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Energy Efficiency: For Energy Transition to Achieve net-zero Emission

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Prakriti Resources Centre

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1. Overview: Energy Efficiency and Climate Change

Around the world, energy production and consumption stand as the foremost source of GHG emissions, accounting for a substantial 75.6% of total global emissions in 2019, as reported by the International Energy Agency (2021). Additionally, in 2022, it was observed that carbon emissions from global energy activities have increased by 0.9%. In comparison, Nepal's GHG emissions is only around 0.09 percent of the total global emissions, and thus it is one of the least GHG polluters in the world. But within the country, the energy sector alone contributes to 28% of the net GHG emissions (Government of Nepal, 2021a).

With rising energy demand, energy prices growing exponentially as well, the demand for energy is beginning to outweigh the available supply. This rise in energy demand has become a considerable challenge in tackling climate change and ensuring energy security. To tackle the prevailing challenges of energy shortages and GHG mitigation, countries have adopted several new ways, among them, the most efficient and optimal strategy that is emerging in recent times is adopting Energy Efficiency (EE) measures (International Energy Agency, 2022). This approach serves as a comprehensive solution that effectively addresses affordability, supply security, and climate objectives concurrently.

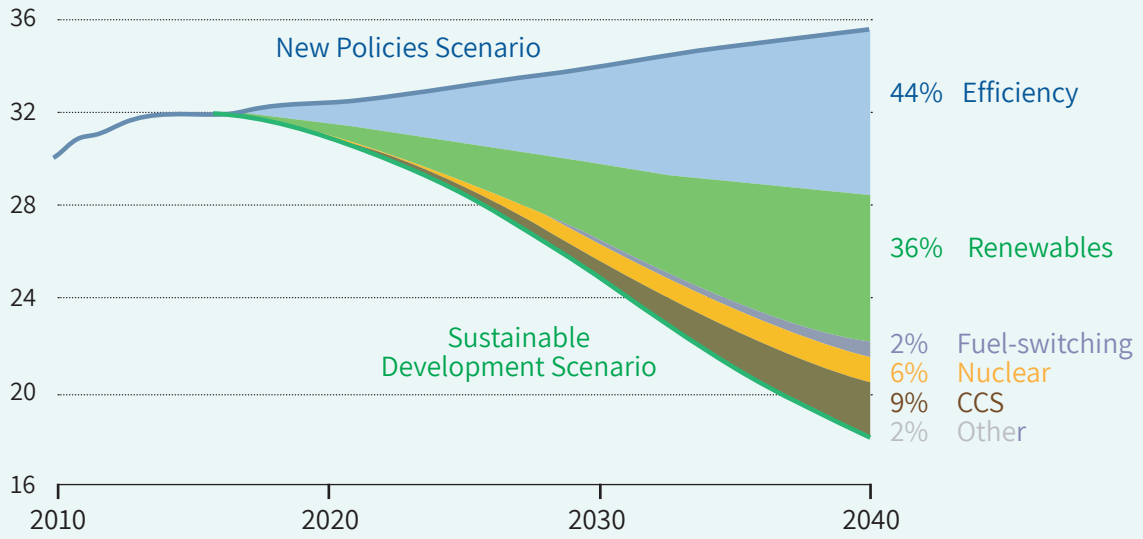

Figure 1: Contribution of Energy Efficiency to reduce carbon emission between 2010-2040

What is Energy Efficiency?

Energy Efficiency (EE) is called the "first fuel" in clean energy transition, as it provides some of the quickest and most cost-effective carbon mitigation options while lowering energy bills and strengthening energy security (International Energy Agency, 2023). EE involves minimizing energy consumption while maintaining living standards, production quality, and profitability (Cengel, 2011). EE basically reduces specific energy consumption not per capita energy consumption, which means we save energy per unit of production while increasing productivity (Patterson, 1996). In other words, EE refers to using less energy to perform the same task while minimizing energy waste. It can be applied to various sectors, including residential, commercial, industrial, agriculture and transportation. It entails adopting technologies, practices, and behaviors aimed at optimizing EE, thereby reducing the usage of particular energy sources and mitigating potential environmental consequences. Maximized EE ultimately contributes to winning the battle against climate change by paving the way for a sustainable and greener future.

While reflecting on Nepal's energy demand growth from 2005 to 2019, it is observed that the overall demand has grown constantly (Teske et al., 2023). From 2005 to 2019, the gross final energy demand has grown by about 50%, with a majority of the energy demand required by the residential sector (60.59%), followed by the industry sector (22.17%) and the transportation sector (10.49%) (Government of Nepal, 2023).

