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INTEGRATING SUSTAINABLE CONSUMPTION AND PRODUCTION (SCP) AND CLIMATE CHANGE POLICY

**A Strategic Contribution to Strengthening
Nepal's Nationally Determined Contributions
(NDC 3.0) and Long Term – Low Emission
Development Strategy (LT-LEDS)**

White Paper

Acknowledgements

This White Paper on Integrating Sustainable Consumption and Production (SCP) and Climate Change Policy: A Strategic Contribution to Strengthening Nepal's Nationally Determined Contributions (NDC 3.0) and Long Term - Low Emission Development Strategy (LT-LEDS) was prepared on behalf of the EU SWITCH-Asia Policy Support Component (PSC) by Shubhuti Ghimire under the supervision of Ranga Pallawala, Key Expert on Climate Change and Environment Policy, Sachin Joshi, Key Expert on SCP Policy Options and SDG12 Progress, and Dr Zinaida Fadeeva, Team Leader, SWITCH-Asia Policy Support Component.

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Contents

Executive Summary	4
1. The SWITCH-Asia Programme.....	5
2. Introduction to the Technical Advisory	7
3. Country Outline	9
4. SCP and Climate Change Priorities of the Country	10
4.1. Country assessment for SCP integration	10
4.2. Potential Sectors in the NDC for SCP integration	12
5. Development Trajectory of Nepal	18
6. Analysis and Recommendation	19
6.1. Country Limitations	19
6.2. Sectoral Evaluation for SCP Integration	19
7. Recommendations and Way Forward	23
REFERENCES.....	26

Executive Summary

Nepal is committed to accelerating climate action by developing legal and institutional mechanisms to implement the long-term goals as agreed in the Paris Agreement. The country's commitment to environmental conservation and climate change is clearly stated in its policy documents, such as the 15th Development Plan and the 25-Year Long-Term Vision 2043. The country has further increased its ambition for adaptation and mitigation targets through its Nationally Determined Contributions (NDCs) submitted in 2016 and enhanced in 2020.

Among other critical issues to deliver on the environmental conservation and climate change objectives are the consumption and production patterns of Nepal's economy and society. To that end, a comprehensive analysis of the status of the country's ability to incorporate sustainable consumption and production (SCP) into the NDC has been conducted. Following extensive consultations with government officials, civil society organisations, individual experts, and a national workshop, the assessment has uncovered the level of understanding of SCP in the country. Raising awareness about SCP and circular economy (CE) has been prominent and linked with key sectors such as waste management, tourism, industrial processes and product use (IPPU), and urban settlement in the context of the country. The concept of circular economy has gained prominence in the waste management sector, with initiatives focusing on waste segregation, recycling programs, and waste-to-energy projects. Opportunities are prevalent for investment in green technologies and cleaner production for the promotion of sustainable housing and green buildings. Additionally, the country's abundant natural resources provide a foundation for the promotion of ecotourism practices, with government support crucial for the development and enforcement of policies that uphold sustainable tourism practices through enhanced SCP awareness raising and practices.

Initiatives such as promoting the 3Rs (Reduce, Reuse, Recycle) approach, green building concepts, and eco-tourism have been accompanied by various awareness-raising programs aimed at promoting and understanding the CE and sustainable consumption and production (SCP) approaches.

Nepal has initiated the integration of SCP into its policies and the promotion of SCP through Sustainable Development Goal 12 (SDG 12) with the aim of sustainably managing its natural resources. Because Nepal is a country vulnerable to climate change, and considering the system thinking of SCP, there is an urgent need to strengthen cross-sectoral collaboration, capacity building, and policy interventions to advance SCP practices, notably with regard to climate change, which requires a comprehensive SCP mainstreaming in the key sectors of NDC. Considering that consumption habits and production methods obviously affect resource use and GHG emissions, integrating SCP into Nepal's NDCs offers a significant opportunity to boost climate ambitions and achieve sustainable development goals across different sectors by leveraging an adequate policy framework and active multi-stakeholder collaborative actions.

1. The SWITCH-Asia Programme

Through the European Union (EU) Green Deal and Global Gateway, the EU is committed to supporting the transition of countries to a low-carbon, resource-efficient and circular economy while promoting sustainable production and consumption patterns.

As part of this engagement, the SWITCH-Asia Policy Support Component (PSC) aims to enhance sustainable consumption and production (SCP) progress by scaling up and mainstreaming SCP policy in 42 countries, spanning from the Middle East and Central Asia to South Asia, Southeast Asia and the Pacific ('target region'). The SWITCH-Asia PSC builds on the long and successful track record of the SWITCH-Asia Programme in providing technical assistance, which also links with the SWITCH-Asia grants component and connects with the programmes and priorities of the EU Delegations (EUDs). Flexible and on-demand interventions combined with a mandate to foster cooperation, strengthen networking, and build platforms for exchange, have strategically positioned the PSC to meet the needs of the target region in addressing the triple planetary crises of climate change, biodiversity loss and pollution along with meeting international commitments, including the SDGs and the 2016 Paris Climate Accords, known as the Paris Agreement.

As a mode of operation, the PSC liaises with and advises national governments and regional organisations and networks in the target region. Typically, it engages countries in regional and multi-country approaches on scaling up SCP policy and implementation, delivering technical advice, exchanging knowledge, and building the capacities of regional institutions. Key points of intervention include United Nations Sustainable Development Goal 12 along with progress on and support for SCP-related goals; integrating SCP into the Nationally Determined Contributions (NDCs) and climate-related actions; regional stakeholder engagement, with a particular attention to business and industry representatives; and communicating to stakeholders about SCP principles.

This report has been developed as a part of an exploratory Technical Advisory (TA) known as 'Sustainable Consumption and Production (SCP)-linked Nationally Determined Contributions (NDC), Learning Lessons from the Champion Countries and identifying opportunities to capitalise synergies between NDC & SCP', carried out in five South Asian countries: Bangladesh, Bhutan, Nepal, Pakistan and Sri Lanka.

OBJECTIVES OF THE TECHNICAL ADVISORY

The TA was strategically designed as an exploratory and scoping initiative to examine the integration of SCP into the climate commitments of the countries. The three primary objectives are to:

- assess the current status of SCP integration within existing climate ambitions
- identify potential opportunities for enhanced integration
- explore viable pathways for implementing these integration options

A scoping approach allows for a comprehensive understanding of both existing practices and future possibilities, providing a foundation for more targeted interventions in supporting country climate actions.

METHODOLOGY

This White Paper has been developed in two phases. The first phase was conducted in September and October 2023 and contributed to developing a 'Country Factsheet' on integrating SCP in the national plan and strategies. The second phase involves the ongoing study of extensive, detailed literature reviews; mapping the key stakeholders; and interviewing them using study questions. The literature base consisted of national climate-specific and development plans, documents, and open-sourced reports from the UN, the Organisation for Economic Co-operation and Development (OECD), the EU, national and international associations, and academies. With the objective focused on developing an enabling policy environment for SCP-linked NDC targets from 2023 to 2026, the whitepaper used a mixed method of data collection against a checklist with key guiding questions on the scope and challenges of developing SCP-linked NDCs.

During the process relevant documents having direct and indirect implications of SCP were reviewed, and interviews were conducted by 27 of the key stakeholders including the NDC focal persons at the Ministry of Forests and Environment (MoFE), sectoral experts, development professionals, directors of small and medium-sized enterprises, and other stakeholders from relevant government agencies and departments. Stakeholder interviews were objectively structured and scheduled to align with the objectives stated above.

