केन्द्रीय कार्यालय
बालुवाटार, काठमाडौं
फोन नं. : ०१-५७१९६४१/४२/४३/४४
Website : www.nrb.org.np
पोष्ट बक्स : ७३

नेपाल राष्ट्र बैंक

बैंक तथा वित्तीय संस्था नियमन विभाग

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सूचना

इजाजतपत्रप्राप्त "क", "ख", "ग" र "घ" वर्गका बैंक तथा वित्तीय संस्थाहरु तथा पुर्वाधार विकास बैंक,

इजाजतपत्रप्राप्त "क", "ख", "ग" र "घ" वर्गका बैंक तथा वित्तीय संस्थाहरु तथा पूर्वाधार विकास बैंकबाट हुने कर्जा प्रवाह एवं लगानीलाई वातावरणमैत्री बनाउन एवं सो प्रकृतिको लगानी गर्दा सन्दर्भ सामाग्री (Reference Document) को रुपमा प्रयोग गर्न सकिने गरी Nepal Green Finance Taxonomy, 2024 जारी गरिएको हुँदा सोहीवमोजिम गर्नु/गराउनु हुन नेपाल राष्ट्र बैंक ऐन, २०५८ को दफा ७९ ले दिएको अधिकार प्रयोग गरी यो सूचना जारी गरिएको छ।

भवदीय,

कार्यकारी निर्देशक

Nepal Green Finance Taxonomy

NEPAL RASTRA BANK

2024

Foreword

The adoption of a dedicated green finance taxonomy is crucial given the pivotal role of private and public finance in tackling climate change. All participants in the financial ecosystem-including banks, investors, issuers, and regulators-require awareness and the capacity to integrate green finance taxonomy into their investment decisions. Green finance taxonomy is essential for enhancing the sustainable finance, providing a standardized framework to classify economic activities, and mobilizing green investments more effectively.

Nepal is currently undergoing economic transition. The country is experiencing increasingly resource-intensive growth, rapid urbanization, and expanding production activities, resulting in higher demand for energy and infrastructure. Yet Nepal has instituted national and sectoral policies and regulatory frameworks to drive climate action and foster a green economy. Key initiatives like the Environment Protection Act, National Climate Change Policy, Nationally Determined Contributions, and National Adaptation Plan steer Nepal's efforts in climate change adaptation and mitigation. Furthermore, Nepal has embraced the Green, Resilient, and Inclusive Development approach, which outlines strategies for achieving sustainable development, long-term green growth, and climate action. High level of investment is needed for Nepal's efforts to achieve green and climate resilient future. The private sector remains a key player in bridging these financial gaps amid Nepal's need for significant financial resources to fulfil climate and environmental goals. The private sector can complement government's ongoing efforts on investing in sustainable solutions and forging a greener future by improving their technical skills and capabilities and directing investments towards "green" initiatives.

The financial sector actors must take the lead in meeting national climate action targets, reducing waste, preventing pollution, and conserving natural resources by prioritizing sustainability and low-carbon development. I am pleased to announce that Nepal Rastra Bank (NRB) is releasing the guideline on green taxonomy, which serves as a crucial document for the financial sector to facilitate the transition towards a green economy. This guideline aims to diminish environmental and social risks, attract capital seeking investments aligned with green and ESG criteria, and foster the creation of financial products and services that promote environmentally sustainable investments and projects.

The development of this green taxonomy guideline has been a collaborative endeavour, with contributions from the staff of NRB and technical and financial assistance from the Alliance for Financial Inclusion (AFI). It was initiated under the guidance of Steering and Working Committees led by NRB with participation from The Ministry of Finance, The Ministry of Forest and Environment, Securities Board of Nepal and Nepal Insurance Authority. During the draft phase of this taxonomy, relevant stakeholders and experts were consulted extensively. NRB remains fully committed to support the implementation of this guideline, along with capacity-building initiatives. I believe this taxonomy serves as a milestone document for all stakeholders in the financial sector. Therefore, I extend my gratitude to AFI and the team at NRB (Steering, Working, and Implementation Committees) for their dedicated efforts in preparing this document.

Maha Prasad Adhikari
(Governor)

Acknowledgment

I would like to express my heartfelt gratitude to all those who contributed in the development of the Nepal Green Finance Taxonomy, 2024.

First and foremost, I would like to express my sincere appreciation to respected Governor Mr. Maha Prasad Adhikari for his unwavering guidance, support, and encouragement, which were pivotal in steering the Nepal Green Finance Taxonomy to its successful completion.

I also appreciate the invaluable suggestions and guidance received from Deputy Governors Dr. Neelam Dhungana Timsina and Mr. Bam Bahadur Mishra as the coordinator of steering committee, throughout the formulation of this taxonomy. The development process of the taxonomy would not have been completed successfully without the active participation and constructive feedbacks from the members of steering committee which had a representation from Nepal Rastra Bank (NRB), the Ministry of Finance, the Ministry of Forest and Environment, Securities Board of Nepal (SEBON) and Nepal Insurance Authority (NIA).

I would also like to acknowledge the invaluable support of the Alliance for Financial Inclusion (AFI). Special thanks goes to Ms. Jeanette Moling, AFI's Policy Specialist, Inclusive Green Finance whose timely feedback and assistance played a crucial role throughout this process. Additionally, I extend my sincere appreciation to the team of consultants from Oxford Policy Management (OPM) for their valuable support in drafting the taxonomy.

Furthermore, I want to acknowledge the contribution of the NRB's Working Committee, chaired by Director Dr. Satyendra Timilsina, which also had representation from NRB, the Ministry of Finance, the Ministry of Forest and Environment, SEBON and Nepal Insurance Authority for the active engagement in drafting as well as finalising the taxonomy. I would also like to highlight the able management of member-secretary Deputy Director Ms. Ragni Singh and valuable contribution of both Assistant Director Ms. Nikee Maharjan and Assistant Director Mr. Binit Jain Bengani.

I am also grateful to Executive Director Dr. Gunakar Bhatta and Director Mr. Kiran Pandit, who were involved in this project from the very beginning and made valuable contributions during the drafting process.

I would like to express my sincere appreciation to all the stakeholders who actively participated in the process of finalizing the Nepal Green Finance Taxonomy as following:

(i) **Peer Learning Visit** - In refining the draft, NRB significantly benefited from a Peer Learning Visit organized by the Alliance for Financial Inclusion (AFI) to the Financial Regulatory Commission of Mongolia (FRC). During the peer learning exercise held in Ulaanbaatar, Nepalese delegates gained valuable insights from Mongolia's experience in drafting and implementing Inclusive Green Finance (IGF) taxonomy. I am especially grateful for the support provided by the officials at FRC and AFI.

(ii) **Stakeholder Interaction Program** – Stakeholder interaction programs were held to review the draft of the Nepal Green Finance Taxonomy, collect inputs and feedbacks from a diverse array of stakeholders, which included representatives from government ministries, Bank and financial institutions, Developing Partners, NGOs, INGOs, and various concerned associations. Following these programs, the draft of the Nepal Green Finance Taxonomy was made available

for open feedback on NRB's website. A significant feedback was received from various stakeholders, including the Ministry of Finance, Nepal Bankers Association (NBA), Development Bankers Association of Nepal (DBAN), Asian Development Bank (ADB), United Nations Development Programme (UNDP), USAID Urja Nepal, and the World Bank, among others.

(iii) **AFI Peer Review** – The draft of the taxonomy was also submitted to AFI for Peer Review. We received constructive feedback from Bangko Sentral ng Pilipinas (BSP) and Bank Negara Malaysia. I would like to acknowledge and appreciate the valuable insights provided by these institutions.

(iv) **Finalization of the Green Finance Taxonomy -** The Green Finance Taxonomy was then finalized by the NRB's Green Finance Taxonomy Steering Committee & Working Committee, bringing it to its present state.

Lastly, I would like to extend my thanks to all the stakeholders who contributed to this process but have not been mentioned above. Your efforts are deeply appreciated.

Guru Prasad Paudel
Executive Director, Banks & Financial Institution Regulation Department

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Abbreviation and Acronyms

BFIs	Banks and Financial Institutions
COP	Conference of Parties
DNSH	Do No Significant Harm
ESG	Environmental, social, and governance
ESRM	Environmental and Social Risk Management
GRID	Green, Resilient and Inclusive Development
ICMA	International Capital Market Association
LTS	Long Term Strategy for Net Zero Emission
MoF	Ministry of Finance
MoFE	Ministry of Forests and Environment
MSMEs	Micro, Small and Medium-sized Enterprises
NAP	National Adaptation Plan
NDC	Nationally Determined Contributions
NIA	Nepal Insurance Authority
NRB	Nepal Rastra Bank
NSIC	Nepal Standard for Industrial Classification
ODA	Official Development Assistance
R & D	Research and Development
SDGs	Sustainable Development Goals
SEBON	Securities Board of Nepal
SIS	Supervisory Information System
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change

Executive Summary

Background	Adhering to the Monetary policy for 2022/23, Nepal Rastra Bank prepared a Green Finance Taxonomy to encourage the flow of domestic green finance to facilitate green bonds, climate risk reporting and capital needs for the financial sectors. The Green Finance Taxonomy is a classification of a list of economic activities (assets, projects, and sectors) eligible to be defined as “green” or environmentally sustainable. This classification aims to help financial sector actors identify, track, and demonstrate the credentials for their green activities and direct the sector capital, resources, and capacity towards Nepal’s green, resilient, and inclusive economy.
Process	Nepal Rastra Bank (NRB), Securities Board of Nepal (SEBON), Nepal Insurance Authority (NIA), Ministry of Finance (MoF) and Ministry of Forests and Environment (MoFE) constituted a governance mechanism (Working and Steering Committee) to facilitate the Green Finance Taxonomy development process. The process received input and feedback from representatives of policymakers, government organizations, financial institutions, businesses, project developers, international organizations, industry experts, and civil society institutions. Details of the Steering and Working Committee can be found in Annex 4h.
Overarching objective	Develop a green taxonomy classification system that provides guidance and incentives for the financial services sector to finance green innovations and to green the whole financial system.
Target users	Wider financial sector actors: • Focused on Banking and Financial Institutions, Capital, and Insurance market community of practice. • Taxonomy-aligned investment and financial products and their application are open to the private sector, MSMEs, pension funds, trust funds and other financial sector actors and communities of practice.
Environment Objectives/ Principles	Four core environmental objectives/principles to guide green investment. • **Core Principle 1**: Climate Change Adaptation • **Core Principle 2**: Climate Change Mitigation • **Core Principle 3**: Natural Resource Conservation and Management • **Core Principle 4**: Pollution Prevention and Control Do No Significant Harm’ (DNSH) remains central to these four guiding core principles. In addition, economic activities should integrate social and inclusion aspects across all the principles**.**

Classification Code	No industrial classification code has been referenced while classifying economic activities.
References	National and Sectoral Policies relevant to green finance and more specific to • National Climate Change Policy, 2019 • Environment Protection Act, 2019 • Nationally Determined Contribution (NDC), 2020 and NDC Implementation Plan, 2023 • National Adaptation Plan (NAP), 2021 • Nepal's Long-Term Strategy for Net Zero Emissions (LTS), 2021 • Sustainable Development Goals (SDGs) 2015-2030 • Green, Resilient and Inclusive Development (GRID) Approach, - Kathmandu Declaration 2021
Sectoral scope	The sectors and categories of investment are based on the following aspects: • Activities as classified by Nepal Standard Industrial Classification (NSIC) • Lending areas of BFIs as categorised and approved by Nepal Rastra Bank, as guided by Unified Directives and Monetary Policy • Capital Market areas as categorised by the Securities Board of Nepal (SEBON) as guided by the Securities Act • Non-life insurance categories as directed by the Nepal Insurance Authority guided by the Insurance Act 2022 and directives for non-life insurance products. • National Climate Action Commitments/Targets expressed under the UNFCCC process (NDC, NAP, LTS). • Examples from international green finance taxonomies. The common ground rules have been set as common criteria or grounds for classifying the economic sectors based on the environmental objectives/principles of the green finance taxonomy. These common ground rules are the basis for categorising green finance economic activities to the broader financial sectors.
Screening criteria	For each category, a list of "green or transformative", "amber or transitional", and "red or non-compliant" lists of activities are classified using a traffic light system. • **Green or Transformative**: Economic activities and/or financial products which adhere to core principles and help achieve climate and environmental objectives. • **Amber or Transitional**: Economic activities and/or financial products that are on a transition pathway to becoming climate resilient and green but need some remedial measures to be able to meet climate and environment objectives fully.

	• **Red or non-compliant**: Economic activities and/or financial products that are not compliant with environmental objectives. The classification under economic activities is categorized based on principle and whitelist-based approach. The principle-based approach focuses on defining a set of core guiding principles to assess the economic activities and the whitelist-based approach focuses on identifying lists of eligible projects/activities. 'Do No Significant Harm' (DNSH) remains central to these guiding core principles.
Treatment of risk	• Investments that comply with core principles to align with national policies, plans, and regulatory frameworks on climate change and the environment and sectoral plans and procedures and contribute to SDG targets. • Regulators support strengthening potential data gaps and encourage more robust and decision-useful taxonomy-aligned investment disclosures from market participants without burdening businesses. • Application of green finance taxonomy followed by due diligence procedure of investment. For example, Environmental and Social Risk Management Guidelines, 2022 etc.
Application	The Green Finance Taxonomy is a tool for financial sectors to classify their economic activities as "green", "amber", or "red". The taxonomy would help make informed decisions on green finance activities and determine green investments. The classified economic activities are, however, not a mandatory list of investments for the investors. Market actors are encouraged to promote "green" activities and provide transparent reporting on investments made in "green", "amber" or "red "sectors to receive green finance credentials from the regulators- with evidence that the assets are taxonomy aligned. The sector actors willing to invest in green economic activities should adhere, verify, track and report taxonomy-aligned investments in the simplified version of the financial and non-financial disclosure reporting templates. The financial sectors can propose or set an annual target to direct their resources towards eligible green financing activities. No stringent measures on verification and certification have been proposed to verify green financing; however, the financial sector actors must comply with global good practices to meet the compliance with evidence to justify the green investments from their economic activities, including while extending financing to the identified sectors.
Financial Sector Roles	Financial sector actors play a crucial role in de-risking economies, attracting green investment, and creating green jobs. They must lead in achieving national climate action targets, reducing waste,

and Responsibilities	preventing pollution, and safeguarding natural resources by focusing on sustainability and low-carbon development. They should develop capacity and skills to set ambitious, credible, and verifiable net-zero, green, resilient, and inclusive investment plans, reducing the risk of greenwashing. They should create a level playing field on green finance and work with the public sector, regulators, and supervisors to introduce innovative green financing instruments and financial products. All actors in the financial ecosystem (banks, investors, issuers, and regulators) need awareness and capacity to implement green finance taxonomy in investment decisions. Market participants should adhere to the green finance taxonomy, verify compliance, advise clients, and track progress towards sustainability goals. They should also encourage remedial measures for activities identified as "red or non-compliant" and suggest additional measures for activities identified as "amber or transitional" to "green or transformative."
Supporting regulation	• Environmental Protection Act 2019 and Regulation 2020 • Industrial Enterprise Act 2020 • Disaster Risk Reduction and Management Act 2017 • Local Government Operation Act 2017 • Motor Vehicle and Transport Management Act 1993 and Regulation 1997 • Forest Act 2019 and Rules 2022 • Water Resources Act 1992 • Electricity Act 1992 • Other sectoral national regulations and rules relevant to economic activities The prohibited activities under the laws, rules and regulations will be treated as exclusion list under the taxonomic classification as they undermine the efforts towards green, resilient, and inclusive development.

Chapter 1. Background

1.1 National Context

The Government of Nepal has formulated appropriate national and sectoral policies and regulatory frameworks to promote climate action and a green economy. The prevailing policies and regulatory framework support the transition of national economic growth towards a green economy, sustainable development, and accelerated climate action. The Environment Protection Act, National Climate Change Policy, Nationally Determined Contributions (NDC), and National Adaptation Plan (NAP) are some of the policies and plans that guide Nepal's commitment to climate change adaptation and mitigation. These aspects are critical to integrate and maintain into the development model as Nepal aspires to graduate into a middle-income developing country by December 2026. Nepal has already adopted the Green, Resilient and Inclusive Development (GRID) approach in September 2021, which aims to provide systematic strategies to create long-term green growth, climate action and sustainable development for all. Also, Nepal's development framework has integrated national targets related to the Sustainable Development Goals (SDGs) to end poverty and other deprivations, improve economic growth, tackle climate change, and preserve natural resources.

Nepal requires substantive financial resources to meet climate and environmental ambitions. Based on several international commitments, it is estimated that Nepal needs about USD 77 billion[1] to implement adaptation, mitigation, and sustainable development targets by 2030. The resource requirements are vast, and the public sector alone cannot meet the estimated financial needs for climate action targets and green growth aspirations. The private sector plays a crucial role in bridging the financial resources gaps by enhancing their technical skills and capabilities and streamlining their "green" investments, which can complement and contribute to the government's efforts to invest in sustainable solutions and create a green future.

Nepal needs to green its financial system in the context of increasing climate vulnerability, reducing carbon emissions, and accelerating adaptation and resilience actions. The financial sectors in Nepal are at the early stage of promoting green finance. The Banking and Financial Institutions (BFIs), capital markets and insurance companies have taken various initiatives to transition towards green and sustainable financing. Nepal's financial system is predominantly dominated by banks, with most of their assets invested in brown sectors such as agriculture, industries, construction, hydropower, and real estate, exposing them to high environmental and climate risks[2]. BFIs lending is categorised into 18 sectors based on the latest supervisory information system (SIS) and Unified Directives 2021 of the Nepal Rastra Bank (NRB). NRB has further prioritised directed lending for agriculture, energy, tourism, and small, micro, cottage, and medium industries (MSMEs). However, there is no systematic breakdown of lending, investment tracking and monitoring in the "green" sectors.

[1] Cost estimation: 35.95 billion USD for NDC implementation plan; 46.2 billion USD for LTS implementation with additional measures; 21 billion USD for NAP and 19.68 billion USD annual average requirements per year for SDGs
[2] https://greenfdc.org/green-finance-for-the-bri-country-nepal-can-lessons-from-china-help/

The Insurance sector in Nepal has huge potentials to transition towards green finance. The Government of Nepal has initiated the agriculture and livestock insurance program. There are 14 private non-life insurance companies in Nepal that provide agriculture and livestock insurance services.[3] The federal government offers an 80 per cent subsidy on insurance premiums in the sector. Besides, the non-life insurance covers insurance for cold storage, hydropower generation, renewable energy generation, electricity transmission and distribution, cable cars, and tourism[4]. Furthermore, few insurance companies have been piloting index-based flood insurance, which covers possible damage caused by flood hazards based on an objectively measured parameter. However, there is a need to address large-scale disasters through a regulatory framework, increase coverage for transitioning to a risk-based regime, and reduce Nepal's rising economic cost of climate change.

Nepal's capital market is at the early development stage to attract green finance. The capital market is gradually developing to meet the financial requirements, particularly for the real sectors of the economy. The Securities Board of Nepal (SEBON) has incorporated green bond or debenture provisions through the updated Security Registration and Issuance Regulation[5] (seventh amendment in 2023). In the past, three energy and four agriculture bonds[6,7] have been issued so far in Nepal's capital market. There are also growing trends in the promotion and building of ESG-related policies and practice capacity by SEBON-listed companies through the development partner's support.

Greening the financial system requires an integrated approach that looks at the entire value chain from investors to project developers and implementors, with the regulatory body incentivizing and assisting these various stakeholders. There is a need to streamline various green initiatives taken by the BFIs, insurance, capital market and broader private sector market participants. There is an opportunity to promote and leverage sustainable financing through green products and instruments in Nepal. Greening the financial system would encourage more private sector investment in environmentally friendly industries and meet the financial needs that Nepal has raised ambitions for a green future and climate action. The financial sector urgently needs to transform its operation from business-as-usual to meet the objective of a green, resilient, and inclusive development approach. For this reason, there is a need for a shared definition of "green" to leverage financing to meet the policy targets. Thus, this green finance taxonomy is expected to guide Nepal's regulators and financial sector actors to identify, track and demonstrate their green activities'' credentials, direct the sector capital, resource, and capacity, and attract international finance.

1.2 Objectives and Scope of Green Finance Taxonomy

The guideline on Green Finance Taxonomy provides an approach and processes for regulators, all financial sector stakeholders, and market participants to transition towards investments in green finance by directing resources through their economic activities in Nepal. This guideline aims to provide the following:

[3] National Insurance Authority. https://nia.gov.np/ Accessed on June 22, 2023

[4] NIA.2023. Non-life insurance directive. Nepal Insurance Authority https://nib.gov.np/wp-content/uploads/2022/12/2.-निर्जीवन-बीमकको-लगानी-निर्देशन.pdf

[5] 4J6mY5hhWf86mzkHVzIcr83TG8g8YYLpz5miKJrt.pdf (sebon.gov.np)

[6] https://www.cdsc.com.np/BondandDebenture

[7] Agriculture Development Bank issues 6 billion agricultural bonds | Banks Nepal | Banking and financial Info

- **Standard definition and classification** of green activities in Nepal. This will include not only activities that involve huge resources but also those low carbon initiatives and adaptation projects that involve vulnerable populations.
- Provide **Banks and Financial Institutions (BFIs) and non-BFIs, including Insurance, Capital market and wider private sector actors with a guide** to identifying green projects for investment.

The green finance taxonomy expects to:

- **Provide clarity on the green investment and projects,** which will be helpful for banks and the broader financial sector, regulators, implementing agencies, including BFIs/non-BFIs and other stakeholders to effectively and efficiently mobilise and redirect their investment/credit flows, including private sector investments towards Nepal's sustainable development agenda.
- **Prevent 'greenwashing' and guide future policy developments** such as incentives for green projects.
- **Attract foreign investment looking to invest in green projects** and drive Official Development Assistance (ODA) from ESG-aware countries, DFIs and impact fund.
- Help the government and financial sector actors to **align and mobilize resources** for low-carbon development and resilience-building activities. It will also help in monitoring green finance flows in the country.
- **Create green jobs** in the BFI/non-BFI sector.
- Provide a springboard **for more inclusive and green financing policies and initiatives** from the financial sector regulators and market participants.

1.3 Users of the Green Finance Taxonomy

The Green Finance Taxonomy users are the financial sectors in Nepal that have been under the guidance of supervisory and regulatory bodies like Nepal Rastra Bank, Securities Board of Nepal (SEBON) and Nepal Insurance Authority (NIA). The intended target users are as follows:

- Banks and Financial institutions (BFIs) supervised and regulated by Nepal Rastra Bank which include:
  - Commercial Banks (Class A)
  - Development banks (Class B)
  - Finance institutions (Class C)
  - Microfinance institutions (Class D)
  - Nepal Infrastructure Bank Limited
- Insurance market regulated by the Nepal Insurance Authority (NIA) includes life insurance, non-life insurance, reinsurance, and micro-insurance.
- Capital market regulated by the Securities Board of Nepal (SEBON) includes merchant banks.

The Green Finance Taxonomy expects to guide broader financial sectors in Nepal to green the financial system by integrating non-financial values of the economic activities and business. Further, this will serve as a guide to the private sector, including Micro, small and medium enterprises (MSMEs), pension funds, impact investments, venture capital, investment or trust funds (such as Employees Provident

Fund[8] and Citizen Investment Trust fund[9]), Deposit Credit Guarantee funds, fintech and cooperatives that are willing to mobilise different green financing investments and instruments, for example, green bonds, blended finance, venture capital, debt and equity, impact investing, result based financing, carbon offset, carbon market, carbon tax, green loans & guarantees, green insurance etc.

In addition, the Green Taxonomy will support government of Nepal's efforts towards implementing climate change adaptation and mitigation priorities as outlined in its National Adaptation Plan (NAP) and Nationally Determined Contributions (NDC). In the long run this guide will help label the priority projects of the government to address climate change as taxonomy aligned.

1.4 Green Finance Taxonomy Development Process

The development of green finance taxonomy followed the six actions mentioned in the conceptual framework developed by the World Bank[10] (Figure *1*) to identify what qualifies as green under the process for its use in the financial sector in Nepal.

The green taxonomy classification includes setting a strategic goal and environmental objectives/principles, identifying, and assessing sectors and investments to help make investment decisions, and incentivising green investments. The taxonomy sets out its core principles in setting out respective investment regimes for integration, requiring greening the assets, projects, and sectors.

Figure 1: Action proposed for the development of National Green Taxonomy

The overall taxonomies at the international level generally follow three approaches–- ***whitelist-based***, ***technical screening criteria-based*** *and* ***principle-based***.[11] There could be overlap in these approaches and they can be used independently or in combination.

[8] EPF manages Provident Fund (PF) in Nepal on behalf of the Government of Nepal (GoN) for government, public enterprises, and private sector employees. It has been entrusted to manage Contributory Pension Scheme for the employees of Federal GoN and other public sector employees appointed from Fiscal Year 2076/77 as per the Pension Fund Act, 2075. Its relationship with GoN is routed through Ministry of Finance

[9] Citizen Investment Trust is owned by the Government of Nepal as a public financial organization. It operates and manages various types of retirement schemes / programs as well as various unit schemes and mutual fund program for both domestic and foreign to increase the investment opportunities along with the dynamic development of the capital market to contribute economic development of the nation.

[10] World Bank. 2020. Developing a National Green Taxonomy: A World Bank Guide. World Bank. June 2020

[11] CBI. 2021. Global Green Taxonomy Development, Alignment, and Implementation. Climate Bonds Initiative.

- **Whitelist-based approach** identifies lists of eligible projects and activities and provides detailed eligibility descriptions. *E.g.: China, Mongolia, and Russia taxonomies.*
- **Technical Screening Criteria-based approach** uses specific quantitative or qualitative thresholds and screening criteria to classify sustainable activities. *E.g.: EU and ASEAN taxonomies*
- **Principle-based approach focuses** on defining a set of core guiding principles to assess economic activities. Egg: Green Bond Principle published by the International Capital Market Association (ICMA), Japan and Malaysia taxonomies.

Based on the approach adopted by the international taxonomies and market practices, Nepal's Green Finance Taxonomy adopted a principle-based and white-list-based approach for classifying the relevant economic activities for selecting and assessing specific green investments. The approach follows the list of green (transformative), amber (transition) and red classifications of economic sector activities, which provides a solid signal to investors and other stakeholders and assists their decision-making by identifying the non-financial benefits of a given investment.

Following are the other process of developing the green finance taxonomy.

1. Leadership from the NRB Governance mechanism for guidance and feedback.

The Green Finance Taxonomy was developed with the guidance of Steering and Working Committees led by NRB, SEBON and NIA. These committees were used to take timely advice and feedback and enrich the information and substance of the green finance taxonomy.

2. Review of International Green Finance Taxonomy.

Most taxonomy efforts in the region and globally follow a science-based and dynamic approach, acknowledging alignment with other taxonomies.

3. Stakeholder consultation to collect and validate the information.

The relevant stakeholders were consulted by engaging different sectoral ministries, departments, and experts. The consultation meetings were conducted with user groups from BFIs, insurance, capital markets sector and broader market participants, including policymakers, international organisations, and civil society organisations.

Chapter 2 Green Finance Taxonomy for Nepal

2.1. Definition of Green Finance Taxonomy

There has been a significant cultural shift towards sustainability and climate change awareness globally in recent years. Alongside this, there is a considerable increase in the number of investment products being labelled and marketed as Environmental Social and Governance (ESG). This, in theory, is positive; however, there is no official definition of which economic activities count as environmentally sustainable; concerns have been raised about whether the investment plans or financial products are truly sustainable and ethical or whether it's merely a marketing tool used to sell a financial product. This misleading of investors is known as greenwashing[12].

To address this, green taxonomy creates a benchmark to ensure that the measurement is objective and introduces consistency throughout the economy, thereby creating clarity for investors. For this reason, governments worldwide are recalibrating their financial system to shift the business-as-usual course of development towards achieving sustainable development, which combines financial, social, and environmental value. The transition to sustainable development requires new financial and corporate governance rules and decision-making to factor in social and environmental dimensions to achieve a low-carbon, regenerative and more circular economy[13].

Nepal's taxonomy is a cornerstone of the country's climate change and sustainable development goals and a vital market transparency tool. It helps direct investments to the economic activities most needed for the transition, in line with Nepal's adaptation, mitigation and environmental objectives. Put simply, green finance taxonomy is a system that aims to determine whether an investment is sustainable or not. It uses thresholds and targets to assess and identify activities or assets that meet key climate, social, green, or sustainable objectives. The taxonomy aims to help financial actors determine which investments can be labelled as green or sustainable for their jurisdictions[14]. Likewise green taxonomy also supports harnessing Nepal's ambition towards Net Zero emissions and facilitates comparative advantages to benefit from international carbon marketing.

This milestone document on Green Taxonomy is a crucial resource for the financial sector, supporting the shift towards a green economy by uncovering new market opportunities, such as carbon trading. It also plays a key role in managing environmental and social risks, attracting capital that meets green and ESG standards, and creating financial products and services that foster sustainable investments and projects. Green taxonomy is a useful instrument with several complementary purposes.

- Taxonomy helps prevent greenwashing.
- Taxonomy helps investors make informed investment decisions.
- Taxonomy develops credentials for channeling investment towards sustainable or green economic activities and assets.

[12] Greenwashing is the act of providing the public or investors with misleading or false information about the environmental impact of their product or operations.
[13] Principles of Sustainable Finance by Dirk Schoenmaker, Willem Schramade: SSRN
[14] Sustainable Finance: Bridging the Gap in Asia and the Pacific | ESCAP (unescap.org)

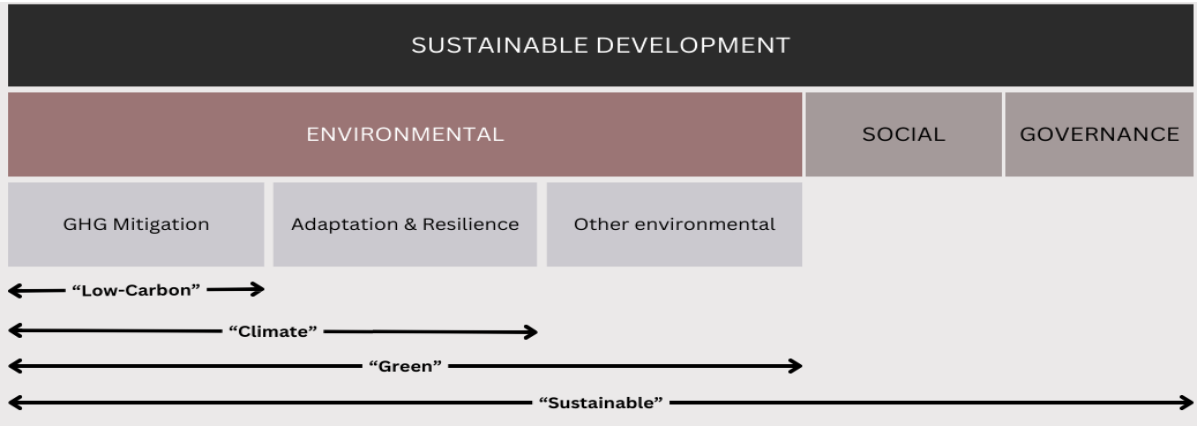

Figure 2: Definition of different types of Finance

Following are vital definitions of the various types of finance to promote green and sustainable investments.[15]

- **Low carbon finance** refers to the financing of activities that support the transition to a low-carbon economy. This includes investments in renewable energy, energy efficiency, and other measures that reduce greenhouse gas emissions.
- **Adaptation and resilience finance** refers to financing activities supporting the transition to a climate-resilient economy. This includes investments in measures that reduce the vulnerability of communities, ecosystems, and economies to the impacts of climate change.
- **Climate finance** refers to local, national, or transnational financing drawn from public, private and alternative sources of financing- that seeks to support mitigation and adaptation action that will address climate change.
- **Green finance** is broader in scope than climate finance and approaches for organised investment activity for transitions toward low-carbon, climate, and inclusive development pathways. 'Green finance' generally conveys something broader than climate finance by addressing other environmental objectives and risks. Climate finance is a subset of green finance which is critical to reduce emissions and allow countries to adapt to the adverse effects and reduce the impacts of climate change.[16] It tends to be understood with a greater focus on greening broad flows of private investment rather than mainly concerning public and public-leveraged financial flows (UNEP, 2016). Green finance has evolved to use various instruments and approaches (regulatory, grant, market, debt/equity, fiscal, guarantee etc) in economic decision-making to finance multiple activities that balance financial return and safeguard social and environmental factors.
- **Carbon Financing:** Carbon financing is an innovative funding tool that places a financial value on carbon emissions and allows companies wishing to offset their own emissions to buy carbon credits earned from sustainable projects. The taxonomy can integrate projects qualifying for participation in the Verified Carbon Market (VCM) into its array of green financing options. This involves the identification of investment-worthy projects tailored for consideration by financial institutions and other market participants, particularly BFI's.

[15] Adopted from Toolkits for Policymakers to Green the Financial System (worldbank.org)
[16]UNEP. 2016. Inquiry: Design of a Sustainable Financial System. Definitions and Concepts, United Nations Environment Programme, Geneva

- **Sustainable finance** refers to the process of considering environmental, social, and governance (ESG) considerations when making investment decisions in the financial sector. This leads to increased longer-term investments in sustainable economic activities and projects. Sustainable investing covers a range of activities, from putting resources into green energy projects, channelling private resources into carbon-neutral projects to investing in companies that demonstrate social values such as social inclusion or good governance by having more women and under-represented stakeholders on the board. The sustainable green finance also includes inclusive approaches and emphasizes on the inclusive elements of the taxonomy. It particularly involves making green finance available for individuals and MSMEs to build resilience to the impacts of climate change, adapt to the extreme climatic events, and transition to low carbon development activities.

