UNLOCKING NEPAL'S GROWTH POTENTIAL

NEPAL COUNTRY ECONOMIC MEMORANDUM

2025

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Executive Summary

Nepal has achieved remarkable success in reducing poverty over the past three decades, virtually eradicating extreme poverty. In 1995, an estimated 55 percent of Nepalis lived in extreme poverty, defined by the US$ 2.15 per day threshold. Although the trend is not strictly comparable, by 2023, this figure had plummeted by an astounding 54.8 percentage points, with just 0.37 percent of the population living below this line. The speed and scale of Nepal's success in eliminating extreme poverty are unparalleled among its peers. Moreover, this progress was not confined to extreme poverty. The broad-based and deep reduction is evident in the poverty headcount ratio measured at US$ 6.85 per day, which fell from 90 percent to below 50 percent over the same time.

However, this reduction in poverty was not fueled by rapid economic growth, as Nepal's economy struggled to keep pace regionally and globally. Nepal's economy grew at a real 4.2 percent annually between 1996-2023, respectable considering a domestic conflict and multiple shocks affecting the country. Nepal's economic development nevertheless lagged that of peer countries. Within South Asia, Nepal's growth rate ranks sixth out of eight countries, surpassing only Pakistan and Sri Lanka. Both structural and aspiration peers outperformed Nepal as well.

The key factor behind the poverty reduction and resilience in the wake of shocks has been migration and the inflow of remittances. By 2023, over 7 percent of Nepal's population had migrated abroad in search of employment due to limited domestic job opportunities. Most of these migrants are young men, primarily seeking work in Gulf Cooperation Council (GCC) countries and Malaysia. This large-scale outmigration led to a substantial increase in remittances and the number of households receiving them. By 2023, remittances accounted for around a quarter of Nepal's GDP, playing a crucial role in sustaining the economy and lifting many out of poverty. The direct impact of remittances on poverty has been significant and transformative.

Significant structural challenges constrain domestic economic growth and job creation. Exports have not contributed to real economic growth over the past decades, partly due to an appreciating real exchange rate and domestic trade policies, including high tariffs and excise taxes. Weak competition in logistics and transport have further limited the potential for a dynamic export sector. The manufacturing sector has been in steady decline from an already low base, while the tourism sector, a key growth and job opportunity, remains underdeveloped. The development of hydropower has progressed slowly, restricting its potential to shape the economy and facilitate stronger growth. Limited infrastructure, regulatory challenges, and digital literacy gaps are holding back the country's digitalization efforts. Because of these constraints, Nepal has struggled to ignite higher domestic growth and create sufficient jobs.

Current policies fall short of achieving Nepal's ambitious growth targets and raising income to peers' levels. The 16th Development Plan envisions an average annual real GDP growth rate of 7.1 percent until 2029, far above historical averages. Baseline projections, however, estimate that potential long-term real growth will hover around 4 percent. If Nepal achieves higher growth rates, GDP per capita could increase faster, enabling the country to narrow the income gap with peer countries. However, if growth continues at historical rates, Nepal's income level would reach only 65 percent of structural peers' levels, and less than one-third of its aspirational peers' by 2050. Bridging this gap requires a decisive policy shift to achieve and sustain higher growth.

Unlocking opportunities for growth is the first step toward achieving Nepal's development aspirations. Policies must unlock the potential of high-promise sectors and support private sector development. Facilitating firm creation, boosting export growth, and attracting domestic and foreign investment can open new pathways for growth. Targeted support for sectors such as hydropower, tourism, and digital services can generate significant economic and employment opportunities. Achieving this, however, requires addressing regulatory hurdles, improving infrastructure, and fostering a more competitive business environment. Additionally, improving migration policies to increase benefits and reduce costs for migrants can further contribute to economic development.

To fully realize these opportunities, Nepal must build the capabilities needed to translate potential into growth. Strengthening workforce skills, enhancing institutional capacity, and improving firms' competitiveness are critical to boosting productivity and resilience. Without these efforts, potential growth could fall below 4 percent over the long-term, undermining national ambitions. Nepal also needs to enhance its capacity to manage migration patterns and remittance flows. Building these capabilities will enable the country to capitalize on emerging opportunities, withstand shocks like natural disasters better, and achieve sustained and inclusive growth.

This report aims to help policymakers identify key growth opportunities and offers recommendations for building the capabilities needed to realize them. Chapter 1 analyzes growth trends across three key periods, highlighting factors that could accelerate or hinder future progress. Chapter 2 focuses on policies to maximize the economic benefits of migration. Chapter 3 examines how exchange rate dynamics and trade policies affect Nepal's merchandise exports and provides strategies for boosting them. Finally, Chapters 4 and 5 explore how Nepal can harness the potential of hydropower and digitalization, two promising drivers of future growth.

Facts of growth

Nepal's economic development since 1996 can be divided into three distinct periods, each shaped by significant challenges. The first one, the conflict period from 1996-2006, was defined by a decade-long conflict between the government and the Communist (Maoist) Party of Nepal, which disrupted the economy and fueled international migration. Increasing numbers of Nepali workers sought employment in Gulf Cooperation Council (GCC) countries and Malaysia. This trend continued during the post-conflict period (2007–2014), which, despite the signing of a peace treaty, was marred by political instability and frequent changes in government. The third phase, from 2015-2023, was dominated by repeated shocks, including the devastating 2015 Gorkha earthquake, India's blockade, a major landslide in 2017, and the global COVID-19 pandemic, all exacerbated by ongoing political instability.

Nepal's growth performance throughout these periods is benchmarked against a set of structural and aspirational peer countries. Both were selected based on economic characteristics that closely resemble those of Nepal, including geography, strong remittance inflows, and significant hydropower potential. Structural peers include Bangladesh, Bolivia, and Kyrgyz Republic. Aspirational peers, which have achieved higher income levels, include Cambodia, Lao PDR, and Moldova.

Political unrest hampered growth in the conflict period from 1996-2006. The decade-long armed conflict between the government and the Communist (Maoist) Party of Nepal disrupted both political and economic stability. During this period, growth averaged a modest 4 percent, trailing behind structural and aspirational peers, who grew at 4.4 and 5.9 percent on average. The conflict hindered investment and stunted job creation, yet, amid the turmoil, remittances from the increasing number of Nepali workers abroad provided a critical lifeline for the economy.

The end of the armed conflict after the signing of a peace treaty in 2006 would have provided the opportunity for Nepal to harvest a peace dividend. However, a surge in growth failed to materialize during the post-conflict period from 2007-2014. Political instability persisted in the form of frequent changes in government and delays in the adoption of a new constitution. These factors limited the country's ability to capitalize on the end of the conflict. Growth did improve slightly though, rising to an average of 4.6 percent, but still below the rates observed in structural and aspirational peers.

Repeated shocks tested the resilience of the economy between 2015-2023. In 2015, Nepal was struck by a devastating earthquake, killing thousands, displacing millions, and causing the widespread destruction of infrastructure. Just months later, the country faced an economic blockade by India, which further strained its economy. These crises were followed by further natural disasters and the COVID-19 pandemic, which severely disrupted global economic activity. Nepal's economy nevertheless maintained an average growth rate of 4.2 percent, slightly above aspirational peers and on par with structural peers.

Due to overall lagging growth, Nepal's real income level remains significantly below that of its peer countries. Between 1996-2023, Nepal's Gross National Income (GNI) per capita increased by an average 7.3 percent annually, supported by slow population growth. Although slower growth among structural peers allowed Nepal to narrow the income gap somewhat, its income level still stands at only half that of structural peers. The disparity with aspirational peers has even widened, and by 2023, Nepal's GNI per capita had reached just 40 percent of theirs. Looking ahead, without reforms to accelerate growth, Nepal is unlikely to close the income gap with its peers, and achieving upper-middle income status could take more than 20 years.

Nepal's growth model has relied heavily on remittances, which contributed significantly to the remarkable reduction of poverty. Between 1996-2023, authorities issued more than 6.6 million new labor approvals for migrant workers and by 2023, more than 7 percent of the total population was living abroad. As a result, remittances more than tripled from an average 7 percent of Gross Domestic Product (GDP) during the conflict period to 25 percent of GDP during the period of repeated shocks. They also directly contributed to the eradication of extreme poverty by 2023.

Remittance-driven consumption and the service sector were the main sources of growth. On the demand side, remittances sustained private consumption and kept economic activity afloat, even as multiple shocks hit the economy. During the period of repeated shocks, private consumption accounted for 3.6 percentage points of real growth, up from 3.1 percentage points during the conflict period. Its share in real GDP consequently reached 80 percent on average during the repeated shocks. This stands in clear contrast to structural and aspirational peers, where private consumption accounted for significantly less of real growth and its share in real GDP was lower. Services were the main source on the supply side, accounting for 2.3 percentage points of real growth and accounting for half of real GDP during the repeated shocks period. Capital accumulation was the primary driver of real economic growth, while labor and total factor productivity (TFP) contributed minimally.

Exports and the industry sector have contributed little to economic growth

Nepal's economy faces a range of structural challenges that hinder stronger growth. Exports have not contributed much to growth in Nepal. The manufacturing sector, historically an engine of growth in other developing countries, has been on a constant decline. Increasing remittances have also not translated into significant job creation or higher productivity in key sectors. The country's labor market struggled to create sufficient jobs and labor productivity lags its peers. Overall productivity remains low and has not contributed significantly to growth.

First, Nepal is yet to boost economic growth and job creation through exports of goods and services. A thriving export sector could have enhanced productivity, created higher-quality jobs, and attracted foreign investment, which would bring new technology and diversify the economy. However, exports of goods and services have remained stagnant, contributing only 7 percent to GDP since 2015, far below its peers. The trade deficit widened as remittances were increasingly used to finance imports. The COVID-19 pandemic further exacerbated the situation, reducing exports to a record low of 5 percent of GDP in 2021.

The appreciation of the real effective exchange rate (REER) caused a loss of price competitiveness and was an important factor in Nepal's export slump. The country's low merchandise exports are often linked to high trade costs due to its mountainous terrain and poor physical infrastructure. But a Dutch Disease-like effect may have eroded price competitiveness over time, with rising remittances driving domestic non-tradeable prices, thereby appreciating real exchange rates. This effect was further exacerbated by Nepal's fixed exchange rate with the Indian Rupee, which has not been adjusted since 1993, even as inflation differentials with key trading partners have widened. This made merchandise exports less attractive and contributed to the persistent trade deficit.

Other critical factors limiting merchandise exports include domestic trade policies and restrictions on cross-border capital flows. Capital flow restrictions, introduced to maintain monetary autonomy, have made Nepal less open to international financial flows compared to its peers, deterring foreign investors who could have

brought in new technology, know-how, and capital. High tariffs and trade taxes have created an anti-export bias, raising costs for domestic producers and reducing their competitiveness. Tariffs on intermediate goods in particular increase production costs, making it difficult for Nepali firms to upgrade the quality of their products and expand into higher-value markets. Political instability and policy uncertainty have added to the challenges, with frequent changes in government delaying reforms and deterring both domestic and foreign firms from investing in export-oriented sectors.

Second, Nepal's industry sector output has been on a constant decline, mirroring the trend of exports. The share of industry in real GDP remained at a low 14 percent over time, contributing only 0.8 percentage points to growth on average. Peer countries, on the other hand, have seen some growth in their industrial sectors. The slump is particularly evident in manufacturing, which has been on a constant decline in Nepal, falling from 7.3 percent of real GDP during the conflict period to 5.7 percent during the repeated shocks period. Construction has overtaken manufacturing as the largest subsector, but both sectors contracted in 2023 due to import restrictions.

Third, low overall productivity has both been a reason and consequence of lagging growth, low exports, and stagnating manufacturing output. The contribution of total factor productivity (TFP) to economic growth varied significantly over time. During the conflict period it contributed only 0.25 percentage points to real growth, reflecting political instability and disruptions to economic activity caused by the insurgency. Although TFP recovered somewhat in the post-conflict period, its contribution to growth effectively vanished during the repeated shocks period, reflecting the impact of various shocks. In turn, the poor export performance and stagnant manufacturing sector have hindered productivity improvements, perpetuating the cycle of low productivity and weak economic outcomes.

Finally, Nepal's employment structure is heavily reliant on agriculture, with a relatively low share of jobs in non-agricultural sectors compared to peer countries. Women face greater challenges, as they are more likely to be employed in informal and low-productivity agricultural roles. The slower pace of job creation in non-agriculture sectors has disproportionately affected women, whose participation in non-agricultural jobs remains lower than the national average. Although Nepal has a higher employment ratio for women compared to other South Asian countries, most of these jobs are informal, offering limited security and opportunities for advancement.

Labor productivity remains a significant concern, as the country ranks lowest among its peers. Agriculture, which accounts for a large portion of employment, remains the least productive sector. Productivity growth in the industry and services sectors has also been sluggish, further contributing to low overall productivity. The widespread informality and subsistence nature of many jobs, particularly in agriculture, are key factors behind this issue. With over 80% of the workforce in the informal sector, improving the formalization of jobs and increasing productivity in non-agriculture sectors are crucial for boosting Nepal's economic growth.

To boost employment growth, Nepal needs to implement policies that focus on increasing trade openness, improving access to finance, and enhancing educational outcomes. These steps could help raise the non-agriculture employment ratio and overall job creation by up to 3 percentage points in the long run. By fostering a more educated workforce, removing trade barriers, and enabling easier access to finance, Nepal could stimulate job-rich growth, leading to higher productivity and more secure job opportunities for both men and women.

Comprehensive policies are needed to improve the competitiveness of Nepal's economy. Better managing inflation and revising the current tariff and excise tax structure are critical, but not sufficient to improve export performance. Additional policies on key export-enabling domestic sectors will be required to improve competition and market structure and reduce barriers to entry into logistics or transportation. Particularly ICT service exports appear to hold promise for increasing export-led growth and should be supported by targeted policies. Similarly, targeted policies to increase domestic hydroelectricity production and improve its reliable transmission and distribution could improve the comparative advantage of domestic goods and services. With migration likely remaining a key growth factor, policies improving migration outcomes are also critical.

Increasing the returns of migration

Migration is an important job strategy for young Nepali workers, offering significant economic benefits

International migration for employment remains a cornerstone of Nepal's economy and livelihoods. In 2021, approximately one-fourth of households had at least one family member abroad, representing 7.5 percent of the country's population. Nepalese workers' remittances were worth over 25 percent of GDP in 2023, placing Nepal among the top 10 remittance-receiving countries globally. These remittances surpass foreign direct investment and foreign aid and remain a vital source of foreign exchange. Despite a rise in migration for educational purposes over the last decade, employment-related migration continues to dominate, significantly easing domestic labor market strains. Notably, 17 percent of the male working-age population, roughly 10 percent of the overall working-age population, resided abroad in 2021.

Remittances play a pivotal role in uplifting the living standards and resilience of the origin communities, with remittances directly contributing to over 30 percent of Nepal's poverty reduction between 2011 and 2023. They benefit households across the wealth distribution, with an increasing number reaping their rewards. Remittances have contributed to increasing household consumption and higher investment in education and healthcare. Having a member abroad also significantly correlates with households suffering less from inadequate family living standards and food insecurity.

Migration opportunities remain unequal, and moving abroad can be taxing

Migration from Nepal is expensive, and while it offers economic benefits, these come with significant burdens for both the migrants and the family members left behind. Migrant workers often rely on informal loans with exorbitant interest rates to finance their costly moves. After daily consumption, repaying loans is households' most cited use of remittances. While the families left behind face disruption in their social and domestic lives, having members abroad is also associated with their reduced labor force participation, particularly women. Migrant workers, on the other hand, are likely to endure challenging working and living conditions without access to healthcare or social protection. Yearly deaths of migrant workers have exceeded 1,000 in recent years. They also face contract fraud and employer exploitation, including withholding travel and legal documents. These adverse work conditions and lack of social support, coupled with the constant pressure to send remittances home, can have detrimental effects on migrants' mental and physical health.

Despite more equitable access to migration opportunities over the past decade, liquidity constraints limit household migration and influence destination choices. Migration patterns are shaped by economic status, social caste/ethnicity, and geographic location. Poorer households are likely to send members to low-cost and low-return India. At the same time, those from the middle wealth brackets prefer the GCC and Malaysia destinations, which have medium-costs and medium-returns. Migration to the most lucrative Western, Asian, and Pacific (WWAP) destinations remains predominantly accessible to the wealthiest, who can afford the high migration costs. Provincial migration rates reflect similar trends, with India being a key destination for the poorest provinces of Sudurpashchim and Karnali. In contrast, wealthier provinces such as Bagmati favor more premier destinations. These patterns have important implications as households' wealth levels are strongly correlated with the frequency and size of remittances received, with migrants from the wealthiest decile sending over five times more than those from the lowest decile.

Reassimilation of migrants upon their return remains a challenge

Reintegrating return migrants poses a considerable challenge, exacerbated by the mismatch between the skill acquired abroad and demand in the domestic labor market. Based on the Nepal Labor Force Survey 2017/18, one of the few data sources on returnees, most of the returnees were either unemployed (14.3 percent) or remained out of the labor force (41.5 percent), and even among those with jobs, over 75 percent were employed in the informal

sector. Only a minority could secure employment in the same occupational category as their overseas jobs and use their acquired skills. Compared to non-migrants, returnees also earn less, at least initially.

A systematic and inclusive migration management system could provide stability and maximize rewards

Establishing an effective institutionalized migration system is critical for sustainability and improving returns. Drawing on current evidence and lessons from other countries, such as the Philippines, the priority should be to ensure that migration is a safe and viable livelihood option for Nepalis across the population domains. Efforts should focus on increasing benefits and reducing migration costs for contemporaneous predominantly low-skilled economic migration with an eye for longer-term skill and destination diversification. This will entail improving migrant preparedness through education and training, raising awareness, enhancing financial and regulatory literacy, establishing a transparent and systematic recruitment process, and planning for longer-term upskilling. Additionally, engaging in bilateral agreements and actively participating in their implementation and timely updating will be crucial.

Besides focusing on safer and more remunerative migration, the reintegration of returnees is as important. Retraining and reskilling programs and initiatives promoting returnees' entrepreneurship could improve returnees' job matches in the domestic labor market. Such initiatives are currently limited and out of reach for most. Additionally, soft skills such as work ethic, time management, and communication, which are highly transferable and often enhanced while working abroad, can be valuable in Nepal's growing service sector. However, these skills are often overlooked. A better understanding of how to combine these soft skills with industry-specific reskilling could reduce labor market friction and improve returnees' job placements. Ultimately, addressing the structural issues in the domestic labor market will not only support the reassimilation of returnees but also improve opportunities for those left behind and broaden their choices if faced with migration decisions.

Increasing export competitiveness through monetary and trade policy

Nepal's export competitiveness eroded over the past decades

Nepal experienced a staggering loss of export competitiveness over the past decades. The country's exports-to-GDP ratio fell from over 25 percent in the late 1990s to a mere 6.8 percent in 2022, with merchandise exports-to-GDP particularly low at approximately 3.2 percent. Despite decent growth in real GDP and imports, real exports have remained largely stagnant over time.

Exports lack diversification in terms of products and destinations and have been low value. ICT services exports account for over 8 percent of services exports and over 4 percent of total exports in 2023. In terms of destination, more than two-thirds of total goods exports go to India, while the shares of geographically close trading partners like Bangladesh, China, or Pakistan are negligible. Finally, only 0.5 percent of manufacturing exports were classified as high-tech in 2022, significantly below the shares in several peer countries.

High trade costs are a critical factor contributing to the low level of exports. The landlocked geography and mountainous terrain increase the costs of transporting and trading goods. The challenging topography is paired with subpar infrastructure, as Nepal ranks poorly on the quality of its road and air transportation infrastructure, evidenced by low global competitiveness ratings. The lack of market competition in the transportation and logistics sector, particularly through the pervasive presence of syndication, further amplifies these high trade costs (Rajkarnikar, 2010). The World Bank B-Ready 2024 report ranks Nepal in the lowest quintile globally in market competition. In addition to the physical infrastructure gap, the National Quality Infrastructure, which comprises safety and health standards amongst others, is also low and has led to Nepali exports being rejected by several countries.

Macroeconomic and trade policies are key factors in determining Nepal's merchandise export performance. There is currently little empirical evidence on the determinants of the country's merchandise export performance at the micro level. To fill this gap, this report uses firm-level customs data from 2011-2015 and 2018-2021 to analyze the effects of RERs and domestic and foreign trade policies on exports. In addition, the chapter also provides some evidence on the link between remittance inflows and the REER. To link the estimated real exchange rates (RER) to remittances, the chapter includes a cross-country analysis of the relationship between remittances and REERs in South and South-East Asia.

The appreciation of RERs and trade policy have contributed significantly to the export slump

The analysis reveals a significant adverse effect of the RER appreciation on Nepal's exports, particularly pronounced among larger firms and those with less diversified operations. A 10 percent increase in the bilateral RER leads to a 3 percent decrease in exports. The RER effect is more pronounced for larger firms, those with exports greater than the sample median. This may be due to smaller firms engaging in less systematic exports, driven to a lesser extent by price competitiveness, while the opposite holds true for large firms. The RER effect is weaker for firms with export destinations and products above the sample median, which indicates that more diversified firms are better able to absorb fluctuations in bilateral RERs without having to adjust their export volumes.

Over the sample period from 2011 to 2021, the appreciation of the average bilateral RER has lowered Nepal's exports by more than 10 percent. Nepal's average bilateral RER increased substantially over time, consistent with the real bilateral appreciation against India and the rest of the world highlighted in Chapter 1. In addition, results point to a stronger effect on exports to India, by far the most important export destination for Nepali firms, accounting for more than two-thirds of total goods exports.

The substantial inflow of remittances was a key driver of the RER appreciation and low labor force participation exacerbated the effect. Nepal's REER has appreciated by about 35 percent since the current peg with India was set in 1993, reducing the competitiveness of merchandise exports. The appreciation is linked to the surge in remittances, which increased from 2 percent of GDP in 2000 to 25 percent in 2025 and has raised concerns of a Dutch disease-like effect. The analysis confirms these concerns and finds that the observed increase in remittances could account for a REER appreciation of about 16 percent since 2000, roughly half the observed total. Consistent with past studies, the estimated exchange rate model provides evidence of a RER overvaluation. The analysis also finds that the exchange rate effect of remittances is larger in countries with a low labor force participation rate, which is the case in Nepal.

Domestic and foreign trade policies create additional barriers to exports. Nepal's input tariffs are relatively high and constitute a barrier faced by exporting firms. While the government implemented tariff drawback policies for exporters designed to reduce this burden, there is a perception among the business community that they can be difficult to obtain in practice. Another important challenge for Nepal lies in securing and taking advantage of market access in other countries. Nepal does not have free trade agreements (FTAs) with countries outside the region, and its scheduled graduation from Least Developed Country (LDC) status in 2026 would cause many existing LDC preferences to eventually expire.

Domestic input tariffs, as expected, had a significant negative effect on Nepal's exports. A 1 percentage point increase in input tariffs results in a 2 percent reduction in exports. The substantial increase in domestic input tariffs between 2011 and 2021 therefore resulted in roughly 8 percent lower exports over the same time. Unsurprisingly, the effect of higher tariffs is amplified for firms in industries that are more dependent on imported inputs. The results also show a greater response to input tariffs from firms that export to more destinations or more products. Unlike in the case of a RER appreciation, however, the effect is more pronounced for smaller firms. This finding is consistent with administrative challenges in obtaining duty drawbacks, which may be amplified for smaller firms.

Preferential market access for Nepali exporters in the form of lower partner country tariffs, on the other hand, had a positive effect on exports. A 1 percentage point decrease in tariffs on Nepalese goods boosts exports by 0.8

percent, while a similar increase in average tariffs in destination markets also enhances exports by 0.8 percent, indicating the significant positive effect of preferential tariffs, which accounted for roughly 3 percent increase in exports over this time. Both effects were stronger for larger firms, who accounted for the bulk of Nepal's exports. This could again indicate that smaller firms engage less systematically in exports, while larger firms are hit harder by changes in their price competitiveness. Finally, findings show that a reduction in the foreign tariff applied to Nepal induces more firms to export to this market for any given tariff level, highlighting another benefit of preferential market access.

Active trade and monetary policy could help to improve export competitiveness

These analytical results shed light on several significant macroeconomic and trade policy determinants of Nepal's merchandise export patterns. They highlight the impact of RERs, domestic input tariffs, and trade policies of partner countries on Nepal's merchandise export performance. The findings reveal that the observed increase in Nepal's REER rate over the past decades has contributed to a decrease of about 10 percent in merchandise exports. Similarly, current input tariffs are estimated to have led to a reduction in exports by about 8 percent, while preferential trade policies from partner countries could potentially increase merchandise exports. Additionally, the chapter links remittances to the appreciation of the REER, suggesting that about half of the increase in Nepal's REER can be attributed to the surge in remittances.

Policies to manage inflationary pressures would address the REER effects and help Nepal's export performance. The peg of the Nepalese rupee to the Indian rupee implies that Nepal's bilateral RER with India appreciates when inflation exceeds that of India. In addition, the effect of India's inflation on their nominal exchange rate will indirectly affect Nepal's RERs. Limiting inflation vis-à-vis India would therefore strengthen export competitiveness by limiting the overvaluation of Nepal's REER. That said, lowering inflation at or below India's rate is a difficult task, given the fixed exchange rate and the dependence on imports from India.

Set in 1993 and unchanged since, Nepal's exchange rate peg warrants reconsideration in today's economic context. Fixed at a time when the economic environment was markedly different, the peg's alignment with today's economic realities, considering persistent inflation differentials with India and significant trade imbalances, may no longer hold. Although the peg has provided a degree of monetary stability, evolving macroeconomic fundamentals suggest that its benefits could be diminishing. A joint review by the Ministry of Finance and Nepal Rastra Bank could explore if shifting to a more flexible regime, such as a crawling peg, might be more suitable, balancing potential longer-term benefits to competitiveness with the possible short-term pressures to inflation.

Policies that encourage the use of remittances and savings for more productive purposes would mitigate the effect of remittances on the REER. The bulk of remittances are used for basic every-day consumption and the repayment of migration loans. New financial instruments could nevertheless provide incentives to channel part of remittances and more general savings into capital formation and less inflationary uses.

Improving the current duty drawback systems and reducing the input tariff burden directly would stimulate exports. Ensuring the effectiveness of duty drawbacks could increase exports, particularly from smaller firms. While larger firms account for the bulk of exports, smaller firms provide an important contribution with their more experimental export participation that helps determine a country's comparative advantage. This measure could be complemented by a direct reduction in input tariffs, including excise taxes that are designed as de-facto tariffs.

Finally, authorities should seek to extend LDC preferences and pursue additional preferential trade agreements. Efforts to extend LDC preferences could focus on highlighting Nepal's status as a landlocked developing country and could reduce or even reverse the negative effects of the country's graduation from LDC status in 2026 on exports. Securing additional trade agreements through enhanced trade diplomacy would diversify currently limited export destinations, which, in turn, would stimulate the diversification of export products since demand and domestic production in India likely differs from other export destinations. The detailed list of recommendations is added in Tables ES1-ES4.

Boosting long-term growth through hydropower

Hydropower could enable stronger growth in the long-run, domestically and through exports

Hydropower has the potential to transform the structure of the economy and shape economic development in the long run. Nepal holds one of the highest hydropower potentials globally, with an estimated capacity of 83,000 MW, of which 42,000 are economically viable. Installing this vast capacity will be a long-term game, requiring sustained investment, supportive policies, and a rules-based regional power trade market. The increased availability of green electricity could reshape the comparative advantage of the economy and boost growth in the long-term. Failure to expand hydropower production, however, could undermine the country's growth prospect.

The development of Nepal's hydropower sector could boost productivity across industries by providing reliable, low-cost, green electricity. Firms face high operational costs due to frequent power outages and reliance on expensive alternatives like diesel generators. A steady supply of hydroelectricity would streamline operations, reduce costs, and enable investment in energy-dependent technologies, improving production efficiency. Labor productivity would also benefit, as consistent electricity would minimize workflow disruptions and support the use of advanced tools. Moreover, clean energy could improve air quality, leading to healthier workers and fewer sick days, enhancing overall workforce efficiency.

Hydropower could also stimulate the domestic production of goods, particularly in energy-intensive sectors like manufacturing, agro-processing, and technology. With access to affordable and stable electricity, industries could scale up operations, improve quality control, and meet higher demand. The availability of cheap and green energy would attract additional domestic and foreign investors looking to capitalize on low energy costs. This shift could also reduce Nepal's dependence on imported energy-intensive products, bolstering the local economy. Branding Nepal's goods and services as green and sustainable could further increase their competitiveness in global markets, especially as demand for eco-friendly products rises.

Among services, the tourism sector stands to gain substantially from the expansion of hydropower. Reliable green electricity would enable the development of modern tourist amenities, attracting higher-income and eco-conscious travelers. By positioning itself as a sustainable tourism destination, Nepal could capitalize on the growing global trend toward environmentally friendly travel. This would not only improve the country's tourism infrastructure but also promote activities like eco-trekking and wildlife conservation. As green tourism gains popularity, hydropower could play a key role in transforming Nepal into a leader in sustainable travel, boosting both the tourism and service sectors.

Tourism would also offer a path to growth with significantly higher employment benefits than hydropower itself. The tourism sector is labor-intensive, creating jobs across various skill levels, from guides and hospitality staff to artisans and transportation providers. Investments in tourism infrastructure not only enhance visitor experiences but also directly benefit local communities by generating employment and fostering entrepreneurship. Unlike hydropower, which primarily requires labor during the construction phase and offers limited jobs once operational, tourism sustains ongoing employment opportunities. Hydropower could be leveraged to boost the tourism sector by providing reliable green energy.

In addition to domestic benefits, more hydropower could be exported to neighboring countries. Several studies by the World Bank and the Asian Development Bank suggest that hydropower exports to neighboring countries Bangladesh and India would increase GDP and government revenues. Furthermore, there is potential for Nepal to enter the green hydrogen market, though significant investments in infrastructure and international agreements would be required to make this a viable option. Challenges like competition from China and India, as well as the need for efficient transport routes, would need to be addressed for Nepal to capitalize on these opportunities.