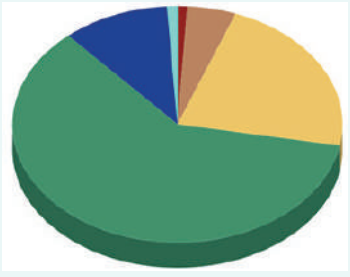

Figure 2: Sectoral Energy Consumption in Nepal, 2022
Source: Water and Energy Commission Secretariat. (n.d.)

According to Teske et. al. in 2022, Nepal's final energy demand is likely to surge by 67% in the reference scenario. Contrarily, in the WEM scenario, as specified by Government of Nepal (2021b), the final demand will increase by only as much as 33%. Moreover, the N-1.5 °C scenario is projected to achieve a further reduction in final energy demand, partially attributed to efficiency gains.

The report also predicts that while the residential sector will continue to hold the primary position in Nepal's energy demand, the industrial sector's energy consumption is expected to undergo a consistent increase. By 2050, the industry sector is projected to consume at least four times more energy than it did in 2020, positioning it as the second-largest consumer. Under the REF scenario, the energy demand from the transportation sector is set to quadruple by 2050. In contrast, this demand will stabilize in both the WEM and N-1.5 °C scenarios.

Nepal utilizes energy from diversified sources, from traditional fuels like biomass to petroleum products, along with renewable energies. Notably, hydropower exclusively provides electricity for the entire country (accounting for 99% of supply), a clean energy source. Nepal has huge potential of hydropower and solar energy. Nonetheless, owing to limited infrastructure for harnessing energy and the prevalent use of run-of-the-river (ROR) type hydropower plants, the availability of supply from these facilities remains bounded to seasonal rain. Specifically, during the winter and dry months, hydropower generation reaches merely one-third of the installed capacity leading to import of electricity from India (Government of Nepal, 2022). Similarly, the potential of solar, wind, biomass and hydrogen gas energy are yet to be utilized to cater the electricity demand.

Over 94% of Nepalis have access to electricity services, with roughly 5.5% linked to mini-grids, and the remaining households connected to the primary national power grid. Despite energy access approximately 90% households, it's important to note that access to energy services doesn't necessarily guarantee availability of continuous and adequate supply. However, Nepal has set its own targets and indicators which align with the United Nation's Sustainable Development Goal 7, which is to "ensure access to affordable, reliable, sustainable and modern energy for all".

Nepal ranks as the second least energy secure nation among the 127 countries (Government of Nepal, 2022). Nepal's complete dependence on external sources for the supply of petroleum products has made its energy security vulnerable. Additionally, the inconsistency in electricity generation, as it relies on run-of-the-river (ROR-based) hydropower, has also contributed to energy insecurity.

Furthermore, despite the surging consumption, Nepal lacks sufficient storage capacity for petroleum products. The country's storage duration for petrol, diesel, kerosene, and aviation fuel stands at 6 days, 8 days, 86 days, and 20 days respectively, according to Nepal Oil Corporation's 2022 data (Government of Nepal, 2022). The International Energy Agency (IEA) mandates that each of its member countries must maintain emergency oil stocks equivalent to a minimum of 90 days of net oil imports.

EE measures can play a crucial role in reducing Nepal's energy intensity[1], which is about four times higher than the world average and it is the highest in the region despite having one of the lowest per capita consumptions (Bank, 2017). In Nepal, as in many parts of the world, the adoption of energy efficiency measures has been on the rise. These measures result in an annual efficiency gain of 1.5%, which has been the global average over the past two decades. However, even with this level of improvement in EE, Nepal's energy demand is

1 Energy intensity is a measure of how much energy is required to produce a unit of economic output (usually measured in GDP) or deliver a specific energy service, such as the energy needed for each kilometer of passenger transport. Essentially, it quantifies how efficiently a country or system uses energy to achieve its economic or functional goals.

projected to double as the country continues its economic development (Teske et al., 2023).

Energy Efficiency and Net Zero Emission

EE plays a pivotal role in Nepal's pursuit of a net-zero emissions target and in the achievement of Sustainable Development Goal 7 (SDG 7). One of the most compelling arguments for prioritizing EE in Nepal's NDCs is its direct impact on reducing GHG emissions. As a developing nation, Nepal faces a significant challenge in mitigating climate change while meeting its growing energy demands. By implementing EE technologies and practices across industries, transportation, and households, Nepal can substantially curtail its carbon footprint. This reduction in emissions aligns with the country's commitment to the Paris Agreement and sets the foundation for a sustainable and low-carbon energy future. A study conducted by PRC shows that the contribution of EE will be substantial for Nepal to achieve 'net-zero emission' by 2045 as targeted in Nepal's second NDCs. The report has mentioned that existing policy settings, namely EE standards for electrical applications, buildings and vehicles, must be strengthened to maximize the cost-efficient use of renewable energy and to achieve high energy productivity by 2030.