2.2. Strategic Goal

Strategic Goal Statement

Develop a green taxonomy classification system that provides guidance and incentives for the financial services sector to finance green innovations and to green the whole financial system.

2.3. Environmental Objectives/Principles

Four core principles guide Nepal's Green Finance Taxonomy (Figure 2). These principles are defined based on national policies, plans, and regulatory frameworks on climate change and the environment and sectoral plans and policies, including the transition required for the Green, Resilient and Inclusive Development (GRID) approach.

- **Core Principle 1**: Climate Change Adaptation (A)
- **Core Principle** 2: Climate Change Mitigation (M)
- **Core Principle** 3: Natural Resource Conservation and Management (N)
- **Core Principle** 4: Pollution Prevention and Control (P)

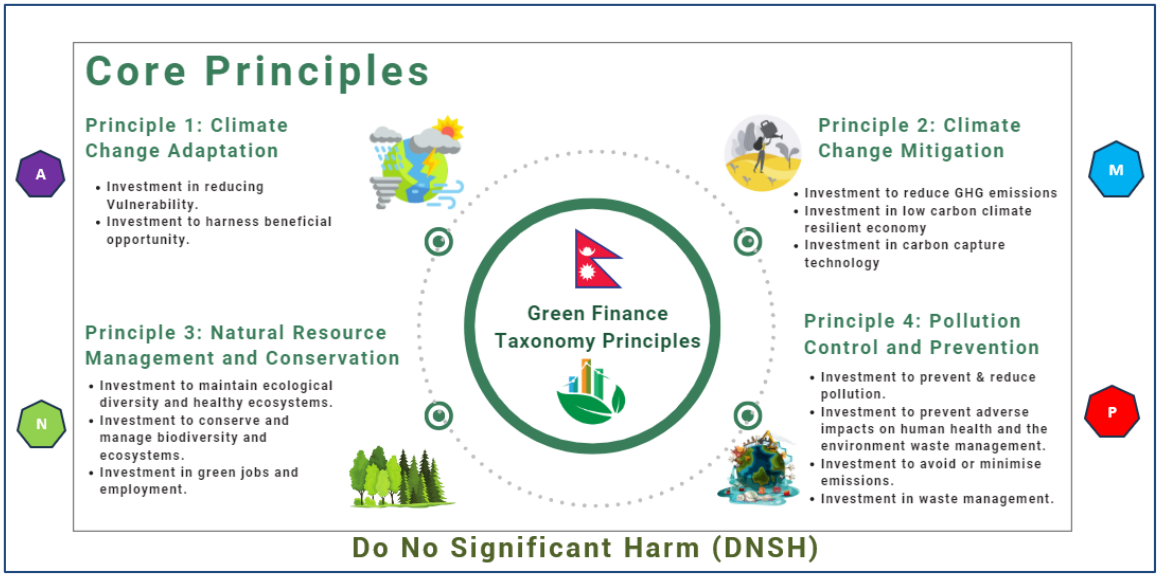

Figure 3 Core principles of green finance taxonomy

Do No Significant Harm' (DNSH) remains central to these four guiding core principles. In addition, social and inclusion aspects should be considered across all the principles**.** The taxonomy-aligned investments should prioritise specific populations of clients e.g. deprived sector, migrants to deliver financial inclusion. For example, Micro, Small and Medium Size Enterprise (MSMEs) must be defined and prioritised. The concept of "underserved communities" or "indigenous populations" should be clarified to all the BFIs, insurance, and capital market sectors to identify the target borrowers that they serve.

Core Principle 1: Climate Change Adaptation

Climate Change Adaptation is the process of adjustments to actual or expected changes to the climate and its effects. The economic activities should meet the objectives and targets set by Nepal's Climate Change Policy, National Adaptation Plan (NAP), Local Adaptation Plans of Action (LAPA), and other sector climate change priorities.

Climate change adaptation aims to increase the resilience to withstand the adverse physical impact of current and future climatic shocks. Economic activity should contribute to the following objectives:

i. Reduce the vulnerability and risks from the harmful effects of climate change (like Glacier Lake Outburst Flood, more intense extreme weather events, or food insecurity) in the economic sectors.
ii. Harness the most potential beneficial opportunities associated with climate change (for example, increased yields in some regions, favourable farming practices, regenerative agriculture) in the economic sectors.

Core Principle 2: Climate Change Mitigation

Climate change mitigation refers to reducing the flow of heat-trapping greenhouse gases into the atmosphere, either by reducing sources of these gases (for example, the burning of fossil fuels for electricity, heat, or transport) or enhancing the "sinks" that accumulate and store these gases (such as forests, and soil). The economic activities must align with Nepal's aspiration to minimise emissions and sustainably achieve net-zero emissions by 2045 as envisioned by Nepal's Long-Term Strategy to Net Zero Emissions and Nepal's Nationally Determined Contributions (NDC) and the implementation plan. Further, the economic activity should align with limiting global temperature rise to no more than 1.5^{o}C in alignment with the Paris Agreement.

The objective of climate change mitigation is to reduce or prevent the emission of GHG into the atmosphere. Economic activity can be considered to meet climate change mitigation if such activity makes a substantial contribution to the following objectives:

i. Reduce greenhouse gas emissions from economic activities, such as burning fossil fuels for electricity, heat, or transport.
ii. Avoid greenhouse gas emissions by transitioning to low carbon and climate-resilient economy by promoting mitigation strategies and actions, including energy-efficient, clean, and sustainable investments.
iii. Enhance the carbon sink by investments in carbon capture technology and practices which accumulate and store these greenhouse gases in forests, soil etc.

Core Principle 3: Natural Resource Management and Conservation

The healthy ecosystems and biodiversity principle focuses on incorporating management, conservation, and restoration mechanisms of natural resources, ecosystems, and biodiversity. The economic activities should align with Nepal's National Climate Change Policy 2019, National Forest Policy 2018, Forest Act 2019, and its Regulations 2022, National Parks, and Wildlife Conservation Act 1973, Environment Protection Act 2019, and its Regulations 2020. BFIs should consider the impact of the economic activity and the overall business in the broader ecosystem and natural resources.

This principle aims to promote the sustainable use of natural resources and minimise or eliminate adverse effects from any economic activity. The economic activities should contribute to the following for resource management and conservation:

i. To maintain ecological diversity and healthy ecosystems.
ii. To conserve and manage biodiversity and ecosystems for future generations.
iii. To harness green jobs and employment facilities for people.

Core Principle 4: Pollution Prevention and Control

The pollution prevention and control principle focus on avoiding or minimising environmental impacts by implementing pollution control mechanisms. The economic activities should align with National Environment Policy 2019, Environment Protection Act 2019 and its Regulations 2020 and environment standards.

This principle aims to prevent and manage pollution, ensure environmental protection, and promote good public health. The economic activities should ensure the following for pollution control and management.

i. Prevent or reduce air, water, noise, and land pollution where the economic activity takes place, including appropriate use of products, equipment, and techniques.
ii. Improving levels of air, water, or soil quality in the areas in which economic activity takes place.
iii. Preventing or minimizing any adverse impact of economic activities on human health and the environment
iv. Avoid or minimize emissions of short and long-lived climate pollutants.
v. Ensure proper waste management practices and promote circular economy models.

Do No Significant Harm (DNSH)

Do No Significant Harm (DNSH) ensures that an activity that contributes to one environmental objective/principle does not cause significant harm to another objective/principle. In addition, an activity interacts directly or indirectly with the surrounding environment. While the activity may contribute towards environmental objectives/principles, it may cause unintended significant harm to the broader environment. Therefore, all activities must ensure Do No Significant Harm (DNSH) to the environment and the environmental objectives/principles to be eligible. The Table 1 provides criteria for causing significant harm to the environmental objectives.

Table 1 Criteria for causing significant harm to the environment objectives.

Environmental Objectives/Principles	Conditions for causing "significant harms"[17]
Climate Change Adaptation 	Where that activity leads to an increased adverse impact of the current climate and the expected future climate, on the activity itself or on people, nature or assets including maladaptation practices.
Climate Change Mitigation 	Where that activity leads to significant greenhouse gas emissions
Natural Resource Management and Conservation 	Activity is detrimental to the • good condition and resilience of the ecosystem. • conservation status of habitat and species, and • ecological potential of the natural resources.
Pollution Prevention and Control 	Where the activity leads to a significant increase in emissions of pollutants into air, water or land as compared with the situation before the activity started.

It is important to consider the co-benefits aspects between and within the principles. The principle is mutually inclusive also as one contributes to another and together helps to generate multiple environment benefits.

Social and Inclusion Aspects relate to social conditions that activity could harm. An economic activity may adhere to the above principles but negatively impact local communities or employees. The economic activity should adhere to the following aspects:

i. Protection of human rights
ii. Prevention from forced labour and protection of children's rights
iii. Inclusive and targeted measures for local communities, prioritisingvulnerable and marginalized populations.

[17] Do-No-Significant-Harm-Handbook.pdf (fs-unep-centre.org)

Chapter 3 Green Finance Taxonomy Application Procedures

3.1. Sector Classification

Proposed sectors: The sectors and categories of investment are based on the following aspects:

- Sectors are considered based on the Nepal Standard Industrial Classification (NSIC).
- Lending areas of BFIs as categorised and approved by Nepal Rastra Bank, as guided by Unified Directives and Supervisory Information System (SIS).
- Capital Market and Specialised Funds regulated by the Securities Board of Nepal (SEBON).
- Non-life Insurance categories as directed by the Nepal Insurance Authority guided by the Insurance Act 2022 and directives for non-life insurance products.
- National climate action commitments expressed under the UNFCCC process (NDC, NAP, LTS).
- Examples from international green finance taxonomies.

Table 2 below shows the sectors and investment categories that classify the green finance taxonomy. These industries/sectors are further sub-categorised for defining activities/investments.

Table 2: Proposed sectors and categories of investment

Industry/Sector
1. Agriculture and Forest related
2. Fishery Related
3. Mining Related
4. Agriculture, Forestry & Beverage Production Related
5. Non-food Production Related
6. Construction
7. Power, Gas and Water
8. Metal Products, Machinery & Electronic Equipment & Assemblage
9. Transport, Communication and Public Utilities
10. Wholesaler & Retailer
11. Finance, Insurance
12. Real Estate
13. Tourism Service
14. Automotive and other services
15. Health Care and Waste Management
16. Education Services
17. Consumption Loan

The procedure for the application of green taxonomy is illustrated in Figure 3 below. It presents a framework on adherence to core principles and assesses the alignment with the national policy and priorities on climate change, environment, and resource management. The Green Finance Taxonomy provides a classification list of the proposed investment or financial products. The verified green finance investment will

go through the reporting and supervision process to justify its actual investment with, generating an impact on economic, social, and environmental values.

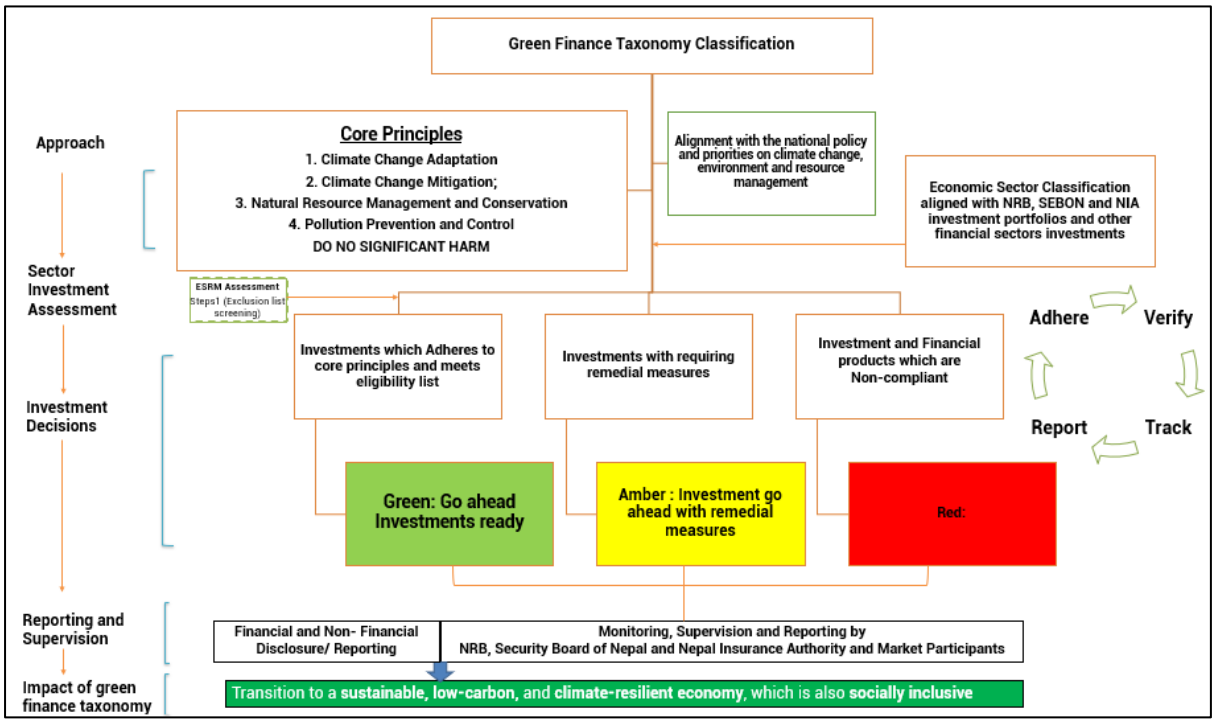

Figure 4: Procedure for application of green taxonomy

3.2. Screening and Assessment of Specific Investments

Based on the principle-based and white-list based approaches, different economic activities for different sectors and sub-sectors have been identified that adhere to the principles of Nepal Green Finance Taxonomy. The principle-based approach focuses on defining a set of core guiding principles to assess the economic activities and the whitelist-based approach focuses on identifying lists of eligible projects/activities. Further, common ground rule has been defined as common key criteria for sectors. The economic activities wise industrial level sub-categories classification is presented in Annex 2 following the three screening criteria (Green, Amber and Red).

3.2.1 Common Ground Rule for specific investments in the sectors

The common ground rule sets common criteria or grounds for classifying the specific investments in the key investment sectors with specific sustainability outcomes. The environmental objectives/principles and common ground rules have set the basis/ground for defining the list of activities for each investment sector and classifying activities as “green”, “amber”, or “red”. The common ground rules primarily will guide the users of Green Finance Taxonomy with common essential options for activities to be classified as “green”. While defining the common ground rule, all relevant national economic sectors have been covered and related sectors have been grouped and further elaborated in Annex 1. The summary of broad common ground rules is explained below.

1. Climate and environmentally Simple, Measurable, Attainable, Realistic and Timebound (SMART) practices (nutrient, water, energy, soil, irrigation).
2. Sustainable natural resources (flora, fauna, land, water, air, and agriculture) conservation and management practices.
3. Use of clean energy, energy efficiency and energy optimization.
4. Certified products, processes, methods, or tools following national and international standards.
5. National and international codes, standards and practices for building and construction, infrastructures, and applications of input (fertilizer)
6. Local seeds, knowledge, technologies, practices, and environmentally sound products.
7. Nature-based practices and approaches (Nature-based solutions, nature-based tourism).
8. Promoting circular economy, including recycling and recyclable products.
9. Environment and climate-resilient technologies, practices, and products (stress tolerant seed or breeds, climate smart agriculture, green technologies).
10. Technologies for pollution control and prevention (Air, water, noise, soil, radioactive, thermal, litter, heath waste etc.)
11. Any credit facilities, financing instruments, insurance schemes, fintech, and bonds are classified under green activities under the taxonomy, such as sustainable banking, green bonds, and green insurance.
12. Green/sustainable procurement, including hire/purchase.
13. Green R&D: Research, development and innovation in the economic activities that directly contribute to the green transition of society-specific solutions and technologies and basic knowledge.
14. Information communication and technology (ICT)–- digital development – Early Warning System (EWS) etc.

3.2.2. Classification of Activities

Any investment in activities must first be evaluated according to which sector or sub-sector it belongs to. In some instances, an investment may be relevant to multiple sectors, but it will be evaluated based on the aggregate performance of the activities towards green objectives. Once the investment has been identified as part of a specific sector or sub-sector, the alignment of each of its components must be evaluated[18] according to the definition of Table 3.

For all economic sectors, investment proposal assessment should be carried out following Annex 3, adhering to the principles and economic activities classification referred to in Annex 2. 'Do No Significant Harm' (DNSH) remains central to these guiding core principles. In the case of BFIs, Steps 1 and 2 of the Environment and Social Risk Management (ESRM) guidelines shall be applied first and then the taxonomy in terms of classifying activities.

[18] Sustainbaility traffic light for financial products", KPMG, 04/10/2022, https://kpmg.com/de/en/blogs/home/posts/2022/10/nachhaltigkeitsampel-fuer-finanzprodukte-en.html

Table 3: Classification of Economic Activities

Classification	Definition	Decision Making
Green or Transformative	Economic activities and/or financial activities which adheres to core principles and help achieve climate and environmental objectives	Investment Ready
Amber or Transitional	Economic activities and/or financial products that are on a transition pathway to becoming green and need some remedial measures[19] to be able to meet climate and environment objectives fully.	Investment after suggestion and adoption of remedial measures
Red	Economic activities and/or financial products that are not compliant with environmental objectives.	Discourage Activities-Encourage reshaping of investments.

An investment can be found to be either “green or transformative”, “amber or transitional”, or “red” using the definition illustrated in Table 3. In this evaluation, it is important to evaluate how the investment contributes to the objectives of the taxonomy. Certain thresholds may apply for the “Amber or Transitional” category, which will help determine whether the investment is aligned with the category[20]. The classification system starts with the following questions, as per Figure 4 (defined above). Does the investment contribute to the core principles?

- If yes, does the investment significantly harm the core principles or the broader environment?
    - If no, the investment can be classified as “Green or Transformational” with focus on inclusion.
    - If yes, does the investment contribute to taking remedial action against the harmful practices?
        - If no, the investment can be classified as"Red.”
        - If yes, the investment can be classified as “Green or Transformational.”

- If not, does the investment significantly harm the core principles or the broader environment?
    - If no, the investment can be classified as “Amber or Transitional.”
    - If yes, does the investment contribute to taking remedial action against the harmful practices?
        - If no, the investment will be classified as “Red.”
        - If yes, the investment will be classified as “Amber or Transitional”.

[19] Remedial measures are risk mitigation measures that includes activities that will reduce the risk of the certain investments and harness opportunities.
[20] Overview and Recommendations for Sustainable Finance Taxonomies”, ICMA, May 2021, https://www.icmagroup.org/assets/documents/Sustainable-finance/ICMA-Overview-and-Recommendations-for-Sustainable-Finance-Taxonomies-May-2021-180521.pdf

3.3 Roles and Responsibilities

All the financial sector actors have a role in de-risking economies, attracting investment and creating green jobs for more prosperous and sustainable communities. While individuals or companies are increasingly taking the initiative to increase sustainability throughout their business operations in their communities, additional efforts are required to target business impact aligning with green finance taxonomy economic activities. For this, it needs a leadership role from the financial sector actors in achieving national climate action targets, reducing waste, and preventing pollution, and safeguarding natural resources by putting sustainability and low carbon patterns of production front at the center across business models supply and value chain by:

- All economic stakeholders must develop awareness and enhance their capabilities to integrate green finance taxonomy into their investment decisions.
- Developing skills to set ambitious, credible, and verifiable net-zero, green, resilient, and inclusive investment plans by reducing the risk of greenwashing (making false or misleading claims about an individual investment, company's or financial product's green credentials) and increasing investor confidence to adhere, comply, verify, and impact reporting aligning with green finance taxonomy.
- Creating and supporting a level playing field on green finance by all financial sector actors. The green finance taxonomy should be used to create a level playing field for green finance in Nepal to help improve transparency and attract investment in sustainable projects.
- Working with the public sector, regulators, and supervisors to introduce and mobilise innovative green financing instruments and financial products to address the current regulatory challenges to promote green investment.

3.3.1 Roles and Responsibilities of the Clients (individual/group lenders, private sector, customers, companies or MSMEs)

At the lowest level of the individual or group business, awareness and capacity are needed to implement the use of green finance taxonomy in making an investment decision by:

- Ensuring adherence to green finance taxonomy while proposing activities for credit requests; proposing shares, bonds, debentures; and insurance schemes.
- Ensuring that the credit disbursed, and funds accumulated through bonds/shares/debentures are utilized for the stated purpose.
- Provide details on how the proposed investments contribute to the strategic goal and principles of the taxonomy.

3.4. 2 Roles and Responsibilities of the market participants (BFIs, Insurance, Capital market and other financial sector actors)

The market participants should adhere to the following roles and responsibilities:

1. **Adherence to green finance taxonomy**: All market participants should demonstrate that investments proposed and implemented are aligned with core principles of the green finance taxonomy. It should ensure adequate reference of the green finance classification system in identifying truly green or

sustainable projects or financial products. The Annex 4g provides a checklist for benchmarking green investment for the financial sectors to target their investment based on core principles of the green finance taxonomy and to assess, monitor and verify the contributions to national climate action targets and green goals.

2. **Verify compliance:** All market participants should gather evidence to verify the compliance required based on the green finance taxonomy classification that investments proposed are directed towards truly green or sustainable projects or financial products and get an independent third party to review the eligibility of the projects under the Green Finance Taxonomy .

3. **Advisory support to clients and prevent greenwashing:** The market actors should advise and encourage the clients to invest in green business areas. They should further encourage them to suggest remedial measures for activities identified as “red” and suggest additional measures for the “amber or transitional” activities to shift to “green or transformative”.

4. **Tracking of progress:** All market participants should track progress towards sustainability goals by monitoring the use of green finance and its impact on the environment and society, at least annually. Conduct regular audits to verify compliance based on green finance taxonomy to help ensure that investment is directed towards genuinely sustainable projects and prevent greenwashing. It is recommended that the progress is verified by an independent third party to ensure ongoing eligibility.

5. **Report on impacts:** Report on the impact of green finance investments to ensure transparency and accountability in using green finance. This also includes reporting to the regulator's provision on the social, economic, and environmental impact achieved. Some guidelines should be provided to market participants on how to report on impacts.

6. **Engage with stakeholders:** Engage with relevant stakeholders, including investors, companies, industry associations, and civil society organisations to gather feedback on the effectiveness of green finance taxonomy and its impact on sustainable investments.

7. **Collaborate with Regulators:** Collaborate with regulators to share information and best practices on using green finance taxonomy and support in reporting and supervision and create a central repository of information to provide transparency to investors. This includes creating a regulatory or facilitative enabling environment to attract green investments.

8. **Set up governance mechanism and support capacity building:** Establish the green finance unit or department within the organisation or company to provide training and capacity-building support to staff in using and monitoring green finance. This can help ensure that staff have the knowledge and skills to effectively apply the green finance taxonomy classification system and criteria in investment or financial products.

3.4.3 Roles and Responsibilities of Regulators

Ensure fair and predictable enforcement of current green finance requirements, for example around ESRM management while strengthening monitoring, reporting, and verification capacity in markets.

1. **Verify Compliance**: The regulator will have the right to scrutiny on disclosure proposed by the market participants to verify if the investments are directed towards set principles and aligned with sustainable development or green economy. As the alignment against the taxonomy should remain on a voluntary basis, the regulatory framework should maintain a certain level of flexibility on how to correct non-compliant projects.

2. **Creating a level playing field**: The green finance taxonomy should be used to create a level playing field for green finance in Nepal to help improve transparency and attract investment in sustainable projects. The regulators should provide provisions and incentives at two levels: the first for BFIs, merchant banks, and insurance companies to encourage financing in green sectors, and the second for clients to enable them to design and implement economic activities in green sectors. Besides regulators, clients could also be provided incentives by other actors.

3. **Provide training and capacity building support:** Provide market participants with the training and capacity building support for practical application, monitoring and impact generation from green finance taxonomy monitoring green finance.

4. **Regular supervision and guidance:** The regulators should supervise market actors regularly to monitor alignment with the taxonomy and their effectiveness in creating impact. The regulator will conduct annual checks of the progress made in the proposed green finance investment, whether the progress is on track, or any deviation is observed.

5. **Reporting and disclosures:** The regulators should prepare a consolidated statement on the status of the green finance taxonomy application based on the reports submitted by market actors and make such a consolidated statement publicly available. The consolidated statement should incorporate financial and non-financial disclosures presenting the verified sustainability benefits with monetary value invested (including financial instruments) by the market participants based on the economic sectors and sub-sectors activity classification of the green finance taxonomy. The regulator will use existing reporting, database, and monitoring systems to classify green and business-as-usual economic activities for annual reporting. NRB uses a Supervisory information system (SIS) and SEBON and NIA are using their yearly reporting on financial flows.

3.5. Monitoring, Reporting and Supervision

3.5.1 Monitoring and Supervision of the Green Finance Taxonomy Application

Monitoring green finance taxonomy is crucial to check if the economy has transitioned towards sustainable finance and a green economy. The taxonomy expects to play an essential role in scaling up green finance, supporting the achievements of high-level national climate goals and contributing towards a green future. Every organisation must comply and disclose how their activities align with the green finance taxonomy. Figure 4 shows the Green Finance Taxonomy Application's Monitoring, reporting and supervision framework.

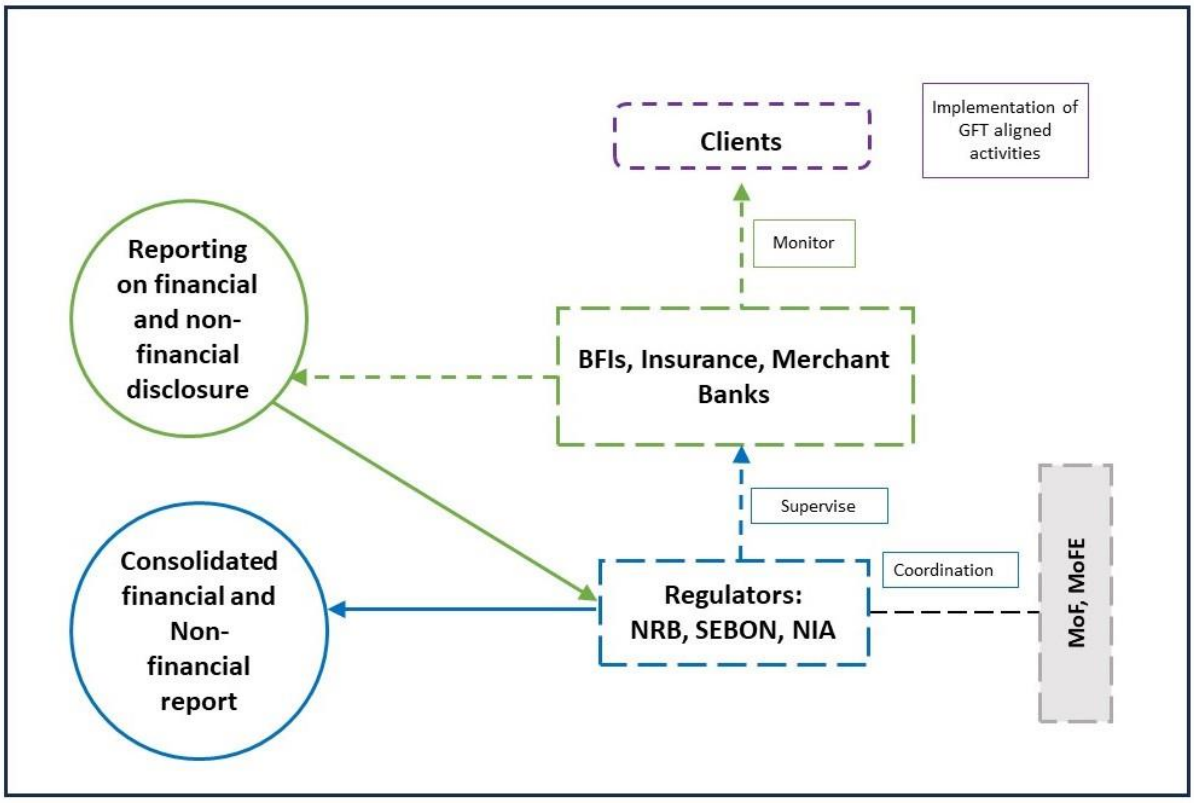

Figure 5: Monitoring, reporting & supervision Framework

Some local verifiers should be set up in Nepal to facilitate the emergence of local skills among market practitioners. NRB and regulators can draw a list of recognized verifiers to encourage firms to develop robust procedures and policies and ensure their staff is adequately trained with existing practices and knowledge. BFIs, merchant bankers and insurance companies should regularly monitor the client's adherence to the use of taxonomy-aligned financing as intended for the “green” activities. It is the client's responsibility to use and use financing for green activities. The BFIs should guide remedial measures if required. The market participants should monitor through regular follow-ups and site visits as applicable and required.

The regulators should regularly supervise market actors to monitor alignment with the taxonomy and their effectiveness in creating impact. The regulator will conduct annual checks of the progress made in the proposed green finance investment, whether the progress is on track, or any deviation is observed. Such checks should first provide a list of improvements needed to maintain the recognized status. Only in the extreme

case of improper conduct should the regulators impose a fine on market participants to not deter private initiatives to develop new businesses and skills.

To evaluate the impacts of the green finance taxonomy, the impact achieved based on core principles will be necessary to report and demonstrate that it shows good market practice. Annex 4a provides a detailed checklist for regulators to assess the taxonomy-aligned investment performance of the market participants.

Likewise, in the future the standards and certification process can be developed which encompass measures to encourage the establishment of green and sustainability certification entities.

3.5.3 Reporting by market participants and regulators

Nepal's green finance taxonomy is principally designed for financial institutions to classify the assets in their lending and investment portfolios and report to regulators for internal risk management and supervisory purposes. The market participants should prepare the disclosure requirements for financial sectors on sustainability-related risks and opportunities. The reporting is based on economic activities adhering to sustainability objectives, verifying compliance, tracking progress and impact reporting.

Financial Disclosure and Reporting:

The financial disclosure and reporting requirements of the market participants (BFIs, merchant banks, insurance companies) include:

- Determining and disclosing the annual targets and achievements on green finance, including new financing versus refinancing of existing projects.
- Financial disclosure should illustrate the proportion of taxonomy-aligned investments, expressed as a percentage of investment, fund or portfolio. This should include the proportions invested in "green or transformative activities" and "amber or transitional" activities.

Table 4: Financial Disclosure and Reporting Procedures for Green Finance Taxonomy aligned investment.

Financial Sector	Reporting Requirements
Banking and Financial Institutions (BFIs) and NRB:	Integration in Supervisory Information System (SIS), which will separately label green finance for the lending areas in the system. annual financial reporting building on the existing reporting system. Refer to Annex 4b for more detail.
Capital Market: SEBON	All capital market activities will be labelled green on the investment that meets the green taxonomy classification. Promote the new financial products based on the green classification system and report annual investments directed towards green objectives, adjusting with current reporting standards. Refer to Annex 4c for more detail.
Insurance Market: NIA	Annual reporting of the progress made on green insurance products adjusting with current reporting standards. Refer to Annex 4d for more detail.

Other Financial Sectors	Should report as per their existing reporting standards followed by the private sector, MSMEs, pension, investment or trust fund and other financial sector actors.

Non-Financial Disclosure and Reporting

The Annex 4f and Annex 4g provide the non-financial disclosure template for market participants to disclose and report the sustainability benefits intended from the taxonomy-aligned investment. The key aspects of disclosure are as follows:

- How and to what extent have they used the Taxonomy in determining the sustainability of the underlying investments?
- What principles do the investments contribute, including qualitative and quantitative information (e.g.: contribution to reducing vulnerability and building resilience, amount of GHG emissions reduced/avoided, increasing carbon sinks, preserving environmental resources and pollution prevention, and targeting vulnerable populations)
- Governance mechanisms supporting the application of the Taxonomy.
- Environmental and climate risks, their management and plans to mitigate these risks.

Also, the regulator and market participants must follow the guidance of the International Capital Market Association (ICMA) as part of the Green Bond Principles[21].

- Reporting must be a core component of the Green Finance Taxonomy
- Must focus on the use of proceeds of green financial instruments and their expected environmental impacts.
- At least on an annual basis
- Projects must be defined by how they have been selected and over which period they have been funded.
- The report must indicate the total signed amount and the amount of green proceeds that are allocated to the eligible disbursement.
- Reporting can be done at the project level or on a portfolio consolidated basis.
- If done at the project level, must provide information about the total project size and/or the issuer's share of total financing.
- If done at the portfolio level, must disclose the pro-rated share of the total projects' results as a percentage of the total financing.
- Reporting must indicate the expected environmental impacts or outcomes made possible because of the projects, the estimated lifetime, and the economic life (in years) to explain how the project impacts over its lifetime.
- If ex-post results are available, this should be disclosed as well.
- For each project or portfolio, it is recommended to report specific core indicators, including the methodology used to compute the indicators.
- Reporting units should be converted on a standard conversion factor to facilitate comparison and aggregation, with appropriate conversion.

[21] https://www.icmagroup.org/assets/documents/Sustainable-finance/2022-updates/Harmonised-Framework-for-Impact-Reporting-Green-Bonds_June-2022-280622.pdf

- If specific projects are only partially aligned, this should be disclosed to the extent that the partial eligibility has been accounted as part of the proceeds.
- There is guidance available for the most common core indicators for specific sectors, such as Renewable Energy, Energy Efficiency, Sustainable Water and Wastewater management, etc.

3.6 Clarity on the implementation approach

This taxonomy implementation will be a phased transition to help regulators and market participants identify activities, assets, and revenue segments that deliver on key sustainability goals based on the eligibility conditions set out in this document. This is important for two main reasons. The first one is that it will help assess the tools needed to evaluate different green criteria. For instance, determining industry readiness to measure GHG emissions or adopting recommended smart practices. The second reason is that it will ease estimating the time needed for capacity building and preparing the financial sectors as the implementation is an ongoing process and requires continuous monitoring and updating. The step-wise process of financial sector capacity building in implementation following an adaptive, flexible and responsive approach is provided in Figure 6.