But while hydropower holds great promise, unlocking the benefits will be a long-term endeavor. Hydropower projects are complex and require significant time for planning, construction, and implementation. Additional delays

from bureaucratic hurdles, environmental concerns, or logistical challenges can extend timelines even further. The long-term nature of hydropower means that economic gains may take many years to fully materialize. Therefore, while hydropower is a strategic asset for future growth, it should be part of a diversified development approach that includes industries capable of providing more immediate growth and employment benefits, such as tourism.

Hydropower resources have not been exploited and electricity remains underutilized domestically

Despite its potential, hydropower remains vastly underutilized and domestic energy production is dominated by biomass. Nepal has so far harnessed only 4 percent of its hydropower resources, with an installed capacity of around 3,000 MW as of 2024. This underutilization is stark compared to regional peers like Pakistan and India, which have exploited 17 percent and 29 percent of their potential, respectively. While hydropower has been the near-exclusive source of electricity production, hydro-powered electricity accounts for a small fraction of Nepal's total energy production. Biofuels and waste, such as fuelwood and agricultural residues, made up more than 90 percent of the domestically produced energy in 2022.

The reliability of electricity supply remains a significant operational challenge for Nepali firms, despite the elimination of scheduled load shedding in 2018. Frequent power outages continue to affect operations, with 76 percent of firms experiencing regular power cuts. This unreliable supply has had a substantial impact on firms' output and profitability, with over 13 percent of firms reporting losses exceeding 10 percent of their annual sales due to power cuts in 2022. The weak distribution network, characterized by outdated and undercapacity transformers, exacerbates these issues. As a coping mechanism, many firms rely on captive generators, with 36 percent using them in 2022.

Recent increases in hydropower capacity were driven by the private sector and give reason for a more optimistic outlook. Total installed capacity has tripled over the past decade, reaching 2,990 MW by the end of 2024. Larger projects like the Upper Tamakoshi plant have boosted capacity significantly, reducing net imports and increasing exports to India. These improvements were largely driven by independent power producers (IPPs), which accounted for over 70 percent of the capacity added since 2018. The share of IPPs in total installed hydropower capacity increased accordingly, to 64 percent in 2024.

Expanding hydropower requires active policy intervention

Despite these advancements, expanding hydropower production will require overcoming key bottlenecks to its development. The government defined the ambitious target of increasing installed hydropower capacity to 28,500 MW by 2035. The current roughly 10,000 MW portfolio of projects, however, falls short of these ambitions. Expanding the project pipeline will require attracting additional financing, improving the market structure, implementing supportive policies, improving infrastructure, and stimulating domestic electricity demand.

Achieving the government's hydropower capacity target will require significant public and private investments. The public sector has invested in hydropower generation, transmission, and distribution through the Nepal Electricity Authority (NEA) and its subsidiaries, leveraging resources from institutional investors. The private sector, who accounted for the bulk of investment since 2018, has increasingly relied on the capital market to finance its investment in electricity generation. Bond financing, due to the early development stage of the market, and foreign investment in the sector have been limited. Inefficient public investment management has negatively affected the financial viability of hydropower projects, which take substantially longer to finish than in other countries.

Mobilizing the additionally required funds will require a strengthened financing model for the sector. Nepal needs to develop a clear strategy for financing the expansion of the sector, which could include the use of multilateral guarantees to maximize the financing envelope, a roadmap for developing the domestic bond market, and an effective framework for large-scale public-private partnerships (PPPs). Increasing foreign currency investment limits and providing effective currency risk mitigation tools could attract more foreign investment.

NEA's role as the sole buyer and distributor of electricity domestically and cross-border has limited the development of the market. The viability of power purchase agreements (PPAs) with NEA hinges on take-or-pay clauses that guarantee a minimum purchase of electricity, ensuring financial institutions are willing to fund projects. However, NEA has been reluctant to adopt these clauses, due to concerns over surplus electricity during low demand periods, leading to a cautious, selective approach to new agreements. This discretion creates delays for power producers and hampers the overall growth of Nepal's energy sector.

Compounding these challenges is Nepal's outdated legal framework. The Electricity Act of 1992 fails to address contemporary needs for hydropower development and energy trading. The stalled replacement legislation leaves critical issues, such as tariff setting and private sector protections, unresolved, deterring private investment in generation and making transmission and distribution investments legally unfeasible. Policy instability and bureaucratic inefficiencies within the Investment Board Nepal (IBN) further inhibit effective project facilitation, resulting in lengthy approval processes and unclear regulations, thereby undermining investor confidence. Additionally, Nepal's first-come first-serve licensing regime has led to an inefficient allocation of resources and project delays.

Geopolitical factors also constrain Nepal's ability to expand electricity exports to India and Bangladesh. Although India currently imports around 900 MW from Nepal and expresses interest in increasing this, its 2018 guidelines restrict imports from projects financed by third-country investors, complicating long-term agreements. Nepal faces challenges in securing stable PPAs with India due to fluctuating political relations and a slow approval process for cross-border trade, which hinders the development of a more robust regional energy market and prevents Nepal from fully capitalizing on its hydropower potential.

Nepal should strengthen the regulatory framework and policies to improve the structure of the electricity market. The pending update to the Electricity Act must be enacted swiftly and the remaining legislation harmonized. Streamlining the current licensing process would allow to prioritize project readiness and capacity and could help attract more investment. To upgrade Nepal's electricity grid, authorities must eliminate legal and bureaucratic hurdles that hinder IPP investment in electricity transmission and distribution. IPPs should be legally permitted to invest in electricity transmission and distribution.

Hydropower development faces additional headwind from low domestic electricity demand from firms and households. Electricity has been underused by manufacturing firms, which consume significantly less electricity than those in peer countries. Similarly, Nepal's services sector continues to rely on biofuels rather than electricity. Households have increasingly used electricity for lighting, but biofuels dominate their total energy use. Government could stimulate domestic electricity demand by removing subsidies for fossil fuels, by revising electricity tariffs for households, and by providing incentives for firms to switch from fossil fuel-powered generators to electric alternatives.

Nepal's weak transmission and distribution infrastructure requires additional investment and technological upgrades. The existing infrastructure is often outdated and poorly maintained, resulting in frequent power outages and inefficiencies in energy delivery, with system losses reported at 12.7 percent in 2024. This unreliability not only disrupts the supply but also deters potential investments in the energy sector. Additionally, essential infrastructure like access roads and transportation facilities for hydropower development is lacking, which complicates the transportation of equipment to remote sites and leads to project delays and increased costs. Exports are limited by the insufficient capacity of current cross-border lines.

Moreover, Nepal's vulnerability to natural disasters poses a significant risk to hydropower projects. The 2015 earthquake and frequent floods have damaged numerous operational facilities. The dominance of run-of-river hydropower plants, which account for over 90 percent of the total capacity, makes electricity production highly seasonal and susceptible to fluctuations in water flow, further complicating the country's energy stability and development potential.

Addressing these challenges and developing the sector requires long-term policy commitment. Frequent changes in political leadership and the resulting policy instability have undermined the more rapid development of the hydropower sector. Unlocking the potential of the sector over the long-term will require clear policy and legal guidance, and an institutional framework that facilitates increased private sector investment.

Boosting long-term growth and jobs through digitalization

Digitalization would improve productivity and create domestic jobs

Digital technologies can enhance economic growth by improving firm productivity. By facilitating the efficient gathering, analysis, and transmission of data, digital technologies such as the internet, computers, and mobile phones help reduce various economic costs. This leads to improved profitability, economic inclusion, and overall business efficiency. During the COVID-19 pandemic, firms that invested in digital solutions or adopted online platforms saw notable increases in digital sales. Firms that adopted digital technologies also demonstrated significantly higher labor productivity than non-adopters, as these technologies allow for the automation of routine and repetitive tasks.

Digital technologies could also create much needed jobs in Nepal. By reducing transaction costs and fostering entrepreneurship, digital platforms create new employment opportunities, both directly and indirectly. Examples such as Daraz Nepal, which saw its registered sellers grow from 2,500 to 20,000 in five years, and Foodmandu, which expanded its workforce to 450 employees, demonstrate the transformative impact of digital platforms on job creation. Additionally, Nepal's low-wage structure and English-speaking workforce make it an attractive destination for Business Process Outsourcing (BPO).

The ICT sector remains small, but its dynamics are promising

Nepal's private sector has shown a growing commitment to investing in the ICT sector. Between 2017 and 2023 the private sector contributed NPR 7.1 billion across 109 industries. This investment has led to the creation of 6,746 jobs, demonstrating the sector's capacity to generate employment. The scope of investments spans small-scale enterprises with fixed capital below NPR 150 million to large corporations exceeding NPR 500 million in capital. This diversity reflects the multifaceted nature of the ICT sector in Nepal, covering various industries from telecommunications to IT services.

Despite its relatively small size, the ICT sector has steadily contributed to economic growth, particularly ICT service exports. The digital sector, although encompassing a broad range of goods and services, is defined in this report as ICT services and manufacturing. As of 2022, ICT accounted for only 1.7 percent of nominal GDP yet has contributed an average 0.3 percentage points to economic growth over the past decade. The private sector was responsible for almost 80 percent of the sector's value added. ICT services have consistently contributed to export revenues, accounting for 10 percent of Nepal's total service exports or 0.3 percent of GDP over the past six years. This positions Nepal competitively within the region, trailing only Pakistan in terms of ICT service exports as a percentage of GDP. Digitally delivered services exports achieved an impressive compound annual growth rate of 11.6 percent, compared to the 5.8 percent growth rate for non-digital services exports.

Despite the promising growth of ICT services, Nepal faces significant challenges in producing and exporting ICT goods. The low levels of FDI in the sector have limited firms' ability to compete in the global market, as they struggle to integrate into global value chains dominated by multinational corporations. Unlike countries such as China and Viet Nam, which have successfully attracted FDI to build robust ICT goods manufacturing industries, Nepal's exports of ICT goods remain minimal. Imports of ICT goods, on the other hand, account for 4 percent of the country's total merchandise imports, with communication equipment like mobile phones and computers comprising the bulk of these imports.

Nepal's ICT labor force has grown faster than overall employment but remains small. The sector's workforce expanded at a compound annual growth rate of 5.1 percent between 2011-2021, outpacing the overall labor force growth rate. However, the ICT labor force remains small, representing just 0.35 percent of the total workforce in 2021. Gender disparities persist within the sector, with women accounting for a smaller proportion of the ICT workforce than men, though the number of economically active women has been growing at a faster rate.

Nepal's digital infrastructure has improved, but a fixed broadband internet coverage gap persists

One of the critical challenges Nepal faces in expanding digital adoption is the substantial gap in fixed broadband internet coverage. The country's landlocked geography limits direct access to global submarine cables, essential for high-speed and reliable internet connectivity. As a result, Nepal relies heavily on India and China for international bandwidth, which incurs additional costs and subjects the country to the telecommunications regulations of its neighbors. Nearly half of Nepal's population lives more than 10 kilometers away from fiber-optic infrastructure. While the government has initiated efforts to address this gap through the Rural Telecommunication Development Fund (RTDF), delays due to legal disputes have hindered timely implementation.

Nepal is making notable strides in developing data infrastructure. The establishment of the Nepal Internet Exchange (NIXP) has improved the affordability and quality of internet services by enabling local data exchanges, reducing reliance on international transit providers. With a higher-than-average number of members compared to other South Asian IXPs, NIXP helps lower overall data transit costs, making internet access more affordable for users. Nepal's above average density of colocation data centers provides shared infrastructure that improves operational efficiency and reduces costs for businesses.

Nepal's commitment to developing a robust Digital Public Infrastructure (DPI) is also noteworthy. While still in its early stages, DPI aims to create a secure, interconnected network that ensures equal access to both public and private services. Recent initiatives highlight Nepal's progress in building its DPI ecosystem. The National ID program and the Nagarik Mobile App are key examples of this commitment. Launched in 2021, the Nagarik App has gained over 800,000 users and provides access to services from more than 30 government bodies.

As Nepal continues to invest in its digital infrastructure, the potential for transformation in various sectors, including commerce, public services, and individual welfare, is significant. Strengthening both hard and soft infrastructure will be essential in realizing this potential, fostering an environment conducive to innovation and attracting further investment. The ongoing development in the digital landscape indicates a promising future for Nepal's economy, positioning it as a competitive player in the regional and global ICT sectors.

Digital payment adoption among firms and households lags peer countries

Most formal firms in Nepal had access to high-speed fixed broadband internet in 2023. Internet usage was more common in the services sector than in manufacturing. Despite high internet penetration, only about half of formal firms had an online presence, highlighting significant room for improvement. Firms nevertheless appear to increasingly recognize the importance of online presence for sales and customer interaction, evidenced by strong growth in website adoption since 2013.

Digital payment adoption remains low, especially in manufacturing. Only 10 percent of manufacturing firms used electronic payments in 2023. Larger firms were more likely to make digital payments but faced higher transaction costs, while medium-sized firms received a higher percentage of their sales through digital channels. The use of ICT capital in the manufacturing sector also lags, with only a modest rise in tangible ICT capital per worker between 2011 and 2019. Despite some improvements in digital technology adoption during the COVID-19 pandemic, the overall use of digital technologies and capital remains low, especially in manufacturing.

Digital technology adoption among households has grown, but gaps remain. Internet usage rose from 3.3 percent in 2011 to 38 percent in 2021, while mobile phone and computer ownership also increased. However, computer adoption is still low at just 15 percent. Despite near-universal mobile broadband coverage, 3G and 4G penetration remains limited. Large differences in usage across provinces and across households persist, with wealthier, urban, and more educated households adopting digital technologies faster. Gender gaps are also significant, particularly in the use of computers.

Digital payment adoption among households has also risen but lags Nepal's lower-middle-income (LMIC) peers. The share of adults using digital payments climbed from 10 percent in 2014 to 28.6 percent in 2021, yet lower than the averages for South Asia and other comparable economies. The COVID-19 pandemic accelerated the use of digital payments, with nearly 1.5 million adults starting to use digital transactions. Urban areas saw a more substantial increase in digital payment usage compared to rural regions. Significant gender, age, and income disparities limit broader financial inclusion.

Digital technologies remain expensive

Fixed broadband internet remains expensive in Nepal, in contrast to mobile broadband. While mobile broadband prices have significantly decreased, now accounting for 2.14 percent of average GNI per capita, fixed broadband remains costly at 7.8 percent of GNI. This disparity is partly due to heavy taxation in the ICT sector that burden service providers and are ultimately passed on to consumers. The affordability of entry-level smartphones has worsened, with prices now consuming 33 percent average of monthly income, primarily due to high tax rates that far exceed those of neighboring countries.

For businesses, the high annual cost of internet services poses a significant challenge, especially for smaller firms. Frequent internet outages exacerbate these issues, affecting over 30 percent of firms in 2022, leading to an average downtime of 3.5 hours and a 2.1 percent annual sales loss. The impact of these outages varies by firm size and sector, with larger firms experiencing shorter disruptions but facing more significant revenue declines, while smaller firms endure longer downtimes and greater financial repercussions.

The market is poorly regulated and highly concentrated

Nepal's regulatory environment is weaker than in other LMICs and has not improved over the past decade. The Telecommunications Act of 1997, is outdated, reflecting a time before the digital revolution and the proliferation of data-based communications. The Nepal Telecommunication Authority (NTA) lacks the independence necessary for effective regulation since its members are appointed by the Ministry of Communication and Information Technology, creating potential conflicts of interest. As a result, Nepal's regulatory framework lags other LMICs, as reflected by its low ICT Regulatory Tracker score, and has not improved in the past 15 years, while most LMICs have advanced.

Nepal's telecom market suffers from a lack of competition, especially in mobile broadband, which is dominated by two major players. This concentration limits innovation and service expansion, negatively affecting consumers through higher prices and lower service quality. In response, the NTA is working to introduce a third mobile operator and has also eliminated the minimum threshold for FDI in the ICT sector. However, the regulatory regime remains weak due to inadequate infrastructure sharing and the absence of secondary spectrum trading, which could otherwise foster more competition and efficient resource use. While Nepal has introduced regulations to promote infrastructure sharing, enforcement remains a challenge, and the 2023 spectrum policy does not allow spectrum trading.

Updating the Telecommunications Act and the digital strategy would strengthen the regulation of the sector. The revised act should transition to data-centric services and address issues around cybersecurity, data protection, and ethical artificial intelligence. The legal framework should also enable the leasing and secondary trading of spectrum and enforce infrastructure sharing. The creation of a dedicated competition authority and strengthening NTA would foster competition.

Digital skills are critically low

Nepal needs to address a significant digital skills gap, which hampers its ability to unlock technological potential and drive digitalization. According to Wiley's Digital Skill Gap Index, Nepal ranks 124th out of 134 economies, performing poorly in key areas such as information literacy, communication, and digital content creation. The lack of basic digital skills is stark and low digital literacy rates severely limit Nepal's workforce's ability to engage with modern technology. Digital skills could be improved by integrating them into school curricula and through training programs for different age groups and demographics.

Finally, the adoption of key digital public infrastructure has been delayed. Digital identities (IDs) and digital signatures have been implemented slowly, hindered by factors such as non-mandatory use and a focus on physical IDs. Despite 15 million digital ID registrations, access issues have limited their use, though a government mandate starting in 2025 may boost adoption. Similarly, digital signatures, legally recognized since 2006, remain underutilized, with institutions like banks still relying on physical signatures. Security concerns, like data breaches, have eroded public trust in digital payments, leading to an increased reliance on paper-based transactions, a trend contrary to other South Asian nations' digital payment growth.

Nepal has officially declared 2024-2034 the Information Technology Decade, but substantial effort will be required to turn this vision into reality. Key initiatives in the past, such as establishing the internet as an essential service, have not delivered anticipated results. To adapt and take advantage of the rapidly evolving digital landscape will require a multifaceted approach that improves the regulatory environment, accelerates then development of digital public infrastructure, reforms the RTDF, expands skills, and promotes advanced and affordable technologies.

The way forward

Nepal's current growth model, heavily reliant on remittances and consumption, has proven resilient but insufficient to meet the country's ambitious development targets. While remittances have buoyed private consumption and reduced poverty, they have not translated into substantial job creation or productivity gains across key economic sectors. This model, coupled with structural limitations such as low export competitiveness, limited industrial output, and dependency on informal labor, constrains Nepal's potential to achieve sustained, higher growth rates. To break this cycle and enhance growth, significant reforms are essential to shift the economy toward more dynamic and sustainable drivers of growth.

Significant policy reforms are imperative to shift the economy toward more dynamic and sustainable drivers of growth. The main objective of this report is to provide policy guidance for Nepal to achieve strong and sustained long-term growth. Chapter 1 provides a detailed discussion of the factors supporting and limiting economic growth. The following chapters each offer granular policy recommendations on how to unlock the potential of sectors that could boost long-term growth. The necessary reforms are summarized as follows:

Table ES1. Policy recommendations to improve migration outcomes

POLICY RECOMMENDATIONS – GETTING MORE OUT OF MIGRATION

	Recommendation	Fiscal Impact	Recommendation	Fiscal Impact
	Creating Opportunities			
Tier 1	Expand formal bilateral labor arrangements and increase awareness of existing ones.	● Low	Improve monitoring and implementation of formal labor arrangements and provide effective consular support.	● Low
Tier 1	Include better provisions for worker protection and improvement in labor market outcomes while abroad in formal bilateral arrangements.	● Low	Lower the cost of sending remittances.	● Low
Tier 2	Expand affordable financing and information about destination markets and domestic exit processes in lagging areas and among the less well-off.	● Low	Improve data on returnees and evidence of existing policy interventions.	● Low
	Creating Capabilities			
Tier 1	Enhance pre-departure training without increasing the cost burden to improve migrants' preparedness.	● Low	Understand destination economies and enable reskilling per demand.	● Low

Table ES2. Policy recommendations to boost exports

POLICY RECOMMENDATIONS – BOOSTING EXPORTS

	Recommendation	Fiscal Impact	Recommendation	Fiscal Impact
	Creating Opportunities			
Tier 1	Improve market competition in key non-tradable sectors.	● Low	Develop and promote remittance-linked financial instruments for productive investment and household savings.	● Low
Tier 1	Substantially revise or eliminate the Cash Incentive Scheme for Exporters (CISE).	Generates Revenue	Strengthen trade diplomacy and investment promotion by leveraging diplomatic missions.	● Low
Tier 1	Improve trade and quality infrastructure.	● Low		
Tier 1	Revise the current input duty drawback systems, particularly from small exporters.	● High	Develop a strategy to gradually compress and rationalize input tariffs and compensate revenue loss with less distorting instruments.	● High
Tier 2	Sharpen the monetary policy framework with a view of containing inflation.	Indirect Effects	Initiate a dialogue about the suitability of the current peg.	Indirect Effects
Tier 2	Develop a strategy to replace excise taxes designed as de-facto tariffs with less distorting instruments.	● High		

Table ES3. Policy recommendations to boost hydropower development

POLICY RECOMMENDATIONS - BOOSTING HYDROPOWER

	Recommendation	Fiscal Impact	Recommendation	Fiscal Impact
	Creating Opportunities			
Tier 1	Strengthen the regulatory framework and harmonize policies.	● Low	Reduce bureaucratic hurdles for the private sector.	● Low
Tier 1	Strengthen the financing model for hydropower projects.	● Low	Invest in transmission and distribution infrastructure.	● High
Tier 2	Stimulate domestic electricity demand.	● Low		
	Creating Capabilities			
Tier 1	Enhance the capacity of key hydropower stakeholders.	● Low		

Table ES4. Policy recommendations to boost digitalization

POLICY RECOMMENDATIONS – BOOSTING THE DIGITAL SECTOR

	Recommendation	Fiscal Impact	Recommendation	Fiscal Impact
	Creating Opportunities			
Tier 1	Improve the regulatory environment.	● Low	Accelerate the development of digital public infrastructure.	● Low
Tier 1	Reform the RTDF.	● Low		
Tier 2	Make digital technologies more affordable.	● Low	Promote the transition to advanced networks and technologies.	● High
	Creating Capabilities			
Tier 1	Expand digital skills.	● Low		

CHAPTER 1.
Facts of Growth

Nepal's economic growth from 1996 to 2023 lagged peer countries but demonstrated resilience in the face of persistent challenges. The country navigated a decade-long conflict, political instability, and multiple external shocks, including the 2015 earthquake, India's blockade, and the COVID-19 pandemic. Despite these obstacles, the economy grew at an average real rate of 4.2 percent, though this remained slower than the growth achieved by its peer countries.

Remarkably, even with slower growth, Nepal achieved a significant reduction in poverty. Living standards improved broadly, and extreme poverty fell from over 50 percent in 1996 to just 0.4 percent in 2023, an achievement unmatched by many peers. This success was largely fueled by remittances from the increasing number of migrant workers, which underscores both a strength and a structural weakness of the economy.

While remittances bolstered household incomes and consumption, Nepal's economic development has been constrained by insufficient job creation and underperformance in key sectors such as manufacturing and tourism. Investment, though rising after the 2015 earthquake, was largely directed at reconstruction rather than growth-enhancing industries. Meanwhile, stagnant exports and a widening trade deficit have limited Nepal's ability to compete globally and achieve more dynamic, sustainable growth.

Nepal's labor market has struggled to create enough jobs to keep pace with its growing working-age population, resulting in a declining employment ratio over the past two decades. Most of the jobs created were in the informal sector, particularly in agriculture, where productivity remains low. Labor productivity in Nepal lags peer countries, especially in industry and agriculture, where output per worker is significantly lower. This lack of formal, high-productivity jobs has constrained overall economic growth, limiting the country's ability to transition into higher-value sectors and achieve faster development.

Despite these challenges, Nepal holds significant growth potential in sectors like hydropower and information and communications technology (ICT). Hydropower, with its abundant resources, could provide a reliable source of clean energy and boost exports, helping to reduce dependence on fossil fuels and imported energy. ICT services, though still small, have shown promise in driving export-led growth, positioning Nepal competitively in South Asia. However, inadequate infrastructure and insufficient policies have slowed progress in these high-potential areas.

Looking ahead, Nepal's ambitious growth targets require substantial reforms. Enhancing productivity, improving export competitiveness, and attracting foreign direct investment are crucial to achieving higher growth rates. The country must also address its vulnerabilities to external shocks, such as climate change and the global economy, to ensure sustainable development. By capitalizing on its hydropower and ICT sectors, and by implementing structural reforms, Nepal can gradually move toward stronger and more resilient economic growth.

1.1. Nepal's journey to lower-middle income status

The discussion of Nepal's economic performance comprises three distinct development periods, each shaped by unique challenges and events. The first was the conflict period, from 1996-2006[1], marked by a decade long armed conflict between the government of Nepal and the Communist (Maoist) Party of Nepal and cost the lives of over 13,000 people (Phadera 2019). The second period, from 2007–2014, followed the signing of a peace treaty and was characterized by the abolishment of the monarchy, political instability, and a further increase in the outward migration of Nepalese workers.[2] The third period, from 2015–2023, was market by repeated shocks, including the devastating 2015 Gorkha earthquakes, India's 2015/2016 blockade, the 2017 landslide, and the 2020 COVID-19 pandemic, as well as the continuation of high government turnover. The third period also saw the adoption of the new Constitution in September 2015, which established Nepal as a federal democratic republic with three tiers of government, local, provincial, and federal.

Nepal's growth performance is benchmarked to a set of structural and aspirational peer countries. Structural peer countries are selected based on economic characteristics that very closely resemble those of Nepal, i.e., lower-middle income (LMIC) status, geography, high level of hydropower potential, high dependence on a single trading partner, strong international remittance inflows, and high vulnerability to climate change. Structural peer countries include Bangladesh, Bolivia, and Kyrgyz Republic. Aspirational peer countries include Cambodia, Lao People's Democratic Republic (PDR), and Moldova, and are selected based on the same criteria but have achieved higher income levels than Nepal and its structural peers.

Nepal's economy has shown remarkable resilience amid various shocks, yet its growth still lagged that of peer countries. From 1996–2023, real GDP expanded by an average 4.2 percent annually, a remarkable rate considering the domestic conflict and multiple external shocks affecting the country. The main reason behind the robustness of growth were remittances from migrant workers, which are among the highest worldwide relative to the country's GDP, and enabled robust private domestic consumption, boosting the services sector. Nepal's average growth rate nevertheless fell short of the rates observed in peer countries. Within South Asia, Nepal's average growth rate ranked sixth out of eight countries, surpassing only Pakistan and Sri Lanka.[3] In comparison to structural and aspirational peers, Nepal was outperformed by both groups, with only Bolivia and Moldova recording lower average growth rates among peer countries.

Nepal's real GDP growth underperformed compared to peer countries during the conflict and the post-conflict periods (Figure 1.1). During the armed conflict period, Nepal recorded average annual real GDP growth of 4 percent, below the 4.4 percent achieved by structural peers and significantly below the 5.9 percent of aspirational peers. During the post-conflict period, average growth increased marginally to 4.6 percent, yet again substantially falling short of peer countries. The absence of a larger peace dividend was mainly due to political economy factors and policy instability, which hampered reform efforts and delayed the adoption of the new Constitution. Increasing remittances from Nepalese workers that left the country during the conflict and post-conflict periods provided a buffer against domestic economic weaknesses and contributed significantly to the resilience of the economy.

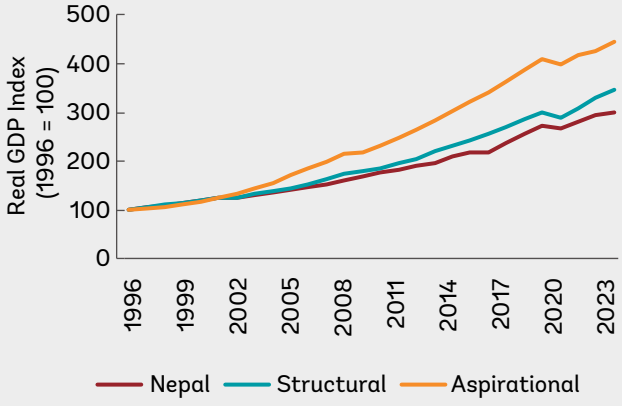
During the period of repeated shocks, Nepal's growth performance was on par with peer countries. From 2015–2023, Nepal managed to sustain an average annual real GDP growth rate of 4.2 percent, ranking fourth out of eight countries in South Asia. Nepal's average growth slightly outpaced that of its s aspirational peer countries and was roughly on par with structural peers. However, despite the country's resilience in confronting numerous shocks, Nepal's performance versus structural peers is influenced by Bolivia's large recession in 2020. When discounting the pandemic year, Nepal's performance was weaker than that of structural peers.

Nepal's overall lower growth rate resulted in a widening real output gap compared to peer countries (Figure 1.2). Nepal's real GDP tripled between 1996 and 2023. Over the same time, real output levels in structural and aspirational peers increased 3.5 and 4.5 times, respectively. The gap widened particularly fast in the post-conflict period and continued to grow during the repeated shocks period.

Figure 1.1. Nepal's economy grew slower than peers' before 2014 and in line thereafter…

Source: World Development Indicators (WDI) October 2024 and World Bank staff calculations.

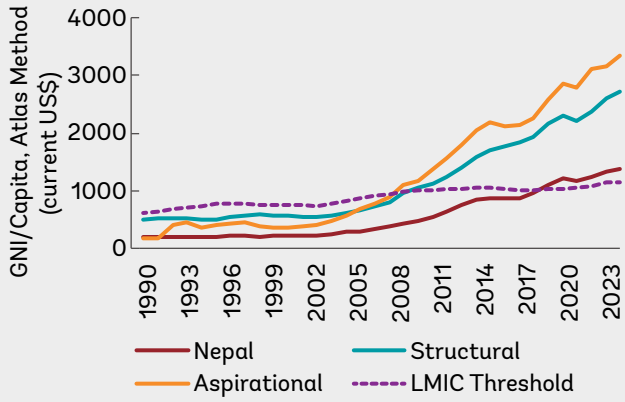
Figure 1.2. … the real output gap nevertheless widened compared to peers.



Source: WDI October 2024 and World Bank staff calculations.