EE initiatives can yield substantial economic benefits. The energy saved through efficiency measures translates into significant cost reductions for industries, businesses, and households. These cost savings can be redirected toward investments in other sectors of the economy, stimulating economic growth. Moreover, the implementation and maintenance of EE technologies can create employment opportunities, contributing to job creation and economic development. Important co-benefits for developing countries include a contribution to the alleviation of poverty. Providing

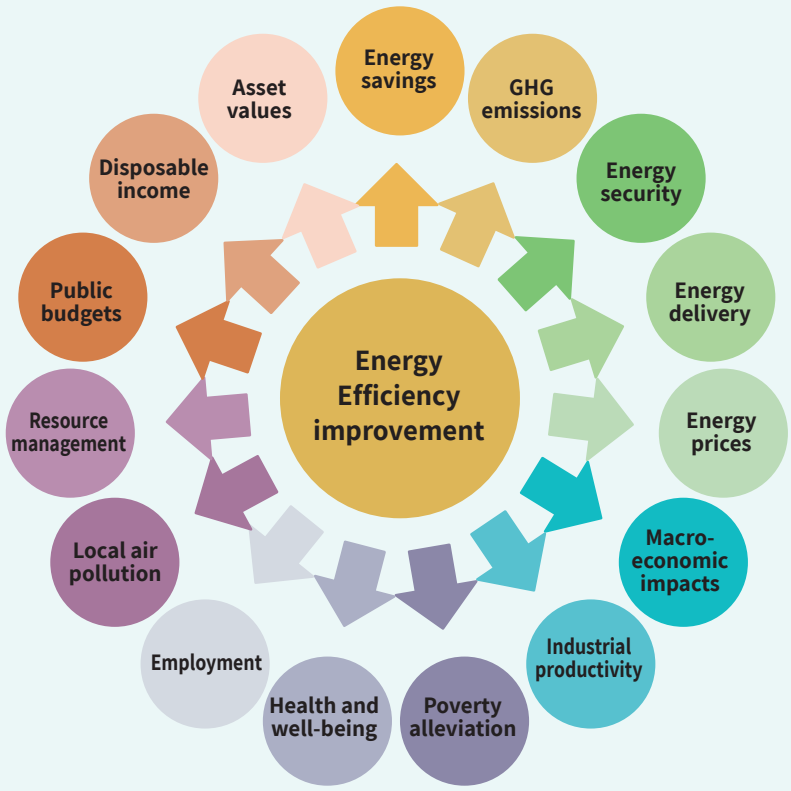

Figure 3: Multiple Benefits of EE Improvements, IEA,2014

access to highly EE devices and housing that consume minimum energy to achieve thermal comfort reduces the need for energy payments and purchases. This allows people to afford a higher level of energy services than if using inefficient basic appliances or housing with poor thermal characteristics.

As hydropower is the dominant source of electricity in Nepal due to its abundant water resources, utilizing this energy source can assist Nepal's aspirations for energy self-sufficiency while simultaneously decreasing vulnerability to the fluctuations of global energy markets. Developing and maintaining efficient hydroelectric plants are essential for optimizing energy production. Embracing EE practices can optimize the utilization of scarce energy resources. This, in turn, would enable broader electrification coverage without necessitating a substantial expansion of energy generation capacity.

In all this, the significant challenge Nepal is experiencing is that if the current trends in the use of fossil and renewable energy sources persist, fossil fuel is expected to dominate the energy supply mix in Nepal by 2040. This projection is concerning because it suggests that the ongoing trends are inadequate to achieve the goal of net-zero emissions as committed in the second NDCs (Teske et al., 2023)

To achieve the desired transition to renewable energy and reduce emissions, it will be crucial for Nepal to not only continue implementing EE measures but also accelerate the shift away from fossil fuels toward cleaner, renewable energy sources. This will require comprehensive policy frameworks, investments, and public awareness campaigns to drive the necessary changes in energy production and consumption patterns which need to be specified in the NDCs.