2. Introduction to the Technical Advisory

The Nexus Between Climate Change and Sustainable Consumption and Production

Unsustainable consumption and production patterns constitute the fundamental drivers of three interlinked planetary crises: climate change, biodiversity erosion, and environmental pollution. Strategic modifications to these patterns could substantially reduce global greenhouse gas emissions through both direct and indirect pathways. Deploying SCP frameworks yields significant co-benefits for climate change mitigation and adaptation in the transition to sustainable development, particularly concerning natural resource extraction and utilisation. The International Resource Panel (IRP) *Global Resources Outlook 2024* presents compelling evidence of this relationship:

Extraction and processing of material resources (fossil fuels, minerals, non-metallic minerals and biomass) account for over 55% of greenhouse gas emissions (GHG) and 40% of particulate matter health related impacts. If land use change is considered, climate impacts grow to more than 60%, with biomass contributing the most (28%) followed by fossil fuels (18%) and then non-metallic minerals and metals (together 17%).¹

These findings emphasise the substantial potential for both climate change mitigation and adaptation strategies through enhanced material resource efficiency and sustainable resource management practices. The data demonstrate clear pathways for intervention through improved production processes and consumption patterns. Despite its significance, the nexus between climate change and sustainable consumption and production remains substantially underexplored in global climate policy frameworks. However, the Paris Agreement and the associated Nationally Determined Contributions (NDCs) present a strategic opportunity for countries to explore this critical relationship more comprehensively, integrate SCP strategies into climate plans and actions, and develop more holistic and systemic approaches to emissions reduction and climate change resilience building.

Considering the extreme dependence on natural resources for all economies and societies, the need for decoupling economic growth from increasing resource use and environmental impact should be the main aim for moving away from wasteful linear production and consumption practices. In this context, the nexus between SCP and NDC provides the framework and could be the catalyst for transformative actions through engagement and compromise at all levels, by all concerned stakeholders, government entities, the private sector and consumers. The juxtaposition of SDG 12 alongside the impact of the climate crisis, and the correlation with other SDGs, particularly SDG13 and SDG17, present excellent opportunities to develop a more comprehensive understanding of the issues at stake between climate change and SCP in order to identify priority areas for actions and more rapid results.

Since climate action depends as much on production as on consumption, effective transformative actions to cope with climate change in the context of the NDCs can thrive only if consumers fully understand why buying products that are sustainably produced is crucial for the environment and for the reduction of emissions that are harmful to the planet. Linkages between SDGs 12, 13 and 17 provide the adequate framework to implement and encourage sustainable patterns of production and consumption in the NDCs without compromising either market access or profitability in the production sector.

Nationally Determined Contributions (NDCs)

The Nationally Determined Contribution (NDC) is the building block of the Paris Agreement, which was agreed at the 21st Conference of Parties (COP21) of the United Nations Framework Convention (UNFCCC).² Not only did the NDCs pave the way towards a bottom-up approach to a global agreement to solve global climate change challenges, they provided an opportunity to integrate national priorities with climate actions. All the parties are expected to update their NDC progressively in every five years in order to achieve the

¹ United Nations Environment Programme (2024): *Global Resources Outlook 2024: Bend the Trend – Pathways to a liveable planet as resource use spikes*. International Resource Panel. Nairobi, p. 51. <https://wedocs.unep.org/20.500.11822/44901>

² on 12 December 2015, entering into effect on 4 November 2016

overall objectives of the Paris Agreement. The NDC process has been recognised as an opportunity to address other global commitments in an integrated manner. The Sustainable Development Goals (SDG), a landmark agreement in the 2030 global development agenda, also recognised the Paris Agreement as a main contributor in achieving the targets, as it opened a window of opportunity for countries to establish a development pathway contributing to multiple global and national commitments with a common process including monitoring, reporting and verification processes.

During the first NDC cycle of the Paris Agreement, many Asia-Pacific countries included SCP-linked NDC targets and championed SCP-NDC integration. Altogether 28 countries in the Asia-Pacific region make a direct reference to SCP within their NDC targets, while in almost all the countries there are SCP-related targets without direct reference to SCP. Energy efficiency, waste management, value chain improvements, green buildings, building material with low carbon footprints, sustainable lifestyles, etc. are some of the common SCP-linked NDC areas in Asia. However, many of these targets have been written as conditional since the achievements are contingent to accessing international support in the areas of finance, technology and capacity building.

In 2025, all parties to the Paris Agreement are required to submit their third round of NDCs (NDC 3.0), which must demonstrate increased climate ambitions guided by the Global Stocktake (GST) outcomes. This update presents countries with a strategic opportunity to integrate their national priorities, including sustainable consumption and production (SCP), with their enhanced climate commitments. The bottom-up approach of NDCs enables countries to effectively align their domestic objectives with their international climate ambitions, ensuring both national relevance and global climate action. To capitalise on this opportunity, this Technical Advisory (TA), 'Sustainable Consumption and Production (SCP)-linked Nationally Determined Contributions (NDC) –Learning Lessons from the Champion Countries and identifying opportunities to capitalise synergies between NDC & SCP' has been specifically designed and implemented to support target countries in writing their NDCs. The TA aims to add value by making the NDCs more relevant and pragmatic through the appropriate mainstreaming of responsible consumption and production patterns, while helping countries bridge the gap between ambitious climate goals and practical implementation strategies.

3. Country Outline

The country of Nepal is particularly vulnerable to the effects of climate change, where a wide range of challenges are exacerbated by a distinct geographic and socioeconomic setting. This vulnerability is underscored by the high dependence of the national gross domestic product (GDP) on climate-sensitive sectors like agriculture, energy, water, and tourism. Heavy reliance on the agriculture sector for livelihood makes the country particularly sensitive to extreme weather, which threatens food security and induces poverty. As a biodiversity hotspot, Nepal faces unprecedented threats as habitats are deformed and species migrate in response to changing climate conditions. Furthermore, marginalised communities bear the brunt of these threats, as they lack the resources and infrastructure to cope with the challenges posed by climate change.

Nepal is committed to accelerating climate action through responsible consumption and production patterns, with the aim of reducing vulnerability, protecting ecosystems and consolidating local resilience, highlighted by national policy initiatives to develop legal and institutional mechanisms to implement the long-term goals as agreed in the Paris Agreement. Various policies and programmes have been set up to enhance resilience and low-carbon development pathways; this long-term vision has been guided by the SDGs. The SDG Status and Roadmap 2016–2030 was developed to achieve these global goals by laying out specific, concrete targets for Nepal’s development progress. Similarly, the roadmap prepared by the National Planning Commission (NPC) of the Government of Nepal was written to include a wide range of stakeholders to articulate development priorities, targets, and resource needs, as well as to suggest institutional prerequisites to support implementation. In particular, SDG 12 emphasises the need for a responsible SCP approach to effectuate the efficient exploitation and use of resources to improve the average quality of life. In the context of Nepal, adopting SCP is crucial for the economy and for society, especially for the efficient management of natural resources, food, energy, waste and toxic pollutants, and for consolidating resilience and reducing vulnerability.