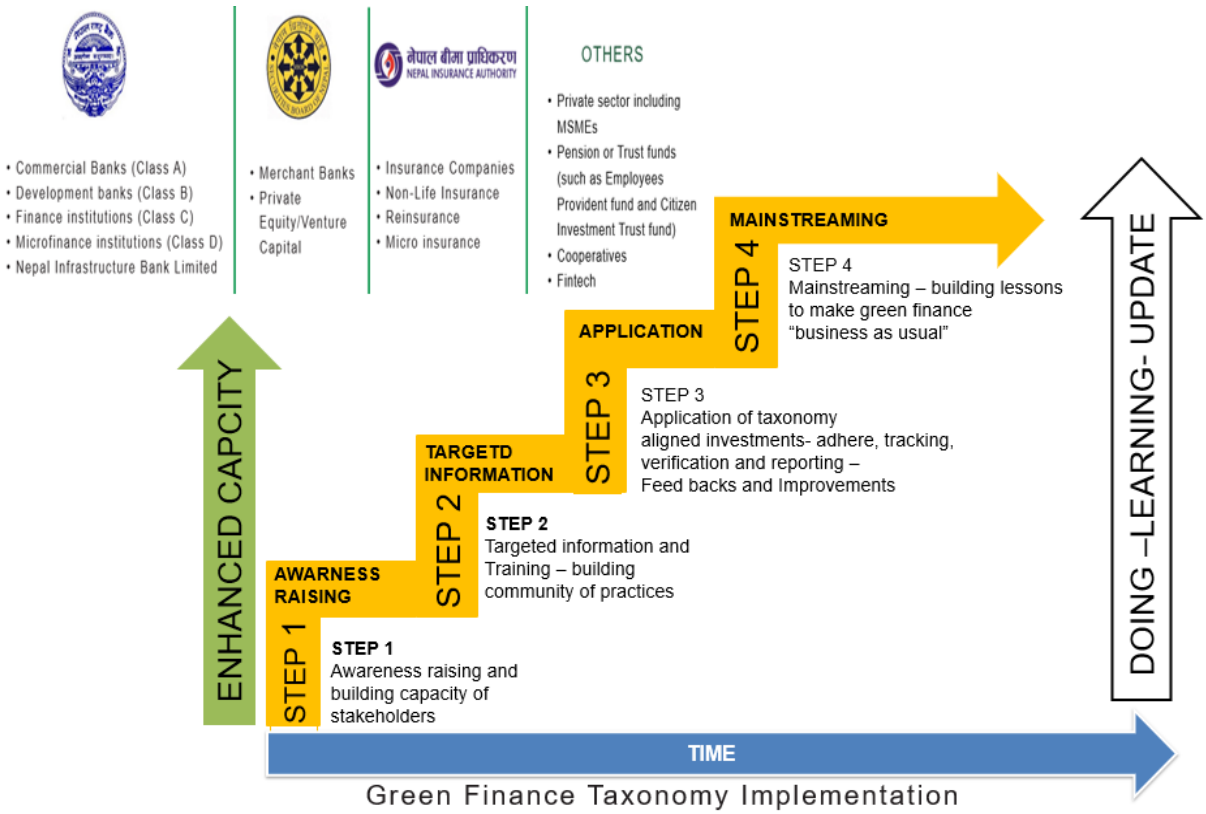

Figure 6: Indicative stepwise approach to Green Finance Taxonomy implementation

Annex 1: Description of Common Ground Rule Sectors

1. Agriculture and Food Security

Specific Investment Areas	Description
Climate Smart Agriculture, Livestock and Fisheries	• Water smart: It aims to guide the utilisation of water towards efficiency, sufficiency, and sustainability. In practice, it refers to investments that promote management of water efficiently i.e., optimisation of water use, and less water use but higher outputs. Examples include installing and operating high-efficiency irrigation systems such as drip irrigation systems, sprinkler irrigation, Solar lifting systems – solar-powered pump irrigation, wind pumps, gravity flow canals and irrigation systems that consider managed aquifer recharge and catchment management and landscape promotion[22]. • Energy smart: It is the process of using devices for energy efficiency. It focuses on sustainable renewable energy sources promoting greater eco-friendliness while reducing costs[23]. Examples include the use of UV lamps to preserve food quality and safety and the switch to solar drying techniques (e.g.: using solar cabinet dryer technologies), including Digital and sustainable processing techniques (e.g., optimum thermal processing conditions, creation of by-products, use of food dehydrators)[24] • Nutrient smart: It is a set of agriculture and agro-processing technologies and practices that contribute to improving nutrition and increasing farm and agribusiness-level productivity and revenue. Nutrient smart agriculture technologies and practices focus on primary production, agri-food processing, and distribution, where farmers and agri-businesses decide what and how to produce. In addition, nutrient-smart agriculture supports the overall Nutrition-Sensitive Agriculture agenda across the food system[25].

[22] Ramos, H. M., McNabola, A., López-Jiménez, P. A., & Pérez-Sánchez, M. (2019). Smart water management towards future water sustainable networks. Water, 12(1), 58.
[23] https://smartenergyusa.com/what-is-smart-energy/#:~:text=Smart%20energy%20is%20the%20process,friendliness%20while%20driving%20down%20costs.
[24] Alvar-Beltrán, J., Elbaroudi, I., Gialletti, A., Heureux, A., Neretin, L. Soldan, R. 2021. Climate Resilient Practices: typology and guiding material for climate risk screening. Rome, FAO.
[25] https://www.worldbank.org/en/topic/agriculture/publication/nutrition-smart-agriculture-when-good-nutrition-is-good-business

	• Soil smart: It Includes practices replacing chemical fertilisers and pesticides with bio-pesticides, biofertilizers, green manure, utilisation of organic bio-stimulants[26], and vermicomposting[27]. Also involves the production of organic fertilisers[28] using waste from animals, humans, food, and industries[29]. In addition, it consists of the production of organic fertilisers using renewable energy, including pilot plant testing that meets national and international standards and acquiring organic or green product labels/certifications e.g., USDA's National Organic Program (NOP), ProCert UK[30]. • Climate-smart livestock and fisheries farming practices: Includes feed and forage management i.e., production of more reliable and improved feeds, particularly drought-resistant and -tolerant fodder, help to improve feed conversion, reduce GHG emissions, and increase herd-level productivity[31]; pasture and rangeland management, management of animal wastes, the introduction of resilient breeds and shed improvements, and other sustainable livestock and fisheries management practices.
Conservation Agriculture	• Conservation-oriented: Focused on conservation and promoting local landraces, varieties, breeds, and stocks. It involves in-situ and ex-situ conservation of plant and animal genetic resources that value local knowledge, practices, and culture, including sustaining local livelihoods (providing green jobs and employment opportunities)[32].
Resilient seeds, planting materials, breeds, and stocks, including certification.	• Resilient seeds, planting materials, breeds, and stocks, including certification: Refers to local or improved seeds, breeds, stocks, planting materials (samplings, seedlings) that are tolerant to environment and climatic stress (temperature and precipitation variations) and shocks (major disaster events such as drought, flood, diseases, and pest outbreaks). It also

26 Organic bio stimulants-substances of synthetic or natural origin (hormones, vitamins, amino acids, humus acids, etc.), which have stimulating effect on physiological biochemical processes in plants World Trade Organisation, Law on Fertilizers

27 Central Bank of Sri Lanka. 2022. Sri Lanka Green Finance Taxonomy, Central Bank of Sri Lanka. May 2022.

28 Organic fertilizer shall mean fertilizer which consists of nutritive elements in the form of organic matter of plant or animal origin, obtained through processing or synthesis of organic compound. Such fertilizers consist of minimum 50% of organic matters and at least 1% of nitrogen, 1% of phosphor and 1% of potassium. World Trade Organisation, Law on Fertilizers

29 World Trade Organization. 2007. Law on Fertilizers. World Trade Organization, August 2007.

30 National Organic Program, USDA Agricultural Marketing Service. https://www.ams.usda.gov/about-ams/programs-offices/national-organic-program

31 Tulu, D., Gadissa, S., Hundessa, F., & Kebede, E. (2023). Contribution of Climate-Smart Forage and Fodder Production for Sustainable Livestock Production and Environment: Lessons and Challenges from Ethiopia. *Advances in Agriculture*, *2023*. https://www.hindawi.com/journals/aag/2023/8067776/

32 https://www.fao.org/conservation-agriculture/overview/what-is-conservation-agriculture/en/

	includes encouraging the use of native species from the original habitat and any investments in seed banks, gene banks and any conservation technologies and practices.
Organically certified crops and associated products (tea, coffee, cash crops, flowers, fruits etc.)	• Organically certified crops, vegetables, and associated products (tea, coffee, milk products such as Yak cheese, cash crops, flowers, fruits, fruit juice): Organic certified products produced without the use of conventional pesticides, petroleum-based fertilisers, sewage-sludge-based fertilisers, herbicides, genetic engineering (biotechnology), antibiotics, growth hormones, or irradiation. Animals raised on an organic operation meet animal health welfare standards, are not fed antibiotics or growth hormones, and are 100% organic feed. Also involves land with no prohibited substances applied to it for at least three years before the harvest of an organic crop[33].
Production, processing, and consumption: efficient technology:	• Reduced wastes, pollution and GHGs (towards green transition): It involves investment that encompasses reduced food loss and waste during production, processing and marketing, proper management of fertiliser and pesticides (judicious use), and use of low-carbon technologies in the agriculture sector including for production, processing, and storage (mechanisation that uses efficient and hybrid fuel).
Low-carbon agriculture technologies	• Low-carbon agriculture technologies and practices: Increase the efficiency of crop/livestock production (e.g., efficient water management and fertiliser use). It involves regulating the volume of water needed in the production unit in water-intensive crops. It also includes clean energy-run industries producing organic fresh, pressed, non-alcoholic beverages (e.g., fresh juice extracted from certified organic vegetables/fruits).

[33] https://ofrf.org/resources/organic-faqs/?gclid=Cj0KCQjwm66pBhDQARIsALIR2zAwzdFevN3L-PB0XMPEqmYjmdG8Dk7mQO-N1B6eEPTtLSsmftLPRZ0aAqN5EALw_wcB

2. Forests and Biodiversity

Specific Investment Areas	Description
Conservation of ecosystems, biodiversity, and genetic resources.	• Conservation of ecosystems and biodiversity: The activity or asset that reduces pressure on ecosystems and/or significantly improves the habitat influenced by the activity. Also refers to any activities that promote the conservation of rare, endangered, and threatened plant and animal species. Activities that enhance ecosystem services- the benefits that the ecosystem provides to humans[34]
Forest enhancement through plantation and Restoration of degraded forest lands	• Conservation and Restoration: Activities that promote the conservation of ecosystems, flora and fauna, and restoration of degraded forest lands through plantation and sustainable management practices (maintain diversity and retaining forest and ecosystem health), including the use of native species from the original habitat. Investments that include in-situ and ex-situ conservation. • Enhancement and Restoration: Activities that promote the enhancement of forests through plantation in private and public lands.
Sustainable forest management	• Sustainable forest management: The management of forests to achieve optimum yield and continuous flow of desired forest products and services, enhancing forest productivity and maintaining economic, social, and environmental values of forests.' Silviculture is the foundation of sustainable forest management, which regulates products and services provided by a forest[35]. • Low carbon and sustainable forestry practices: Investment that increases long-term carbon sequestration from forests to reach the goal of zero net emissions by 2045; Increasing annual carbon sequestration in existing forests and expand forest cover; ensure zero deforestation; apply selective logging to maintain balance; adopt sustainable harvesting, sustainable silviculture practices (thinning, pruning), and controlled burning and control of pest and diseases. It also involves sustainable pulp and paper production, sustainable resin tapping, sustainable NTFP harvesting and processing, and recycling of wood products,

[34] Plant Production and Protection Division: What are biodiversity and ecosystem services (fao.org)
[35] Sustainable Forest Management Manual | WWF (wwfnepal.org)

	furniture, and waste generated from it using clean energy. In addition, it also includes energy-efficient machinery, construction, technologies, and equipment[36] [37].
Forest/NTFPs products- green certification	• Forest certification: Provided to business firms, companies or agencies that abide by the rule of zero deforestation, safeguarding ancient and endangered forests, fair wage and work environment, biodiversity preservation, and ensuring community rights, including the rights of Indigenous Peoples[38].
Productive, sustainable, and equitable management and utilization	• Sustainable Utilization: Productive, sustainable, and equitable management and utilisation of community forests, forest resources and wildlife resources as per the prevailing rules and laws.
Carbon stock or storage	• Carbon stock or storage: Biological carbon sequestration happens when carbon is stored in the natural environment. The activities refer to what are known as 'carbon sinks', such as forests, grasslands, soil, oceans, and other bodies of water. This is also known as an 'indirect' or passive form of sequestration. REDD+ and other programmes are eligible for this stock and storage purpose.
Nature-based tourism.	• Nature-based tourism: It includes Nature-based recreation (establishment of green parks, amusement parks, zoos, botanic gardens, rafting, mountain climbing, paragliding, bungy jumping etc.), zero carbon transport (cable cars, zipliners), green construction and infrastructure with certification, sustainable businesses (homestays), and sustainable solid waste management. Investments in green enterprises provide jobs and employment opportunities for the local communities, including women and Indigenous people.

36 https://www.deskera.com/blog/importance-of-recycling-in-wood-manufacturing/

37 https://wedesigngreen.com/stories/__trashed

38 https://fsc.org/en/how-the-fsc-system-works

3.Energy and Water Resources

Specific Investment Areas	Description
Renewable energy – hydro, wind, solar, hydrogen etc.	• Clean renewable energy: Energy from a source that is not depleted when used and avoids using coal, oil and gas (fossil fuels). It includes energy from solar (Construction or operation of electricity generation facilities that produce electricity using solar photovoltaic technology), wind and water (Investing in energy from a Watermill[39]). The generation plant that meets criteria (a) and (c) OR (b) and (c): a) the electricity generation facility is a run-of-river plant and does not have an artificial reservoir; b) the power density of the electricity generation facility is above 5 W/m2; and c) the life cycle GHG emissions from the generation of electricity from hydropower, are lower than 100gCO2e/kWh. Reservoir-based hydropower will remain a usual development project.
Low-carbon energy technologies and infrastructures	• Low carbon energy technologies: It includes energy mix and hybrid technologies used in agriculture and forestry, tourism, transport, residential and corporate, manufacturing, mining, industry, and construction that reduce the use of fossil fuels[40]. Other investments include ensuring end-of-life recycling of components (e.g., batteries, solar panels); Ensuring that the hazardous waste is managed appropriately (e.g., lubricants); Avoiding the use of unstainable feedstock (e.g., biomass from deforested areas); and Control of emission of pollutants (e.g., combustion of biomass). • Low carbon energy infrastructures: It includes investments in energy infrastructures and services in the economic sectors (transport, industry, manufacturing, buildings, agriculture, forestry, tourism, mining) that contribute to avoiding the construction of energy production plants in sensitive ecosystems and biodiverse areas (e.g., hydropower plants); Avoiding damage to flora and fauna (e.g., construction of wind energy or concentrated solar plants along the migratory path of birds; Ensuring end-of-life recycling of components (e.g., batteries, solar panels); Ensuring that the hazardous waste is managed appropriately (E.g., lubricants); Avoiding use of unstainable feedstock (e.g., biomass from deforested areas); Control of emission of pollutants (e.g., combustion of biomass); and Prevention of altering temperature regimes in downstream water bodies (e.g., discharge of heated water).

39 Central Bank of Sri Lanka. 2022. Sri Lanka Green Finance Taxonomy, Central Bank of Sri Lanka. May 2022

40 https://www.adb.org/sites/default/files/publication/176262/adbi-managing-transition-low-carbon-economy.pdf

Energy optimization & and efficiency	• Energy efficiency: Energy efficiency simply means using less energy to perform the same task –eliminating energy waste. Energy efficiency brings various benefits: reducing greenhouse gas emissions, reducing demand for energy imports, and lowering our costs on a household and economy-wide level[41]. • Energy optimisation: Energy Optimisation Solutions (EOS) provide a fully funded, secure, and sustainable energy storage solution, operated to produce additional resilience of supply and energy cost savings. There is a proven history of delivering multiple renewable and process systems across various critical facilities[42].
Sustainable water management	• Sustainable water management: It refers to the Efficient management of water resources; Protection of aquifers, catchments, springs, river basins, and ecosystems; Installation of efficient water management systems (rainwater harvesting systems, water rationing and water recycling) and improvement of irrigation systems. It also includes promoting the pressurised piped irrigation system with remote sensing technology, which provides water on demand through hydrants and control valves; programmed irrigation at dawn and dusk reduces direct soil evaporation, making better use of water resources.
Smart irrigation	• Smart irrigation: It involves the coupling of sensors, control instruments, and irrigation machinery with computer models and meteorological information for real-time farm management[43].

[41] https://www.eesi.org/topics/energy-efficiency/description
[42] https://www.energyoptimisation.com/
[43] https://www.casaprogramme.com/casa-highlights-investment-opportunities-in-climate-smart-agriculture-technologies/

4. Industry, Transport and Storage

Specific Investment Areas	Description
Greener industries and products	• Application of green industries: minimise impact on the environment. This can apply to any industry, including businesses that achieve meaningful improvements in sectors that currently do the most environmental damage[44]. • Greener medical products: Production of pharmaceuticals, cosmetics, or other bio-based products through biotechnological applications up to local sustainable production standards or certification schemes[45].
Transition to low-carbon options	• Transition to low carbon in industry: This includes the use of measures that are more energy efficient which reduces the use of fossil fuels in industrial production and processing or the use of hybrid energy (energy mix), uses water more efficiently, and includes technologies in industries that reduce air pollution. Example i) Installation of Hybrid Hoffman Kilns (HHK), Tunnel Kilns (TK), and Compressed Stabilised Earth Blocks (CSEB) technologies to replace traditional brick kilns[46] ii) Investments on low-emission technologies for cement industries i.e., Production facilities, incorporating dry processes, reduced clinker content[47] Promotion of Concrete Hollow Blocks / Interlocking Concrete Block/ lightweight Cellular Concrete/ Clay Brick of Auto Brick factory with efficient kiln. (At list 60% of total Masonry wall)[48]. Another example is adherence to the best environmental management practice in the fabricated metal product manufacturing sector[49].
Sustainable public and mass transport (zero emission)	• Zero emission transport system; Include electric and green hydrogen-based transport systems; Zero emission micro-mobility; EV charging infrastructure; Dedicated cycle lanes; Electric urban railways. Also includes the use of electric vehicle manufacturing, construction and development, purchase and/or operation of vehicles for electrified public transportation

44 FS_Green Industry 01 02 (unescap.org)

45 file://ukfs01/Users/bregmi/Desktop/New%20folder/sl_green_finance_taxonomy.pdf

46 https://www.mofe.gov.np/uploads/documents/nepal-lts-document-uploaded-in-unfccc1653986846pdf-0523-253-1657876086.pdf

47 file://ukfs01/Users/bregmi/Desktop/New%20folder/CBI_Taxonomy_Tables-08A%20(1).pdf

48 https://www.mofe.gov.np/uploads/documents/nepal-lts-document-uploaded-in-unfccc1653986846pdf-0523-253-1657876086.pdf

49 Best environmental management practice in the fabricated metal product manufacturing sector - Publications Office of the EU (europa.eu)

	(i.e., bus and train), including high occupancy bus vehicle lanes; and manufacture of electric vehicles, including engines and bodies[50].
Low or zero-carbon storage facilities (energy efficient)	• Carbon capture, storage, and utilisation: Activities related to artificial capture, storage and utilisation are essential for meeting thresholds, especially for the high-emission sector of manufacturing. This activity is also critical for the transition of several heavy industries and processes. • Low or zero carbon facilities: This refers to energy-efficient (reduced use of fossil fuel-based energy) storage facilities, warehouses, garages, and other physical infrastructures related to processing, transportation, and marketing.

5. Construction, mining, and manufacturing

Specific Investment Areas	Description
Green building codes and certifications – residential and commercial	• Green building codes: The standard addresses site sustainability, water use efficiency, energy use efficiency, indoor environmental quality, and the impact on the atmosphere, materials, and resources by buildings, as well as high-performance operation[51]. It includes buildings that incorporate the principles of Increasing energy efficiency, the use of green building certifications (e.g., buildings certified by Excellent Design for Greater Efficiencies (EDGE), Leadership in Energy and Environmental Design (LEED) or Climate Bond Initiative criteria). Also includes establishing a minimum level of efficiency with respect to the certifications (e.g., % of energy efficiency above the limits established in green building certifications)- Installation of solar water heaters in buildings and retrofit of buildings to install efficient façade. Promotion of blue and green infrastructure (e.g., bioswales and green urban spaces). • Sustainable construction or building materials: Sustainable construction means using recyclable and renewable materials in building projects and minimising energy consumption and waste production. The primary goal of the sustainable construction

50 Adhikari, M., Ghimire, L. P., Kim, Y., Aryal, P., & Khadka, S. B. (2020). Identification and analysis of barriers against electric vehicle use. Sustainability, 12(12), 4850.

51 https://durablebuildingsolutions.org/building-future/green-building-codes-standards-rating-systems/#:~:text=Example%20of%20green%20building%20codes%3A&text=The%20standard%20addresses%20site%20sustainability,well%20as%20high%2Dperformance%20operation.

	method is to reduce its impact on our environment.[52] Increasing the efficiency of water usage both in and outside and Improving air quality, which improves health and productivity[53]. • Low carbon in buildings: Reduction in Primary Energy Demand (PED) or energy consumption of buildings (e.g., percentage % reduction in PED); Meeting PED benchmarks (e.g., kWh/m 2 y); Reduction in carbon intensity of buildings (e.g., % reduction of GHG emissions); and Meeting carbon intensity trajectories (e.g., tonCO 2 e/m 2y[54].
Smart and sustainable cities	• Smart and sustainable cities: Smart cities are an innovative response to the challenges presented by urbanisation. As more people move to cities, the need for efficient infrastructure and services, enabled by innovative digital technologies and useable information, offers promising solutions[55]. The focus is to ensure that the activities offer the inhabitants a high quality of life, improve the availability, accessibility, acceptability, and quality of the different services, and reduce impacts on the natural environment, with adequate governance to maintain economic growth. • Energy-efficient construction: An energy-efficient building balances all aspects of energy use in a building by providing an optimised mix of passive solar–design strategies, energy-efficient equipment, and renewable energy sources[56].
Resilient roads, bridges, and highways.	• Follow national and international good practices and innovation: Adopting a system of roads which limit their impact on the environment to a minimum through different sustainable practices. The goal is to maximise the lifetime of a highway while restricting its emissions. Amongst the different construction techniques, we find the use of recycled materials, the establishment of ecosystem management, the implementation of energy reduction actions or stormwater retrieval systems[57]
Low carbon extraction/mining	• Low carbon extraction: Clean extraction and production of metal and ore with net zero emission with carbon offsetting, including attaining strict environmental safety measures

52 https://www.construction21.org/articles/h/what-is-sustainable-construction.html#:~:text=Sustainable%20construction%20means%20using%20recyclable,its%20impact%20on%20our%20environment

53 https://www.ubuildit.com/what-are-the-4-basic-elements-of-green-building/

54 https://www.undp.org/sites/g/files/zskgke326/files/2023-07/common-framework-of-sustainable-finance-taxonomies-lac.pdf

55 Javidroozi, V., Carter, C., Grace, M., & Shah, H. (2023). Smart, Sustainable, Green Cities: A State-of-the-Art Review. Sustainability, 15(6), 5353.

56 https://www.sciencedirect.com/topics/engineering/energy-efficient-building#:~:text=The%20energy%2Defficient%20building%20acts,%2C%20air%20temperature%2C%20and%20lighting.

57 Sustainable road construction: current practices and future concepts | World Highways

	while extracting metal and ore (lead, iron) and other raw materials (magnate, talc, limestone) • Low carbon mining: mining is a sector of strategic importance in LAC due to the availability of large reserves of minerals such as lithium, copper, and nickel, among others, which are necessary for low-carbon transition (e.g., manufacturing of renewable energy equipment, electronic components, and batteries)[58]. • Transition to Mining sector: It involves - minimisation of waste generation through the operations; Stabilisation, treatment, and adequate disposal of hazardous waste; Effluent wastewater treatment and prevention of contamination upon discharge to water bodies; Use of zero-emission vehicles for material movement; Prevention and control of emissions such as particular matter and dust, among others; Avoiding mining in protected or biodiverse areas; Ensuring community and societal consensus, especially for mines located in sensitive areas; and Ensuring the safety, health and education of the workers, especially women who work in mines.
Manufacturing of clean technologies and products – fabricated metal products, machinery, and equipment	• Climate smart technologies: Climate Smart Technologies are a host of clean low greenhouse gas emission technologies to facilitate adaptation and mitigation to achieve resilience directly and indirectly against climate change impacts globally in the short, medium, and long term across all sectors[59]. • Manufacturing of clean technologies and products: It involves manufacturing solar panels, manufacturing of electric vehicles (public, private), and other manufacturing of green products[60]. • Manufacturing energy efficient equipment tools: It includes procurement of feedstock from sustainable sources; Incorporating circular economy in upstream and downstream processes; Efficient use of water resources and sustainable water management; Prevention of pollution to air, soil, and water bodies; Avoiding use of toxic material in manufacturing processes; avoiding use of materials from sensitive ecosystems (e.g., use of deforested wood from the Amazon rainforest); and manufacturing products are repairable and recyclable. • Low carbon technologies in manufacturing industries: Activities with no possible technological pathways for significantly improving their performance and hence need to be

[58] https://www.undp.org/sites/g/files/zskgke326/files/2023-07/common-framework-of-sustainable-finance-taxonomies-lac.pdf

[59] http://www.climatesmarttech.com/#:~:text=Climate%20Smart%20Technologies%20are%20a,term%20in%20across%20all%20sectors .

[60] Adhikari, M., Ghimire, L. P., Kim, Y., Aryal, P., & Khadka, S. B. (2020). Identification and analysis of barriers against electric vehicle use. Sustainability, 12(12), 4850 .

	phased out (e.g., decommissioning of fossil fuel plants). Involves the use of low-carbon and recyclable products in the manufacturing of goods (handicrafts, garments, leather, textile, rubber). Activities that have potential technological pathways for significantly improving their performance and but need to be transitioned urgently to prevent negative damage (e.g., activities of high-emission manufacturing processes of cement, chemicals, iron, and steel). Examples include establishing life cycle GHG emission limit per unit of product (e.g., thresholds based on CO 2 eq/ton-cement.

6. Environmental Management

Specific Investment Areas	Description
Sustainable solid waste management and plastics	• Sustainable solid waste, including healthcare waste management: It refers to an efficient and adequate management process. Examples of such requirements are: Ensuring that the waste is separated at source; Process efficiency (e.g., ensuring recovery of recycling materials); Use of by-products (e.g., compost, biogas, recyclables); Prevention of methane leaks (e.g., in Anaerobic digestion facilities); Adherence to waste management hierarchy (e.g., energy recovery using incineration facilities only when recycling infrastructure is not available); and Compliance with local standards and regulations (e.g., compost quality, air emissions meeting national regulations)[61].
Hazardous waste including health care waste management.	• Sustainable health care waste management: Activities that prevent or reduce, at the minimum, the discharge of priority substances and priority hazardous substances in water bodies due to indirect discharge via inappropriate wastewater treatment plants[62]. Activities that include proper handling and disposal of hazardous health wastes.
Environmental governance	• Enabling policy environment: Environmental governance comprises of rules, practices, policies, and institutions that shape how humans interact with the environment[63]

61 https://www.undp.org/sites/g/files/zskgke326/files/2023-07/common-framework-of-sustainable-finance-taxonomies-lac.pdf

62 https://finance.ec.europa.eu/system/files/2021-08/210803-sustainable-finance-platform-report-technical-screening-criteria-taxonomy_en.pdf

63 (Haque, M. (2017). Environmental Governance. In: Farazmand, A. (eds) Global Encyclopedia of Public Administration, Public Policy, and Governance. Springer, Cham. https://doi.org/10.1007/978-3-319-31816-5_1766-1).

	• Banks, issuers, investors, and regulators are aware of and actively manage finance according to Environment, Social and Governance (ESG) risks[64].
Pollution prevention and control	• Pollution control (Air, water, noise, soil, radioactive, thermal, visual, litter etc): Circular economy and recyclability of end-of-life vehicles, reusing parts and using recycled material during infrastructure renovation, upgrading and construction; Pollution control and prevention, due to direct emissions of exhaust gases from internal combustion engines (NOx, THC, NMHC, CO and PM), as well as preventing noise pollution.
Circular Economy	• Circular economy: The activity or asset promotes efficiency in the use of materials and resources and improves the durability, reusability and/or recyclability of its components. The activity or asset tends to reduce waste generation significantly. E.g., recycling of paper, recycling of bio-degradable plastics etc.[65].

7. Financial Services

Specific Investment Areas	Description
Any credit facilities, financing instruments, insurance schemes, fintech, and bonds are classified under green activities under the taxonomy.	• Green financing: Mainstreaming of environment and climate risk management in the financial sector through any credit facilities, financing instruments, insurance schemes, fintech, and bonds issued by the regulators or funds classified under green activities. This also includes financing or lending activities under wholesale and retail economic activities. • Green bonds: These are a type of debt issued by public or private institutions to finance themselves and, unlike other credit instruments, they commit the use of the funds obtained to an environmental project or one related to climate change[66]. It also includes other forms of bonds such as SDG bond, sustainability bond etc. • Green Insurance: Adopting insurance schemes known to be safe for the environment and for coping with climate and disaster events risks. For example, green insurance incentives for motor vehicles, homes, businesses, and parametric insurance (index-based crop or

[64] ESCAP-2023-WP-Sustainable-Finance-Bridging-Gap-Asia-Pacific.pdf (unescap.org)
65 https://www.europarl.europa.eu/news/en/headlines/economy/20151201STO05603/circular-economy-definition-importance-and-benefits
[66] https://www.climatebonds.net/

	livestock insurance)[67]. Likewise, it includes insurance and reinsurance products specifically designed for renewable energy.
Green/sustainable procurement – hire/purchase	• Sustainable procurement (or "green procurement") is the process of integrating environmental, social, and governance (ESG) goals into procurement, purchasing, and supply chain. Sustainable procurement integrates responsible business practices and sustainable corporate behaviour into procurement processes, policies, and decisions. It balances sustainability, profitability, and meeting stakeholder requirements[68].

8. Research and Development

Specific Investment Areas	Description
Green R&D: Research, development, and innovation	• Green R&D: Research, development and innovation in the economic activities that directly contribute to the green transition of society-specific solutions and technologies and basic knowledge. This applies in terms of reducing greenhouse gas emissions, energy efficiency, climate adaptation, sustainable use of resources, circular economy, environment, nature, biodiversity, and societal aspects e.g., sustainable behaviour[69]. For example, solar energy, wind power, hydropower, bioenergy, geothermal energy, hydrogen energy, carbon capture and storage (CCS)/utilisation (CCUS), storage and conversion technologies[70], food production and storage, clean transportation, nature conservation etc. It also involves any studies and assessment works related to green finance investments.
Information communication and technology (ICT) - digital development – EWS, SMS etc.	• Green ICT: Refers to Weather monitoring and forecast systems (e.g., early warning systems), and agro-advisory services using IT (SMS, forecast and other communication means). • Information, Communication and Technologies: The ICT sector helps mitigate GHG emissions in other sectors. The activities of the sector such as data-driven solutions and

[67] Green insurance | III
[68] Sustainable Procurement 101 | Guide & Playbook | Sievo
[69] Definition of green research, development, and innovation within the framework of the Ministry of Higher Education and Science — English (ufm.dk)
[70] https://ufm.dk/en/publications/2020/green-solutions-of-the-future-strategy-for-investments-in-green-research-technology-and-innovation

	software for resource efficiency, meteorological solutions for adaptation and direct mitigation potential associated with activities such as data centres, etc. are essential for the overall decarbonisation of the region. Also includes digital transformation and data monitoring for optimising the efficiency of processes.