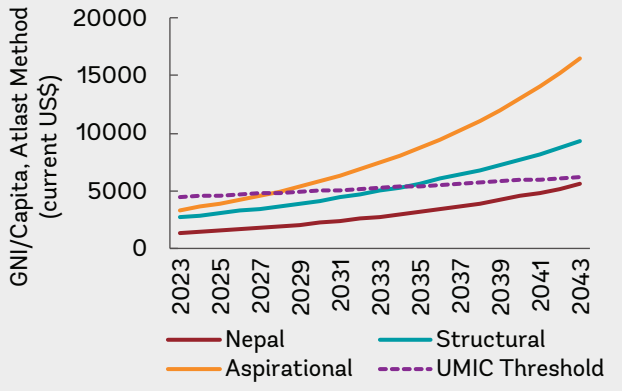
Nepal's income level has grown more rapidly than that of its structural peers, supported by slow population growth. Since 1996, Nepal's GNI per capita increased by an average of 7.3 percent annually, outpacing structural peers, which grew at 6.3 percent per year, but falling behind aspirational peers, who averaged 8.3 percent growth.[4] Nepal's GNI per capita increased fastest during the post-conflict period, which was marked by a substantial increase in outward migration. Strong per capita growth was bolstered by Nepal's relatively slow population growth rate of 1.2 percent annually. The declining proportion of dependents (those younger than 15 or older than 64) relative to the working-age population, have created the conditions for a demographic dividend, which presents a key opportunity for further accelerating economic growth as the country capitalizes on its increasingly productive workforce.

Figure 1.3. GNI per capita lost ground against peers…



Source: WDI October 2024 and World Bank staff calculations.

Figure 1.4. … and current growth rates are not sufficient to catch up in the long-term



Source: WDI October 2024 and World Bank staff calculations.

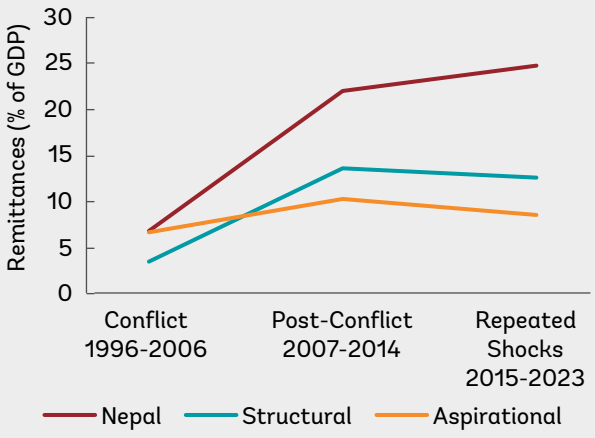
As a result, Nepal's income level made some progress in catching up with structural peers, although it continues to fall behind aspirational peers (Figure 1.3). In 1996, Nepal's GNI per capita stood at 39 percent of that of structural peers, but stronger growth lifted it to 50 percent by 2023. The gap with aspirational peers widened, with Nepal's GNI per capita reaching only 40 percent of their level by 2023, down from 49 percent in 1996. Projections based on historical averages indicate that Nepal is unlikely to catch up with either group of peers. If GNI per capita and the upper-middle income threshold grow at their 1996-2023 average rates, Nepal would take approximately two decades to reach upper-middle-income status, without closing the income gap with structural or aspirational peers over that period (Figure 1.4).

Nepal is highly vulnerable to climate change and natural disasters, as evidenced by the period of repeated shocks. Nepal ranks as the 10th most affected country in the world according to the Climate Risk Index[5] Nepal's vulnerability to climate events stems from a lack of resilient infrastructure together with fragile and mountainous ecosystems, unplanned settlements, and an agriculture determined by monsoons. These characteristics put an estimated 80 percent of the population at risk from natural and climate-induced hazards, including extreme heat, flooding, and air pollution. The World Bank Nepal Country Climate and Development Report (CCDR, WB 2022) provides an extensive discussion of the macroeconomic effects of climate change and natural disasters.

The lack of domestic job opportunities has caused the significant outmigration of Nepalese workers over the past decades. Between 1996 and 2023, authorities issued over 6.6 million new labor approvals to migrant workers. The average outmigration of 237,127 workers per year has resulted in more than 7 percent of the total population living abroad by 2023. Migration remains dominated by young male adults, with a median migrant age of 28 years and a share of male migrants of more than two-thirds. The number of destinations has increased to around 150 countries, but most migrants are employed in the Gulf Cooperation Council (GCC) countries and Malaysia.[6]

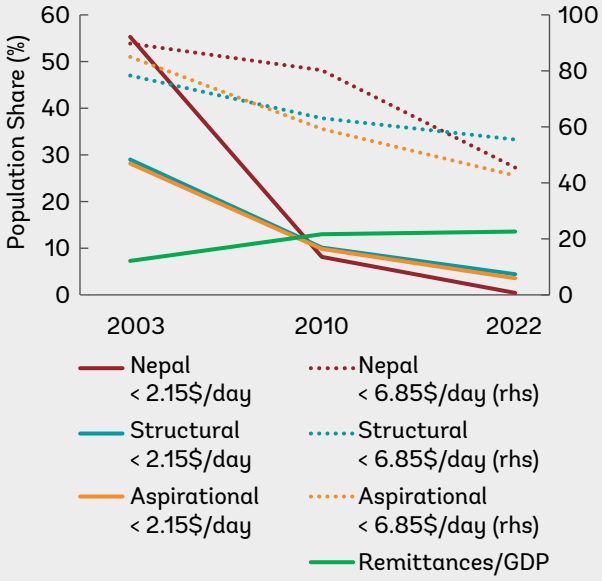
Consequently, remittances were among the highest in the world relative to GDP, and the primary reason for Nepal's resilient growth in the face of many shocks. Remittances more than tripled from an average of 7 percent of GDP between 1996–2006 to an average of nearly 25 percent of GDP between 2015–2023 (Figure 1.5). Per capita remittances and the share of households receiving remittances increased for the poor and non-poor, but with larger gains at the lower end of the distribution. This enabled robust private consumption, which has been the primary source of growth.

Figure 1.5. Remittance inflows increased significantly over time...



Source: WDI October 2024 and World Bank staff calculations.

Figure 1.6. ...and contributed to the poverty reduction.



Source: National Statistics Office and World Bank staff calculations.

Remittances also directly contributed to the remarkable poverty reduction over the past decades. 30 years ago, around 55 percent of Nepal's population lived on less than US$ 2.15 per day, a substantially higher share than in peer countries. By 2023, the situation has drastically changed, and Nepal has practically eradicated extreme poverty with only 0.4 percent of Nepalese living on less than US$ 2.15 per day, a lower share than in peers (Figure 1.6). The same pattern holds true when looking at the poverty headcount ratio measured at US$ 6.85 per day, which nearly halved over the past decades. Evidence of higher living standards is also supported by higher per capita spending in urban and rural areas. Remittances have directly accounted for more than 30 percent of the poverty reduction in Nepal between 2011 and 2023 (see chapter 3).

The migration of Nepali workers has strengthened household resilience to economic shocks, in addition to reducing poverty. On average, migrant workers earn three times more than domestic earnings[7], and an average migrant worker with 9 years of education earns the same amount as a tertiary-educated domestic worker.[8] In the context of a high exposure to shocks and limited access to formal assistance, informal safety nets, or coping mechanisms, having a migrant worker abroad mitigates risks associated with negative income shocks. During COVID-19, the correlation between the labor income shock and economic distress was small or close to zero for migrant households relative to non-migrant ones.[9]

Nepal's progress in reducing poverty nevertheless remains vulnerable to economic and climate shocks, and other uninsured risks.[10] Nepal lacks targeted policy instruments for the poor. The fiscal model relies largely on public infrastructure and service delivery for resource distribution. In 2023, Nepal's public spending on social assistance as a share of GDP was 1.6 percent, and categorically targeted programs accounted for almost all these expenditures. While more than one third of the poorest 20 percent of the population now receive some social assistance, 85 percent come from categorical programs that target the elderly, single women, or the disabled. The COVID-19 crisis exposed the challenges of relying solely on categorical systems that have limited scalability and cannot be flexibly reoriented to meet emerging needs during an emergency. Nepal's was not able to activate a system of direct transfers in response to the crisis, in part due to the lack of digital public infrastructure, which resulted in a minimal emergency fiscal response, covering just 2 percent of households compared to the regional average of nearly 20 percent.

Nepal's exports of labor and dependence on remittances, despite their positive contribution to reducing poverty, also pose challenges for economic development. Migration was the people's answer to the lack of jobs in the weak domestic labor market. Remittances allowed for an increased per capita consumption and higher living standards. Peoples' efforts, however, provided a buffer to domestic economic weaknesses and alleviated the pressure on governments to make progress on economic development and poverty reduction, negatively affecting incentives to implement critical economic policy and reforms. While there is currently no empirical evidence for it, migration could also lead to a future brain drain, if higher-educated workers were to leave the country with the intention of living abroad with their families.

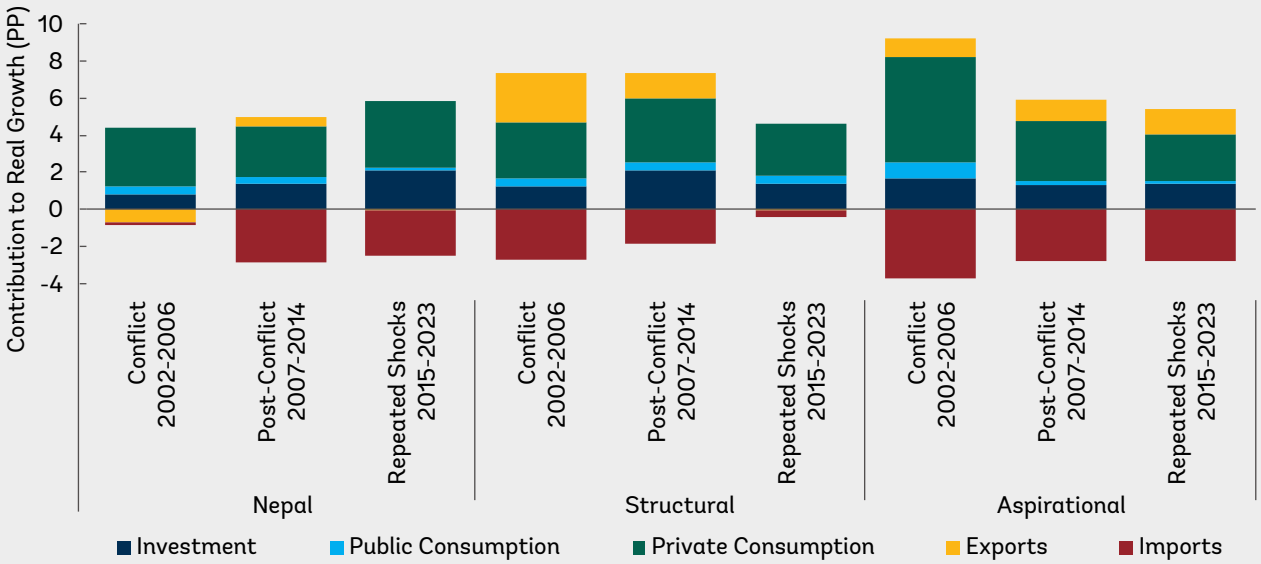
1.2. Growth accounting and drivers

Understanding the contributing, driving, and restraining factors of economic growth requires an examination through several lenses. The expenditure approach measures aggregate demand in the economy, whether short-term developments are consumption or investment driven, and assesses the economy's external competitiveness through exports. The production approach accounts for each sector's contribution to growth and the structural changes the economy has undergone. Finally, the Solow-Swan long-term growth model assesses whether growth has been driven by capital accumulation or labor and provides an estimate of total factor productivity.

1.2.1. Expenditure approach[11]

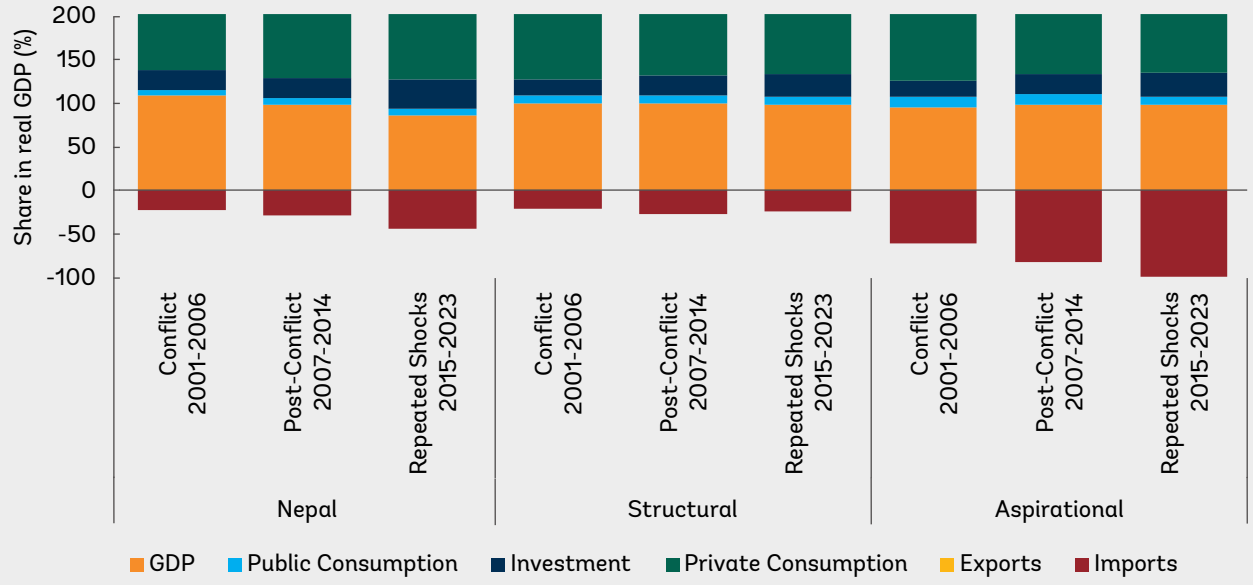
Private consumption has accounted for the largest share of real GDP growth on the expenditure side. It's contribution to real growth remained strong across all three periods and increased from an average 3.1 percentage points during the conflict period to 3.6 percentage points during the repeated shocks period (Figure 1.7). The contribution of public consumption was smaller and fell from 0.4 percentage points during the conflict period to 0.2 percentage points on average in the repeated shocks period. The share of private consumption in real GDP remained high and reached 80 percent on average during the repeated shocks period (Figure 1.8). Overall consumption, public and private, amounted to 89 percent of real GDP in 2023.

Figure 1.7. Private consumption has been the biggest contributor to growth in Nepal...



Source: WDI October 2024 and World Bank staff calculations.

Figure 1.8. ... and its share in GDP remained high over time.



Source: WDI October 2024 and World Bank staff calculations.

Nepal's reliance on remittance-fueled consumption becomes apparent when comparing the country to its peers.[12] The surge in private consumption was enabled by increasing remittances from the large number of Nepalis working abroad, which provided households with the means to maintain or increase consumption even during economic shocks. In both structural and aspiration peer countries, the contribution of private consumption to real growth was significantly lower and decreased over time, while exports contributed significantly in aspirational peers.

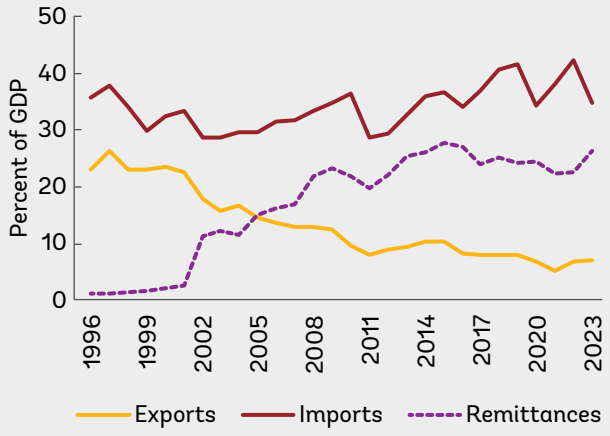
Growth was increasingly bolstered by investment spending, particularly in the period of repeated shocks. The average contribution of investment to real GDP growth increased from 0.9 percentage points during the conflict period to 2.1 percentage points during the repeated shocks. The share of investment in real GDP consequently increased to 34 percent on average during 2015-2023, higher than in structural and aspirational peers. Private investment drove the overall increase and accounted for 65 percent of overall investment by 2023.

The limited growth impact of higher investment levels may be due to their focus on post-disaster reconstruction and replenishing fixed assets. Although investment has risen significantly and contributed to growth, Nepal's economic performance has still lagged that of its peers. This is primarily due to the use of investment for the reconstruction in the aftermath of the earthquake, e.g., for residential housing. Another reason may be the increase in hydropower investments, which require large upfront capital outlays but deliver returns over a longer time horizon. This delay in realizing the economic benefits may partly explain why the expected growth from these investments has not yet materialized.

Exports remain the biggest opportunity Nepal has missed to boost growth and create jobs. A thriving export sector allows firms to increase production and revenue, as well as their productivity. Such expansion would likely lead to firms creating new and higher quality jobs, facilitating the transition out of low-productivity subsistence and informal work, and would allow the economy to substitute the import of basic products with domestic production. An expanding exports sector is also likely to attract foreign investments which, in addition to their macro stabilizing effects, would also bring new know-how and technologies to the country. Overall, a healthy and expanding exports sector increases economic diversification and resilience and can become an engine of growth and job creation.

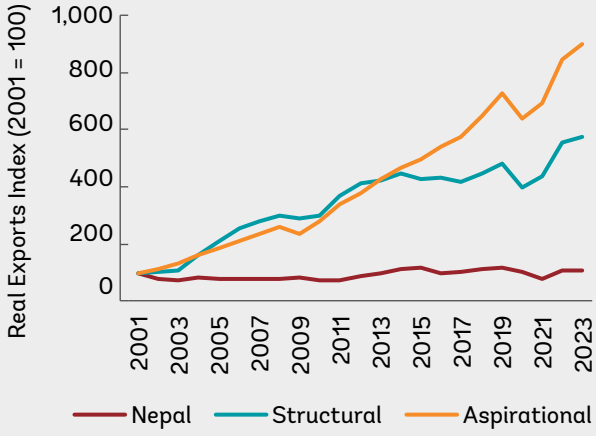
Unlike in other developing and peer countries, exports have not contributed to economic growth in Nepal. Instead, the decline in exports widened the country's trade deficit substantially during the 2000s, financed by increasing remittances (Figure 1.9). Relative to GDP, exports have fallen to an annual average of 7 percent after 2014, one-third of the level of structural peers and around one-fifth of aspirational peers. The COVID-19 pandemic caused a temporary drop in exports to a record low of 5 percent of GDP in 2021, driven by the absence of tourists. In real terms, the level of Nepal's annual exports barely rose since 2001, compared to a fivefold increase in structural peers, and a ninefold increase in aspirational peers (Figure 1.10).

Figure 1.9. Remittances financed Nepal's growing trade deficit...



Source: WDI October 2024 and World Bank staff calculations.

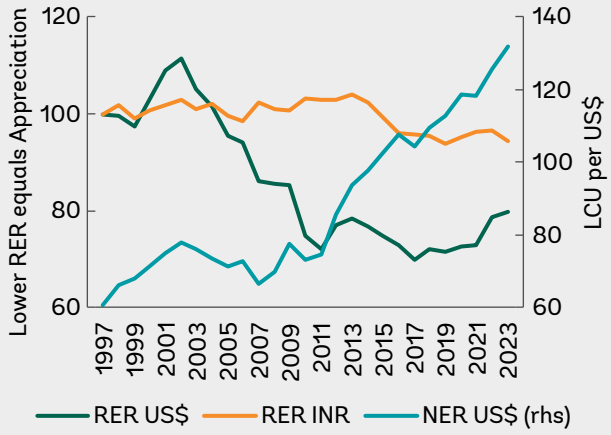
Figure 1.10. ... which was driven by stagnating exports.[13]



Source: WDI October 2024 and World Bank staff calculations.

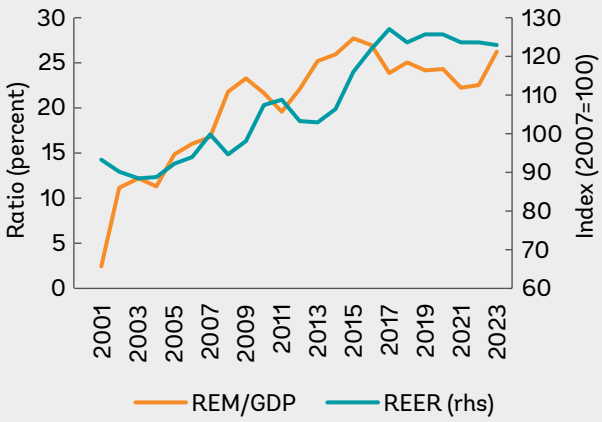
Several factors may have contributed to Nepal's missing exports, firstly a loss of price competitiveness through appreciating bilateral real exchange rates (RERs). The decay of Nepal's external competitiveness was likely the result of several factors, including the challenging geography coupled with poor infrastructure. A loss of price competitiveness, less frequently studied in the context of Nepal, may have contributed significantly as well. Nepal's Rupee was pegged to the Indian Rupee in 1993, without any subsequent adjustments to the peg. Higher inflation in Nepal compared to the main trading partners, India and the United States, has appreciated bilateral RERs. While average inflation in Nepal decreased over the past decades, the average inflation differential compared to India still turned positive after 2014 and led to a real appreciation (Figure 1.11).

Figure 1.11. Real exchange rates appreciated…



Source: WDI October 2024; Darvas (2021); World Bank staff calculations.

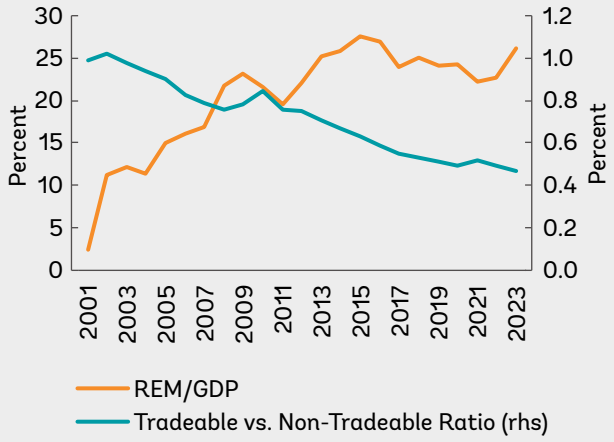
Figure 1.12. … which appears correlated with the increase in remittance inflows.



Source: WDI October 2024; Darvas (2021); World Bank staff calculations.

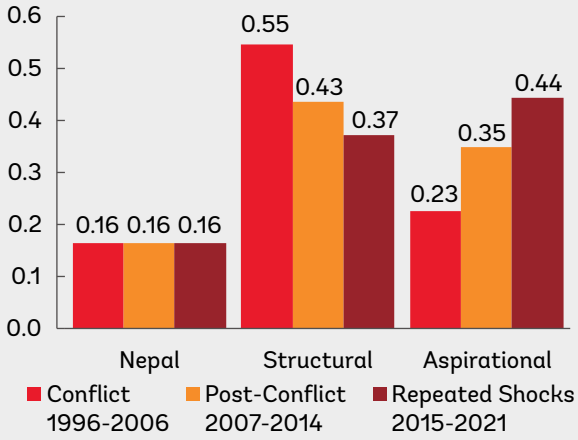
Remittance inflows may have been a significant contributor to the appreciation of the real effective exchange rate (REER) and the resulting decline of Nepal's tradeable sector. The evolution of remittance inflows, the REER (the trade-weighted average of bilateral RERs), and the tradeable and non-tradeable sectors raise concern that the former fueled a Dutch disease-like effect, i.e., remittances boost consumption and prices in the non-tradeable sector, thereby reducing export competitiveness. Figure 1.12 suggests a positive relationship between remittances and Nepal's REER, while Figure 1.13 suggests a negative relationship between remittances and the ratio of tradeable to non-tradeable sector value added. Chapter 2 will discuss the relationship between remittances and real exchange rates in more detail.

Figure 1.13. The tradeable sector ratio declined while remittance inflows increased…



Source: WDI October 2024 and World Bank staff calculations.

Figure 1.14. …and Nepal was relatively closed to cross-border financial flows.



Source: Chinn, Menzie D. and Hiro Ito (2006)

Note: Higher index means more open capital account, zero equals complete closure, 1 complete openness.

The appreciation of the REER not only negatively affects the price competitiveness of Nepal's goods in foreign markets, but also domestic production and inflation. A REER appreciation may push domestic wages, which was observed in Nepal, if workers successfully demand higher compensation in an environment of rising domestic prices. Particularly in the absence of rising productivity, these wage increases further deteriorate the competitiveness of the tradeable sector by increasing production costs. Higher wages and production cost in a relatively unproductive economy ultimately deter foreign companies to invest or set up shop in the country. Finally, rising wages can also lead to an inflation spiral, further decreasing competitiveness.

A second factor may have been Nepal's limited openness to capital flows, which impeded foreign investment. Reflecting the fixed exchange rate, Nepal had to introduce capital flow restrictions to maintain monetary autonomy, which makes the country less open to international financial flows than peers (Figure 1.14). In addition, Nepal restricts international payment flows, which tends to penalize the development of small-scale modern services exports, such as software design and professional business services. For a landlocked country for which modern services exports could be a high potential activity to add value, create good quality jobs, and secure foreign exchange, this penalty has a high opportunity cost.

Net FDI inflows were accordingly low over the past decades. Nepal has the lowest level of net FDI inflows relative to GDP across the region and among peers. Average annual inflows increased only marginally from 0.2 percent of GDP during the conflict period to 0.4 percent during the repeated shocks. In nominal terms, net FDI inflows increased in the repeated shocks period to an average of US$ 125 million per year, compared to US$ 53 million on average during the post-conflict years, however, with a significant drop in 2022 to around US$ 65 million. The stock of FDI reached around US$ 2.2 billion in mid-2023, more than half of it consisting of paid-up capital. The electricity sector accounted for one-third of the FDI stock, with sound increases during recent years, driven by hydropower. Manufacturing accounted for roughly 30 percent and the financial and insurance services sector for 25 percent. The entire agriculture sector, on the other hand, accounted for only 0.1 percent of the FDI stock. India accounted for one-third of the total FDI stock, with about half of their investment directed into the electricity sector.

A third factor behind missing exports stems from Nepal's fiscal reliance on trade taxes and de-facto tariffs, which hinder the development of a dynamic export sector. High tariffs introduce an anti-export bias in the economy and affect domestic competitiveness and exporters through various channels. Input tariffs on intermediate goods and raw material increase costs for domestic producers and exporters. Higher costs can prevent domestic

exporters from upgrading the quality of their products, which may be a reason behind the low quality of Nepal's exports. High tariffs on imported final goods increase incentives for firms to produce for the domestic market, decrease competition and thereby innovation and competitiveness. In addition to tariffs, many excise taxes in Nepal are de-facto tariffs, in that they are higher for imported goods as compared to domestically produced ones.

Trade taxes alone accounted for nearly 45 percent of tax revenue on average during 2015 – 2023, exposing public finances to external shocks. The import restrictions imposed by the government in 2023 revealed another downside of the heavy reliance on trade-related taxes, the fiscal exposure to volatile trade flows. The restrictions reduced imports as intended and improved the external balance. However, they also led to an unintended fall in fiscal revenues through lower trade-related tax income and resulted in a decade high fiscal deficit of 5.8 percent of GDP.

Most-favored nation (MFN) applied tariff rates are higher than in peers and relatively dispersed. 99.4 percent of tariffs are bound by an upper limit, a higher share than in most peers. The simple average final bound in 2023 was 26.1 percent, significantly higher for agricultural products with 41.1 percent, and lower for non-agricultural products with 23.7 percent. The simple average MFN tariff applied was 12.7 percent, with a higher agriculture tariff of 15.7 percent, and a lower non-agriculture tariff of 12.3 percent. This compares to a simple average MFN tariff rate of 9 percent in structural peers, and 4 percent in aspirational peers. Tariffs are designed with a positive escalation, applying lower rates on primary and intermediate goods, and higher rates on final goods. Overall, eight ad-valorem rates were applied, but dispersion has been significant, meaning that similar goods may be subject to different rates, which makes the tariffs less predictable and transparent.

Finally, political instability and policy uncertainty emerged as key issues for exporters. Nepal has experienced numerous changes in governments after becoming a Republic in 2008, along with corresponding delays in policy implementation, such as opening the country to FDI inflows. Uncertainty and changes affect firms' investment and planning decisions and may deter them from pursuing a successful export strategy. The outcomes of World Bank enterprise surveys over time appear to confirm this issue. In the 2023 survey, around 70 percent of direct and indirect exporters highlight political stability as a major or severe obstacle to their operations.

Nepal's export landscape, however, has shown promise through the growth of ICT and hydropower exports. The ICT sector has been a consistent driver of export revenues, accounting on average for 10 percent of Nepal's total service exports or 0.3 percent of GDP over the past years. This positions Nepal as a competitive player in South Asia, ranking second only to Pakistan in ICT service exports. Meanwhile, hydropower exports have also surged, with surplus electricity sold to India during the rainy season. Between 2022 and 2024, electricity exports increased from 39 MW or 0.1 percent of GDP to 941 MW or 0.3 percent of GDP, marking a milestone for Nepal as it became a net electricity exporter for the first time in 2024. These exports could contribute to a sustainable growth in Nepal's export portfolio.

Box 1.1. Nepal's exports

Nepal failed to significantly grow and diversify its export basket. Between 1996-2023, exports grew by less than 5 percent in nominal US$ terms per year, with above average growth rates observed during the post-conflict years. The sectoral composition of Nepal's exports has been concentrated in services, which recovered from a low level during the conflict period. ICT services exports account for over 8 percent of services exports and over 4 percent of total exports in 2023.

The COVID-19 pandemic had a significant effect on service exports. Having peaked at US$ 1.7 billion in 2018, service exports dropped to less than US$ 700 million in 2021. The drop was partially compensated for by an increase in exports of household food and beverages, from less than US$ 200 million in 2019 to nearly US$ 640 million in 2021. Overall, exports decreased in nominal terms from their peak in 2019.

Goods exports are also concentrated when considering their final destinations. Diversifying goods export destinations is critical to ensure resilience to negative shocks in destination markets. While Nepal's goods exports reached more than 125 countries in 2023, they were highly concentrated in India, which received more than two-thirds of total goods exports. The second and the third largest destination markets were the United States and the European Union with shares of 12.5 and 9.7 percent of total goods exports. The remaining roughly 10 percent of exports were scattered across the other destinations. Surprisingly, only 1.1 percent of exports went to China, and other geographically close potential trading partners exhibit even lower export shares, such as 0.4 percent for Bangladesh, or 0.04 percent for Pakistan.

