2e/kWh, measured on a Life Cycle Energy (LCE) basis, to a substation or grid.

Systems in decarbonisation pathway: More than 67% of the newly enabled generation capacity in the system is below the generation threshold value of 100 gCO2e/kWh measured on a life-cycle basis according to the electricity generation criteria, over a rolling **five-year period**, or the average system grid emissions factor[42], calculated as the total annual emissions from power generation connected to the system, divided by the total annual net electricity production in that system, is below the threshold value of 100 gCO2e/kWh measured on a life-cycle basis according to the electricity generation criteria, over a rolling five-year period.

Note: Some methodologies for calculating the marginal greenhouse gas emission factor of a power system are:

- Tool for calculating the emission factor of an electricity system (TOOL07 - CDM Methodology - UNFCCC): This methodological tool determines the CO2 emission factor for the displacement of electricity generated by power plants in an electricity system by calculating the "combined margin" (CM) emission factor of the electricity system.

- Transmission/distribution infrastructure that supports the consolidation of microgrids in non-interconnected areas is eligible.
- The following activities related to the transmission and distribution network are eligible, regardless of whether the system is on a pathway towards full decarbonisation.

a) Construction and operation of direct connection, or expansion of existing direct connection, of low-carbon electricity generation below the threshold of 100 gCO2e/kWh measured on a lifecycle basis to a substation or grid.

b) Construction and operation of electronic vehicle (EV) charging stations and supporting electric infrastructure for transport electrification.

c) Construction/installation and operation of equipment and infrastructure where the main objective is an increase in the generation or use of renewable electricity generation.

d) Installation of equipment to increase control and monitoring of the electricity system and to enable the development and integration of renewable energy sources, including:

- Sensors and measurement tools (including meteorological sensors for forecasting renewable production.

[42] The operating margin CO2 emission factor for the project electricity system in Rwanda is about 771 gCO2e/kWh.

- Communication and control (including advanced software and control rooms, substation or feeder automation, and voltage control capabilities to accommodate more decentralised renewable feeds).

e) Installation of equipment such as future smart metering systems or those replacing smart metering systems that allow information to be brought to users for them to act remotely on consumption, including at customer data centres.

f) Construction/installation of equipment that allows the exchange of electricity, specifically renewable electricity, between users.

g) Interconnectors between transmission systems are eligible, provided that one of the systems is eligible.

For the purposes of this Section, the following specifications apply:

a) The five-year rolling period used to determine compliance with the thresholds is based on five consecutive historical years, including the year for which the most recent data are available.

b) "system" means the power control area of the transmission or distribution network where the infrastructure or equipment is installed.

c) Transmission systems may include generation capacity connected to subordinate distribution systems.

d) Distribution systems subordinate to a transmission system that is considered to be on a trajectory towards full decarbonisation can also be considered to be on a trajectory towards full decarbonisation.

Ineligibility Criteria

Infrastructure dedicated to creating a direct connection or expanding an existing direct connection between a substation or grid and an energy production plant that, in its life cycle, generates greenhouse gases greater than 100 gCO2e/kWh is not eligible.

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the generic compliance requirements (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Promotion of Circular Economy

- A waste management plan must be in place to ensure maximum reuse or recycling at end-of-life in accordance with the waste hierarchy, including through contractual agreements with waste management partners, reflection in financial projections or in official project documentation.
- Ensure compliance with national standards and regulations on the waste management of electrical and electronic components: *RS 276-1: Electrical and electronic waste — Handling, collection, transportation and storage — Requirements and RS 276-2: Electrical and electronic waste —Treatment and disposal — Code of Practice.*

Pollution Prevention and Control

- Refer to national applicable Rwanda standards and regulations on electromagnetic emissions, *RS IEC 61000-3-2:2018 Electromagnetic compatibility (EMC) — Part 3-2: Limits for harmonic current emissions (equipment input current ≤ 16 A per phase), RS IEC 61000-4-11: 2020, Electromagnetic compatibility (EMC) — Part 4-11: Testing and measurement techniques — Voltage dips, short interruptions and voltage variations immunity tests for equipment with input current up to 16 A per phase.*
- Do not use equipment, such as power converters or generators, containing polychlorinated biphenyls (PCB) based electrical fluid.

Protection of Biodiversity and Environment

- All projects must comply with the **Environmental and Social Impact Assessment (ESIA) and enforce the Environmental and Social Management Plan (ESMP) that was embedded in the ESIA study[43].**
- Avoid potential negative impacts of underground power lines on marine and terrestrial ecosystems (proven by an environmental impact study).
- Avoid routes with associated strong negative environmental impacts.
- Conduct field studies in the project area where data is collected to detail aspects concerning the flora, fauna and fragile ecosystems of the site.

1.2.10. Energy Storage

This activity includes the construction and operation of facilities that store energy from Taxonomy-aligned activities and return it later in the form of electricity/heat/cool/steam. This activity is particularly important when it comes to solving the drawbacks of intermittency and instability that renewable energies may have. The activity includes, among others, pumped hydro storage, thermal energy storage (fluids, aquifers – ATES – or underground systems - UTES) and compressed air storage (CAES), all of which are suitable for large-scale energy storage.

This activity can support the integration of renewable energy systems into electricity transmission and distribution.

ISIC Codes: No specific ISIC Code

Substantial Contribution Criteria

- All energy storage activities from Taxonomy-eligible activities are directly eligible.

Note*:* pumped storage of hydropower must comply with the criteria set out in the hydropower electricity generation activity. Energy used for pumping or compression must have lifecycle emissions less than 100gCO_2e/Kwh.

Generic Compliance Requirements

[43] Please refer to MINISTERIAL ORDER No 001/2019 OF 15/04/2019 which establishes the list of projects that must undergo environmental impact assessment, instructions, requirements and procedures to conduct environmental impact assessment.

- The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Promotion of Circular Economy

- Ensure that a waste management plan is in place covering the different phases of the project, estimating the waste volume that could be generated. The purpose of this component is to ensure that the types of waste generated at all stages of the project are properly managed by waste management companies. The main focus must be on the recovery and use of waste, as well as the proper treatment of hazardous waste by certified companies.
- Ensure compliance with national standards and regulations on the waste management of electrical and electronic components: *RS 276-1: Electrical and electronic waste — Handling, collection, transportation and storage — Requirements and RS 276-2: Electrical and electronic waste —Treatment and disposal — Code of Practice.*
- Waste Electrical and Electronic Equipment (WEEE), including batteries, must be disposed of for recycling with certified or authorised organisations.

Protection of Biodiversity and Environment

- All projects must comply with the **Environmental and Social Impact Assessment (ESIA) and enforce the Environmental and Social Management Plan (ESMP) that was embedded in the ESIA study[44].**
- In the case of pumped hydro storage connected to a water body, the activity must comply with the specific requirements for the sustainable use and protection of water and marine resources specified in the activity Production of electricity from hydropower.
- Avoid possible negative impacts on birdlife due to the high temperatures generated by the plants.

Sustainable Use and Protection of Water Resources

- For thermal energy, reduce water consumption by using more efficient technologies to recycle water from heat exchangers, condensers and other processes.
- For thermal energy, implement dry cooling systems and design procedures to reduce evaporation losses.

1.2.11. Low Carbon Hydrogen Production

Low-carbon hydrogen can decarbonise activities in various sectors such as energy, transport, and industry and is an enabling activity.

ISIC Codes: 3520

[44] Please refer to MINISTERIAL ORDER No 001/2019 OF 15/04/2019 which establishes the list of projects that must undergo environmental impact assessment, instructions, requirements and procedures to conduct environmental impact assessment.

Substantial Contribution Criteria

- Hydrogen production must have life cycle GHG emissions equal to or less than three tCO2e/t of hydrogen.

Some of the methodologies for calculating these emissions are:

- Methodology (IPHE): Methodology for determining GHG emissions associated with hydrogen production.
- ISO 14067; ISO 14040, ISO 14044: ISO guidelines that allow the quantification of GHGs that can be emitted and eliminated throughout the life cycle of a product.

Ineligibility Criteria

Hydrogen produced from fossil fuels, including natural gas, is not eligible.

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Sustainable Use and Protection of Water Resources

- A local water availability assessment and demonstration that water use for hydrogen production is not impacting water availability for human consumption and agriculture must be conducted. Hydrogen production assets should not be located in regions with high water stress that do not have seawater desalination as an alternative.

Promotion of Circular Economy

- Waste and sub-products from the manufacturing process should be treated according to the waste hierarchy and ideally recycled in the same process. The purpose of this component is to ensure that the types of waste generated at all stages of the project are properly managed by waste management companies. The main focus is on the recovery and use of waste that can be recycled and reused, as well as the proper treatment of hazardous waste by certified companies.
- A waste management plan must be in place to ensure maximum reuse or recycling at end-of-life in accordance with the waste hierarchy, including through contractual agreements with waste management partners, reflection in financial projections or in official project documentation.
- Ensure compliance with national standards and regulations on the waste management of electrical and electronic components: *RS 276-1: Electrical and electronic waste — Handling, collection, transportation and storage — Requirements and RS 276-2: Electrical and electronic waste —Treatment and disposal — Code of Practice.*

1.2.12. Low Carbon Hydrogen Storage

Hydrogen storage refers to the infrastructure for storing H2 for later use. This constitutes a key activity on the road to decarbonisation as it supports the development of activities related to reducing emissions, for example, from vehicle fleets, thus contributing to the transition towards a sector without direct emissions.

ISIC Codes: 5210

Substantial Contribution Criteria

The activity is eligible if it is for **one of the following**:

- Construction of low-carbon hydrogen storage facilities (review low-carbon hydrogen production criteria).
- Conversion of existing underground gas storage facilities to dedicated hydrogen storage facilities.

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Promotion of Circular Economy

- A waste management plan must be in place to ensure maximum reuse or recycling at end-of-life in accordance with the waste hierarchy, including through contractual agreements with waste management partners, reflection in financial projections or in official project documentation.
- Ensure compliance with national standards and regulations on the waste management of electrical and electronic components: *RS 276-1: Electrical and electronic waste — Handling, collection, transportation and storage — Requirements and RS 276-2: Electrical and electronic waste —Treatment and disposal — Code of Practice.*

Sustainable Use and Protection of Water Resources:

- Implement water recycling or other efficiency measures for internal us.

1.2.13. Biomass, Biogas and Biofuel Production

Energy sources from organic sources such as sustainable biomasses, biogas generated through anaerobic digestion and biofuels made from agricultural residues can be used for energy production for transport, electricity generation, heating, cooling and others. It is important to ensure that these sources are sustainable and do not generate adverse impacts in their biomass production chain and affect other environmental objectives such as protection and ecosystems and water conservation, among others.

The manufacture of feedstocks to generate electricity from bioenergy can result in climate change mitigation benefits. However, when done incorrectly, it can result in land use changes

(biomass), deforestation (biofuels) or methane leakage (biogas) with negative environmental impacts.

ISIC Codes: 3510, 3520

Substantial Contribution Criteria

The manufacture of biomass and biofuels is eligible if the feedstock meets one of the following criteria:

- Bioenergy produced from waste (e.g. agricultural, municipal) is eligible, and full traceability of the feedstock supply must be ensured or
- The feedstock used for bioenergy production complies with the criteria for the relevant activities in the agriculture sector or
- The feedstock used for bioenergy production must comply with sustainability certifications such as:
    - Forest Stewardship Council (FSC)
    - Voluntary Biomass Biofuels Scheme (2BSvs)
    - Bonsucro - International Sustainability and Carbon Certification (ISCC Plus)
    - Roundtable on Sustainable Biomaterials (RSB)
    - Roundtable on Responsible Soy (RTRS)
- Where installations are based on anaerobic digestion of organic material, the digestate production can be used as compost, fertiliser and raw material for composting. Activities that facilitate the use and utilisation of biogas (such as dewatering, compression or similar) are also eligible.

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Promotion of Circular Economy

If the feedstock is industrial bio-waste (including from food industries) or municipal bio-waste:

- Solid bio-waste used in the manufacturing process must come from non-hazardous and source-separated waste streams.
- Bio-waste must comply with the waste regulatory framework and with national, regional and local waste management plans, in particular with the proximity principle.
- Where municipal biowaste is used as feedstock, the project is complementary and does not compete with the existing municipal biowaste management infrastructure.

If the feedstock is biogas, methane leakage is controlled by a monitoring plan and effective measures to prevent methane emissions and the digestate produced is used as fertiliser, soil improver or other uses, directly or after composting or other treatment.

Protection of Biodiversity and Environment

- All projects must comply with the **Environmental and Social Impact Assessment (ESIA) and enforce Environmental and Social Management Plan (ESMP) that was eembedded inthe ESIA study[45].**
- Ensure the implementation of all mitigation measures necessary to protect biodiversity and ecosystems.
- All forest biomass used in the process must comply with the forestry regulatory frameworks (LAW Nº47bis/2013 OF 28/06/2013 Determining the management and utilisation of forests in Rwanda) and refer to the Law governing biological diversity.

1.2.14. Urban Heating Facilities

Construction of urban centralised heating facilities using low-grade industrial waste heat sources or other clean heat sources; and energy-saving and environmentally friendly technological renovation activities of urban centralised heating boilers, heating pipe networks and other centralised heating facilities. Construction, refurbishment and operation of pipelines and associated infrastructure for distribution of heating and cooling, ending at the sub-station or heat exchanger.

ISIC Codes: 3530

Substantial Contribution Criteria

- The construction and operation of pipelines and the infrastructure associated with the distribution of heat and cooling are activities eligible if the system complies with the regulations available regarding energy efficiency.
- All energy sources for heat/cooling must come from Taxonomy-eligible activities. **Note**: for the production of heat and cooling from waste heat, refer to activity “Generation of heat/cool from waste heat”.
- **Note:** The following activities are always eligible:
  - Modification to lower temperature regimes.
  - Advanced pilot systems (energy management and control systems, Internet of Things).

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Sustainable Use and Protection of Water Resources

Implement measures for water recycling or efficiency for internal use.

[45] Please refer to MINISTERIAL ORDER No 001/2019 OF 15/04/2019 which establishes the list of projects that must undergo environmental impact assessment, instructions, requirements and procedures to conduct environmental impact assessment.

1.2.15. Transmission and Distribution Network for Renewable or Low-Carbon Gases

This activity refers to the conversion, reuse or retrofitting of existing gas networks for use in the transport and distribution of renewable and low-carbon gases (e.g. low-carbon hydrogen).

ISIC Codes: 3520, 4940

Substantial Contribution Criteria

The activity must comply with the following criteria:

- The activity consists of **one of the following**:
  - Construction or operation of new transmission and distribution networks dedicated to hydrogen or other low carbon gases that have life cycle emissions of less than 100gCO2e/kWH.
  - Conversion/reuse of existing natural gas networks to 100% low-carbon hydrogen.
  - Gas transmission and distribution network upgrades that enable the integration of hydrogen and other low-carbon gases into the network, including any gas transmission or distribution network activity that enables the increased mixing of hydrogen or other low-carbon gases into the gas system.
- The activity must include leak detection and repair of existing gas pipes and other network elements to reduce methane leakage.

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

The activity has no specific requirements.

1.2.16. Cogeneration of Heat/Cool and Power from Solar Energy

Cogeneration refers to the joint production, in a sequential process, of electrical or mechanical energy and useful thermal energy from the same primary energy source. The main source of this activity is concentrated solar power, which provides a higher overall energy yield than the separate generation of electricity and heat.

ISIC Codes: 3510, 3530

Substantial Contribution Criteria

- This activity is directly eligible.

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Promotion of Circular Economy

- Ensure that the equipment and components are of high durability and recyclability, which are easy to dismantle and recondition.

Protection of Biodiversity and Environment:

- All projects must comply with the **Environmental and Social Impact Assessment (ESIA) and enforce Environmental and Social Management Plan (ESMP) that was embedded in the ESIA study[46].**
- Avoid possible negative impacts on birdlife due to the high temperatures generated by the plants.

Sustainable Use and Protection of Water Resources

- Avoid potential negative impacts of cooling systems on water resources.

1.2.17. Cogeneration of Heat/Cool and Power from Geothermal Energy

Cogeneration refers to the joint production, in a sequential process, of electrical or mechanical energy and useful thermal energy from the same primary energy source. The main source of this activity is geothermal energy, which provides an overall energy yield higher than the separate generation of electricity and heat. In this activity, it is important to ensure that the activity has no life cycle impacts.

ISIC Codes: 3510, 3530

Substantial Contribution Criteria

The activity is eligible if the Life cycle GHG emissions from combined heat/cold and power generation from geothermal energy are less than 100gCO2e/kWh in combined generation. Life cycle GHG emissions are calculated based on project-specific data, where available, using methodologies such as ISO 14067: 2018 or ISO 14064-1: 2018. Quantified life cycle GHG emissions must be verified by an independent third party.

Note: other methodologies for the calculation of emissions for this activity are GEOENVI LCA Toolkit and S4CE - University College London & TWI.

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.
- Geothermal energy should not trigger tremors and seismic shocks that could result in significant loss of life and property damage

Specific Compliance Requirements

Pollution Prevention and Control

[46] Please refer to MINISTERIAL ORDER No 001/2019 OF 15/04/2019 which establishes the list of projects that must undergo environmental impact assessment, instructions, requirements and procedures to conduct environmental impact assessment.

- For the operation of high enthalpy geothermal energy systems, appropriate emission reduction systems are in place so as not to hinder the achievement of air quality limit values.
- Prevent non-condensable geothermal gases with specific environmental threats, such as H_2 S, CO_2 and CH_4, which are released from the *flash* steam and dry steam power plants of this activity.
- Avoid possible emissions to surface water and groundwater.
- Thermal anomalies associated with waste heat discharge should not exceed 3°K for groundwater environments or 1.5°K for surface water.

1.2.18. Cogeneration of Heat/Cool and Power from Bioenergy

Cogeneration refers to the joint production, in a sequential process, of electrical or mechanical energy and useful thermal energy from the same primary energy source. The main source of this activity corresponds to energy from bioenergy and provides a higher overall energy yield than the separate generation of electricity and heat. In this activity, it is important to ensure that the activity has no life cycle impacts and that the biomass comes from sustainable sources.