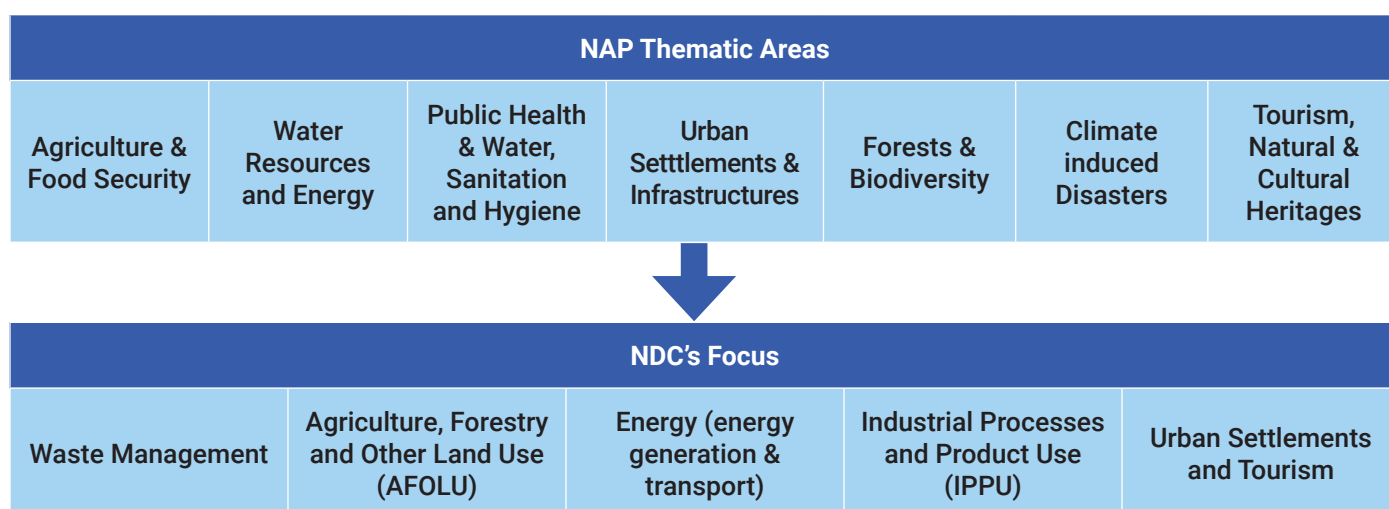
In addition to the SDGs, Nepal has set NDC targets to cut back on GHG emissions and mitigate climate change, the results of which will depend mainly on the effective transformation of current unsustainable consumption and production patterns by means of efficiency and circularity. Nepal’s NDC has established strategies for achieving its pledges, and elaborate systems to track and verify progress. The country submitted its first and second NDCs to the UNFCCC in October 2016 and December 2020, respectively. With an emphasis on the importance of adaptation and resilience building in protecting lives, livelihoods and ecosystem services, Nepal is committed to a localised approach to climate change adaptation. The NDC cycle has incorporated SCP-linked NDC targets and plans for mainstreaming resource efficiency and SCP approaches and their implementation in the sectors of energy, waste management, green buildings, materials with low carbon footprints, and promoting sustainable lifestyles.

4. SCP and Climate Change Priorities of the Country

4.1. Country assessment for SCP integration

Nepal's National Adaptation Plan (NAP) involved defining sectoral adaptation priorities at the national level. Categorised under seven different thematic working groups, NAP led the process by focusing on agriculture and food security; water resources and energy; public health and water, sanitation and hygiene; urban settlements and infrastructures; forests and biodiversity; climate-induced disasters; and tourism, natural and cultural heritages. Cross cutting issues such as Gender and social inclusion (marginalised groups) and livelihoods and governance were also incorporated.

Under the NAP thematic working groups, the NDC lists key target sectors upon which to focus: energy; waste; agriculture, forestry and other land-use (AFOLU); industrial processes product use (IPPU); and urban settlement. In addition, the energy sector targets include the sub-sectors of energy generation, transport, residential cooking, and biogas. Obviously, all of these thematic areas are closely related to consumption and production practices, the supply and demand context, how Nepalese society consumes, and how the industry and its actors, mainly SMEs, transform materials and deliver products.



In Nepal the integration and promotion of SDG 12 – Ensure sustainable consumption and production – was already initiated during the second NDC. The very concept of SCP highlights sustainable management and using natural resources in such a way as to minimise the environmental impact of resource extraction, production processes, and consumption patterns.

<i>National Climate Change Policy, 2019</i>	This policy aims to foster socio-economic prosperity through the establishment of a climate-resilient society. A key objective of this policy is to advance a green economy by embracing low carbon emission development for which it has formulated policies, strategies, and guidelines across eight primary sectors and four intersecting sectors.
<i>The National Adaptation Plan (NAP)</i>	The plan outlines a framework that is intended to help Nepal integrate climate action and strategies into its development plans more effectively where the priority actions support the Government of Nepal in achieving the adaptation goals outlined in the 2020 Nationally Determined Contributions (NDC).

Nepal's Long-term Strategy for Net-zero Emission	It is designed to achieve carbon neutrality by mid-century, in alignment with global climate goals. The key components to this strategy include decarbonising the energy sector, sustainable agriculture and forestry, green transportation, waste management, industrial transition to cleaner technologies and energy-efficient practices, climate resilience and adaptation and policy and institutional strengthening.
The SDG Status and Roadmap 2016-2030	The roadmap provides us with a brief account on SDG 12 with the focus on agriculture as the primary backbone of economic activities (sustainable use of water resources, doubling land productivity and land use, reducing post-harvest losses in agriculture), forestry (consumption of biomass), energy (reducing the use of fossil fuels) and waste (liquid and solid industrial waste and plastic).
National Environment Policy, 2019	The policy promotes mitigation activities by encouraging the use of electric vehicles and renewable energy technologies. For adaptation, it expands the 'Climate Resilient Village' programme, supports sustainable forest management, and integrates watershed management practices. Additionally, the policy includes strategies for developing climate-resilient infrastructure to reduce losses and damage from disasters related to infrastructure.
The Environment Protection Act, 2019	The act has its key feature where any development project developers need to comply with several regulations to ensure environmental sustainability. It explicitly empowers the GoN to establish standards to reduce and regulate emissions, hazardous waste, and pollution from various entities and addresses climate change concerns.

Sectoral policies related to Climate Change and SCP



The National Reducing Emissions from Deforestation and Forest Degradation (REDD+) Strategy (2018)

Aims in addressing climate change by promoting sustainable forest management and conserving biodiversity.



National Energy Efficiency Strategy (2018)

The strategy aims to double the average annual rate of energy efficiency improvement in Nepal from 0.84% to 1.68% by 2030.



National Agroforestry Strategy (2019)

The Strategy aims to contribute to national prosperity through the development, expansion and commercialisation of the agroforestry system.



The Nepal Renewable Energy Subsidy Policy (2016)

Formulated for implementation of subsidies for different renewable energy technologies and expanding access to renewable energy while reducing reliance on traditional and commercial energy sources.



The Rural Energy Policy (2006)

The policy emphasizes on the development of environment-friendly rural energy technologies such as micro and mini hydro, biogas, ICS, solar energy systems as a reliable and sustainable source of energy.



The Biomass Energy Strategy (2017)

The strategy has its objective to enhance energy supply and security by managing agricultural and forest residues and organic waste.



The Solid Waste Management Act (2011)

The act aims to reduce the impacts of environmental pollution through management of the solid waste in a systematic and effective way by reducing at its source, re-use, processing or discharge



The Industrial Policy (2010)

The policy gives special emphasis on using environment-friendly technologies for sustainable development of the industrial sector and makes provisions for development of green, energy efficient and environment-friendly industrial base.



The National Land Use Policy (2015 BS)

The policy aims to make needful preparations to achieve the goals of sustainable developments, provide a safe, dignified and well-facilitated human settlement for all, to conserve biodiversity, to operate a campaign against desertification as well as to mitigating risks from climate changes.



The Forest Policy (2015)

The policy is the key for conservation programmes for forests, plant resources, wildlife, biodiversity, medicinal plants, and soil and watershed.

The policy calls for sustainable and climate-resilient management of forest ecosystems and watersheds which should be sustainably managed through a decentralized, competitive and well-governed forest sector.



Nepal's Agriculture Development Strategy (2015-2035)

The strategy has its vision of 'a self-reliant, sustainable, competitive, and inclusive agricultural sector that drives economic growth and contributes to improved livelihoods and food and nutrition security'.



The Tourism Policy (2008)

The policy gives emphasis to protection of the environment and sustainable use of natural resources while developing and constructing tourism infrastructures.

It focuses on eco-tourism with plans to develop and expand the tourism industry as a vehicle for green growth.



Nepal: Zero Hunger Challenge National Action Plan (2016 - 2025)

The action prioritizes activities related to five strategic pillars where 3 and 5 pillar are particularly aligned with the SCP goal.

Pillar 3: All Food Systems Sustainable promotes and rewards the universal adoption of sustainable and climate-resilient agricultural practices.

Pillar 5: Zero Loss or Waste of Food aims to minimize food losses during harvesting, storage, and transport, as well as reduce food waste by retailers and consumers.