Annex 2: Green Finance Taxonomy classification by economic sectors

1. Agriculture and Forest Related

Table 5 Green Taxonomy Classification of Agriculture and Forest Related sector

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
1.1. Crops and Vegetables	• Promote water-smart (management of water efficiently), energy-smart (using clean energy and managing energy efficiently), and nutrient-smart (soil and nutrient management) technologies and practices, including stress-tolerant seeds and planting materials[71] (**A, M, N)** • Promotion of the establishment of climate-smart villages, diversity farms (home gardens, kitchen gardens), climate-smart farms, and organic villages[72]. (**A, M)** • Crops and vegetables that are organically certified[73] (enhancement of the soil's physical, biological, and chemical characteristics, increase in soil nutrients, reduced water runoff and erosion, improvement in the quality of soil and its cover, enabled	• Reduce tillage and other machinery-based production activities; Change crop mixes and rotations; Change the mix of irrigated versus dry land; and Increase irrigation efficiency[91] • Production and application of the state- and industrial-endorsed effective, low-toxicity and low-residue pesticides up to local standards[92]. • Promotion of nitrification inhibitor urea, site-specific colour chart, slow release of N fertilizer that increases the N-use efficiency[93] • Substituting organic sources of N in manure, residues from anaerobic digesters, and	• Investments that lead to genetic erosion. Crops and vegetable varieties and seeds that replace traditional varieties, are a threat to agro biodiversity (promotes mono-cropping and leads to genetic erosion) and create an economic burden for smallholder farmers. - is the replacement of local varieties by improved or exotic varieties and species. Frequently, genetic erosion occurs as old varieties in farmers' fields are replaced by newer ones[98]. • Farming practices such as overexploitation of natural resources, overharvesting

[71] https://openknowledge.worldbank.org/server/api/core/bitstreams/4ad970bf-6fb7-5f42-aa29-1c0f8de429f0/content
[72] CSA_Profile_Vietnam2.2%20(2).pdf
[73] https://www.ams.usda.gov/sites/default/files/media/CACSProposalOrganicIsClimateSmart.pdf
[91] https://fairclimate.com/Technology/Farming
[92] https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/sl_green_finance_taxonomy.pdf
[93] https://www.researchgate.net/publication/348835603_Low_carbon_technologies_for_agriculture
[98] https://www.fao.org/3/y5609e/y5609e02.htm

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
	water infiltration, reduced nutrient runoff and erosion)[74] (**A, M, N)** • The technology and practices that enhance the biodiversity of the farming landscape (conservation, diversification, enrichment) in comparison with current interventions in similar farming systems[75]. (**M, N)** • Crops and vegetables that are not organically certified but demonstrate the following[76] • Precision nutrient management in cereals and rice (using leaf color charts or green seekers, and improving the timing, placement, rate and source of fertilizer application), Installation and operation of water management system for agricultural use in the fresh water stressed districts (Installation and operation of high-efficiency irrigation measure (e.g. drip irrigation) , rain water collection facilities, water recycling and treatment facilities for agriculture land	leguminous crops for synthetic N fertilizer[94]; • Adoption of low carbon technologies Electrical or biological nitrogen synthesis; Electric tractor, Automated small implements/robotics[95] • Soil testing and formulated fertilization, application of controlled release fertilizer, Deep application of chemical fertilizer, reduced use of pesticide[96] • Cultivation of new variety, extension of conservation tillage; Retaining crop residues, reducing bare fallow[97]	(crops), and overuse of artificial fertilisers, pesticides and insecticides put more immediate pressure on land use and water supplies, leading to higher levels of pollution and the loss of natural ecosystem services.[99] • Facilities that do not comply with a proper assessment of their environmental impacts have a negative impact on the local environment, high levels of CO2 or other greenhouse gas emissions. • Rice and flour mills that produce GHG emissions

[74] https://www.orfonline.org/wp-content/uploads/2021/12/ORF_Monograph_Green-Taxonomy.pdf
[75] https://www.orfonline.org/wp-content/uploads/2021/12/ORF_Monograph_Green-Taxonomy.pdf
[76] https://climateknowledgeportal.worldbank.org/sites/default/files/2019-06/CSA_Profile_Nepal.pdf
[94] David Norse (2012). Low carbon agriculture: Objectives and policy pathways., 1(1), 25–39. doi: 10.1016/j.envdev.2011.12.004
[95] Northrup, D. L., Basso, B., Wang, M. Q., Morgan, C. L., & Benfey, P. N. (2021). Novel technologies for emission reduction complement conservation agriculture to achieve negative emissions from row-crop production. Proceedings of the National Academy of Sciences, 118(28), e2022666118.
[96] Xiong, C., Wang, G., Su, W., & Gao, Q. (2021). Selecting low-carbon technologies and measures for high agricultural carbon productivity in Taihu Lake Basin, China. Environmental Science and Pollution Research, 28(36), 49913-49920.
[97] Xiong, C., Wang, G., Su, W., & Gao, Q. (2021). Selecting low-carbon technologies and measures for high agricultural carbon productivity in Taihu Lake Basin, China. Environmental Science and Pollution Research, 28(36), 49913-49920.
[99] https://app.croneri.co.uk/feature-articles/biodiversity-loss-and-threat-food-production

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
	in the fresh water-stressed districts), and alternative wetting and drying (rice), System of Rice Intensification (SRI), and drainage management[77] [78] (**A, M, N)** • Promote soil conservation techniques such as zero-tillage sowing, direct sowing and conservation agriculture in wheat, maize, lentils, and mustard. On sloping soils, plantation in contour lines through terraces, deep-rooting plant covers, or other methods. Maintain a biomass coverage of the soil in at least 80% of the property[79] (**M, N)** • Promote crop intensification techniques (legume intercropping or mixed cropping in cereals, or lentils) and intercropping with short-duration vegetables are also common. Traditional crop rotation systems, such as rice-wheat in the Terai region, or maize-millet in the hill region, are sometimes further complemented by adding leguminous intercrops (such as mungbean catch-cropping between rice and wheat), which helps increase the system's overall productivity by allowing the cultivation of an additional crop, maintaining		

[77] https://cgspace.cgiar.org/bitstream/handle/10568/82600/Policy%20brief-CSA%20in%20Nepal.pdf
[78] https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/sl_green_finance_taxonomy.pdf
[79] https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/sl_green_finance_taxonomy.pdf

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
	continuous soil cover, increasing soil organic matter, and replenishing soil nitrogen content[80]. **(M, N)** • Sustainable agricultural systems and practices that promote: (i) utilisation of organic bio-stimulants (ii) reliance on scientific field management, efficient irrigation management and suitable crop rotation patterns (iii) prevention and early detection of diseases, elimination of sources of infection and judicious/economised use of pesticides and insecticides (iv) enhancement of the soil environment, soil health, ensure a good water vapour cycle, and improve the soil microbiota (v) the efficient utilisation of fertilisers for enabling the recycling of nutrients[81]. (**M, N)** • Sustainable agricultural land use management used to produce crops, agroforestry and silvopastoral systems, including demonstration of significant carbon sequestration, reduction in emissions or compatibility with 'low carbon agriculture' targets AND/OR adaptation and resilience activities[82] (**A, M, N)** • Machinery and equipment to manage and cultivate eligible land that uses		

[80] https://cgspace.cgiar.org/bitstream/handle/10568/82600/Policy%20brief-CSA%20in%20Nepal.pdf
[81] https://www.orfonline.org/wp-content/uploads/2021/12/ORF_Monograph_Green-Taxonomy.pdf
[82] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
	clean energy and maximizes energy efficiency-[83] (**M, N)** • Improved seed and planting materials that are short durational, stress tolerant and disaster resilient (drought resistant, submergent varieties, pest, and disease resistant)[84] (**A, N)** • Creation of community seed banks and national gene banks to protect, promote and support the conservation and management of indigenous seeds/crop varieties[85]. (**A, N)** • Innovative methods for disseminating knowledge and skills need further exploration and promotion. Modern ICT-based approaches (mobile phone applications-sms), have been used in pilot projects to provide agro-advisories and weather forecasts throughout the country[86] (**A, M, N)** • Research, development and dissemination of seeds and crops that are resilient to drought, heat, flood, pests, disease, or soil increased salinity.[87] (**M, N)** • Processing of crops and vegetables that uses clean energy equipment or technology and practices example		

[8383] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf
[84] https://www.fao.org/3/cb2395en/online/src/html/growing-green.html
[85] https://climateknowledgeportal.worldbank.org/sites/default/files/2019-06/CSA_Profile_Nepal.pdf
[86] https://climateknowledgeportal.worldbank.org/sites/default/files/2019-06/CSA_Profile_Nepal.pdf
[87] https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/sl_green_finance_taxonomy.pdf

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
	solar dryer[88], electric dryer- application of dehydration technologies: solar, infrared (IR), microwave (MW), to produce shelf-stable dried agricultural produce[89] (**M, N)** • Crop insurance that provides incentives for the farming and farming communities- Do No Significant Harm[90] (**A, M, N)** • Agri-voltaic system promotions – that incorporate solar with the sustainable farming system. (**A, M, N)**		
1.3. Tea/Coffee	• Organically certified tea/coffee which adopts Pest- and disease-resistant varieties, promotes shade-grown practices[100] , uses water-saving irrigation techniques (such as sprinkle, micro sprinkle), intercropping with perennial crops and managed tree pruning[101] (**A, M, N)** • Growing of beverage tea with certification focusing on sustainable	• Making use of straw and manure in the tea cultivation process, improving the use of fertilizers, planting trees to provide more shade, introducing multi-cropping practices and using more renewable energy[103] • Promotion of stress-tolerant tea and coffee varieties that withstand drought, flood and	• Investment that promotes the overuse of water, fertilizer and pesticides in tea cultivation which is detrimental to the environment and health[105] • Exploitative coffee production that are responsible for clearing the forest land that leads to deforestation, use of excessive fertilizer and pesticides which leech

[88] https://energypedia.info/wiki/Solar_Drying
[89] Skåra, T., Løvdal, T., Skipnes, D., Nwabisa Mehlomakulu, N., Mapengo, C. R., Otema Baah, R., & Emmambux, M. N. (2022). Drying of vegetable and root crops by solar, infrared, microwave, and radio frequency as energy efficient methods: A review. Food Reviews International, 1-21.
[90] https://cgspace.cgiar.org/bitstream/handle/10568/82600/Policy%20brief-CSA%20in%20Nepal.pdf
[100] https://climateknowledgeportal.worldbank.org/sites/default/files/2019-06/CSA%20RWANDA%20NOV%2018%202015.pdf
[101] CSA_Profile_Vietnam2.2%20(2).pdf
[103] https://www.fao.org/fao-stories/article/en/c/1512898/
[105] https://www.thegoodboutique.com/inspiration/environmental-impact-of-tea.

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
	land and water management[102] (**A, M, N)**	other environment and climate extremes[104]	nitrate into nearby water sources, depleting the oxygen supply and killing aquatic life, and detrimental to human health[106] • Monocropping of tea and coffee involves producing only a single, dominant crop without rotation[107].
1.4. Tobacco		• The use of drip irrigation and contour farming in tobacco production reduces soil erosion, promotes efficient management of water, and improves below-ground carbon sinks and soil organic matter content[108].	• Industries producing cigarettes, bidi, cigars, chewing tobacco and other goods utilizing tobacco as the basic raw materials, and electronic cigarettes
1.5. Jute	• Organically certified or Jute production is the use of conservation agriculture which includes minimum soil disturbance, permanent soil cover through crop residues and crop diversification, making rational use of resources109, including technologies such as the ribbon retting method which reduces fibre damage increasing the production of high-quality fibre, save half of the water	• Improved agronomic practices from the selection of improved varieties to nutrient management, intercropping of mung in jute, integrated weed management, drought management, insect and disease management and improved retting/processing	• Jute processing without dyeing • Investment that relies on excessive use of fertilizers or pesticides in cultivation. The toxic chemicals have the chance to enter water bodies and in turn the biosphere[112].

[102] https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/sl_green_finance_taxonomy.pdf
[104] https://www.nestle.com/stories/nestle-breakthrough-coffee-breeding-low-carbon-drought-resistant-varieties
[106] https://ohiostate.pressbooks.pub/sciencebites/chapter/a-bitter-brew-coffee-production-deforestation-soil-erosion-and-water-contamination/
[107] https://ohiostate.pressbooks.pub/sciencebites/chapter/a-bitter-brew-coffee-production-deforestation-soil-erosion-and-water-contamination/
[108] https://cgspace.cgiar.org/bitstream/handle/10568/97083/CSA%20_Profile_Zimbabwe_12012018_1330.pdf?sequence=1&isAllowed=y
[109] https://www.currentscience.ac.in/Volumes/119/06/0926.pdf
[112] https://www.yarnsandfibers.com/textile-resources/other/what-are-the-environmental-impacts-of-jute/

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
	normally, and moderate reduction GHG emissions per unit of produce.[110] (**M, N)**	techniques increase the jute fibre productivity sustainably[111].	
1.6. Other Cash crops (ginger, sugarcane, cardamom, coconut)	• Cash crops that are environmentally or organically certified (use of quality seeds adapted to local climate and pests, diversify crop systems, use sustainable mechanization, apply soil, and water conservation practices, improve water management, and invest in agricultural knowledge transfer)[113] (**A, M, N)** • Adoption of green technologies in sugarcane that integrates different methods/techniques of crop production, planting methods (cane node/STP technologies and planting through Cutter Planter), nutrient management strategies (intercropping, green manuring, press mud, bio-compost, bio-fertilizers, etc.), insect–pest and disease management options (cultural and physical methods, use of bio-agents, bio-pesticides, botanicals, light/pheromone or combo traps, etc.)[114] (**A, M, N)**	• Sugarcane production includes fine-tuning of various crop production methods/ techniques, planting methods, nutrient management techniques, insect-pest, and infection control alternatives including methods like cultural methods and physical methods, using of bio-agents, bio-pesticides, botanicals, light/pheromone, or combo traps[119] • Cash crops that adopt conservation tillage system, direct sowing technology, selection of compound fertilizer/organic fertilizer/controlled-release fertilizer, soil formula fertilization technology, deep fertilization/irrigation fertilization, sprinkler/drip irrigation/wet	• Investments that lead to the conversion, fragmentation, or unsustainable intensification of land for cultivation. • Investments that contribute to loss of agrobiodiversity (e.g., loss of local crops, varieties, replacement of local crops, introduction of alien crops, negative impact to pollination, impacts to insect, and soil organisms)

[110] https://climateknowledgeportal.worldbank.org/sites/default/files/2019-06/CSA-in-Bangladesh.pdf
[111] Kumar, M., Bera, A., Gotyal, B. S., Naik, M. R., & Kumar, S. (2014). Technologies for Sustainable Jute Fibre Production. Popular kheti, 2(3), 47-52.
[113] https://www.fao.org/in-action/save-grow-climate-smart/en/
[114] Shukla, S. K., Solomon, S., Sharma, L., Jaiswal, V. P., Pathak, A. D., & Singh, P. (2019). Green technologies for improving cane sugar productivity and sustaining soil fertility in sugarcane-based cropping system. Sugar Tech, 21, 186-196.
[119] Bhatt, R., Majumder, D., Tiwari, A. K., Singh, S. R., Prasad, S., & Palanisamy, G. (2023). Climate-Smart Technologies for Improving Sugarcane Sustainability in India–A Review. Sugar Tech, 25(1), 1-14.

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
	• Cultivation of large cardamom that considers leguminous trees or shrubs for soil nutrients, application of cow urine or *jholmal* (liquid fertilisers) as a natural fertiliser and pesticide. Intercrop nitrogen-fixing pulses or beans to enrich the nutrient and use slashed pseudo-stems, weeds, or leftover fodder resident with dung for mulching to conserve soil moisture and use of use sprinkler irrigation during dry periods at least twice a week; and uses an improved dryer model that consumes less fuelwood and emits less carbon[115]. (**M, N)** • Cash-crop-based Agroforestry practices that adopt improved fallow, plantation crop combinations, alley cropping, multilayer tree gardens, multi-purpose tress on cropland, home gardens, shelterbelts, and hedges [116] (**M, N)** • Ginger-based agroforestry systems which provide livelihood security to the farmers of rainfed areas[117]. (**A, M, N)**	irrigation/intermittent irrigation, and straw resource[120]	

[115] Sharma, G., Joshi, S.R., Gurung, M.B., (2017) Climate-resilient practices for sustainability of large cardamom production systems in Nepal – Resource Book for Farmers. ICIMOD Manual 2017/6. Kathmandu: ICIMOD
[116] https://www.fao.org/climate-smart-agriculture-sourcebook/production-resources/module-b5-integrated-production-systems/chapter-b5-2/es/
[117] https://www.intechopen.com/chapters/84445
[120] Huang, B., Kong, H., Yu, J., & Zhang, X. (2022). A study on the impact of low-carbon technology application in agriculture on the returns of large-scale farmers. International Journal of Environmental Research and Public Health, 19(16), 10177.

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
	• Manufacture of coconut oil with sustainable/organic certification.[118] (**M, N)**		
1.7. Fruits and Flowers	• Climate-smart Fruit production, processing, and marketing i.e., fruit tree orchards, field gene banks and fruit trees in home gardens, use of clean energy in storage, processing, and transportation (Sun drying, Atmospheric drying, Sub atmospheric drying) which can contribute to carbon sequestration and adaptation[121]. (**A, M, N)** • The sustainable practices in floriculture include INM (Integrated Nutrient Management), IPM (Integrated Pest Management), crop rotation, efficient utilisation of water, and use of energy-efficient lighting systems LED's (Light Emitting Diodes)[122]. (**M, N)** • Piloting innovative, climate-friendly processing equipment (solar mill, solar cold storage) that helps to further reduce food waste and gives	• Promotes Judicious use of pesticides, chemical fertilizer - and their application (in time and area treated)[130] • Introduce hybrid fruits and flowers for climate resilience[131]. • Use technologies and practices that increase flower production (use of the plastic tunnel)[132] • Promotes energy-efficient and labour-intensive technologies and practices e.g., mechanization of agriculture[133]	• Farming practices such as overexploitation of natural resources, overharvesting (crops), and overuse of artificial fertilisers, pesticides and insecticides put more immediate pressure on land use and water supplies, leading to higher levels of pollution and the loss of natural ecosystem services.[134]

[118] https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/sl_green_finance_taxonomy.pdf
[121] https://www.researchgate.net/publication/340565318_Climate_Change_and_Resilience_in_Fruit_Crops
[122] Wani, M. A., Nazki, I. T., Din, A., Iqbal, S., Wani, S. A., Khan, F. U., & Neelofar. (2018). Floriculture sustainability initiative: The dawn of new era. Sustainable Agriculture Reviews 27, 91-127.
[130] https://climateknowledgeportal.worldbank.org/sites/default/files/2019-06/CSA%20RWANDA%20NOV%2018%202015.pdf
[131] Turbek, S. P., & Taylor, S. A. (2023). Hybridization provides climate resilience. *Nature Climate Change*, *13*(3), 212-213.
[132] https://climateknowledgeportal.worldbank.org/sites/default/files/2019-06/CSA%20RWANDA%20NOV%2018%202015.pdf
[133] CSA_Profile_Vietnam2.2%20(2).pdf
[134] https://app.croneri.co.uk/feature-articles/biodiversity-loss-and-threat-food-production

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
	additional value to second-grade fruit[123] (M**, N)** • Promote conservation agriculture in the cultivation of fruits and flowers i.e. efficient use of soil, water and nutrient management - water (water-saving technology) for irrigation, ensuring a good water vapour cycle, and efficient irrigation management to overcome the issues of water stresses caused by climate change; zero tillage, using biomass and bio-pesticides, biofertilizers, green manure, utilization of organic bio-stimulants, & vermicomposting[124] .(**A, M, N).** • Interventions that have adequate provisions of insurance for organic fruits and flowers[125]. (**A, M, N)** • Bio-coatings make use of organic inputs for the natural coating of fruits and vegetables, which can lengthen their shelf-life. Bio-coatings can be particularly useful in preserving fresh goods under climate-related stresses, such as increased heat or humidity[126]. **(N, P)**		

[123] https://we4f.org/wp-content/uploads/2021/12/2021_EA-RIH_Miyonga.pdf
[124] Jat, M. L., Chakraborty, D., Ladha, J. K., Rana, D. S., Gathala, M. K., McDonald, A., & Gerard, B. (2020). Conservation agriculture for sustainable intensification in South Asia. Nature Sustainability, 3(4), 336-343.
[125] https://cgspace.cgiar.org/bitstream/handle/10568/82600/Policy%20brief-CSA%20in%20Nepal.pdf
[126] https://www.casaprogramme.com/casa-highlights-investment-opportunities-in-climate-smart-agriculture-technologies/

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
	• Insurance products that minimize risk in sugarcane farming and sugar production[127]**. (A, P)** • Promote stress-tolerant and high-yielding varieties of sugarcane[128] (**A)** • Use organic fertilizers for sugarcane production[129]**(A, M, N, P)**		
1.8. Cold stores	• Solar-powered cold storage solutions help to prevent food wastage and spoilage, particularly in increasingly humid conditions and extreme temperatures[135]. **(M, N)** • Renewable energy powered or use of natural refrigerants (ammonia, carbon dioxide, hydrocarbons, water, and air) meeting Minimum Energy Performance Standards (MEPS) cold storage to meet the primary or residual energy needs as per Montreal Protocol and Kigali Amendment.[136] **(M, P)**	• Investments promoting alternatives to technology using Hydrochlorofluorocarbon (HCFCs). Alternatives include natural refrigerants; HFCs with lower Global Warming Potential, such as R32; Hydrofluoroolefins (HFOs); and HFC-HFO blends[136]. • Sustainable backup power options e.g., solar panels or a combination of available renewable power options (e.g., wind-hydro, solar-hydro)[140]	• Use of conventional cooling techniques and equipment that use ozone-depleting substances such as HFCs or HCFCs as refrigerants[141]

[127] Central Bank of Sri Lanka. 2022. Sri Lanka Green Finance Taxonomy, Central Bank of Sri Lanka. May 2022
[128] Riajaya, P. D., Hariyono, B., Cholid, M., Kadarwati, F. T., Santoso, B., Djumali, & Subiyakto. (2022). Growth and yield potential of new sugarcane varieties during plant and first ratoon crops. *Sustainability*, *14*(21), 14396. https://www.mdpi.com/2071-1050/14/21/14396/pdf
[129] Kulasekara, B. R., Weerasinghe, H. A. S., & Ariyawansha, B. D. S. K. Production of Organic Fertilisers by Using Sugarcane Industry By-products of Sri Lanka: A Preliminary Investigation. https://www.academia.edu/download/67943581/6._Production_of_Organic_Fertilisers_by_Using_Sugarcane_Industry_By_products_of_Sri_Lanka_A_Preliminary_Investigation.pdf
[135] https://www.casaprogramme.com/casa-highlights-investment-opportunities-in-climate-smart-agriculture-technologies/
[136] Participating countries to the Montreal Protocol agreed to phase out chlorofluorocarbons (CFCs). The Kigali Amendment to the Montreal Protocol agreed to gradually reduce the consumption and production of hydrofluorocarbons (HFCs).
[140] https://energy5.com/solar-thermal-energy-in-cold-storage-facilities-sustainable-cooling
[141] Bolaji, B. O., & Huan, Z. (2013). Ozone depletion and global warming: Case for the use of natural refrigerant–a review. Renewable and Sustainable Energy Reviews, 18, 49-54.

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
	• Build cold chain infrastructures and technologies such as ventilation, pre-cooling, air conditioning[137] **(M, P)** • Construction of energy-efficient cold storage buildings[138] **(M, P)** • Use of digital technology in cold chain which contributes to supply chain optimization, transparency contributing lesser food waste[139] **(A, M, P)**		
1.9. Agro-Product Storage	• Agricultural research in the development of technologies to reduce post-harvest food waste; constructing and supplying low-cost storage for small-scale farmers to store their harvest[142] **(A, M, P)** • Food storage facilities/warehouse facilities such as onions in nylon mesh bags, wooden and bamboo racks[143]**(A, M, P)** • Use of local and Indigenous practices for storage e.g., soil pits for ginger storage[143] **(A, M, N)**	• A low-energy storage container for food and agriculture products example the envelope of the container is made from sandwich panels with a polyurethane layer paired with two-phase change material (PCM) layers[145]	• Agro-product storage facilities that are highly carbon intensive and hazardous to the environment

[137] Alvar-Beltrán, J., Elbaroudi, I., Gialletti, A., Heureux, A., Neretin, L. Soldan, R. 2021. Climate Resilient Practices: typology and guiding material for climate risk screening. Rome, FAO.
[138] Bureau of Energy Efficiency, India, and The World Bank. Cold Chain Energy Efficiency in India: Analysis of Energy Efficiency Opportunities in Packhouses. 2021. Bureau of Energy Efficiency (BEE), Ministry of Power, Government of India, The World Bank, Energy Sector Management Assistance Programme (ESMAP), and Alliance for an Energy Efficient Economy, India.
[139] Bai, Lin, Minghao Liu, and Ying Sun. 2023. "Overview of Food Preservation and Traceability Technology in the Smart Cold Chain System" *Foods* 12, no. 15: 2881. https://doi.org/10.3390/foods12152881
[142] Central Bank of Sri Lanka. 2022. Sri Lanka Green Finance Taxonomy, Central Bank of Sri Lanka. May 2022.
[143] Khatiwada, P.P., Chofil, P., Joshi, S.R., Bhuchar, S., Samdrup, T. (2017) Package of practices for climate resilient value chains development of selected vegetable crops and ginger in Barshong, Bhutan. ICIMOD Manual 2017/9. Kathmandu: ICIMOD
[145] https://www.agroengineering.org/index.php/jae/article/view/1174

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
	• Strengthen early warning systems to prepare for and reduce food spoilage from extreme heat and prevent flooding impacts on storage infrastructure and food products[144]. **(A)** • Install efficient energy infrastructures to support temperature-controlled storage and contribute to offsetting GHG emissions from fossil-fuel-based sources of energy[144] **(A, M, P)** • Use ICTs such as temperature and humidity sensors to prevent food losses from heat[144] **(A, M, P)**		
1.10. Fertiliser and Insecticides	• Replacing the chemical fertiliser and pesticides with bio-pesticides, biofertilizers, green manure, utilization of organic bio-stimulants[146], and vermicomposting[147] **(A, M, P, N)** • Production of organic fertilizers[148] using waste from animals, humans, food, and industries[149] **(A, M, P, N)**	• Production of controlled-released chemical fertilizers which have slow/controlled release require less application and has reduced environmental pollution. e.g., Sulfur Coated Urea (SCU) Sulfur Coated Compound Fertilizer Resin Coated Fertilizer Urea Formaldehyde	. • Production of pesticides restricted by the Government of Nepal, for example, Aldrin, BHC, Chlordane, DDT. **Refer to: List of Restricted Pesticides**

[144] Alvar-Beltrán, J., Elbaroudi, I., Gialletti, A., Heureux, A., Neretin, L. Soldan, R. 2021. Climate Resilient Practices: typology and guiding material for climate risk screening. Rome, FAO.
[146] Organic bio stimulants-substances of synthetic or natural origin (hormones, vitamins, amino acids, humus acids, etc.), which have stimulating effect on physiological biochemical processes in plants World Trade Organisation, Law on Fertilizers
[147] Central Bank of Sri Lanka. 2022. Sri Lanka Green Finance Taxonomy, Central Bank of Sri Lanka. May 2022.
[148] Organic fertilizer shall mean fertilizer which consists of nutritive elements in the form of organic matter of plant or animal origin, obtained through processing or synthesis of organic compound. Such fertilizers consist of minimum 50% of organic matters and at least 1% of nitrogen, 1% of phosphor and 1% of potassium. World Trade Organisation, Law on Fertilizers
[149] World Trade Organization. 2007. Law on Fertilizers. World Trade Organization, August 2007.

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
	• Production of organic fertilizers using renewable energy including pilot plant testing that meets national and international standards and acquiring organic or green product label/certification e.g., USDA's National Organic Program (NOP), ProCert UK[150] **(A, M, P)** • Laboratory set-up, Research, and study for developing organic fertilizer **(A, M, P, N)** • Production and application of the state- and industrial-endorsed effective bioinsecticides and biopesticides, e.g.: neem-oil insecticides, Trichoderma, NPV, Nematodes, Azotobactor, Tricho-Card, Rhizo[151] **(A, M, P, N)** • Construction and operation of dedicated facilities for the treatment of separately collected bio-waste through composting (aerobic digestion) with the resulting production and utilization of compost[152]**(A, M, P, N)** • Research, development, promotion and commercial application of green	Urease and Nitrification inhibitors Tower Melt Spraying Granulation Compound Fertilizer Urea Melt Spraying Granulation Compound Fertilizer Chemically Modified Biomass Coating Urea for Controlled Released Bulk Blend Fertilizer and Glass fertilizer[156] • Development of low-toxicity, low-risk, low-residue pesticides, and insecticides bioprotectants, for example, Chlorantraniliprole, Aclonifen[157]	

[150] National Organic Program, USDA Agricultural Marketing Service. https://www.ams.usda.gov/about-ams/programs-offices/national-organic-program
[151] Bharti, V. and Ibrahim, S. (2020) 'Biopesticides: Production, formulation and Application Systems', *International Journal of Current Microbiology and Applied Sciences*, 9(10), pp. 3931–3946. doi:10.20546/ijcmas.2020.910.453.
[152] Renita D'Souza. 2021. *Developing a Green Taxonomy for India: A Rulebook,* December 2021, Observer Research Foundation
[156] Hazra, G. (2016) 'Different types of eco-friendly fertilizers: An overview', *Sustainability in Environment*, 1(1), p. 54. doi:10.22158/se. v1n1p54.
[157] https://agsci.oregonstate.edu/oipmc/pesticide-risk-reduction-low-risk-pesticide-list

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
	prevention/control products such as green efficient functional fertilizers, biological fertilizers, new soil conditioners, low-risk pesticides, pesticide application agents, and physical and chemical inducements[153] **(A, M, P, N)** • Production and application of the state- and industrial-endorsed effective, low-toxicity and low-residue pesticides up to local standards[154] **(A, M, P, N)** • Production of organic pesticide-producing equipment and technological enhancement of production process[155] **(A, M, P, N)**		
1.11. i husbandry / Slaughterhouse	• Sustainable livestock farming practices including better pasture management, improvement in animal nutrition and genetics, improved manure management, Fertilizer management, animal health planning, well-designed selection strategies, cross-breeding and artificial insemination for improving livestock productivity, and measures to minimize water	• Development of mixed crop-livestock systems, intercropping and cover cropping practices that protect the local environmental ecosystems and can demonstrate a low environmental impact[169]. • Refrigerator transportation for dairy products with low emission.	• Animal husbandry massively uses carbon-intensive practices such as overuse of water resources, non-renewable energy sources, haphazard disposal of animal wastes and other environmentally harmful practices. • Animal husbandry that replaces traditional livestock, creates a major threat to

[153] Central Bank of Sri Lanka. 2022. Sri Lanka Green Finance Taxonomy, Central Bank of Sri Lanka. May 2022.
[154] Central Bank of Sri Lanka. 2022. Sri Lanka Green Finance Taxonomy, Central Bank of Sri Lanka. May 2022.
[155] Central Bank of Sri Lanka. 2022. Sri Lanka Green Finance Taxonomy, Central Bank of Sri Lanka. May 2022.
[169] Gardner, J. C., Faulkner, D. B., & Hargrove, W. L. (1991). Use of cover crops with integrated crop-livestock production systems. *Cover crops for clean water. Soil and Water Conserv. Soc., Ankeny, IA*, 185-191.

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
	pollution and GHG emissions[158,159,160] **(A, M, P, N)** • Improving access and use of climate-resilient animal breeding services and breeds through investing in infrastructure, high-yielding genetics and breeding materials, knowledge, and skills, and development of breeding systems for climate-resilient indigenous breeds with higher resistance to disease and heat[161]. **(A, M)** • Improvement in animal nutrition and genetics: Balanced feed rations, increase in dietary fat and reduced protein content in the feed, provision of higher quality forage (with lower fibre content or greater fibre digestibility, greater energy content), supplementing forage with grain and other concentrate feeds, feed additives, provision of supplements (bovine somatotropin, 3-nitro-oxy propanol) and the use of anti-methanogens, i.e., vaccines, to	• Construction of infrastructure for effective agricultural and livestock waste management, which can demonstrate a low environmental and social impact. • Modern slaughterhouses use scientific approaches and energy-efficient technology and promote hygienic practices for the animal handling process, housekeeping improvements to work practices, proper equipment maintenance, and changing product design to reduce waste disposal[170]. • Animal slaughterhouse with proper waste management and disposal (composting, landfilling, incineration, rendering, anaerobic digestion)[171]	genetic erosion and relies heavily on commercial meat production schemes. • Cattle farming with improper feeding practices increases methane emissions. • Animal slaughterhouses with haphazard management of insoluble organic and inorganic particles (blood and by-products of animals, oil, grease and fats, ammonia, dangerous faecal bacteria, and excrement) pollute the air, water sources and impact human health. • Animal slaughterhouses using cooling systems with refrigerants with high global warming potential (e.g., HCFCs) • Slaughterhouse that uses trimming, spillage during slaughtering, additional

[158] Ministry of Finance and Public Credit, Mexico. 2023. Mexico Sustainable Taxonomy. March 2023.
[159] Central Bank of Sri Lanka. 2022. Sri Lanka Green Finance Taxonomy, Central Bank of Sri Lanka. May 2022.
[160] Renita D'Souza. 2021. *Developing a Green Taxonomy for India: A Rulebook,* December 2021, Observer Research Foundation
[161] Central Bank of Sri Lanka. 2022. Sri Lanka Green Finance Taxonomy, Central Bank of Sri Lanka. May 2022.
[170] Roupas, P., De Silva, K., Smithers, G., & Ferguson, A. (2007). Waste management and co-product recovery in red and white meat processing. In *Handbook of waste management and co-product recovery in food processing* (pp. 305-331). Woodhead Publishing. https://www.sciencedirect.com/science/article/abs/pii/B978184569025050013X
[171] Roupas, P., De Silva, K., Smithers, G., & Ferguson, A. (2007). Waste management and co-product recovery in red and white meat processing. In *Handbook of waste management and co-product recovery in food processing* (pp. 305-331). Woodhead Publishing. https://www.sciencedirect.com/science/article/abs/pii/B978184569025050013X

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
	suppress methane emissions[162] **(A, M, P)** • Construction of physical structures and installation equipment to protect the livestock against heat stress (e.g., adequate cooling, air flow, evaporative systems, water misting and ventilation); elevated livestock shelters (e.g., raised foundations); protection of livestock against heat stress (e.g., shade screens or shade cloth structures) **(A, M, P)** • Incorporating sustainable land management, e.g., Application of livestock standards to sustainably manage pastureland and to promote quality (high yield) based livestock, efficient tillage, inclusion of trees, use of better plant species, legume inter-seeding, use of earthworms, etc[163]. **(A, M, N)** • Pasture Management for Pollution Control and Biodiversity Protection: Keeping livestock away from water bodies like streams, lakes, ponds, and highly erodible areas, maintaining grass cover such as rotational grazing, keeping stocking rates consistent with carrying capacity of grazing area[164] **(A, M, N)**		industrial processing, and packaging[172].