ISIC Codes: 3510, 3530

Substantial Contribution Criteria

The manufacture of biomass and biofuels is eligible if the feedstock meets **one of the following criteria**:

- Bioenergy produced from waste (e.g. agricultural, municipal) is eligible, and full traceability of the feedstock supply must be ensured or
- The feedstock used for bioenergy production complies with the criteria for the relevant activities in the agriculture sector or
- The feedstock used for bioenergy production must comply with sustainability certifications such as:
    - Forest Stewardship Council (FSC)
    - Voluntary Biomass Biofuels Scheme (2BSvs)
    - Bonsucro - International Sustainability and Carbon Certification (ISCC Plus)
    - Roundtable on Sustainable Biomaterials (RSB)
    - Roundtable on Responsible Soy (RTRS)
- Where installations are based on anaerobic digestion of organic material, the digestate production can be used as compost, fertiliser and raw material for composting. Activities that facilitate the use and utilisation of biogas (such as dewatering, compression or similar) are also eligible.
- If the feedstock is biogas, methane leakage is controlled by a monitoring plan and effective measures to prevent methane emissions and the digestate produced is used as fertiliser, soil improver or other uses, directly or after composting or other treatment.

Note: Biomass Environmental Assessment Tool (BEAT2) is a product of the GHG Protocol, developed for the Environment Agency and Defra (Department for Environment, Food and Rural Affairs), which assesses the potential environmental impacts of biomass energy projects,

including life cycle emissions results. Reference can also be made to the UNFCCC methodology ACM0018 for Biomass Electricity Generation in Power Plants

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Protection of Biodiversity and Environment

- All projects must comply with the **Environmental and Social Impact Assessment (ESIA) and enforce Environmental and Social Management Plan (ESMP) that was embedded in the ESIA study[47].**

Ensure the implementation of all mitigation measures necessary to protect biodiversity and ecosystems.

- All forest biomass used in the process must comply with the forestry regulatory framework (LAW Nº47bis/2013 OF 28/06/2013 determining the management and utilisation of forests in Rwanda)

Promotion of Circular Economy

If the feedstock is industrial bio-waste (including from food industries) or municipal bio-waste:

- Solid bio-waste used in the manufacturing process must come from non-hazardous and source-separated waste streams.
- Bio-waste must comply with the waste regulatory framework and with national, regional and local waste management plans; particularly with the proximity principle[48].

Where municipal biowaste is used as feedstock, the project is complementary and does not compete with the existing municipal biowaste management infrastructure.

1.2.19. Generation of Heat/Cool from Waste Heat

Construction and operation of facilities that produce heat/cool using waste heat.

ISIC Codes: 3530

Substantial Contribution Criteria

- All heating/cooling production activities using waste heat are eligible.

Generic Compliance Requirements

[47] Please refer to MINISTERIAL ORDER No 001/2019 OF 15/04/2019 which establishes the list of projects that must undergo environmental impact assessment, instructions, requirements and procedures to conduct environmental impact assessment.
[48] The proximity principle refers to the fact that management facilities should be located as close as possible to the generators, thus avoiding unnecessary relocations leading to higher environmental impacts (e.g., increased carbon footprint scope 3) and associated risks.

- The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Promotion of Circular Economy

Ensure that the equipment and components are of high durability and recyclability, which are easy to dismantle and recondition.

Pollution Prevention and Control

- The pumps and the equipment used must have an eco-design and energy label, complying with energy efficiency requirements.

1.2.20. Research and Development – Professional Services

ISIC code: NA

This activity includes the research, applied research and experimental development of solutions, processes, technologies, business models and other products dedicated to the reduction, avoidance or removal of GHG emissions. These solutions must demonstrate their ability to contribute significantly to the mitigation objective of Energy sector activities.

Substantial Contribution Criteria

The creation of intangible assets, research, development and innovation activities that have the objective of promoting compliance with the **Substantial Contribution Criteria** of the Taxonomy in the Energy sector are considered enabling to substantial contribution to climate change mitigation objective.

Some of the intangible assets, research, development and innovation activities that enable substantial contribution to climate change mitigation are:

- Energy management services
- Creation and implementation of comprehensive operation and maintenance (O&M) protocols services
- Supervisory control and data acquisition systems, which track energy usage at the component/equipment level.
- Infrastructure and asset management, including maintenance, sectorization
    - Smart Grids: Implementing smart grid technology to enhance the efficiency and reliability of electricity distribution.
    - Predictive Maintenance: Using IoT and AI to predict and prevent equipment failures, reducing downtime and maintenance costs.
    - Sectorization: Dividing infrastructure into manageable sectors to improve monitoring and maintenance.
    - Sustainable Materials: Using durable and eco-friendly materials in infrastructure projects to reduce environmental impact.
- Zero carbon fuels and Zero carbon heating
- Energy storage and inter seasonal storage
- Innovations to promote Industrial decarbonization
- Carbon capture and storage

Generic Compliance Requirements

- The economic activity must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

1.3. Transportation

Transport is one of the key strategic pillars of Rwanda's economic growth and the enabler of social inclusion and prosperity of the citizens. This sector has been experiencing significant growth and development in Rwanda, with the government investing in various initiatives to improve infrastructure and enhance connectivity both domestically and internationally. Currently, the transport sector contributes approximately 10% of the country's GDP[49].

Road transport accounts for 13% of total greenhouse gas emissions in Rwanda. The Green Growth and Climate Resilience Strategy has been guiding local initiatives to promote sustainable mobility in Rwanda. The specific programme of action has four key components that include:

- Improving the efficiency of the internal combustion engine (ICE) vehicles measured by reduction in emissions per kilometre.
- Awareness of new technology
- Investments in infrastructure
- Developing efficient operational systems measured by reduction in emissions per km.

Rwanda has been actively pursuing green transport policies and strategies to promote sustainable and environmentally friendly transportation options. Therefore, the importance of reducing emissions from the transport sector to tackle climate change and enhance air quality is recognised by the local authorities.

Policies and hard infrastructure to facilitate a transition to widespread adoption of electric vehicles are planned to be a priority. As Rwanda aims to become a regional transport hub, low-carbon transport such as railways will be prioritised[50]. Also, a multimodal transport system for both freight and passengers will focus on low-carbon railways with efficient links to road transport to reach throughout the country. No restrictions to trade or freight volume are imposed by Taxonomy.

1.3.1. Urban Public Transport

Public transport systems should prioritise sustainable modes of transport that link mobility systems with the urban infrastructure and have an efficient operation that favours the mobilisation of more passengers with better frequencies and vehicles, including electricity-powered cable cars.

Given the high emissions they generate, public transport systems must strive to prioritise sustainable transport modes that articulate mobility systems with the urban structure and have an efficient operation that enhances the mobilisation of more passengers with better frequencies and vehicles. In this sense, urban public transport must demonstrate a substantial reduction in GHG emissions by:

[49] Statistical reports | National Institute of Statistics Rwanda
[50] Currently, Rwanda has no railway network. However, the country is working in partnership with other countries of the region to develop a railway network

- Increase or renew the fleet of low or zero-emission vehicles, thus improving the efficiency of the urban public transport system with a lower carbon footprint.
- Be aligned with the sectoral decarbonisation plans that the country has, as well as with the instruments or sustainable mobility plans.

ISIC Codes: 4921, 4911

Substantial Contribution Criteria

The **Substantial Contribution Criteria** for the activity are as follows:

1. All direct zero-emission urban land, rail or inland public transport activities (e.g. electric or powered by low-carbon hydrogen) are directly eligible.
2. Public land transport fleet (passengers):
    - New fleet: direct tailpipe emissions are less than 20 gCO2e/pkm until 2028 (after this, only fleet with zero direct emissions listed in the previous category will be eligible).
3. Inland water transport fleet (passengers): public inland passenger transport meets any of the following criteria:
    - Ships that have zero direct CO_2 emissions (tailpipe) are directly eligible.
    - Vessels using sustainable biofuels or biogas, guaranteed either by technological design or continuous monitoring and third-party verification. Ensure the use of transport technologies that allow the use of 100% biofuels.
    - Inland water passenger transport is eligible if direct emissions are less than 50 gCO2e/pkm (criteria are based on estimated current occupancy (passenger-km) and not on capacity offered (seat-km or seat-km) until 2028 (after this, only fleet with zero direct emissions listed in the previous criteria will be eligible).
    - Until 31 December 2028, hybrid and dual-fuel ships obtain at least 50% of their energy from fuels with zero direct emissions (tailpipe) of CO_2 or from plug-in power for normal operation.

Note: Some methodologies for calculating emissions and improving efficiency in the transport sector that can be considered are:

- Efficient operation of public transport (AMS-III.BN): this methodology is applied to project activities that implement measures that improve the efficiency of public bus transport operation.
- GHG Protocol - GHG Emissions Calculation Tool for Mobile Sources: This tool calculates CO_2, CH_4 and N_2O emissions from public transport by road, rail, air, and water.
- ISO 14083:2023 Greenhouse gases — Quantification and reporting of greenhouse gas emissions arising from transport chain operations

To estimate the emissions associated with fleets of vehicles or rolling stock for public transport, the following parameters can be considered:

- Types of fuels or biofuels
- Emission factors for each mode of transport
- Performance of the different types of vehicles to be considered

- Weights of vehicles, passengers and loads *Load factors and percentage of empty runs
- Kilometres travelled by passengers *Distances travelled
- Numbers of journeys

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Promotion of Circular Economy

- Measures must be in place to manage waste, according to the type of waste, both in the use (maintenance) phase and at the end of the fleet's useful life, including through the reuse and recycling of batteries and electronic equipment (the critical raw materials they contain).
- Where the modes of transport run on batteries, those measures include the reuse and recycling of batteries and electronic components, including critical raw materials.

Pollution Prevention and Control

- Both maintenance and end-of-life management of vehicles must comply with the country's regulations on Integral Management of Waste or Hazardous Waste.
- Comply with air regulations dictated in Law No. 18/2016 of 18 May 2016 and the East African Community Standard (EAS751:2001) and EAS 1047:2022 standards on Air Quality – Vehicular exhaust emission limits.
- Comply with the noise regulations corresponding to the country.
- In relation to direct emissions into the air of the exhaust gases of internal combustion engines - nitrogen oxides (NOx), total hydrocarbons (THC), hydrocarbons other than methane (NMHC), carbon monoxide (CO), particulate matter (PM), buses must comply with the Euro VI standard in force or higher.
- Some international standardisation standards that allow verifying GHG and noise emissions in the transport sector are ISO 13.040.50: Emissions from mobile sources; ISO 362 Measurement of noise emitted by accelerating road vehicles; ISO 28580:2018 – Method of measuring the rolling resistance of passenger cars, trucks and buses tyres.

Sustainable Use and Protection of Water Resources

- The cleaning practices of the vehicles must be carried out in places specifically destined for this task, making rational use of the water resource and avoiding wastewater discharges that do not comply with the relevant environmental permits and authorisations.

1.3.2. Micromobility

Micromobility refers to a transportation option in small and light vehicles, which usually operate at speeds of less than 25 kilometres per hour and are ideal for trips of up to 10 kilometres (Institute for Transport and Development Policy, 2020). This is a transportation option that can be human-powered or electric and used individually or shared by several people. Today's micromobility solutions include lightweight vehicles such as skateboards, bicycles, and other small means of transport, which are typically electric.

ISIC Codes: 7710, 7721

Substantial Contribution Criteria

Any fleet or micromobility system of freight or passenger transport with zero direct emissions is directly eligible.

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

There are no specific requirements for this activity.

1.3.3. Transport Infrastructure

The activity includes infrastructure, machinery and equipment required to promote sustainable means of transport, as well as computer equipment for the provision of control services and maintenance facilities.

Actions that tend to the construction, rehabilitation, operation and maintenance of transport infrastructure are eligible because they are decisive to promote and enable more sustainable and efficient means of transport. Sustainable infrastructure must, therefore, be climate resilient, socially inclusive, technologically advanced, productive and flexible.

Low-carbon infrastructures are those that generate the lowest carbon (CO2) emissions compared to the infrastructure alternatives possible for the provision of a specific transport service under national conditions.

ISIC Codes: various codes, mostly, but not exclusively, within F42

Substantial Contribution Criteria

The activity is eligible if it meets one of the following criteria:

- Infrastructure and equipment that is required for transport with zero direct emissions in urban or rural areas (e.g. electric charging points, grid connection upgrades[51], hydrogen fuel stations or electric highways, zero direct emissions vehicles in agriculture sector).
- Infrastructure and equipment (including fleets) for active micromobility (pedestrian, bicycle and scooters), including e.g. redistribution of the road profile to increase pedestrian area

[51] These grid upgrades should not lead to grid instability.

and cycle lanes and micromobility systems in general; urban and rural equipment for stations of shared public micromobility systems; points of consolidation and urban distribution of last-mile goods in micromobility and cross-docking systems, etc.), whether the fleet of vehicles or modes of transport using the infrastructure comply with **Substantial Contribution Criteria** from the present Taxonomy

- Non-electrified railway infrastructure with an existing plan for electrification or use of reciprocating trains.
- Infrastructure and equipment for urban logistics in general (e.g. urban logistics corridors, logistics platforms, urban freight consolidation and distribution centres, etc.)
- Technological infrastructure and platforms for mobility as a service in freight and passenger transport.
- Infrastructure that moves towards multimodal, rail or inland transport, regardless of the type of fleet it uses, assuming that it will decrease the net emissions caused by replacing road mobility
- The infrastructure dedicated to the operation of ships with zero direct CO2 emissions (tailpipe): electricity charging, hydrogen-based refuelling
- The infrastructure dedicated to the supply of electricity on land to berthed ships.
- The infrastructure dedicated to the performance of the port's own operations with zero direct CO2 emissions (tailpipe).
- The infrastructure and facilities dedicated to the transhipment of goods between modes: terminal infrastructure and superstructures for loading, unloading and transhipment of goods.
- Services associated with the purchase, maintenance, recycling and replacement of batteries for vehicles and low-carbon transport infrastructure.
- Adaptation of urban and interurban transport infrastructure to improve its efficient use (load factors) and generate behavioural changes (demand) in users (e.g. high occupancy lanes; technology for parking and intelligent transport systems; technology to support staggered schedules; technological road pricing systems, such as electronic urban tolls; control systems for exclusive bus lanes, etc.), and in general, infrastructure and technology for demand management projects that are defined as potential GHG reduction measures.

Ineligibility Criteria

Infrastructure dedicated to the transportation of fossil fuels or mixed fossil fuels is not eligible.

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Protection of Biodiversity and Environment

- Avoid the fragmentation and degradation of the natural and urban landscape and the risks of road incidents or accidents, as well as wildlife accidents caused by collisions. When possible and supported by biodiversity studies, wildlife crossings are introduced where appropriate to allow safe crossings of animals when new transport routes are introduced.
- Avoid possible negative impacts on aquatic ecosystems caused by tunnels that cause changes and degradation of the hydromorphological conditions of water bodies.
- Take measures to monitor and protect urban ecosystems, in particular public spaces, urban green areas and urban trees.

Promotion of Circular Economy

- Reuse parts and use recycled material during the renovation, improvement, and construction of infrastructure.
- Increase the preparation, reuse, recycling and recovery of non-hazardous construction and demolition waste and comply with the country's regulatory provisions associated with the integral management and co-processing of solid waste. Comply with Law No. 48/2018 of 13/08/2018 on Environment (CHAPTER IV, article 18, 19,20: solid waste management, management of hazardous and toxic waste and management of electronic waste).

Pollution Prevention and Control

- Minimize noise and vibration caused by infrastructure use (e.g., introduction of open trenches and wall barriers). Reduce noise, dust and pollution from emissions during construction and infrastructure maintenance works.

1.3.4. Interurban Transport (Freight and Passenger)

Interurban transport is that which is carried out between urban centres belonging to different municipal terms and can be road, rail, inland freight, and interurban passenger services. This activity refers to the movement of goods or passengers on public roads. Its purpose is to demonstrate a substantial reduction in GHG emissions by:

- Increasing the number of low- and zero-emission vehicles and improve vehicle efficiency.
- Increasing fossil fuel substitution with sustainable, net-zero carbon alternative fuels.

ISIC Codes: 4921, 4911

Substantial Contribution Criteria

The following assets are eligible under the Taxonomy:

1. A fleet of vehicles or rolling stock intended for inter-municipal transport, whether freight or passenger, road, rail, or inland transport with zero direct emissions, is directly eligible.

2. Vehicles that use sustainable biofuels and biogas, guaranteed by technological design or by continuous monitoring and third-party verification. Ensure the use of transport technologies that enable the use of 100% biofuels.
3. Transition criteria: For intercity rail service:
    - Interurban rail passenger transport is eligible if direct emissions are less than 50g of CO2e emissions per passenger-kilometre (gCO2e/pkm) until 2028. After this year, the new projects must be zero emissions.
    - The direct emissions for freight transport by rail must be less than 25 gCO2/tkm until 2028 (after this year, only rolling stock with zero direct emissions will be eligible).
4. For inland freight service:
    - Vessels operating solely using biofuels and renewable fuels, guaranteed either by technological design or by continuous monitoring and third-party verification. Ensure the use of transport technologies that allow the use of B100 mixtures with high standards of product quality and efficiency. When applicable, please refer to ISO 17225-1:2021 - Solid biofuels, EN590 (biodiesel), EN14214 (FAME), EN228, and EN15736 (bioethanol) for more guidance.
    - Other inland waterway vessels are eligible if the direct (tailpipe) emissions of CO2 per tonne-kilometre (gCO2/tkm), calculated (or estimated in the case of new ships) using the Energy Efficiency Operational Indicator, are 50% below the average reference value for CO2 emissions defined for heavy-duty vehicles.

Some useful methodologies for the calculation of these emissions in the transport sector are:

- GHG protocol[52] - GHG emission calculation tool for mobile sources: this tool calculates CO2, CH4 and N2O emissions from public transport by road, rail, air, and water.
- GHG protocol - category 4: emissions in the transport and distribution of goods: a guide to calculating emissions associated with the transport and distribution of products.
- Trip avoidance through equipment improvement of freight transport: this methodology is applicable to project activities that reduce the number of journeys required to transport a given quantity of goods through improvements to freight vehicles.

Ineligibility Criteria

The fleet of vehicles or rolling stock carrying fossil fuels or fossil fuels mixed with alternatives is not eligible.

Generic Compliance Requirements

[52] https://ghgprotocol.org/calculation-tools-and-guidance

- The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Promotion of Circular Economy

- Measures must be in place to manage waste, according to the type of waste, both in the use (maintenance) phase and at the end of the fleet's useful life, including through the reuse and recycling of batteries and electronic equipment (the critical raw materials they contain).
- Where the means of transport runs on batteries, those measures must include the reuse and recycling of batteries and electronic components, including the critical raw materials they contain.