Potential Sectors in the NDC for SCP integration

Energy Generation and Clean Cooking Sub-sector

Energy Sector

Nepal aims to generate clean energy of approximately 15,000 MW by 2030 of which 5-10% will be generated from mini and micro-hydro power, solar, wind and bioenergy. With the renewable energy resources of hydropower, solar, wind, and biomass, expansion of the use of renewable energy sources can help reduce reliance on fossil fuels, minimise greenhouse gas emissions, and enhance energy security. The 15th five-year plan (2076/77-2080/81) (Gregorian calendar 2019/20-2023/24) has also prioritised the promotion of clean energy with a focus on increasing renewable energy production and encouraging the consumption of electric energy across various sectors by promoting regional trade of electricity to reduce petroleum imports. Rural electrification and decentralised energy systems powered by renewable energy sources can help extend energy access to remote communities.

Transport Sub-sector

The transport sector is one of the major contributors to energy-related carbon emissions. The NDC has its target of having 20% of all four-wheeler's public passenger e-vehicle sales in 2025. This transition can significantly reduce reliance on fossil fuels with interventions of the adoption of electric vehicles, including rickshaws, through subsidies, tax breaks, and charging infrastructure development. The Environment-Friendly Vehicle and Transport Policy, 2014 has been promoting clean transport by increasing the share of electric vehicles and providing subsidies for the promotion of electric and non-motorised vehicles. Similarly, the establishment of EV charging stations and public transport hubs can further enhance sustainability of the sector. It is essential to have a strong public transport policy, deserving large parts of the cities and of the country to reduce the use of private cars.

4.2.2. Industrial Processes Product Use (IPPU) and Urban Settlement Sub-sector:

Industrial Process and Product Use Sector:

Nepal's emissions from industrial processes and product uses are currently low. There are some prominent industries which are related to brick, cement, metal manufacturing, and food and beverage in Nepal. The concept of cleaner production came into practice in Nepal with the Environment Sector Programme Support (ESPS) which was a bilateral programme between the Government of Nepal and the Government of Denmark (DANIDA). The project introduced the concept of environmental management systems to improve and promote optimum usage of the resources along with preventive measures on minimising waste generation. The project, completed in 2008 achieved around 30% - 35% success in terms of energy efficiency for electricity, fuel, and reduction in greenhouse gasses in over 360 industries, mostly SMEs, which paved the path for the Nepal Energy Efficiency Programme. This commenced the promotion of clean energy, with the focus mainly shifted on to households, hydroelectricity, alternative energy and industry in general.

Urban Settlement Sub-sector (Building and Construction):

Nepal is one of the most rapidly urbanising countries with the population status of 60% inhabitants living in the urban sector. The CO₂ emissions is mostly from the transport sector followed by the industrial and building sectors. Transition of the rural to peri urban to urban sector demand for millions of houses to be built. The post-earthquake construction still in line, the government has its focus on the use of green building materials with the initiation of the Green Homes concept. For this, the Department of Urban Development and Construction has also formulated Guidelines for Green building technologies in Nepal. In this context, it is also important to induce and support the micro and small medium enterprises producing hollow bricks or other locally available materials for construction to use cleaner production technologies, more energy efficient and less pollution.

4.2.3. Tourism Sector:

The tourism industry contributes about 6.7% to the Nepal GDP (World Bank, 2022). The promotion of sustainable and inclusive tourism in Nepal's protected areas is essential for the nation's green, resilient, and inclusive development. Ecotourism practices emphasise responsible traveling with minimum impact on the environment and help promote conservation efforts. Sustainable tourism initiatives have been focusing on minimising waste generation, promoting recycling, and adopting eco-friendly practices along with energy-efficient accommodations, water conservation measures, and the use of renewable energy sources to minimise resource consumption. The Tourism Vision 2020 published in 2009 has its emphasis on improving the livelihoods of people across the country by developing integrated tourism infrastructure, generating employment in the rural areas and enhancing inclusiveness of women and other deprived communities. This vision has further emphasised the concept of rural and community-based tourism, homestays and eco-tourism. This will also require proactive and targeted information campaigns so as to make the tourists behave more responsibility for the environment and for the society. Promoting green and responsible tourism through above activities will clearly contribute to reducing CO₂ emissions, from transport, accommodation, resource use and waste sectors, while consolidating local resilience through protection of ecosystems and providing jobs and incomes to local communities, mainly women and youth,

4.2.4. Waste Management Sector:

Waste management is a major challenge in the urban and peri-urban areas of Nepal. The Solid Waste Management Act, 2068 (2011) provides regulatory guidance for solid waste management in the country with the provision of the local communities to handle their own waste. There are still some prominent issues relating to adequate waste management infrastructures such as waste collection, transportation, and disposal facilities. The municipal waste collection services are often insufficient and, in many cases, have led to littering and illegal dumping. The waste management sector holds significant opportunities in terms of waste reduction to a shift from linear to circular economy model. To that end, the government and local authorities should induce and support innovative solutions for managing waste by local entrepreneurs, startups and MSMEs, as has been the case in places where local people prove to be very creative for solutions to local challenges with little incentives.

For wastewater management sector, the situation is critical. The volume of wastewater production has been increasing, and with the absence of waste treatment technologies and transmission of water-borne diseases, the environmental damages cost to society work out to be more than the financial costs. Domestic sewages, industrial effluents and agricultural residues are the significant wastes which are discharged without pretreatment through the public sewerage systems and indirectly via runoff and open drainages polluting the rivers in Nepal. The cultural, religious and environmental significance of the Pashupati temple in Nepal has led to the establishment of the Guheshwori Wastewater treatment plant in 1995 via the Bagmati Area Sewerage Construction / Rehabilitation Project (BASP). The wastewater treatment plant is the only functioning treatment plant with the main objective of keeping the Bagmati River and its tributaries clean by preventing the direct discharge of solid and liquid wastes into the river and to conserve the river system within the Kathmandu valley. Similarly, for faecal sludge management, there are some pilot projects which have been carried out for the implementation of sanitation with focus on faecal sludge management, its policies, and institutional and regulatory framework. Raising the sense of responsibility for all actors, public, private and citizens is a critical factor for this basic concern for a healthy society.

4.2.5. Agriculture, Forest and other land use (AFLOU):

Agriculture Sub-sector:

Agriculture is an important livelihood sector of Nepal which contributes to around 25% in the national GDP and provides employment to around 60% of the population. (Kharel et al., 2022). Hence, the development of the agriculture sector is key to the development of the national economy. Agricultural livelihood comprises subsistence farming, livestock rearing and crop production and forest-based activities. These activities are directly related to naturally available resources which are vulnerable to climate related disasters such as floods, landslides and droughts. These hazards have a direct impact on the livelihood and economic development of the people depending on agriculture. Improving agricultural practices through more efficiency and less losses will contribute to reducing CO₂ emissions.

Forest Sub-sector:

The launch of the community forestry (CF) programme in 1995 was a commending initiative from the government for improving Nepal's forest cover. This initiative also had its intention on developing the livelihood of the local communities who rely on forest products to fulfil their basic needs. The programme further focused on developing local institutions and promoting good governance addressing the issue of GESI at local level. Evidence shows that these initiations have supported women empowerment and inclusion of the indigenous communities. However, with the main objective of CF being fulfilled, there are still some challenges that have been encountered in the present context. Studies have shown that the introduction

of producing Non timber forest products (NTFPs) for the livelihood support of community members has come at a price of biodiversity loss due to introduction of alien species. The introduction of REDD+ has renewed aspirations for the utilisation of the tangible forest products sustainably and move forward with verifiable emission reduction credits. This could be an essential source of income for the local communities for alternative climate resilient livelihoods.