Nepal continues to export low value products, reflecting the lack of foreign investment and technology adoption. As of 2022, only 0.5 percent of manufacturing exports are classified as high-tech.14 based on the importance of research and development spending relative to the value added of the industry that produces the export. In comparison, the shares for peer countries like Kyrgyz Republic and Cambodia amount to 10.5 percent and 6.3 percent, respectively. The low quality of Nepal's exports implies low prices the country can obtain in international markets for its products. The observed low foreign direct investment inflows are a key reason for Nepal's slow technology and export upgrading, since FDI has been associated with the transfer of knowledge and know-how, boosting productivity and competitiveness.

Nepal's export potential is nevertheless substantial. A World Bank report from 2022 estimates that missing exports amount to US$ 9.2 billion, around 12 times the annual merchandise exports at that time (World Bank 2021c). A large share of missing exports corresponds to potential trading partners in the region with currently weak export links, but trade could also be strengthened with India. Accessing these markets and closing the exports gap would significantly increase the share of exports relative to GDP and would be a strong impulse for growth.

Realizing its export potential would also create a significant number of additional, highly needed jobs. The same World Bank report estimates that every US$ 1 million of exports would create an additional 38 jobs in agriculture and 13 in manufacturing. Based on this multiplier, closing the missing exports gap would imply that an additional 220 thousand jobs could be created. These additional jobs could help to transition people out of informal activities and into formal wage jobs, and could be a stimulus for wage growth, given that exporting firms tend to pay higher salaries.

1.2.2. Production approach

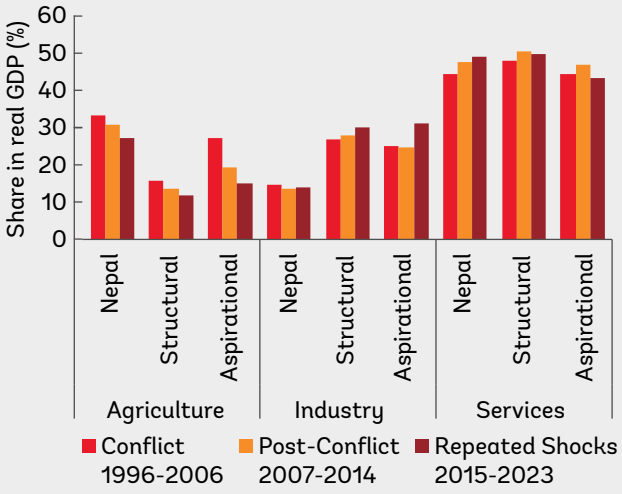
Developing countries have increasingly bypassed the historically observed pattern of industrialization and moved from agriculture to services. Economic development and growth in developing countries have been driven historically by a process of industrialization, whereby production factors move from agriculture to manufacturing, before moving to the services sector. More recent economic literature has documented, however, a departure from this historical trend, with today's developing countries experiencing shorter and less pronounced periods of industrialization (Gollin 2018). This could reflect a lack of similar industrialization opportunities for today's developing countries as they were presented to today's advanced economies during their development stages. As a result, developing countries move to a more service-based economic structure at much lower levels of income (Rodrik 2016).

The observed premature deindustrialization trend is evident in Nepal's economy, where services have accounted for a large part of real growth, while industry never gained momentum (Figure 1.15). Services' contribution to real GDP growth has been increasing from a high level throughout the three considered periods. Already in the conflict period, services accounted for an average 2.1 percentage points of real growth. During the repeated shocks period, services' contribution increased to 2.3 percentage points on average, despite the contraction in 2020. Agriculture contributed less to real growth over time, 1.2 percentage points on average during the conflict period, down to 0.8 percentage points during the latest period. Industry has been the smallest contributor to real growth, stagnating at a low level of 0.8 percentage points during the repeated shocks period.

Figure 1.15. Services were the key component of growth on the supply side…

Source: WDI October 2024 and World Bank staff calculations.

Figure 1.16. … and accounted for a high share of the economy.



Source: WDI October 2024 and World Bank staff calculations.

The robust dynamics of Nepal's service sector led to a stronger shift of the economy towards services than in peer countries (Figure 1.16). Services have been the dominant sector in Nepal over the past two decades. Its average share in real GDP increased from 44 percent during the conflict period to 49 percent during the period of repeated shocks, despite a significant contraction during 2020. The shift towards services was less pronounced in peer countries. In structural peers, the average share of services in real GDP increased by 2 percentage points since the conflict period to 50 percent in the repeated shocks period. In aspiration peers, the share of services in real GDP fell over the same time by 1 percentage point to 43 percent.

The agriculture sector remains more important than in peer countries, but its share in the economy decreased alike. The average share of agriculture in Nepal's real GDP decreased from 33 percent during the conflict period to 27 percent during the period of repeated shocks. Despite the decrease, the sector accounts for a larger share of real output compared to peer countries. In structural peers, the share of agriculture in real GDP fell to an average 12 percent during the repeated shocks period, in aspiration peers to 15 percent.

The lack of dynamism in Nepal's industry sector has led to its stagnation, in contrast to some growth in peer countries. The share of industry in real GDP remained at a low level of 14 percent over time. Industries in peer countries were more dynamic than in Nepal, even though also less than their service sectors. In structural peers, the average share of industry in real output increased from 27 percent during the conflicts period to 30 percent during the repeated shocks period. In aspirational peers, the share increased from 25 percent to 31 percent over the same time.

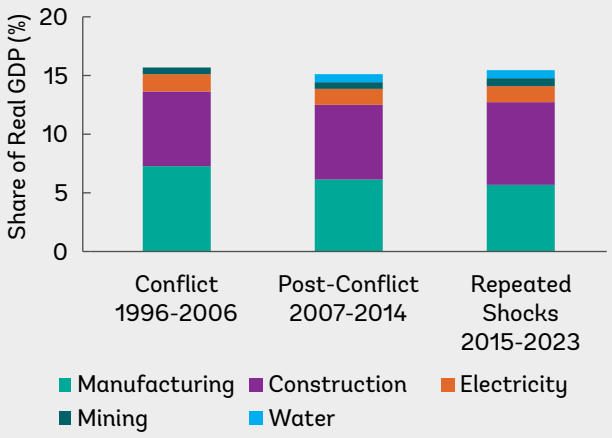
Manufacturing, historically an engine of growth in developing countries, has been on a constant decline in Nepal (Figure 1.17). The share of manufacturing in real GDP was low from the outset but decreased further over time, from an average 7.3 percent during the conflict period to 5.7 percent during the repeated shocks period. This manufacturing slump has been reflected in the sluggish trend of Nepal's exports mentioned before. Construction superseded manufacturing as the largest subsector in the post-conflict period and accounted for roughly 7 percent of real GDP during the repeated shocks period. Both subsectors contracted during 2023, when import restrictions led to declined imports and availability of construction and input material.

Hydropower boosted electricity production and could emerge as a bright spot and enabler of higher future industrial growth. Nepal features among the top countries worldwide in terms of hydropower potential, albeit only a fraction of it has come online so far. While the share of hydroelectricity production in real GDP is still small, it was nevertheless the fastest growing subsector during the repeated shocks period, with its real output increasing by an annual 15 percent on average. The electricity sector also recorded sound growth during the COVID-19 pandemic and installed hydropower capacity increased from 787 megawatt (MW) in 2015 to nearly 2990 MW in 2024.

Increased hydroelectricity production could boost growth by reshaping the comparative advantage of the economy in several ways. Hydropower could increase Nepal's competitiveness by providing reliable, clean, and cheap energy, reducing the reliance on imported fossil fuels and lowering production costs for industries. Aside from attracting investment, cheap and reliable energy could also stimulate growth in manufacturing and construction. Finally, hydropower could enhance the competitiveness of Nepal's goods and services through green and sustainable branding. Chapter 4 of this report will discuss hydropower in detail.

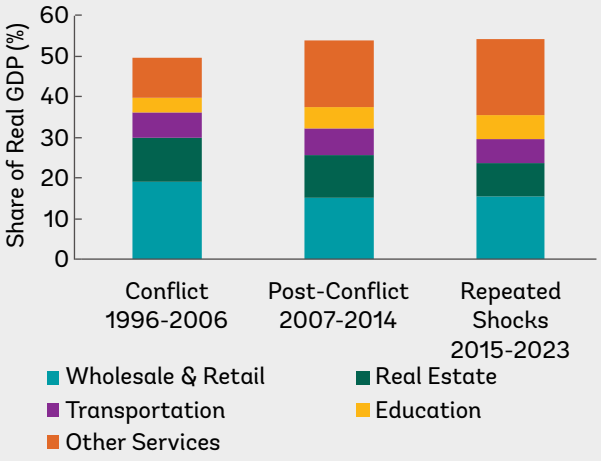
Wholesale and retail remain the largest subsector in services (Figure 1.18). Its share in real GDP nevertheless decreased from 19 percent during the conflict period to 16 percent during the repeated shocks period. Real estate, the second largest subsector, accounted for 8.4 percent of real GDP on average during the latest period, yet its share in real GDP was also declining.

Figure 1.17. Construction became the largest component of the industry sector...



Source: National Statistics Office and World Bank staff calculations.

Figure 1.18. ... wholesale and retail services of the services sector.



Source: National Statistics Office and World Bank staff calculations.

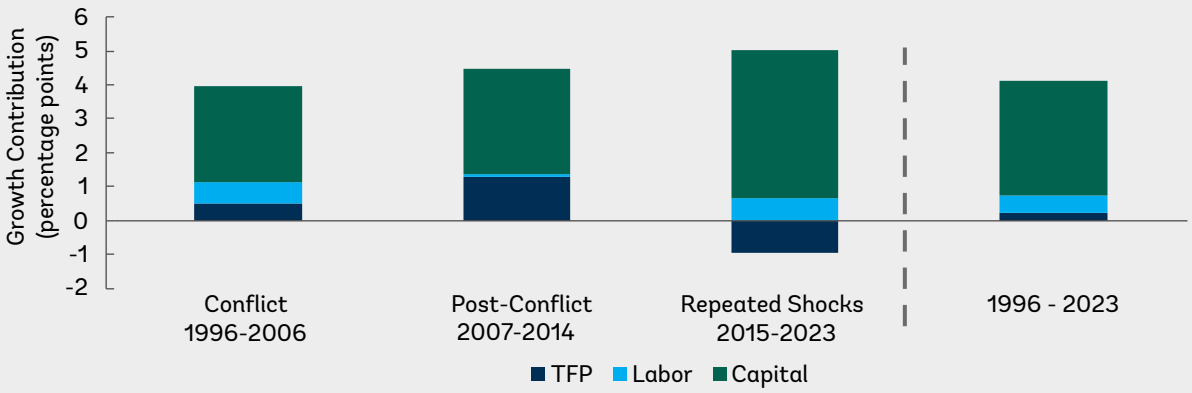
Despite its potential, the tourism sector still underperforms significantly. Accommodation and food services accounted for a mere 1.5 percent of real GDP on average during the repeated shocks period, showing limited momentum with an average annual growth rate of 4 percent. While tourist arrivals have been recovering from the COVID-19 pandemic, the lack of connectivity and service quality continue to deter more and higher spending arrivals. As a result, the per capita daily tourist spending of US$ 40 remains low in comparison to peers. Nepal has also not exploited the potential of developing a sustainable tourism brand, which could help to attract more tourists from higher income brackets.

ICT services, however, show promise to drive export-led growth in the future. While its relative size remains rather small, accounting for around 4 percent of real GDP during the repeated shocks period, ICT services have increasingly contributed to growth. ICT services by now account for around 10 percent of total service exports, positioning Nepal competitively in the region. Nepal also outperformed its regional peers in the export of digitally delivered services, which accounted for half of total service exports by the end of 2023. Chapter 5 of this report will discuss ICT services in more detail.

1.2.3. Long-term growth

The Solow-Swan growth model is a foundational framework for understanding the drivers of long-term economic growth. In this model, the key contributors to sustained growth are labor, capital, and total factor productivity (TFP). TFP represents the efficiency with which labor and capital inputs are used to produce output and is closely tied to technological progress, institutional quality, and other productivity enhancing factors. Often referred to as the "growth residual," TFP is calculated by subtracting the combined contributions of labor and capital from overall economic growth, capturing the portion of growth that stem from improvements in efficiency, innovation, or structural changes that enhance economic output.

Figure 1.19. Capital accumulation drove long-term growth.



Source: World Bank Macro Poverty Outlook, October 2024 and World Bank staff calculations.

Capital accumulation, reflecting increased investment, was a major driver of long-term growth (Figure 1.19). During both the conflict and post-conflict periods, capital contributed roughly 3 percentage points on average to real GDP growth, accounting for over two-thirds of overall growth. The stability of its contribution during the conflict years suggests that, despite political instability, certain sectors like construction and infrastructure development received sustained investment, supported by remittances, grants, and concessional financing.

Post-2014, in the context of shocks, capital accumulation accelerated and contributed 4.4 percentage points to real GDP growth. The sharp increase can be attributed to reconstruction efforts following the 2015 Gorkha earthquake, which triggered significant investments in housing, infrastructure, and public facilities. Throughout all three periods, capital therefore remained the dominant source of growth, reflecting Nepal's dependence on physical infrastructure development rather than labor or productivity improvements.

In contrast, labor barely contributed to real GDP growth, reflecting Nepal's persistently low formal labor force participation rates. Over the entire period from 1996 to 2023, labor contributed just 0.5 percentage points to growth. This limited contribution reflects Nepal's reliance on remittances from the large-scale migration of Nepalese workers abroad. Surprisingly, labor's lowest contribution came during the post-conflict period. This can be explained by the significant surge in outmigration during these years, as despite the peace, more workers sought better-paying jobs overseas. Although labor's contribution recovered somewhat after 2015, it remained low during the repeated shocks period, as natural disasters and the COVID-19 pandemic disrupted employment opportunities and led to continuous outmigration.

The contribution of TFP was limited and varied significantly over time. Across all three periods, TFP contributed only 0.25 percentage point to real growth, accounting for 6 percent of overall GDP growth. During the domestic conflict period, TFP's contribution was a modest 0.49 percentage points, or 12 percent of growth. This lower contribution likely reflected the political instability and disruptions to economic activity caused by the Maoist insurgency, which undermined productivity improvements by deterring investment in modern technologies and efficient practices.

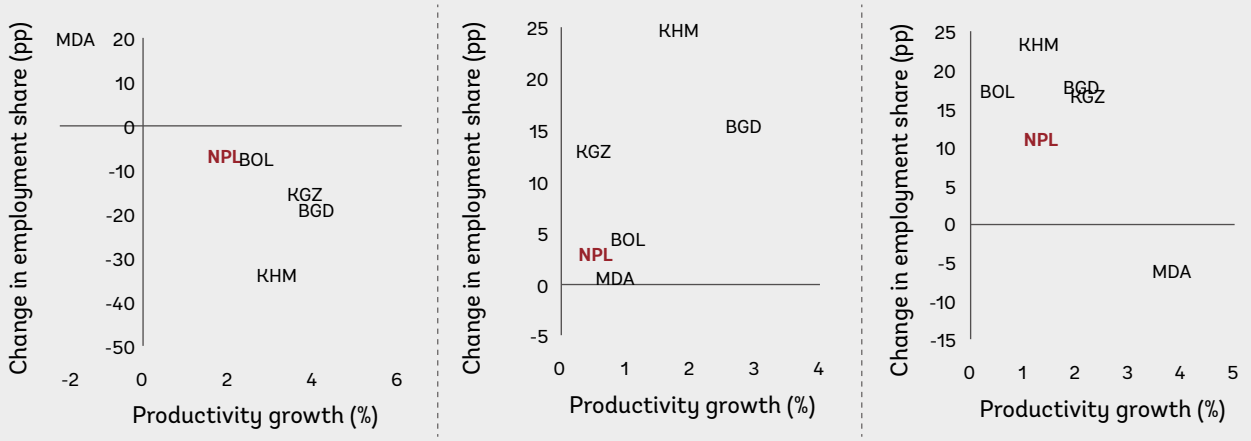
After the end of the conflict, TFP's contribution rose sharply to 1.3 percentage points, or 29 percent of growth during the post-conflict recovery. This increase can be linked to a period of increased political stability, which encouraged investment in new technologies, improvements in institutional frameworks, and enhanced service delivery. The growth of sectors like ICT also played a role in boosting productivity, as Nepal began exporting ICT services, benefiting from foreign demand.

TFP's contribution to growth effectively vanished post-2014, highlighting Nepal's vulnerability to shocks. TFP's contribution in the repeated shocks period was in fact negative, reflecting natural disasters, particularly the 2015 earthquake, which severely damaged infrastructure, disrupted production, and led to widespread economic losses. The trade blockade imposed by India in 2015-2016 exacerbated the situation, creating severe supply chain disruptions and stalling economic activity. The COVID-19 pandemic further deepened these challenges through lockdowns, reduced workforce participation, and disruptions in trade and tourism. Together these shocks undercut any gains in productivity, illustrating how vulnerable Nepal's economy remains to external shocks and structural inefficiencies.

1.3. Labor market developments

The structural transformation of employment has been slower than in peer countries, yielding only modest productivity gains (Figures 1.20-1.22). While peer countries have seen a more marked reallocation of workers from agriculture to the industry and services sectors, this shift has been far less pronounced in Nepal. In addition, the benefits of such reallocation, particularly in driving productivity improvements, have been more limited. Peer countries have demonstrated higher productivity gains across sectors, including in the services sector, highlighting Nepal's missed opportunities in capitalizing on such transitions for economic growth and development.

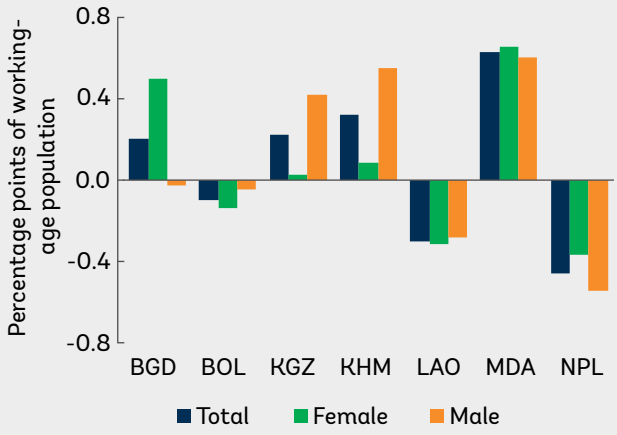
Figure 1.20. The efficiency-enhancing reallocation of workers was slow in Nepal.



Source: World Development Indicators, October 2023.

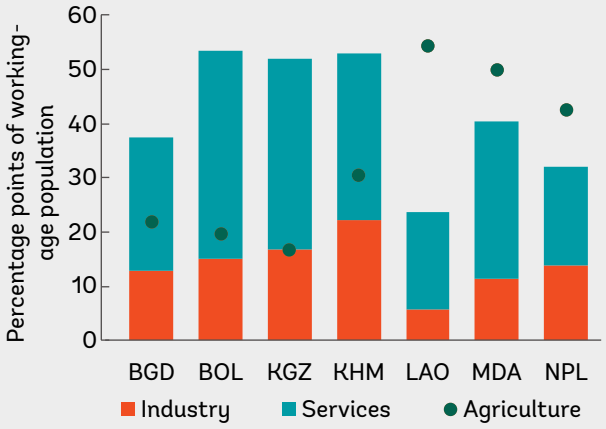
The rate of job creation has been slower in Nepal than in peer countries and below the growth of the working age population.[15] As a result, the country's employment ratio fell by an average 0.46 percentage points per year between 2000 and 2022, and the decline was larger for men than for women (Figure 1.21). Nepal started from a relatively high employment level compared to peer countries when they had similar income per capita levels, but the downward trend over the past decades sets Nepal apart.

Figure 1.21. Nepal's annual employment ratio change was negative from 2000 – 2022…



Source: International Labor Organization; Penn World Tables; Rupert Bulmer et.al; World Development Indicators, October 2023.

Figure 1.22. … and non-agriculture employment in 2022 was lower than in peers.



Source: International Labor Organization; Penn World Tables; Rupert Bulmer et.al; World Development Indicators, October 2023.

The decrease in the overall employment ratio stemmed from a reduction in agricultural employment, with non-agricultural sectors unable to generate enough jobs to compensate for this decline. The shift of labor from agriculture to non-agriculture follows a typical path of structural transformation, although countries may differ in the speed of the transformation. Nepal started the transformation relatively late. In 2000, the country had the highest agriculture employment ratio among South Asian countries and the second highest among peers, after Lao. Its services employment ratio was the lowest in South Asia and only slightly above that of Lao. During 2000-2022, agriculture employment ratio fell by one percentage point per year, on par with most peers. However, employment ratios in industry and services sectors grew only by around 0.25 percentage points per year, below most peer countries.[16]

The service sector employment ratio increased over time, yet slower than in peer countries. Nepal's services employment ratio was propelled by a rapidly growing real estate market, growing links between tourism and business services, and expanding digital services exports (World Bank 2021, 2023). But in comparison to peers, its services employment ratio increased slower during 2000-2022. As a result, the country's non-agriculture employment ratio in 2022 was lower than all comparator countries except for Lao (Figure 1.22).

Box 1.2. Labor Productivity

Low non-agriculture employment ratios limit average labor productivity growth. Agriculture jobs are typically less productive than industry and service sector jobs. As a result, in 2022 Nepal's overall labor productivity ranked lowest among peers (Figures 1.23-1.24) and labor productivity growth since 2000 lagged four of the six peer countries. Agriculture labor productivity grew slower than in all other peer countries and annual industry sector labor productivity growth during 2000-22 was the second slowest in South Asia (faster only than Bhutan) as well as among peers (faster only than Kyrgyz). Labor productivity growth in the services sector fared somewhat better but remained behind several peer countries.

Figure 1.23. Labor Productivity in 2022

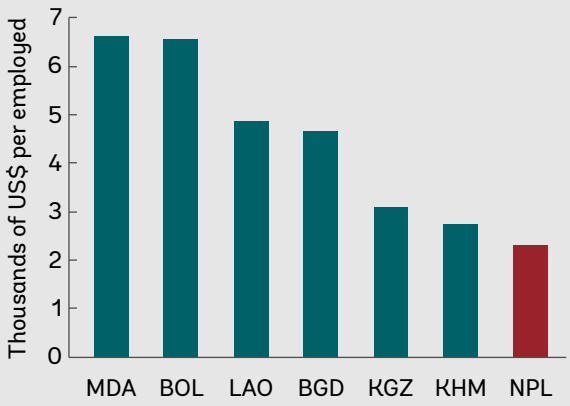
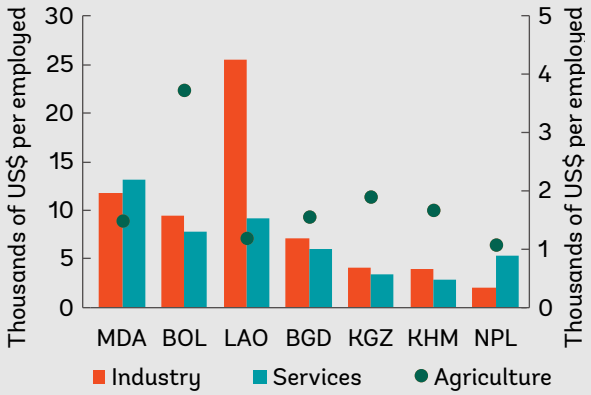


Figure 1.24. Labor Productivity by Sector in 2022



Sources: International Labour Organization; Penn World Tables; Ruppert Bulmer et.al; World Development Indicators, October 2023.

Low labor productivity reflects the predominance of less productive informal and subsistence work. According to the latest Nepal Labor Force Survey in 2018, over 80 percent of workers were in the informal sector; over half of employment was in subsistence activities (Ruppert Bulmer, Shrestha, and Marshalian 2020). Work in the informal sector tends to be less productive than in the formal sector (Ohnsorge and Yu 2022). Beyond productivity, informal work provides less job security and stability to workers, and less potential for human capital growth. Almost all agriculture workers in Nepal work in the informal sector, as well as about three-quarter of workers in industry. The share of informal workers has fallen substantially in the services sector, from over 60 percent in 2008 to 40 percent in 2018 (Ruppert Bulmer, Shrestha, and Marshalian 2020). Higher non-agriculture employment ratios could be a way to reduce informality.

Nepal's long-run, steady-state employment ratio is above average in agriculture and below average in non-agriculture (Figures 1.25-1-26). The country-specific long-run employment ratios are recovered from a set of panel regressions, controlling for labor productivity growth, working-age population growth, initial conditions, and fixed effects (World Bank 2024). The sample consists of 103 emerging markets and developing economies (EMDEs). Details are available in World Bank 2024, chapter 2, and annex 2.2-2.4. Compared to the EMDE average, Nepal has a significantly higher long-run agriculture employment ratio, whereas its non-agriculture employment ratio is significantly lower than average by 15 percentage points. The long-run employment structure differs from peer countries. For most peers, long-run agriculture and non-agriculture employment ratios are both on par with the average, except for Lao with significantly higher long-run agriculture employment ratio like Nepal, and Cambodia with significantly higher long-run non-agriculture employment ratio.

Figure 1.25. Agriculture - Deviation from EMDE long-run employment ratio

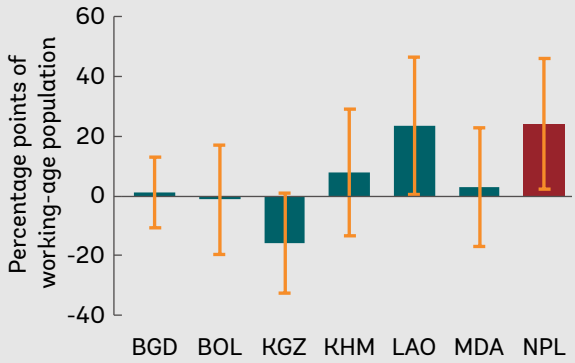
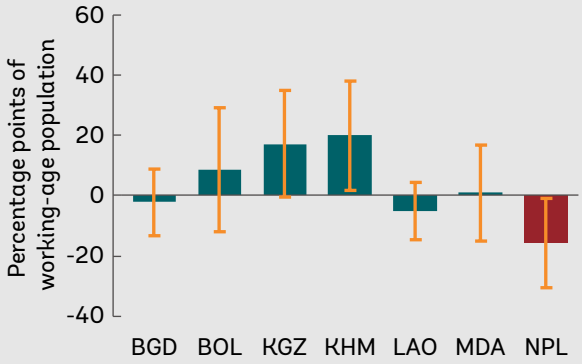


Figure 1.26. Non-Agriculture - Deviation from EMDE long-run employment ratio



Sources: World Bank Enterprise Survey; International Labor Organization; Penn World Tables; Ruppert Bulmer et.al; World Development Indicators, October 2023.

Women have predominantly engaged in less productive and mostly informal agricultural work and slow job creation has held them back more than men. Nepal's employment ratio for women, at around 70 percent including subsistence work, is higher than most other South Asian countries and higher than in half of the peer countries. Most of these jobs, however, are informal. The share of women working in non-agriculture is low, and women's employment ratio in non-agriculture is even lower than the average non-agriculture employment in the economy. Compared to the EMDE average, Nepal's long-run women's non-agriculture employment ratio is 20 percentage points lower.

Greater openness to trade, more flexible trade regulations, easier access to finance for firms, and better educational outcomes could boost long-run employment. Several policies have been significantly correlated with higher long-run non-agriculture employment ratios in the sample of EMDEs. Among these, Nepal's export-to-GDP ratio and literary rates are in the bottom quartile of other EMDEs, and more firms in Nepal than the EMDE average cited customs and trade regulations and access to finance as major constraints. Trade liberalization has been associated with more job-rich growth in regions and industries with less restrictive labor regulations in India (Hasan, Mitra, and Ramaswamy 2007). Greater access to finance can stimulate investment, which in turn can lead to productivity growth, firm expansion, and employment growth. A better-educated work force is needed to facilitate the shift of labor into non-agriculture. Based on the empirical estimates, if Nepal could improve openness to trade and educational outcomes and have more flexible trade regulations and easier access to finance for firms, its long-run non-agriculture employment ratio could have been higher by 1.5 to 13.5 percentage points, and total employment ratio could have been up 3 percentage points.

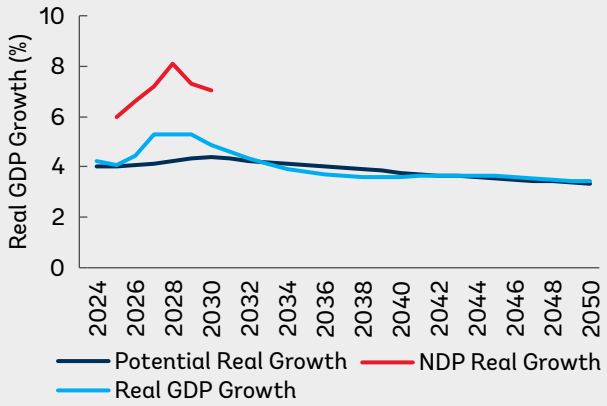
1.4. Looking ahead: Drivers of future growth

Nepal defined ambitious growth targets in their National Development Plan (NDP) and Medium-Term Expenditure Framework (MTEF). Nepal's governments outline their development priorities, policies, and programs in periodic medium-term NDPs. The 16th NDP, presented in May 2024, targets an average annual real GDP growth rate of 7.1 percent over 2025-2029, significantly above the rates observed during the three periods considered in this chapter. The most recent 2024 MTEF aims at average annual real growth of 6.7 percent during 2025–2027.