Demonstrating a strong commitment to EE within Nepal's NDCs can attract international support and funding. This external assistance can accelerate the country's progress toward achieving its climate and development objectives, including the transition to renewable energy sources. Incorporating EE into Nepal's NDCs are not only an environmental imperative but also a smart strategy for economic growth, resilience, and improved quality of life for its citizens. It aligns with both global climate goals and the nation's own development priorities.

2. Nepal's Policies and Institutional Framework on Energy Efficiency

Article 51 (f) 3 of the Constitution of Nepal, 2015, underlines the role of reliable and affordable energy and its sustainable use for the fulfillment of basic needs and economic growth of the country. Nepal has aimed to achieve the sustainable development goals set by the United Nations and reach the level of medium-income countries by 2030. Among the sustainable development goals, the seventh goal is aimed to ensure the accessibility of affordable, reliable, sustainable and modern energy for all. To achieve the SDGs and fulfill this commitment made in the constitution, several policies and strategies have been developed. The Rural Energy Policy (2006) focuses on reducing dependence on traditional energy sources and promoting clean and affordable energy in rural areas. The recent RE Subsidy Policy (2022) and National Renewable Energy Framework (2022) further emphasize expanding access to clean and affordable renewable energy while mobilizing finance and coordinating initiatives. The Industrial Management Act of 2020 exempts all taxes on investments in devices or equipments aimed at reducing energy consumption and increasing EE.

To promote sustainable supply of biomass energy available from animal waste, human excreta, fuelwood, agricultural residue, trees, forest residues including any biodegradable matters and to improve the efficient use of such biomass energy, the Government of Nepal has also already developed and adopted the Biomass Energy Strategy 2016.

Nepal is also a signatory to the Paris Agreement and has committed to reduce GHG emissions and adapt to climate change impacts. In its second NDCs, Nepal aims to upscale the use of renewable energy, decrease air pollution, expand forest coverage, and promote climate change adaptation. The NDCs emphasize decarbonization in brick and cement industries through adoption of low emission technologies by 2030; raise the sales of e-vehicles by 25% by 2025, ensure 25% households use electric stoves as primary mode of cooking, and installation of improve cooking stoves and bio- gas. The government has also adopted the Long-Term Strategy for Net Zero Emissions (2021) and the National Adaptation Plan (2021) to address climate change challenges. However, the NDCs overlook the targets of implementation of EE measures in all of these sectors.

Nepal has also prepared the Nepal Energy Efficiency Strategy (NEES), 2018, for the promotion of energy efficiency; demand side management of energy; and energy conservation for the sustainable development of primarily modern and improved energy sources including hydropower, solar energy, wind energy, coal, natural gas, LPG and other petroleum products except biomass energy (which is also called traditional energy). NEES aims to assist in energy security by increasing energy access through the efficient use of available energy. The goal is to double the average improvement rate of energy efficiency in Nepal from 0.84% per year, which existed during the period of 2000 -2015 to 1.68% per year in 2030.

The government also launched the Nepal Energy Efficiency Programme (NEEP) in 2010 with technical assistance from German International Cooperation (GIZ). The programme aims to introduce market-based energy efficiency services for the private and public sectors; support the development and introduction of biomass-based improved cooking stoves for rural households; and provide direct advice and expertise to the government for the establishment of a policy and institutional framework to encourage energy efficiency in the country.

Nepal recognizes that a well-developed and efficient energy sector is crucial not only for economic growth but also for realizing its development objectives while simultaneously benefiting the environment. Even though Nepal is marching towards energy efficiency, it does not yet have a strategy for sustainable, efficient energy use for electricity sector and for biomass energy (Energy efficiency. n.d.). In Nepal, there is a significant lack of awareness among private households, the public sector, and businesses about economic and ecological benefits of energy efficiency. Also, inefficiencies in energy consumption are predominant in every sector. There are no standards for energy-saving domestic appliances, lighting or products and processes in industrial use. In addition, the building codes and guidelines along with technologies for design and construction of Green Building are in a nascent phase. Nepal still is not able to introduce the provision of e-mobility, especially in public transportation. The infrastructure required for electric mobility, in terms of maintenance and service centers and charging stations across urban and rural areas, is also limited.

The Ministry of Energy, Water Resource and Irrigation is the line ministry with primary jurisdiction and authority for the energy sector. The Alternative Energy Promotion Centre (AEPC) has been designated as the EE focal entity of the Government of Nepal under the Ministry and is tasked to promote EE in Nepal. AEPC is playing a central coordinating role in facilitating collaboration among various stakeholders to meet the energy efficiency improvement targets.