These different sectors with the potential to integrate SCP into the NDC and which are also aligned with the target of SCP have been detailed out in the table below:

NDC Strategy / Action Plan	SCP Target	Description
Agriculture Sub-sector		
By 2030, the soil organic matter content of agricultural land will reach 3.95%.	12.2 Sustainable management and use of natural resources: focuses on minimising the environmental impact of resource extraction, production processes, and consumption patterns.	The action plan expects improvement in adoption of ecologically resilient agriculture systems to support climate resilience, and public awareness campaigns to promote efficient food systems. It aims to promote use of organic fertilisers and improved land management practices, and push towards establishment of climate smart villages and farms by providing incentives.
By 2030, the number of organic fertiliser production plants in the country will reach 100.		
Promote intercropping, agroforestry, conservation tillage, and livestock and agricultural waste management.		
By 2030, establish 200 climate-smart villages and 500 climate-smart farms.		
Forest Sub-sector		
By 2030, manage 50% of Terai and Inner Terai forests and 25% of the middle hill and mountain forests sustainably, including with funding from REDD+ initiatives.	12.2 Sustainable management and use of natural resources: focuses on minimising the environmental impact of resource extraction, production processes, and consumption patterns.	The action plan involves utilising the benefits of forest conservation from the REDD+ mechanism through carbon credits, and management and revitalisation of wetlands, promoting resilience, long-term viability, and ecologically sound resource management practices.
By 2025, enhance the sink capacity of the land-use sector by instituting the Forest Development Fund (FDF) for compensation of plantation and forest restoration.		
By 2030, upgrade watershed health and vitality in at least 20 districts to a higher condition category		
By 2030, create an inventory of wetlands and sustainably manage vulnerable watersheds		

NDC Strategy / Action Plan	SCP Target	Description
Energy Generation and Clean Cooking Sub-sector		
Energy generation	12.2 Sustainable management and use of natural resources: focuses on minimising the environmental impact of resource extraction, production processes, and consumption patterns.	For the energy sector, the goal is to ensure sustainability by promoting both Energy Efficiency and the use of Renewable Energy and increasing access to clean cooking solutions.
Expand clean energy generation to 15,000 MW, of which 5-10% will be generated from mini and micro-hydro power, solar, wind and bioenergy.		
Ensure 15% of total energy demand from clean energy sources.		
Clean cooking		
Ensure 25% of households use electric stoves as their primary mode of cooking.		
By 2025, install 500,000 improved cook stoves (ICS), specifically in rural areas.		
By 2025, install an additional 500 large biogas plants by 2025.		
By 2025, install an additional 200,000 household biogas plants.		
Transportation Sub-sector		
By 2030, increase sales of e-vehicles to cover 90% of all private passenger vehicle sales, including two-wheelers and 60% of all four-wheelers public passenger vehicle sales.	12.2 Sustainable management and use of natural resources: focuses on minimising the environmental impact of resource extraction, production processes, and consumption patterns.	The action plan expects transition to zero-emission transportation across the public and private sectors.
Promote public electric mobility through policy incentives, including subsidy policies and other financial mechanisms.		
By 2025, ensure at least three provinces operate electric public transport, three provinces establish vehicle fitness test centres to monitor and regulate vehicular emissions.		

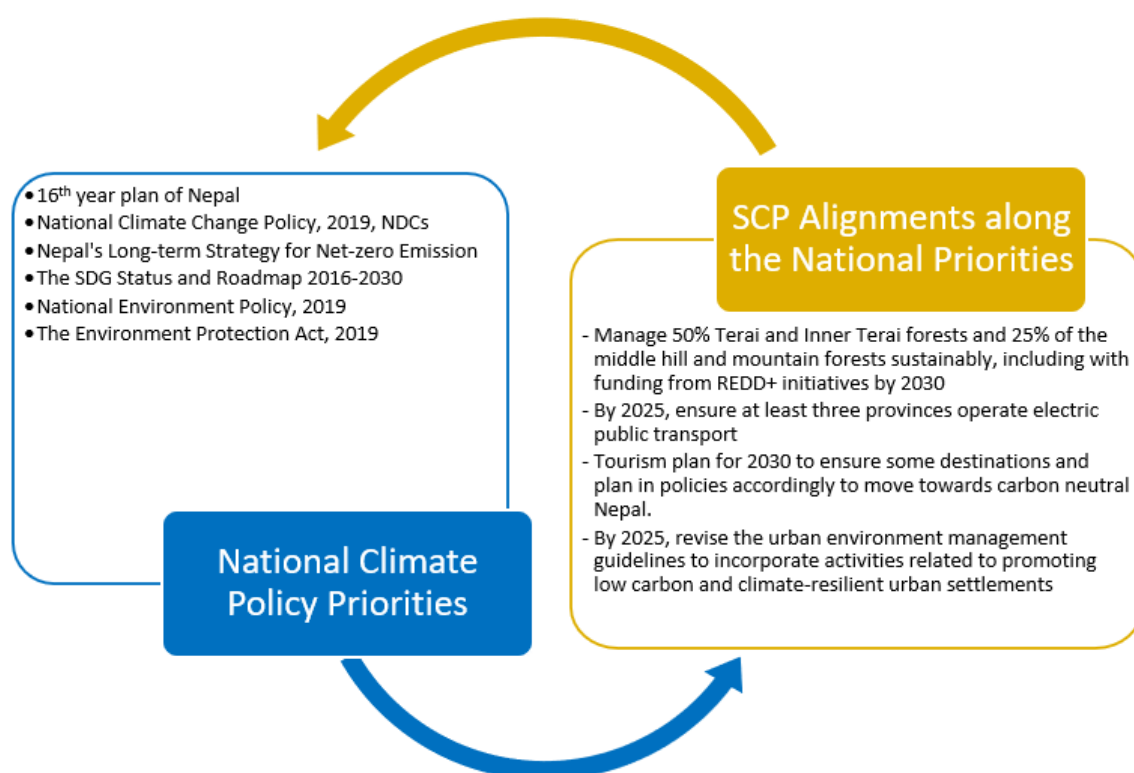
NDC Strategy / Action Plan	SCP Target	Description
Waste Management Sub-sector		
By 2030, adopt and implement waste segregation, recycling, and waste to energy programmes in at least 100 municipalities.	12.5 Substantially reduce waste generation: encourage the adoption of circular economy principles to minimise waste generation.	The action plan involves development of an integrated waste management system and promotes policies for private investment in waste management.
By 2030 create an enabling environment for both public and private sectors to treat industrial and municipal waste.		
Promote 3Rs (reduce, reuse, recycle) approach to waste management, along with source segregation and management of degradable and non-degradable waste.		
Industrial Processes Product Use (IPPU) and Urban Settlement Sub-sector		
By 2025, formulate guidelines and establish a mechanism to monitor emissions from large industries.	12.6: Encourage companies to adopt sustainable practices and sustainability reporting	The action plan involves adoption of low emission technologies to reduce coal consumption and air pollution, formulate guidelines and establish emission standards and mechanisms to monitor emissions from large industries, and strengthen institutional mechanisms.
By 2030, adopt low emission technologies in brick and cement industries to reduce coal consumption and air pollution, including through the development and/or enactment of emission standards.		
Adopt national building codes and prepare Integrated Urban Development Plans (IUDPs) emphasising low carbon and climate-resilient urban settlements in all municipalities.	12.8 Promote universal understanding of sustainable lifestyles: Raising awareness and promoting sustainable behaviour among individuals and communities is vital.	The plan also looks toward promoting meaningful participation among women, youth, Indigenous Peoples, and marginalised groups in climate change-related policy development, planning, implementation, monitoring, capacity building, negotiation and other important processes.
By 2025, revise the urban environment management guidelines to incorporate activities related to promoting low carbon and climate-resilient urban settlements.		
Tourism Sub-sector		
By 2025, formulate and implement nature-based tourism plans in at least five main tourist destinations.	12.b Develop and implement tools to monitor sustainable tourism	The action plan involves development of policy measures to decarbonise tourism transport, and implementation of nature-based tourism management plan.
By 2030, ensure at least five tourist destinations are carbon neutral.		
By 2030, including measures in policies to offset the carbon footprint of emissions resulting from tourism transport.		