[162] Renita D'Souza. 2021. *Developing a Green Taxonomy for India: A Rulebook,* December 2021, Observer Research Foundation
[163] Renita D'Souza. 2021. *Developing a Green Taxonomy for India: A Rulebook,* December 2021, Observer Research Foundation
[164] Renita D'Souza. 2021. *Developing a Green Taxonomy for India: A Rulebook,* December 2021, Observer Research Foundation
[172] FAO. 2013. Climate Smart Agriculture Sourcebook. Food and Agriculture Organization of the United Nations, 2013.

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
	• Improved manure management, for example, use of anaerobic digestors (with care taken to minimize methane leakage), the covering of ponds, tanks or lagoons in which manure is stored, use of enclosed storage facility with a flare, shortened storage time, removal of solids from manure using a solids separator, adjustment of animal diets to alter the volume and composition of manure, use of improved housing mechanisms to handle manure (such as perforated flooring with under-floor storage combined with short storage time, use of bedding contingent on the land application method used, active aeration of stored manure and acidification of manure, use of appropriate land application methods (immediate incorporation or subsurface injection[165] **(A, M, N)** • Insurance products to increase climate resilience of livestock activities[166]. **(A)** • Green animal husbandry to promote the efficiency of animal husbandry resources and environmental protection. For example: -harmless		

[165]Renita D'Souza. 2021. *Developing a Green Taxonomy for India: A Rulebook,* December 2021, Observer Research Foundation
[166] Alvar-Beltrán, J., Elbaroudi, I., Gialletti, A., Heureux, A., Neretin, L. Soldan, R. 2021. Climate Resilient Practices: typology and guiding material for climate risk screening. Rome, FAO.

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
	treatment systems for sick and dead livestock and poultry[167] **(M, N, P)** • Investments in silvo-pastural systems (crop-livestock system) which incorporate trees into grazing land enhancing carbon storage above and below ground, improve cattle's diets with complementary tree by-products, improve soil fertility and limit expansion of weeds through periodical grazing and diversify farm income losses[168] **(A, M, N)**		
1.12. Poultry	• Renewable energy to operate the poultry farms e.g.: solar energy, wind energy[173]. **(M)** • Providing excellent quality inputs, particularly in the form of climate resilient breeds, feeds, and technology to ensure good production[174]. **(A, M)** • Improving housing and related infrastructures and technology to protect poultry from temperature stresses such as hot and cold waves	• Improving energy efficiency of poultry farms- assessment of energy usage, ensuring lights efficiency, efficiency of heating and cooling systems for ensuring energy efficiency with regular operation and maintenance plan[178]. • Use of waste generated to produce energy and other substances (e.g.: keratin	• Intensive poultry farming with improper waste management can have an impact on global greenhouse gas emissions and pose a serious threat to environmental, animal, and human health. The wastes like pesticide residues, and pharmaceuticals (antibiotics) can lead to air, land and water contamination. • Poultry production uses fossil fuels for the operation of

[167] Central Bank of Sri Lanka. 2022. Sri Lanka Green Finance Taxonomy, Central Bank of Sri Lanka. May 2022.
[168] https://www.fao.org/nr/sustainability/consultation-electronique/projets/projects-detail/fr/c/216258/
[173] Jalali, M., Banakar, A., Farzaneh, B., & Montazeri, M. (2023). Reducing Energy Consumption in a Poultry Farm by Designing and Optimizing the Solar Heating/Photovoltaic System. *Sustainability*, *15*(7), 6059. https://www.mdpi.com/2071-1050/15/7/6059
[174] Alvar-Beltrán, J., Elbaroudi, I., Gialletti, A., Heureux, A., Neretin, L. Soldan, R. 2021. Climate Resilient Practices: typology and guiding material for climate risk screening. Rome, FAO.
[178] Jalali, M., Banakar, A., Farzaneh, B., & Montazeri, M. (2023). Reducing Energy Consumption in a Poultry Farm by Designing and Optimizing the Solar Heating/Photovoltaic System. Sustainability, 15(7), 6059.

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
	and heat from direct sunlight for poultry[175] **(A)** • Monitoring and treatment services to prevent, monitor and treat climate-related pathogens and diseases in poultry[176]. **(A)** • Poultry farms with proper waste management and disposal (composting, landfilling, incineration, rendering, anaerobic digestion)[177]	extraction from chicken feathers)[179]	mechanization, heating and air conditioning systems, ventilation and other processes related to the day-to-day operation of poultry farms, as well as transport of feed, waste materials and poultry. • Poultry farms with improper ventilation expel pollutants arising from birds/feed/faeces into the environment leading to air pollution.
1.13. Bee keeping	• Beekeeping practices support increasing the genetic diversity of bees through local breeding, including the retention of locally adaptive and stress-tolerant breeds[180]. **(A)** • Incorporation of the health management plan for honeybees including testing effects of cutting drone blood and reducing cell size for Varroa control, mitigate varroa infestation by setting a common treatment calendar at the local level[181]. (**A)**	• Improved breeds that are less harmful and low threat to the traditional bee breeds.	• Beekeeping practices that pose a major threat to the local bees, local biodiversity, and nature (hybrid variants, use of chemicals, unhealthy feeding practices) • Investments without adequate consideration to the health management of honeybees. • Beekeeping that promotes artificial feeding practices.

[175] Renita D'Souza. 2021. *Developing a Green Taxonomy for India: A Rulebook,* December 2021, Observer Research Foundation
[176] Central Bank of Sri Lanka. 2022. Sri Lanka Green Finance Taxonomy, Central Bank of Sri Lanka. May 2022.
[177] Roupas, P., De Silva, K., Smithers, G., & Ferguson, A. (2007). Waste management and co-product recovery in red and white meat processing. In *Handbook of waste management and co-product recovery in food processing* (pp. 305-331). Woodhead Publishing. https://www.sciencedirect.com/science/article/abs/pii/B978184569025050013X
[179] Pourjavaheri, F., Pour, S. O., Jones, O. A., Smooker, P. M., Brkljača, R., Sherkat, F., ... & Shanks, R. A. (2019). Extraction of keratin from waste chicken feathers using sodium sulfide and l-cysteine. Process Biochemistry, 82, 205-214.
[180] Bee Health and Sustainable Beekeeping
[181] Bee Health and Sustainable Beekeeping

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
	• Hive construction, design, and management of apiaries to better cope with adverse conditions (e.g., drought)[182] **(A, N)** • Addressing knowledge and skills gaps in beekeeping (research, lab set up, training), particularly in the context of climate change, disasters, and environmental pollution[183]. **(A, N, P)** • Promote the use of zero-emission or energy-efficient technologies for honey separation[184]. **(M)** • Beekeeping practice that promotes sustainable and healthy feeding[185] **(A, N)**		
1.15. Irrigation	• Smart irrigation involves the coupling of sensors, control instruments, and irrigation machinery with computer models and meteorological information for real-time farm management[186]. **(A, M)** • Solar-powered micro drip irrigation systems can help farmers in arid and drought-affected areas to sustainably increase yields and crop resilience, with minimal use of scarce water	• Re-excavation of traditional ponds and water storage • Construction of water catchments or storage for the collection of water[194] • Construction of several small reservoir dams with spillways • Construction of plastic ponds • Irrigation through canal system	• Irrigation system that uses Diesel pumps. • Deep boring • Use of shallow tube wells in water-scarce areas where the water table is low. • Investments that demand water extraction (withdrawing water more than the recharge rate).

[182] Bee Health and Sustainable Beekeeping
[183] Bee Health and Sustainable Beekeeping
[184] He, W., Zhang, S., Hu, Z., Zhang, J., Liu, X., Yu, C., & Yu, H. (2020). Field experimental study on a novel beehive integrated with solar thermal/photovoltaic system. *Solar Energy*, *201*, 682-692. https://www.sciencedirect.com/science/article/pii/S0038092X20302929
[185] FAO, IZSLT, Apimondia and CAAS. 2021. Good beekeeping practices for sustainable apiculture FAO Animal Production and Health Guidelines No. 25. Rome. https://doi.org/10.4060/cb5353en
[186] https://www.casaprogramme.com/casa-highlights-investment-opportunities-in-climate-smart-agriculture-technologies/
[194] (http://www.2030palette.org/water-catchment-and-storage/)

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
	resources and no ongoing energy costs[187]. (**A, M)** • Promotion of the pressurized piped irrigation system with remote sensing technology which provides water on demand through a system of hydrants and control valves[188]. **(A, N)** • Installation and operation of high-efficiency irrigation systems such as Rainwater harvesting systems/ stored-rainwater-based irrigation, drip irrigation systems[189], sprinkler irrigation, Solar lifting system – solar powered pump irrigation, wind pumps, gravity flow canal[190] **(A, M, N)** • Programmed irrigation at dawn and dusk which reduces direct soil evaporation, making better use of water resources[191] **(A, N)** • Irrigation systems that consider managed aquifer recharge and catchment management and landscape promotion [192] **(A, N)** • Development, Rehabilitation and Modernization of Farmer Managed Irrigation systems (FMIS) and Agency	• Promotion of river-based irrigation not following standards. • Promotion of Shallow tube wells. • Usage of Indirect approaches such as energy pricing and rationing (to control pumping) or land use regulation.	

[187] https://www.casaprogramme.com/casa-highlights-investment-opportunities-in-climate-smart-agriculture-technologies/
[188] Climate Resilience through Modern Irrigation Systems
[189] Central Bank of Sri Lanka. 2022. Sri Lanka Green Finance Taxonomy, Central Bank of Sri Lanka. May 2022
[190] FAO. 2013. Climate Smart Agriculture Sourcebook. Food and Agriculture Organization of the United Nations, 2013.
[191] Alvar-Beltrán, J., Elbaroudi, I., Gialletti, A., Heureux, A., Neretin, L. Soldan, R. 2021. Climate Resilient Practices: typology and guiding material for climate risk screening. Rome, FAO.
[192] Niswonger, R. G., Morway, E. D., Triana, E., & Huntington, J. L. (2017). Managed aquifer recharge through off-season irrigation in agricultural regions. *Water Resources Research*, *53*(8), 6970-6992. https://agupubs.onlinelibrary.wiley.com/doi/abs/10.1002/2017WR020458

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
	Managed Irrigation Systems (AMIS) in which farmers collectively engage in managing "green" irrigation options mentioned above.[193] **(A, N)**		
1.16. Forestry	• Planting of trees (afforestation and reforestation), Plantation of trees in private lands, agroforestry[195] and accelerating the establishment of tree plantation in unproductive and degraded land[196] (M**, N)** • Rehabilitation and restoration of forests, including reforestation and natural forest regeneration[197] (M**, N)** • Conservation forestry- Forest management activities to preserve one or more habitats or species. Conservation forestry assumes no change in the land category and occurs on land matching the forest definition as set out in national law, or where not available, following the FAO definition of forest[198] (M**, N)** • In situ and ex-situ genetic conservation of rare and threatened plant species[199] (M**, N)**	• Strengthening forest carbon sequestration in managed forests by stimulating forest productivity (e.g., tree species and provenance selection, thinning and harvest regimes)[209] • Investments that promote greater carbon sequestration through fertilization, irrigation, switching to fast-growing planting stock, increasing intervals between harvests, decreasing harvest intensity, and increasing forest density[210]. • Research to prevent the spread of invasive insect species, such as the mountain pine beetle, could maintain or boost sequestration rates by reducing forest disturbance and tree mortality[211].	• Deforestation activities (clearing forests), • Monocropping (plantation of single species) by clearing the natural forest or any forest stand. • Land conversion (conversion of forest land to other purposes) consequently will lead to biodiversity loss, impact on the habitat of flora and fauna, and disturb ecological system. • Indiscriminate burning of forest land leads to forest fires and loss of biodiversity. • Introduction of alien and exotic plant species that replaces local plant species, are invasive in nature and increases pest and diseases.

[193] MoEWRI (2019). Irrigation Master Plan 2019. Ministry of Energy, Water Resources and Irrigation, Government of Nepal.
[195] https://www.mofe.gov.np/uploads/documents/nepal-lts-document-uploaded-in-unfccc1653986846pdf-0523-253-1657876086.pdf
[196] https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/sl_green_finance_taxonomy.pdf
[197] https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/sl_green_finance_taxonomy.pdf
[198] https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/sl_green_finance_taxonomy.pdf
[199] https://www.fao.org/climate-smart-agriculture-sourcebook/production-resources/module-b3-forestry/chapter-b3-3/en/
[209] https://efi.int/news/optimizing-contribution-forests-mitigating-climate-change-2022-01-27
[210] https://www.c2es.org/document/decarbonizing-u-s-agriculture-forestry-and-land-use/
[211] https://www.c2es.org/document/decarbonizing-u-s-agriculture-forestry-and-land-use/

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
	• REDD+ (Reduced emissions from deforestation and forest degradation) activities[200] (M**, N)** • Leasing of forest land for conservation purposes[201] (M**, N)** • Biosphere conservation projects through protection and/ or remediation of degraded ecosystems; wetland conservation, construction, and maintenance of ecological function areas, like specific wildlife habitats, wetlands, and desert[202] (M**, N)** • Facilities and infrastructure for grassland preservation of natural grassland, restoration of degraded grassland, and retention activities, [203] (**M, N)** • Promotion of sustainable and eco-certified non-timber Forest products - Nursery establishment of multipurpose trees and NTFPs, sustainable processing and marketing[204] (M**, N)** • Conservation investments: Establishment of green parks, botanical gardens, zoological gardens,	• Plantations that consider no conversion from the natural landscape and the health of the forest is well managed[212] • Machinery and equipment to manage and cultivate eligible forested land if the forest and timber production adheres to sustainability principles that reduce carbon emissions and loss of biodiversity[213] • Land remediation and clean up if the habitat is appropriate for the location and is maintained in good health[214] • Primary processing and storage facilities for eligible forestry produce, eligible if forest produce complies with relevant Criteria[215] • Planting of commercial forests to aid recovery of degraded areas, including sustainable management of remaining native forests[216]	

[200] https://www.ifc.org/content/dam/ifc/doc/mgrt/mongolia-green-taxanomy-eng-pdf-for-publishing.pdf
[201] https://www.mofe.gov.np/uploads/documents/ndcip-2080-mainpdf-3898-697-1691920162.pdf
[202] https://www.ifc.org/content/dam/ifc/doc/mgrt/mongolia-green-taxanomy-eng-pdf-for-publishing.pdf
[203] https://www.ifc.org/content/dam/ifc/doc/mgrt/mongolia-green-taxanomy-eng-pdf-for-publishing.pdf
[204] https://www.mofe.gov.np/uploads/documents/ndcip-2080-mainpdf-3898-697-1691920162.pdf
[212] https://www.climatebonds.net/standard/taxonomy
[213] https://www.climatebonds.net/standard/taxonomy
[214] https://www.climatebonds.net/standard/taxonomy
[215] https://www.climatebonds.net/standard/taxonomy
[216] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/229597/pb14023-low-carbon-agri-intervention-summary.pdf

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
	museum, herbarium, planetarium) [205] (M**, N)** • Harvesting that enhance/Improve harvested wood products and avoid carbon loss from forest product/wood products[206] • Facilities for sustainable timber production and pulp production; production facilities incorporating efficient pulping process, biorefineries, use of recycles[207](**M, N)** • Enhance forest information, research, and technology development -Fire early warning systems (fire detection, monitoring)[208] **(A, M, N)**	• Sustainable timber and pulp production, including the circular recycling of waste material from the timber and pulp industries, must demonstrate their low level of greenhouse gas emissions[217] • Wildlife farming (commercial) with considering existing safeguard and compliance measures[218].	
1.17. Seeds	• Establishment of a seed bank and gene bank for conserving rare, endangered, and resistant seeds[219]. (**A, N)** • Research, development and dissemination of climate resilient and local seeds and crops stress tolerant seed (drought resistant, flood and heat tolerant, pest and disease	• Hybrid varieties that do not replace traditional and local varieties[224]	• Genetically modified seeds create a potential threat to genetic erosion. • Production, processing, and marketing of seeds that transmit new pests and diseases.

[205] https://www.ifc.org/content/dam/ifc/doc/mgrt/mongolia-green-taxanomy-eng-pdf-for-publishing.pdf
[206] https://www.mofe.gov.np/uploads/documents/nepal-lts-document-uploaded-in-unfccc1653986846pdf-0523-253-1657876086.pdf
[207] https://www.ifc.org/content/dam/ifc/doc/mgrt/mongolia-green-taxanomy-eng-pdf-for-publishing.pdf
[208] nepal-lts-document-uploaded-in-unfccc1653986846pdf-0523-253-1657876086.pdf (mofe.gov.np)
[217] MoFE. 2023. NDC implementation Plan. Government of Nepal.
[218] Existing government policies and regulations.
[219] https://cgspace.cgiar.org/bitstream/handle/10568/82600/Policy%20brief-CSA%20in%20Nepal.pdf
[224] https://orfonline.org/wp-content/uploads/2021/12/ORF_Monograph_Green-Taxonomy.pdf

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
	resistant) e.g., quinoa, pearl millet, sorghum. **(A)**[220] • Production, processing, and packaging of organic varieties of seeds with national and international certification (e. climate bond certification, national certification)[221] **(A, N, M)** • Strengthened seed systems with the ability to produce good-quality seed in larger volumes - Investments in participatory variety selection, participatory plant breeding and farmer-managed seed systems and the implementation of participatory seed certification guaranteed system[222] **(A)** • Use of ICT in providing agrometeorological advisory and market information - Digital seed information system[223] **(A)**		

[220] https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/sl_green_finance_taxonomy.pdf
[221] https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/sl_green_finance_taxonomy.pdf
[222] Climate-Smart Practices for Intensive Rice-Based Systems in Bangladesh, Cambodia, and Nepal (adb.org)
[223] https://www.adb.org/sites/default/files/publication/533186/climate-smart-rice-systems-ban-cam-nep.pdf

2. Fishery Related

Table 6 Green Finance Taxonomy Classification of Fishery related sector

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
2.1. Fishery Related	• Adoption of sustainable aquaculture that applies water, energy, and nutrient efficient measures **(A, M, N)** [225, 226, 227] • Fish breeding, stocks and genetic types that can live and perform adequately in a wide range of environments, withstand climate extremes and are friendly to nature and biodiversity **(A, N)**[228] • Enhance the suitability and resilience of fish that are locally available and that reduce nutritional deficiency **(A, N)**. [228] • Restoration of the sustainable aquatic ecosystem in hydropower projects by using fish safety turbines, 3D optical and ultrasonic tracking, maintaining the water quality of the dam water, improvements in river flows, facilitating fish	• Changing the location of fishing or shifting to new areas. [228] • Controlled fishing practices that set catch limits based on changes in recruitment, growth, survival and reproductive success via adaptive management, monitoring, and precautionary principles to prevent overfishing [228] • Manage unused lands, and trap ponds on seasonally flooded land to provide a habitat for young native species.[228] • Increase the efficacy of water usage; efficient energy, encourage non-consumptive	• Overexploitation from unregulated hunting, harvesting land fishing practices[233] • Establishing fishery enterprises without carrying out an environmental assessment • A haphazard and unregulated fishing system such as the use of current, toxic chemicals, and explosives while fishing[233] • Promoting breeds that are a threat to the local fish species and population. • Fisheries and aquaculture that exploit water use or maintain environmental water flow and disturb water flow system. • Carrying out commercial fishing activities in protected areas and Ramsar sites

[225] Kassem, T., Shahrour, I., El Khattabi, J., & Raslan, A. (2021). Smart and sustainable aquaculture farms. *Sustainability*, *13*(19), 10685.
[226] Srilankan Green Finance Taxonomy
[227] South African Green Finance Taxonomy
[228] Alvar-Beltrán, J., Elbaroudi, I., Gialletti, A., Heureux, A., Neretin, L. Soldan, R. 2021. Climate Resilient Practices: typology and guiding material for climate risk screening. Rome, FAO.
[233] ASEAN taxonomy

	passage and migrations and enhancing dissolved oxygen levels in water discharges to maintain river ecology **(A, M, N, P)** [229] • Use of novel human-inedible feed resources such as insect meals, leaf meals, protein isolates, single cell protein produced using waste streams, protein hydrolysates, spineless cactus, algae, co-products of the biofuel industry, food wastes among others **(A, N, P)**.[230] • Introduction of well-proven practices such as the use of appropriate troughs, increase in efficiency of harvesting crop residues and their conversion to complete feeds, especially in the form of densified feed blocks or pellets, feeding as per the nutrient requirements **(A, M, N, P)**.228, [230] • Operation of fish hatcheries, fish farms, and veterinary services operated that use environmentally friendly energy	water use aquaculture, e.g., cage-based aquaculture [231] • Fishmeal and fish oil replacement by shifting to reduce aquafeed dependency on them and ensuring good fish health and a resultant final product that is nutritionally adequate, safe to eat and well accepted by consumers [232]	• Investments that disturb fish movement, seasonal migration, and breeding cause harm to the environment

[229] Moran, E. F., Lopez, M. C., Moore, N., Müller, N., & Hyndman, D. W. (2018). Sustainable hydropower in the 21st century. Proceedings of the National Academy of Sciences, 115(47), 11891-11898.
[230] Makkar, H. P. S. (2018). Feed demand landscape and implications of food-not feed strategy for food security and climate change. *Animal*, *12*(8), 1744-1754.
[231] Q. Li; J. W. Gowing; C. Mayilswami (2005). Multiple-use management in a large irrigation system: an assessment of technical constraints to integrating aquaculture within irrigation canals., 54(1), 31–42. doi:10.1002/ird.149
[232] Oliva-Teles, A., Enes, P., & Peres, H. (2015). Replacing fishmeal and fish oil in industrial aquafeeds for carnivorous fish. Feed and feeding practices in aquaculture, 203-233.

	sources (clean energy) and manage all its waste **(M, N, P)**		

3. Mining Related

Table 7 Green Finance Taxonomy Classification of Mining related sector

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
3.1. Metal and Ore (Iron; Lead etc.)		• Promote Green mining Initiative that follows clean extraction, energy efficiency in mining, production of metal and ore with reduced emission, following carbon offsetting, waste treatment, and attaining strict environmental safety measures like use of water efficiency while extracting and processing metal and ore [234 , 235, 237] • Conversion of coal/fossil fuel combustion operated metal extraction furnace plants to renewable energy based electrical plants and substituting raw material (coal) used in electric arc furnace by biochar [236]	• Ferrous and non- ferrous metal extraction • Aluminium and copper extraction from scrap • Manufacture of brass and bell, aluminium utensils • Manufacture of pig iron, sponge iron and other spongy ferrous products. • Production of fabricated metal products resulting in carbon emissions and pollution • Manufacturing, mining, and quarrying and transformation of materials, substances, or components into new products.
3.2. Coal			• Coal washeries that are less polluting and comply with international (e.g. Minamata convention) and national quality

[234] Elsentriecy, H. H., Jalbout, A. F., & Gervasio, D. F. (2015). Clean and efficient extraction of copper ions and deposition as metal. *Resource-Efficient Technologies*, *1*(1), 28-33.
[235] Vardhan, K. H., Kumar, P. S., & Panda, R. C. (2019). A review on heavy metal pollution, toxicity, and remedial measures: Current trends and future perspectives. Journal of Molecular Liquids, 290, 111197. https://doi.org/10.1016/j.molliq.2019.111197
[236] Reichel, T., Demus, T., Echterhof, T., & Pfeifer, H. (2014, January). Increasing the sustainability of the steel production in the electric arc furnace by substituting fossil coal with biochar. In Proceedings of the 4th Central European Biomass Conference, Graz, Austria (Vol. 16).

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
			standards (air, water, and others) [237] • Shift the focus phase out and phase down of coal-powered plants by promoting alternative products to coal or coal-powered energy. [238] • Promoting area-based mining or mining in identified/allocated area which poses less threat to people and the ecosystem and usage of renewable technologies for mining purpose [239] • Develop decarbonization measures and encourage safety practices[240, 241] • Financing for the management (breakdown) of coal ash before contaminating drinking water, groundwater, and air. [242]

[237] Huang, J., Yinping, L., & Yue, P. (2021). Review on the evaluation of green development of mining industry. IOP Conference Series, 859(1), 012094. https://doi.org/10.1088/1755-1315/859/1/012094
[238] Brutschin, E., Schenuit, F., Van Ruijven, B., & Riahi, K. (2022). Exploring enablers for an ambitious coal phaseout. Politics and Governance, 10(3), 200–212. https://doi.org/10.17645/pag.v10i3.5535
[239] Xiuyan Han;Tianyi Cao;Xinlin Yan; (2021). Comprehensive evaluation of ecological environment quality of mining area based on sustainable development indicators: a case study of Yanzhou Mining in China. Environment, Development and Sustainability, (), –. doi:10.1007/s10668-020-00935-3
[240] Ilinova, A., Sheveleva, N., Riadinskaia, A., & Danilin, K. P. (2023). Decarbonization Measures: A Real Effect or Just a Declaration? An Assessment of Oil and Gas Companies' Progress towards Carbon Neutrality. Energies, 16(8), 3575. https://doi.org/10.3390/en16083575
[241] Lyu, X., Yang, K., & Fang, J. (2022). Utilization of resources in abandoned coal mines for carbon neutrality. Science of the Total Environment, 822, 153646.
[242] CanmetMINING Research Plan 2016–2021, Green Mining Initiative

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
3.3. Limestone		• Investment in non-toxic and non-residual production of limestone 237 • Investments that follow decarbonization of all aspects of limestone operations (use of energy-efficient and clean technology for mining, production, and processing) for example introducing new practices, such as improved water and air purifying devices that ensure that the health of health and the ecosystem are kept intact in limestone production[243].	• Mining that poses a threat to livelihood, ecosystem, plant, and wildlife • Mining that poses a huge threat to the environment e.g., that triggers pollution and GHG emissions • Mining that undermines Indigenous and people's customary rights
3.4. Magnesite	-	• Production of magnesite that complies with national and international environmental and social safeguards standards, that is less polluting, uses water and energy efficiently and causes less harm to people and the ecosystem [244]	• Open mining of refractory non-clay minerals like Magnesite possesses negative consequences for human health, the environment, and the ecosystem.
3.5. Talc	-	• Production of Talc that complies with national and international environmental and social safeguards standards, that are less polluting, uses water and energy more efficiently and causes less harm to people and ecosystem [244]	• Production, processing, and marketing of Talc have negative consequences to human health, the environment, and nature.
3.6. Oil and Gas Extraction		• Sustainable (water, energy, and resources efficient) and non-polluting mining and quarrying of oil and gas that involves refining and waste treatment process[245]	• Over-extraction and use of oil and gas • Facilities for transportation, distribution, and supply of gaseous fuels. • Manufacture of gas through coal carbonation

[243] Simoni, M., Wilkes, M. D., Brown, S., Provis, J. L., Kinoshita, H., & Hanein, T. (2022). Decarbonising the lime industry: State-of-the-art. *Renewable and Sustainable Energy Reviews*, *168*, 112765.
[244] Doerfler, K., & Wurm, M. (2008). Talc mining in Austria: Sustaining activities in the face of scarce resources and competing interests. GOSPODARKA SUROWCAMI MINERALNYMI, 24.
[245] Bakka, H. (2016, May 10). How can mining become more environmentally sustainable? - IOC Website. IOC Website - Company L.L.C. https://ioccompany.com/iron-a-biological-element/

Economic Sector	Green (Transformative)	Amber (Transitional)	Red
			• Facilities for gas manufacturing through processing, refining, and mixing of natural gas. • Electric power generation by oil, gas that emits high amounts of GHG. • Unsustainable production of liquid and gaseous fuels, illuminating oils, lubricating oils or greases or other products from crude petroleum

4. Agriculture, Forestry & Beverage Production Related

Table 8 Green Finance Taxonomy Classification of Agriculture, Forestry and Beverage Production related sector

Economic Sub Sector	Green (Transformative)	Amber (Transitional)	Red
4.1. Food Processing (Packaging and Processing)	• Use of UV lamps to preserve food quality and safety and switch to solar drying techniques (e.g.: using solar cabinet dryer technologies), including clean energy-based techniques[246] **(A, M, N, P)** • Modified atmosphere packaging in biodegradable packs, tough and tear-resistant packs, and pulsed electric field techniques[246]. **(A, M, P)** • Use of tetra packs for packaging which are recyclable, uses recycled polymers[247] **(P)** • Use of digitization and technology such as temperature and humidity sensor systems, systems integration, and automation[246]. **(A, M, P)** • Digital and sustainable processing techniques (e.g., optimum thermal processing conditions, creation of by-products, use of food dehydrators)[246]**(A, M, P)** • Installation of sustainable, safe, and energy-efficient machines (e.g., for milling, drying, grating) which increase productivity, time and cost-effectiveness of labour work and	• Modern processing techniques (e.g., optimum thermal processing conditions, creation of by-products, use of food dehydrators) that use minimum required fossil fuels. • Packaging material using reusable materials on large or small packaging, plastic containers, aseptic packaging, impermeable to moisture and oxygen bags. plastic packages with excellent moisture barrier. • Well-managed postharvest processing (cleaning, drying, milling, grading, essential oil extraction, chilling, freezing) including, investments in modern processing techniques (e.g., optimum thermal processing conditions, creation of by-products, use of food dehydrators, improved rice thresher cleaner).	• Promote the use of mechanical dryer techniques such as heated air-drying using fossil-fuel-based sources. • Investments that neglect spillage or degradation during processing, such as during washing, peeling, slicing, and boiling of fruits, vegetables, and due to packaging. • Investments that lead to improper and insufficient packaging leading to physical and chemical damage during distribution, transport, and marketing; and inadequate attention to protection against insects, rodents, and other contaminants from entering the food. • Investments that use non-degradable packaging such as foil-backed wrap, and multi-layered plastic.

[246] Alvar-Beltrán, J., Elbaroudi, I., Gialletti, A., Heureux, A., Neretin, L. Soldan, R. 2021. Climate Resilient Practices: typology and guiding material for climate risk screening. Rome, FAO.
[247] https://www.tetrapak.com/en-in/campaigns/go-nature-go-carton/sustainable-solutions/packaging#:~:text=Our%20paper%2Dbased%20carton%20packages,facilities%20to%20increase%20recycling%20capacity.

	operations and reduce emissions[246]**(A, M, P)**		

4.2. Animal and Poultry Feeds	• Production of more reliable and improved feeds, particularly drought-resistant and -tolerant fodder helps to improve feed conversion, reduce GHG emissions, and increase herd-level productivity[248]. **(A, N, M, P)**
	• Development or introduction of dietary technologies for reducing enteric fermentation[249]. **(A, M, N, P)**
	• Certified Feed from global standards such as[250]:
	  • GMP+ (good manufacturing practices (GMP) + hazard analysis and critical control points (HACCP))
	  • EFISC (European Feed and Food Ingredient Safety Certification)
	  • FAMI QS (Feed Additive and preMIxture System)
	  • FSSC 22000 (Food Safety System Certification 22000)
	• Research, lab equipment and testing for the development of improved, sustainable, low emissions animal and poultry feeds[251]. **(A, M, N, P**)
		• Improve the feed quality through improved grassland management, improved pasture species (e.g., grass and legumes mix), forage mix, feed processing (e.g., chopping, urea treatment) and strategic use of supplements, preferably locally available and minimal use of pollutants.
		• Shifting to total or partial stall feeding through fodder, hay, and silage production to improve manure and soil-nutrient management and biogas production.
		• Poultry feed which are packaged in a clean and dry polythene laminated jute sack or laminated paper bag with key information on brand name, type of feed, batch number, production and consumption dates, details of the ingredients, and storage method.
			• Production, processing and marketing of Animal and poultry feeds that are highly carbon intensive (uses fossil fuels, releases GHG, and overuse water and energy) and detrimental to the environment and animal health.
			• Poultry feed which contains fungus and insects, is decayed or poisonous.
			• Feed production that contains high levels of residues, contaminants, and toxins, including improper waste disposal, not adhering to government standards.

[248] Tulu, D., Gadissa, S., Hundessa, F., & Kebede, E. (2023). Contribution of Climate-Smart Forage and Fodder Production for Sustainable Livestock Production and Environment: Lessons and Challenges from Ethiopia. *Advances in Agriculture*, *2023*. https://www.hindawi.com/journals/aag/2023/8067776/
[249] https://agledx.ccafs.cgiar.org/emissions-led-options/sources-sinks/enteric-fermentation/
[250] https://www.sgs.com/en/service-groups/animal-feed-and-feed-certification
[251] https://agledx.ccafs.cgiar.org/emissions-led-options/sources-sinks/enteric-fermentation/

4.3. Processing of Tea; Coffee; Ginger and Fruits and Primary processing of domestic agro products	• Use of electricity and other clean energy sources e.g., for factory lighting and powering pumps and other electrical equipment used for processing domestic agro products[252]. **(A, M, N, P)** • Research and investigations on recycling and proper waste management of processed materials coming from domestic agro products[253] **(N, P)** • Tea/Coffee meets international organic certifications such as Fairtrade, Rainforest Alliance, Fair for Life, and the ethical tea Partnership[254].	• Establishing a processing plant or facilities of tea, coffee, ginger and fruits and primary processing of agro-products that has clear plans to transition from fossil fuel and combustion systems to clean energy and energy-efficient schemes. • Processing factories or plants that generate waste but have clear plan for waste disposal.	• Use of fossil fuels and combustion of wood (gas, coal, oil) e.g., tea processing, transport, and boilers for drying the tea • Facilities that will have a negative impact on the local environment, emitting high levels of CO2 or other greenhouse gas emissions. • Processing facilities that do not have waste disposal systems and do not comply with other environmental standards
4.4. Sugar	• Sugarcane processing uses water-efficient infrastructure, proper drainage systems, and improved management practices[255]. **(A, M, N, P)** • Use of clean energy and energy-efficient equipment and materials that keep the GHG emission at zero level[256]. **(A, M, P)** • Sugarcane processing industry considers biorefinery or aims to promote the second generation of sugar mill, which enables the	• Promote low emissions technology for sugarcane processing, and recycling of wastes generated from sugar production and processing, including proper waste disposal.	• Inefficient management of waste (e.g., sugarcane residue burning, haphazard disposal of by-products) • Investment that expands the sugarcane processing industry in protected areas, forest land and restricted and environmentally sensitive areas

[252] https://energypedia.info/wiki/Renewable_Energy_Resources_in_Powering_Agriculture
[253] Oluseun Adejumo, I., & Adebukola Adebiyi, O. (2021). Agricultural Solid Wastes: Causes, Effects, and Effective Management. IntechOpen. doi: 10.5772/intechopen.93601 https://www.intechopen.com/chapters/73517
[254] https://www.ethicalconsumer.org/food-drink/tea-coffee-certification-schemes
[255] Gunarathna, M. H. J. P., Sakai, K., Nakandakari, T., Momii, K., Onodera, T., Kaneshiro, H., ... & Wakasugi, K. (2018). Optimized subsurface irrigation system: the future of sugarcane irrigation. *Water*, *10*(3), 314. https://www.mdpi.com/2073-4441/10/3/314
[256] Alvar-Beltrán, J., Elbaroudi, I., Gialletti, A., Heureux, A., Neretin, L. Soldan, R. 2021. Climate Resilient Practices: typology and guiding material for climate risk screening. Rome, FAO.

	coproduction of useful products from the sugarcane wastes such as bagasse, molasses, cane trash, filter mud and vinasse to produce disposal plates, fly ash, and reinforcement in polymer composites, biomethane, bioethanol and bioelectricity which would contribute to reducing waste while generating revenue.[257] **(M, N, P)**		
4.5. Tobacco Processing			• Tobacco processing company which has complied with environmental and social safeguards. • Tobacco processing uses smoke-free, zero-emissions equipment for processing. • Companies promoting sustainably grown tobacco, using integrated pest management, or organic fertilizers, farmers engaged in crop diversification, among others. • Tobacco processing with efficient water-use management strategies in the tobacco manufacturing units. • Tobacco processing companies do not effectively manage waste discharged, haphazardly burning the wood to cure tobacco.