As the next steps in institutionalizing EE in the country, the Government of Nepal is preparing a National Energy Efficiency Action Plan (NEEAP) and Energy Efficiency and Renewable Energy Act.

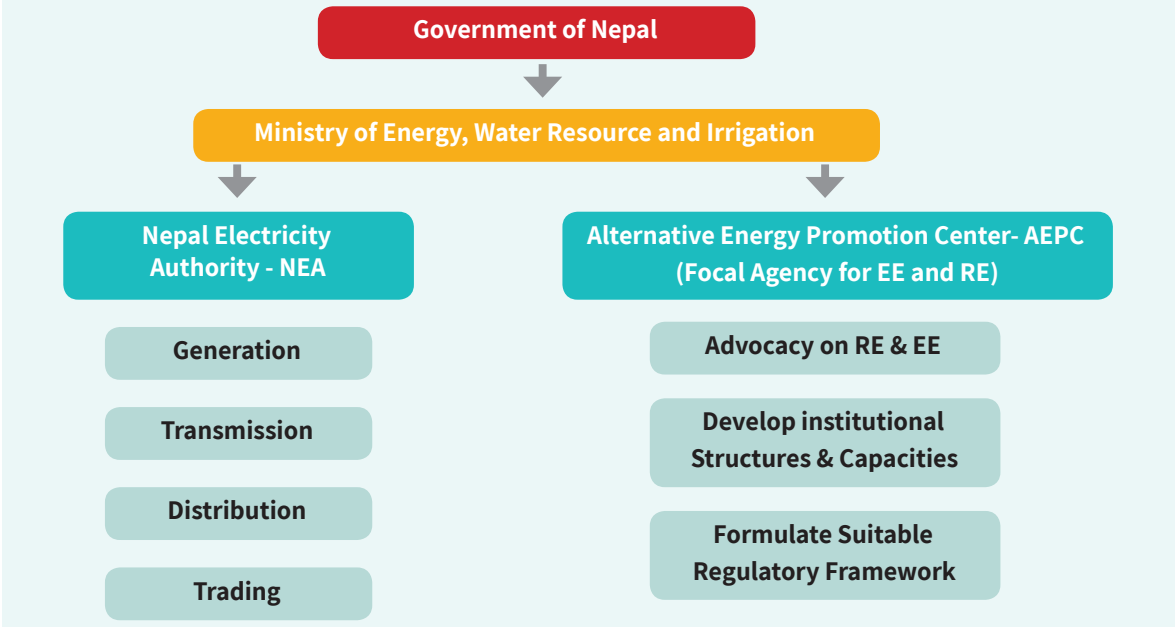

Figure 4: Institutional Framework in Energy Sector in Nepal

3. Energy Efficiency Initiatives in Nepal

Energy Efficiency (EE) initiatives in Nepal have been found to begun in 1985 with different studies and analyses on EE. During 1999 to 2005, initiatives like increasing public awareness, human resource development and capacity enhancement along with energy audit and management of loans for EE in industrial sector were carried out. Subsequently, additional measures were taken by the Nepal Electricity Authority, such as implementing demand-side management of electricity, conducting energy audits, studying electricity load profiles, formulating policy recommendations to promote energy efficiency, and replacing traditional bulbs with energy-efficient ones from 2009 to 2011 (Government of Nepal, 2019). Nepal Bureau of Standard and Metrology has also developed the standards for LEDs in 2011 whereas for infrared induction stoves in 2018. It is currently working on standard labeling for different households' appliances.

3.1 Buildings

Buildings are considered as one of the major carbon emission contributors and highly energy-inefficient buildings slow down progress toward a zero-carbon-building goal. It is estimated that about 30% of global final energy consumption and 26% of global energy-related emissions are accounted for by buildings (International Energy Agency, 2023).

As per the national census of 2021, there are 6.67 million houses in Nepal and 1.24 million houses have been added after 2011, hence increasing energy demand. To combat this and to build energy efficiency in the country, the first step that needs to be taken is to achieve sustainability in buildings.

To help achieve the objective of low-carbon- and resource-efficiency in the building sector, Building Energy Efficiency in Nepal (BEEN), a project funded by the European Union under

the Switch Asia Program, is being implemented in Nepal since March 2022. The project aims to promote climate-responsive building design and retrofitting, as well as the use of EE space heating and cooling technologies, resource-efficient building materials, and integration of renewable energy sources. The project's target is to improve the building or retrofitting of at least 200 buildings in 60 municipalities and to offer advices on policies. The project seeks to decrease operational energy consumption by at least 25 % and 10% of energy embodied in materials.