Pollution Prevention and Control

- Both maintenance and end-of-life management of vehicles must comply with the country's regulations on Integral Management of Waste or Hazardous Waste.
- Comply with the noise regulations corresponding to the country and that apply to this activity, as well as with the air regulations dictated in Law No. 18/2016 of 18 May 2016 and the East African Community Standard (EAS751:2001) and EAS 1047:2022 standards on Air Quality – Vehicular exhaust emission limits.
- The tyres meet the requirements for external rolling noise in the most populated class and for the rolling resistance coefficient (which influences the energy efficiency of the vehicle).
- In relation to direct emissions into the air of exhaust gases from internal combustion engines - nitrogen oxides (NOx), total hydrocarbons (THC), hydrocarbons other than methane (NMHC), carbon monoxide (CO), particulate matter (PM) -, buses must comply with the Euro VI standard in force.
- Some international standardisation standards that allow verifying GHG and noise emissions in the transport sector are ISO 13.040.50: Emissions from mobile sources; ISO 362 Measurement of noise emitted by accelerating road vehicles; ISO 28580:2018 – Method of measuring the rolling resistance of passenger cars, trucks and bus tyres.
- Vehicles must comply with the maximum permissible noise levels, according to National Noise Pollution Guideline
- In the case of transport by rail and inland (passengers and goods), compliance with the maximum permissible limits of pollutants of the US EPA test cycles must be demonstrated, as long as there are no national regulations.

Sustainable Use and Protection of Water Resources

- The cleaning practices of the vehicles must be carried out in places specifically destined for this task, making rational use of the water resource and avoiding waste water discharges that do not comply with the relevant environmental permits and authorisations.

1.3.5. Passenger Cars and Light Commercial Vehicles

Electric vehicles for passenger transport are considered directly eligible. Likewise, those that have been developed with other renewable alternatives, such as low-carbon hydrogen, are also directly eligible to emit no emissions. These vehicles can play an important role in reducing carbon emissions and emerge as an emerging market in countries' economies.

ISIC Codes: 492

Substantial Contribution Criteria

The following assets are eligible under the Taxonomy:

- Zero-emission vehicles are directly eligible (e.g., electricity or low-carbon hydrogen).
- Transition criteria: Hybrid vehicles will be eligible until 2028.

Ineligibility Criteria

Hybrid vehicles that use diesel are not eligible.

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Pollution Prevention and Control

- Both maintenance and end-of-life management of vehicles must comply with the country's regulatory provisions on integrated management and co-processing of solid waste.
- Comply with the noise regulations corresponding to the country and that apply to this activity, as well as with the air regulations dictated in Law No. 18/2016 of 18 May 2016 and the East African Community Standard (EAS751:2001) and EAS 1047:2022 standards on Air Quality – Vehicular exhaust emission limits.
- Some international standardisation standards that allow verifying GHG and noise emissions in the transport sector are ISO 13.040.50: Emissions from mobile sources; ISO 362 Measurement of noise emitted by accelerating road vehicles; ISO 28580:2018 – Method of measuring the rolling resistance of passenger cars, trucks and bus tyres.
- Vehicles must comply with the maximum permissible noise levels, according to National Noise Pollution Guideline

1.3.6. Research and Development – Professional Services

ISIC code: NA

This activity includes the research, applied research and experimental development of solutions, processes, technologies, business models and other products dedicated to the reduction, avoidance or removal of GHG emissions. These solutions must demonstrate their

ability to contribute significantly to the climate change mitigation objective of Transportation sector activities.

Substantial Contribution Criteria

This includes the creation of intangible assets and research, development and innovation activities that are aimed at promoting compliance with the **Substantial Contribution Criteria** of the Taxonomy in the Transport sector, specifically contributing to the objective of climate change mitigation.

Some of the intangible assets, research, development and innovation activities that enable substantial contribution to climate change mitigation are:

- Energy management services
- Supervisory control and data acquisition systems, which track energy usage at the component/equipment level, to increase energy efficiency and enable zero emissions vehicles.
- Innovation in charging infrastructure for zero emission vehicles.
- Innovation in Infrastructure and asset management[53]:
    - Smart Infrastructure: Developing intelligent transportation systems (ITS) that use data analytics and IoT to optimise traffic flow and reduce congestion.
    - Maintenance and Sectorization: Implementing predictive maintenance using AI and machine learning to extend the lifespan of infrastructure and reduce downtime.
- Alternative fuels technology that enables zero emission vehicles.
- Advanced batteries and efficient motors that enables zero emission vehicles.

Generic Compliance Requirements

- The economic activity must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

1.3.7. Airport Infrastructure

ISIC code: 4100, 4290

Construction, modernisation, maintenance and operation of infrastructure that is required for zero tailpipe CO2 operation of aircraft or the airport's own operations, and for provision of fixed electrical ground power and preconditioned air to stationary aircraft as well as infrastructure dedicated to transhipment with rail and water transport.

Substantial Contribution Criteria

The activity complies with the following:

1. The activity complies with at least one of the following:
    a. the infrastructure is dedicated to the operation of aircraft with zero tailpipe CO_2 emissions: electricity charging and hydrogen refuelling;
    b. the infrastructure is dedicated to the provision of fixed electrical ground power and preconditioned air to stationary aircraft;
    c. the infrastructure is dedicated to the zero direct emissions performance of the airport's own operations: electric charging points, electricity grid connection upgrades, hydrogen refuelling stations;

[53] Frontiers | Empirical analysis of R&D spending, transport infrastructure development and CO2 emissions in China (frontiersin.org)

d. the infrastructure and installations are dedicated to transhipping freight with rail and water transport: terminal infrastructure and superstructures for loading, unloading and transhipment of goods.

2. The infrastructure is not dedicated to the transport or storage of fossil fuels.

Generic Compliance Requirements

- The economic activity must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements:

Pollution Prevention and Control

Measures are taken to reduce noise, vibration, dust and pollutant emissions during construction maintenance works.

Protection of Biodiversity and Environment

Ensure an Environmental Impact Assessment has been completed in accordance with national and international standards (e.g., IFC Performance Standard 1: Assessment and Management of Environmental and Social Risks; Convention of Biological Diversity (CBD) Voluntary guidelines on biodiversity-inclusive impact assessment, etc.). Ensure major uncovered risks are mitigated to the extent possible.

Promotion of Circular Economy

At least 70 % (by weight) of the non-hazardous construction and demolition waste (excluding naturally occurring material) generated on the construction site is prepared for reuse, recycling and other material recovery, including backfilling operations using waste to substitute other materials.

Operators limit waste generation in processes related to construction and demolition, taking into account best available techniques and using selective demolition to enable removal and safe handling of hazardous substances and facilitate reuse and high-quality recycling by selective removal of materials, using available sorting systems for construction and demolition waste.

1.3.8. Air Transport

ISIC code: 5110, 5120

This activity is for provision of air transport for both passengers and goods. This includes renting the air transport equipment such as the vehicles and other equipment that support ground activities in airports.

Substantial Contribution Criteria

The activity complies with the following criteria:

- Performed using zero exhaust CO_2 emission aircraft such as those powered by electricity or low-carbon hydrogen.
- Aircrafts are not dedicated to fossil fuel transport.

Generic Compliance Requirements

- The economic activity must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Pollution Prevention and Control

Complies with:

- Amendment 13 of Volume I (noise), Chapter 14, of Annex 16 to the Chicago Convention;
- Amendment 10 of Volume II (engine emissions), Chapters 2 and 4 of Annex 16 to the Chicago Convention;

Promotion of Circular Economy

- Measures are in place to prevent generation of waste in the use phase (maintenance, operation of air transport services with regards to catering waste) and manage any remaining waste in accordance with the waste hierarchy.
- Measures are in place to manage and recycle waste at the end-of life of the fleet, including through decommissioning contractual agreements with aircraft recycling service providers, ensuring that measures are in place to segregate and treat components and materials in order to maximise recycling and reuse in accordance with the waste hierarchy and airworthiness regulations.

1.4. Manufacturing

Rwanda's manufacturing sector is relatively small but growing (11% in 2023 compared to 2022[54]), contributing to both economic development and employment. Manufacturing and construction together contributed to about 22% of the country's GDP in 2023[55] (in national accounts they're united as "Industry" section). The sector is characterised by a gradual diversification from basic manufacturing to more value-adding activities, such as food and beverages production, production of construction materials, etc.

The government has prioritised manufacturing as a key driver for economic growth, aiming to transform Rwanda into a lower middle-income country by 2035 through initiatives like the "Made in Rwanda" policy[56]. This policy encourages domestic production to reduce imports and increase exports. The government is seeking to increase the share of industry and manufacturing of the country's total GDP, targeting 24% by 2035 and 33% by 2050. To be in line with Rwanda's sustainability goals, such growth requires a low-carbon and environmentally sound industrialisation strategy supported by energy and infrastructure systems that promote green manufacturing and increase Rwanda's connectivity for regional and global trade.[57]

In this context, Rwanda is promoting sustainable manufacturing practices through Rwanda's Green Growth and Climate Resilience Strategy (GGCRS)[58] , which together provide a roadmap for transforming the manufacturing sector into a more sustainable and resilient one. By focusing on energy and resource efficiency, low-carbon technologies, capacity building, regulatory support, and innovation, the strategy aims to create a manufacturing sector that not only contributes to economic growth but also aligns with Rwanda's environmental goals.

The key climate change concerns highlighted by GGCRS for the sector is supply-chain disruptions to key industries and manufacturing units, because of both rapid-onset events (extreme weather disasters such as floods and landslides) and slow-onset events (droughts and shifts in agricultural growing regions). Acute climate hazards also pose a risk of physical damage and depreciation to capital assets. Given the key role of agro-based industries in Rwanda, and the vulnerability to climate change of crops and livestock, GGCRS highlights the risks of disruptions to the value-chains of agribusiness.

The CPCIC in Rwanda is a pivotal institution promoting sustainable industrial practices and climate innovation. Established from the merger of the Rwanda Resource Efficient and Cleaner Production Centre and the Climate Innovation Centre, CPCIC focuses on integrating resource efficiency and cleaner production into Rwanda's industrial sector. Its mission is to provide access to green technologies, to promote climate resilience, and to foster a circular economy, thereby enhancing productivity and environmental compliance across various sectors.

[54] GDP National Accounts, 2023 | National Institute of Statistics Rwanda
[55] GDP National Accounts, 2023 | National Institute of Statistics Rwanda
[56] 2017 MINICOM Made in Rwanda Policy (1).pdf (rwandatrade.rw)
[57] Rwanda_GGCRS__November_2023.pdf (rema.gov.rw)
[58] Rwanda_GGCRS__November_2023.pdf (rema.gov.rw)

Furthermore, Rwanda has implemented specific guidelines for mainstreaming climate change considerations into the manufacturing sector[59]. These guidelines emphasise the need for industries to adopt energy-efficient technologies, to reduce emissions, and to manage waste sustainably. A summary of other main relevant projects and policies is provided below:

National Policy on Environment and Climate Change[60]. This policy provides a framework for environmental management and climate change mitigation and adaptation, including practices relevant to manufacturing. The policy promotes a green economy that is resource efficient, low-carbon and climate resilient. It highlights the need to support local industries and small and medium sized enterprises (SMEs) to adopt environmentally sound technologies through the provision of appropriate incentives and disincentives.

The Circular Food System for Rwanda[61]**.** This is a project led by the Word Resources Institute and funded by the IKEA Foundation. It aims to transform Rwanda's food system to make it more circular and sustainable. The programme consists of two interlinked workstreams, namely:

- The SME Technical Assistance Program which supports agri-food SMEs in Rwanda to improve their ability to utilise and scale circular business models.
- Policy and Stakeholder Engagement to create a stronger enabling environment for food systems transformation in Rwanda.

Chemical and Hazardous Waste Management[62]**.** The project is implemented by the Rwanda Environment Management Authority (REMA) and funded by the Global Environment Facility (GEF) through UNDP. It seeks to protect human health and the environment from the adverse effects of hazardous wastes by enhancing the introduction of the "*Reuse, Reduce, Recycle and Recover*" approach in priority industries and economic sectors to ensure the sound management of waste.

Scope of Taxonomy application in the Manufacturing sector

Unlike most other sectors of the Taxonomy where only activities can substantially contribute to the objective of climate change mitigation, in the manufacturing sector, facilities and final products may also have this status. These, however, can only acquire this status in conjunction with activities, which are still the centrepiece of the Taxonomy.

- **Activities** in the manufacturing sector can be recognised as making substantial contribution to the objective of climate change mitigation if they are included in the Taxonomy, their performance complies with the criteria and thresholds, they do not breach DNSH standards (as defined in the **Specific Compliance Requirements**) and the entity, which conducts the activity, does not breach the minimum social safeguards.
- A **facility** can be recognised as making substantial contribution to the objective of climate change mitigation if all its manufacturing (as defined by ISIC) activities are making substantial contribution to the objective of climate change mitigation. In this

59 Sector_specific_guidelines_for_Mainstreaming_Climate_Change_in_the_manufacturing_industry_sector_in_Rwanda.pdf (climatechange.gov.rw)

60 Rwanda Environmental Policy_English.pdf (rema.gov.rw)

61 Circular Food Systems For Rwanda (circularfoodsystemsrwanda.org)

62 The Cleaner Production and Climate Innovation Center: Chemical and Hazardous Waste Management (cpcic.rw)

case, green finance can be raised for the construction of a greenfield facility, but the owner must show documentation that the activities at the future facility will be making a substantial contribution to one of the Taxonomy's objectives. DNSH in this case is verified through a mandatory environmental impact assessment conducted in accordance with the requirements for each activity. The entity operating the facility must also abide by MSS requirements.

- The **product** of the activity can be recognised as making substantial contribution to the objective of climate change mitigation (e.g. green steel or green cement) if the activity parameters are compliant with the requirements of the Taxonomy.

Please bear in mind that the criteria for defining substantial contribution to the objective of climate change mitigation are the same for all three instances described above. Industrial processes described within the criteria may take place only within a specific facility, and there are no criteria that are related to the physical features of facilities' buildings. Thus, the criteria make no differentiation between "facilities" and "activities" and the terms are used interchangeably.

1.4.1. Manufacture of Basic Chemicals

ISIC Code: C201

Production of carbon black, soda ash, chlorine, anhydrous ammonia, nitric acid, ethylene, propylene, butadiene, benzene, xylene, toluene, methanol.

The criteria cover both production activities that meet the thresholds and the construction of new facilities whose production processes are technically compliant with the thresholds. Products compliant with the thresholds can also be granted Taxonomy compliant status.

The scope of the activity includes the production of a number of eligible organic and inorganic basic chemicals. The eligible basic chemicals that are within the scope of the Taxonomy are defined in Table 3 below.

Table 1: Eligible Basic Chemicals Under the Scope of the Rwandan Green Taxonomy

Chemical groups	Eligible chemicals
Inorganic basic chemicals	• Ammonia • Chlorine • Disodium carbonate/Soda ash • Nitric acid • Carbon black
Organic basic chemicals	• High-value chemicals (ethylene, propylene, butadiene) • Aromatics BTX (acetylene, benzene, toluene and xylene) • Methanol

The carbon emission thresholds for all mentioned chemicals except chlorine were determined basis their alignment with a 1.5°C decarbonisation pathway for the entire chemical sector recently published by Teske et al. (2022).[63] With the reduction rates from Teske et al.'s

[63] https://doi.org/10.1007/s42452-022-05004-0.

pathway and taking 2022 thresholds as the baseline, the thresholds were extrapolated to calculate the 2030, 2040 and 2050 thresholds.

For chlorine, the 2030 threshold was established separately on the basis of an updated value proposed in a European Union study[64]. For the years 2040 and 2050, thresholds were designed as qualitative requirements to ensure the process delivers low-carbon chlorine by using renewable power, given that the main source of emissions in the chlorine process come from indirect emissions due to the electricity usage.

The scope of emissions' calculations for the production of the basic chemicals is as follows:

- **Nitric acid and soda ash**: Scope 1 emissions, which include all direct emissions from the production processes, such as emissions generated during the chemical reactions and emissions from fuel combustion on-site.
- **Carbon black, high value chemicals and aromatics**: Scope 1 as defined above plus Scope 2 emissions which include indirect emissions from the energy imported from off-site.
- **Methanol and ammonia**: Associated GHG emissions counted as the life cycle emissions of hydrogen used as feedstock.
- **Chlorine**: Only electricity consumption intensity is within the scope. No GHG accounting is required for chlorine.

Substantial Contribution Criteria

For the manufacturing of basic chemicals activity to make substantial contribution to the objective of climate change mitigation, it must comply with the following requirements:

1. More than 50% of the facility's production (by volume) consists of chemicals included in the scope of the present activity (**Table 1**).
2. All activities carried out at the facility fall within the scope of the present criteria and need to meet specific carbon or energy intensity thresholds defined in **Table 2** below.
3. The facility owner must check whether some of the "Additional Requirements" listed below apply to the facility and follow this. If no additional requirements apply to the facility – only Criterion 1 and 2 must be met to prove substantial contribution **to the objective of climate change mitigation**.

Additional requirement 1: applicable only if the facility is using hydrogen, biomass or CO_2 as feedstock.

These facilities are making substantial contribution **to the objective of climate change mitigation** only if they meet the following criteria:

- **Hydrogen**: the hydrogen used in the facility as feedstock must meet the Taxonomy criteria for hydrogen production.
- **Biomass**: any biomass used as feedstock needs to meet the Taxonomy Bioenergy criteria.
- **CO_2**: the CO_2 used in the facility as feedstock must meet the criteria described in **Table 4** (e.g. CO_2 from ammonia production should not be used for urea production).

[64] https://doi.org/10.2763/284129.

Additional requirement 2: applicable only if the facility is using fossil gas, hydrogen, biomass, or heat supplied from alternative sources as a fuel source.

These facilities are making substantial contribution **to the objective of climate change mitigation** only if they meet the following criteria:

- **Hydrogen**: the hydrogen used in the facility as feedstock must meet the Taxonomy criteria for hydrogen production.
- **Biomass**: any biomass used as feedstock needs to meet the Taxonomy Bioenergy criteria. Only secondary organic streams are eligible.
- **Facilities using heat supplied from alternative sources, such as geothermal, solar thermal, and waste heat recovery**: the heat source must meet Taxonomy criteria for each respective source of energy.