5. Development Trajectory of Nepal

As a developing nation, Nepal has defined its Sustainable Consumption and Production (SCP) aspirations, which align with various Nationally Determined Contributions (NDC) targets and national priorities. By the year 2025, the country aims to implement electric public transportation systems and regulate vehicle emissions to ensure reduction of GHG emissions, improve air quality and contribute to healthier society. Additionally, there is a strong emphasis on minimising the environmental impacts associated with resource extraction, production processes, and consumption patterns.

Recognising its potential in tourism as an important driving economic and social sector, Nepal has set a goal for 2030 to achieve carbon neutrality in selected destinations by promoting eco-tourism and adopting sustainable practices within the sector. Furthermore, plans are in place to implement low-emission technologies in the brick and cement industries to decrease coal usage and mitigate air pollution. This includes the development and enforcement of emission standards. By 2025, the country also intends to revise urban environmental management guidelines to promote low-carbon and climate-resilient urban settlements. Promoting a universal understanding of sustainable lifestyles and raising awareness to encourage responsible production along the value chain and promote sustainable behaviours among all segments of the society, notably individuals and communities, is essential.

These aspirations are clearly presented in the figure below.



6. Analysis and Recommendation

6.1. Country Limitations

6.1.1. Government centric Nationally Determined Contribution (NDC)

The NDC is the responsibility of the Climate Change Management Division (CCMD) of the Ministry of Forest and Environment (MoFE) as its secretariat. However, for any coordination needed in terms of its implementation, committees are established to overlook the matters. For high-level oversight and policy guidance, a multi-stakeholder High-Level Climate Change Steering Committee has been established under the Chair of the Minister of Forests and Environment. The committee members are secretaries of relevant ministries to ensure necessary coordination within their jurisdiction. Similarly, for the engagement of development partners, academia, and experts, they are invited to attend meetings only on an ad-hoc basis.

6.1.2. Understanding and Awareness about SCP

Programmes and projects have been implemented in the context of sustainable consumption and production for the past many years. Projects related to energy efficiency, natural resource management, and cleaner production are just a few examples which have been contributing directly / indirectly on the promotion and application of SCP patterns. Nevertheless, understanding of the overall system of SCP and awareness remain limited. It is essential to explain and demonstrate the inter-relations of resources exploitation, use, processing and products consumption with their impacts on CO₂ emissions and climate change impacts. It is essential to define SCP targets within projects aimed at the sustainable utilisation of environmental resources, as there is still a disconnect among individuals regarding the relationship of these activities to Sustainable Development Goal 12 (SDG 12). Where the overall understanding of SCP is missing, pursuing cleaner production techniques, improving productivity and efficiency, and promoting responsible consumption with quality products and minimum waste will still progressively pave the way for an integrated and comprehensive SCP system, demonstrating the impacts of unsustainable consumption and production practices on ecosystems destruction and climate consequences. Hence, there is a crucial need to understand SCP and its linkages with the targets in the NDC among the key stakeholders, while ensuring that the different stakeholders understand the values of SCP with regards to innovation, efficiency, resilience and climate objectives.

6.1.3. Limited integration of the Social and Cultural knowledge

Utilising natural resources and maintaining them has been in the consciousness of people from the very beginning of civilisation. Simple techniques have been used in the communities which have helped preserve the culture and social norms of the society. These cultural aspects of the community are pivotal to society as they showcase an excellent example of how local materials were utilised and guide us towards resource management and recovery. It is essential to promote the dissemination of these concepts; otherwise, they risk being overshadowed by technological advancements and fading from societal and community consciousness. It is also essential to induce and support innovative practices by local entrepreneurs and local communities, using new and emerging knowledge and technologies, in response to local challenges while considering the context and conditions of surrounding ecosystems.

6.2. Sectoral Evaluation for SCP Integration

6.2.1. IPPU and Urban Settlement

The industrial sector in Nepal is experiencing gradual growth, with numerous enterprises classified as micro-industries which together with the small and medium enterprises constitute the large majority of business actors and stakeholders. This sector holds significant potential for investment and the integration of green technologies aimed at enhancing cleaner production methods, improving energy efficiency, and implementing waste reduction strategies. The introduction of the EU Green Deal has facilitated a gradual yet meaningful

shift from a linear to a circular economy within various industries. This transition has heightened awareness among industrial stakeholders regarding the importance of incorporating environmentally sustainable products and has underscored the necessity of adopting sustainable consumption and production practices. Currently, initiatives are underway to promote the adoption of resource-efficient and cleaner production (RECP) techniques within small and medium enterprises (SMEs), particularly in the building and construction sector, contributing largely to CO₂ emissions whereas RECP practices have proven to drastically reduce waste and emissions.

In terms of the urban sub sector, there has been considerable work being carried out by the UN-Habitat with the support of the European Union. The Green Homes Project was launched to advocate for sustainable housing practices in Nepal, emphasising the reduction of adverse effects on natural resources and carbon emissions within the housing sector. This initiative was established to enhance the capabilities of small and medium-sized enterprises (SMEs) and to fortify the supply chain for sustainable housing products and services. It also aims to classify these offerings based on the use of eco-friendly construction materials, passive solar design, energy efficiency, waste management, and water conservation, with most of these practices having a relation to use of energy and CO₂ emissions that correlate with climate objectives and actions.

The Nepal Energy Efficiency Programme, a component of the bilateral collaboration between Nepal and Germany, has undertaken initiatives to enhance energy efficiency within various industries. The Energy Efficiency Centre (EEC), supported by NEEP and operating under the Federation of Nepalese Chambers of Commerce and Industry (FNCCI), is focused on increasing awareness among Nepalese industries, including the brick sector. This initiative aims to promote energy efficiency services by providing training for energy auditors and facilitating financing through financial institutions.

The concept of green building is still in its early stages; however, there has been a gradual shift towards the restoration of cultural heritage, which has created a demand for sustainable construction that integrates modern technologies. Construction firms have the opportunity to offer services that design and implement nature-based solutions, such as green infrastructure projects, and to develop climate-smart building materials, thereby unlocking new market opportunities.

By fostering effective collaboration between businesses in the industrial, production, and urban sectors, there is potential to engage government entities in leveraging their resources, expertise, and innovation to create products, services, and technologies that stimulate economic growth while aligning with Nepal's Nationally Determined Contributions (NDC) for green building investments. The introduction of e-tendering in the construction industry represents a significant advancement in sustainability efforts, as it reduces paper usage, lowers carbon emissions associated with travel, and enhances procurement efficiency through digitisation and online bidding platforms.

6.2.2. Tourism

Being a country rich in natural resources such as mountains, rivers, minerals, water, forest, medicinal herbs and varieties of agricultural products, Nepal has the capacity to foster tourism as one of the most promising sectors especially with the integration of SCP practices. The government has committed to achieving carbon neutrality for at least five tourist destinations by 2025, as outlined in its Nationally Determined Contributions (NDC). This initiative includes the formulation of policy measures aimed at decarbonising tourism-related transportation and the execution of a nature-based tourism management plan. Furthermore, it is essential for the sector to enhance public awareness regarding sustainable resource management. A deficiency in understanding SCP principles and practices as well as in the concept of a circular economy has limited individuals' capacity to engage in informed and responsible actions. Tourism is cross-sectoral in nature, with close interconnections between economy, society and the environment, with major impacts on ecosystems' resilience and climate.

Numerous initiatives have been undertaken within the hotel sector to integrate Sustainable Consumption and Production (SCP) principles. The notion of ecotourism has gradually gained traction among hotels. Practices such as employing non-toxic cleaning products, utilising organic cotton for sheets and towels, harnessing renewable energy sources like solar and wind for sustainable energy generation, implementing energy-efficient lighting solutions, providing recycling bins, offering organic and locally sourced cuisine, and

adopting greywater recycling methods—such as repurposing water from kitchens, baths, and laundry for gardening and landscaping, as well as rainwater harvesting—are increasingly being adopted by hotels.