The buildings that are designed and built as per climate with use of available local materials and technology without involvement of any mechanical means i.e. by use of effective combination of passive strategies, can save energy used by buildings up to 35.4% (Al-Tamimi N, 2022). The provision of well-designed building envelope[2] as per the climatic condition of the place is the single most important factor in the design of energy-efficient buildings along with other strategies, such as orientation of buildings and spaces, sizing and position of fenestration with shading, along with assurance of natural ventilation, etc.

An illustration below shows the advantages of an energy efficient building:

The four-storey multifunctional building owned by Ms. Kalpana Shrestha with plot area 214.5 sq. m and built-up area of 400 sq. m is an example of an energy efficient building. The walls of the building are made of hollow bricks whereas the openings are built with double glazed bricks. The south facing plot has larger openings with openable shutters in the southern walls with proper shading. Most of the living spaces are placed towards the south. Proper daylight and ventilation are well ensured inside the building, cultivating a pleasant indoor environment. As per the project BEEN, with the proper design of building and provision of building envelope as per the climate of Kathmandu, almost 37% of the space heating and cooling electricity is reduced as compared to business-as-usual model. The building also has solar PVs installed for electricity and water heating. The building also has a rainwater harvesting system and a greywater system, making the building sustainable. To design and build this EE building with integration of EE and RE measures, technical support was provided by BEEN Project.

3.2 Industry

In Nepal's industrial sector, EE audits have been undertaken during 1995 to 2005 AD by Government of Nepal, and the findings indicate that substantial EE improvements are attainable, particularly in thermal processes, motive power, and lighting applications. A study shows that EE improvement in thermal process, motive power and lighting application in industrial sector of Nepal would reach up to 22.5% by 2023 with the introduction of energy efficient technologies and replacement of incandescent and fluorescent light whereas sectoral GHG emission can be mitigated by 30% in 2030.

2 A building envelope is the component that separates the exterior of the building from the interior. It's the shell of the building, and as such, it is a key consideration when constructing. It affects the ventilation, climate, energy consumption and protection of occupants and interiors. The building envelope design targets the design of the building's foundation, walls, roof, windows, and external doors.

Photo 1: Residential Sector Case Study, Courtesy: Ar. Dibya Acharya, BEEN Project funded by EU under Switch Asia Program

An illustration below is an example of an EE audit in the dairy industry, particularly focusing on whole dairy value chain:

An EE audit conducted by Practical Action Nepal in the Dairy Value Chain across two districts, Baglung and Makawanpur, has revealed some crucial insights. It has been identified that thermal energy dominates electric energy in this sector. Notably, the production sector is the largest consumer of thermal energy, accounting for a staggering 93.4% of energy usage. This heavy reliance on thermal energy is primarily sourced from LPG and wood, both of which contribute significantly to GHG emissions. The audit has highlighted several critical issues within the value chain. The inefficient and ineffective use of energy resources, coupled with the suboptimal operation of energy technologies, such as the chaff cutter, chilling vat, and boiler, pose significant challenges. Additionally, the minimal adoption of clean energy technologies in the production processes, along with the use of non-star-rated energy appliances by dairy enterprises, results in higher energy costs.

The provision of automated drinking water feeding system, replacement of aluminum cans with stainless steel cans, addition of efficient machineries (like chaff cutter and feed mixer, electric ghee making machine and its correct handling), use of properly insulated and appropriate sized chilling VAT, optimization of diesel generator in collection and processing center/units, replacement of traditional refrigerator with star-rated refrigerator/chest freezers, promotion of biogas through biodigester, conversion of solar energy into heat energy and electrical energy, improving the efficiency of boiler by insulation of boiler and its feeding areas (flanges, and pipelines like steam pipes, condensate recovery, and distribution pipes), immediate installation of capacitor bank with automatic power factor control for improvement of power factor, having the energy meter within every section and energy log book for individual section are some of the key opportunities identified in the Dairy Value Chain that can lead to increase in EE ultimately leading to decreased production cost and economic loss and ultimately reduction in GHG emission.