Table 2: Basic Chemicals Decarbonisation Pathways[65]

Activity type	Criteria			
	2025 - 2029	2030-2039	2040-2049	2050
Production of ammonia	Uses hydrogen as feedstock that meets the Taxonomy criteria for hydrogen production OR Ammonia is recovered from wastewater. AND CO_2e from ammonia production is not used for urea production.			
Production of nitric acid	0.038 t CO_2e/t nitric acid	0.021 t CO_2e/t nitric acid	0.011 t CO_2e/t nitric acid	0.007 t CO_2e/t nitric acid
Production of chlorine	2.45 MWh electricity/t chlorine OR carbon intensity of the electricity used meets the Taxonomy criteria for electricity generation	1.85 MWh electricity/t chlorine OR carbon intensity of the electricity used meets the Taxonomy criteria for electricity generation	The carbon intensity of the electricity used meets the Taxonomy criteria for electricity generation.	
Production of carbon black	1.141 t CO_2e/t carbon black	0.63 t CO_2e/t carbon black	0.34 t CO_2e/t carbon black	0.20 t CO_2e/t carbon black
Production of disodium carbonate/soda ash	0.789 t CO_2e/t disodium carbonate/ soda ash AND	0.44 t CO_2e/t disodium carbonate/ soda ash	0.23 t CO_2e/t disodium carbonate/ soda ash AND	0.14 t CO_2e/t disodium carbonate/ soda ash

[65] Basic Chemicals Criteria (climatebonds.net)

	carbon intensity of the electricity used meets the Taxonomy criteria for electricity generation	AND carbon intensity of the electricity used meets the Taxonomy criteria for electricity generation	carbon intensity of the electricity used meets the Taxonomy criteria for electricity generation	AND carbon intensity of the electricity used meets the Taxonomy criteria for electricity generation
Production of high-value chemicals (ethylene, propylene, butadiene)	0.51 t CO_2e/t high-value chemical	0.28 t CO_2e/t high-value chemical	0.15 t CO_2e/t high-value chemical	0.09 t CO_2e/t high-value chemical
Production of aromatics BTX[66] (acetylene, benzene, xylene and toluene)	0.0072 t CO_2e/t aromatics BTX	0.0040 t CO_2e/t aromatics BTX	0.0021 t CO_2e/t aromatics BTX	0.0012 t CO_2e/t aromatics BTX
Production of methanol	Uses hydrogen as feedstock that meets the Taxonomy criteria for hydrogen production			

Generic Compliance Requirements

The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Protection of Biodiversity and Environment

- Ensure an Environmental Impact Assessment has been completed in accordance with national and international standards (e.g., IFC Performance Standard 1: Assessment and Management of Environmental and Social Risks; Convention of Biological Diversity (CBD) Voluntary guidelines on biodiversity-inclusive impact assessment, etc.).
- Ensure that the key risks identified in the previous step are mitigated as far as possible.

Pollution Prevention and Control

- Ensure emissions to air, water and soil are prevented or minimised as per international and national standards and guidelines (e.g., IFC EHS Guidelines: Air emissions and

[66] BTX are measured as complex weighted throughput. Refer to: Concawe, "Developing a Methodology for an EU Refining Industry CO2 Emissions Benchmark," December 21, 2022, https://www.concawe.eu/publication/report-no-912/.

ambient air quality; ISO 14001:2015 Environmental management systems — Requirements with guidance for use, or comparable).

Promotion of Circular Economy

- Implement measures concerning waste management to minimise and manage waste and material use, especially hazardous manufacturing waste as per international standards and guidelines (e.g., KAPSARC Guide to circular economy, French standard, XP X30-901, Circular economy – Circular economy project management system; ISO/TC 323 (In development Scenario 2); ISO/AWI 59014: Secondary materials — Principles, sustainability and traceability requirements ; Global Recycled Standard; Strategic Approach to International Chemicals Management; ISO 11014:2009(en) Safety data sheet for chemical products, or comparable).
- Ensure that water use/conservation management plans, developed in consultation with relevant stakeholders, have been developed and implemented as per international standards and guidelines. (e.g.: UNEP Framework for freshwater ecosystem management; ISO 13.060: Water Quality or comparable)

Ineligibility Criteria

The following facilities are not eligible under Rwanda's Green Taxonomy:

- The energy source or feedstock is coal, coal derivatives or fossil oil.
- The energy source or feedstock is food crops, feed crops or wood.

1.4.2. Manufacture of Cement

ISIC Code: 2394

Manufacture of cement clinker, cement or alternative binder.

The criteria cover both production activities that meet the thresholds and the construction of new facilities whose production processes are technically compliant with the thresholds. Products compliant with the thresholds can also be granted Taxonomy compliant status.

The SBTi Cement sector guidance[67] was chosen as the cement decarbonisation pathway methodology. It is 1.5°C-aligned and based on a Sectoral Decarbonisation Approach (SDA) that reflects robust IEA modelling of sector-specific carbon budgets and takes into consideration the cost of decarbonising each sector. The following criteria may be used to produce Portland cement or hydraulic cement as well as for constructing facilities that meet the criteria.

To be compliant with the Taxonomy criteria, all important elements of the facility and technological processes should correspond to the criteria stipulated in the respective screening criteria.

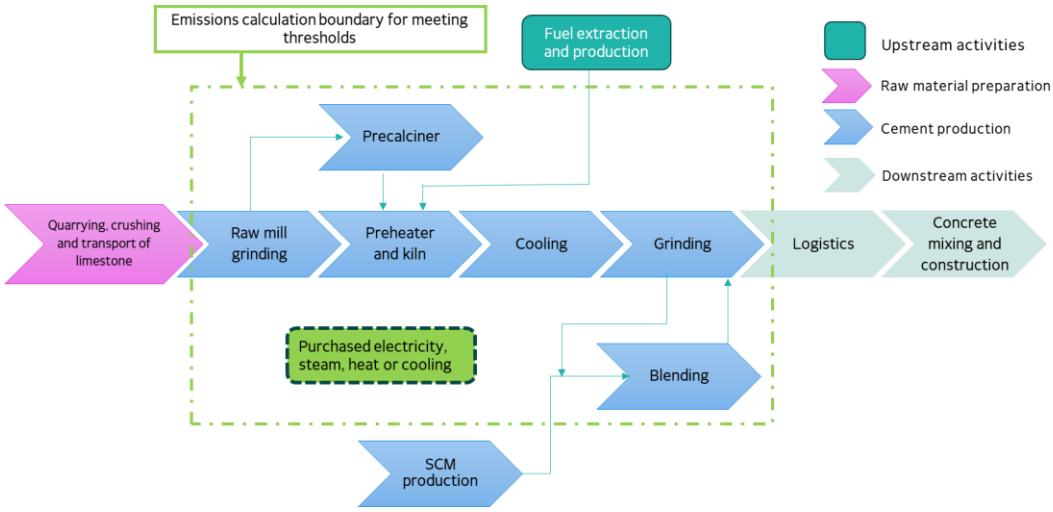
The facility level emission intensity threshold is in terms of t CO2e/t cementitious product or t CO2e/t cement (equivalent), wherein "*cementitious product*" means clinker, cement and cement substitutes produced by the reporting entity. The scope of emissions that must be

[67] Cement-guidance-public-consultation.pdf (sciencebasedtargets.org)

covered when assessing substantial contribution to the objective of climate change mitigation is detailed in Figure 1 and includes the following:

- **Direct (scope 1) emissions from cement production**
  - Burning fossil fuels to heat kilns (thermal emissions).
  - Calcination emissions (process emissions).
  - Emissions from alternative fuels and raw materials.
  - On-site power generation.
- **Indirect (scope 2) purchased energy emissions.**
  - Purchase of electricity, steam, heat, or cooling.

Figure 1. Emission Boundary for Meeting the Thresholds of Manufacturing of Cement Activity (Scope 1 And 2)



NB: SCM stands for substitute cementitious materials[68].

Substantial Contribution Criteria

For the cement production activity or the facility where it is produced to be making substantial contribution to the objective of climate change mitigation , it must meet all of the following criteria:

- The cement production activity (which encompasses all blue shapes contained within the green boundary in Figure 1) need to meet specific cumulative emissions intensity thresholds as defined in **Table 3**.
- Facilities using biomass, hydrogen, or waste as a fuel source are making substantial contribution to the objective of climate change mitigation only if they meet the following criteria:
  - **Hydrogen**: The hydrogen used meets Taxonomy criteria for hydrogen production.
  - **Biomass**: The biomass meets the meets the Taxonomy Bioenergy criteria.
  - **Waste-derived fuels**, including municipal solid waste, must meet Taxonomy criteria and:
    - All waste with recycling potential must be removed prior to using them as fuel.

[68] Substitute (or alternative) cementitious materials are materials that can replace portland cement and provide alternative characteristics compared to the traditional cement. For more on this please look at Alternate Cementitious Materials (psu.edu)

- Production of cement where more than 20% of pozzolanic materials are added are making substantial contribution to the objective of climate change mitigation if **Table 3** thresholds are met.

Table 3: Cementitious Products Decarbonisation Pathway[69]

Year	Carbon intensity (tCO2e/t cementitious product)	Year	Carbon intensity (tCO2e/t cementitious product)	Year	Carbon intensity (tCO2e/t cementitious product)	Year	Carbon intensity (t CO2e/t cementitious product)
2024	0.427	2032	0.326	2040	0.179	2048	0.036
2025	0.416	2033	0.308	2041	0.161	2049	0.018
2026	0.406	2034	0.289	2042	0.143	2050	0
2027	0.395	2035	0.271	2043	0.125		
2028	0.384	2036	0.253	2044	0.107		
2029	0.374	2037	0.234	2045	0.089		
2030	0.363	2038	0.216	2046	0.071		
2031	0.345	2039	0.197	2047	0.054		

Additionally, the following measures are always making substantial contribution to the objective of climate change mitigation:

- Installation, upgrading and operation of precalciners.
- Installation, upgrading and operation of heat recovery systems.
- Installation, upgrade and operation of digitised control equipment or infrastructure. This may include:
    - Sensors and measurement tools (including software enabling close and real-time control of processes to improve efficiency).
    - Communication and control (including advanced software and control rooms, and automation of plant processes).
- Further reduction of clinker content in cement through the use of natural calcined pozzolans (clays).
- Installation, upgrading and operation of testing equipment. E.g. automated drx (x-ray diffraction) systems.
- Electrification of heat (e.g. electrified kiln processes).
- Installation, upgrading and operation of equipment dedicated to the use of calcined clay in cement production, as opposed to clinker.
- Installation, upgrading and operation of equipment dedicated to the treatment of legacy or historical fly ash and blast furnace slag from power plants.

[69] Cement Criteria (climatebonds.net)

- Installation, improvement and operation of equipment dedicated to the measurement, control and abatement of major (NOx, SO2, particulate matter) and minor air emissions.
- Capture of CO2 emissions for valorisation in processes such as PTL or other microalgae for 3rd generation biofuels.
- Modern CO2 capture processes such as calcium looping, lime. Also known as cleanker, from clean Clinker.
- Infrastructure for the use of alternative fuels to fossil fuels: AFR, hydrogen or others.

Generic Compliance Requirements

The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Protection of Biodiversity and Environment

- Ensure an Environmental Impact Assessment has been completed in accordance with national and international standards (e.g., IFC Performance Standard 1: Assessment and Management of Environmental and Social Risks; Convention of Biological Diversity (CBD) Voluntary guidelines on biodiversity-inclusive impact assessment, etc.).
- Ensure that the key risks identified in the previous step are mitigated as far as possible.

Pollution Prevention and Control

- Ensure emissions to air, water and soil are prevented or minimised as per international and national standards and guidelines (e.g., IFC EHS Guidelines: Air emissions and ambient air quality; ISO 14001:2015 Environmental management systems — Requirements with guidance for use, or comparable).

Promotion of Circular Economy

- For cement production sites using hazardous wastes as alternative fuels, ensure a waste management plan and implementation of measures concerning waste management to minimise and manage waste and material use as per international standards and guidelines (e.g., KAPSARC Guide to circular economy; French standard; XP X30-901; Circular economy – Circular economy project management system; ISO/TC 323 (In development Scenario 2); ISO/AWI 59014: Secondary materials — Principles, sustainability and traceability requirements; Global Recycled Standard; ETP Clean Energy Technology Guide, or comparable).
- Ensure that water use/conservation management plans, developed in consultation with relevant stakeholders, have been developed and implemented as per international standards and guidelines. (e.g.: UNEP Framework for freshwater ecosystem management; ISO 13.060: Water Quality or comparable)

Out-of-scope Activities and Facilities[70]

The activities and facilities in the cement production value chain that are out of scope under the Taxonomy are as follows:

[70] Meaning that they can't be affected by the taxonomy and no taxonomy-compliant funding can be sourced for them, but at the same time they're not considered ineligible

- **Production of fly ash and blast furnace slag**: production of these through coal power or steel production is out of scope. However, the processing of such materials extant from a power plant that no longer functions can be within scope.
- **Concrete**: the production of concrete itself and associated activities (mix design, mixing itself, transportation to site, quality control, etc.) are out of scope.
- **Quarrying**: quarrying in and of itself (i.e., that is separate from a cement plant or is a pure-play quarry company) is not within scope.

Additionally, the entities in the cement production value chain that are out of scope of the Taxonomy are as follows:

- **Pureplay concrete producers**: Companies whose sole activity is the production of concrete itself and associated activities (mix design, mixing itself, transportation to site, quality control, etc.).
- **Pureplay quarrying companies**: Companies whose sole activity is quarrying (i.e., separate from a cement production company).

Pureplay clinker production companies: Companies that solely produce clinker, which is then sold downstream for further processing into cement. Note: companies that produce clinker and cement are within the scope of a company that purchases clinker.

Ineligibility Criteria

Refuse Derived Fuels (RDF) for cement production are always excluded. Co-incineration of waste has significant impacts on health and the environment due to the polluting nature of the associated emissions, and higher emissions ceiling for cement plants in comparison with dedicated waste incineration plants. Furthermore, promoting waste as eligible fuel source may undermine waste minimisation efforts in other sectors.

1.4.3. Manufacturing of Basic Iron and Steel

ISIC Code: 2410

Operations of conversion by reduction of iron ore in blast furnaces and oxygen converters or of ferrous waste and scrap in electric arc furnaces or by direct reduction of iron ore without fusion to obtain crude steel, which is smelted and refined in a ladle furnace and then poured and solidified in a continuous caster to produce semi-finished flat or long products.

The criteria cover both production activities that meet the thresholds and the construction of new facilities whose production processes are technically compliant with the thresholds. Products compliant with the thresholds can also be granted Taxonomy compliant status.

To be making substantial contribution to the objective of climate change mitigation, **steel making facilities must comply with two sets of criteria**:

i. facility-specific (based on the major technological process utilised by the facility, for example blast furnace or direct reduction of iron facilities) and
ii. cross-cutting (related to feedstock used by the facility regardless of the main technological process utilised on it).

Since steel production facilities can operate for many years, new facilities should already be built with GHG emissions mitigation technologies in place or avoid GHG generation entirely by limiting the use of fossil fuels. The technical challenges are such that this is very important at

the design stage – for example, if a plant is not designed to have Carbon Capture and Storage (CCS) implemented, it will be very difficult to retrofit later.

To determine the carbon emission intensity thresholds for the technical screening criteria, the International Energy Agency Net-Zero Emissions (IEA NZE)[71] decarbonisation pathway adjusted in line with the Climate Aligned Finance Framework for Steel approach[72] was utilised.

The IEA NZE Benchmark used by the Sustainable STEEL Principles is a modified version of the "Net Zero by 2050" scenario published by the IEA in 2021, with the following modifications:

- Yearly emissions and scrap utilisation data was interpolated using the decadal emissions and scrap utilisation data published by the IEA in the "Net Zero by 2050" report.
- Scope 1 emissions were taken directly from the IEA's "Net Zero by 2050" report, while Scope 2 emissions were estimated using the technology shares of total production included in the report paired with the corresponding emissions factors included in the Mission Possible Partnership model[73].

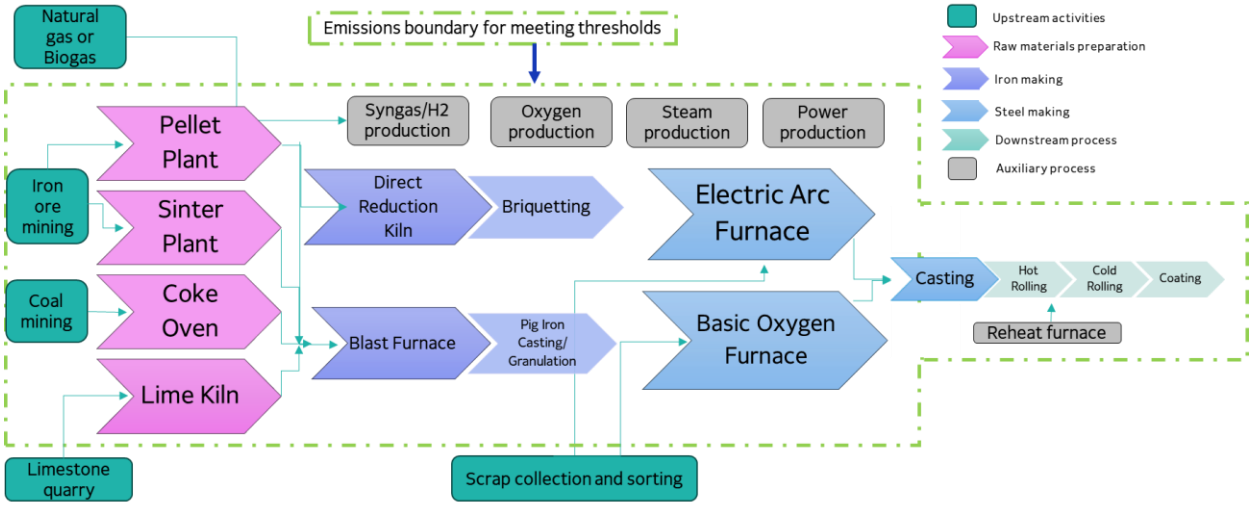
Currently, steelmakers calculate their CO_2e emissions intensity according to their scope of production and in accordance with scopes 1, 2, and/or 3, as determined by the GHG Protocol. However, in the steel sector, there is a high degree of variability in the ownership structure and level of vertical integration of production facilities. This causes inconsistent emissions accounting, particularly for scope 3 and makes it difficult to compare steel companies equitably.