Baseline projections, however, do not corroborate authorities' ambitions. The projections summarized in Figures 1.27– 1.30 were derived using an enhanced World Bank Macro-Fiscal Model (MFMOD). The baseline scenario assumes no major shift in policies and estimates potential growth to increase to around 4.5 percent until 2030, before eventually slowing to 3.8 percent in 2040 and 3.3 percent in 2050 (Figure 1.27). Real GDP is expected to

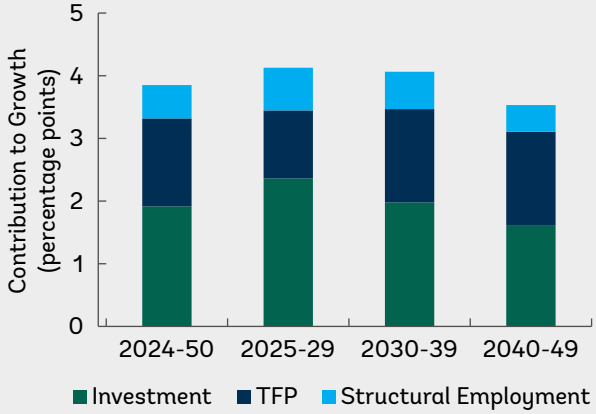
rebound to above potential growth in the shorter-term, but nevertheless remain significantly below the growth rates targeted in the recent NDP. The longer-term slowdown in potential output is driven by slower capital accumulation after 2030. The rates are assumed to converge to those observed during the conflict period, which are in line with the mean observed in LMICs during the two decades before the pandemic (Figure 1.28). TFP growth is derived in a similar way and expected to increase gradually until 2030 to growth rates in line with the mean growth observed in LMICs before the pandemic. Finally, the limited contribution of labor to long-term growth reflects slower population growth and labor market participation rates.

Figure 1.27. Baseline growth projections are significantly below authorities'...



Source: World Bank staff calculations.

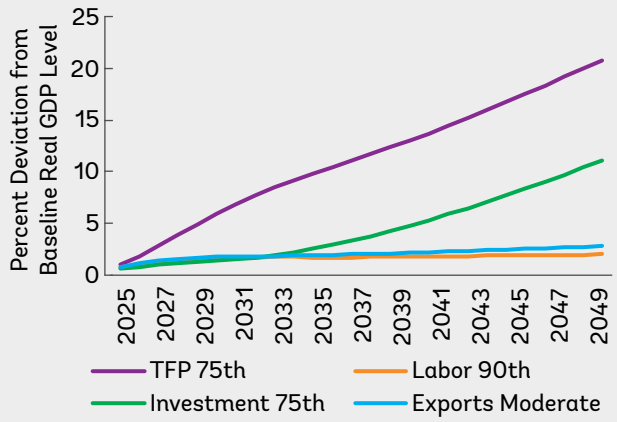
Figure 1.28. ... reflecting lower capital accumulation over the medium- to long-term.



Source: World Bank staff calculations.

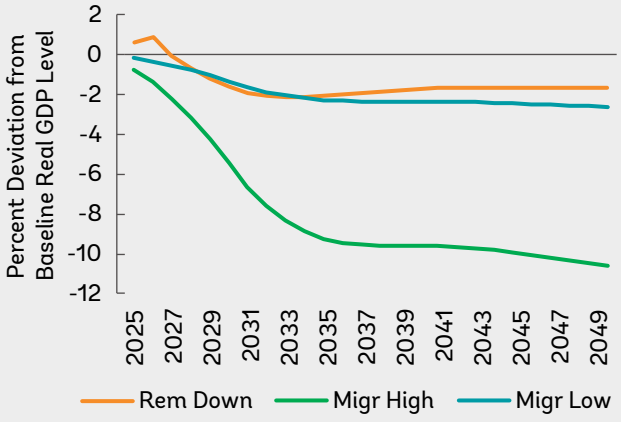
Unsurprisingly, boosting low TFP closer to the rates observed in other LMICs would bring the largest gains over the baseline. An ambitious reform agenda could increase the country's productivity growth beyond the baseline assumptions and closer to the rates observed in other LMICs, for example by implementing trade enhancing policies or attracting more FDI. If TFP were to grow at a rate equivalent to the 75th percentile observed in LMICs during 2000 – 2019, then the real output level would be roughly 20 percent higher by 2050 (Figure 1.29). The gains from higher investment rates are considerable but less pronounced over the long-term. If public and private investment relative to GDP were to reach the 75th percentile of what was observed in other LMICs, real output would still increase by around 10 percent compared to the baseline. Finally, a conservatively estimated constant labor force participation rate increase of 2 percent would result in an equivalent increase of the real GDP level by 2050.

Figure 1.29. Higher productivity and factor accumulation would boost growth...



Source: World Bank staff calculations.

Figure 1.30. ... while permanent outmigration and lower remittances would slow it.



Source: World Bank staff calculations.

Nepal could also boost economic development by taking better advantage of growth opportunities from exports and hydropower. Increasing exports at a moderate pace, closing the export gap identified in World Bank (2021) over the course of a decade, would increase the real GDP level already by 2 percent over the medium-term, and 3 percent over the long-term.[17] More aggressive policies to promote exports would have even stronger output effects. The CCDR (WB 2022) estimated the effects of additional hydropower investments of US$ 6.4 billion until 2033 on real output. Additional capacity would lead to higher exports and fiscal revenue and boost annual real GDP by 0.5 percent by 2033. The output effect of additional hydropower capacity could be even higher, as the modeling did not include the effects of higher electricity supply on domestic production.

Nepal's current growth model, however, could also deliver slower economic development should remittance or migration dynamics shift (Figure 1.30). Remittances going forward could decrease if economic activity in destination countries would slow or change, e.g., a slowdown of construction sectors in GCC countries. An average annual remittance growth of 7.1 percent, roughly 2 percentage points below the baseline assumption, would suppress real GDP levels by around 2 percent annually over the medium-term. Similarly, a change in migration patterns leading to more people permanently relocating and reuniting with their families abroad would have a negative effect on economic growth. If only 5 percent of migrants and their families were to remain abroad, real GDP levels would permanently decrease by nearly 3 percent. Assuming the share of non-returning migrant families would increase to 20 percent would lead to even more pronounced real output losses of more than 10 percent.

Climate change and natural disasters will also negatively affect long-term economic development. Events including flooding and landslides, the related destruction of infrastructure, and lower agricultural yields will affect long-term GDP growth. Rising temperatures likely lead to higher energy imports, higher health costs due to water and electricity shortages, and will negatively affect already low labor productivity (WB 2022).

Going forward, Nepal should implement reforms to increase the returns from migration and generate growth domestically. Improving export capacity through trade-enhancing reforms is crucial for long-term growth. This could be achieved, for example, by improving price competitiveness by better managing inflationary pressures or by revising the current tariff and excise tax structure. ICT services exports appear to hold promise for increasing export-led growth. Investments in technology transfer and skill development could boost productivity and stimulate the stagnating manufacturing sector. Similarly, increased hydroelectricity production could, among other positive effects, stimulate manufacturing by providing a clean, cheap, and reliable source of energy. From a fiscal perspective, Nepal appears comparably well positioned to undertake reform, having emerged from the COVID-19 pandemic with more fiscal space than other developing countries.[18] Finally, migration will remain a key factor shaping the country's long-term growth, and policies improving migration outcomes are therefore critical.

The subsequent chapters of this report explore key opportunities for fostering domestic growth and present targeted policy recommendations. Chapter 2 discusses how migration outcomes can be improved at different stages of the migration process. Chapter 3 examines the impact of RERs and trade policies on Nepal's exports, offering strategies to stimulate export growth based on the findings. Chapters 4 and 5 focus on hydropower and the ICT sector, two critical drivers of Nepal's long-term economic growth, and provide actionable recommendations to unlock the potential of these sectors.

CHAPTER 2.
International Migration for Employment and Welfare

Temporary international migration remains integral to Nepal's economy and livelihoods. In 2021, roughly one in four Nepali households had at least one family member abroad, amounting to 7.5 percent of the population. The significance of migration is further underscored by officially recorded personal remittances, which in 2023 accounted for over 25 percent of GDP, placing the country among the top five remittance-receiving countries globally.

The migration of primarily low-skilled workers to the Gulf Cooperation Council (GCC) countries and Malaysia has become an essential job strategy to offset the limited quality jobs at home, especially for younger workers, who face disproportionately high unemployment rates. Consequently, young workers account for the majority of Nepal's migrant workforce. However, the structural lack of domestic economic opportunities presents challenges for returning migrants who seek to reintegrate and effectively utilize the capital and skills they have gained abroad.

Remittance from Nepali workers abroad remain crucial for improving the living standards and resilience of the origin communities, directly contributing to over 30 percent of Nepal's poverty reduction between 2011 and 2023. The benefits of these remittances are widely felt, with households across all income levels experiencing improved living standards, increased consumption, and enhanced investments in education, health, and food security. Furthermore, high migration rates have positive spillover effects on local labor markets. Municipalities with high migration rates show increased labor force participation and employment, particularly among women in the service sector.

Yet, access to migration opportunities remains unequal, and the economic gains come with significant costs for migrants and their families. Financial constraints limit migration opportunities for many households, influencing both the decision to migrate and choice of destination. Migration trends are shaped by economic status, social caste and ethnicity, and geographic location. While remittances support families, the absence of a family member abroad often reduces labor force participation among those left behind, especially women. Migrants themselves face high costs to migrate and often endure poor working and living conditions abroad, with limited access to healthcare or social protection, sometimes resulting in fatalities.

A systematic, inclusive, and institutionalized approach to migration management is crucial for enhancing the benefits of migration while reducing its costs. Policies should prioritize increasing migration opportunities across all the population domains, the safety and well-being of migrant workers, and support skill development to expand access to higher-quality employment abroad. Effective reintegration programs for returning migrants would not only support them in utilizing their acquired skills but also strengthen local labor markets and provide more opportunities for those who remain in Nepal. Expanding domestic employment options is essential, as it would ease the challenges of reintegration for returnees, offer more viable choices to prospective migrants, and ultimately build a stronger, more resilient economy.

2.1. International migration remains important, with increasing economic returns

This chapter analyzes migration in Nepal across its various stages. It studies the migration cycle following the framework proposed by Ahmed & Bossavie (2022) and Cho & Majoka (2020), differentiating between the pre-departure, during, and post-migration phases. Through synthesizing existing literature and integrating fresh evidence, this chapter examines evolving migration trends and their implications for migrants and their communities of origin. A better understanding of these underlying processes that determine the level of migration and remittances is critical to identifying strategic interventions across the migration life cycle. The analysis leverages a new household welfare survey and housing and population census data.

2.1.1. Remittances contributed significantly to reducing poverty

International migration for temporary employment remains a cornerstone of Nepal's economy and society. After a rapid rise in the previous decade, emigration has stabilized at a higher rate over the last decade. As of 2021, based on the latest Nepal Housing and Population Census, 23.3 percent of households had at least one member living abroad, and absentees accounted for 7.5 percent of the country's population. Remarkably, these overall figures have remained relatively stable since the 2011 Census (Figure 2.1). Although there has been a marginal increase in migration for educational purposes during this period, the primary reason for migration remains temporary employment. The propensity to migrate remains disproportionally high for the working-age population, especially working-aged men (Figure 2.1).

Remittance inflows rank among the highest globally and contribute significantly to enhancing the country's living standards. In 2023, officially recorded personal remittances accounted for over one-fourth of GDP, nearly three times as much as the second highest remittance-receiving country in South Asia, Pakistan, with 7.8 percent of its GDP (Figure 2.2). This places Nepal in the top five remittance-receiving countries globally. Remittances significantly surpass FDI and official development assistance and remain a vital source of foreign exchange.

Remittances directly accounted for over 30 percent of the poverty reduction between 2011 and 2023 (World Bank, Forthcoming). They benefit households across the wealth distribution, with an increasing number of households reaping their rewards (Figure 2.3). The proportion of households receiving remittances and per capita remittances from an absentee member abroad have increased substantially over the past decade, including for households at the lower end of the wealth distribution.

Figure 2.1. International migration from Nepal is high and mostly for economic work.

Figure 2.2. Personal remittances as a share of GDP remain high…

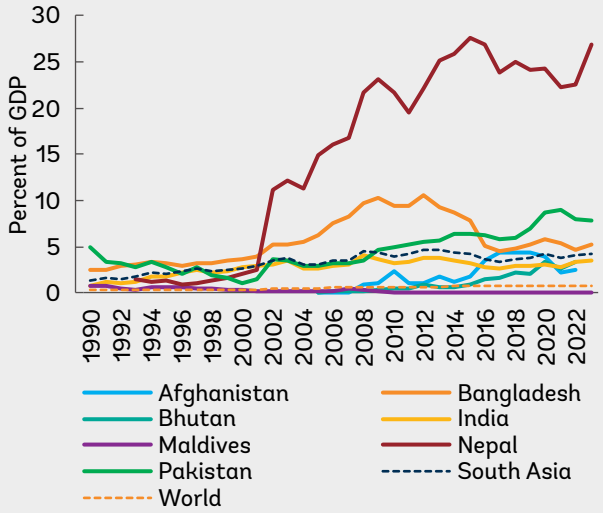
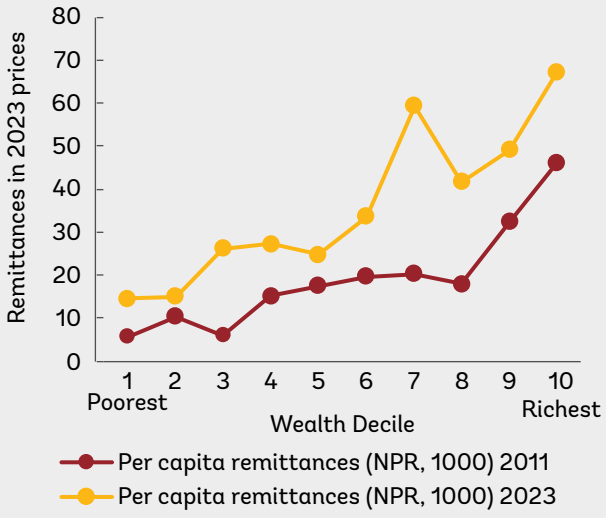


Figure 2.3. … and per capita receipts have increased across the wealth distribution.



Source: Figure 2.1, Nepal Housing and Population Censuses 2011 and 2021; Figure 2.2 World Development Indicators World Development Indicators (BX.TRF.PWKR.DT.GD.ZS; accessed on September 15, 2024); Figure 3 NLSS 2010/11 and 2022/23.

Note: Wealth deciles in Figure 2.3 are defined based on the first principal component of the household's ownership of various durable assets, housing characteristics, and land ownership.

Seeking employment abroad has been an important job strategy to cope with structural domestic labor market issues, particularly for younger workers. Between 2008 and 2018, Nepal's economy created 4 million new jobs at an annual growth rate of 3 percent, mainly in construction, manufacturing, and services. A significant share of the workforce, however, continues to engage in subsistence agriculture. Despite some livelihood and productivity improvements compared to traditional farming, these new jobs are mostly informal or temporary. Furthermore, the growth rate of jobs did not keep up with the increasing number of job seekers, particularly younger and female workers, who consequently experience disproportionately high unemployment rates. Nearly one-quarter of those aged 15 to 24 did not have a job in 2023, almost double the overall unemployment rate of 12.5 percent. Accordingly, the share of youth not in employment, education, or training (NEET) is high at 35.7 percent, particularly for young women. These patterns have increased slightly since 2018, underscoring the structural challenge of creating sufficient high-quality jobs in Nepal. On the other hand, an average Nepali worker can earn three times more while going abroad (Sapkota, Shrestha, & Shrestha, 2021). With continued high demand for Nepali labor abroad, the pull of higher wages remains an important job strategy for Nepali workers to better their livelihoods.

Young male adults, who experience higher domestic unemployment than older workers, account for most international migrants; for many, it is their first job when entering the labor market. Over 80 percent of migrants are male, but the share of female migrants increased from 12.3 percent in 2011 to 17.8 percent in 2021 (NSO, 2021). The age profile of international migrants has remained unchanged since 2011 (Figure 2.4). 44.5 percent of the 2.2 million individuals living abroad in 2021 were between ages 15 and 24, while another 31.3 percent were between 25 and 34 when leaving the country. Nepali workers seek foreign employment early in their careers, with 17.0 and 14.9 percent of 15-24 and 25-34-year-olds having already left Nepal previously for work (Figure 2.4). This is more common among younger men than women, with 28.7 and 27.5 percent of men between 15- 24 and 25-34 years living abroad in 2021. The patterns among women are similar, but the shares are significantly lower across the age distribution. With migration starting early in the labor cycle, many Nepali workers spent most of their economically productive years employed abroad, through multiple migration spells, and often across different destinations (World Bank, 2020).

While the education level of international migrants has increased over time, the overall education level remains low (Figure 2.5). More than 60 percent of absentees living abroad in 2021 had obtained only secondary education (grades 9 to 10) or less before leaving the country, and a quarter had gained Intermediate and SLC/SEE levels and beyond. Low educational attainments of international migrants, 8.6 years on average, reflect Nepal's generally low level of education. Despite improvements over the last three decades (Ruppert Bulmer, Shrestha, & Marshalian, 2020), the average years of education among the working-age non-migrant population (15 plus) is only 6.3 years, below the average level of international migrants. Domestic migrants, on the other hand, have the highest education level, 10.2 years on average (authors' calculation using NLSS IV). There nevertheless is an increasing association between higher levels of education and international migration, as reflected by the 3 percentage points increase in the share of international migrants with some tertiary education levels over the last decade from 4 percent in 2011 to 7 percent in 2021 (Figure 2.5).

Figure 2.4. Economic migration is a young and male phenomenon…

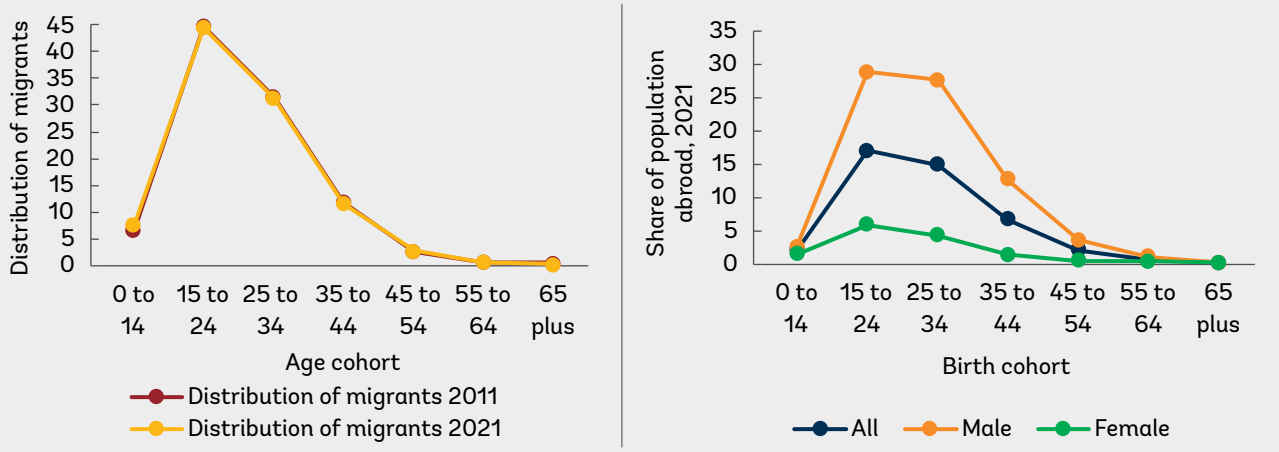


Figure 2.5. … and concentrated among those with intermediate/high school education or less.

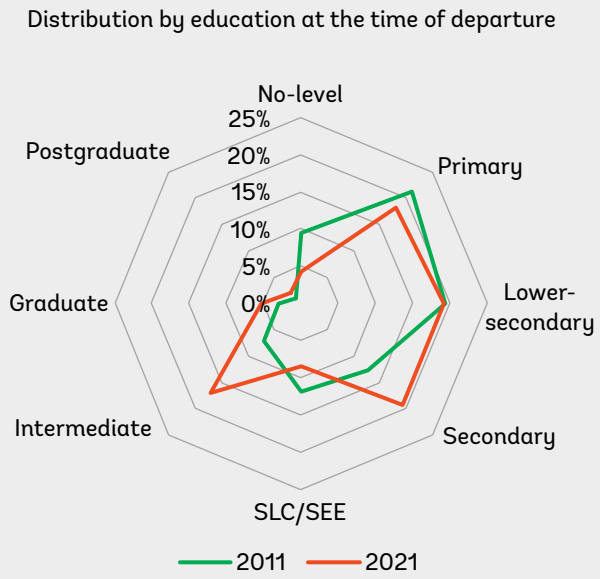
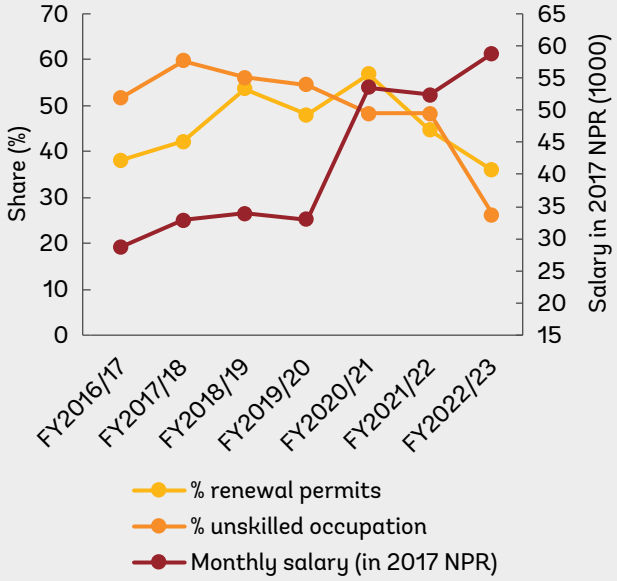


Figure 2.6. However, there is a gradual shift towards more skilled occupations, and average earnings overseas are also increasing.



Source: Figures 2.4 and 2.5 - Nepal Housing and Population Censuses 2011 and 2021; Figure 2.6 – Foreign Employment Information Management System (FEIMS).

Despite a concentration of migration for elementary occupations in GCC countries and Malaysia, new destinations have emerged, and average skills and wages have increased. Data from the Foreign Employment Information Management System (FEIMS) show a gradual decrease in the number of people migrating for unskilled occupations and an increase in migrant wages (see Figure 2.6).[19] Between 2017 and 2022, the average monthly migrant salary increased by over 100 percent from NPR 28,701 to 58,856. Considering Nepali workers spent multiple stints abroad, declining renewal rates in recent years (renewals are registered only when the extension is for the same employer) could indicate migrants' ability to navigate to better opportunities with different employers. While there is a positive income trajectory during employment abroad (Sapkota, Shrestha, & Shrestha, 2021), the observed salary increase may not entirely be due to higher returns from re-migration. New migrants may have higher skill sets and migrate to newer, more remunerative destinations. Indeed, countries in Central and Eastern Europe, the UK, Malta, and Türkiye have become more prominent new emerging destinations in recent years, especially among women migrants (MOLESS, 2022).

While Nepal is not likely to experience a brain drain currently, a longer-term management strategy is needed to utilize returns from its high-skilled emigrants. Most current migration from Nepal is temporary and is for employment. Work permits are issued typically for an average of 2.1 years and are tied to specific jobs at the destination. Given the predominantly low educational attainment and focus on low-skilled employment, Nepal's brain drain risk is currently low. However, there has been a slight increase in the percentage of individuals migrating for education and training abroad, rising from 5.9 percent in 2011 to 9.6 percent in 2021. The level of education positively correlates with international migration. Additionally, individuals moving to highly developed destinations like Western Europe, Australia, and North America have risen in recent years (Figure 2.7). This pool of migrants is more likely to move for a longer term and/ or relocate permanently. Leveraging the network of these migrants abroad will be crucial for the development of Nepal in the long run. They can play an important role in increased knowledge transfer, remittances, and investment in Nepal, with significant job creation and growth potential.

2.2. Pre-departure: The factors shaping the migration and destination choice

Migration from Nepal can be categorized broadly into three groups of destination countries that differ in cost and return to migration (Williams, et al., 2020; Shrestha M., 2022). The first group consists of India, a neighboring country with an open border and a historically popular destination with a low cost of migration but low returns. The second migration stream is to GCC and Malaysia, which have medium migration costs and medium returns and are currently the most favored destinations. Finally, the third group is migrating to wealthy Western, Asian, and Pacific (WWAP) countries such as Japan, the Republic of Korea, Australia, North America, and Europe. These are relatively new destinations and their shares in overall migration remain low, with only the richest few able to afford the high costs and reap the high benefits. While students account for a significant share of migration to WWAP countries, there is a growing trend of nurses migrating to these destinations (Adhikari, Rai, Baral, & Subedi, 2023).

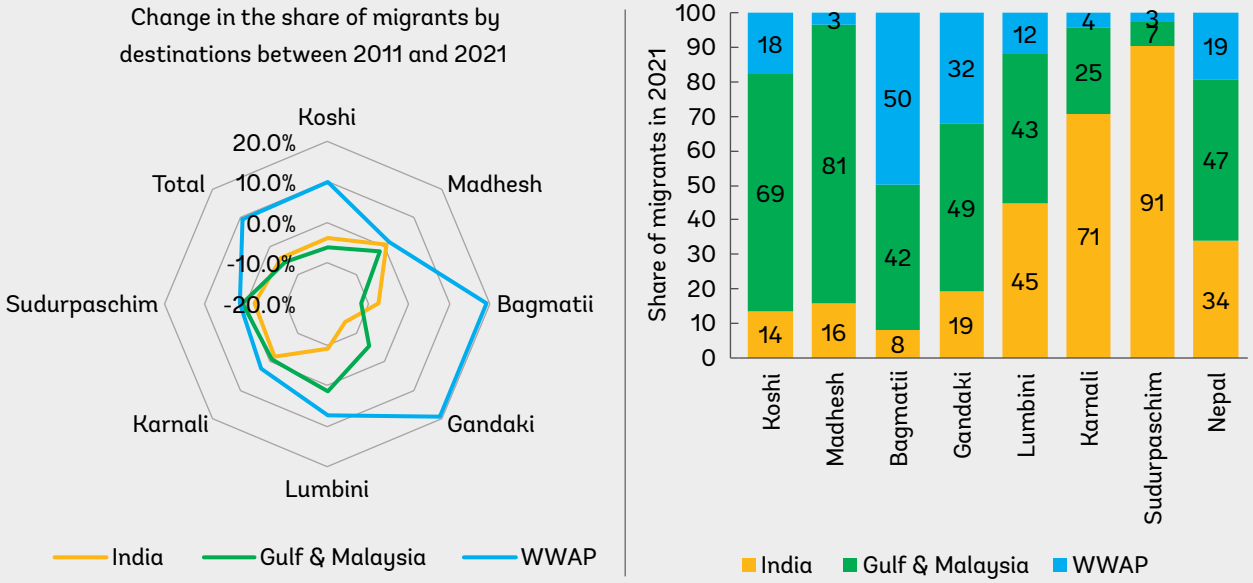
2.2.1. Migrants face high costs before departure

Nepali migrants, in general, face comparably high migration costs. When controlling for GDP per capita, Nepal has the second-highest migration costs to the GCC countries after Pakistan (Figure 2.9) among the countries sampled in the KNOMAD-ILO survey. For example, the average cost of migrating to Qatar in 2016 was 1.14 times Nepal's annual GDP per capita. The migration costs to Saudi Arabia and Malaysia were as high as 80 percent of the GDP per capita. Migration costs in South Asia are generally high and among the highest globally, often equaling several months of migrants' salary (Ahmed & Bossavie, 2022). This is particularly taxing for Nepali workers. Despite the "free-visa, free-ticket" policy implemented in 2015 for the GCC countries and Malaysia, which allows recruitment agencies to charge a maximum of only 10,000 NPR as service fees, most recruitment agencies continue to charge more than ten times that amount. Additionally, 85 percent of migrant workers rely on informal loans to finance their moves, facing an average interest rate of 27 percent (Kharel, Bhattarai, & Tumsa, 2023a).

2.2.2. Socioeconomic factors affect the destination choice

Migration to more lucrative but more expensive destinations is increasing among wealthier provinces, while low-cost and low-return destinations continue to dominate in poorer provinces (Figure 2.7). Between 2011 and 2021, the share of migrants to India and the GCC & Malaysia decreased by 3.8 and 5.5 percentage points, respectively, while the shares to more lucrative WWAP destinations increased by 9.3 percentage points. This trend is driven by migrants from the well-off provinces of Bagmati and Gandaki. Both provinces experienced an increase in migration to WWAP countries by over 19 percentage points, while migration to the GCC and Malaysia, and India decreased significantly. Koshi, another province with a poverty headcount below the national rate, also experienced a significant increase in the share of migration to WWAP countries by almost ten percentage points during the same period. As a result, WWAP countries have become almost as popular as GCC and Malaysia in the Bagmati and Gandaki provinces. In Koshi and Madhesh, GCC and Malaysia are the most important destinations, while India remains the dominant destination in the other two provinces, which are also the poorest.

Figure 2.7. Access to higher remunerative migration destinations improved over the last decade but remained unequal across provinces…



Source: Nepal Housing and Population Censuses 2011 and 2021.

Figure 2.8. … and across wealth decile.

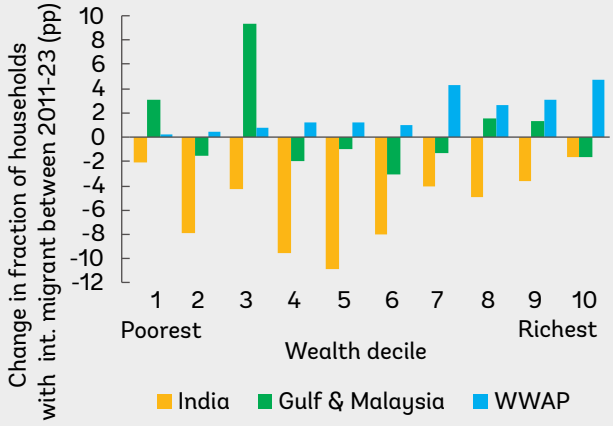
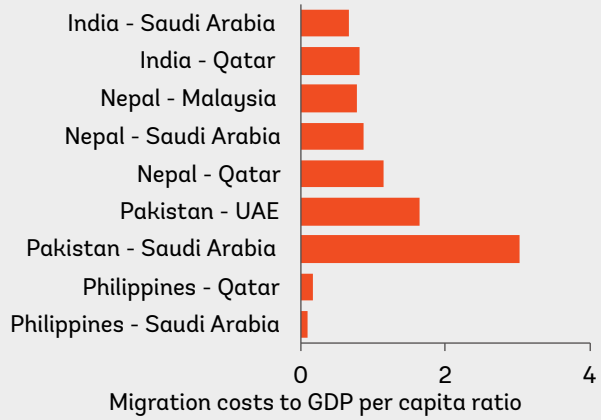


Figure 2.9. While Nepali migrants face one of the highest migration costs relative to per capita GDP.