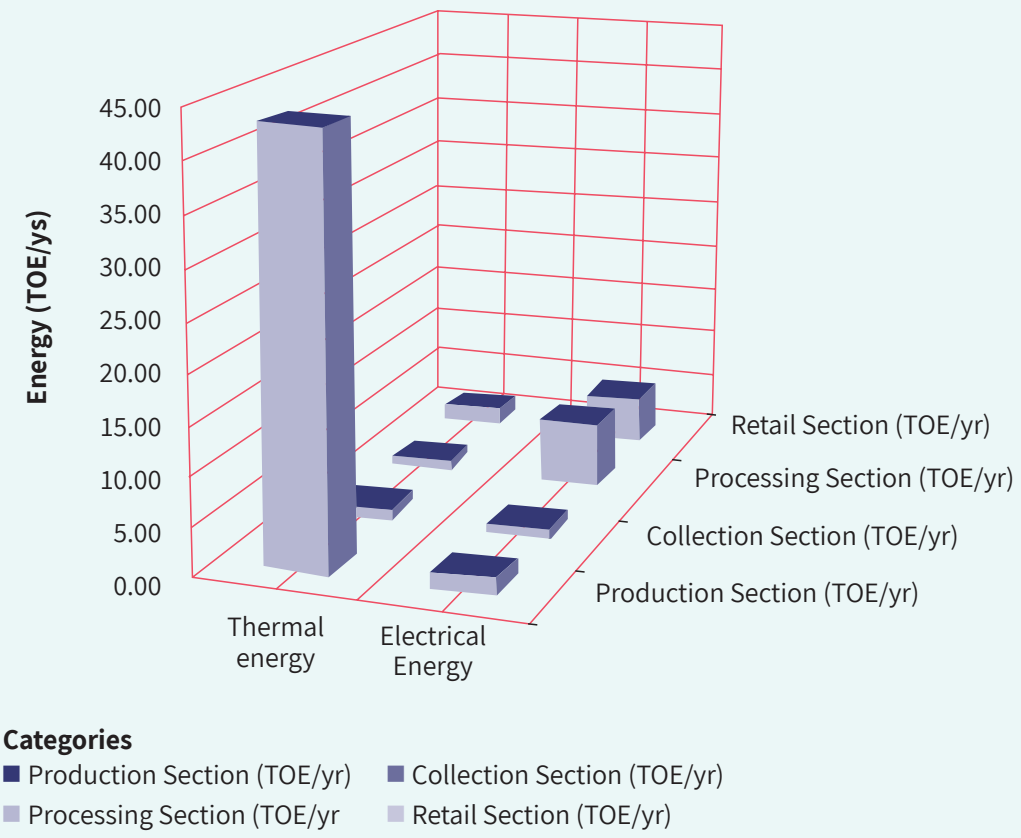

Figure 5: Sectoral Energy Consumption in Dairy Industry, Photo Courtesy: Practical Action

Photo 2: Sectoral Energy Consumption in Dairy Industry, Photo Credit: Practical Action

4. Way Forward for Enhancing Energy Efficiency

- **Implement EE Policy and Formulate regulation on EE:** While EE and Conservation have been addressed in various sectors and policies, the implementation of a dedicated EE policy has been absent. The initial step must involve the development of a National Energy Efficiency and Conservation Policy, building upon NEES. Also, inclusion in the revised NDCs is necessary to strengthen energy efficient policies and measures and also to catalyze action on EE. Subsequently, it is imperative to expedite the approval process for NEEAP and the Energy Efficiency and Renewable Energy Act to institutionalize energy efficiency in the country.

- **Formulate and Strengthen of EE standards for buildings, appliances and vehicles**: Along with the development of a dedicated policy, it is also equally necessary to strengthen EE standards. Existing policy settings, particularly for EE standards, for electrical applications, buildings, and vehicles, must be strengthened to maximize the cost-efficient use of renewable energy and to achieve high energy productivity by 2030.

- **Revise EE targets:** Nepal has set a goal to double the average improvement rate of EE from 0.84% per year, which existed during the period of 2000 -2015, to 1.68% per year in 2030. However, Nepal should revise the target sets that are included in the NEES as well. NEXSTEP analysis proposes an annual EE improvement rate target of 2.98 %, which is double the annual improvement rate for the 1990-2010 period in order to meet Nepal's global commitment (Economic and Social Commission for Asia and the Pacific, 2023).

- **Prioritize energy intensive sector for EE and formulate sectoral policies, plans, guidelines and standards to enhance EE in the prioritizes sector.** The most energy intensive sectors of Nepal, i.e., Buildings, Transportation and Industry, should be prioritized and targets should be set accordingly.