To ensure the emissions intensity values are comparable, the approach from the Sustainable STEEL Principles[74], where applicants quantify their emissions intensity within a Fixed System Boundary of activities[75], applies.

In the context of Taxonomy criteria, emissions boundary for calculating CO_2e emissions intensity covers only scope 1 and 2 emissions. The scope of emissions to be considered for carbon intensity calculations for the different types of steel production facilities is specified in Figure 2.

Figure 2. Scope of Emissions for Steel Production Facilities

[71] Iron & steel - IEA
[72] https://climatealignment.org/wpcontent/uploads/2022/06/sustainable_steel_principles_framework.pdf.
[73] Steel (missionpossiblepartnership.org)
[74] https://climatealignment.org/wpcontent/uploads/2022/06/sustainable_steel_principles_framework.pdf.
[75] https://site-vkkfu93r.wsecdn1.websitecdn.com/uploads/F5B19C8ADDA9CB51.pdf?v=0



Substantial Contribution Criteria

To be making substantial contribution to the objective of climate change mitigation, activities and facilities where they take place must comply with all of the following:

- Applicable facility-specific mitigation criteria (Table 4)
- Applicable cross-cutting criteria (Table 5)

Table 4: Eligible Iron and Steel Production Facilities

Facility technology type	Facility-specific climate change mitigation criteria
BF-BOF (Blast Furnace – Basic Oxygen Furnace)	• CCS should capture at least 70% of all emissions.
Smelting reduction	• CCS should capture at least 70% of all emissions.
Direct Reduced Iron (DRI)	If fossil gas-based: • CCS should capture at least 70% of all emissions. If 100% hydrogen-based: • hydrogen meets carbon intensity thresholds and specific Taxonomy criteria for hydrogen.
Electric Arc Furnace (EAF)	• Needs to use 50% of scrap as total annual inputs. OR • The combined scrap and (100%) hydrogen-based DRI which meet the Taxonomy criteria for DRI should add to at least 70% of the EAF's total annual inputs.
DRI – EAF	If fossil gas-based: • CCS should capture at least 70% of all emissions.

	If 100% hydrogen-based: • hydrogen meets carbon intensity thresholds and specific Taxonomy criteria for hydrogen.

Table 5: Cross-cutting Criteria for Iron and Steel

Eligible facilities	Cross-cutting mitigation criteria
Facilities that use fossil gas as a reducing agent and/or for energy generation	Using fossil gas both as a reducing agent and for energy generation is only eligible for existing facilities prior to 2040: • Direct CO_2 emissions from steel production are used for the manufacture of durable products and do not lead to enhanced oil recovery and the production of other forms of fossil energy sources. • Projects using fossil gas (even if) combined with CCS should demonstrate the following on-site activities: MRV (monitoring, reporting and verification), and mitigation measures for methane leaks as per the best practice recommended[76]. Any venting or burning within the limits of the steel plant must be avoided, except in emergency situations, in such case it must be reported and accounted for in the GHG assessment. Flaring is allowed. • Projects using fossil gas (even if) combined with CCS should demonstrate that upstream activities provide evidence of having MRV (monitoring, reporting and verification) and mitigation measures for methane leaks as per the best practice recommended[77].
Facilities that use biomass as a reducing agent	Facilities using biomass as a reducing agent are only eligible if they use at least one of the following sources of biomass (dedicated food crops are not eligible): • **Agricultural residues**: feedstocks must comply with the Agricultural section criteria of the Rwandan Taxonomy. • **Plantation wood**: the wood plantation must meet the requirements set out for forestry plantation activity of the Taxonomy. • **Refuse derived fuels (RDF) and solid recovered fuels (SRF)** AND Facilities using biomass as fuel are only eligible if they use secondary organic streams. The production of biofuels must be demonstrated to meet the Bioenergy Taxonomy criteria.

76 Best_Practice_Guidance_for_Effective_Methane_Management_in_the_Oil_and_Gas_Sector__Monitoring__Reporting_and_Verification__MRV__and_Mitigation-_FINAL__with_covers_.pdf (unece.org)

77 ibid

Generic Compliance Requirements

The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Protection of Biodiversity and Environment

- Ensure an Environmental Impact Assessment has been completed in accordance with national and international standards (e.g., IFC Performance Standard 1: Assessment and Management of Environmental and Social Risks; Convention of Biological Diversity (CBD) Voluntary guidelines on biodiversity-inclusive impact assessment, etc.).
- Ensure major uncovered risks are mitigated to the extent possible.

Pollution Prevention and Control

- Ensure emissions to air, water and soil are prevented or minimised as per international and national standards and guidelines (e.g., IFC EHS Guidelines: Air emissions and ambient air quality; ISO 14001:2015 Environmental management systems — Requirements with guidance for use, or comparable).

Promotion of Circular Economy

- Implement measures concerning waste management to minimise and manage waste and material use as per international standards and guidelines (e.g., KAPSARC Guide to circular economy; French standard; XP X30-901; Circular economy – Circular economy project management system; ISO/TC 323 (In development Scenario 2); ISO/AWI 59014: Secondary materials — Principles, sustainability and traceability requirements; Global Recycled Standard; ETP Clean Energy Technology Guide, or comparable).
- Ensure that water use/conservation management plans, developed in consultation with relevant stakeholders, have been developed and implemented as per international standards and guidelines. (e.g.: UNEP Framework for freshwater ecosystem management; ISO 13.060: Water Quality or comparable)

Ineligibility Criteria

The facilities not complying with cross-cutting criteria (Table 7) are not making substantial contribution to the objective of climate change mitigation, including facilities using:

- coal for on-site electricity generation.
- dedicated crops, primary organic streams, and wood when using biomass as a reducing agent and/or for energy generation.
- Carbon Capture and Storage for the production of products that release CO_2e immediately when these are used (such as in urea, carbonated beverages, or fuels), for enhanced oil recovery, and the production of other forms of fossil energy sources.

Wood and dedicated crops are not eligible as feedstock or fuel.

Out-of-scope Facilities and Activities[78]

The activity covers the production of basic iron and steel using all types of facilities covered by the criteria, as well as construction of new facilities that comply with the criteria. The **activities and facilities** in the basic iron and steel production value chain that are **out of scope** (meaning that they are can't be recognized as making substantial contribution to the objective of climate change mitigation or affected by it in any way, but at the same time they're not ineligible) are as follows:

- **Iron mining:** Mining in and of itself (i.e., separate from a steel plant) are out or scope under these criteria.
- **Coal mining:** coal mines are out of scope.
- **Steel alloying:** alloying is not a climate-material process that can be separated from steelmaking.
- **Steel scrap collection and sorting**: it is defined by the Waste Sector criteria.
- **Raw material preparation and downstream processes**: facilities and activities dealing solely with the production of coke, iron ore pellets and other raw materials that are not part of an iron or steel production facility are out of the scope, as are facilities only dedicated to downstream activities such as rolling, and finishing.

Additionally, the **entities** in the iron and steel production value chain that are **out of scope** are as follows:

- **Pureplay iron ore mining companies:** companies whose sole activity is the mining of iron ore (i.e., separate from a steel production company).
- **Pureplay coal companies:** companies whose sole activity is coal mining (i.e., separate from a steel production company).
- **Pureplay stainless and high alloy steels production companies:** companies whose sole activity is the production of stainless and high alloy steels and associated activities.
- **Pureplay steel scrap collection and sorting companies:** Companies whose sole activities are the collection and sorting of steel scrap (covered under the waste sector).

1.4.4. Manufacturing of Aluminium

ISIC Code: 2420

Manufacture of aluminium through primary alumina (bauxite) process or secondary aluminium recycling.

The criteria cover both production activities that meet the thresholds and the construction of new facilities whose production processes are technically compliant with the thresholds. Products compliant with the thresholds can also be granted Taxonomy compliant status.

Scoping boundaries for GHG calculation include scope 1 and scope 2 as defined by the International Aluminium Institute[79]:

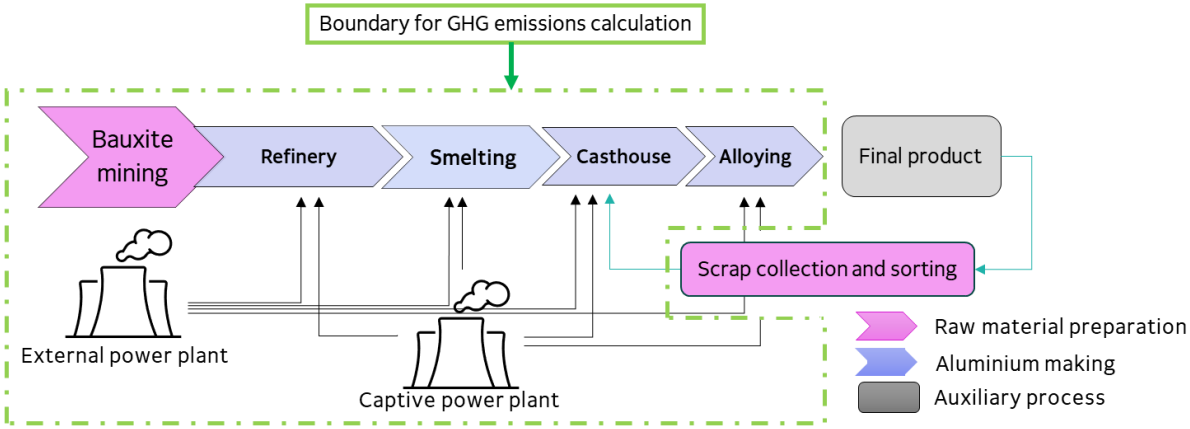
Table 6: Scoping Boundaries for GHG Calculation in Aluminium Manufacturing

[78] Meaning that they can't be affected by the taxonomy and no taxonomy-compliant funding can be sourced for them, but at the same time they're not considered ineligible

[79] The Aluminium Sector GHG Protocol

Scope 1	Scope 2
• **Fuel combustion in furnaces/boilers on-site** • **Coke calcination** • **Anode production** • **Anode consumption** • **PFC emission** • **Lime production**	• Emissions from purchased electricity, heat or steam

Figure 3.GHG Emission Calculation Scope for Manufacturing of Aluminium Activities (Primary Aluminium)



Scoping for the production of secondary aluminium is not included as secondary aluminium is automatically making substantial contribution to the objective of climate change mitigation without any additional criteria or requirements.

Substantial Contribution Criteria

Option 1

Primary aluminium production is making a substantial contribution to the objective of climate change mitigation if all of the following criteria are met:

- the GHG emission intensity does not exceed thresholds presented in Table 7.
- the average carbon intensity for the consumed electricity does not exceed thresholds established for green electricity production as defined by the present Taxonomy.
- the electricity consumption for the manufacturing process does not exceed 14.86MWh/t Al.

Option 2

- Secondary aluminium production is automatically making substantial contribution to the objective of climate change mitigation.

Table 7: Primary Aluminium Decarbonisation Pathway

Facility type	CO2e emissions intensity (tonnes CO2e per tonne of aluminium manufactured)				
	2024	2030	2035	2040	2050
Production of primary aluminium through electrolysis	1.484	1.185	0.826	0.520	0.311

Generic Compliance Requirements

The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Protection of Biodiversity and Environment

- Ensure an Environmental Impact Assessment has been completed in accordance with national and international standards (e.g., IFC Performance Standard 1: Assessment and Management of Environmental and Social Risks; Convention of Biological Diversity (CBD) Voluntary guidelines on biodiversity-inclusive impact assessment, etc.).
- Ensure major uncovered risks are mitigated to the extent possible.

Pollution Prevention and Control

- Ensure emissions to air, water and soil are prevented or minimised as per international and national standards and guidelines (e.g., IFC EHS Guidelines: Air emissions and ambient air quality; ISO 14001:2015 Environmental management systems — Requirements with guidance for use, or comparable).

Promotion of Circular Economy

- Implement measures concerning waste management to minimise and manage waste and material use as per international standards and guidelines (e.g., KAPSARC Guide to circular economy; French standard; XP X30-901; Circular economy – Circular economy project management system; ISO/TC 323 (In development Scenario 2); ISO/AWI 59014: Secondary materials — Principles, sustainability and traceability requirements; Global Recycled Standard; ETP Clean Energy Technology Guide, or comparable).
- Ensure that water use/conservation management plans, developed in consultation with relevant stakeholders, have been developed and implemented as per international standards and guidelines. (e.g.: UNEP Framework for freshwater ecosystem management; ISO 13.060: Water Quality or comparable)
- To avoid risks to circular economy, aluminium manufacturing plants need to be able to process aluminium scrap. To avoid unnecessary resource and energy consumption, the aluminium scrap collection and sorting activities should be optimised for separation on an alloy specific basis. If scrap alloys are mixed, the functionality of the recycled material is restricted, and valuable alloying elements may be lost.

1.4.5. Manufacturing of Plastics in Primary Form

ISIC Code: 2013

Manufacture of resins, plastics materials and non-vulcanisable thermoplastic elastomers, the mixing and blending of resins on a custom basis, as well as the manufacture of non-customised synthetic resins.

Substantial Contribution Criteria

The activity meets at least one of the following three criteria:

- The plastic in primary form is fully manufactured by mechanical recycling of plastic waste.
- Where mechanical recycling is not technically feasible or economically viable, the plastic in primary form is fully manufactured by chemical recycling of plastic waste and the life cycle GHG emissions of the manufactured plastic, excluding any calculated credits from the production of fuels, are lower than the life cycle GHG emissions of the equivalent plastic in primary form manufactured from fossil fuel feedstock [80]
- Derived wholly or partially from renewable feedstock and its lifecycle GHG emissions are lower than the lifecycle GHG emissions of the equivalent plastics in primary form manufactured from fossil fuel feedstock.

Generic Compliance Requirements

The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Protection of Biodiversity and Environment

- Ensure an Environmental Impact Assessment has been completed in accordance with national and international standards (e.g., IFC Performance Standard 1: Assessment and Management of Environmental and Social Risks; Convention of Biological Diversity (CBD) Voluntary guidelines on biodiversity-inclusive impact assessment, etc.).
- Ensure major uncovered risks are mitigated to the extent possible.

Pollution Prevention and Control

- Ensure emissions to air, water and soil are prevented or minimised as per international and national standards and guidelines (e.g., IFC EHS Guidelines: Air emissions and ambient air quality; ISO 14001:2015 Environmental management systems — Requirements with guidance for use, or comparable).

Promotion of Circular Economy

- Implement measures concerning waste management to minimise and manage waste and material use as per international standards and guidelines (e.g., KAPSARC Guide to circular economy; French standard; XP X30-901; Circular economy – Circular economy project management system; ISO/TC 323 (In development Scenario 2);

[80] Lifecycle GHG emissions for this activity are calculated using ISO 14067:2018 or ISO 14064-1:2018. Quantified lifecycle GHG emissions are verified by an independent third party.

ISO/AWI 59014: Secondary materials — Principles, sustainability and traceability requirements; Global Recycled Standard; ETP Clean Energy Technology Guide, or comparable).

Ineligibility Criteria

Plastic manufactured for single-use consumer products is not making substantial contribution to the objective of climate change mitigation in line with the Rwandan Law N° 17/2019 of 10/08/2019 Relating to the prohibition of manufacturing, importation, use and sale of plastic carry bags and single-use plastic items.

1.4.6. Manufacture of Batteries

ISIC: 2720

Manufacture or recycling of rechargeable batteries, battery packs and accumulators for transport, stationary and off-grid energy storage and other industrial applications; manufacture of respective components (battery active materials, battery cells, casings and electronic components).

The criteria cover both production activities that meet the thresholds and the construction of new facilities whose production processes are technically compliant with the thresholds. Products compliant with the thresholds can also be granted Taxonomy compliant status.

Substantial Contribution Criteria

The activity complies with one of the following criteria:

- The economic activity manufactures rechargeable batteries, battery packs and accumulators (and their respective components), including from secondary raw materials.
- The activity repurposes batteries to extend their lifespan.
- The activity recycles end-of-life batteries.

Generic Compliance Requirements

The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Protection of Biodiversity and Environment

- Ensure an Environmental Impact Assessment has been completed in accordance with national and international standards (e.g., IFC Performance Standard 1: Assessment and Management of Environmental and Social Risks; Convention of Biological Diversity (CBD) Voluntary guidelines on biodiversity-inclusive impact assessment, etc.). Ensure major uncovered risks are mitigated to the extent possible.

Pollution Prevention and Control

- Ensure emissions to air, water and soil are prevented / minimised as per international and national standards (e.g., IFC EHS Guidelines: Air emissions and ambient air quality; ISO 14001:2015 Environmental management systems — Requirements with guidance for use; Strategic Approach to International Chemicals Management

(SAICM); ISO 11014:2009 (en) Safety data sheet for chemical products, or comparable).

Promotion of Circular Economy

- Implement measures concerning waste management to minimise and manage waste and material use as per national standards and regulations on the waste management of electrical and electronic components: RS 276-1: Electrical and electronic waste — Handling, collection, transportation and storage — Requirements and RS 276-2: Electrical and electronic waste —Treatment and disposal — Code of Practice.

1.4.7. Manufacture of Renewable Energy Technologies

ISIC: Various codes

Production of technologies, components and parts that are necessary for the functioning of low-carbon or renewable energy technologies as defined by the Energy section of the Rwandan Taxonomy.

The criteria cover both production activities that meet the thresholds and the construction of new facilities whose production processes are technically compliant with the thresholds. Products compliant with the thresholds can also be granted Taxonomy compliant status.

Substantial Contribution Criteria

The economic activity manufactures renewable energy technologies that meet the criteria set out in the Energy sector of the present Taxonomy.

Generic Compliance Requirements

The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Protection of Biodiversity and Environment

- Ensure an Environmental Impact Assessment has been completed in accordance with national and international standards (e.g., IFC Performance Standard 1: Assessment and Management of Environmental and Social Risks; Convention of Biological Diversity (CBD) Voluntary guidelines on biodiversity-inclusive impact assessment, etc.). Ensure major uncovered risks are mitigated to the extent possible.

Pollution Prevention and Control

- Ensure emissions to air, water and soil are prevented / minimised as per international and national standards (e.g., IFC EHS Guidelines: Air emissions and ambient air quality; ISO 14001:2015 Environmental management systems — Requirements with guidance for use; Strategic Approach to International Chemicals Management (SAICM); ISO 11014:2009(en) Safety data sheet for chemical products, or comparable).