6.2.3. Waste Management Approaches

The challenges posed by rapid urbanisation with increased demands for products have created an urgent need for effective management of solid waste, faecal sludge, and wastewater. The improper disposal of waste materials, coupled with the growing population's failure to minimise waste generation at its source, has resulted in the pollution of water bodies and the surrounding environment.

Significant advancements have been noted in the waste management sector, particularly regarding the principles of a circular economy. Various civil society organisations and numerous non-governmental organisations are actively engaged in enhancing the waste sector and supporting both formal and informal waste workers. Several initiatives are focused on the circular economy, aiming to establish circular infrastructure that encompasses recycling facilities, waste-to-energy systems, and recycling initiatives. However, the presence of outdated and limited policies concerning solid waste management underscores the urgent need for the development or upgrade the policies within the waste sector. In parallel, substantial efforts have been directed towards managing plastic waste. The government's prohibition of plastic bags under 40 microns underscores its commitment to environmental conservation and effective waste management.

While it is important to define adequate policies and apply relevant techniques for an improved management of waste, it is essential to also develop in parallel policies and actions, with targeted and tailored incentives, to improve efficiency and minimise waste throughout the value chain. Moreover, this will require active communication campaign for responsible stakeholders and citizens, coupled with information and awareness raising programmes at all levels of the education system, explaining the intrinsic relations of unsustainable consumption and production patterns, wasteful in resources and energy, with climate change and its consequences on the social and economic ecosystems.

6.2.4. Agriculture, Forest and Other Land Use (AFLOU):

Agriculture Sub-sector

The primary focus of sustainable production and consumption within the agricultural sector is to enhance output and quality while minimising resource use. Nepal's Long-term Strategy for Net Zero Emission underscores the importance of adopting improved cultivation techniques, implementing rice intensification systems, optimising manure management, and enriching soil organic matter through effective soil management practices. Recently, addressing 'inefficiencies' in the food value chain has become vital, which can be achieved through the application of agrochemicals in conjunction with Good Agricultural Practices (GAP). These guidelines are designed to ensure safe crop production and facilitate the generation of high-quality goods that meet both national and international standards. This is particularly critical for a developing country like Nepal, which depends on imports for chemical fertilisers. Further reductions in inefficiencies can be accomplished by selecting appropriate seeds and varieties, promoting indigenous and climate-resilient crops, minimising post-harvest losses, utilising climate information services, reducing waste, and opting for environmentally sustainable packaging solutions.

The Nationally Determined Contributions (NDC) of Nepal set a target to increase the number of organic fertiliser production facilities to 100 by 2030. Nevertheless, the agricultural sector in Nepal has been persistently affected by irregular rainfall patterns due to climate change, along with a shortage of fertilisers and seeds. The 2023 monsoon season experienced severe weather conditions, including an extended dry period that adversely impacted eight districts in the plains, leading to an estimated 15-20% reduction in paddy production. Furthermore, there is a pressing need to address food loss throughout various stages of the food supply chain, emphasising the importance of raising awareness and addressing concerns. This aligns with the broader objective of Sustainable Consumption and Production (SCP), which aims to halve food waste at the retail and consumer levels while minimising food loss across supply chains. In addition to the challenges of food loss, limited market access and inadequate pricing for farmers' produce are diminishing the appeal of the agricultural sector. However, the government's initiative to modernise agriculture, with an emphasis on enhancing production, processing, and marketing, presents a promising starting point.

Efforts are being intensified to encourage practices such as intercropping, agroforestry, conservation tillage, and the effective management of livestock and agricultural waste. Pilot projects have been established under the Climate Smart Villages (CSV) initiative which serves as a foundational step towards achieving the Nationally Determined Contributions (NDCs) goal of creating 200 climate-smart villages and 500 climate-smart farms. Additionally, various other pilot projects have been executed, employing different CSV models tailored to diverse agro-ecological contexts, thereby generating local evidence to inform comprehensive implementation guidelines for scaling CSV models across various districts in Nepal. It has become evident that there is a necessity to devise strategies and action plans aimed at reducing agricultural food loss and improving food security. Moreover, a vital aspect of food security is the principle of 'food system localisation,' which calls for the decentralisation and restructuring of food production, distribution, and consumption, with an emphasis on local resources, networks, and markets. The aim of this approach is to enhance the resilience, sustainability, and self-sufficiency of food systems by minimising reliance on long-distance transportation, large-scale agricultural practices, and global supply chains.

A straightforward yet significant initiative can be implemented for agroforestry projects by optimising the supply of raw materials through investments in climate-resilient agriculture, allowing various agencies to focus on their designated roles. Collaboration with research institutions and private organisations can improve research and development efforts on practices and technologies, such as drought-resistant seed varieties and drip irrigation systems, which government agencies can promote to farmers. Additionally, agro-based businesses may enter a memorandum of understanding to purchase the produce from the farmers involved in the initiative.

Forestry Sub-sector

Nepal has made significant strides in enhancing its forest cover of about 44% of the country's landmass and has committed to the sustainable management of 50% of the Terai and Inner Terai forests, as well as 25% of the middle hill and mountain forests, with support from REDD+ initiatives. As a developing country, Nepal is positioned to sell carbon credits to developed nations seeking to offset their emissions through the Reducing Emissions from Deforestation and Forest Degradation (REDD) programme. Furthermore, Nepal has placed a strong emphasis on increasing and preserving its forest cover by implementing afforestation initiatives and striving for net-zero deforestation. This includes measures aimed at reducing the incidence of forest fires, promoting sustainable forest management practices, and enhancing agroforestry and private forestry efforts. Agroforestry, as a sustainable land use strategy, presents a promising solution for Nepal's current circumstances. By promoting agroforestry, the livelihoods of individuals dependent on agriculture and forestry for various products can be supported. Additionally, expanding the community-based forest management approach will bolster Nepal's capacity as a carbon sink, positioning the country as an attractive option for developed nations seeking carbon offsets.

The key findings of the assessment have showcased some of the major sectors where there are possibilities for incorporating sustainable consumption and production policies and practices with regards to climate change solutions and the NDC targets, as well as for positive transitioning towards sustainable development in Nepal. Some of the sectors where incorporation of SCP will enhance efficient, resilient and low-carbon economies in Nepal according to the priority of the country are mentioned below.

Resource Efficiency (Consumption)	Cleaner Production
• IPPU and Urban Settlement Sectors (Sub Sectors: Industrial processes; Building and Construction and Tourism Sector) • AFLOU Sector (Sub sectors: Agro forestry and Food Security) • Waste Reduction with Circular Economy Approach • Energy Sector (Sub Sectors: Mini-micro hydro, Improved cooking stoves, Solar and Wind energy, Waste to Energy) • Transport Subsector	• Industrial Processes • Building and Construction • Agroforestry • Energy Sector (Sub Sectors: Mini-micro hydro, Improved cooking stoves, Solar and Wind energy, Waste to Energy)

7. Recommendations and Way Forward

The foremost challenge facing Nepal today is the migration of its labour force. The nation's economy is significantly dependent on remittances, as workers, particularly those in the industrial and agricultural sectors, face limited employment prospects and are seeking opportunities abroad.

The integration of SCP into the NDC would enhance resource efficiency by optimising the consumption of natural resources during production processes and consolidate a low-carbon economy. This approach would contribute to the reduction of waste and emissions, thereby supporting environmental conservation efforts and create opportunities for new and emerging markets focused on green jobs, promote locally or community-based sustainably produced goods, boost local tourism, and foster inclusive development.