[257] Singh, S. P., Jawaid, M., Chandrasekar, M., Senthilkumar, K., Yadav, B., Saba, N., & Siengchin, S. (2021). Sugarcane wastes into commercial products: Processing methods, production optimization and challenges. *Journal of Cleaner Production*, *328*, 129453. https://www.sciencedirect.com/science/article/abs/pii/S0959652621036337

			• Tobacco processing contributes to the deforestation of forests for tobacco plantations. • Tobacco processing companies which use fossil fuel energy for shredding and assembling tobacco • Excessive use of chemicals and additives that harm the environment especially air, water, and land quality for preparing and treating tobacco. • Investments in products which are engaged in the deforestation of forests for producing rolling paper for tobacco.
4.6. Lumber and Wood Products/Furniture	• Eco-standards and consider eco-design, use of poorly processed eco-materials, innovative technologies, and sustainably and responsibly managed forests[258]. **(M, N, P)** • Recycling of wood products, furniture, and waste generated from it using clean energy, energy-efficient technologies, and equipment[259,260]. **(M, N, P)**	• Wood products/furniture are produced Using environmentally friendly, raw materials which combat the depletion of natural resources. • Use less energy and produce less waste in the production process of lumber and wood products/furniture. • Wood products and furniture industry or factory that minimizes environmental pollution such as burning and emissions	• Furniture production uses synthetic materials, which are often the source of the overproduction of harmful waste with a negative impact on the environment and health (e.g.: polished, heavy metals, VOCs, formaldehyde, etc.). • Lumber and wood products/furniture business that violates the Forest Act and regulations (e.g., establishment within protected areas), involves

[258] https://wedesigngreen.com/stories/__trashed
[259] https://www.deskera.com/blog/importance-of-recycling-in-wood-manufacturing/
[260] https://wedesigngreen.com/stories/__trashed

			illegal harvesting of timber and any burning of wood products. • Production of modular wooden furniture
4.8. Hire Purchase Vehicle - Agriculture	• Purchase of electric vehicles for agriculture purposes **(M, N, P)**	• Purchase of vehicles that meet the pollution standard complying with Euro IV standards (for petrol) and Euro VI standards (for diesel). • Purchasing of vehicles with coolers that have refrigerants with very low Global Warming Potential (e.g.: HFOs) • Financing conversion of diesel/petrol vehicles to hybrid	• Purchase of vehicles that do not comply with Euro IV (for petrol) and Euro VI standards (for diesel) which cause pollution and emissions. • Purchase of carbon-intensive vehicles that emit GHG emissions
4.9. Beverage - Alcoholic			• Promote sustainable generated raw materials (e.g., grapes, potatoes, rice, cane, agave, etc.) using organic fertilizers or judiciously used chemical fertilizers. • Use of efficient energy technologies to harvest raw materials, while also reducing post-harvest loss. • Efficient energy usage in the alcohol processing industry for heating and lighting (e.g., LED lighting equipment, solar energy) • Industries that: a) incorporate efficient water management for alcohol production; adopt recyclable, reusable and biodegradable packaging of

			alcoholic products (e.g., use of cardboard, glass), including proper waste disposal; and use of energy-efficient or electric vehicles for the transportation of alcoholic products. • Alcoholic production without adequate management plan for water run-off from distilled products, for example, molasses and cane juice is highly disruptive to the nearby microorganism balance, water wasted when making tequila creates a highly acidic pulp which severely befouls the soil and groundwater, and wine production leave behind chromium copper arsenate on soil. • Investments that heavily rely on fossil-fuel-based energy for alcohol production. • Establishment or operation of Industries which contribute to higher and inefficient use of water resources; and use of non-recyclable materials for packaging (e.g., plastic) • Investments that do not comply with environmental standards, are a threat to human health and cause massive environmental degradation

4.10. Beverage - Non-alcoholic	• Clean energy-run industries producing organic fresh pressed non-alcoholic beverages (for e.g.: fresh juice extracted from organic certified vegetables/fruits) [261] (**M, N, P)** • Industries producing beverages using renewable energy, and energy-efficient equipment, including the use of biodegradable materials for packaging and proper plans for waste management[262] **(M, N, P)**	• Industries that produce non-alcoholic beverages use a mix of renewable energy and fossil-fuel-based energy. • Industries that ensure recyclable and reusable packaging of non-alcoholic beverages (e.g., use of cardboard, glass) • Industries that guarantee Non-alcoholic beverage production without chemical additives that are harmful to the environment and health.	• Industries that will produce carbonated drinks using harmful chemicals. • Industries that will produce non-alcoholic beverages sourcing raw materials produced using chemical fertilizers. • Industries that are detrimental to the environment and climate i.e., use of non-recyclable materials for packaging of beverages (e.g., plastic), higher emissions from the industries • Investment in industries that derive products from farms which clear the forest land and biodiversity-rich areas for fruit and vegetable farming

[261] https://www.nutritionaloutlook.com/view/energy-drinks-in-2022-sustainable-natural-and-making-a-difference

[262] Alvar-Beltrán, J., Elbaroudi, I., Gialletti, A., Heureux, A., Neretin, L. Soldan, R. 2021. Climate Resilient Practices: typology and guiding material for climate risk screening. Rome, FAO.

5. Non-food Production Related

Table 9 Green Finance Taxonomy Classification of Non-Food Production related sector

Economic Sub Sector	Green (Transformative)	Amber (Transitional)	Red
5.1. Handicraft	• Manufacture of handicrafts with green/sustainability certification (Handicrafts made from sustainably sourced recycled materials)[263]. **(M, N, P)**	• Integrated approaches for minimizing extensive use of resources, recycling, for example, waste generated in the production of bamboo, rattan and seagrass crafts recovered as secondary resources to make new value-added products. And reducing losses through a linseed-based preservation treatment in bamboo[264]. • Earthen pottery including stone carving[265]	• Manufacture of handicrafts that are resource intensive (more resources used), lack proper waste disposal and uses excessive chemicals that are harmful to the environment and human. For example, Conventional cotton is particularly emitting (19700 kg CO2e/t). This is mainly due to the inputs used for its cultivation, as well as the numerous (energy-intensive) processing stages (spinning, weaving, dyeing, etc.), the use of mercury in the preparation of handicrafts metal) [266].
5.2. Textile Production and Garments	• Manufacture of textiles with green/sustainability certification- This includes preparation and spinning of textile fibres as well as textile weaving, finishing of textiles and wearing apparel, manufacture of made-up textile articles, except	• Sustainable Consumption and Production (SCP), of wastes from textiles, using: (a) water management, (b) energy conservation, and (c) wastewater treatment and chemical use reductions, d) solid waste management, including garments[270]	• Manufacturing of synthetic fibres, Textile processing without solid waste management plans Note[271] • Textile production is estimated to be responsible for about 20% of global clean water pollution from dyeing and finishing products.

[263] https://www.ifc.org/content/dam/ifc/doc/mgrt/mongolia-green-taxanomy-eng-pdf-for-publishing.pdf
[264] http://www.mdgfund.org/sites/default/files/PS_STUDY_Viet_Greening%20Value%20Chains%20for%20Sustainable%20Handicrafts.pdf
[265] https://womenforindia.org/earthen-pots/
[266] https://oxfammagasinsdumonde.be/content/uploads/2022/08/Analyse-7-Empreinte-carbone-artisanat-equitable-EN.pdf
[270] https://www.bing.com/search?q=Sustainable+Consumption+and+Production
[271] https://www.europarl.europa.eu/news/en/headlines/society/20201208STO93327/the-impact-of-textile-production-and-waste-on-the-environment-infographics.

	apparel (It does not include growing of natural fibres or manufacture of synthetic fibres)[267] – **M, N** • Sustainable textile processing and producing - Hide and skin processing methods, for extensive farming only, with fixed traceability and quality management, Production process that meets relevant sustainable textile/cashmere/ wool/yak down production standards and uses eco-dying technologies, chemicals and bioagents; production processes that meet international and national standards and voluntary code of conducts, which also includes standards on its liquid and solid waste treatment[268] **(A, N)** • Eco-friendly garments - the whole process from raw materials, yarn, weaving, dyeing, cutting, sewing, and packaging that has minimum negligible impact and damage to the environment[269]. **(M, N)**		• Laundering synthetic clothes accounts for 35% of primary microplastics released into the environment. A single laundry load of polyester clothes can discharge 700,000 microplastic fibres that can end up in the food chain. • The majority of microplastics from textiles are released during the first few washes. Fast fashion is based on mass production, low prices and high sales volumes that promote many first washes.
5.3. Paper and Allied Products	• Production of paper and allied products (such as paper coated off the paper machine, paper bags, and paper boxes) with green/sustainability certification	• Production facilities of paper and allied products incorporating efficient pulping process (less energy and water resources), bio-refineries, use of recycles (re-use)[273]	• Production of paper and allied products that produce different toxic gasses are emitted from the factories. These gasses are ammonia, carbon monoxide,

[267] https://www.ifc.org/content/dam/ifc/doc/mgrt/mongolia-green-taxanomy-eng-pdf-for-publishing.pdf
[268] https://www.ifc.org/content/dam/ifc/doc/mgrt/mongolia-green-taxanomy-eng-pdf-for-publishing.pdf
[269] https://medium.com/@peonybuyoh/eco-friendly-clothing-2327a00da98d
[273] CBI_Taxonomy_Tables-08A (1).pdf

	which includes pulp production; production facilities incorporating efficient pulping process, biorefineries, and use of recycles[272]. **(M, N)**		nitrogen oxide, nitrates, mercury, benzene, methanol, volatile organic compounds, and chloroform[274].- Note: there is a national environment standard for this
5.4. Printing and Publishing	• Use of recycled paper in printing and publishing - sustainable strategies to source, produce, and recycle paper from natural materials- use pollen-based paper[275], including the machineries that use clean energy **(M, N)**		• Use of plastic and other materials in printing and publishing: Flex printing, (literature)
5.5. Medicine	• Production of pharmaceuticals, cosmetics, or other bio-based products through biotechnological applications up to local sustainable production standards or certification schemes[276]. **(N, A, P)**	• Sustainable Consumption and Production (SCP), of wastes from medicine, using: (a) water management, (b) energy conservation, and (c) wastewater treatment and chemical use reductions, d) solid waste management.[277]	• Manufacturing that involves direct emission from drug manufacturing as a source of much higher environmental discharges that, in some cases, greatly exceed toxic threshold concentrations and pose a threat to the environment and health.[278] • Chemicals used in cosmetics which are prohibited and hazardous
5.6. Refined Oil and Coal		• Manufacture of liquid biofuel for use in transport with significantly reduced	• Coal mining or oil extraction, refining, processing or production

[272] mongolia-green-taxanomy-eng-pdf-for-publishing.pdf
[274] https://cartlyapp.com/en/the-impacts-of-paper-on-the-environment
[275] Zhao, Z., Deng, J., Tae, H., Ibrahim, M. S., Suresh, S., & Cho, N. J. (2022). Recyclable and Reusable Natural Plant-Based Paper for Repeated Digital Printing and Unprinting. Advanced Materials, 34(19), 2109367.
[276] mongolia-green-taxanomy-eng-pdf-for-publishing.pdf
[277] https://www.bing.com/search?q=Sustainable+Consumption+and+Production
[278] Larsson, D. J. (2014). Pollution from drug manufacturing: review and perspectives. Philosophical Transactions of the Royal Society B: Biological Sciences, 369(1656), 20130571.

Products (lubricants)		GHG emissions by using advanced technologies[279]. • Green technologies used in refining oil. They serve as alternative methods for the treatment of wastewater. Several types of green technologies have been applied for the remediation of polluted sites. Examples include but are not limited to phytoremediation, bioremediation, bio stimulation, bioaugmentation, natural attenuation, constructed wetlands, vermi-filtration, nanotechnology, membrane filtration, and microbial fuel cells[280]	and associated supply chain infrastructure Gas extraction, refining, processing or production and associated supply chain infrastructure Blending of Lubricating oil, greases. • Coal washeries • Lubricating oils and grease manufacturing • Industries like the excavation of precious minerals and petroleum products • Liquefied petroleum gas (L.P.G) refiling industries
5.7. Resin and Turpentine		• Sustainable harvesting of resin using proper monitoring of the collection work and proper application of harvesting practices[281].	• Resin and Turpentine harvesting, processing and production are unsustainable, highly polluting, and haphazard waste disposal
5.8. Rubber Tyre		• Manufacture of natural rubber products with sustainability certification. This includes the manufacture of rubber tires and tubes, retreading, and rebuilding of rubber tyres[282]. (P, N) (storage of carbon) • Sustainable Consumption and Production (SCP), of wastes from leather, using: (a) water management, (b) energy conservation, and (c)	• Rubber plantation, processing and production that are environmentally detrimental (land use change, pollution, haphazard waste disposal)- because of the materials used to create tires, this worn away material is counted as a microplastic, which is a known environmental pollutant- The estimated contribution of tires to the microplastics that end

[279] mongolia-green-taxanomy-eng-pdf-for-publishing.pdf
[280] https://www.intechopen.com/chapters/77342
[281] https://www.researchgate.net/publication/265391079_Sustainable_Resin_Collection_and_trade_Practices_in_Mid_Hills_of_Nepal
[282] https://www.cbsl.gov.lk/en/sl-green-finance-taxonomy

		wastewater treatment and chemical use reductions, d) solid waste management[283]	up in oceans annually would be 5 – 10%.
5.9. Leather		• Investments in sustainable leather production such as use of alternatives like cacti, pineapple leaves, and mycelium are reducing the environmental impact of leather production. Leather made from cacti saves 164,650% of water compared to animal leather and 190% in comparison to polyurethane-based vegan leather. While leather made from apple scraps emits 85% less carbon dioxide than traditional leather production.[284] • Production that uses scrap material to make shoes, produces zero waste, and uses old leather materials to make new ones[285] • Tanning – farm-based, which us fewer fossil fuels and are less polluting.	• Manufacturing of leather footwear /products that are water extensive, high polluting, haphazard waste disposal.
5.10. Plastic		• Investment in Plastic recycling, upcycling, remanufacturing, and repurposing i.e., establishment and operation of plastic collection and recycling facilities that reuse, remanufacture, and repurpose the plastics up to local industrial and environmental standards[286].	• Plastics made from non-renewable sources such as petroleum and polyvinyl chloride (PVC) And hazardous [289].

[283] https://www.bing.com/search?q=Sustainable+Consumption+and+Production
[284] https://www.weforum.org/agenda/2022/07/future-leather-pineapple-leaves-cacti-mycelium/
[285] https://www.unep.org/explore-topics/resource-efficiency/what-we-do/sustainable-and-circular-textiles
[286] https://www.cbsl.gov.lk/en/sl-green-finance-taxonomy
[289] https://www.vanellagroupmn.com/the-negative-effects-of-plastic-on-the-environment

		• Investment in plastic made from renewable resources, like corn or sugarcane. These plastics are called bioplastics. They're made from plant materials that can be replenished, so they're more environmentally friendly than petroleum-based plastics[287] • Plastic manufacturing except PVC which is less harmful and uses less fossil fuels during production[288].	
5.11. Cement		• Production facilities, incorporating dry processes, reduced clinker content. • Installation of Hybrid Hoffman Kilns (HHK), Tunnel Kilns (TK), and Compressed Stabilized Earth Blocks (CSEB) technologies to replace traditional brick kilns, to transition towards low-carbon technologies in the industry sector[290]. • Low-emission technologies for cement industries i.e., Production facilities, incorporating dry processes, reduced clinker content[291] Promotion of Concrete Hollow Blocks / Interlocking Concrete Block/ lightweight Cellular Concrete/ Clay Brick of Auto Brick	• The increasing harvesting of raw materials for mounting cement manufacturing, which causes a reduction in quantity of the non-renewable resources such as limestone- continuous reaping of these precious resources, exposes it to the risk of depletion in future. Furthermore, the raw materials processing phases in the factory release dust, noise, and greenhouse gases especially carbon dioxide which contaminates the environment and aggravates climate change[294].

[287] https://www.vanellagroupmn.com/the-negative-effects-of-plastic-on-the-environment#:~:text=Both%20PET%20and%20PVC%20are,These%20plastics%20are%20called%20bioplastics.
[288] Sri Lanka Green Finance Taxonomy | Central Bank of Sri Lanka (cbsl.gov.lk)
[290] https://www.mofe.gov.np/uploads/documents/nepal-lts-document-uploaded-in-unfccc1653986846pdf-0523-253-1657876086.pdf
[291] https://www.climatebonds.net/standard/taxonomy
[294] Mohamad, N., Muthusamy, K., Embong, R., Kusbiantoro, A., & Hashim, M. H. (2022). Environmental impact of cement production and Solutions: A review. Materials Today: Proceedings, 48, 741-746.

		factory with efficient kiln. (At least 60% of total Masonry wall)[292] • Low-emission technologies for brick and cement industries must demonstrate their low environmental impact[293]	
5.12. Stone; Clay and Glass Products		• Businesses that use natural Stone chips as coarse aggregate. The Factory should have an energy audit report from the Sustainable Finance Policy for Banks and FIs national/International Certifying agency should have recycled content or fly ash[295].	• Use of materials that are resource-intensive, highly polluting, and non-recyclable.
5.14. Metals-Basic Iron and Steel Plant		• Manufacture of iron and steel products with significantly reduced GHG emissions in the manufacturing process by using advanced technologies. Steel scrap can be recycled in electric arc furnaces (EAFs) producing EAF carbon steel or EAF high alloy steel[296]. • Reinforcement steel from energy-efficient factories. The Factory should have an energy audit report from a national/International Certifying agency and use >0% recycled materials content[297].	• Use of materials that are resource-intensive, highly polluting, and non-recyclable.

[292] https://www.mofe.gov.np/uploads/documents/nepal-lts-document-uploaded-in-unfccc1653986846pdf-0523-253-1657876086.pdf
[293] https://www.mofe.gov.np/uploads/documents/nepal-lts-document-uploaded-in-unfccc1653986846pdf-0523-253-1657876086.pdf
[295] https://www.bb.org.bd/mediaroom/circulars/gbcrd/dec312020sfd05.pdf
[296] sl_green_finance_taxonomy.pdf
[297] https://www.oecd.org/sti/ind/Energy-efficiency-steel-sector-1.pdf

		• Use of electrolysis-based production and the decarbonisation of steel-based production[298]	
5.15. Metals-Other Plant / Workshop		• improving the operation efficiency and ending treatment, such as the utilization of biomass and hydrogen in ironmaking, the utilization of recycled organic solid waste in ironmaking, the advanced operation technology of blast furnace ironmaking, the preparation and utilization of ferro-coke and bio-coke, new ironmaking processes, CCUS (carbon capture, uses and storage) technology in steel plants[299]	• Use of materials that are resource-intensive, highly polluting, and non-recyclable.
5.16. Hire Purchase Vehicle - Industrial/Manufacturing	Purchase, leasing, or operation of electric vehicles for industrial and manufacturing purposes[300] **(M, N, P)**	• Purchase, leasing, or operation of low carbon hire purchase vehicle (Hybrid, energy-efficient vehicle)[301]	• Hire purchase vehicle, which is highly polluting and does not meet environmental standards.
5.18. Clinker		• Improving energy efficiency; Switching to alternative fuels; Clinker substitution; and use of emerging and innovative technologies[302]	High polluting and does not meet environment standards

[298] https://www.iea.org/energy-system/industry/steel
[299] https://www.mdpi.com/journal/metals/special_issues/Low_Carbon_Metallurgy_Technology
[300] https://finance.ec.europa.eu/system/files/2020-03/200309-sustainable-finance-teg-final-report-taxonomy_en.pdf
[301] https://finance.ec.europa.eu/system/files/2020-03/200309-sustainable-finance-teg-final-report-taxonomy_en.pdf
[302] Chatterjee, A., & Sui, T. (2019). Alternative fuels–effects on clinker process and properties. Cement and Concrete research, 123, 105777.

6. Construction

Table 10 Green Finance Taxonomy Classification of Construction related sector.

Economic Sub Sector	Green (Transformative)	Amber (Transitional)	Red
6.1. Construction - Residential	• Sustainable and green residential or real estate buildings using resource improvements/ efficiency to comply with domestic green building standards[303] or international building codes, during new building, renovation, and reconstruction such as - Leadership in Energy and Environmental Design (LEED[304]), - Excellent Design for Greater Efficiencies (EDGE) (EDGE[305]) - Climate Bond Initiatives (CBI) criteria for residential sectors (CBI[306]) or - other internationally recognized green construction codes[307]. **(A, M, N, P)**	• Construction of residential areas that partially meet the domestic or international green building practices and certification criteria or processes starting from - proper site selection, consideration of any existing buildings or infrastructure, - the orientation of streets, and homes for passive and active solar features, - location of access roads, parking, - potential hazards and any high-priority resources that should be conserved, such as trees, waterways, and animal habitats[308].	• Non-compliant in terms of the use of domestic or international green building practices/codes and the application of environmentally responsible and resource-efficient processes throughout a building's life cycle: from planning to design, construction, operation, maintenance, renovation, and demolition.
6.2. Construction -	• Sustainable and green commercial or real estate buildings using resource improvements/efficiency to	• Construction of non-residential which Partially	• Non-compliant in terms of the national building codes

[303] Nepal Green Building Guidelines and Green Building Codes of the Department of Urban Development and Building Construction (DUDBC)- under preparation.
[304] LEED is for all building types and all building phases, including new construction, interior fit-outs, operations and maintenance and core and shell.
[305] EDGE focuses purely on energy, water, and embodied energy in materials for a quantitative approach to sustainability.
[306] CBI Residential Buildings Criteria uses local building codes and energy ratings/labels.
[307] Bangladesh taxonomy (Characteristics of Green Featured Building), Srilanka Taxonomy (reduction of GHGs and nearly zero-energy building requirements), Mongolia Taxonomy (Efficient and low carbon building systems)
[308] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)

Non-Residential (Commercial)	comply with domestic green building standards[309] or international building codes, during new building, renovation, and reconstruction such as - Leadership in Energy and Environmental Design (LEED[310]), - Excellent Design for Greater Efficiencies (EDGE) (EDGE[311]) - Climate Bond Initiatives (CBI) criteria for commercial sectors (CBI[312]) or - other internationally recognized construction codes[313]. **(A, M, N, P)**	meet the domestic or international green building practices and certification criteria or processes starting from - proper site selection, consideration of any existing buildings or infrastructure, - the orientation of streets, homes for passive and active solar features, - location of access roads, parking, - potential hazards and any high-priority resources that should be conserved, such as trees, waterways, and animal habitats.	or structure and the application of environmentally responsible and resource-efficient processes throughout a building's life cycle: from planning to design, construction, operation, maintenance, renovation, and demolition. •
6.3. Construction - Heavy Construction (Highway; Bridge etc)	• Innovative green highways and bridges design structures to allow animals to safely cross busy highways[314]), connect greenways or multi-use trails promote sustainable transportation, active lifestyles and social interaction for pedestrians, joggers, and bicycle traffic, and allow more green spaces such as trees and plants, habitats for wildlife and other environmental benefits[315] [316]. **(A, M, N, P)**	• Construction that meets the compliance of the environmental assessments guided by the Environmental Protection Act and Regulation, including implementing Environmental Management Plans (EMPs)	• Construction that does not protect utility infrastructure and other vulnerable components against future environmental issues, including more extreme weather.

[309] Nepal Green Building Guidelines and Green Building Codes of the Department of Urban Development and Building Construction (DUDBC)- under preparation.
[310] LEED is for all building types and all building phases, including new construction, interior fit-outs, operations and maintenance and core and shell.
[311] EDGE focuses purely on energy, water, and embodied energy in materials for a quantitative approach to sustainability.
[312] CBI Residential Buildings Criteria uses local building codes and energy ratings/labels.
[313] Bangladesh taxonomy (Characteristics of Green Featured Building), Srilanka Taxonomy (reduction of GHGs and nearly zero-energy building requirements), Mongolia Taxonomy (Efficient and low carbon building systems)
[314] Following the Wildlife friendly Infrastructure construction directives, 2022
[315] Srilanka Taxonomy (Infrastructure enabling low-carbon road transport); Malaysia (Green Road certification)
[316] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)

	• Green smart ways to promote innovative technologies[317] **(M, N, P)**	and the Government of Nepal's Standard Specifications for road and bridge works[318] [319](2073). • Research and feasibility assessment to introduce plastic waste[320], rubber asphalt and other waste/recycled materials into the traditional bitumen mixture[321], reducing the amount of asphalt concentrate to make it cheaper, longer lasting, and environmentally friendly roads[322].	• Non-compliant with Environment Management Plans, and Standards Specifications for road and bridge works
6.4. Hire Purchase Vehicle - Construction	• Hire Purchase vehicle construction that adopts Green procurement as a gateway approach to enhance environmental performance in building and heavy construction, including renting or hiring construction or demolition machinery and equipment with or without an operator[323]. **(A, M, N, P)** • Public and private purchase of works, goods or services that seek to contribute to closed energy and material loops within supply chains whilst minimizing and, in the best case, avoiding negative environmental	• Construction that uses alternatives to conventionally diesel-driven construction machines to develop and pilot innovative sustainable procurement approaches- to reduce the environmental impact of construction activities and encourage market innovation[325].	• Construction that is heavily fossil fuel dependent, has higher pollution (water and air) and does not follow environmental safeguard measures.

[317] Ecological landscape planning and design, industrial construction for bridges (assembled bridges and steel concrete composite bridges) and culverts, transportation, tourism, application of photovoltaic power generation for energy needs and safe traffic technology and use of plastics waste in road construction Concept of green highway and practice of green highway in Jiangxi Province (e3s-conferences.org)
[318] Department of Road, Ministry of Physical Infrastructure and Transport. Government of Nepal.
[319] Green Road Concept - Green Roads in Nepal - IRF gTKP - global Transport Knowledge Practice
[320] Plastic Waste in Road Construction: A Path Worth Paving? Application of Dry Process in South Asia (worldbank.org)
[321] (29) (PDF) Recycling of Waste Materials for Asphalt Concrete and Bitumen: A Review (researchgate.net)
[322] A guide to good practices for environment-friendly roads Friendlyroads.pdf (nature.org)
[323] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)
[325] Frontiers | Impact of Green Construction Procurement on Achieving Sustainable Economic Growth Influencing Green Logistic Services Management and Innovation Practices (frontiersin.org)

	impacts and waste creation across their whole life cycle[324]. **(A, M, N, P)**		

[324] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)

7. Power, Gas and Water

Table 11 Green Finance Taxonomy Classification of Power, Gas and Water related sector.

Economic Sub Sector	Green (Transformative)	Amber (Transitional)	Red
7.1. Hydroelectricity Production	• Investment in the promotion of the zero-carbon emitting hydroelectricity production facility with safeguarding and environmental protection measures i.e., Hydropower development with climate risk assessment and inclusion and application of risk mitigation measures [326]**(A, M, N)** • Hydroelectricity generation plant that meets criteria (a) and (c) OR (b) and (c) [327,328]: a) The electricity generation facility is a run-of-river plant and does not have an artificial reservoir. b) the power density of the electricity generation facility is above 5 W/m2. c) the life cycle GHG emissions from the generation of electricity from hydropower, are lower than 100gCO2e/kWh. The life cycle GHG emissions are calculated using ISO 14067:2018, ISO14064-1:2018 or the G-res tool[329].	Generation plant meets criteria (a) and (c) OR (b) and (c) [327,328]: a) The electricity generation facility is a run-of-river plant and does not have an artificial reservoir. b) Power density of the electricity generation facility is above 5 W/m2. c) Lifecycle GHG emissions from the generation of electricity by the entire facility: >100 and <425 gCO2e/kWh	• Hydroelectricity production in protected areas, biodiversity hotspot areas and disaster-prone areas as identified by VRA and disaster mapping. • Hydropower generation not meeting mitigation standards as well EIA/IEE and ESG standards.

[326] https://www.intechopen.com/chapters/78368
[327] Central Bank of Sri Lanka. 2022. Sri Lanka Green Finance Taxonomy, Central Bank of Sri Lanka. May 2022
[328] European Taxonomy: Final technical report of the Technical Expert Group on Sustainable Finance
[329] Using the G-res tool developed by the International Hydropower Association in collaboration with the UNESCO Chair for Global Environment Change (see here). The issuer will provide a validated result to the Approved Verifier for the verifier to confirm compliance with these Criteria.

Economic Sub Sector	Green (Transformative)	Amber (Transitional)	Red
	Quantified life cycle GHG emissions are verified by an independent third-party entire facility <100 gCO2e/kWh **(M, N, P)** • Decarbonization and energy storage: pumped storage, electricity storage, including the grid-scale battery storage. • Site-specific assessment, carried out by an accredited assessor to meet the requirements of Environmental Impact Assessment (EIA)/Initial Environment Assessment (IEE) as per Nepal's Environment Protection Act and Regulations. Hydropower developers are also encouraged to meet hydropower criteria of Climate Bonds Initiative including use ESG Gap Analysis tool[330] to meet ESG requirements as suggested by International Hydropower Association. If any significant gaps are identified, an Environmental and Social Action Plan (ESAP) must be established to address those gaps including details on how and when these gaps will be closed.[331] **(M, A, N, P)**		

[330] ESG Gap Analysis tool identifies gaps between the facility's practices and industry good practice regarding environmental and social impacts. If any significant gaps are identified, an Environmental and Social Action Plan (ESAP) must be established to address those gaps including details on how and when these gaps will be closed.
[331] The Hydropower Criteria- Climate Bonds Initiative https://www.climatebonds.net/files/files/standards/Hydropower/Hydropower%20brochure%20Mar%202021.pdf

Economic Sub Sector	Green (Transformative)	Amber (Transitional)	Red
7.2. Electricity Transmission and Distribution	• Dedicated transmission lines from a clean and green hydropower facility (see criteria for hydropower generation) to the main grid [332] • Electricity transmission and distribution incorporating sustainable and biodiversity conservation. • Purchase of transmission and distribution equipment for electricity produced from hydropower, solar, wind or other renewables, which meet applicable standards stated in this green finance taxonomy to qualify as "green"[333]. *Note: As part of the EU sustainable infrastructure policy, climate mitigation transmission infrastructure or equipment must meet criteria such as no more than 100 gCO2/kWh of emissions over the next five years. Also, the EU taxonomy attempts to keep grid emissions below 100 gCO2e/kWh over a rolling five-year period.*	• Installation of electricity transmission and distribution with minimal impacts on biodiversity and natural resources[334] • Transmission and distribution equipment, including transformers and power lines, with low emissions and environmental degradation. • Investment in the construction and upgrading of transmission infrastructures evaluated against specific thresholds to ensure that negative impacts on the natural resources and the environment are minimized.	• Expanding transmission and distribution system for coal-powered electricity • Construction of electricity transmission and distribution affects the protected areas, forests, and water resources.
7.3. Wind Energy	• Wind power generation facilities that use energy-efficient infrastructure development, and clean technologies[335] **(M, N, P)**	• Wind power systems for small communities and small, medium, and large-sized enterprises that use low-carbon technologies and	• Wind energy plant triggers threat to biodiversity including birds, livelihoods, and the environment

[332] The Hydropower Criteria- Climate Bonds Initiative https://www.climatebonds.net/files/files/standards/Hydropower/Hydropower%20brochure%20Mar%202021.pdf
[333] The Hydropower Criteria- Climate Bonds Initiative
[334] Central Bank of Sri Lanka. 2022. Sri Lanka Green Finance Taxonomy, Central Bank of Sri Lanka. May 2022
[335] Central Bank of Sri Lanka. 2022. Sri Lanka Green Finance Taxonomy, Central Bank of Sri Lanka. May 2022

Economic Sub Sector	Green (Transformative)	Amber (Transitional)	Red
	• Wind energy projects incorporate corresponding studies and monitoring plans to minimize risks for birds, livelihoods, and the environment[336]. **(M, N)**	equipment (clean raw materials and equipment) • Manufacture facilities dedicated to the storage of wind energy, considering the mitigation of environmental and social impacts	
7.4. Solar Energy	• Small, medium, and large-scale, portable solar home systems, mini grids, and other types of stand-alone systems to power communities **(M, P).** • Construction or operation of electricity generation facilities that produce electricity using solar photovoltaic (PV) technology. The component products selected for solar photovoltaic power generation facilities should meet the requirements (See footnote explanations)[337,338] **(M, P).** • Solar plants that consider minimizing losses to ecosystems and biodiversity and ensuring protection[339] **(N, P)**	• Solar power plants considering battery recycling and battery recycling and waste disposal management[340]	• Construction of solar plants in protected areas or agricultural land; climatic or non-climatic hazard-prone areas without applying any environmental protection measures. • Solar power plants consider battery recycling and battery recycling and waste disposal management. • Solar plants that involve significant land use that results in losses in ecosystems and biodiversity[339].