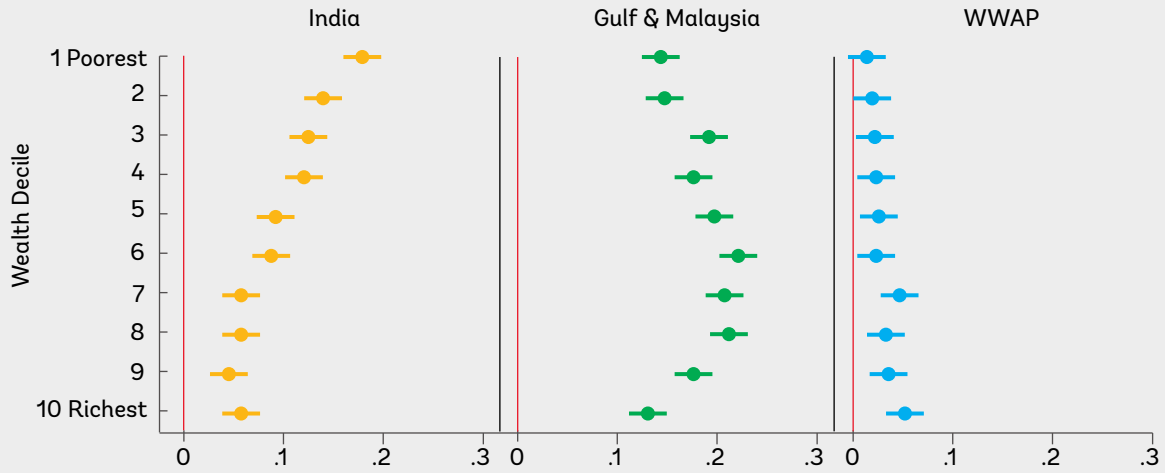


Source: Figure 2.8 - NLSS 2010/11 and 2022/23; Figure 2.9 – KNOMAD-ILO Migration Costs Survey 2015 and 2016 and per capita GDP from WDI.

Similarly, wealthier households are increasingly more likely to send members to destinations with high economic returns than poorer households (Figure 2.8). The probability of households sending a member to India decreased across the wealth groups between 2011 and 2023, especially among those in the middle of the wealth distribution. With an already low probability of migrating to India, the decrease was smaller among the wealthiest households. The likelihood of migrating to the GCC & Malaysia increased for the less wealthy (bottom 30 percent), with some exceptions. Similarly, the increase in the probability of migrating to the premier WWAP destinations was significantly more pronounced among the wealthiest households.

The link between household wealth and the destination type suggests that liquidity constraints restrict migration choices (Figure 2.10). The predictive probabilities from a multivariate logistics model show a clear pattern of the economic class of migrants and their destination choices. Consistent with other studies in Nepal (Shrestha M. , 2017b; Adhikari, Rai, Baral, & Subedi, 2023), migration to India is most popular among the poorest households. Controlling for various household characteristics and geographic factors, the propensity of sending a member to India decreases with the wealth level. The propensity of having a migrant in the GCC countries and Malaysia is relatively high across the distribution but is highest among middle and upper-middle-class households (deciles 5 to 8). However, only households in the highest wealthiest decile have a meaningful and statistically significant probability of migrating to WWAP destination, most likely due to sufficient liquidity to cover the higher migration costs.

Figure 2.10. There is a strong wealth and migration association by destination



Source: World Bank Staff estimates using the NLSS 2022/23 data.

Note: Predictive margins and their 95% confidence levels after fitting logistic models are reported in the figure. Other controls used in the models are household head's caste/ethnicity, highest adult education in the household, household size, number of adult male members, number of domestic migrants, log of road distance of municipality from Kathmandu, Urban/Rural status of municipality, municipality destination-specific international migration rates, and province fixed effects. Standard errors are clustered at the primary sampling unit (PSU) level.

Wealthier migrants send more remittances, reflecting their access to higher-return destinations compared to poorer migrants (Figure 2.11). Migrants across all wealth deciles are equally likely to send remittances home at least once over the previous 12 months. However, there is a strong positive correlation between household wealth and the number of times migrants sent remittances. Migrants from wealthier households also sent significantly more remittances, with those in the wealthiest decile sending 5.1 times more remittances than those in the poorest decile. Destination-specific results show that the premier destinations with high migration costs are associated with significantly higher returns compared to the lower-cost destinations. While most migrants finance their moves to the GCC and Malaysia with high-interest loans (Kharel, Bhattarai, & Tumsa, 2023a), this may not be feasible to finance even costlier WWAP destinations.

Finally, household social standing and caste/ethnicity also affect migration and destination patterns (Adhikari, Rai, Baral, & Subedi, 2023). The economic cost of migration does not vary by caste/ethnic groups (Kharel, Bhattarai, & Tumsa, 2023a) nor by the location of the origin community. However, Factors that reflect a household's social standing, such as the highest adult education, are strong predictors of the destination choice (Shrestha M. , 2017b). Similarly, historical legacies perpetuated through social networks affect the migration patterns of different ethno-caste groups (Williams, et al., 2020). For example, the high-caste Brahmins and Chhetris, which exhibit higher income, education, and better social networks, have higher migration to premier destinations. On the other hand, the lack of migration history and culture among the Terai Janajati discourages their out-migration altogether (Williams, et al., 2020). These findings imply that in addition to migration costs, non-pecuniary factors also act as barriers to higher-return migration for poorer and certain population segments.

Figure 2.11. … and it has important implications both on the frequency and amount of remittance migrants send home.

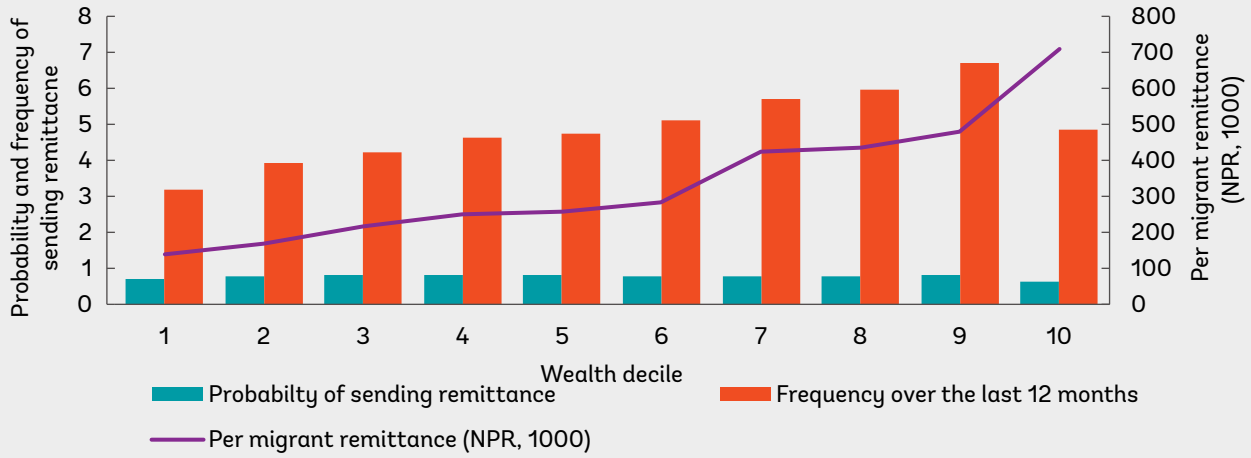
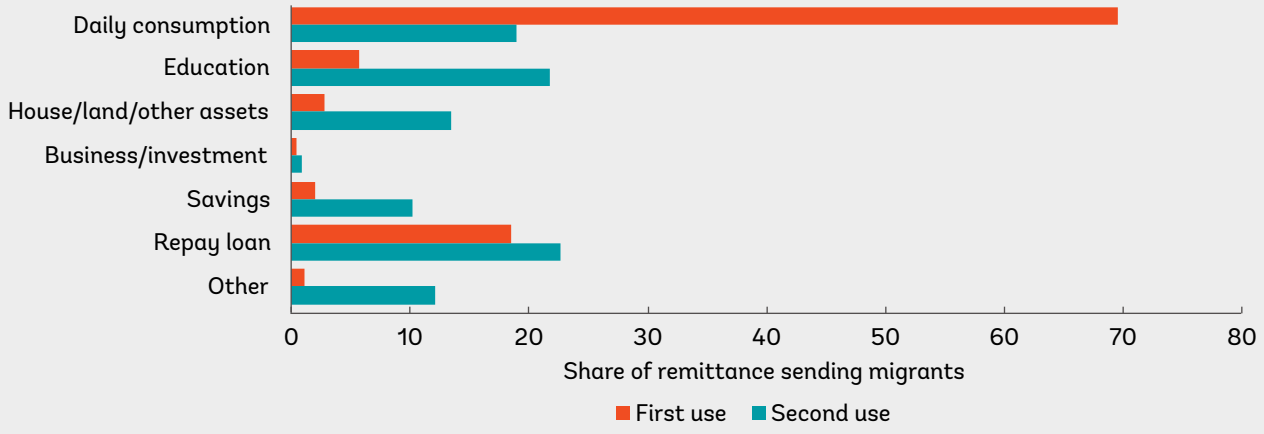


Figure 2.12. Remittances are primarily used for daily consumption and repaying loans.



Source: World Bank Staff estimates using the NLSS 2022/23 data.

Note: Figure 2.12 presents the share of migrants by usage of their remittance by their families at home.

Household use of remittances from family members abroad primarily revolves around daily consumption and repaying loans (Figure 2.12). Most migrants (70 percent) send remittances primarily to support their family's daily consumption. Given high migration costs and Nepali workers relying on high-interest loans to finance their moves, it is not surprising that almost one-fifth of migrants send remittances to repay their loans. While educational investment is the most cited secondary use of remittances, daily consumption and repaying loans are as prominent. This

may reflect that remittances are not large enough for many households to support beyond their basic expenditures, and low-skilled migration remains primarily a survival strategy rather than an investment. It may also partially explain the extremely low take-up of the government's saving instruments to channel private remittances into development investment, such as investment the Foreign Employment Savings Bonds (FESB).[20]

2.3. During migration: The benefits for migrant-sending communities and households

2.3.1. Remittances strengthen household resilience and affect migrants' home-communities

International labor migration remains the key driver of progress on living standards and poverty reduction in Nepal. Remittances directly contributed to over 30 percent of the poverty reduction observed between 2011 and 2023. This is in line with the historical role migration and remittances have played, having accounted for 27 percent of the poverty reduction between 1995 and 2010 on the national level and 33 percent in rural areas (Tiwari, 2016).[21]

Incomes from abroad contribute significantly to sustaining household expenditures and increasing overall consumption. They benefit households across the consumption distribution, especially when compared to households in the neighboring countries (Figure 2.13). In 2023, a Nepali household, on average, was likely to receive more than 20 percent of its expenditure from remittances. This is almost three times higher than the average household in the regional peer countries. Remittances ranged from 17 percent of household expenditure among the bottom quintile to nearly 25 percent among Nepalis in the richest quintile. Moreover, fueled by remittances, Nepali households experienced over a 65 percent rise in consumption during the last decade. The average per-person consumption expenditure increased by 66 percent between 2011 and 2023. This is more pronounced for the households at the bottom of the expenditure distribution (Figure 2.14). While it increased by 71 percent for the bottom 40 percent, consumption expenditure among those in the top 6 deciles increased by 68 percent.

Figure 2.13. Financial flows from migrants abroad account for significantly more of Nepali households' finances across the distribution than their peers in the region.

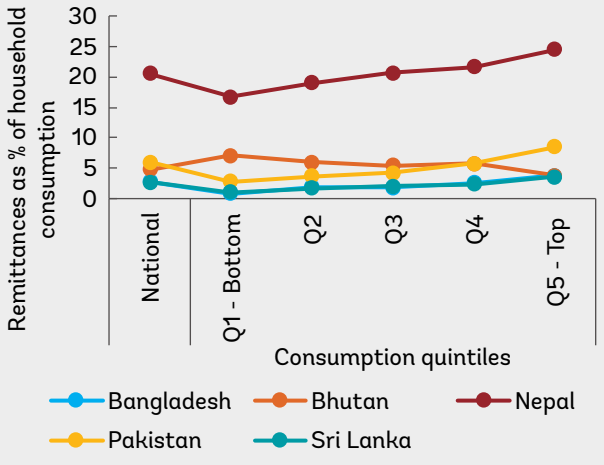
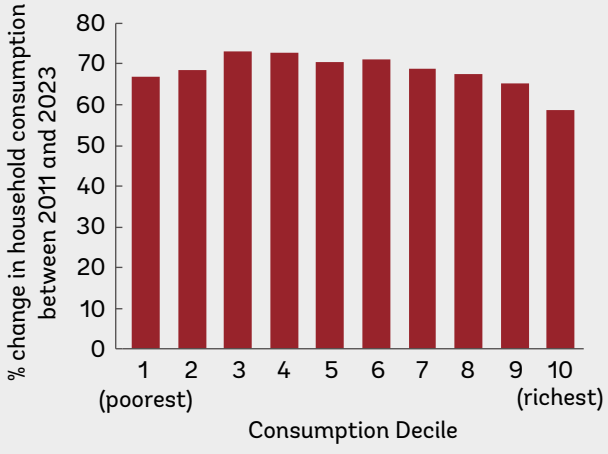
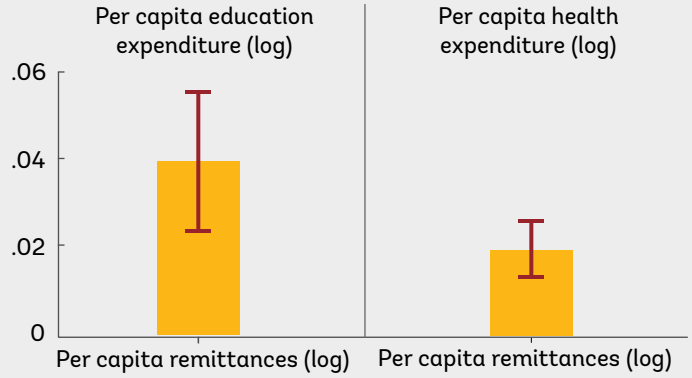


Figure 2.14. Household expenditures have improved across the distribution.



Source: Figure 2.13, World Bank staff estimates using Bangladesh's 2022 HIES, Bhutan's 2022 BLSS, Pakistan's 2018 HIES, Nepal's 2022/23 NLSS, and Sri Lanka's 2019 HIES; Figure 2.14, World Bank staff estimates using the NLSS 2022/23 data.

Figure 2.15. Remittances from a member abroad are strongly linked with human capital investments.



Source: World Bank Staff estimates using the NLSS 2022/23 data.

Note: Each column is a separate regression model. Controls used in the OLS regressions are household head's caste/ethnicity, highest adult education in the household, household size, log of road distance of municipality from Kathmandu, Urban/Rural status of municipality, and province fixed effects. Standard errors are clustered at the primary sampling unit (PSU).

Remittances are associated with increased investment in education and health (Figure 2.15). There is a strong positive correlation between the amount of remittances from family members living abroad and non-food expenses, particularly on education and healthcare. Controlling for a host of other characteristics, a one percent increase in per capita remittances is associated with a 0.04 and 0.02 percent increase in per capita education and health expenditures. These findings are particularly significant given the track record of migration and remittances leading to positive educational outcomes in Nepal, particularly for girls (Shrestha M., 2017a).

Table 2.1. Local labor market spillovers

	LABOR FORCE PARTICIPATION	EMPLOYED	PARTICIPATION IN		
			Agriculture	Manufacturing	Services
	All working age (15-64)				
Municipality migration rate X no international migrant in HH	0.326**	0.304**	0.0728	0.0440	0.185*
	(0.138)	(0.140)	(0.0754)	(0.101)	(0.0966)
Municipality migration rate X international migrant in HH	-0.683***	-0.823***	0.0157	-0.358***	-0.480***
	(0.142)	(0.140)	(0.0718)	(0.0940)	(0.0946)
Observations	23,981	23,981	23,981	23,981	23,981
R-squared	0.142	0.141	0.034	0.043	0.164
Number of clusters	800	800	800	800	800
	Female working age (15-64)				
Municipality migration rate X no international migrant in HH	0.289*	0.266*	0.0969	0.00445	0.165*
	(0.155)	(0.151)	(0.0731)	(0.0972)	(0.0951)
Municipality migration rate X international migrant in HH	-0.290*	-0.483***	-0.00539	-0.119	-0.357***
	(0.149)	(0.140)	(0.0725)	(0.0910)	(0.0904)

	LABOR FORCE PARTICIPATION	EMPLOYED	PARTICIPATION IN		
			Agriculture	Manufacturing	Services
Observations	13,586	13,586	13,586	13,586	13,586
R-squared	0.112	0.110	0.037	0.026	0.139
Number of clusters	800	800	800	800	800
			Male working age (15-64)		
Municipality migration rate X no international migrant in HH	0.262	0.248	0.0683	-0.000901	0.176
	(0.186)	(0.190)	(0.0943)	(0.160)	(0.150)
Municipality migration rate X international migrant in HH	-0.607***	-0.768***	0.0905	-0.327**	-0.537***
	(0.201)	(0.203)	(0.0948)	(0.159)	(0.153)
Observations	10,395	10,395	10,395	10,395	10,395
R-squared	0.174	0.169	0.038	0.087	0.173
Number of clusters	800	800	800	800	800

Source: World Bank Staff estimates using the NLSS 2022/23 and the 2021 Population Census data.

*Note: Estimates do not include subsistence activities as labor market activities and migration rates are expressed in percentages. Controls used in the regressions are years of education, age, age squared, household head's caste/ethnicity, highest adult education in the household, household size, log of road distance of municipality from Kathmandu, Urban/Rural status of municipality, and province fixed effects. Standard errors, clustered at the primary sampling unit (PSU), are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.*

Estimates also suggest that high rates of international migration at the municipal level are linked to greater labor market participation of adults from non-migrant households (Table 2.1). A one percentage point increase in the rate of international migration in a municipality is associated with a 0.33 percentage point increase in the labor force participation rate and a 0.30 percentage point increase in the employment ratio among adults from non-migrant households. This is primarily driven by the increased participation of working-age females from non-migrant households in the service sector.

On the other hand, the local-level migration rate is negatively correlated with the labor force participation of adults from migrant-sending households (Table 2.1). When not accounting for subsistence agricultural activities, a high out-migration rate is associated with reduced labor force participation and employment ratios of both male and female adults from migrant-sending households. As explored in Phadera (2019) and Lokshin & Glinskaya (2009) in the context of Nepal, labor supply of left-behind adult members may decrease due to increased leisure consumption resulting from higher income through remittances. A more plausible reason in the context, especially for women, is that the remaining household members may take on more household responsibilities likely to compensate for the roles vacated by the male members abroad (Phadera, 2019).

Table 2.2. Annual earnings for daily wage workers increase with higher migration rates and return on education is high across migration rates.

	LOG (WAGE)		LOG (DAILY WAGE)		LOG (LONG-TERM CONTRACT WAGE)	
	All					
Municipality with high migration rate	0.0701		0.183**		-0.0459	
	(0.0498)		(0.0739)		(0.0541)	
Municipality with low migration rate X Years of education		0.101***		0.0706***		0.0733***
		(0.00620)		(0.0100)		(0.00667)
Municipality with high migration rate X Years of education		0.103***		0.0802***		0.0711***
		(0.00650)		(0.0107)		(0.00735)
Observations	5,295	5,295	2,380	2,380	2,616	2,616
R-squared	0.207	0.206	0.130	0.126	0.246	0.245
Number of clusters	787	787	641	641	694	694
Difference (High Migration - Low Migration)		0.00201		0.00954		-0.00220
HO: High Migration - Low Migration = 0 p-value		0.666		0.330		0.627
HO: High Migration - Low Migration >= 0 p-value		0.667		0.835		0.314
	Female					
Municipality with high migration rate	0.145		0.392***		-0.0401	
	(0.0903)		(0.120)		(0.117)	
Municipality with low migration rate X Years of education		0.101***		0.00138		0.0714***
		(0.0117)		(0.0232)		(0.0132)
Municipality with high migration rate X Years of education		0.110***		0.0429**		0.0723***
		(0.0122)		(0.0208)		(0.0142)
Observations	1,732	1,732	750	750	926	926
R-squared	0.266	0.265	0.177	0.165	0.233	0.232
Number of clusters	633	633	366	366	462	462
Difference (High Migration - Low Migration)		0.00908		0.0415		0.000856
HO: High Migration - Low Migration = 0 p-value		0.298		0.0446		0.925
HO: High Migration - Low Migration >= 0 p-value		0.851		0.978		0.538

	LOG (WAGE)		LOG (DAILY WAGE)		LOG (LONG-TERM CONTRACT WAGE)	
	Male					
Municipality with high migration rate	0.0511		0.167**		-0.0591	
	(0.0471)		(0.0685)		(0.0500)	
Municipality with low migration rate X Years of education		0.0649***		0.0158		0.0639***
		(0.00640)		(0.0105)		(0.00784)
Municipality with high migration rate X Years of education		0.0649***		0.0205*		0.0600***
		(0.00655)		(0.0116)		(0.00778)
Observations	3,563	3,563	1,630	1,630	1,690	1,690
R-squared	0.190	0.189	0.127	0.122	0.273	0.272
Number of clusters	766	766	594	594	619	619
Difference (High Migration - Low Migration)		-2.94e-05		0.00473		-0.00381
HO: High Migration - Low Migration = 0 p-value		0.995		0.629		0.354
HO: High Migration - Low Migration >= 0 p-value		0.497		0.685		0.177

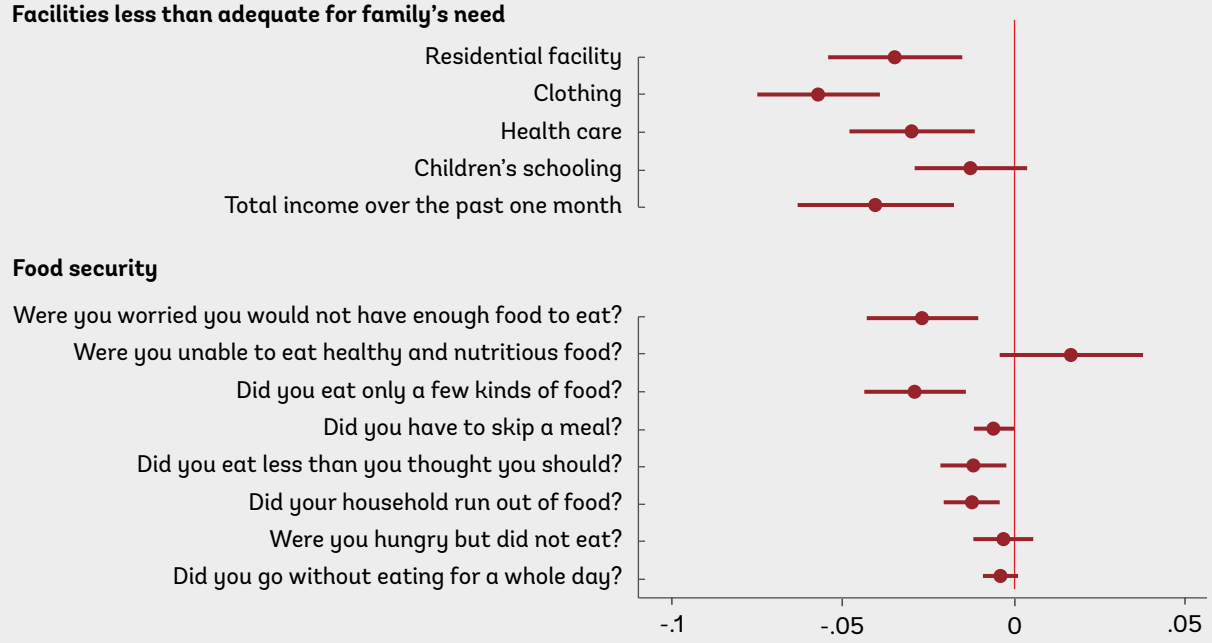
Source: World Bank Staff estimates using the NLSS 2022/23 and the 2021 Population Census data.

*Note: The outcome variables are annual earnings from wage jobs; the survey did not collect information on working time. Nepal's 753 local municipalities are divided into high- and low-migrant-sending areas based on migration rates above or below the median. The sample is limited to those with wage employment. Controls used in the regressions are years of education, years of work experience and its squared, household head's caste/ethnicity, highest adult education in the household, household size, log of road distance of municipality from Kathmandu, Urban/Rural status of municipality, and province fixed effects. Standard errors, clustered at the primary sampling unit (PSU), are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.*

High municipal migration rates are also associated with higher wages for daily-wage laborers (Table 2). While overall and long-term wages do not vary by the level of local migration outflows, daily wages in areas with high migration rates are 20 percent higher than in low migration areas. This is true for both male and female daily wage workers. The wage premium is higher for female workers, whose wages are 48 percent higher in municipalities with high migration rates compared to municipalities with low rates. The difference is less pronounced for male workers, with a premium of 18.3 percent. Returns on education are high but do not differ by migration rates. One additional year of education is associated with 10.6 percent higher annual wage earnings in low migration areas and 10.8 percent in higher migration areas. Education returns are generally higher for long-term contract workers than for daily laborers and for female workers than male workers.

Controlling for other characteristics, international migration improves the subjective adequacy of household living standards and resilience to food insecurity (Figure 16). Households with a member abroad are significantly less likely to report less than adequate family living standards. Similarly, migrant households tend to have less experience of food insecurity in the past 12 months. They are less likely to worry about not having enough food (2.3 percent), eating less variety of food (2.9 percent), skipping meals (0.6 percent), or running out of food (1.2 percent). These results align with the established evidence that migrant household members abroad act as insurance for the household in the context of high exposure to shocks and limited access to formal assistance (Yang & Choi, 2007). Relatedly, the correlation between the labor income loss during COVID-19 and economic distress was close to zero for migrant households in Nepal (World Bank, 2021).

Figure 2.16. Adequacy of family's standard of living and food security.



Source: World Bank Staff estimates using the NLSS 2022/23 data.

Note: Coefficient on a household with and without an international migrant indicator and its 95% CI reported in the figure. Each coefficient is a separate regression model. Controls used in the regressions are household head's caste/ethnicity, highest adult education in the household, household size, log of road distance of municipality from Kathmandu, Urban/Rural status of municipality, and province fixed effects. Standard errors are clustered at the primary sampling units (PSU).

2.3.2. But migration comes with considerable risks

These economic rewards, however, may be taxing to both the migrants and their families. Much of social and domestic life in the household is put on hold when young male member/s go abroad temporarily and possibly for multiple stints (World Bank, 2018). While international remittances have improved investment in child health and education in Nepal, many children face the prospect of not having both parents present during their formative years. The absence of a parent may have important emotional and psychological implications for the left-behind children (Fellmeth, et al., 2018) and may even impact their academic performance (Antman, 2013). Additionally, a growing body of literature shows mixed evidence regarding the impacts of migration on left-behind members' non-monetary outcomes, especially on female members. It can reduce women's labor participation and increase their agricultural and unpaid family work (Bossavie, 2023; Lokshin & Glinskaya, 2009; Phadera, 2019; Binzel & Assaad, 2011). Moreover, it may overburden the left-behind members with extra pressure to take up additional household responsibilities (Démurger, 2015).

Nepali migrants continue to face considerable health, safety, and legal challenges abroad, including a high incidence of deaths. The Nepal Labour Report 2022 highlights these critical issues faced by migrants. With increasing numbers of Nepalis going abroad for work, the death toll among migrants has risen. Yearly deaths have mounted to over 1,000 in recent years, with an annual rate of more than 150 in each of the Gulf and Malaysia destinations (MOLESS, 2022; Kathmandu Post, 2024). Migrants in these destinations endure harsh living and working conditions without access to healthcare, social protection, and other basic services while facing high occupational hazards and long working hours. These poor conditions and lack of social support, along with the persistent pressure to send remittance home, contribute to migrants' poor mental and physical health (MOLESS, 2022) and can remain persistent even during old age (Ghimire & Bhandari, 2020).

Contract fraud, particularly during the recruitment phase, and employer exploitation while abroad remain key concerns. Prospective migrants often encounter contract deception not only about the nature of the job abroad but false contracts altogether. Most of the complaints filed at the migration resource centers (MRCs) are related to "cheating" during the pre-departure phase (MoLESS, 2020). While abroad, workers may be misled about the type of employment, salary, working hours, and their initial contracts not being honored. In addition, many employers continue to practice withholding travel and legal documents, leaving migrants with no choice but to work for them and severely restricting migrants' movements.

2.4. Post-migration: Remigration and reassimilation in the labor market

2.4.1. Migrants struggle to effectively reassimilate

Most of the migration from Nepal is temporary, with migrants eventually returning to the country. GCC countries and Malaysia, which absorb most workers, do not offer a path to permanent residence. These temporary periods typically last several years to a decade or more. Between 2016/2017 and 2022/23, renewal permits accounted for an average of 40% of total labor permits (Author calculation from FEIMS data). Workers typically spend at least four years abroad, with the average contract duration being only two years.

The lack of systematic record-keeping of returnees creates a challenge to estimate the extent of return migration accurately. Efforts to address this issue include the integration of the FEIMS with the Nepali Port, managed by the Department of Immigration (DOI), to record the number of returning migrants at Tribhuvan International Airport (MOLESS, 2022), the main international airport in the country. However, it is not clear if the system distinguishes between migrants returning for a short holiday period or those who return after completing a contract with the intention of staying in the country. The latter will require reassimilation into society and systematic reintegration into the domestic labor market.

Remigration is high and indicates the structural weaknesses in the domestic labor market. In a 2020 World Bank survey of 2000 returnees in high migration districts across all seven provinces, 40 percent reported migrating more than once, and 32 percent reported migrating to more than one country, with individuals spending 1.5 years on average between adjacent migration spells (Sharma, Sherpa , & Goyal, 2020). The high renewal rate of labor permits is another indication of the challenge. The 40 percent renewal rate presented above is a lower bound estimate of remigration, as many permits that are recorded as "new" in the FEIMS are remigrations. The FEIMS records remigration for contracts with new employers/or destinations and those issued after the renewal deadline as "new" permits. Remigration for different employment with a different permit is common as language skills, experience, and networks gained during previous stints help migrant workers secure better jobs in their next spell - migrant salaries increase by 12% on average during a permit renewal (Sapkota, Shrestha, & Shrestha 2020).