With the expected increasing demand for higher resource and energy intensive consumption products from the growing middle-class, an appropriate procurement policy would be essential, in support to green, safer products together with a targeted communication policy for awareness raising on the need and benefits for maintaining sustainable lifestyles. As for SCP, climate change issues and NDC are multi-actors and multi-sectors. Defining NDC targets without other concerned stakeholders, including with regards to implementation means, will leave little change for their implementation. Hence the essential integration of SCP and NDC for mutually supportive policies and action plans, and engagement for a common national objective.

The 16th Year Plan of Nepal (2024/25-2028/29) emphasises the attainment of Sustainable Development Goals and the promotion of a Green Economy, particularly in the areas of Resource Recovery and Efficient Management. Consequently, the incorporation of SCP into the NDC 3.0 should focus on advancing sectors such as Industrial Processes and Product Use (IPPU) and urban development, alongside waste reduction through a circular economy framework and tourism aspects. This includes enhancing value chains for green buildings and low carbon building materials, fostering sustainable lifestyles, and adopting a comprehensive approach to climate action. Additionally, it should aim to increase public awareness and encourage behavioural changes, empowering individuals to make environmentally responsible decisions and contribute to a sustainable nation.

Moreover, it is important that the government defines relevant public green and sustainable procurement policies, structured around responsibility and sustainability principles, aiming at promoting efficient, resilient and low-carbon economy and society, giving priority to green safer products, local innovations in response to local challenges, creation of local jobs, youth and women in particular, contributing to building local resilience to climate change and local ecosystems' resilience.

In alignment with the aims of the Sustainable Development Goals (SDGs), figure below depicts the sectors where these targets may be realised in Nepal.

12.2 Sustainable management and use of natural resources: focuses on minimising the environmental impact of resource extraction, production processes, and consumption patterns.

- Agriculture Sub-sector
- Forest Sub-Sector
- Energy Generation and Clean Cooking Sub-sector
- Transportation Sub-sector

12.b Develop and implement tools to monitor sustainable tourism

- Tourism Sub-sector

12.5 Substantially reduce waste generation: encourage the adoption of circular economy principles to minimize waste generation.

- Waste Reduction with Circular Economy approach

There are some ways forward where the inclusion of SCP into NDC can be incorporated in the above-mentioned sectors, for a mutually supportive transformation in the transition to sustainable development in Nepal.

i. Need of Government Intervention

The main aim of the SCP framework and the climate agenda is to regulate and reduce carbon emissions in key sectors. Government entities have the ability to leverage their purchasing power to steer markets towards more sustainable and innovative products and services, thus enabling a transition to cleaner energy sources for promoting sustainable development. Governments play a vital role in highlighting the necessity of monitoring sustainable practices to ensure both economic feasibility and environmental integrity. By implementing suitable policy instruments, such as regulations, taxes, incentives and subsidies, and by prioritising sustainable public procurement, the government can stimulate investments in green innovation, green financing, and responsible eco-conscious consumption, thereby fostering an environment conducive to resource-efficient strategic investments. Furthermore, integrating SCP measures into the Nationally Determined Contributions (NDC) can facilitate a seamless application of responsible practices in the transition towards circularity, climate neutrality and sustainability, as many existing policies already align with the climate agenda. This strategy can help decouple economic growth from resource consumption, encourage the development of green jobs, support local culture and products, and ensure the sustainable management of sectoral development.

ii. Raising awareness and empowering action

The concept of a circular economy and its relationship with SCP is relatively recent. It is crucial to enhance awareness and engage with major stakeholder groups of government, private sectors and academia regarding SCP matters, fostering a collective understanding that can facilitate consensus among the public by sharing experiences and evaluating lessons learned. Nevertheless, numerous developing nations, such as Nepal, face challenges due to insufficient technical skills and expertise, rendering them more susceptible and less adaptable. To mitigate this issue, there is a pressing need for initiatives aimed at raising awareness, including training programs that can compile and disseminate best practices, challenges, and experiences through various platforms such as websites, blogs, podcasts, videos, and traditional media to effectively reach younger demographics. Furthermore, encouraging dialogue, coordination, and collaboration among pertinent efforts can aid in the exchange of information on the integration of SCP, thereby enhancing both human and institutional capacities and ultimately fostering resilience within communities.

iii. Engagement of the private sector

The role of private entities, mainly the MSMEs, in the development of NDC is limited., whereas their involvement in the delivery of the goals and targets is essential. To promote effective knowledge sharing within local communities, it is crucial to undertake projects or initiatives at the grassroots level, which can be significantly improved through private sector engagement. Furthermore, there are investment prospects for international and bilateral donor organisations in innovation funds designed to induce, enable and encourage the adoption of environmentally sustainable technologies that support circularity. The private sector's role can be instrumental in creating innovative solutions for cleaner production, waste minimisation and improved management of waste, and advancing a circular economy, thus generating potential climate solutions and fostering dialogue and collaboration among diverse stakeholders. Some private companies have outlined activities that contribute to the Sustainable Development Goals (SDGs); however, this practice is still in its early stages. The movement towards enhanced sustainability reporting is a commendable trend, reflecting an increasing recognition of the necessity to emphasise sustainable practices across all sectors. Additionally, there is a pressing need for further collaboration to facilitate resource sharing, knowledge exchange, and the adoption of technologies that collectively enhance the transition from a linear to a circular economic model.

iv. Importance of Synergy among ministries, agencies and policies

The concept of SCP embodies a holistic strategy that enables diverse sectors, each governed by unique policies, to work together effectively for climate-related advantages. For example, practices in waste management can lead to the generation of biogas energy while also producing organic fertilisers, thus benefiting both the energy and agricultural industries. Therefore, it is crucial to promote collaboration and coordination among various governmental ministries to successfully implement SCP, with NDC serving as an

optimal framework for this initiative. Additionally, the government should contemplate the enhancement of current policies to include cross-sectoral integration. These collaborative adaptation efforts across sectors such as agriculture, industry, and tourism can maximise the utilisation of available resources and capabilities, fostering collective action that will aid Nepal in its ambition to achieve net-zero emissions by 2045.

Considering the key role of the MSMEs, it is crucial to elaborate a cross-ministerial support program for green innovations, in particular addressing start-ups and MSMEs, with adequate enabling capacity and measures. Being the main stakeholder's component of the industry sector, incentivising and enabling measures will address the needs of the SMEs, to further innovate, accelerate efficiency, job creation and local resilience, driving the transition to main climate objectives and to net-zero.

Finally, for a society that needs stable responsible growth, providing jobs for locals to reduce emigration, where consumption is on an increasing trend and where construction is booming, as well as ensuring a stable industrial development, precisely with regards to efficiency and carbon emissions, SCP can be a driver and an enabler on the transition path to low carbon, circular and resilient economy.

Furthermore, as Nepal aims to attain middle-income status, it is essential for the country to find a balance between environmental preservation and socioeconomic advancement. Changes in production and consumption practices can promote responsible growth and sustainable development, and by incorporating SCP principles into Nepal's NDC objectives, the nation will enhance its ability to achieve climate targets and further its sustainable development goals. Integrating SCP policies and actions, mainly through mitigation, creates the foundations for a long-term resilient economy and society. If duly integrated in relevant national policies and climate change action plans, among others, SCP, which foundation is to achieve more and better with less, less material, less pollution and less emissions, will actively contribute to moving from vulnerability, today, to resilience in the near future and to national shared prosperity in the long-term.

Looking forward, it will be important to identify hotspots and quick wins in climate challenges for SCP actions, in priority sectors to demonstrate the correlation and pilot relevant actions so as to create trust and a set an operational mechanism for further integrating SCP and circular economy principles and actions in the climate agenda and NDCs operational goals. To that end:

- Identify the sectors with the highest material use and related GHG emissions.
- Assess the productivity and resource efficiency potential in these sectors, with a clear link to the NDCs goals.
- Identify quick-win actions in each sector and with relevant stakeholders, from public and private sectors.
- Set achievement targets with clear milestones and monitoring indicators.
- Such approach will be very useful in creating confidence in the necessity to link and integrate NDC climate and SCP objectives, policies and action plans.

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