[336] Ministry of Finance and Public Credit, Mexico. 2023. Mexico Sustainable Taxonomy. March 2023.
[337] Requirements for component products selected for solar photovoltaic power generation facilities:1)The minimum photoelectric conversion efficiency of polycrystalline silicon cells and monocrystalline silicon cells shall not be less than 19% and 21% respectively; 2)The minimum photoelectric conversion efficiency of polycrystalline silicon cell modules and single crystal silicon battery modules shall not be less than 17% and 17.8% respectively; 3)The minimum photoelectric conversion efficiency of silicon-based, CIGS, CdTe and other thin-film battery modules shall not be less than 12%, 14% , 14% , 12% ;
4)The decay rates of polycrystalline silicon battery modules and monocrystalline silicon battery modules shall not be higher than 2.5% and 3% in the first year, and not higher than 0.7% per year, and not higher than 20% within the period of 25 years; the attenuation rate of thin-film battery module shall not be more than 5% in the first year, no more than 0.4% per year in the following year, no more than 15% within the period of 25 years
[338] Central Bank of Sri Lanka. 2022. Sri Lanka Green Finance Taxonomy, Central Bank of Sri Lanka. May 2022
[339] Renita D'Souza, *Developing a Green Taxonomy for India: A Rulebook,* December 2021, Observer Research Foundation.
[340] https://www.solarpowerworldonline.com/2019/10/a-qa-on-battery-recycling/

Economic Sub Sector	Green (Transformative)	Amber (Transitional)	Red
7.5. Other Electricity and Energy Production	• Energy optimization captive power from renewable sources like solar and hydro **(M, P).**		• Energy generation from fossil-fuel-based power plants such as coal, and heavy fuel oil.
7.6. Other Renewal Energy including charge station	• Investment in the promotion of renewable energy projects that have no greenhouse gas emissions impact, such as green hydrogen, biofuels, etc.[341] **(M, P)** • Sustainable charging stations rely on renewable energy sources, such as hydro, solar or wind power, to ensure clean energy for EV charging [342] **(M, P)** • Use of efficient and long-lasting batteries that are critical for sustainable charging stations[343] **(M, P)**	• Facilities for renewable electricity generation and thermal applications of geothermal heat that demonstrate their impact on the environment is minimized and that they do not emit GHGs. • Facilities for producing biofuel, biomass, biogas, and other bioenergy products including fuel preparation process facilities, pre-treatment facilities and bio-refinery facilities, and gaseous, liquid, and solid (forest) biofuel manufacturing facilities. • Facilities for manufacturing of small, medium, and large biogas plants	• Financing energy facilities that produce high GHGs and have detrimental impacts on the environment and biodiversity. • Charging stations that rely on fossil-fuel-based energy sources (coal, heavy fuel oil)
7.7. Gas and Gas Pipeline Services		• Facilities for gas manufacturing through processing, refining, and mixing of natural gas[344].	• Construction of pipelines in protected areas • Constructions of gas pipelines without carrying out environmental and social impact assessment

[341] Central Bank of Sri Lanka. 2022. Sri Lanka Green Finance Taxonomy, Central Bank of Sri Lanka. May 2022
[342] https://energy5.com/the-eco-friendly-side-of-charging-stations-revolutionizing-sustainability-in-the-tech-world
[343] https://energy5.com/the-eco-friendly-side-of-charging-stations-revolutionizing-sustainability-in-the-tech-world
[344] Patrascioiu, C., Rahman, N. A., & Popescu, M. (2022). Optimal Control System for Products Quality from a Deethanizer Column. In *Computer Aided Chemical Engineering* (Vol. 51, pp. 253-258). Elsevier.

Economic Sub Sector	Green (Transformative)	Amber (Transitional)	Red
		• Construction of pipeline by applying proper environmental protection measures[345]	
7.8. Water	• Investing in energy from Water mill[346] **(M, P)** • Construction and operation of technically advanced drinking water collection, storage, treatment, and supply infrastructure that reaches at least 20% water savings per unit of service compared to a documented local baseline[347] **(A, N, P)** • Retrofit of existing water supply infrastructure that reaches at least 20% water savings per unit of service compared to a documented local baseline[346] **(A, N, P)** • Installation of water treatment equipment and facilities for water as per local industrial and environmental standards[348] **(A, N, P)**	• Construction of facilities related to production, collection and distribution of steam and hot water for heating and other purposes that consider mitigation of environmental impacts.	• Installation of water treatment equipment and facilities for water that does not meet local industrial and environmental standards. • Construction and operation of drinking water collection, storage, treatment, and supply infrastructure that do not provide water savings and result in losses to natural resources and biodiversity.

[345] Patrascioiu, C., Rahman, N. A., & Popescu, M. (2022). Optimal Control System for Products Quality from a Deethanizer Column. In *Computer Aided Chemical Engineering* (Vol. 51, pp. 253-258). Elsevier.
[346] Central Bank of Sri Lanka. 2022. Sri Lanka Green Finance Taxonomy, Central Bank of Sri Lanka. May 2022
[347] Central Bank of Sri Lanka. 2022. Sri Lanka Green Finance Taxonomy, Central Bank of Sri Lanka. May 2022
[348] Central Bank of Sri Lanka. 2022. Sri Lanka Green Finance Taxonomy, Central Bank of Sri Lanka. May 2022

8. Metal Products, Machinery & Electronic Equipment & Assemblage

Table 12 Green Finance Taxonomy Classification of Metal Products, Machinery & Electronic & Assemblage related sector

Economic Sub Sector	Green (Transformative)	Amber (Transitional)	RED
8.1. Fabricated Metal Products		• Adherence to the best environmental management practice in the fabricated metal product manufacturing sector[349] , considering A) **direct environmental aspects (***use of raw materials, Energy, Water, Consumables, Emissions to air, Emissions to water, Waste: non-hazardous or hazardous, noise, GHG emissions, Land use, and Biodiversity*) in a) Product and manufacturing design[350]; b) Manufacturing processes[351]: and c) Supporting processes[352]: B) **indirect environmental aspects**, reduced in the fabricated metal product manufacturing sector upstream[353] and downstream[354] in the value chain.	• Business-as-usual economic activities of fabricated metal products resulting in carbon emissions and pollution from iron, aluminium utensils, brass and bell metal utensils, cardboard and corrugated box, global and silver smithy, grill manufacturing, aluminium and copper extraction from scrap, ferrous and non-ferrous metal extraction, steel, and steel products with furnaces[355]. • Plating, anodizing etc. of metal, heat treatment of metal, deburring, sandblasting, tumbling, cleaning of metals, colouring, engraving, printing of metal non-metallic coating of metal,

[349] Best environmental management practice in the fabricated metal product manufacturing sector - Publications Office of the EU (europa.eu)
[350]Production or manufacturing of metal products that are smart and efficient with reportable adverse climate and environmental impacts. Product design, Infrastructure design (plant level), Process design (plant level)
[351]Manufacturing processes (casting, shaping, metal powder, heat treatment, removing, additive processes, deformation, joining, surface treatment, assembly) considering the environment risk mitigation measures. Casting, Shaping, Metal powder, Heat treatment, Removing, Additive processes, Deformation, Joining, Surface treatment and assembly process.
[352] Supporting processes (Management, procurement, supply chain management, quality control, Logistics, handling, storage, packaging, emission treatment, utilities, and maintenance).
[353] Raw material extraction and primary metal production; Tools and equipment production
[354] End of life, use and service phase (disassembly) and waste management.
[355]Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)

			hardening, buffing of metal, boring, turning, milling, eroding, planning, lapping, broaching, levelling, sawing, grinding, sharpening, polishing, welding, splicing etc. of metalwork pieces, cutting of and writing on metals utilizing the laser beam. • Metal products such as tanks and reservoirs, swords, bayonets, clock or watch springs, wire and cable for electricity transmission, power transmission chains, metal furniture, sports goods, and toys etc.
8.2.1. Machinery Tools - Agriculture related	• Clean energy-based (solar/wind/hydroelectricity) based agriculture tools. **(A, M)** • Use of wind turbines to pump water for irrigation. **(A, M)** • Use of Drone technology for precision farming, capturing aerial imagery and examining crops[356]. **(A, N)** • Use of robots for efficient approaches in applying pesticides in	• Manufacture or purchase of hybrid energy tools such as agricultural shredders, tractors, round straw balers, pit digging machines, manure spreaders, cotton processing plants, banana tree shredders, hydraulic reversible ploughs, iron corn crusher, straw blower machines, manual seeding cum trans planter, Redlands baler, and other machinery[358]. • Green fleet management using a GPS that provides detailed	• Fossil fuel and carbon-intensive agriculture-related machinery tools using power take off, automatic and semi-automatic technologies for rice transplanter, hydro seeder, hay baler, mulcher, harvester, tractor, seed drill (Wetland paddy), rice transplanter and other machinery tools.

[356] 7 Best Agricultural Drones 2023 (A Complete Buying Guide) (droneller.com)
[358] Common Farm Tools and Equipment: Names, Pictures, And Uses » Green Lifo

	a way that does not harm the environment[357]. **(A, M, N)** • Use of Digital sensors to maximise yields, conserve waters and fertilizers, reduce waste and increase productivity (monitor micro-climate, Ph level in the soils and movements of animals in farms) **(A, P, N)**	information including fuel usage, engine speed and upcoming maintenance[359].	
8.2.2. Machinery Tools - Construction; Oil; Mining		• Investment in mining[360] technology and tools for the extraction of minerals, metals or other resources while mitigating the environmental impacts of the process including emission reduction and pollution reduction machinery tools and technologies. • Clean energy and energy-efficient production or purchase of boring, cutting, sinking, and tunnelling machinery[361]. • Energy efficient and clean energy-driven manufacture or purchase of concrete and mortar mixers, piledrivers and pile-extractors, mortar spreaders, bitumen spreaders, and concrete surfacing machinery[362].	• Manufacture or purchase of fossil fuel-based earth-moving machinery (bulldozers, angle-dozers, graders, scrapers, levellers, mechanical shovels, shovel loaders, off-road dumping trucks etc.)[363] • Manufacture or purchase fossil fuel-based tracklaying tractors and tractors used in construction or mining; including the manufacture or purchase of parts and accessories for machinery/equipment used by construction and mining industries.

[357] 16 Agricultural Robots and Farm Robots You Should Know | Built In and Design and development of a robot for spraying fertilizers and pesticides for agriculture - ScienceDirect
[359] (16) (PDF) AGRICULTURAL FLEET MANAGEMENT: A SYSTEMS APPROACH (researchgate.net)
[360] Green technologies: making mining more sustainable and energy efficient - Mining Technology (mining-technology.com)
[361] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)
[362] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)
[363] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)

8.2.3. Machinery Tools - Office and Computing	• Use of digital storage options to initiate paperless billing to enhance the operating efficiency of the office. **(A, M, N, P)** • Green office supplies by considering high-quality products with a long service life to help limit waste such as refillable pens, reusable notebooks, and staple-less staplers, avoiding plastics thinner than 40 microns[364] (replace by reusable items). **(A, M, N, P)** • Use of electrified computer terminals like automatic teller machines (ATM), and point-of-sale (POS) terminals not mechanically operated. **(A, M, N, P)** • Manufacture or purchase of energy efficient printers, scanners, including bar code scanners, smart card readers, virtual reality helmets, and computer projectors (video beamers). **(A, M, N, P)**	• Production, processing and marketing of energy-efficient and low-emitting reinforced safes, vaults, strong room doors, gates and metal goods for office use and other purposes[365] • Production, processing and use of energy-efficient and low emitting calculating machines, adding machines, cash registers, calculators, electronic or not, postage meters, mail handling machines, collating machinery, typewriters, stenography machines, office type binding equipment (i.e. plastic or tape binding), cheque writing machines, coin counting and coin wrapping machinery, pencil sharpeners, staplers and staple removers, voting machines, tape dispensers, hole punches, cash registers, mechanically operated, photocopy machines, toner cartridges, manufacture of blackboards; white boards and marker boards, and dictating machines[366]. • Manufacture or use of environmentally friendly and energy efficient machinery for making paper pulp, paper, paperboard, and articles of paper board[367].	• Manufacture or purchase of carbon-intensive and environmentally non-compatible machinery tools for office and computing such as printing and bookbinding machines and machines for activities supporting printing on a variety of materials (other than textiles).

[364] Action Plan for Ban on Plastic Bags, 2022. Government of Nepal
[365] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)
[366] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)
[367] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)

8.3. Electrical Equipment	• Manufacture or purchase of solar water heaters. **(M)** • Manufacture and use of electric and eco-friendly and certified (meeting the rating requirements - minimum energy performance standards) e cooking ((for instance Induction Cooktops, Electric Stoves and Ovens, Electric Pressure Cookers, Microwaves, Slow Cookers (Crock-Pots), Toaster Ovens, Electric Grills, Rice Cookers, Multi-Cookers, Sous Vide Machines, Air Fryers, Electric Woks, Electric Griddles, Bread Makers, Electric Skillets, Coffee Makers with Hot Plates, Electric Steamers, Electric Smokers, Halogen Ovens), kettles, coffee makers, toasters, blenders, rice cookers, ironing machines, washing, and drying machines, dry-cleaning machines, sewing machines and other laundry machinery. **(A, M, N, P)** • Manufacture or purchase of electric fans or exhaust fans. (**M)**	• Manufacture or use of environment-friendly and energy-efficient and electric machinery for the preparation of textile fibres, spinning machines, machines for preparing textile yarns, weaving machines (looms), including hand looms, and knitting machines. • Manufacture or use of energy-efficient and environment-friendly electric machinery for washing, bleaching, dyeing, dressing, finishing coating or impregnating textile fabrics, machines for reeling, unreeling, folding, cutting, or pinking textile fabrics, and similar machinery for fabric processing[368]. • Production or purchase of electric power distribution transformers, arc-welding transformers, fluorescent ballasts, transmission, and distribution voltage regulators[369]. • Manufacture of energy efficient, low emission and electric machinery for preparing, tanning, or working hides, skins or leather, machinery for making or repairing footwear or other articles of hides, skins, leather, or fur skins[370].	• Manufacture of primary cells, batteries and rechargeable batteries, cells containing manganese oxide, mercuric oxide, silver oxide, or other material.

[368] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)
[369] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)
[370] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)

8.4. Home Appliances and Other Durables	• Manufacture of domestic electric appliances (meeting the rating requirements - minimum energy performance standards) such as refrigerators[371], washing machines, vacuum cleaners, mixers, grinders etc **(M, P)** • Manufacture of energy-efficient and environmentally friendly radio and television studio and broadcasting equipment, including television cameras. **(M, P)[372].** • Manufacture or purchase of energy-efficient desktop computers, laptop computers, hand-held computers (e.g., PDA), mainframe computers and computer servers[373]. **(M, P).** • Manufacture or purchase energy-efficient monitors, keyboards, all types of mice, joysticks, and trackball accessories, dedicated computer terminals etc[374]. **(M, P)** • Manufacture or purchase of energy-efficient computers and peripheral equipment [375]. **(M, P)**	• Manufacture or purchase of reusable metal household articles (plates, saucers, pots, kettles, saucepans, frying pans and other non-electrical utensils, small hand-operated kitchen appliances and accessories)[376].	• Manufacture or purchase of domestic non-electric/fossil fuel-based cooking and heating equipment such as non-electric space heaters, cooking ranges, grates, stoves, water heaters, cooking appliances, plate warmers
8.5. Information/communication equipment and infrastructure	• Manufacture or use of fibre optic cables for data transmission or live transmission of digital documents by		• Reproduction of carbon-intensive recorded media, electronic components and electronic assemblies used

[371] HFC/HCFC related refrigerants and related equipment's manual, 2076, Nepal Bureau of Standards and Metrology.
[372] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)
[373] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)
[374] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)
[375] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)
[376] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)

	considering e-waste management[377]. **(A, M, N)** • Equipment and infrastructure for Climate Monitoring and weather forecasting system[378] **(A)** • Manufacture or purchase of energy-efficient magnetic and optical storage devices such as magnetic disk drives, flash drives, CDs, DVDs, and other storage devices **(M, P)[379]** . • Telephone tower- wireless technology meeting green standards **(M, N)** [380].		in computers and peripherals.
8.6. Electronic Components	• Development of software that increases the efficiency of supply chains and reduces material loss[381]. **(M)**	• Manufacture or use of optical equipment and instruments, • Manufacture or use of lighting ballasts, electrical relays, electrical wiring devices, • Manufacture of display components (plasma, polymer, LCD, LED) • Manufacture or use of printing of smart cards with proper consideration of environmental measures[382]	• Manufacture of X-ray tubes and similar irradiation devices, • Manufacture of computer and television displays, • Manufacture of modems (carrier equipment), • Manufacture of integrated circuits (analogue, digital or hybrid) • Manufacture of electronic capacitors, resistors, chokes, coils, transformers (electronic) and similar components

[377] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)
[378] COMMON FRAMEWORK OF SUSTAINABLE FINANCE TAXONOMIES FOR LATIN AMERICA AND THE CARIBBEAN
[379] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)
[380] Can telecom networks go green? - ITU Hub
[381] COMMON FRAMEWORK OF SUSTAINABLE FINANCE TAXONOMIES FOR LATIN AMERICA AND THE CARIBBEAN
[382] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)

			• Manufacture of electron tubes, diodes, transistors, and related discrete devices • Manufacture of bare printed circuit boards, loading of components onto printed circuit boards; manufacture of interface cards (e.g., sound, video, controllers, network, modems) • Manufacture of printer cables, monitor cables, USB cables etc. • Manufacture or use of carbon-intensive and mechanical and electro-mechanical signalling safety and traffic control equipment for railways, tramways, inland waterways, roads, parking facilities, airfields etc.
8.7. Medical Related Equipment		• Manufacture or use of laboratory apparatus (laboratory ultrasonic cleaning machinery, laboratory sterilizers, laboratory type distilling apparatus, laboratory centrifuges etc.)[383].	• Manufacture of medical equipment that is non-degradable, non-recyclable, highly polluting and hazardous
8.8. Generators	• Manufacture and use of electric generators that use clean energy	• Manufacture or use of power generators (except battery charging alternators for internal combustion	• Manufacture or use of fossil fuel-based coal, diesel, or petrol-run

[383] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)

	sources (hydro, solar, wind) to generate electricity **(M)** • Production or use of green turbines, which produce electricity from waste heat. **(M, A, N, P)** • Manufacture or use steam or other vapour-generating boilers and hot water boilers using renewable energy. **(M)**	engines), and motor generator sets (except turbine generator set units)[384]. • Production or use of self-propelled electric railway or tramway coaches, vans and trucks, energy efficient maintenance or service vehicles[385] .	generators for starting motors. • Manufacture or use of, diesel, steam, and other rail locomotives generators
8.9. Turbines	• Production or use of wind turbines to generate clean energy[386]. **(M)** .	• Manufacture of energy-efficient and less polluting internal combustion piston engines. • Energy-efficient and less polluting manufacture of turbines and parts [387].	• Manufacture of pistons, piston rings, carburettors and such for all internal combustion engines, diesel engines etc. • Manufacture of turbojets and turbo propellers without consideration of environmental measures.

[384] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)
[385] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)
[386] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)
[387] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)

9. Transport, Utilities, Public communication

Table 13 Green Finance Taxonomy Classification of Transport, Utilities, Public Communication Sector

Economic Sub Sector	Green (Transformative)	Amber (Transitional)	RED
9.1. Motor Vehicles; Parts and Accessories	• Clean energy motor vehicles - manufacturing supply chain facilities [388] **(M, N, P)**	• Dedicated manufacturing facilities for vehicles and key components, such as batteries[389]	• Manufacture of tyre (rubber factory or industry) that doesn't meet quality and standards. • Activities that promote overuse of motor vehicle parts and accessories and their haphazard disposal or no recycling plans
9.2. Jet Boat/water transport	• Infrastructure enabling environmentally sustainable water transport: The activity complies with one or more of the following criteria: (a) the infrastructure is dedicated to the operation of vessels with zero direct (tailpipe) CO2 emissions: electricity charging, hydrogen-based refuelling; (b) the infrastructure is dedicated to the provision of shore-side electrical power to vessels at berth; (c) the infrastructure is dedicated to the performance of the port's own operations with zero direct (tailpipe) CO2 emissions; (d) the infrastructure and installations are dedicated to transhipping freight between the modes: terminal	• Cargo ships: Use of low GHG fuel (e.g., hydrogen, ammonia, electric, high % of biofuel), delivering required emissions intensity thresholds gCO2 e/tonne/km[391] • Use of low GHG fuel (e.g., hydrogen, ammonia, electric, high % of biofuel), delivering required emissions intensity thresholds gCO2 e/passenger/km[392]	• Diesel, petrol and gas run jet boat and water transport that pollute air and water and high in pollution. • Open sewerage and waste disposal to water due to the operation of jet boats and other water transport

[388] mongolia-green-taxanomy-eng-pdf-for-publishing.pdf
[389] Climate Bonds Taxonomy | Climate Bonds Initiative
[391] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf
[392] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf

	infrastructure and superstructures for loading, unloading and transhipment of goods. And the infrastructure is not dedicated to the transport or storage of fossil fuels[390]. **(M, N)**		
9.3. Aircraft and Aircraft Parts	• Construction, modernization, maintenance, and operation of infrastructure that is required for zero tailpipe CO2 operation of aircraft or the airport's operations, as well as for provision of fixed electrical ground power and preconditioned air to stationary aircraft-[393] **(M, N, P)**	• Use of Eco-friendly products, like lightweight trolleys, or special cleaning processes for engines, installed winglets and spent billions on new fuel-efficient aircraft including investment in innovative new technologies such as sharkskin coatings for aircraft and electric taxi-bots[394]. • Passenger and Cargo aircraft: Use of low GHG fuel (e.g., solar, electric, high % of biofuel), delivering a substantial reduction in gCO2 e/passenger or tonne/km[395] • Low carbon freight and cargo transportation- Rolling stock for electrified freight[396]	• Purchasing and operation of aircraft that are old, less energy efficient, highly emitting and have no plans for mitigate emissions.
9.4. Transport Related Other productions	• Manufacture of clean transport vehicles (train, bike, bicycle, bus, coach, water transport)[397] **(M, N, P)**	• Manufacture of hybrid transport vehicles and less fossil fuel-intensive productions[399].	• Transport-related productions that are highly emitting and no plans for mitigation emissions.

[390] https://www.ifc.org/content/dam/ifc/doc/mgrt/mongolia-green-taxanomy-eng-pdf-for-publishing.pdf
[393] https://www.ifc.org/content/dam/ifc/doc/mgrt/mongolia-green-taxanomy-eng-pdf-for-publishing.pdf
[394] https://www.weforum.org/agenda/2015/09/how-to-create-an-environmentally-friendly-airline/
[395] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf
[396] mongolia-green-taxanomy-eng-pdf-for-publishing.pdf
[397] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf
[399] mongolia-green-taxanomy-eng-pdf-for-publishing.pdf

	• Manufacture of rechargeable batteries, battery packs and accumulators for transport, stationary and off-grid energy storage, and other industrial applications (power storage, advance vehicle batteries), including alignment with solar-powered battery specifications[398].**(M, N, P)**		
9.5. Rail Transportation	• All infrastructure for electrified freight rail[400] **(M, N)** • Infrastructure for electric rail transport - Construction, modernization, operation and maintenance of railways and subways as well as bridges and tunnels, stations, terminals etc[401] . For example, construction and operation of freight railway facilities such as freight railway routes, yards and stations, and special power substations; construction and operation of existing railway electrification, yards and stations and relevant energy-saving and environmental	• Low carbon freight and cargo transportation- Rolling stock for electrified freight rail[404] Fossil fuel freight must not be more than 25% of the freight transported (in tonne/km) [405] • Rolling stock for non-electrified freight rail - (i) Fossil fuel freight must not be more than 25% of the freight transported (in tonne/ km) (ii) Transport meets universal gCO2/t-km (tonne-kilometre) threshold[406]	• Coal run, highly intensive other fossil fuel used rail transportation

[398] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf
[400] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf
[401] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf
[404] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf
[405] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf
[406] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf

	protection renovation projects[402]. (**M, N, P)** • Purchase, financing, rental, leasing, and operation of passenger zero direct emissions rail transport such as electrified rail, metro, tram, trolleybus, and cable cars[403]. (**M, N, P)**		
9.6. Truck Services and Warehousing	• Warehouses and storage facilities powered by renewable energy. (**M, P)** • Construction, operation, and renovation of logistics warehouses following the national green building codes and standards. For example, the technical indicators of green logistics warehouse building shall meet the requirements[407] (**M, N, P)**	• Construction, operation, and renovation of logistics warehouses using less emission-intensive technologies, materials, and energy-efficient schemes etc[408].	• Trucking equipment powered by fossil fuels (e.g., gas, petrol & diesel) and other vehicles that do not comply with a proper assessment of their environmental impacts.
9.8. Cable Car; ropeway; Projects	• Electric cable car and electric and gravity ropeways that meet the national standards[409]. (**M, N)** • Charging stations and refuelling assets that are dedicated to storing and delivering chemical or electric energy to power and propel ships, consistent with the	• Adoption of the new aerial cable-car system would generate a savings of up to 10% in average travel time, with a greater impact on populations with lower socioeconomic stratum[411]	• Diesel, petroleum, and gasoline-run electric cable car and ropeway installed without emission mitigation measures. • Ropeway and cable car has a direct impact on protected areas and biodiversity (mass clearing, forest degradation)

[402] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf
[403] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf
[407] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf
[408] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf
[409] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf
[411] Sarache, W., & Jiménez-Riaño, E. (2022). The impact of a new aerial cable-car project on accessibility and CO2 emissions considering socioeconomic stratum. A case study in Colombia. Journal of Cleaner Production, 340, 130802.

	definition of zero-emissions fuels[410].(**M, N)**		
9.9. Tunnel; Port (including dry port) and other physical infrastructure	• Zero emissions vessel[412] Use of low GHG fuel (e.g., hydrogen, ammonia, electric, high % of biofuel), delivering required emissions intensity thresholds gCO2 e/tonne/km **(M, P)** • Charging stations and refuelling assets that are dedicated to storing and delivering chemical or electric energy to power and propel ships, are consistent with the definition of zero-emissions fuels[413]. (**M, P)** • Purchase, leasing, or operation of low-carbon cargo transportation equipment, including electric and hydrogen vehicles[414]**. (M, P)** • Rolling stock, signalling equipment and ICT systems for electrified cargo rail transportation systems[415]. (**A, M, P)**	• Installation of solid waste collectors, receivers and treatment facilities for ports and marine terminals for the collection of garbage generated in shipping vessels, yards, and ports[416]. • Hybrid trucking equipment and water transport have demonstrated low greenhouse gas emissions[417]	• High carbon intensive, plastic and use of high explosive, degradation of land

[410] mongolia-green-taxanomy-eng-pdf-for-publishing.pdf
[412] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf
[413]mongolia-green-taxanomy-eng-pdf-for-publishing.pdf
[414] mongolia-green-taxanomy-eng-pdf-for-publishing.pdf
[415] mongolia-green-taxanomy-eng-pdf-for-publishing.pdf
[416] https://wedocs.unep.org/bitstream/handle/20.500.11822/26160/guidelineprovideportrec.pdf?sequence=1
[417] CBI_Taxonomy_Tables-08A (1).pdf

9.10. Mass public Transportation under priority sector	• All the mass public vehicles with no direct emissions (electric or hydrogen)[418]
	  - Public transport and freight infrastructure; high-occupancy vehicle lanes, electric BRT (Bus Rapid Transit) systems, public walking, and cycling[419]
	  - Buses with no direct emissions (electric or hydrogen)[420] **(A, M, P)**
	• Dedicated charging and alternative fuel infrastructure (when separate from fossil fuel filling stations and garages)[421] **(M, P)**
	• Public walking and cycling infrastructure and cycling schemes[422]**(A, M, P)**
	• Construction and operation of public transportation system in urban and rural areas - Construction and operation of subways, light railways, tram, and other urban rail transportation facilities; construction and operation of high-capacity public transportation facilities, such as e-
		• Efficient fossil fuel or hybrid vehicles that meet universal gCO2 /p-km (passenger kilometre) threshold[427]
		• Dedicated product or supporting infrastructure for fossil fuel or hybrid vehicles or rolling stock[428]
			• Manufacture and upgrade, Passenger vehicles powered by fossil fuels (e.g., gas, petrol & diesel) and other vehicles that do not comply with a proper assessment of their environmental and social impacts

[418] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf f
[419] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf
[420] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf
[421] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf
[422] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf
[427] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf
[428]https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf

	BRT bus stations, lines and other facilities construction and operation; purchase of public transportation vehicles, etc- the trains and passenger coaches have zero direct (tailpipe) CO2 emissions[423]. (**M, P)** • Dedicated charging and alternative fuel infrastructure (when separate from fossil fuel filling stations and garages); Eco-fuel station, charging station/pile for EV cars, trolleybus, tram bus, electric buses, and associated infrastructure[424] **(M, P)** • ICT that improves asset utilisation, flow, and modal shift, regardless of transport mode - Public transport information, carsharing schemes, smart cards, road charging systems, etc[425] **(A, M, P)** • Zero direct emissions miscellaneous vehicles such as waste collection vehicles or construction vehicles[426] **(M, P)**		

[423] Sri Lanka Green Finance Taxonomy | Central Bank of Sri Lanka (cbsl.gov.lk)
[424] Sri Lanka Green Finance Taxonomy | Central Bank of Sri Lanka (cbsl.gov.lk)
[425] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf
[426] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf

10. Wholesaler & Retailer

Table 14 Green Finance Taxonomy classification of Wholesaler & Retailer Sector

Economic sub sector	Green (Transformative)	Amber (Transitional)	Red
10.1. Wholesale Trade - Durables	• Wholesale trade of all durable items/activities that are categorized as green as per this green taxonomy guideline.	• Wholesale trade of all durable items/activities that are categorized as amber under this green taxonomy guideline.	• Wholesale trade of all durable items/activities that are categorized as red as per this green taxonomy guideline.
10.2. Wholesale Trade - Non-Durables	• Wholesale trade of all non-durable items/activities that are categorized as green as per this green taxonomy guideline.	• Wholesale trade of all non-durable items/activities that are categorized amber under this green taxonomy guideline.	• Wholesale trade of all non-durable items/activities that are categorized as red as per this green taxonomy guideline.
10.3. Automotive Dealer / Franchise	• Trade of items/activities of all automotive/dealers/franchises that are categorized as green as per this green taxonomy guideline.	• Trade of items/activities of all automotive/dealers/franchises that are categorized amber under this green taxonomy guideline.	• Trade of items/activities of all automotive/dealer/franchises that are categorized as red as per this green taxonomy guideline.
10.4. Other Retail Trade	• All other retail trade activities that are categorized as green as per this green taxonomy guideline.	• All other retail trade activities that are categorized as amber under this green taxonomy guideline.	• All other retail trade activities that are categorized in red as per this green taxonomy guideline.
10.5. Import Trade	• Import trade of all items/activities that are categorized as green as per this green taxonomy guideline.	• Import trade of all items/activities that are categorized as amber under this green taxonomy guideline.	• Import trade of all items/activities that are categorized as red as per this green taxonomy guideline.

Economic sub sector	Green (Transformative)	Amber (Transitional)	Red
10.6. Export Trade	• The export trade of all items/activities that are categorized as green as per this green taxonomy guideline.	• Export trade of all items/activities that are categorized as amber under this green taxonomy guideline.	• Export trade of all items/activities that are categorized as red under this green taxonomy guideline.
10.7. Hire Purchase Vehicle - Trading/Business	• Export trade of all items/activities that are categorized as green as per this green taxonomy guideline.	• Export trade of all items/activities that are categorized as amber under this green taxonomy guideline.	• Export trade of all items/activities that are categorized as red under this green taxonomy guideline.

11. Financial Services, Bond, and Stock Market

Table 15 Green Finance Taxonomy classification of financial services, bond, and stock market sector

Economic sub-Sector	Green (Transformative)	Amber (Transitional)	Red
11.1. Financial Intermediation[429] green blended finance, other funds (pension, mutual, trust funds etc.) bonds and Insurance	• Promotion of renewable energy[430], clean technology[431], green construction, transportation, and manufacturing[432], w**ater and waste management**[433] , sustainable agriculture and natural resource management[434] and sectoral priorities supporting green and sustainable development efforts aligning with the national policy, plan, and strategies, especially categorised in this taxonomy documents under green qualifies as green financial intermediaries (**A, M, N)** • Access, deploy and mobilize green finance through financial intermediaries or access entities to access international finance such as green climate fund, least developed countries fund, adaptation fund or other non-traditional sources of funds[435]. • Mutual funds or other innovative financing investment vehicles (venture capital, blended finance, green bonds	• Financing and intermediation in all the activities that are categorised as Amber under this green taxonomy document are Amber.	• Any Banking and Financial institutions (insurance of fossil fuel-based activities), capital markets (merchant banks), insurance companies and pension funds, trust funds or other funds activities that are carbon intensive, have environmentally poor standards, and cause significant damage to human health, climate, and ecosystems or categorised under excluded/ red are considered as financing in red activities.