Returnees face significant challenges in reassimilating into the domestic labor market and returns from participating in the domestic labor market are lower for returnees. Based on the nationally representative Nepal Labor Force Survey (NLFS) 2017/18 analysis[22], the majority of the returnees were either unemployed (14.3 percent) or remained out of the labor force (41.5 percent), and even among those with jobs, over 75 percent were employed in the informal sector (MoLESS, 2020). The figures are even more drastic for younger return migrants. Based on the same survey, the labor force participation rate of male returnees aged 25-44 was 20 percentage points lower than non-migrants (Sapkota, Shrestha, & Shrestha, 2021). Even when accounting for potential preference for leisure among migrants, the trend holds. The same analysis shows that returnees also underperform on other labor market outcomes, such as employment rate and salary in the first year but are likely to catch up over time. As has been shown for new labor market entrants (Banerjee & Gaurav, 2018; Duflo, Dupas, & Kremer, 2021), a mismatch between the expectation and the reality (discussed below) may hold the returnees back in the initial years, but as time passes,

the increased economic compulsion may force them to accept the same jobs. On the other hand, the observed improved labor market indicators over time may simply be because many discouraged returnees remigrate, leaving mostly those who are able to reassimilate into the domestic labor market.

The difference in labor market outcomes between returnees and non-migrants in the initial years can be partly attributed to the vastly different skill sets the returnees bring from abroad compared to the demand of the domestic labor market. Only a fraction of returnees utilize the skills learned abroad. According to the NLFS 2017/18, only 15.1 percent of returnees were employed in the same occupational category as abroad (MoLESS, 2020). Other surveys show that about 25 percent of returnees reported utilizing the skills learned during their work abroad upon returning (Kharel, Bhattarai, Tumsa, Gupta, & Sen, 2022; IOM, 2021). The migration experience is also likely to increase reservation wages. Given the undersupply of jobs at the expected higher wages, returning migrants may be further discouraged from entering the job market.

Thus, returnee preference for self-employment remained high. Among the employed returnees in the NLFS 2017/18, almost half (43.7 percent) were either employers, own account workers, or contributing workers (MoLESS, 2020). Similarly, in a survey of 1,400 returnees conducted in Koshi province, the highest proportion were employed in self-employment agriculture, mainly farming and plantation (34.9%) (IOM, 2021). These patterns are not unique to Nepal. For example, in Bangladesh, two-thirds of the returnee migrants work in some form of entrepreneurial or self-employment activity as opposed to only a third of similarly educated nonimmigrant workers (World Bank, 2023).

2.5. Looking ahead: Reducing costs, increasing benefits, boosting long-term growth

Systematic migration management through an inclusive institutionalized system is critical for sustainability and maximizing the rewards from migration. The government of Nepal has started developing an institutionalized migration system, as seen in the current governance structure reported in Table A1. However, more should be done to make migration more affordable and equip future migrants with skills and information to make migration safer and better remunerative. The system should evolve using current evidence and lessons from other countries. Including different stakeholders, with the current and ex-migrants as key partners, is important for effective migration management. Nepal's current predominantly low-skilled economic migration matches the strong demand at the destination countries. This provides a basis for designing policies focusing on increasing benefits and reducing migration costs (World Bank, 2023) for contemporaneous migrations with an eye for longer-run skill and destination diversification.

Incorporating migration as a core set of policies within the country's development, job, and poverty reduction strategies will provide a platform to work towards such a system and will have larger benefits that are shared across the distribution (World Bank, 2023). This will entail reducing costs and increasing benefits in all three stages of migration, namely before, during, and post-migration. Countries like the Philippines and Bangladesh are good examples for Nepal to follow.

Addressing the structural issues in the domestic labor market will be important for Nepal to create a vibrant domestic economy where local opportunities can retain people and/or harness new skills. While improving local labor markets will support the reassimilation of returnees, it will also improve opportunities for those left behind and broaden choices if faced with migration decisions in the first place. If managed effectively, the current migration and remittances-based model can contribute to the effort of strengthening local labor markets. Based on the evidence presented in this review, this section provides policy recommendations for different stages of the migration cycle to enhance benefits and reduce costs. Table 2.3 summarizes the policy actions, which are discussed in detail in the rest of the section.

Table 2.3. Policy recommendations to improve migration outcomes

	POLICY RECOMMENDATIONS			
	Recommendation	Fiscal Impact	Recommendation	Fiscal Impact
	Creating Opportunities			
Tier 1	Expand formal bilateral labor arrangements and increase awareness of existing ones.	● Low	Improve monitoring and implementation of formal labor arrangements and provide effective consular support.	● Low
Tier 1	Include better provisions for worker protection and improvement in labor market outcomes while abroad in formal bilateral arrangements.	● Low	Lower the cost of sending remittances.	● Low
Tier 2	Expand affordable financing and information about destination markets and domestic exit processes in lagging areas and among the less well-off.	● Low	Improve data on returnees and evidence of existing policy interventions.	● Low
	Creating Capabilities			
	Enhance pre-departure training without increasing the cost burden to improve migrants' preparedness.	● Low	Understand destination economies and enable reskilling per demand.	● Low

Recommendation 1: Expand formal bilateral labor arrangements to new emerging destinations and increase awareness of existing arrangements among workers and civil society.

Summary of the issue: Studies have shown some common issues in bilateral agreements that are also relevant to Nepal and are discussed below. The issues are weak monitoring and enforcement mechanisms; inadequate protection compared to regulation and market; overlooking gender sensitivity; lack of guarantee of minimum standards of employment; and malpractices of migration intermediaries; and lack of engagement and consultation with civil society (Wickramasekara 2006, Go 2007).

Labor permits in Nepal are granted to over 150 countries, but formal bilateral labor arrangements (such as Bilateral Labor Agreements - BLAs or Memorandum of Understanding MoUs) exist with only a dozen countries. Out of the top thirteen countries where over 10,000 permits have been issued from 2020/21 to 2022/23, only 7 have formal labor relations. It's worth noting that Saudi Arabia and Kuwait, which are the second and fifth largest destinations for Nepali workers, do not have a Bilateral Labor Agreement (BLA) or a Memorandum of Understanding (MoU) with Nepal. Similarly, emerging destinations like Portugal, Malta, Cyprus, Croatia, Poland, Maldives, and Türkiye, where over 10,000 Nepali workers are estimated to be present, do not have formal bilateral labor arrangements with Nepal. This lack of formal arrangements may result in informal labor movements, leading to high costs for migrants, making protection and welfare expensive or inaccessible, and preventing the labor market from reaching its full potential. Increasing awareness of existing bilateral labor arrangements can assist potential migrants in making informed decisions, while current migrants can seek support when needed. However, knowledge about these formal bilateral arrangements and the protection they provide remain low among both aspiring and current migrants (People's Forum for Human Rights, 2021) (The Five Corridors Project, 2021).

How: Nepal should explore expanding formal labor arrangements to emerging destinations. The focus should be on improving transparency by maintaining an up-to-date repository of all existing agreements, including content from bilateral labor arrangements in pre-departure training materials and information and communication sources,

and increasing engagement with civil society and other organizations in developing, implementing, and monitoring bilateral labor arrangements.

Example: The Philippines Overseas Employment Administration (POEA) is tasked with promoting and developing overseas employment. It regulates and oversees the employment processes that Overseas Filipino Workers (OFWs) undergo, but its core functions extend beyond this role. As an employment facilitator, the organization monitors overseas labor markets, conducts marketing missions, and enters into Bilateral Labor Agreements (BLAs) and Memoranda of Understanding (MoUs) with host countries regarding the hiring of OFWs. This also includes participating in the drafting of both bilateral and multilateral agreements (POEA, 2016). Additionally, the POEA maintains a public repository of existing BLAs, which includes both land-based and sea-based agreements. The organization fosters strong connections with non-governmental organizations and workers' organizations. To further support OFWs, the Overseas Workers Welfare Administration (OWWA) provides mandatory country-specific, and sometimes skill-specific, Pre-Departure Orientation Seminars (PDOSs), while the Department of Migrant Workers offers Pre-Employment Orientation Seminars. These seminars cover standard employment contract terms and work standards as outlined in the bilateral labor arrangements (OWWA, 2024).

Recommendation 2: Improve monitoring and implementation of formal labor arrangements based on evidence and provide effective consular support abroad.

Summary of the issue: Implementation of the existing bilateral labor arrangement remains weak despite Nepal's increased efforts in the last decade. The diplomatic engagement has shown results such as the reversal of a labor ban for Nepalese in Malaysia in 2018, the "free ticket, free visa" policy requiring employers to bear recruitment costs to the GCC countries, moving payments through formal banking, and ensuring timely payments by employers, etc. However, implementation of these policies remains weak. For example, the "free ticket, free visa" policy, the prohibition on withholding migrants' passports and other documents by employers, and the availability of free legal counsel abroad have not been effectively implemented or implemented at all (People's Forum for Human Rights, 2021) (Pokhrel, 2024).

How: To ensure effective implementation, it is crucial to regularly review and monitor formal bilateral labor agreements. Cachon (2004), Wickramasekara (2006), and Go (2007) identify five key aspects for monitoring and evaluating these processes: efficacy (comparing expectations with results), conformity (verifying if results align with established procedures), pertinence (assessing if the agreement meets the needs), efficiency (conducting a cost-benefit analysis), and impact (evaluating the effect on the system and stakeholders in both origin and destination countries). Based on the findings from these reviews, negotiations should be initiated to add or amend provisions and improve implementation measures. It is also vital to enhance the dissemination of information about the agreements to the public and migrant workers to ensure better implementation.

Examples: The Philippines has established a coordinating oversight body called the Department of Labor and Employment (DOLE) Committee to enhance the implementation of BLAs for better protection of overseas Filipino workers. The country also assigns focal points at its embassies overseas to monitor signed MoUs. Similarly, India has established the Indian Workers' Resource Centre (IWRC) in various cities in the UAE, Saudi Arabia, and Malaysia, which have round-the-clock call centers to register grievances, verify job offers, and provide various other supports to its citizens (Ministry of External Affairs, Government of India, Media Center, 2018).

Recommendation 3: Include better provisions for both worker protection and improvement in labor market outcomes while abroad in formal bilateral arrangements (e.g., ensuring labor market flexibility for workers abroad).

Summary of the issue: The existing bilateral labor agreements do not adequately address worker protection and welfare, as well as tools to enhance labor market outcomes at the destination. While these agreements have helped open up recruitment channels, they fall short in ensuring worker protection and welfare. Additionally, they do not address factors that can improve labor market outcomes for migrants abroad, such as job mobility, skills certification, and recognition (The Five Corridors Project, 2021). Furthermore, despite increased demand for resumption from destination countries, Nepal continues to ban female workers from traveling abroad for domestic work, severely limiting their opportunities (Pandey, 2023). It is crucial to improve these formal labor arrangements to ensure access and protections for all its citizens.

How: Include provisions that improve labor market outcomes for workers, such as ensuring labor mobility, and skill training and recognition. Open pathways for female migrants in sectors that have been banned due to issues of protection by including provisions for access and protection in sufficient detail in these agreements and implementing them rigorously.

Example: The Philippine government emphasizes the inclusion of specific provisions in Bilateral Labor Agreements (BLAs) to protect women migrant workers. For instance, the 2018 Kuwait-Philippines Agreement on the Employment of Domestic Workers requires that recruitment and employment processes follow a standard contract. The agreement imposes legal penalties on employers, domestic workers, and recruitment agencies from both Kuwait and the Philippines for any violations of the contractual or legal terms. It also prohibits employers from confiscating the identification documents of domestic workers (ASEAN, 2022). The UAE-India Harmonized Framework for Skill Recognition and Certification, on the other hand, ensures that the skills of migrant workers align with the demands of the UAE labor market. Importantly, these certified skills are recognized across various employers and sectors, allowing for mobility between industries without the need for redundant training or assessments. This enhances job security and reduces vulnerabilities for migrant workers (Global Forum on Migration and Development, 2023).

Recommendation 4: Lower the cost of sending remittances.

Summary of the issue: The average transaction cost of sending remittances to Nepal have been on a decline since 2017, with a slight increase between 2022 and 2023 but remain below the global average (The World Bank, 2024). Access to bank accounts abroad and use of formal channels have also improved. However, Informal channels continue to be popular, and use of digital modes remain low. Over 20 to 30 percent of all remittances in certain corridors are still sent through informal channels, which provide a price advantage through better exchange rates and/or faster transfer times compared to formal channels. Limited digital and financial literacy contributes to the low use of digital channels, and the adoption varies based on gender, digital literacy, income level, and urbanicity (United Nations Capital Development Fund, 2022). Mobile digital money has the lowest costs compared to other channels, but its potential growth and availability is constrained by regulations aimed at money laundering and the financing of terrorism (World Bank, 2023).

How: Promote competition in both the sending and receiving countries and ensuring that migrants and their families can compare the costs of all the channels available to them is important (World Bank, 2023).

Example: Since its launch in 2007, M-Pesa has transformed financial inclusion in Kenya by allowing users to deposit, send, and withdraw funds using their mobile phones. It is highly regarded for its transparency, featuring fixed transaction fees that facilitate easy cost comparisons with other services (The Star, 2023). Over the years, M-Pesa has partnered with providers such as Western Union, PayPal, WorldRemit, and Remitly to enable cross-border money transfers. Today, M-Pesa is widely used by Kenyan migrant workers to send money back home (Velmie, 2024).

Recommendation 5: Expand affordable financing opportunities and information about destination labor markets and domestic exit processes, including costs and formal financing options in lagging areas and among the less well-off segment of the population.

Summary of the issue: Despite the significant improvements over the last decade, international migration opportunities remain unequal regarding information, access, and overall cost to migrate Those in the poorest provinces of Sudurpaschim and Karnali are still unable to fully reap the benefits offered by destinations beyond India. To find jobs abroad, many rely on sub-agents, relatives, and friends (International Trade Union Confederation, 2023), which may provide inaccurate information leading to incorrect expectations. For example, potential migrants from Nepal overestimate the increase in earnings and mortality risk associated with working in Malaysia and the GCC countries (Shrestha M., 2020). Additionally, most migrant workers rely on informal loans to finance their moves, facing very high interest rates (Kharel, Bhattarai, & Tumsa, 2023a). Thus, efforts to expand affordable financing opportunities and improve the reach of verifiable information on available destinations can help lower costs and increase returns for potential migrants.

How: The Department of Foreign Employment (DoFE) and the Foreign Employment Board (FEB) have launched platforms such as the Foreign Job Search (foreignjob.dofe.gov.np) and the Employment Exchange Market (jobs.feb.gov.np) to enhance transparency in the recruitment process (MOLESS, 2022). The Foreign Job Search platform even provides links to advertisements posted by manpower agencies in the newspapers that are required by regulations to obtain labor permits. However, newspapers and these portals are mostly fit for urban and more educated audiences. Therefore, ensuring wider communication and reach to rural and lagging areas will require working with local governments, utilizing community-based mechanisms such as community-level organizations and volunteers, and popular media such as radio programs (Ahmed & Bossavie, 2022). Migrant Resource Centers (MRCs) provide this information to a certain extent, but coverage is limited (38 districts currently). Additionally, the government can expand financing options and provide gainful access to migration opportunities to the least well-off and lagging groups and areas through targeted low-interest loans, grants, and incentives to recruitment agencies.

Example: Indonesia's Ministry of Manpower delivers migration-related services to migrant workers and families at the village level. The Desmigratif program (Desa Migran Produktif, or Productive Migrant Village, a safe migration program) provides information services, data collection, education services tailored to villagers' needs, and economic activities for returnees and their families. (Ahmed & Bossavie, 2022). Similarly, Bangladesh has established a migration-focused bank that provides loans to finance the costs of migration (Bossavie, 2023b).

Recommendation 6: Improve data on returnees and evidence of existing policy interventions by conducting a rigorous evaluation of existing policies and interventions for effective labor market reintegration. Focus on job matching, recognition of skills learned abroad (sector-specific and soft skills), reskilling per domestic labor demand, and promoting entrepreneurship among returnees.

Summary of the issue: The data on returnee migrants remain scarce. The current programs for retraining/reskilling and promoting returnee entrepreneurship with soft loan remain out of reach for the most, with very few returnees having information or utilizing them (IOM, 2021). Efficacy of these programs is not obvious since no rigorous evaluations have been done. Unlike job-specific skills, soft skills such as work ethic, time management, and communication/customer care are highly transferable across jobs in different sectors. These are the skills returnees are most likely to report improving while working abroad and can be easily applied to jobs in Nepal, particularly in the growing service sector. Attention to these types of skills remains limited, and a better understanding of which, when combined with industry-specific reskilling, can reduce friction, and improve placements.

How: Evaluate existing programs focusing on labor market re-integration of returnees using monitoring data available from primary and administrative sources (e.g., Prime Minister's Employment Scheme and others). Test the effectiveness of different labor market interventions such as job matching, recognition of skills learnt abroad (sector specific and soft skills), reskilling per domestic labor demand, and returnee entrepreneurship.

Example: The National Reintegration Center for Overseas Filipino Workers (NRCO) offers comprehensive support services to returning Overseas Filipino Workers (OFWs) to ensure their smooth reintegration into society. As a vital resource center, the NRCO provides returnee OFWs with information about government programs, legal assistance, and various necessary services. It offers counseling services, family reintegration programs, and community-based support networks. One of the NRCO's key functions is to provide skills development training and workshops on business and financial literacy. The center also assists returnee OFWs in accessing employment opportunities through skills-job matching and encourages entrepreneurial ventures, allowing them to utilize their overseas experience for sustainable livelihoods at home. Furthermore, the NRCO conducts research on migration trends and reintegration challenges. The insights gained from this research help enhance its programs and services. The NRCO also collaborates with civil society organizations, the private sector, and local communities to advocate for policies that address the unique needs and challenges faced by OFWs and their families, ultimately benefiting them.

Recommendation 7: Enhance pre-departure training with short language, financial planning, and other practical skills without increasing the cost burden to improve migrants' preparedness.

Summary of the issue: Pre-departure orientation training is mandatory for workers seeking a labor permit. However, the 12-hour course spread over two days has limited efficacy in improving the transition experience of migrants aboard (Aryal & Kharel, 2023). Many migrants report not having basic language skills when starting their work as a key impediment (Migration for development, 2023). A recent field experiment demonstrated that implementing a new module in Pre-Departure Orientation Seminars (PDOS) to enhance financial decision-making increases the likelihood of migrant workers having a bank account (Barsbai et al. 2020). Similarly, relative to migrants who received the standard pre-departure orientation, those who received the improved PDOS generally experienced fewer travel-related difficulties and problems relating to settlement, such as obtaining a social security number and opening a bank account (Barsbai, 2016).

How: The orientation curriculum has been improved overtime to tailor modules based on the destination, including aspects of physical safety and mental health. This includes the use of audio-visual aids and electronic attendance monitors to ensure active participation. However, there is still room for enhancing pre-departure training to keep them updated with changing rules in destination countries. Additionally, it is important to provide foundational skills in language, financial planning, and soft skills such as communication and time management. The effectiveness of these trainings can be improved by involving experienced migrant workers and individuals who work with returnees.

Examples: Bangladesh's pre-departure training is flexible and can be updated through effective collaboration with destination countries. It also includes language modules, such as Basic English and Arabic words for care work, electronic, housekeeping, and construction works, separately (Ministry of Expatriaes' Welfae and Overseas Employment, 2014).

Recommendation 8: Enabling reskilling per demand of destination economies (education and training).

Summary of the issue: Over the recent years, skilling migrants feature as a top priority in government plans and actions, however, the supply of education and training have not caught up with the demand in the destination markets. The formal education system lacks flexibility to quickly meet the emerging overseas demands (Sapkota, 2020) and the availability of technical and vocational education is limited (IOM, 2023). The Vocational and Skill Development Training Centre (VSDTC) under MoLESS, and Council for Technical Education and Vocational Training (CTEVT) under the Ministry of Education, Science, and Technology are two main institutions that provide training but very few migrants report undergoing any formal skill training prior to a migration episode (World Bank, 2020). Government, development partners, and other non-governmental organizations recognize the general need to enhance skills of migrant workers, but the trainings are ad-hoc (IOM, 2023). Combined with the issue of lack of recognition of skills gained in Nepal in destination countries (IOM, 2023), the efficacy of these trainings remains low. At the same time, Nepal should evaluate its position relative to countries such as India, Pakistan, Bangladesh, and the Philippines that have dominated the supply of migrants for semi-skilled professions and try to find sectors in which Nepali migrants

can have a comparative advantage (Froilan T. Malit & Tiwari, 2022). Quality and price competitiveness will be key. Investing in building the credibility of Nepali migrants and formal recognition of training and education provided in the country will be vital. This will require a strong bilateral engagement from the government.

How: Nepal should invest in understanding emerging demands in existing and new destinations by improving data quality and proactively engaging with destination countries. It should work on a mutual skills recognition system. Improving the language profile of Nepali workers, particularly in English and Arabic, in the immediate pre-departure phase will be key to enhancing their competitiveness.

Example: The Philippines produces many graduates from over 2000 institutions of higher learning. Their proficiency in English and training in generic professional skills allow for easy upskilling and deskilling based on overseas demand. Furthermore, the country's flexible education system and skill recognition of its workers internationally aid in the ease by which Filipino workers can migrate. The higher education enrollments by disciplines essentially mirror the demand abroad (Ang & Tiongson, 2023).

CHAPTER 3.
Real Exchange Rates, Trade Policy, and Exports in Nepal

Nepal's export sector has seen a marked decline in competitiveness over recent decades, with the exports-to-GDP ratio dropping sharply from over 25 percent in the late 1990s to just 6.8 percent in 2022. Real exports have stagnated, with key exports across various industries experiencing significant declines. High trade costs, driven by Nepal's challenging geography and inadequate infrastructure, have been central to this trend. Nepal ranks poorly in global assessments of road and air transport infrastructure, and its National Quality Infrastructure (NQI) is underdeveloped, leading to frequent issues with international trade standards and export rejections.

The analysis presented in this chapter focuses on the effect of macroeconomic factors and domestic and foreign trade policies on exports. The real effective exchange rate (REER) has appreciated significantly since 1994, diminishing export competitiveness, a situation partly driven by the substantial increase in remittances. Domestic trade policies, including high input tariffs and the difficulty in obtaining duty drawbacks, create additional barriers. Limited trade agreements and the upcoming graduation from Least Developed Country (LDC) status in 2026 may lead to the loss of preferential market access and higher tariffs in key export markets.

Empirical analysis at the micro level indicates that the appreciation of bilateral real exchange rates (RER) has had a significant negative effect on Nepal's export performance, decreasing exports by about 10 percent since 2011. Domestic input tariffs have also negatively impacted exports, lowering them by around 8 percent since 2011. Lower tariffs on and preferential access for Nepali products, on the other hand, had a positive effect on exports. The findings highlight specifically the barriers faced by smaller exporters, consistent with more severe challenges from input tariffs, logistics, and compliance with regulations faced by the same firms.

The results of the analysis suggest that authorities should actively manage inflationary pressures to avoid a further appreciation of the REER, especially by increasing market competition in key non-tradeable sectors such as transportation and logistics, and aim at channeling remittances into productive, less inflationary uses than consumption. Improving the duty drawback system and lowering input tariffs would comprise domestic trade policies that could stimulate exports. Enhancing trade policy to prolong and secure preferential market access would additionally benefit Nepali exporters.

3.1. Introduction

The competitiveness of Nepal's export sector has declined significantly over the past decades. Nepal's exports-to-GDP ratio dropped from over 25 percent at its peak in the late 1990s to just 6.8 percent in 2022. Merchandise exports relative to GDP are particularly low, at around 3.2 percent. Real exports have been declining or stagnant over this period, driven by a collapse in major export products across industries (Sharma, 2023). These patterns are remarkable given that GDP and imports have both grown steadily at the same time. Many factors are commonly discussed in the context of Nepal's poor export performance, ranging from the landlocked geography and poor infrastructure to unfavorable trade policy and exchange rate misalignment due to a surge in migrant remittances.

High trade costs are often cited as a critical factor linked to Nepal's low level of exports. Nepal's landlocked and mountainous geography increase both internal and external trade costs. These natural factors are amplified by poor physical infrastructure. The World Economic Forum's Global Competitiveness Report 2019 ranked Nepal's road infrastructure 120th and its air transportation infrastructure 131st, out of 141 countries. These issues are amplified by the lack of market competition in the transportation and logistics sector. The presence of numerous syndicates leads directly to higher trade costs and acts as a barrier to entry (Rajkarnikar, 2010). Nepal ranks in the lowest quintile globally in market competition in the 2024 B-READY report. Apart from physical infrastructure and market competition, the National Quality Infrastructure (NQI) capacity is also low. Nepal underperforms significantly compared to other countries, including in the South Asia region, on compliance with trade standards such as safety, standardization, and technical regulations (Arenas, 2016). Nepal's weak NQI capacity has led to the refusal of several of its exports and exacerbated already high trade costs.

Macroeconomic and trade policies have presented challenges to exports, in addition to high trade costs. Nepal's REER has appreciated by roughly 35 percent since 1994, the year the current peg with India was set. The appreciation of the REER reduces the competitiveness of Nepalese exports and is often linked to the surge in remittance inflows during recent decades. Remittances as a share of GDP have increased from about 2 percent in 2000 to 22.8 percent in 2022, reaching a peak of 27.5 percent in 2015, placing Nepal in the top 10 remittance receiving countries worldwide, and prompting concerns about a Dutch disease effect. At a micro level, lack of competition in key non-traded sectors such as transportation and logistics also contributes to higher price levels and inflation.

Nepal's trade policies create potential barriers to exports. Input tariffs are relatively high, a factor that contributes to Nepal being the country with the lowest global value chain participation in the South Asia region (Arenas, 2016). While the government has implemented policies that allow for a duty drawback for exporters, which should at least partially mitigate the negative effects of input tariffs, there is a perception among the business community that these can be difficult to obtain in practice. Firms may not be able to rely on drawbacks when making exporting or pricing decisions in the presence of substantial delays and/or uncertainty about whether drawbacks will eventually be granted.

Securing and taking advantage of preferential market access in other countries is important in view of the relatively large trade costs. Nepal currently has two free trade agreements (FTAs), a bilateral agreement with India and the South Asian Free Trade Agreement (SAFTA). The country, however, currently does not have any agreements with countries outside of the region, a potential limiting factor for exports considering the global proliferation of FTAs. The only FTA under formal negotiation is a potential Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) agreement, whose membership largely overlaps with SAFTA. Apart from FTAs, Nepal receives Generalized Scheme of Preferences (GSP) tariff benefits from several high-income countries and tariff preferences from some developing countries such as China. However, the scheduled graduation from Low-Developing Country (LDC) status in 2026 would cause many of these preferences to expire following a possible grace period (Pandey et al., 2022). This could lead to a significant increase in the tariffs faced by Nepalese exporters in several key export markets.

The analysis in this chapter focuses on macroeconomic and trade policies and aims to fill the current gap in empirical evidence on the determinants of Nepal's export performance, especially at the micro level. The bulk of this paper focuses on using detailed firm-level customs data – which are available to us for 2011-2015 and 2018-2021 – to provide evidence on the effects of exchange rates and trade policies, domestic and partner country, on exports at the firm-level.[23] In order to benchmark results of the effect of real exchange rate movements on exports, the analysis also provides some evidence on the link between remittances and the REER. Due to the lack of sufficient micro-econometric variation, this chapter focuses on a cross-country panel analysis using countries in South and East Asia/Pacific regions.

Preview: Real exchange rates and domestic trade policy lowered exports

Firstly, the appreciation of bilateral RERs had a significant effect on Nepal's export performance. A 10 percent increase in the bilateral RER decreases exports on average by about 3 percent.[24] Given the appreciation of Nepal's REER by around 35 percent between 2011 and 2021, this implies that the appreciation accounted for more than 10 percent lower Nepali exports over the same time. The RER effect was stronger for larger firms, but weaker for firms that are more diversified in terms of their export destinations or export products.

Secondly, domestic input tariffs have negatively affected exports, while lower foreign tariffs on Nepali goods had a positive effect. Nepal's domestic input tariffs have accounted for about 8 percent of lower exports between 2011 and 2021. Smaller firms are more affected by domestic tariffs, which could reflect their limited ability to use duty drawback schemes due to administrative barriers. Not surprisingly, exports from firms in sectors that are more dependent on imported inputs are more affected by domestic tariffs. Lower foreign tariffs on Nepal, on the other hand, boost exports, with a 1 percent lower tariff increasing exports by 0.8 percent. Similarly, if the average foreign tariff increases conditional on the tariff applied to Nepal, exports also react positively. This result highlights the importance of preferential tariffs and the risks around the loss of preferential market access through Nepal's graduation from LDC status.

Firm-level results highlight the significant barriers faced by smaller exporters in Nepal. This is explicit in the input tariff results, where the negative effects are driven by these firms. The RER and partner tariff results also show that smaller firms do not seem to be able to expand to take advantage of more positive external circumstances. This is consistent with smaller firms facing especially severe challenges in the areas of input tariffs, logistics, and compliance with regulations (e.g. Kharel and Dahal, 2021). The barriers to the growth of small exporters can prevent the development of successful export industries in the long-run, and so can help explain the overall weakness of the Nepalese export sector over time.

Finally, the analysis finds a significant effect of remittances on Nepal's REER. Between 1992 and 2022, the increase in remittances accounted for 16 percent or around half of the increase in the REER. This confirms past results from Latin American and Caribbean countries (Amuedo-Dorantes and Pozo, 2004) in finding that remittances contributed to a loss of competitiveness. The analysis also explores some potential heterogeneity in this effect across countries and finds that a lower labor force participation significantly amplifies the negative effect of remittances on REER. This pattern is quite significant because of Nepal's low labor force participation (see chapter 1).

3.2. The effect of bilateral RERs and trade policy on firm-level exports

3.2.1. Overview of firm-level data in Nepal

The analysis studies the effects of bilateral RER, domestic trade policy, and partner countries' trade policies on firm-level exports (Box 3.1). It is based on firm-level customs data spanning 2011-2014 and 2018-2021. This is the first time such analysis has been done for Nepal. The detailed micro data allows to control for a range of potential confounding factors through the inclusion of detailed fixed effects. The analysis also emphasizes the heterogeneity in effects across different types of firms.