Buildings

- Nepal currently lacks established guidelines or codes for EE building design. To address this gap, it is imperative to prioritize the development and implementation of policies that promote EE building design and construction, along with building performance ratings. This initiative could initially target resource-intensive building categories in Nepal, such as commercial, public buildings, hospitals, and hotels. Setting a clear target to reduce energy consumption at least by 25% in these types of buildings, whether they are newly constructed or subject to energy retrofitting, can be achieved by mandating specific policies and enforcing by-laws. Additionally, introducing voluntary regulations, like rating systems, can encourage compliance with energy efficiency standards. By raising these targets within the NDCs, the government can be incentivized to give greater attention to the development and enforcement of these codes and regulations, fostering more sustainable and energy-efficient building practices.

- Nepal should develop country-specific Minimum Energy Performance Standard (MEPS) and Standard and Labeling (S & L), vital tools that could significantly enhance the overall efficiency of appliances. Although AEPC and NBSM have initiated efforts in this direction, there is a pressing need to raise EE standards for appliances commonly used in households and commercial buildings, like refrigerators, heating pumps, and space conditioning systems. To complement the implementation of MEPS, the Government of Nepal could explore appliance replacement programs, which might include providing subsidies to incentivize the early retirement of existing, inefficient appliances.

- Nepal should raise the share of residential e-cooking from 25% by 2030 to 100% by 2050 to achieve its climate commitments. Nepal should also prioritize to formulate local government level policy frameworks and develop programs to promote household appliances like e-cooking along with development of MECS to meet the target of 100%.

Transportation

- To effectively reduce its current levels of transportation emissions, Nepal should adopt more ambitious targets than specified in its NDCs. The country should implement stricter measures by 2030, going beyond the NDCs, such as limiting the import and sale of fossil fuel-powered private vehicles, as recommended in the 2021/22 fiscal budget policy. It is also essential the country establishes a clear roadmap to phase out existing fossil fuel private vehicles.

- By 2025, Nepal should cease the registration of new fossil fuel vehicles for urban public transportation and aim for a complete transition to 100% electric public transport by 2030.

- Emphasizing the promotion of walking and cycling should be a central focus in low-carbon transport plans and strategies. Targeting specific goals for cycling mode share is crucial, with city governments aiming to achieve a 20-25% cycling mode share by 2030, particularly in cities like Kathmandu, which currently has a low cycling mode share of only 1.5%.

Industries

- Nepal should make it mandatory to institute energy audit programs to explore systemwide energy savings and identify untapped EE potential, in harmony with the objectives outlined in NEES. The targets should be fixed for the frequency of audits.

- Additionally, Nepal should explore a comprehensive array of policy measures, such as market instruments, i.e., subsidies or taxes, which can incentivize cleaner and more energy-efficient practices to expedite the transition toward a more environmentally sustainable framework. Emissions caps and trade systems, as seen in the European Union Emission Trading Scheme, can provide opportunities to limit greenhouse gas emissions and encourage the adoption of cleaner technologies.

- The implementation of minimum energy performance standards should be carried out for equipments like electric motor systems and driven equipment to enhance EE.

- Efforts to address emissions in Nepal should extend beyond the brick and cement industries. Targets should be set to establish emission standards for other significant industrial sectors operating within the country.

- Mass awareness programs along with capacity development is necessary in small scale industries whereas subsidies in loans and incentives can be effective in large industries.

- **Awareness campaign on EE:** Awareness raising programs and campaigns need to be developed in EE from the residential, transportation, industrial and commercial sectors. NEES should also emphasize on generating awareness on EE from the consumers' level to policy makers' level through its first pillar of EE strategy.

- **Form EE platform for exchanging knowledge and collaboration:** To facilitate the achievement of set targets and to provide a streamlined path toward achieving Nepal's NDC goals, the establishment of an EE network of experts is imperative. Currently, there is an absence of such a network comprising a pool of expertise that can engage in discussions regarding updates and the implementation of energy-efficient (EE) initiatives. By creating this network, we can effectively bridge this gap, fostering collaboration, knowledge-sharing, and coordination among experts and stakeholders. This proactive approach will not only enhance our capacity to realize our targets but also pave the way for a smoother journey towards accomplishing our NDC objectives. Furthermore, this network can also serve as a valuable platform for discussing and finalizing the new targets to be set for upcoming NDCs, ensuring a comprehensive and informed approach to our climate commitments.

- **Financial instruments for supporting EE initiatives:** Nepal should develop programs and policies aimed at providing a range of financial instruments to commercial banks at low interest rates to support EE projects. An initial target should be to establish various loan schemes for the integration of EE measures in various sectors, implemented by all government commercial banks. Donors can play a crucial role by offering direct credit lines to commercial banks, facilitating the expansion of EE-specific lending.

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