[429] https://documents1.worldbank.org/curated/en/374051622653965991/pdf/Toolkits-for-Policymakers-to-Green-the-Financial-System.pdf
[430] producing clean and renewable energy sources, such as solar, wind, and hydroelectric power
[431] develop green innovative technologies and solutions to reduce environmental impact and promote sustainability.
[432] develop and manufacture eco-friendly transportation solutions, such as electric vehicles and public transit systems.
[433] to initiate water conservation, wastewater treatment, recycling, and waste reduction
[434] to practice environmentally friendly and socially responsible farming methods, such as organic farming or regenerative agriculture.
[435] capitalising-green-finance-report.pdf (opml.co.uk)

Economic sub-Sector	Green (Transformative)	Amber (Transitional)	Red
	etc.) that promote socially and environmentally sound and green business practices[436]. **(A, M, N)** • Green finance scheme through a green pension fund, trust funds or other public funds: to motivate its savers through investment in environmentally friendly and green companies related to the sectors **(A, M, N)** • Green capital markets including green bonds such as commodity contracts, securities, exchanges, stock exchanges, stock, or commodity options exchanges, and stockbrokering that align financial flows to meet the green and sustainable development objectives[437]. **(A, M, N)** • Adoption of green fin-tech- Digital payment and account solutions, digital investment solutions, digital ESG data analytics solutions, green digital crowdfunding and syndication platforms, green digital risk analysis and insures, green digital deposit and lending solutions, green digital assets solutions, and green regtech solutions[438]. **(A, M, N)** • Green Insurance products that are eco-friendly not only cover people in case of injury or damage but also contribute to protecting our environment. These are: Climate-induced loss and damage		

[436] Standard Industry Classification System for Environmental Enforcement 20200824_SICS for Environmental Enforcement (PART B)_FINAL.pdf (greentechknowledgehub.de)
[437] https://blogs.worldbank.org/developmenttalk/greening-capital-markets
[438] FINAL Green Fintech Classification.pdf - Google Drive

Economic sub-Sector	Green (Transformative)	Amber (Transitional)	Red
	insurance, reinsurance, parametric insurance (weather-based index insurance), Weather-based Livestock, Poultry and Fishery insurance, Green Car Insurance; Green Business insurance; Eco-Friendly home insurance; Green Travel Insurance, Eco- Friendly liability insurance; Green life Insurance; and Eco-friendly health insurance[439]. **(A, M, N)**		

[439] Green Insurance products

12. Real estate

Table 16 Green Finance Taxonomy classification of the Real estate Sector

Economic sub-Sector	Green (Transformative)	Amber (Transitional)	Red
12.1. Residential Real Estate	• Sustainable and green residential or real estate buildings[440] using resource improvements/ efficiency to comply with domestic green building standards[441] or international building codes, during new building, renovation, and reconstruction such as - Leadership in Energy and Environmental Design (LEED[442]), - Excellent Design for Greater Efficiencies (EDGE) (EDGE[443]) - Climate Bond Initiatives (CBI) criteria for residential sectors (CBI[444]) or	- Residential and Real state building and infrastructures[446] that focuses more on energy and water efficiency schemes, greenery, maximum use of renewable energy, recycling and solid waste management, insurance facility, and compliance with building codes and governmental norms[447]	• Real estate on protected natural areas, UNESCO World Heritage sites. • New construction built on one of the following: ➢ arable land and cropland with a moderate to high level of soil fertility ➢ land of recognized high biodiversity value and land that serves as the habitat of species listed on the IUCN Red List • Real estate in disaster-prone areas • Buildings constructed by real estate that cause significant

[440] Summary of the *Field Guide for Sustainable Construction* developed by the Partnership for Achieving Construction Excellence and the Pentagon Renovation and Construction Program Office: **1. Procurement** – Specific procurement strategies to ensure sustainable construction requirements are addressed. **2. Site/environment** – Methods to reduce the environmental impact of construction on the project site and surrounding environment are identified. **3. Material selection** – Identifies environmentally friendly building materials as well as harmful and toxic materials that should be avoided. **4. Waste prevention** – Methods to reduce and eliminate waste on construction projects are identified. wastewater effluent standard, 2080) **5. Recycling** – Identifies materials to recycle at each phase of construction and methods to support the onsite recycling effort. **6. Energy** – Methods to ensure and improve the building's energy performance, reduce energy consumed during construction, and identify opportunities to use renewable energy sources. Nepal example energy efficiency buildings – BEEN project and AEPC Energy Efficiency Standards and Labeling (EE S&L).**7. Building and material reuse** – Identifies reusable materials and methods to facilitate the future reuse of a facility, systems, equipment, products, and materials. **8. Construction technologies** – Identifies technologies that can be used during construction to improve efficiency and reduce waste (especially paper). **9. Health and safety** – Methods to improve the quality of life for construction workers are identified. **10. Indoor Environmental Quality (IEQ)** – Methods to ensure IEQ measures during construction are managed and executed properly.

[441] Nepal Green Building Guidelines and Green Building Codes of the Department of Urban Development and Building Construction (DUDBC)- under preparation.

[442] LEED is for all building types and all building phases, including new construction, interior fit-outs, operations and maintenance and core and shell.

[443] EDGE focuses purely on energy, water, and embodied energy in materials for a quantitative approach to sustainability.

[444] CBI **Residential Buildings Criteria** uses local building codes and energy ratings/labels.

[446] Liu, T., Chen, L., Yang, M., Sandanayake, M., Miao, P., Shi, Y., & Yap, P. S. (2022). Sustainability considerations of green buildings: a detailed overview on current advancements and future considerations. *Sustainability*, *14*(21), 14393.

[447] Kamal, M., & Gani, M. O. (2016). A critical review on importance of eco-structure building or green building in Bangladesh. International Journal of Business Administration, 7(3), 166-180.

Economic sub-Sector	Green (Transformative)	Amber (Transitional)	Red
	- other internationally recognized green construction codes[445]. **(A, M, N, P)**		impact on the environment and society. • Real estate in cultural or religiously holy cities • Real estate that is carbon-intensive and causes massive pollution
12.2. Commercial Complex and Residential Apartment Construction	• Sustainable and green commercial or real estate buildings using resource improvements/efficiency to comply with domestic green building standards[448] or international building codes, during new building, renovation, and reconstruction such as: - Leadership in Energy and Environmental Design (LEED[449]), - Excellent Design for Greater Efficiencies (EDGE) (EDGE[450]) - Climate Bond Initiatives (CBI) criteria for commercial sectors (CBI[451]) or other internationally recognized	• Large non-residential buildings (i.e., buildings with an effective rated output for heating systems or systems for combined space heating, ventilation and cooling), with additional requirements introduced to ensure that these buildings are operated efficiently, and that actual energy and carbon savings [227] • Acquisition of buildings designed to minimize energy use, and carbon emissions, and manage its waste throughout the lifecycle and following building codes and environment protocols.[455]	• Construction of commercial complex and residential apartments that are built without complying with environmental and climate risk considerations (highly polluting, massive soil removal, massive use of fossil fuels as energy) and non-use of green and building codes, including construction in disaster and restricted areas thus causing threat to biodiversity, wildlife, and socio-cultural aspects.

[445] Bangladesh taxonomy (Characteristics of Green Featured Building), Srilanka Taxonomy (reduction of GHGs and nearly zero-energy building requirements), Mongolia Taxonomy (Efficient and low carbon building systems)
[448] Nepal Green Building Guidelines and Green Building Codes of the Department of Urban Development and Building Construction (DUDBC)- under preparation.
[449] LEED is for all building types and all building phases, including new construction, interior fit-outs, operations and maintenance and core and shell.
[450] EDGE focuses purely on energy, water, and embodied energy in materials for a quantitative approach to sustainability.
[451] CBI **Residential Buildings Criteria** uses local building codes and energy ratings/labels.
[455] Feng, H., Liyanage, D. R., Karunathilake, H., Sadiq, R., & Hewage, K. (2019). BIM-based life cycle environmental performance assessment of single-family houses: Renovation and reconstruction strategies for aging building stock in British Columbia. Journal of Cleaner Production, 119543. doi: 10.1016/j.jclepro.2019.119543

Economic sub-Sector	Green (Transformative)	Amber (Transitional)	Red
	construction codes[452]. **(A, M, N, P)** • Activities that ensure commercial complex and residential buildings consider green and clean energy-efficient materials and equipment **(M, N, P)**[453]. • Promotion of alternative schemes such as 'green building' certifications or building regulations and standards for the proof of eligibility verified by a third-party accredited verification body.[454]	• Finance in the construction of environmentally friendly buildings and/or retrofit of existing buildings.[456] for example, buildings that consider the non-hazardous construction and demolition waste generated on the construction site are reused, recycled, and recovered, including backfilling operations.	
12.5. Other real estate - Including land purchase and plotting		• Land purchase and plotting on environmentally safe areas i.e., using minimum soil removal, and use of renewable energy and energy and water efficient equipment and materials	• Land purchase or plotting in disaster hotspots, cultural and biodiversity hotspots, productive agriculture lands, including the protected areas and of religious and cultural values.

[452] Bangladesh taxonomy (Characteristics of Green Featured Building), Srilanka Taxonomy (reduction of GHGs and nearly zero-energy building requirements), Mongolia Taxonomy (Efficient and low carbon building systems)
[453] Shaikh, P. H., Nor, N. B. M., Sahito, A. A., Nallagownden, P., Elamvazuthi, I., & Shaikh, M. S. (2017). Building energy for sustainable development in Malaysia: A review. Renewable and Sustainable Energy Reviews, 75, 1392–1403. doi: 10.1016/j.rser.2016.11.128
[454] Green Building Standards and Certification Systems | WBDG - Whole Building Design Guide. (n.d.). https://www.wbdg.org/resources/green-building-standards-and-certification-systems
[456] Khairi, M., Jaapar, A., & Yahya, Z. (2017, November). The application, benefits, and challenges of retrofitting the existing buildings. In IOP Conference Series: Materials Science and Engineering (Vol. 271, No. 1, p. 012030). IOP Publishing.

13. Tourism Service

Table 17 Green Finance Taxonomy Classification for the Tourism service sector

Economic Sub Sector	Green (Transformative)	Amber (Transitional)	Red
13.2. Hotel (Including Other Service)	• Hotel Investments guarantee standard certification (LEED, green globe, and associated certification) which includes the promotion of eco-friendly infrastructure and services example use of clean energy technologies, e.g., replacement of Boiler operated by Furnace Oil by Hydroelectricity/solar[457]. (**M, N, P)** • Homestays that use clean local resources, local green products, local knowledge, use recycled products[458]. (**N, A, P)**	• Hotels that use hybrid energy sources (clean+ minimum use of fossil fuels) maintain efficiency in water and energy use and consider proper waste management. For example, maximizing natural ventilation, lighting design, and thermal insulation design, including the application of roof photovoltaics, energy-saving variable frequency air conditioners, automatic energy-saving lighting, and building energy optimization management system[459] • Technologies for pollution control and prevention (litter, waste etc) in the mountaineering and other tourism activities	• Facilities that do not comply with a proper assessment of their environmental and social impacts
13.3. Entertainment; Recreation; Films	• Green recreation, entertainment related productions (film, water parks, theme parks, including others) and infrastructures which clearly demonstrate the use of energy efficiency, efficient use of natural resources, use of clean energy, recycling of wastes, digitization, and use of electric mobility[460]. (**A, M, N**)		• Entertainment, recreation, and films that depend on fossil fuels for energy, exploit nature, cause damage to the environment and have a bigger carbon footprint-mobility

[457] https://www.mofe.gov.np/uploads/documents/nepal-lts-document-uploaded-in-unfccc1653986846pdf-0523-253-1657876086.pdf
[458] https://www.mofe.gov.np/uploads/documents/ndcip-2080-mainpdf-3898-697-1691920162.pdf
[459] Wu, Y., Xin, B., Zhu, H., & Ye, Z. (2022). Energy-Saving Operation Strategy for Hotels Considering the Impact of COVID-19 in the Context of Carbon Neutrality. Sustainability, 14(22), 14919.
[460] https://lwlies.com/articles/green-filmmaking-sustainability-in-cinema/

	• Paragliding, zipliners, sightseeing, birdwatching, bungy jumping, parachuting, mountain biking, swimming considering the zero-emission and adopting the safety protocols**. (A)**		

14. Automotive and other services sector

Table 18 Green Finance Taxonomy Classification for Automotive and other services sector

Economic Sub Sector	Green (Transformative)	Amber (Transitional)	Red
14.1 Automotive Services	• Use of clean and renewable energy for the operations and provision of automotive services[461] (M, P) • Use of dry management approach using different strategies, including sealing the floor drains and using safety cans, drip pans, trays, and funnel drum covers when transferring fluids. During standard repair and maintenance, vehicle fluids may drip, spill, or otherwise enter floor drains and sinks in service areas[462]**.(M, P)** • Adopting water water-efficient approach or using recycled water reduces the reliance on increasingly scarce and expensive surface water[463]**Error! Bookmark not defined. (A, N, P).**	• Establish effective energy-efficient practices[464] such as recycling, remanufacturing, upcycling, or reusing engine fluids, batteries, and many car parts where possible[465].	• Automotive services discharge harmful emissions to air, water, and land. Air pollutants released by automotive services can include volatile organic compounds, heavy metals, and diisocyanates[466] • Services that utilize groundwater resources and discharge untreated wastewater to rivers and open discharge. • Auto body and repair shops use pneumatic tools powered by loud air compressors[467]

[461] https://www.pellmansauto.com/sustainable-car-maintenance#:~:text=Recycle%20Used%20Engine%20Fluids%2C%20Batteries,management%20agency%20or%20visit%20Earth911.
[462] https://greenbusinessbureau.com/green-practices/transportation/sustainable-automotive-and-repair-shop/
463 https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32020R0852
464 https://greenbusinessbureau.com/green-practices/transportation/sustainable-automotive-and-repair-shop/
465 https://www.pellmansauto.com/sustainable-car-maintenance#:~:text=Recycle%20Used%20Engine%20Fluids%2C%20Batteries,management%20agency%20or%20visit%20Earth911.
466 https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32020R0852
467 https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32020R0852

	• Proper waste management and automotive service providers that limit the release of Volatile Organic Compounds (VOCs), heavy metals, and diisocyanates with smart working practices **(M, P).** • Automotive services that control workplace noise, choose quieter machines/equipment, and adopt good industry practices to reduce workplace noise **(P).**		

15. Health care and waste management

Table 19 Green Finance Taxonomy Classification for Health care and waste management sector

Economic Sub Sector	Green (Transformative)	Amber (Transitional)	Red
15.1. Hospital, clinic, medical colleges etc	• Buildings that comply with domestic standards of energy efficiency or international building codes, such as LEED, EDGE, or other internationally recognized construction codes[468]. (**A, p)** • Sustainable waste management as per government/WHO standards **(A, M, P)**	• Hospitals, clinics, and medical colleges that adopt more hybrid and energy efficient (low fossil fuel use) and water management schemes, and proper solid waste management.	• Production or trade in radioactive materials. This does not apply to the purchase of medical equipment, quality control (measurement) equipment and any equipment where the radioactive source is trivial and/or adequately shielded.

[468] mongolia-green-taxanomy-eng-pdf-for-publishing.pdf

Economic Sub Sector	Green (Transformative)	Amber (Transitional)	Red
15.2. Waste Management ; Drainage ; Sanitation etc.	• Facilities and assets with high recovery rates of reusable or recyclable material- Made from 100% recycled and recyclable materials. Supports source segregation of waste[469] **(M, P)** • Sustainable waste management and sanitation[470]- Construction and operation of solid waste (including medical and hazardous waste) management, treatment & and disposal facilities. refuse incinerator, solid waste landfill facilities, sanitary landfill (with or without gas capture **(M, P)** • Waste collection, sorting and material recovery, reuse, and recycling facilities- Facilities for collection, sorting, material recovery, re-use, and recycling of materials. facilities for the recycling of building materials, metals, plastics, glass, paper, and scrap electronics[471] **(M, P)** • Anaerobic digestion facilities- Facilities to produce biogas from green waste- Total methane emissions <= 1285g CH4/ tonne of waste input. Woody waste must be segregated before or after processing and sent to an eligible EfW or composting plant. Monitoring, sampling, and control of the following is carried out following PAS110 guidance. The solid and liquid products are not landfilled and replace non-waste materials in the market[472] **(M, P)** • Sustainable water reuse facilities or infrastructure. water recycling systems, recycling mine water, grey water reuse and recycling systems, sewage/ drainage	• Waste management technology enables the switch of Raw Materials- Toxic with non-toxic, virgin with recycled[474]. • Wastewater treatment facilities; Wastewater collection networks, storage, treatment, and disposal facilities. wastewater plants, sludge treatment facilities, drinking water treatment, desalination plants, wastewater treatment facilities, manure, and slurry treatment facilities[475].	• Wastewater management facilities in health care systems do not comply with a proper assessment of their environmental impacts.

[469] mongolia-green-taxanomy-eng-pdf-for-publishing.pdf
[470] https://www.ifc.org/content/dam/ifc/doc/mgrt/mongolia-green-taxanomy-eng-pdf-for-publishing.pdf
[471] https://www.ifc.org/content/dam/ifc/doc/mgrt/mongolia-green-taxanomy-eng-pdf-for-publishing.pdf
[472] CBI_Taxonomy_Tables-08A (1).pdf
[474] mongolia-green-taxanomy-eng-pdf-for-publishing.pdf
[475] mongolia-green-taxanomy-eng-pdf-for-publishing.pdf

Economic Sub Sector	Green (Transformative)	Amber (Transitional)	Red
	networks which segregate stormwater from the sewage[473] **(A, M, P)**		

16. Education services

Table 20 Green Finance Taxonomy Classification for Education services sector

Economic sub-Sector	Green (Transformative)	Amber (Transitional)	Red
16.1. Educational Services like University/School etc.	• Promotion of the use of renewable energy like solar, and wind for power generation for building construction, and re-greening the school assets and compounds, including materials and equipment **(M, N, P).[476]** • Investments that involve efficient and sustainable resource management rooftop gardening, rainwater harvesting, and managing water resources through mapping **(A, M, N, P)** [477]	• Retrofitting buildings to make them disaster-resilient, green, and safe school buildings which have followed the environmental safeguards measures and building codes [456]	• Construction of the educational infrastructures in the disaster-prone areas, biodiversity hotspot/protected areas and culturally important areas • Construction of any education services like a university, or school that involves carbon-intensive equipment and materials. • Construction of such buildings which are gender unfriendly and not accessible to all

[473] https://www.ifc.org/content/dam/ifc/doc/mgrt/mongolia-green-taxanomy-eng-pdf-for-publishing.pdf
[476] Lu, Y., Khan, Z. A., Alvarez-Alvarado, M. S., Zhang, Y., Huang, Z., & Imran, M. (2020). A Critical Review of Sustainable Energy Policies for the Promotion of Renewable Energy Sources. Sustainability, 12(12), 5078. doi:10.3390/su12125078
[477] Saeedi, I., Goodarzi, M. Rainwater harvesting system: a sustainable method for landscape development in semiarid regions, the case of Malayer University campus in Iran. Environ Dev Sustain 22, 1579–1598 (2020). https://doi.org/10.1007/s10668-018-0218-8

17. Consumption Loan

Table 21 Green Finance Taxonomy Classification for Consumption Loan Sector

Economic Sub Sector	Green (Transformative)	Amber (Transitional)	Red
17.2. Hire Purchase Vehicle - Personal Consumption	• Purchase of Electric Vehicles (EV motor, E-scooters including bicycle). **(M)** • Conversion of petrol/diesel vehicles to an electric vehicle	• Purchase and/or operation of vehicles for hybrid-engine vehicles (i.e., hybrid car/ jeep)	• Purchase of fossil fuel-run vehicles powered by diesel, gas, and petrol.
17.4. Residential Personal Home Loan (Up to Rs. 15 million)	• Home loans with the application of eco-friendly construction materials, energy efficiency, application of clean energy appliances (systems), water-efficient systems, solar systems, and application low energy consumption (structure that allows to regulate climatic conditions, such as temperature and humidity including designed to reduce the overall impact of the built environment on human health and the natural environment)[478]. **(A, M, N)** • Personal consumption loans that are green real estate, mortgages, or properties. **(A, M, N)**	• Residential and personal home loan are used in construction facilities that have environmental risks but considers mitigation measures.	• A residential and personal home loan used for construction facilities that are heavily carbon intensive (high emissions, high pollutions) and detrimental to human health and ecosystem/nature

Note: Any credit facilities issues by regulated Banks and Financial Institutions (BFIs) are utilised in the activities which are categorised in the green coloured section under each of the sub-sector of this green finance taxonomy are green finance.

[478] https://worldgbc.org/article/what-are-green-mortgages-how-will-they-revolutionise-home-energy-efficiency/

Annex 3: Investment Proposal Assessment guidance checklist for regulators and financial sectors for taxonomy aligned investment.

S/N	Green investment plans or financial products	Description
1	**Sector**	• Describe which economic activities and sectors. • Category of classification under the green finance taxonomy • Does the company have an environmental policy that also covers the issue of climate change mitigation and adaptation?
2	**Investment plan**	• What is being proposed as green finance? • How much green finance is expected to mobilise through lending or financial products? • How the sustainable benefits be realised in qualitative or quantitative terms (economy, society, and environment) • What is the current baseline, and what changes are expected on social, environmental, and economic fronts? • Has the company conducted a baseline assessment of its GHG emissions? • Is there a set target and strategy for the reduction of GHG emissions? • How much amount has been invested/lended to companies with GHG emission reduction projects? • Has the company prepared an Emergency Management Plan to address climate-induced disasters, and agreed with local authorities? • Are the company's operations or assets at risk from climate change (including increased flooding, drought, or other severe weather events), business disruption or damage to assets and production from these events? • If yes, are there any climate change risks (physical and transition) assessed during the operation of proposed projects?

3	**Verify Compliance**	• Which core principles does the investments are intended for? • What is the essential measurement required to understand investments are directed towards green investments? • Does the company monitor and report its carbon and/or other greenhouse gas (GHG) emissions? If yes, which methodology is used, i. e. IPCC Guidelines, PCAF standards? • What plans or actions has the company undertaken to control and/or reduce emissions?
4	**Tracking Progress**	• What is the monitoring plan to track progress toward green objectives? • What progress will be monitored and if needed, what are the course correction measures to ensure it truly contributes to green investments?
5	**Impact Reporting**	• What impact will the investment make? • Where and how will be impacted how will it be reported? • Are there any environment and climate change related disclosures in the public domain?

Note: For any investment decisions aligned with green finance taxonomy- BFIs, insurance and capital market and other financial sector actors adhere to the ESRM, 2022 guidelines and other relevant sectoral policies and acts.

Annex 4: Monitoring, Reporting and Supervision Format

Annex 4a: Monitoring and Supervision Checklist to be used by regulators.

Areas of Assessment	Checklist	Remarks
Governance	1. Have the BFIs, Insurance companies, merchant banks, and other relevant market actors set up the governance mechanism for the application of green finance taxonomy, e.g., sub-committee in the board, dedicated unit, and staff? Include details of any such governance mechanism. 2. Is there assigned roles and responsibilities for the application of the taxonomy? Include details.	
Capacity	1. Have the market actors provided training and capacity-building support to their staff for knowledge-building and effective application of green finance taxonomy? 2. Is peer learning and exposures offered by the market actors to their staff? 3. Are the staff provided with adequate knowledge materials and resources (financial and technical) as required to meet the Green Finance Taxonomy Guidelines?	
Adherence to Green Taxonomy	1. Have the market actors followed the process and assessment guidance as suggested by the Nepal Green Finance Taxonomy? 2. Have they regularly conducted monitoring of their clients to ensure the use of funds as per the stated purpose? 3. What has been the good practice and lessons observed by the market actors from the application of the Green Finance Taxonomy?	
Financial Disclosure	1. Have the BFIs, Insurance Companies, Merchant Banks, and other market actors systematically recorded and provided financial disclosures as suggested by the Green Finance taxonomy? 2. Have they submitted the financial disclosure report to the regulators (NRB, SEBON, NIA)? 3. Is the financial disclosure report made publicly available?	

Non-financial Disclosure	1. Have the BFIs, Insurance Companies, Merchant Banks, and other market actors systematically recorded and provided non-financial disclosures as suggested by the Green Finance taxonomy? 2. Have they submitted the non-financial disclosure report to the regulators (NRB, SEBON, NIA)? 3. Is the non-financial disclosure report made publicly available?	

Annex 4b: Green Finance Statement of Sector (Purpose) wise Loans and Advances (Annual) – Annual report template of NRB Supervisory Information System

Industry/Sector	Class A	Class B	Class C	Other Total Loans	Grand Total (in NPR million)
1. Agriculture and Forest related					
2. Fishery Related					
3. Mining Related					
4. Agriculture, Forestry & Beverage Production Related					
5. Non-food Production Related					
6. Construction					
7. Power, Gas and Water					
8. Metal Products, Machinery & Electronic Equipment & Assemblage					
9. Transport, Communication and Public Utilities					
10. Wholesaler & Retailer					
11. Finance, Insurance					
12. Real estate					
13. Tourism Service					
14. Automotive and other services					
15. Health care and waste management					
16. Education services					
17. Consumption loan					

Annex 4c: Green Finance Statement of Capital Market trade (Sector wise Initial Public Offering/Secondary Market)- Annual report of Securities Board of Nepal (SEBON)

Industry/Sector	Fiscal Year	Other Total	Grand Total (in NPR million)
1. Commercial Banks			
2. Development Banks			
3. Finance Company			
4. Micro-Finance			
5. Nepal Infrastructure Bank Limited			
6. Life Insurance			
7. Non-Life Insurance			
8. Hydro power			
9. Production and Processing			
10. Business			
11. Hotel and Tourism			
12. Mutual Fund			
13. Rights Share			
14. Promoter Share			
15. Loan Agreement			
16. Others			

Annex 4d: Green Finance Statement of Insurance schemes - Annual report of Nepal Insurance Authority.

Industry/Sector	Fiscal Year	Other Total	Grand Total (in NPR million)
1. **Life Insurance (Parametric/non-parametric)**			
1.1 Crop			
2.2. Livestock			
2.3. Human			
2. Non-Life Insurance			
2.1 Business			
2.2 Home/Residence/Real estates			
2.3 Motor vehicles			
2.4 Other Green Insurance			

Annex 4e: Green Finance Statement in Red Book and Economic Survey (MoF/MoFE)

- The Ministry of Finance should regularly use the existing format of climate, pro-poor and gender coding of public financial resources in the red book.
- The Ministry of Finance should categorize green investments aligned with green, resilient, and inclusive development (GRID) approaches in the Aid Management Information System –received from bilateral and multilateral as well as international funds such as UN mechanism- Green Climate Fund, Adaptation Fund, Global Environmental Facilities, and other sources of funds.
- The Ministry of Forests and Environment (MoFE) and the Ministry of Finance should regularly update the green finance narrative statements in the annual economic survey.

Annex 4f. Non-Financial Disclosure Report of Green Finance Taxonomy aligned investments.

S/N	Green investment plans or financial products	Description
1	Industry/ Sector	• Describe which economic activities and sectors. • Category of classification under the green finance taxonomy • What is being proposed to justify taxonomy-aligned green finance investments?
2	Amount of Green Finance Investments:	• How much green finance is expected to mobilise through lending or financial products? • The status of allocated green finance vs expenditure of green finance was as per the proposed investment plans.
3	Impact Reporting	• What method was used to verify and comply with green finance taxonomy-aligned investments? • What sustainable benefits are generated in qualitative or quantitative terms for the economy, society, and environment? • Any corrective measures are needed to generate additional positive impact to social and environmental benefits. • Lesson learnt on using the green finance taxonomy.

Note: This is the minimum reporting format highlighting the overall economic, social, and environmental impact of green finance investments from relevant financial sectors. The reporting agencies can expand these formats to keep the relevant evidence-based information.

Annex 4g: Monitoring Checklist for benchmarking investment targets from financial sectors (to be used in non-financial reporting)

Key Principles	National Targets	Benchmark Indicator – For investment alignment with national indicator
Core Principle 1 : Climate Change Adaptation (A)	Investments in adaptation action to ensure all vulnerable people are protected from climate change by 2030.	• Number of people with access to climate-smart technologies and practices (early warning systems, agro advisories, innovative technologies, and practices) • Number of people with access to climate financing to support their efforts to introduce technologies and practices that can withstand climatic stress and shocks. • Area of forest, agriculture, wetlands, watersheds, and other land uses recovered, rehabilitated, and managed to build the resilience of livelihood systems that people depend on • Number of people (youth) employed in green enterprises
Core Principle 2: Climate Change Mitigation (M)	Investment in mitigation action aligned with remaining cumulatively 'net zero carbon' from 2022-2045 and become carbon negative after that.	• Employ GHG-focused genetic selection and breeding (no) • Promote animal feeds mix optimization (no of farmers adopting this) • Development of hydropower plants (MgWatt) • Scale-up of distributed energy resources (mini grid, off-grid isolated wind, solar, micro-hydro, and biogas) • Electrification in all end-use services in urban areas (no of households reach) • Promotion of clean cooking technologies with high efficiency and low emissions in rural areas (no of households reached) • Electrification in cooking, space heating, water heating, and lighting in rural areas (number of households reached) • Electrification in process heat, boilers, and motive power in all industries (number of industries) • The intervention of CCUS in the cement industry

		• The intervention of green fuels (electricity, waste, and hydrogen) for thermal processes in the industries • Introduction of electric technology for process heat in heavy industries (metals, cement, and brick) • Promotion of electric mass passenger transport (%) • Switching fuel to clean energy (electricity, fuel cells, synthetic fuels/biofuels in aviation) -% • Installation and expansion of charging stations (number) • Achieve total Electrification in all commercial sectors (% or no) • Electrification in farm machinery and water pumping (number of farmers adopting this) • Promotion of Solar PV pumping (number of beneficiaries)
Core Principle 3: Natural Resource Conservation and Management (N)	Investments to halt deforestation and increase forest cover to 45% by 2030. And other vital natural resources conservation and management	• Reduce forest loss and stop land cover conversion (ha) • Increase forest gain through plantation in an open area (ha) • Promote private forestry (ha) • Promote farm forestry/agroforestry to produce wood products (ha) • Improve harvesting technology for efficient forest production (CQ ft) • Promotion of wood technology (composite wood, particle boards, etc.)- number • Implementation of silviculture systems to enhance growth in forest growing stock (ha) • Promote sustainable forest management (ha) • Expand use of anaerobic manure digestion (no) • Make efficient use of livestock nutrients (farms covered) • Apply Nitrification inhibitors on pasture (livestock number) • Promote technologies that increase livestock production efficiencies. • Employ GHG-focused genetic selection and breeding (no)

		• Promote animal feed mix optimization (amount) • Improve rice paddy water management (ha) • Expand adoption of dry direct seeding in rice cultivation (ha) • Scale low- and no-tillage practices (ha) • Improved rice straw management (ha)
Core Principle 4: Pollution Prevention and Control (P)	Investment that aligns with pollution prevention and control.	• Investment in establishing # of pollution monitoring stations in major cities, industries and environmentally risk areas, • Replacement of traditional brick kilns (FCBTK) with modern improved brick kilns (zigzag kilns, and electric tunnel kilns) to reduce emissions from brick kilns (Mt ton) • # % of households use improved cooking stoves so that the effect of indoor air pollution is reduced. • Methane recovery from landfills (Mt ton) • Incineration of waste for heat and power generation (Mt ton) • Methane generation from anaerobic digester in wastewater treatment (mt ton) • Improve fertilization and pesticide use by replacing them with organic fertilizer (ha, %, ton)

Annex 4h: Structure of Steering and Working Committee

(A) Steering Committee

S.No.	Position	Organization	Position
1	Deputy Governor (BFIRD)	Nepal Rastra Bank	Coordinator
2	Deputy Governor	Nepal Rastra Bank	Member
3	Executive Director	Nepal Rastra Bank, Banks and Financial Institution Regulation Department	Member
4	Executive Director	Nepal Rastra Bank, Bank Supervision Department	Member
5	Executive Director	Nepal Rastra Bank, Office of the Governor	Member
6	Chairman	Securities Board of Nepal	Member
7	Chairman	Nepal Insurance Authority	Member
8	Joint Secretary	Ministry of Finance	Member
9	Joint Secretary	Ministry of Forest and Environment	Member
10	Director	Nepal Rastra Bank, Banks and Financial Institution Regulation Department (Policy Planning Unit)	Member Secretary

(B) Working Committee

S.No.	Position	Organization	Position
1	Director	Nepal Rastra Bank, Banks and Financial Institution Regulation Department (Policy Planning Unit)	Coordinator
2	Director	Nepal Rastra Bank, Bank Supervision Department	Member
3	Director	Nepal Rastra Bank, Office of the Governor	Member
4	Deputy Executive Director	Securities Board of Nepal	Member
5	Director	Nepal Insurance Authority	Member
6	Under Secretary	Ministry of Finance	Member
7	Under Secretary	Ministry of Forest and Environment	Member
8	Deputy Director	Nepal Rastra Bank, Banks and Financial Institution Regulation Department (Policy Planning Unit)	Member Secretary

Annex 4i: Major Timeline of Nepal Green Finance Taxonomy Development Process

Activities	**Date**
Sub-grant Agreement between AFI and NRB for GFT Development	December 2022
Consultant Selection through International Bidding	February 2023
Kick-off Meeting with AFI, NRB and the Consultants	March 2023
Inception Report Received	May 2023
Initial Draft of GFT Received	August 2023
Joint workshop: Consultants and working group members	September 2023
Feedback from AFI and NRB	October 2023
Consultation with line ministries, BFIs and Others	November 2023
Draft GFT finalized and sent for International Peer Review	December 2023
GFT finalized and Accepted by NRB Management	December 2023
GFT Published for public Consultation	January 2024