Promotion of Circular Economy

- Implement measures concerning waste management to minimise and manage waste and material use as per international standards and guidelines (e.g., KAPSARC Guide to circular economy; French standard; XP X30-901; Circular economy – Circular economy project management system; ISO/TC 323 (In development Scenario 2); ISO/AWI 59014: Secondary materials — Principles, sustainability and traceability requirements; Global Recycled Standard; ETP Clean Energy Technology Guide, or comparable).

1.4.8. Manufacture of Low-Carbon Technologies for Transport

ISIC: Various codes

Manufacturing, repair, maintenance, retrofitting, repurposing and upgrade of low carbon transport vehicles, rolling stock and vessels, as well as their components.

The criteria cover both production activities that meet the thresholds and the construction of new facilities whose production processes are technically compliant with the thresholds. Products compliant with the thresholds can also be granted Taxonomy compliant status.

Substantial Contribution Criteria

Manufacturing of low-carbon transport vehicles and their respective key components (including GHG measurement and tracking equiplment)[81], fleets and vessels meeting the criteria set out in the Transport section of the Taxonomy as well as charging stations equipment parts and components are eligible.

Generic Compliance Requirements

The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Protection of Biodiversity and Environment

- Ensure an Environmental Impact Assessment has been completed in accordance with national and international standards (e.g., IFC Performance Standard 1: Assessment and Management of Environmental and Social Risks; Convention of Biological Diversity (CBD) Voluntary guidelines on biodiversity-inclusive impact assessment, etc.). Ensure major uncovered risks are mitigated to the extent possible.

Pollution Prevention and Control

- Ensure emissions to air, water and soil are prevented / minimised as per international and national standards (e.g., IFC EHS Guidelines: Air emissions and ambient air quality; ISO 14001:2015 Environmental management systems — Requirements with guidance for use; Strategic Approach to International Chemicals Management (SAICM); ISO 11014:2009(en) Safety data sheet for chemical products, or comparable).

Promotion of Circular Economy

[81] Components intended solely for use in vehicles that fulfil the criteria of the Taxonomy.

- Implement measures concerning waste management to minimise and manage waste and material use as per national standards and regulations on the waste management of electrical and electronic components: RS 276-1: Electrical and electronic waste — Handling, collection, transportation and storage — Requirements and RS 276-2: Electrical and electronic waste —Treatment and disposal — Code of Practice.

Ineligibility Criteria

Manufacturing of internal combustion engines-based vehicles, their parts and components.

1.4.9. Manufacturing of Energy Efficiency Equipment for Buildings

ISIC: Various codes

Manufacturing of energy efficiency equipment for buildings.

The criteria cover both production activities that meet the thresholds and the construction of new facilities whose production processes are technically compliant with the thresholds. Products compliant with the thresholds can also be granted Taxonomy compliant status.

Substantial Contribution Criteria

The economic activity manufactures one or more of the following products and their key components necessary to support the activity “Individual measures and professional services” from the construction sector of the Taxonomy, including (but not limited to):

- Light sources rated in the highest class of energy efficiency in accordance with local market standards.
- Space heating and domestic hot water systems rated in the highest two populated classes of energy efficiency in accordance with local market standards.
- Cooling and ventilation systems rated in the highest two populated classes of energy efficiency in accordance with local market standards.
- Presence and daylight controls for lighting systems.
- Heat pumps compliant with the technical screening criteria set out in this Taxonomy.
- Facade and roofing elements with a solar shading or solar control function, including those that support the growing of vegetation.
- Energy-efficient building automation and control systems for residential and non-residential buildings.
- Zoned thermostats and devices for the smart monitoring of the main electricity loads or heat loads for buildings and censoring equipment.
- Products for heat metering and thermostatic controls for individual homes connected to district heating systems, for individual flats connected to central heating systems serving a whole building, and for central heating systems.
- District heating exchangers and substations compliant with the district heating/cooling distribution activity set out in the Taxonomy.
- Products for smart monitoring and regulating of heating systems and censoring equipment.

Generic Compliance Requirements

The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Protection of Biodiversity and Environment

- Ensure an Environmental Impact Assessment has been completed in accordance with national and international standards (e.g., IFC Performance Standard 1: Assessment and Management of Environmental and Social Risks; Convention of Biological Diversity (CBD) Voluntary guidelines on biodiversity-inclusive impact assessment, etc.). Ensure major uncovered risks are mitigated to the extent possible.

Pollution Prevention and Control

- Ensure emissions to air, water and soil are prevented / minimised as per international and national standards (e.g., IFC EHS Guidelines: Air emissions and ambient air quality; ISO 14001:2015 Environmental management systems — Requirements with guidance for use; Strategic Approach to International Chemicals Management (SAICM); ISO 11014:2009(en) Safety data sheet for chemical products, or comparable).

Promotion of Circular Economy

- Implement measures concerning waste management to minimise and manage waste and material use as per national standards and regulations on the waste management of electrical and electronic components: RS 276-1: Electrical and electronic waste — Handling, collection, transportation and storage — Requirements and RS 276-2: Electrical and electronic waste —Treatment and disposal — Code of Practice.

1.4.10. Manufacture of Other Low-Carbon Technologies

ISIC: Various codes

Manufacturing of household goods that fall into the highest class of Rwanda's national energy efficiency scheme and manufacture of technologies aimed at substantial GHG emissions reductions in other sectors of the economy.

The criteria cover both production activities that meet the thresholds and the construction of new facilities whose production processes are technically compliant with the thresholds. Products compliant with the thresholds can also be granted Taxonomy compliant status.

Substantial Contribution Criteria

Option 1

- Manufacturing of household goods that meet the highest performance level for a given good according to the national or international energy efficiency rating system (such as EU Energy Label, South African Energy Efficiency Label, Kenya Energy Label or comparable).

Option 2

- Manufacturing of technologies that are aimed at and demonstrate substantial life cycle GHG emissions savings[82] compared to the best performing alternative technology/product/solution available on the market.

Generic Compliance Requirements

The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Protection of Biodiversity and Environment

- Ensure an Environmental Impact Assessment has been completed in accordance with national and international standards (e.g., IFC Performance Standard 1: Assessment and Management of Environmental and Social Risks; Convention of Biological Diversity (CBD) Voluntary guidelines on biodiversity-inclusive impact assessment, etc.). Ensure major uncovered risks are mitigated to the extent possible.

Pollution Prevention and Control

- Ensure emissions to air, water and soil are prevented / minimised as per international and national standards (e.g., IFC EHS Guidelines: Air emissions and ambient air quality; ISO 14001:2015 Environmental management systems — Requirements with guidance for use; Strategic Approach to International Chemicals Management (SAICM); ISO 11014:2009(en) Safety data sheet for chemical products, or comparable).

Promotion of Circular Economy

- Implement measures concerning waste management to minimise and manage waste and material use as per national standards and regulations on the waste management of electrical and electronic components: RS 276-1: Electrical and electronic waste — Handling, collection, transportation and storage — Requirements and RS 276-2: Electrical and electronic waste —Treatment and disposal — Code of Practice.

1.4.11. Manufacture of Building Materials From Secondary Raw Materials

ISIC: 2220

The activity includes the processing of recycled plastics or resins into construction materials using such processes as compression molding, extrusion molding, injection molding, blow molding, casting and others.

Substantial Contribution Criteria

- The activity produces construction materials from previously recycled plastics or resins. If waste collection, sorting and recycling is exercised on the same site, it must be exercised in line with Taxonomy's Waste section criteria.

Generic Compliance Requirements

[82] Life-cycle GHG emission savings are calculated using ISO 14067:2018, ISO 14064-1:2018 or similar standards.

The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Protection of Biodiversity and Environment

- Ensure an Environmental Impact Assessment has been completed in accordance with national and international standards (e.g., IFC Performance Standard 1: Assessment and Management of Environmental and Social Risks; Convention of Biological Diversity (CBD) Voluntary guidelines on biodiversity-inclusive impact assessment, etc.).
- Ensure major uncovered risks are mitigated to the extent possible.

Pollution Prevention and Control

- Ensure emissions to air, water and soil are prevented or minimised as per international and national standards and guidelines (e.g., IFC EHS Guidelines: Air emissions and ambient air quality; ISO 14001:2015 Environmental management systems — Requirements with guidance for use, or comparable).

Promotion of Circular Economy

- Implement measures concerning waste management to minimise and manage waste and material use as per international standards and guidelines (e.g., KAPSARC Guide to circular economy; French standard; XP X30-901; Circular economy – Circular economy project management system; ISO/TC 323 (In development Scenario 2); ISO/AWI 59014: Secondary materials — Principles, sustainability and traceability requirements; Global Recycled Standard; ETP Clean Energy Technology Guide, or comparable).

1.4.12. Retrofitting of Internal Combustion Engine Vehicles for the Use of Electric Engines

ISIC: 4520

The activity involves the complete removal of internal combustion engines from personal vehicles (cars, trucks, motorbikes or other types of personal vehicles) and the subsequent installation and connection of electric motors and associated devices (batteries and other components necessary for vehicle's functioning) or installation of electric engines and batteries on bicycles and other micromobility vehicles.

Substantial Contribution Criteria

- The activity is leading to a change in the way a vehicle engine is powered from internal combustion to electricity consumption. The internal combustion engine must be completely removed from the vehicle. As a result of the operation, the vehicle must be ready to be used for its intended purpose (moving people or goods).
- Dismantled parts of the vehicle associated with internal combustion processes shall not be returned to the market (sold or transferred to the other user or vendor) but must be disposed of in accordance with the corresponding criteria of the Waste Section.

Generic Compliance Requirements

The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Pollution Prevention and Control

- Ensure emissions to air, water and soil are prevented or minimised as per international and national standards and guidelines (e.g., IFC EHS Guidelines: Air emissions and ambient air quality; ISO 14001:2015 Environmental management systems — Requirements with guidance for use, or comparable).

Promotion of Circular Economy

- Implement measures concerning waste management to minimise and manage waste and material use as per international standards and guidelines (e.g., KAPSARC Guide to circular economy; French standard; XP X30-901; Circular economy – Circular economy project management system; ISO/TC 323 (In development Scenario 2); ISO/AWI 59014: Secondary materials — Principles, sustainability and traceability requirements; Global Recycled Standard; ETP Clean Energy Technology Guide, or comparable).

1.5. Waste Management

Rwanda's economic growth and poverty reduction goals can be hampered by a lack of effective waste management and remediation services across both rural and urban areas. In Rwanda, the main sources of solid waste are the residential, commercial, and construction sectors, which produce municipal solid waste (MSW).Although data on waste generation in the country remains limited, an estimated 400 tons of unsorted waste is generated daily in Kigali which is sent directly to the dumpsite[83]. Other reports estimated that urban areas in cities such as cities Kigali, Muhanga and Huye generates between 0.56 and 0.7 kg per capita per day[84]. . Due to increased urbanization of Rwanda, the rate of increase of solid waste in urban areas is high, which causes challenges in the management of MSW. In the city of Kigali, MSW generation increased from 180 tonnes per day in 2012 to over 600 tonnes per day in 2019, which amounts to a total waste of 193,434 tonnes per year[85]. Only 2% of the MSW is being recycled, and an even lower percentage of organic waste is used in a beneficial manner.

Furthermore, there are no studies in the country on the amount of waste generated and disposed of by economic sectors such as industry, commerce, construction, agriculture and mining[86]. Considering that waste management and remediation plays a vital role in preventive health care and quality of life, the Government of Rwanda (GoR) has made waste management and remediation one of the priorities of the National Development Agenda. Rwanda has also developed several key strategic documents to guide the management and development of its waste management and remediation sector. These documents include laws, policies, and comprehensive plans that address both immediate and long-term waste management and remediation challenges:

Rwanda's greenhouse gas (GHG) emissions from waste are estimated at 0.64 megatons CO2 equivalent (MtCO2e), accounting for 12% of Rwanda's total GHG emissions. The primary drivers for waste related carbon emissions in Rwanda is inadequate management of municipal and agricultural solid waste.

In this context, the Taxonomy focus for this sector will be specifically on non-hazardous solid waste management. This is not just based on Rwanda's priorities, but also based on interoperability with other international taxonomies, wherein the primary focus for climate change mitigation in the waste management and remediation sector would be strengthening the solid waste value chain, specifically focussed on municipal, domestic and agricultural waste. In future phases of Taxonomy development, other activities related to hazardous waste management may be included especially for substantial contribution to pollution prevention and control and promotion of circular economy objectives.

The activities considered under this sector can be carried out in urban, small cities or rural areas. The Taxonomy addresses reducing GHG emissions due to insufficient infrastructure for collection, treatment, recycling and scientific disposal of non-hazardous solid waste. It also

[83] index.php (mininfra.gov.rw)
[84] https://www.rema.gov.rw/fileadmin/user_upload/Rwanda_SOER_-_Summary_for_Policy_Makers_Final-HR.pdf
[85] Ibid.
[86] index.php (mininfra.gov.rw)

includes professional services and individual measures related to the research, development and implementation of solutions aimed at meeting the thresholds of the Taxonomy.

1.5.1. Collection and Transport of Non-Hazardous Waste in Source Segregated Fractions

ISIC code: E3811

This activity aims to increase the segregated collection and transport of non-hazardous waste in single or comingled fractions to prepare for reuse or recycling.

Substantial Contribution Criteria

The activity complies with both of the following criteria:

1. Collection and transportation of non-hazardous waste that is segregated at source or at an intermediate sorting facility that is intended for preparation for reuse, recycling or recovery operations, and;
2. Includes waste collection containers, transfer stations, transportation vehicles and other related infrastructure.

Generic Compliance Requirements

- The economic activity must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Promotion of Circular Economy

- Separately collected waste fractions are not mixed with other waste or materials with different properties in waste storage or transfer facilities.
- Implement efficient equipment and technologies that allow for the optimal utilisation of solid waste to prevent final disposal without treatment.
- Operators must have licenses issued by the competent authority, in order to ensure that the collection and transport operations of non-hazardous waste are in line with the country's regulations.

1.5.2. Material Recovery from Non-Hazardous Waste

ISIC Code: E3821

Construction and operation of facilities for the sorting and processing of separately collected non-hazardous waste streams into secondary raw materials involving mechanical reprocessing, except for backfilling purposes.

Substantial Contribution Criteria

The use of non-hazardous waste material, collected separately or segregated at intermediate sites, substantially contributes to climate change mitigation when it meets all of the criteria listed below:

- The activity converts at least 60% (in terms of weight) of the collected and segregated non-hazardous waste into secondary raw materials suitable for the substitution of virgin inputs in production processes. This includes, but is not limited to, materials such as cardboard, aluminium, and PET.
- The collection of segregated waste at source is prioritised, but segregation of waste onsite or at intermediate sites is also acceptable.
- Recovery and recycling plans and programmes are developed to promote the optimal use of the resources contained in waste (e.g. plastics, metal, paper) either as raw material or by recovering their energy when recycling is not feasible.

Note: In addition to the above activity, investments in the following infrastructure also substantially contributes to climate change mitigation directly:

- Infrastructure for mechanised separation (e.g., sorting and utilisation stations) and processing (e.g., drying, cutting, pelletising, extrusion, or other machinery necessary to prepare waste for co-processing), which increase the value and usability of the material.
- Infrastructure associated with the preparation of waste for use in subsequent industrial processes. Example: Baler, Shredder, etc.
- Infrastructure for separating and preparing non-recyclable fraction of the waste with a high calorific value for energy recovery, wherein the waste is used as an alternative fuel or as a raw material in a production process (e.g. as RDF in cement industries).

Note: To ensure the solid waste hierarchy is followed, this activity should prioritise recycling and allow for waste for energy use, only when recycling is technically or economically viable.

Generic Compliance Requirements

- The economic activity must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Pollution Prevention and Control

- Develop preventive and control measures to avoid material leakage.
- Avoid having material storage areas where there is direct contact with abiotic factors.
- Prevent leachate of waste during the transport of materials.
- Projects should ensure that recycling facilities are equipped with energy-efficient equipment and that they use mechanical or biological processes that minimize emissions.

1.5.3. Composting of Bio-Waste

ISIC Code: E3821

Construction and operation of dedicated facilities for the treatment of segregated bio-waste through composting (aerobic digestion), with the resulting production and utilisation of compost.

Substantial Contribution Criteria

The activity complies with all of the following criteria:

1. Only segregated bio-waste or organic waste is to be used for composting to prevent impurities that compromise the quality of compost.
2. The collection and segregation of bio waste at source is prioritised, but segregation of waste onsite or at intermediate sites is also acceptable.
3. The compost produced is used as fertiliser or soil improver and meets national rules on fertilisers or soil improvers for agricultural use.
4. Uses a good aeration process in compost production to avoid methane[87] generation from anaerobic processes in composting.

Generic Compliance Requirements

- The economic activity must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Pollution Prevention and Control

- For composting plants treating over 75 tonnes per day, emissions to air and water are within or lower than the emission levels associated with the latest relevant best available techniques – associated emissions level (BAT-AEL) ranges set out for aerobic treatment of bio-waste.
- Implement filters in the system to minimise atmospheric emissions (NH3, CH4, H2CO2, H2S, particulate matter, among others).
- The site has a system in place that prevents leachate reaching groundwater.
- The compost produced meets the requirements for fertilising materials set out in national rules on fertilisers or soil improvers such as Rwanda's National Fertilizer Policy[88].

Promotion of Circular Economy

- Implement efficient equipment and technologies that allow the optimal utilisation of solid waste to prevent final disposal without treatment.

1.5.4. Anaerobic Digestion of Biowaste

ISIC Code: E3821

Construction and operation of dedicated facilities for the treatment of segregated biowaste through anaerobic digestion, with the resulting production and utilisation of biogas, digestate, and/or chemicals.

[87] It is recommended that the activity can quantify, through a baseline, how the project avoids GHG emissions.
[88] rwa174364.pdf (fao.org)

Substantial Contribution Criteria

The activity complies with all of the following criteria:

1. A monitoring and contingency plan is in place to minimise methane leakage at the facility.
2. The produced biogas is used in one of the following ways:
   a. used directly for the generation of electricity or heat or;
   b. upgraded to biomethane for injection into the natural gas grid or;
   c. used as vehicle fuel or;
   d. used as feedstock in the chemical industry.
3. Only segregated bio-waste or organic waste is to be used for anaerobic digestion to prevent impurities.
4. The collection and segregation of bio waste at source is prioritised, but segregation of waste onsite or at intermediate sites is also acceptable.
5. The produced digestate is used as fertiliser or soil improver, either directly or after composting or any other treatment, and meets national rules on fertilisers or soil improvers for agricultural use.
6. In the dedicated bio-waste treatment plants, the share of food and feed crops used as input feedstock, measured in weight, as an annual average, is less than or equal to 10% of the input feedstock[89].

Generic Compliance Requirements

- The economic activity must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Pollution Prevention and Control

- For anaerobic digestion plants treating over 100 tonnes per day, emissions to air and water are within or lower than the emission levels associated with the latest relevant best available techniques (BAT-AEL) ranges set for anaerobic treatment of bio-waste.
- Emissions to air (e.g. SOx, NOx) after combustion of biogas are controlled, abated (when needed) and within the limits set by the Law governing the Preservation of Air Quality and Prevention of Air Pollution in Rwanda.
- Install efficient filters in the anaerobic digestion system to reduce air emissions (e.g., CO2, NH3).
- The produced digestate meets the requirements for fertilising materials set out in Rwanda's National Fertilizer Policy[90].

[89] It is recommended that the activity can quantify, through a baseline, how the project avoids GHG emissions.
[90] rwa174364.pdf (fao.org)

- The Nitrogen content (with a tolerance level of ±25%) of the digestate used as fertiliser or soil improver is communicated to the buyer or the entity in charge of taking off the digestate.

1.5.5. Landfill Gas Capture and Utilisation

ISIC Code: E3821

Installation and operation of infrastructure for landfill gas capture and utilisation in permanently closed landfills or landfill cells using new or supplementary dedicated technical facilities and equipment installed during or post landfill or landfill cell closure.

Substantial Contribution Criteria

The activity complies with all of the following criteria:

1. The landfill cell where gas capture is implemented is permanently closed and will not receive additional waste and;
2. The produced biogas is used directly for the generation of electricity or heat or upgraded to bio-methane for injection in the natural gas grid or used as vehicle fuel or as feedstock in the chemical industry, and;
3. A monitoring and contingency plan is in place to minimise methane leakage at the facility.

Generic Compliance Requirements

- The economic activity must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Pollution Prevention and Control

- The permanent closure, remediation, and aftercare of old landfills where the landfill gas capture system is installed are carried out following national and international provisions such as the Law governing the Preservation of Air Quality and Prevention of Air Pollution in Rwanda[91].
- Emissions to air (e.g. SOx, NOx) after combustion of biogas are controlled, abated (when needed) and within the limits set by national legislation.

1.5.6. Biochar Production

ISIC Code: N.A

Construction and operation of facilities dedicated to producing biochar for clean energy or heat, all of which involve heating biomass with little or no oxygen to remove volatile gases, leaving behind carbon.

Substantial Contribution Criteria

[91] Law governing the Preservation of Air Quality and Prevention of Air Pollution in Rwanda - RwandaLII

The activity complies with all the following criteria:

1. Biochar must be only produced from segregated organic waste (e.g., tree pruning, garden waste, agricultural waste, among others).
2. The biochar can be used as a soil enhancer, once it is tested for safe use based on international standards[92,93] or meets national rules on fertilisers or soil improvers for agricultural use.
3. The energy co-products are used to generate electricity or heat.
4. The energy source used for biochar production should not come from fossil fuels[94].

Generic Compliance Requirements

- The economic activity must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Pollution Prevention and Control

- Emissions to the atmosphere are controlled and reduced (when necessary), maintaining the limits established by the current regulations in the country (the Law governing the Preservation of Air Quality and Prevention of Air Pollution in Rwanda).
- The use of biochar as soil enhancer meets the requirements for fertilising materials set out in Rwanda's National Fertilizer Policy[95] or based on international standards[20.21].

1.5.7. Research and Development and Professional Services

ISIC Code: NA

This category includes the research, development, and implementation of innovative solutions, processes, technologies, technical advice, and business models aimed at reducing, eliminating, or preventing greenhouse gas (GHG) emissions. These solutions must demonstrate their ability to contribute significantly to the mitigation objective of activities noted under the waste management and remediation sector.

Substantial Contribution Criteria

The creation of intangible assets, research, development and innovation activities that have the objective of promoting compliance with the **Substantial Contribution Criteria** of the Taxonomy in the waste management and remediation sector are considered enabling to substantial contribution to climate change mitigation objective.

Some of the intangible assets, research, development and innovation activities that enable substantial contribution to climate change mitigation are:

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92 IBI_Biochar_Standards_V2.1_Final2.pdf (biochar-international.org)

93 version_en_9_0.pdf (european-biochar.org)

94 It is recommended that the activity can quantify, through a baseline, how the project avoids GHG emissions.

95 rwa174364.pdf (fao.org)

- Energy management services, i.e. services that could potentially provide solutions to reduce/optimise energy use
- Creation and implementation of comprehensive operation and maintenance (O&M) protocols services
- Creating supervisory control and data acquisition systems, which track energy usage at the component/equipment level.
- Creating waste recovery and recycling technologies for both organic and inorganic wastes, including innovation in mechanical recycling, chemical recycling, anaerobic digestion, black soldier fly technologies and others.
- Developing ICT for Waste collection tracking and monitoring, specifically to promote source segregation.
- Creating technologies to treat non-recyclable fractions of waste, including Refuse-derived fuel (RDF) technologies.

Generic Compliance Requirements

- The economic activity must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

1.6. Water Management

As identified in national policies, safe drinking water is a basic amenity, ranked among the highest priority public services by Rwanda's population[96]. The share of water consumption by main users/sectors is as follows: agriculture represents 91.12% of water use, followed by manufacturing (4.36%), electricity (2.41%) and education[97] (1.47%) at country level. Just 60% of Rwandan households have access to at least a basic water supply[98]. Nevertheless, the country is expected to increase in 99% the amount of household that have access to improved water sources by 2050[99].

Rwanda faces a daunting funding gap in the water supply and sanitation sector. The percentage of the Rwandan government budget allocated to water supply and sanitation decreased from 1.9% in 2018 to 1.3% in 2022. However, the country needs approximately four times the existing expenditure (around RWF 320 billion/ year or $295 million USD) to achieve the SDG target of universal access to safely managed water supply and sanitation services by 2030. Furthermore, Rwanda needs an additional RWF 855 billion/year ($788 million USD equivalent) to reach the goals related to the water supply and sanitation sector, outlined in the Rwanda Vision 2050[100].

The activities considered under this sector can be carried out in urban, small cities or rural areas. The Taxonomy addresses economic activities related to drinking water, sewerage systems, and water treatment plants, which support emission mitigation in terms of their energy efficiency and their ability to avoid methane emissions generated by untreated wastewater. It also includes professional services and individual measures related to the research, development and implementation of solutions aimed at supporting other economic activities in meeting the technical screening criteria.

1.6.1. Construction, Extension and Operation of Water Collection, Treatment and Supply Systems

ISIC Code: E3600

This activity aims to increase the proportion of the population/households accessing improved sources of water in urban, peri-urban and especially in rural areas, through more efficient centralised and decentralised technologies. **The activity includes construction, renewal, extension and operation of water collection, treatment and supply systems.**

Some energy efficiency measures can directly reduce energy consumption in a water supply system, significantly reducing GHG emissions. There are alternatives to achieve this, including the use of more efficient sources to replace those that demand more energy, implementing more efficient pumping sources, and managing technical water losses, among others.

Substantial Contribution Criteria

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96 NATIONAL WATER SUPPLY POLICY DECEMBER 2016.pdf (rura.rw)

97 The share of this sector refers to water used in schools and other educational institutions, where water is not an essential factor in the business model.

98 RWANDA Global Waters Strategy Country Plan 2023

99 English-Vision 2050 Abridged version WEB Final.pdf (minecofin.gov.rw)

100 RWANDA Global Waters Strategy Country Plan 2023

The water supply system complies with **one** of the following **options**:

Option 1: New water treatment and distribution systems

The new water supply system complies with the following criteria:

- **Abstraction and water treatment plants**:
    - Transition threshold: The average net energy consumption for abstraction and treatment must be equal to or less than 0.5 kWh/m3 of water produced by 2035[101]

or

    - The average carbon intensity of the energy for these systems must be equal to or less than 100 gCO2/kWh over the infrastructure's lifetime.

- **Distribution or supply systems**:
    - The design of new water distribution or supply systems should include leak identification and prevention systems that prevent water losses. The leakage level must be calculated using the Infrastructure Leakage Index (ILI[102]) rating method and the threshold value must be equal to or lower than 1.5. The calculation must be applied across the extent of the water supply (distribution) network where the works are carried out, i.e. at the water supply zone level, district metered area(s) (DMAs), or pressure managed area(s) (PMAs)[103].

Option 2: Existing systems (renewal/optimisation)

The renewal of the water supply system leads to improved energy efficiency in one of the following ways:

- **Abstraction and water treatment plants**: By decreasing the net average energy consumption of the system by at least 20% compared to the reference results averaged over three years, including abstraction and treatment, measured in kWh per cubic metre of treated water produced.
- **Distribution or supply systems**: By reducing losses by at least 20% in the network of intervention compared to the ILI average of the past three years in the network.

Option 3: Water supply technologies for rural water users

The following investments substantially contributes to climate change mitigation directly:

- Solar-powered water treatment and distribution systems[104]
- Water pumping through solar or wind energy systems[105]

[101] Net energy consumption can consider measures that reduce energy consumption, such as source control (pollutant load inputs) and, as appropriate, the inclusion of renewable energy generation that meet the criteria stipulated under the energy sector in the Taxonomy.
[102] Developed by the International Water Association (IWA) Water Loss Task Force, the ILI has been applied in at least 50 countries worldwide. The ILI is typically calculated as the ratio of real losses (measured in cubic meters per kilometer of network per day) to the total volume of water supplied.
[103] As per national water and sanitation master plan, in 2020 NRW (Non- revenue water) was 41.9 %. The target is to reach 25% by 2030.
[104] Solar_Powered_Water_Systems_Guide_02-2021_English.pdf (globalwatercenter.org)
[105] World Bank Document (ircwash.org)

- Remote monitoring of rural water systems (examples of technologies: sensing of water in the pump head, traditional flow sensor on pump outflow, sensing movement of pump parts)
- Rainwater harvesting and greywater reuse systems
- Hauled water system (for rural areas without reliable water infrastructure)
- Upgraded small traditional wells[106] (for rural areas with extensive dry season)
- Water supply boreholes[107]
- Water Automated Teller Machines (water kiosks)[108]
- Slow and rapid sand filters for water treatment

Note: all these systems must demonstrate access to safe water. This list should be updated as new information is developed on decentralised technologies for drinking water supply.

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document. (Options 1 and 2)

Specific Compliance Requirements

For **options 1 and 2** please consider the following do no significant requirements:

Promotion of Circular Economy

- Integrate efficient waste management in the project for the sludge and other waste produced.
- Develop a solids and sedimentation (primary sludge) management plan.
- Develop a water monitoring plan at the plant's inlet and outlet to maintain a record of the water quality.

Pollution Prevention and Control

- The oils and lubricants used must have an adequate management plan for their disposal and treatment, in addition to complying with the applicable regulations.
- Have a management plan for chemicals or processes to avoid damage to water sources, soil, and ecosystems.

Sustainable Use and Protection of Water Resources

[106] summary info (rural-water-supply.net). In order to optimally upgrade small water treatment systems, there are different treatment technologies/systems that can be used for treating small water supplies. The upgrading could be applied for disinfection (ensuring a microbiologically safe supply of water for drinking) and clarification processes (ensuring the removal of potentially harmful chemical components in the drinking water). For this, different measures such as in-line tablet chlorinator, UV systems (for disinfection) and slow or rapid sand filtration, pressure and upflow filters could be applied.

[107] Rural Community Water Supply (practicalactionpublishing.com)

[108] Review on Water Automatic Teller Machine (Water ATM) Technologies | SpringerLink

- Develop a catchment management plan for water abstraction that complies with national water use standards and environmental impact assessment instruments, including ecological flow.
- The water catchment activity must maintain the natural flow of the source.

1.6.2. Construction and Renewal of Sanitary Sewer Systems

ISIC Code: E3700

Sanitary sewer systems aim to provide coverage for collecting sewage for treatment and disposal. This activity focuses on increasing efforts related to the collection of wastewaters, thereby reducing emissions generated by untreated discharge into the environment due to the decomposition of organic material.

Substantial Contribution Criteria

The following systems and technologies substantially contribute to climate change mitigation:

- Centralised or distributed effluent treatment systems that comply with regulations on decentralized wastewater treatment systems issued by the national regulatory board such as the Rwanda utilities regulatory agency – (RURA) in Rwanda.
- Those that prevent leaks or overflows of untreated wastewater.
- Collection and transportation systems that increase the volume of treated and/or reduce the discharge of untreated wastewater.
- Systems that reduce water consumption through reuse, including projects segregating municipal, stormwater, and industrial drainage for specialised treatment.
- Wastewater collection systems for separating stormwater and sewage, which helps improve the efficiency of wastewater treatment.

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Promotion of Circular Economy

- Sludge and waste must have an adequate management plan for their disposal and treatment.

Pollution Prevention and Control

- The oils and lubricants used must have an adequate management plan for disposal and treatment

1.6.3. Construction, Extension and Operation of Wastewater Treatment Systems

ISIC Code: E3700

This activity includes implementing new or renewing wastewater treatment systems. Removing physical, chemical, or biological contaminants from wastewater before discharge is essential for a safe and efficient sanitation system.

According to UN Water[109], the operation of the wastewater treatment systems generates between 3% and 7% of all GHG emissions, and it is estimated that between 80% and 90% of these are released into the environment without any treatment. In the context of Rwanda, the country does not have a national system to treat wastewater but has a semi-centralised central sewerage system in Kigali[110]. However, there are plans to implement a sewerage system through the water supply and sanitation corporation. Wastewater treatment systems can help reduce these impacts by increasing the volume of treated wastewater and improving contaminant removal efficiency in domestic and industrial wastewater treatment systems.

The following **Substantial Contribution Criteria** apply to two types of systems:

- Centralised wastewater treatment systems (e.g., municipal, residential).
- Alternative or individual, decentralised wastewater treatment systems (e.g. agricultural and industrial sources).

Note: Methane capture from sludge resulting from wastewater treatment is covered in an activity of the Waste Sector.

Substantial Contribution Criteria

The wastewater treatment system must comply with **one** of the following **options**:

Option 1: New wastewater treatment systems

New systems must meet **one** of the criteria:

- The new wastewater treatment system replaces high GHG-emission treatment systems (such as pit latrines, septic tanks, and anaerobic lagoons without biogas capture). For these investments, it must be demonstrated that the new system achieves GHG savings of at least 20% compared to the current system.

Or

Transition threshold (by 2030):

- By 2035, the net energy consumption of the wastewater treatment plant is equal to or less than 68 kWh per equivalent population per year (PE-year) and is applicable for all wastewater treatment plant capacities.

After 2030, the treatment plants must meet the following criteria:

- 35 kWh per equivalent population per year (PE[111]-year) for a treatment plant capacity of less than 10,000 PE;

[109] SDG6_Indicator_Report_631_Progress-on-Wastewater-Treatment_2021_EN.pdf (unwater.org)
[110] PowerPoint Presentation (rwb.rw)
[111] 1 PE= 60gBOD_5/day. Biochemical Oxygen Demand.

- 25 kWh per population equivalent per year (PE-year) for a treatment plant capacity between 10,000 and 100,000 PE;
- 20 kWh per population equivalent per year (PE-year) for a treatment capacity greater than 100,000 PE.

Option 2: Existing wastewater treatment systems

The activities must meet one of the following criteria:

- Activities that increase the capacity of the wastewater treated (when the system meets the criteria established for new systems) or the efficiency in the process of contaminant load removal (e.g., adding further stages of treatment, nitrogen and phosphorous removal), or
- Activities that reduce the energy consumption (kWh/m³) by at least 20% compared to the average performance of the reference over three years or use renewable energy (that meets the criteria established in the energy sector of the Taxonomy) to meet the energy demand of the wastewater treatment system.

Note 1: For the purposes of the above points, the system's net energy consumption is calculated in kWh per population equivalent per annum of the wastewater collected or effluent treated[112]

Note 2: The operator must demonstrate that there are no material changes relating to external conditions, including modifications to discharge authorisation(s) or changes in load to the accumulation that would reduce energy consumption.

Note 3: For anaerobic systems, such as Upflow Anaerobic Sludge Blanket (UASB) digestion (both new and existing), the following additional **Substantial Contribution Criteria** also apply:

- Methane leakage from relevant facilities (e.g., in the production and storage of biogas, energy generation, and digestate storage) must be controlled through a monitoring plan.
- The biogas produced must be used directly for electricity and/or heat generation, or biomethane is used for injection into the natural gas grid, as fuel for vehicles (such as bio-CNG), or as a raw material in the chemical industry (e.g., for the production of H2 and NH3).
- Activities that facilitate the use of biogas, such as scrubbing, compression, or similar processes, also substantially contribute.

Option 3: Wastewater treatment systems for rural areas

The following activities substantially contributes to climate change mitigation directly:

- Decentralised wastewater treatment systems that combine the following technical treatment steps in a modular manner:

[112] Some recommended measures to reduce energy consumption in treatment plants are related to source control (reduction of stormwater inputs or pollutant loads) or integration of energy from decentralised and renewable sources (e.g. solar energy).

  - Primary treatment – in sedimentation ponds, settlers, Imhoff tanks, septic tanks or biodigester
  - Secondary treatment – in anaerobic baffled reactors, anaerobic filters or anaerobic and facultative pond systems
  - Secondary aerobic/facultative treatment – in horizontal gravel filters
  - Post-treatment – in aerobic polishing ponds
- Artificial wetlands with additional primary or secondary treatment such as
  - Free surface water constructed wetlands (FSW CW)
  - Vertical flow constructed wetlands (VF CW)
  - Horizontal subsurface flow wetlands (HSF CW)

Note: It is recommended that these decentralised systems be accompanied by a Community-Based Sanitation (CBS) Programme[113]

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Promotion of Circular Economy

- Sludge and waste must have an adequate management plan for their disposal and treatment.
- Treatment of by-products must have an appropriate management plan for their treatment, utilisation, and/or disposal.

Pollution Prevention and Control

- Reduction of contaminants and pathogens to acceptable levels in accordance with national regulations such as Regulations No 005/R/SAN-EWS/RURA/2016 and Law No. 49/2018 of 13/08/2018 on the use and management of water resources in Rwanda.
- Refer to RS 126-2: 2022, this Rwanda Standard specifies general requirements for structures and equipment of wastewater treatment plants for a total population of more than 50 PT.
- Refer to RS 180: 2019, this Rwanda Standard provides guidelines for safe management of solid waste disposal sites in the form of landfills, land treatment facility and incinerators.

[113] The profile of each CBS programme has to be country, site and situation specific.

1.6.4. Investments in the Efficient Use of Water

ISIC Code: NA

Efficient water use reduces the demand for raw drinking water from water sources and increases efficiency in aqueduct and sewerage systems. The savings in water consumption result in a lower demand for fresh water, thus reducing the emissions associated with water extraction, supply and treatment.

Substantial Contribution Criteria

The following systems and technologies substantially contribute to climate change mitigation:

- Those activities, systems and/or technologies that generate a reduction of at least 25%[114] in the annual water consumption of economic activities compared to an established baseline or reference.
- Water reuse in closed systems to minimise annual water consumption within the facilities by at least 25%, compared to an established baseline or reference
- Those that produce a minimum reduction of 25% in annual water consumption per unit of product manufactured, compared to an established baseline or reference.

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Promotion of Circular Economy:

- Closed water systems must comply with the parameters stipulated in the National Policy for Water Resources Management.
- Water harvesting activities must follow the Rainwater Harvesting Strategy

1.6.5. Research and Development - Professional Services

ISIC Code: NA

This category includes the research, development and implementation of innovative solutions, processes, technologies, technical advice and business models aimed at reducing, eliminating or preventing greenhouse gas (GHG) emissions related to water supply and sanitation. These solutions must demonstrate their ability to contribute significantly to the mitigation objective of water supply and sanitation sector activities.

[114] This threshold is based on improving the water efficiency of different existing processes, according to an established baseline. Depending on the process, the baseline may vary, so it is expected that the activities tied to the taxonomy respond to an improvement of at least 25% savings in water consumption, according to a baseline consumption or baseline technology, for example in industrial processes or in the building sector with efficient systems. This threshold has been the result of different discussions at the taxonomies roundtables in the water sector, considering the reality of each country and the interoperability with other taxonomies.

Substantial Contribution Criteria

The creation of intangible assets, research, development and innovation activities that aim to promote compliance with the **Substantial Contribution Criteria** of the Taxonomy in the water supply and sanitation sector are considered enabling to substantial contribution to climate change mitigation objective.

Examples of such activities are described below:

- Energy management services (pump/motor upgrades, energy software, smart metering, pump optimisation, water loss control, among others, energy/water audits)
- Energy performance contracts
- Creation and implementation of comprehensive operation and maintenance (O&M) protocols services
- Supervisory control and data acquisition systems, which track energy usage at the component/equipment level.
- Active leak control services
- Flow and pressure management services
- Infrastructure and asset management, including maintenance, sectorisation (macro-metering and pressure regulators)
- Measurement and micro-metering, monitoring and reporting, digitalization and automation, reduction of inactive connections, periodic updating of the user registry, among others.
- Engineering design of distribution and treatment systems
- Research and development of technologies related to wastewater treatment

Generic Compliance Requirements

- The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

1.7. Information and Communication Technology (ICT)

The Government of Rwanda considers the ICT sector among those emerging sectors that are key economic drivers with the potential to contribute significantly to job creation and productive employment. In addition, the Government of Rwanda has put much effort into establishing ICT infrastructure across the country and ensuring a growing supply of qualified workforce to position Rwanda as an ICT hub in Africa. As of 2020, the ICT sector contributed 2% of GDP and employed around 8,962 workers (0.26% of the workforce[115]). Within the ICT sector itself, telecommunications remain the largest subsector (75%), but the growth rate of software development revenues has been faster than telecommunications since 2006. The country now has an ambitious goal of increasing ICT's contribution to GDP to approximately 5% by 2024.

Rwanda's Vision 2050 aims to transform the country into a high-income nation and a globally competitive, knowledge-based economy. Within this ambitious framework, ICT plays a crucial role. The ICT sector is seen as a key enabler of economic growth, innovation, and improved quality of life. In moving towards a modern, knowledge-based economy, Rwanda is navigating a digital transformation to ensure that data, information, science and technology, and smart digital systems are an integral and efficient feature of the green growth and climate resilient development pathway. The Ministry of ICT and Innovation (MINICT) has been mandated to accelerate the use of ICT in the fields of socio-economic development in Rwanda. MINICT does this through addressing national priorities for economic growth and poverty reduction.

1.7.1. Data Processing, Storage, Transmission and Management

ISIC Code: J6311

Provision of infrastructure for hosting, data processing services and related activities, specialised hosting activities such as web hosting, streaming services, application hosting; application service provisioning; general time-share provision of mainframe facilities to clients; data processing activities such as complete processing of data supplied by clients or generation of specialised reports from data supplied by clients; provision of data entry services.

Substantial Contribution Criteria

The activity complies with **one** of the following criteria:

- Construction of a new data center or running of an existing data center: PUE of the facility must comply with **Table 8** requirements. The table indicates the required performance thresholds of the same installation with a different workload. Workload options (in % of total capacity) are given for instances where it is impossible to achieve 100% workload on site. In this case, it is possible to establish compliance with either 25%, 50% or 75% workload.
- Alternatively, the data centre must be powered by renewable or low-carbon energy that complies with the criteria from the Energy Sector of the Taxonomy.

The activity has to comply with **all** of the following criteria:

[115] https://rdb.rw/wp-content/uploads/2022/05/ICT-Skills-Snapshot.pdf

- The global warming potential[116] (GWP) of refrigerants used in the data centre cooling system must not exceed 20 as defined by Rwanda's National Cooling Strategy[117].
- Architecture and design of the data centre must follow international best practice guidelines, such as European Code of Conduct on Data Centre Energy Efficiency; CEN-CENELEC document CLC TR50600-99-1; Singaporean Green Mark Scheme for Data Centers, or comparable (one of them).
- If the project includes the construction of a new facility, the facility must be compliant with the criteria for the construction of new commercial buildings from the present Taxonomy.

Table 8:.PUE Value Required for Compliance Under Different Workloads of the Data Centre.

Required PUE	Workload
1.35	100%
1.39	75%
1.45	50%
1.50	25%

Generic Compliance Requirements

The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Protection of Biodiversity and Environment

- **If a new data centre is being constructed**: Ensure an Environmental Impact Assessment has been completed in accordance with national and international standards (e.g., IFC Performance Standard 1: Assessment and Management of Environmental and Social Risks; Convention of Biological Diversity (CBD) Voluntary guidelines on biodiversity-inclusive impact assessment, etc.).
- Ensure major risks associated with the construction or functioning of the data center (potential damage to endangered species, protected biomes, national reserves etc.) are mitigated to the extent possible.

Promotion of Circular Economy

- Adopt an electric and electronic waste management plan and implement measures concerning waste management to minimise and manage waste and material use, especially hazardous manufacturing waste as per national standards and regulations

[116] Global-warming potential, abbreviated as GWP, is a term used to describe the relative potency, molecule for molecule, of a greenhouse gas, taking account of how long it remains active in the atmosphere. The global-warming potentials (GWPs) currently used are those calculated over 100 years. Carbon dioxide is taken as the gas of reference and given a 100-year GWP of 1. For more on this read https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Global-warming_potential_(GWP)

[117] https://www.rema.gov.rw/fileadmin/templates/Documents/National_Cooling_System_book_-_Print__1_.pdf

on the waste management of electrical and electronic components: *RS 276-1: Electrical and electronic waste —Handling, collection, transportation and storage — Requirements and RS 276-2: Electrical and electronic waste —Treatment and disposal — Code of Practice.*

1.7.2. Data-Driven Solutions for GHG Emissions Reductions

ISIC Code: J6202

Development or use of ICT solutions that are aimed at collecting, transmitting, storing data and at its modelling and use where those activities are predominantly seeking to provide data and analytics enabling GHG emission reductions. Such ICT solutions may include, *inter alia*, the use of decentralised technologies (i.e., distributed ledger technologies), Internet of Things (IoT), 5G and Artificial Intelligence.

Substantial Contribution Criteria

The following systems and technologies are always making substantial contribution to the objective of climate change mitigation:

- ICT solutions which are predominantly used for the provision of data and analytics enabling GHG emission reductions. Examples may include (but not limited to):
  - Emission management software that is designed to assist businesses in measuring, analyzing, reducing, and eliminating their emissions across Scope 1, 2, and 3;
  - Software that enables companies to implement cost-effective carbon reduction strategies based on science-based targets;
  - Solutions catered towards supply chain emissions management etc.
- Where an alternative solution/technology is already available on the market, the ICT solution demonstrates substantial life cycle[17] GHG emission savings compared to the best performing alternative solution/technology.

Quantified lifecycle GHG emission reductions are verified by an independent third party which transparently assesses how the standard criteria, including those for critical review, have been followed when the value was derived.

Generic Compliance Requirements

The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

1.7.3. Wired and Wireless Telecommunication Infrastructure

ISIC Code: J6110, 6120, 6130

Constructing, operating, maintaining or providing access to facilities for the transmission of voice, data, text, sound and video using wired, wireless or satellite telecommunications infrastructure, including operating and maintaining switching and transmission.

Substantial Contribution Criteria

The activity complies with one of the following criteria:

- Construction, operation or maintenance of land-based part of telecommunication equipment and infrastructure (including transmission and switching devices) if it is powered by renewable or low-carbon energy as defined by the Energy Section of the Rwanda's Taxonomy.
- Conversion of the existing telecommunication equipment and infrastructure from fossil fuels-powered to renewable energy-powered as well as replacement of the energy sources for the low-carbon ones (defined as all energy sources compliant with the Energy section of Rwanda's Green Taxonomy).

Generic Compliance Requirements

The economic activity or project must demonstrate compliance with the **Generic Compliance Requirements** (Do No Significant Harm) described in this technical document.

Specific Compliance Requirements

Climate Change Adaptation and Resilience

- Where applicable, telecom operators must be included in early warning system and assist local communities in disseminating warnings, using cell broadcast, SMS or Interactive Voice Response (IVR) – and prepare for and respond to disasters by coordinating with first responders and governments.

Protection of Biodiversity and Environment

- Ensure an Environmental Impact Assessment has been completed in accordance with national and international standards (e.g., IFC Performance Standard 1: Assessment and Management of Environmental and Social Risks; Convention of Biological Diversity (CBD) Voluntary guidelines on biodiversity-inclusive impact assessment, etc.).
- Ensure major risks associated with the construction, operation or maintenance of telecommunication equipment (potential damage to endangered species, protected biomes, national reserves etc.) are mitigated to the extent possible.

Promotion of Circular Economy

- Adopt an electric and electronic waste management plan and implement measures concerning waste management to minimise and manage waste and material use, especially hazardous manufacturing waste as per national standards and regulations on the waste management of electrical and electronic components: *RS 276-1: Electrical and electronic waste —Handling, collection, transportation and storage — Requirements and RS 276-2: Electrical and electronic waste —Treatment and disposal — Code of Practice.*

2. Generic DNSH Criteria for All Activities Contributing to Climate Change Mitigation

Bear in mind that to comply with this Taxonomy, the entity within which the evaluated activity sits must first comply with all laws, regulations and requirements established by the law of Rwanda. The criteria below are in addition to the applicable legislation to ensure no negative effects occur because of the activity. The activity must identify potential harm that could be caused for the objectives and take measures to mitigate the harm whenever applicable. The following table shows the generic DNSH criteria of the present Taxonomy that all activities must abide by:

Table 9: Generic DNSH Criteria

OBJECTIVE	DESCRIPTION
Climate change adaptation and resilience	The activity must ensure that it does not negatively impact adaptation measures of other assets or activities. All investments in physical assets must ensure that they are resilient and take measures to reduce the vulnerability to acute and chronic climate risks (**Table 7** provides examples of such risks). Guidance of such vulnerability assessments is explained below: The physical climate risks that are material to the activity must be identified performing a robust climate risk and vulnerability assessment with the following steps: • Screening of the activity to identify which physical climate risks that may affect the operational performance of the economic activity during its expected lifetime. • Where the activity is assessed to be at risk from one or more of the physical climate risks, a climate risk and vulnerability assessment to evaluate the materiality of the physical climate risks on the economic activity needs to be conducted; • Adaptation solutions that can reduce the identified physical climate risk needs to be identified. The climate risk and vulnerability assessment must be proportionate to the scale of the activity and its expected lifespan. The evaluation must be performed using the highest detailed information available across the existing range of future scenarios[118] consistent with the expected lifetime of the activity. The climate projections and assessment of impacts must be based on best practice and available guidance and consider the state-of-the-art science for vulnerability and risk analysis and related methodologies in line with the most recent Intergovernmental Panel on Climate

[118] Future scenarios include Intergovernmental Panel on Climate Change representative concentration pathways RCP2.6, RCP4.5, RCP6.0 and RCP8.5.

OBJECTIVE	DESCRIPTION
	Change reports[119], scientific peer-reviewed publications, and open source or paid models. For existing activities and new activities using existing physical assets, the economic operator must implement physical or non-physical solutions over up to five years that reduce the most critical identified physical climate risks that are material to that activity. An adaptation plan for the implementation of those solutions is drawn up accordingly. For new activities and existing activities using newly built physical assets, the economic operator must integrate adaptation solutions that reduce the most critical identified physical climate risks that are material to that activity.
Sustainable use and protection of marine and water resources	Identify, assess and manage risks associated with water consumption and water quality. Use water risk analysis tools where available (e.g. risk assessments by national environmental authorities, water footprint, WWF Water Risk Filter, WRI Aqueduct etc.). If assets or activities are located in water-stressed areas, ensure that water use and conservation management plans, developed in consultation with relevant local entities, have been implemented.
Pollution prevention and control	The economic activity should not result in a significant increase of pollutant emissions to air, water or soil, compared to the situation before the start of the activity (including the generation of hazardous waste).
Promotion of circular economy	National regulations associated with retirement and dismantlement plans for plants and infrastructure related to economic activity in question must be applied. Ambition to maximise the efficient use, reduction, repair, recycling and reuse of materials during the activity's operational life cycle (e.g. through contractual agreements with recycling companies and integration of the cost of recycling), proper treatment and waste disposal (e.g. adequate end-of-life management of batteries) and compliance, as a producer, with Extended Producer Responsibility Standards must be demonstrated. The ambition that new installations are designed and manufactured for high durability, easy to dismantle, refurbishment and recycling must be demonstrated. Proper repair of facilities and equipment and the accessibility and interchangeability of the activity's equipment components must be ensured.

[119] Assessments Reports on Climate Change: Impacts, Adaptation and Vulnerability, published periodically by the Intergovernmental Panel on Climate Change (IPCC), the United Nations body for assessing the science related to climate change produces, https://www.ipcc.ch/report/ar6/wg2/

OBJECTIVE	DESCRIPTION
Protection of biodiversity and environment	New financed facilities and infrastructure should not be in ecosystems that are strategic for food security, rich in biodiversity, or serve as habitat for endangered species (flora and fauna) on the list of nationally protected areas or on the IUCN Red List[120]. Museums or technical facilities[121] that concurrently serve as biodiversity preservation centres are exempt from this requirement. For sites and operations located in or near biodiversity-sensitive areas (UNESCO World Heritage Sites, key biodiversity areas, including those defined by the Rwandan national legislation), an appropriate assessment must be carried out in line with the criteria set by IFC Performance Standard №6[122]. A long-term biodiversity monitoring and assessment programme must be implemented for these sites.
Sustainable land management and agriculture	Requirements for this objective are relevant only for the Agricultural and livestock sector projects and are incorporated into Table 9 measures.

Table 10: Classification of Climate-related Hazards

	Temperature-related	Wind-related	Water-related	Solid mass-related
Chronic	• Changing temperature (air, freshwater, marine water) • Heat stress • Temperature variability • Permafrost thawing	Changing wind patterns	• Changing precipitation patterns and types (rain, hail, snow/ice) • Precipitation or hydrological variability • Ocean acidification • Saline intrusion • Sea level rise • Water stress	• Coastal erosion • Soil degradation • Soil erosion • Solifluction

[120] IUCN Red List of Threatened Species
[121] Technical facilities means electronic communications network equipment and facilities used to originate, process, transfer, transmit or receive electronic communications calls and information signals.
[122] Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources | International Finance Corporation (IFC)

	Temperature-related	Wind-related	Water-related	Solid mass-related
			• Lake Kivu level fluctuation	
Acute	• Heatwave • Cold wave/frost • Wildfire	• Cyclone, hurricane, typhoon • Storms (including blizzards, dust and sandstorms) • Tornado	• Drought • Heavy precipitation (rain, hail, snow/ice) • Flood (coastal, fluvial, pluvial, ground water) • Glacial lake outburst • Landslide-generated tsunamis	• Avalanche • Landslide • Subsidence

3. Minimum Social Safeguards Requirements for All Activities Contributing to Climate Change Mitigation

Minimum Social Safeguards is a set of additional criteria for making a substantial contribution to climate change mitigation. They are introduced to ensure that activities are also in line with minimum social conventions, for example, labour laws, land tenure rights and international human rights commitments. Whilst the TSCs and the DNSH criteria are applied at the activity level, the MSS criteria are applied at the entity level.

Consequently, the entity using the Taxonomy must ensure that it does not generate negative social impacts by complying with a list of relevant national and international conventions, laws, and regulations. In practice, the entity must adhere to the appropriate local regulatory framework and national policies and applicable internationally recognised principles and patterns. For Rwanda's Green Taxonomy, the following conventions were identified:

International Labor Organization core conventions:

- Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87)
- Right to Organise and Collective Bargaining Convention, 1949 (No. 98)
- Forced Labour Convention, 1930 (No. 29) (and its 2014 Protocol)
- Abolition of Forced Labour Convention, 1957 (No. 105)
- Minimum Age Convention, 1973 (No. 138)
- Worst Forms of Child Labour Convention, 1999 (No. 182)
- Equal Remuneration Convention, 1951 (No. 100)
- Discrimination (Employment and Occupation) Convention, 1958 (No. 111)

International Bill of Human Rights conventions:

1. Universal Declaration of Human Rights (1948)
2. International Covenant on Civil and Political Rights (1966)
3. International Covenant on Economic, Social and Cultural Rights (1966)

The asset or activity that make substantial contribution to mitigation must ensure that it does not have a negative social impact. To this end, it must identify and adhere to the relevant local regulatory framework and policies and have a social management system in place, in accordance with the above list, as applicable.