Box 3.1. Empirical Strategy and Data for Firm-Level Analysis

Regression Model

The baseline regression model for this portion of the paper is:

$$Y_{ipdt} = \beta_0 + \beta_1 X_{ipdt} + \alpha_i + \delta_p + \theta_d + \eta_t + C_{ipdt} + e_{ipdt,} \quad (1)$$

where i is firm; *p* is product; *d* is destination; and *t* is year. Y_{ipdt} is the (USD) export value at the firm-product-destination-year level. X_{ipdt} is the treatment variable of interest. Depending on the specific application, this would be either the bilateral RER, domestic input tariffs or foreign tariff variables. The minimum set of fixed effects included in all specifications are α_i , δ_p, θ_d and η_t: firm, product, destination and year. A more extended set of fixed effects is included in other specifications depending on the level of variation of the treatment variable. The empirical approach here primarily relies on an extensive set of fixed effects to control for potential confounding factors. For some robustness tests, the analysis also includes additional control variables, $C_{ipdt,}$.

To examine any heterogeneity in the estimated effects, the analysis uses interaction terms of the following general nature:

$$Y_{ipdt} = \beta_0 + \beta_1 X_{ipdt} + \beta_2 (X_{ipdt} * Z_{ipdt}) + \beta_3 Zi_{pdt} + \alpha_i + \delta_p + \theta_d + \eta_t + C_{ipdt} + e_{ipdt,} \quad (2)$$

where Z is a mediating variable. Z could be, for example, an indicator of whether the firm is relatively small or large, or exports few or many products. These interaction terms allow us to capture factors that either amplify or attenuate the effects of the treatment variable on exports.

Data

Exports: As noted above, export data are obtained from the firm-level customs database. The underlying data are based on monthly firm-product-destination customs transactions, which are then aggregated to the firm-product-destination-year level. Exports are measured in current US$ throughout the analysis.

Bilateral RER: The bilateral RER is measured in the standard way so that an increase corresponds to an appreciation. The GDP deflator is used by default for the price index except in some specifications, which use the CPI as a robustness test. Nominal exchange rates and CPI, when used, are obtained from the IMF, and the GDP deflator from the World Bank national accounts data.

Domestic Tariffs: Input tariffs are calculated at the industry-year level using information from input-output matrices for Nepal. Tariff and input-output information are obtained from the Global Trade Analysis Project (GTAP). Using GTAP for both tariffs and input-output information ensures greater consistency between the two series. Since the GTAP data are not available for every year, the analysis uses the closest GTAP reference year prior to the export data year, i.e., reference year 2011 for 2011-2013, reference year 2014 for 2014, and reference year 2017 for 2018-2021.

Partner Country Tariffs: The analysis uses the applied and weighted average tariffs in the destination markets as measures of partner trade policies. The applied tariffs are the lowest tariffs available to Nepalese exporters for that product-destination. These could be MFN tariffs but could also be preferential tariffs (e.g., GSP or SAFTA). The weighted average tariffs are the trade-weighted applied tariff and would account for the destination country's MFN tariffs as well as any preferential tariffs on each of its partner countries. The tariff information is from the International Trade Centre (ITC). The weights for the weighted tariffs are calculated based on CEPII's BACI version of the United Nations COMTRADE database. Tariff rates are missing for some country-product-years and trade flows for which the corresponding tariff rates are missing are not used in the weighted tariff calculations.

More exporters did not lead to higher export value or more export destinations

The number of exporting firms increased between 2011 and 2021 (Table 3.1). However, the exports value per firm (in thousands of US dollars), the average number of export destinations per firm, and the number of (6-digit) export products per firm all decreased over the same time.

Table 3.1. Firm-level export patterns

VARIABLES	YEAR	MEAN	MIN	MAX
Number of firms	2011	1,322	-	-
	2021	2,037	-	-
Exports per firm	2011	US$ 1,239	0	76,657
	2021	US$ 1,039	0	78,110
Destinations per firm	2011	13.2	1	97
	2021	7.1	1	31
Products per Firm	2011	22.6	1	202
	2021	16.0	1	74

The average bilateral real exchange rate increased substantially over time (Annex Table A1). This is consistent with the general appreciation in Nepal's real exchange rate. The input tariffs also increased substantially, driven by sectoral composition changes towards higher tariffs on industrial inputs.

Tariffs of partner countries on Nepal are on average lower than the weighted average tariff in Nepal's destination market. This is due to the India-Nepal FTA in the case of India and of GSP-type preferences in the case of some major developed country destination markets. Both variables also changed in a direction more favorable to Nepal over time since partner countries' tariff on Nepal decreased while the average tariff in the destination markets increased.

3.2.2. Bilateral exchange rates and exports

The bilateral RER has a significant negative effect on exports (Annex Table A2). The estimates imply that a 10 percent increase in the RER is associated with a 3 percent decrease in exports. The results are similar when using the CPI instead of GDP deflator to calculate price indices (Column 2) and when controlling for the more extensive set of fixed effects (Column 3)[25].

The RER effect is stronger for larger firms (Annex Table A3, Column 1). Large firms are defined as those that have total exports greater than the median for all firms in the 2-digit industry the same year. The stronger effect on larger firms could be because small exporters engage less in systematically in export markets but explore them on an experimental basis. As such, the amount small firms sell externally may be more "random" and less determined by systematic factors such as exchange rates. For larger exporters, the relationship between changes in their price competitiveness and export value may be tighter.

The RER effect is weaker for firms that export to more destinations or that export more products (Annex Table A3, Columns 2 and 3). These two groups include firms with above-median export destinations and products. A possible explanation is that these firms are more diversified and better able to ride out bilateral RER shocks. They may not have to cut exports as much on account of short-term fluctuations in exchange rate conditions. These patterns also hold when including all three interactions together (Column 4 shows that the patterns from 1 – 3 continue to hold when including all three interactions together).

Additional factors may mediate the effect of RERs on exports (Annex Table A4). The RER effect is substantially larger for exports to India (Column1). The net effect for India (the sum of the coefficients) is about 1.23. While this difference is statistically significant, one should caveat that this is estimated using relatively limited variation, i.e., there are only 9 distinct values of the RER with respect to a specific partner such as India. Column 2 explores the dynamics of the RER effect. By default, the analysis lags the RER variable by one period. This regression also includes the 2-year lag and the contemporaneous year values. It shows that the results are driven by the one-year lag, with the two-year lag and contemporaneous RER effects being very close to zero. This suggests that the effect of a RER change on exports generally appear in the subsequent year. A weighted least squares (WLS) regression weights destinations according to their share of total exports (Column 3). This estimate is less precise but implies a larger magnitude of about -0.42, consistent also with the larger value for India noted in Column 1. While this estimate is less precise, the weighting makes it a more natural micro analog to the commonly used real effective exchange rate (REER) measures. Using this estimate, a 30 percent increase in REER could account for almost a 13 percent reduction in exports.[26]

3.2.3. Domestic trade policy and exports

Input tariffs have a significant negative effect on exports, with larger effects when controlling for additional factors. The regressions in Annex Tables A6-A8 examine the effect of input tariffs on (log) USD exports at that firm-product-destination-year level. Input tariffs are calculated at the industry-year level using information from input-output matrices for Nepal as described in Section 2.[27]

The magnitude of the coefficients implies that a 1 percentage point increase in the input tariff rate for an industry is associated with a 2 – 4 percent decrease in exports for firms in that industry. For reference, the average input tariff rate over the sample is about 2.8 percent, though it is important to keep in mind this measure includes non-tradable inputs for which the tariff rate would necessarily be zero. Given the increase in average input tariffs of about 3 percentage points over the sample period, these estimates imply that this factor could account for 6 – 12 percent lower exports.

Input tariffs affect smaller firms more than larger ones, possibly due to the latter being able to benefit from drawback schemes. The regressions summarized in Annex Table A7 interact the average tariff variables with several firm characteristics as in Section 3. The negative effect of input tariffs is driven by smaller exporters and the net effect (i.e., the sum of the two coefficients) is approximately zero for the larger exports (Column 1). This would be consistent with larger exporters being successfully able to make use of existing duty drawback schemes and smaller exporters unable to do so. The compliance costs, delays and risks associated with the duty drawback scheme are hence likely to be a more significant barrier for smaller exporters. A closer look at firm sizes, considering how input tariffs affect firms at the 25-50th, 50-75th and 75-100th percentile of size relative to the reference 0-25th percentile category, confirms the drawback argument (Annex Table A8). The implied negative effect decreases for each subsequent firm size bin. The firms in the bottom 50th percentile and especially those in the bottom 25th percentile are the ones which are most affected by input tariffs.

The tariff effect is stronger for firms that export to more destinations or that export more products (columns 2 and 3, Annex Table A8). One explanation for this pattern is that perhaps firms cut more sharply exports to destinations or of products that are more marginal in response to higher input costs. Column 4 includes all three interactions together and confirms the sign and significance of the patterns outlined from columns 1-3.

The effect of import competing tariffs, those set on the firm's industry, is positive on the other hand (Annex Table A8). This could reflect spillovers across domestic and foreign activities of firms. A higher price in the domestic market may help a firm to export more in the presence of credit constraints or economies of scale. It is important to caveat, however, that these estimates would not account for potential general equilibrium effects of tariffs that may affect negatively impact exports.

Consistent with economic intuition, the effects of input tariffs are amplified for firms that are in industries more dependent on imported inputs. The analysis also examines whether the input tariff effect is greater for industries that use a greater proportion of imported inputs (Annex Table A8, Column 3). Specifically, it analyses the effect of an interaction of input tariffs with an indicator for whether a firm's industry is in the top half of (lagged) imported input share. The results confirm that firms in industries that are more dependent on imports are more affected by input tariffs. Additional analysis of the extensive margin also shows some evidence that input tariffs reduce the number of products and destinations by firm (Annex Table A9). However, these results do not survive the inclusion of industry fixed effects and so the evidence of an extensive margin effect is weaker than for the intensive margin effect examined in Annex Tables A7-A9.

The significant effects for input tariffs are in useful contrast to the results from Defever et al. (2020), who find that the Cash Incentive Scheme for Exporters (CISE) was ineffective in increasing exports. The CISE provides cash subsidies to exporting firms and was originally limited to firms exporting to countries other than India. Despite the considerable fiscal cost, Defever et al. (2020) find that the scheme had very limited effect on exports. Based on our results here, those fiscal resources may be better directed towards reducing the input tariff burden on exporters.

3.2.4. Partner country trade policy and exports

High foreign tariff rates applied to Nepal tend to deter exports and vice versa. The regressions summarized in Annex Tables A10-A12 examine the effect of tariffs applied on Nepalese exports in a destination and the weighted-average tariff for that product in that destination on (log) USD exports at that firm-product-destination-year level. The applied tariffs are the lowest tariffs available to Nepalese exporters for that product-destination. These could be MFN tariffs but could also be preferential tariffs (e.g., GSP or SAFTA). The weighted average tariffs are the trade-weighted applied tariff and would account for the destination country's MFN as well as any preferential tariffs on each of its partner countries. The results show that Nepalese exports are reduced by a higher applied rate on Nepal and increased by a higher (weighted) average tariff rate in the market.

The applied tariff coefficient estimate implies that a 5 percent increase in the tariffs on Nepalese exports, for example due to a removal of GSP preferences, would lead to a 4 percent decrease in exports. The weighted tariff estimate implies that a 5 percent decrease in the average tariff rate in a market, perhaps due to a free trade agreement between the destination country and another major exporting countries, would also lead to 4 percent decrease in Nepalese exports. The estimates are broadly consistent across the different controls, though the weighted tariff result is not significant with the most stringent set of fixed effects (Annex Table A10, Column 3).

The effects of both the Nepal-specific and the weighted tariffs are amplified for larger firms, who account for the bulk of Nepal's exports. The regressions in Annex Table A11 interact the tariff variables with several firm characteristics and column 1 shows more pronounced effects for larger firms. This could be because small exporters engage in less systematic and more experimental participation in export markets. As such, the amount they sell may be more "random" and less determined by systematic factors such as tariff rates. For larger exporters, the relationship between changes in their price competitiveness and export value may be tighter. Also, smaller exporters may experience more difficulty in scaling according to market opportunities, which would be an interpretation like the results for the bilateral RERs. The net effect for large firms (adding up the respective coefficients) is -1.35 for the tariff on Nepal and 1.72 for the average tariff. Given that larger firms account for the bulk of Nepalese exports, the aggregate effect of partner country tariff regimes is more substantial than what is implied by the estimates.

The effect of the tariff on Nepal is not significantly affected by whether the firm exports to many destinations or products. However, the positive effect of the average tariff in that market is both significantly weaker for firms that export many products or export to many destinations. A possible explanation is that firms exporting many products and destinations do so precisely because their exports are less sensitive to competition.

The positive effect of average tariffs on Nepal's exports may be driven by preferential market access (Annex Table A12). The effect of average tariffs is more pronounced when also accounting for the tariff margin, i.e., whether the Nepalese tariff is lower than the average tariff rate in the market, equal, or higher. The results imply that the positive effect of average tariffs is driven by cases where Nepal is enjoying a preferential benefit (Column 1). The positive effect of the average tariff is significantly amplified for agricultural and homogenous goods according to Rauch's (1999) definition (Columns 2 and 3). These results are consistent with greater price sensitivity for agricultural and homogeneous goods more generally.

A lower applied tariff on Nepal for a given average tariff rate induces more Nepalese firms to export to this market (Annex Table A13). Also consistent with the earlier results, a higher average tariff rate in the market induces more exports by Nepalese firms as well. The coefficients on these extensive margin effects are smaller than the above discussed intensive margin effects, although robust to the inclusion of additional fixed effects.

Finally, the results presented throughout sections 3.2.2 – 3.2.4 are robust to the inclusion of RER, domestic trade policy, and partner trade policy variables together (Annex Table A5, Columns 2-3).

3.3. The effect of remittances on REER dynamics

This section examines the effect of remittances on the REER using a panel of low and lower middle-income countries in South and East Asia spanning 1992-2022. The sample comprises of 15 countries.[28] The methodology used is similar to Amuedo-Dorantes and Pozo (2004), who examine the effect of remittances on the REER with a panel of 13 Latin American and Caribbean countries (Box 3.2).

Box 3.2. Empirical Strategy and Data for Panel Data Analysis

The analysis is built on an exchange rate determination model with the following main regression equation:

$$\Delta REER_{ct} = \beta_0 + \beta_1 \Delta Remit_{ct} + \Delta X_{ct} + \alpha_c + \delta_t + \Delta e_{ct,} \quad (2)$$

where c is country and t is year. REERct is the (log) real effective exchange rate. Remitct is (log) remittances per capita. X_{ct} is a vector of control variables. These include: (log) GDP per capita – a proxy for productivity; (log) net barter terms-of-trade; and (log) foreign aid per capita. The regression also includes country and year fixed effects, α_i and η_t. As discussed below in connection with the test of non-stationarity, this analysis is conducted in first differences.

Data

REER: Data are from Bruegel, which provides a comparable cross-country database. The REER values are normalized to 100 in 2007. GDP per capita and remittances are from the World Bank. Foreign aid – measured as net official development assistance and official aid received – is from the OECD. The net barter terms-of-trade is ultimately from UNCTAD. For additional analysis with interaction terms, data on labor force participation (ILO), import share of GDPs (World Bank) and employment share of the service sector (ILO) are used.

The growth rates of REER and remittances per capita were higher in Nepal than in most other countries. Table 2 summarizes the basic descriptive statistics for the key variables in the sample as well as the values for Nepal specifically. In addition to faster REER and remittances growth, Nepal's labor force participation is substantially lower, and is in fact the lowest among all countries in the sample. Since this is a panel with a relatively small number of cross-sectional entities compared to the number of years, it is necessary to ensure that the regression variables are non-stationary. Using the Im-Pesaran-Shin test for panel data allows to reject non-stationarity when the variables are first-differenced. The analysis therefore relies on a first differenced version of the model throughout. Finally, all the independent variables are lagged by one period relative to the dependent variable (i.e., REER) to reduce simultaneity concerns.

Table 3.2. Mean values for regression variables

VARIABLE	ALL COUNTRIES	NEPAL
REER	110.000	102.000
REER (log change)	0.007	0.010
GDP/capita	1411.000	562.000
GDP/capita (log change)	0.028	0.030
Terms of Trade	106.000	98.000
Terms of Trade (log change)	0.005	-0.005
Aid/Capita	235.000	136.000
Aid/Capita (log change)	-0.016	-0.004
Remit/Capita	73.000	118.000
Remit/Capita (log change)	0.057	0.124
Labor Force Part.	0.611	0.406
Import Share	0.425	0.334

Nepal's low labor force participation rate reinforced the effect of remittances on the REER

Remittances per capita have a significant positive effect on the REER, with an elasticity of 0.0145 (Annex Table A15, Column 1). This appears to be a small value in magnitude but as will be discussed later, can account for substantive effects on the REER given the actual level of remittance growth in Nepal. Financial aid had a similar positive effect on the REER. The terms-of-trade effect is also positive but less precisely estimated. Conversely, there is no evidence of a significant real GDP per capita effect on REER. Using the change in level of the REER rather than log as the dependent variable yields comparable results (Column 2). Since the REER series is normalized to 100 for each country in 2007, this would imply broadly similar results in terms of magnitude.

The effect of remittances on the REER, however, is driven by countries with a low labor force participation rate (Annex Table A16). Low vs. high labor force participation are defined as below and above the median level for any given year. The results summarized in Annex Table A16 show that the effect of remittances on the REER is driven specifically by low labor force participation countries, which have an implied effect elasticity of 0.0232. For the higher labor force participation countries, the implied point estimate is in fact negative (i.e., 0.0232 – 0.0357), though an F-test finds that this is not significantly different from zero. Putting together the pieces, this means that there is no evidence of a positive effect of remittances on REER for high labor force participation rate countries but a significant effect for low participation rate countries. Low labor force participation means that a country's labor supply is limited relative to the consumer base. Put differently, remittance per worker is effectively higher in countries with low participation for the same level of remittance per capita. Using a continuous variable for labor force participation rather than a discrete split yields similar results, with a negative and significant interaction between remittances and labor force participation (Column 2).

The effects of remittances on the REER in Nepal are substantially more pronounced than in peer countries, due to its low labor force participation rate. Evaluated at Nepal's labor force participation of about 40 percent, which is the lowest among the countries in this sample, the estimates imply an elasticity of 0.041 (0.108 – 0.40*0.168). By comparison, the effect elasticity for a country with Bangladesh's labor force participation, about 58 percent, would be 0.011 (0.108 – 0.58*0.168). This is about a fourth of the value for Nepal. Nepal's labor force participation is the lowest among the sample of countries, consistently around 0.40, throughout the same period, even prior to the surge in remittances.

Considering other potential mechanisms through which remittances affect the REER yield insignificant results. Annex Table A17 considers two additional potential mechanisms. The first two columns examine whether the remittance effects are different for countries with a higher import share. There interaction term, however, is not significant, whether using a binary (Column 1) or continuous (Column 2) measure. The point estimates in both cases are negative, consistent with economic intuition, however. Columns 3 and 4 examine whether the share of labor employed in the services sector may mediate the effect of remittances on REER, however, again there is no significant evidence.

Using these results, the inflow of remittances may have accounted for almost half of the REER appreciation observed in Nepal. Nepal's remittance per capita increases by about 3.61 log points over the sample period. Using the estimate that ignore heterogeneity based on labor force participation rates (Annex Table A15), this would translate into a REER increase of about 5 percent. Accounting for Nepal's very low labor force participation rate (Annex Table A16), the observed remittance growth would account for about a 16 percent increase in REER. The actual REER appreciation over this sample period was roughly 35 percent. Hence, based on these estimates, remittances could account for almost half the REER appreciation observed in Nepal. These estimates imply that the REER appreciation would have been much more modest if Nepal's labor force participation were closer to peers, for example Bangladesh.

The model applied in this section can also be used to estimate the REER misalignment. This analysis is presented in Annex 3.2. As detailed in that appendix, there is evidence of a REER overvaluation but the estimated is modest when compared to past estimates.

3.4. Looking ahead: Policy recommendations to boost exports

The analysis presented in this chapter finds evidence that RERs, domestic input tariffs, and partner countries' trade policies are all significant determinants of Nepalese export patterns. Estimates imply that the observed increase in the real effective exchange rate in Nepal over the past few decades accounts for about 10 percent lower exports. The current input tariffs would account for about 6 – 12 percent lower exports. Finally, preferential trade policy partners towards Nepal from partner countries would account for about 3 percent higher exports. In addition to the firm-level analysis of exports, the chapter also provides evidence linking remittances to a RER appreciation using a panel of developing countries in South and East Asia/Pacific. The estimates from this analysis imply that the remittance surge over time could account for about half of the increase in Nepal's REER.

Table 3.3. Policy recommendations to boost exports

	POLICY RECOMMENDATIONS			
	Recommendation	Fiscal Impact	Recommendation	Fiscal Impact
	Creating Opportunities			
Tier 1	Improve market competition in key non-tradable sectors.	● Low	Develop and promote remittance-linked financial instruments for productive investment and household savings.	● Low
Tier 1	Substantially revise or eliminate the Cash Incentive Scheme for Exporters (CISE).	*Generates Revenue*	Strengthen trade diplomacy and investment promotion by leveraging diplomatic missions.	● Low
Tier 1	Improve trade and quality infrastructure.	● Low		
Tier 1	Revise the current input duty drawback systems, particularly from small exporters.	● High	Develop a strategy to gradually compress and rationalize input tariffs and compensate revenue loss with less distorting instruments.	● High
Tier 2	Sharpen the monetary policy framework with a view of containing inflation.	*Indirect Effects*	Initiate a dialogue about the suitability of the current peg.	*Indirect Effects*
Tier 2	Develop a strategy to replace excise taxes designed as de-facto tariffs with less distorting instruments.	● High		

Recommendation 1: Improve market competition in key non-tradable sectors such as logistics and transportation.

Recommendation 2: Sharpen the monetary policy framework with a view of containing inflation, for example through the harmonization of domestically regulated prices.

Recommendation 3: Initiate a dialogue about the suitability of the current peg.

Summary of the issue: The REER effects imply that policies to manage inflationary pressures would help Nepal's export performance. Given the Nepalese rupee's peg to the Indian rupee, Nepal's bilateral real exchange rate with India will mechanically appreciate when inflation is higher in Nepal than in India. Since the Indian rupee's nominal values vis-à-vis other currencies will be linked to inflation in India, this will also indirectly translate into appreciation of Nepal's real exchange rate with respect to other trade partners. Nepal's annualized inflation in the decade to 2022 has exceeded India's by about 2 percentage points. While the costs of inflation to consumers have been salient across the world in recent years, including in Nepal, the results point to the value of managing inflation from an exporter perspective as well. Beyond limiting high inflation, if Nepal can maintain an inflation rate lower than India's for some time, this would over time reverse the overvaluation of Nepal's real exchange rate.

Tackling distortions in the non-tradable services sector, managing episodes of inflationary pressures through monetary policy and initiating dialogues about potential alternatives to the current peg can be gradual approaches to addressing the loss of price competitiveness. While Nepal's inflation rate is mechanically connected to India's, the very fact that the inflation differential has been sufficiently large and sustained to cause a REER appreciation shows that Nepal does have some potential policy space in this area. In addition, economic fundamentals

evolve and the current peg, while providing some stability, may not align anymore with current macroeconomic conditions, particularly since inflation differentials and trade imbalances persist.

How: Reduce distortions in key non-tradable sectors to mitigate and reverse the effect of adverse price trends in Nepal. Remove the pervasive presence of syndicates in transportation (e.g. trucking), logistics, and distribution that contribute to higher prices and barriers to entry. Increased use of digitization at customs points and removing distortions in the provision of digital utilities (discussed more in Chapter V) would also contribute to reducing price levels and inflation. Apart from reducing price levels, in the absence of improvements in logistics and transportation, other policies to encourage exports will be much less effective. Sharpen the monetary policy framework with an emphasis on the fact that inflation, especially more than India's, can exacerbate the overvaluation of the exchange rate and substantially hurt the export sector. Conduct a joint dialogue led by the Ministry of Finance and Nepal Rastra Bank to assess whether the currency peg remains appropriate considering evolving macroeconomic fundamentals, or if the medium-term competitiveness benefits of a crawling peg would outweigh potential short-term inflationary pressures. A key aspect of this dialogue should be to brainstorm external circumstances under which moving from a peg could be potentially more attractive and politically feasible (e.g. during a more deflationary global environment).

Example: Botswana and Cambodia in the early 2000's provide examples of tackling inflationary pressures in the context of a pegged exchange rate. Singapore is another country that implements effective policy with a managed floating exchange rate.

Recommendation 4: Develop and promote remittance-linked financial instruments, including remittance-backed credit for productive investment and remittance-linked household savings instruments.

Summary of the issue: Remittances have contributed to the appreciation of the REER. The bulk of remittance income in Nepal is spent on basic consumption and on repaying expensive migration loans (see Chapter 3). But channeling part of remittances into more productive investment could help offset the negative effect of remittances on the REER and exports.

How: Create and promote investment vehicles for remittance income and savings in general. This could encourage channeling of income towards capital formation and less inflationary uses more broadly.

Example: Mexico's 3x1 program for migrants leverages remittances to fund development projects in migrants' hometowns, enhancing local development and creating jobs. Philippines Overseas Workers' Welfare Administration (OWWA) programs offer investment opportunities in addition to diaspora bonds offered by the government.

Recommendation 5: Revise the current input duty drawback systems with a view of lowering administrative burdens and increasing firm uptake, particularly from small exporters.

Recommendation 6: Develop a strategy to gradually compress and rationalize input tariffs, starting with raw materials and intermediate inputs, and compensate revenue loss with less distorting instruments.

Recommendation 7: Develop a strategy to replace excise taxes designed as de-facto tariffs with less distorting instruments.

Recommendation 8: Substantially revise or eliminate the Cash Incentive Scheme for Exporters (CISE).

Summary of the issue: The results on the adverse effect of input tariffs imply the need for improvements in the current duty drawback systems, especially targeted towards smaller exporters. While the government has implemented an input drawback scheme for exporters, results show that, consistent with the perceptions in the business community, this system has not neutralized the input tariff burden on exporters. This is particularly the case for smaller firms, who face a greater administrative burden in connection with the existing scheme. While larger exporters tend to account for the bulk of a country's exports at a given point in time, smaller exporters play a crucial role in experimenting and engaging in the discovery of a country's comparative advantage. Factors that affect their survival could have significant effects in creating large and successful exporters in the future. Beyond drawbacks and exemptions, there would be additional benefit from a reduction in input tariffs. This would have a larger fiscal cost, although not necessarily prohibitive according to some studies (e.g., Narain and Varela, 2017), but offer other advantages. It would reduce the costs of inputs that a firm does not directly import but sources through other domestic firms that ultimately depend on imported inputs. A reduction in input tariffs would also help producers selling in the domestic market. Given Nepal's low current level of exports, this would have a larger aggregate productivity effect.

How: Improve the input rebate system by ensuring that drawbacks are provided in a more prompt and complete manner could be an important part of reducing barriers to the growth of small and medium enterprises. Schemes that allow exporters to be exempted from customs duties, such as the proposed Revised Customs Act approved by Cabinet in 2023, could be one step in this direction. Consider as a complement to an improvement in the input drawback or exception schemes to directly reduce input tariffs. Reducing input tariffs would be administratively simpler compared to improving the input rebate system. Improving the rebate system and reducing input tariffs on some products could be policies that go together rather than being alternatives. Addressing the high input tariff burden would be a more effective use of fiscal resources than the current CISE, which has been found to be ineffective at increasing exports despite its considerable fiscal cost (Defever et al., 2020).

Example: India took steps to rationalize tariffs and improve duty drawback systems through the Duty Drawback Scheme and Remission of Duties and Taxes on Exported Products.

Recommendation 9: Strengthen trade diplomacy and investment promotion by leveraging diplomatic missions to pursue additional FTAs and extend LDC preferences.

Recommendation 10: Improve trade and quality infrastructure by fully implementing fiscal federalism and aligning infrastructure planning across government tiers.

Summary of the issue: Efforts to extend LDC preferences could help to reduce or reverse potential negative effects of Nepal's LDC graduation on exports, particularly those of larger firms. Nepal currently benefits from LDC preferences in several destinations that are set to expire in 2026 or after some subsequent grace period. In the long run, Nepal could benefit from pursuing preferential trade agreements with countries outside of the region. Apart from increasing the total level of exports, this could also help diversify export destinations since about 80 percent of Nepal's exports currently are to India. Diversification of this nature was an explicit goal in the original CISE too, which however was ineffective. Since the composition of demand and domestic production in India will be different from other destination markets, market diversification would also increase the scope for product diversification.

In the absence of broader infrastructure improvements, including the NQI, the effects of preferential market access are likely to be more modest than the effects of addressing the RER appreciation and input tariffs. Nepal's high trade costs are likely limiting the extent to which exporters can benefit from preferential access. About 80 percent of Nepal's exports go to India and most of the rest transits through India. Infrastructure that reduces internal trade costs and connects centers of potential economic activity to the Indian border effectively could therefore be especially valuable. Since part of Nepal's trade costs with India and the rest of the world depend on infrastructure

in India, recent improvements in Indian road, rail, air, and port infrastructure further increases the potential benefits from improvements on the Nepalese side of the border. Apart from the direct reduction of export costs, such policies would also help exporters through reduced input costs, an effect implied by the results on input tariffs. Finally, the evidence suggests that agricultural exports may be especially responsive to preferential tariff margins. This is an area where improvement in Nepal's relatively weak NQI, e.g., better alignment with international quality standards, could be particularly impactful.

How: Pursue and protect preferential access to foreign markets due to the expected loss of trade preferences from the upcoming LDC status graduation. One line of negotiation can be emphasizing Nepal's status as a landlocked developing country (LLDC). This status may provide foreign countries with flexibility to extend LDC preferences to Nepal without necessarily having to create a much broader precedence that would apply to all recent LDC graduates. In addition, pursue preferential trade agreements with countries outside of the South Asia region. Finally, reducing trade costs through improvements in transportation and quality infrastructure will be essential both in general and in allowing Nepal to take advantage of any available preferential trading terms.

Example: Bangladesh, anticipating its 2026 LDC graduation, has actively engaged in trade diplomacy to extend preferential market access. The country also worked on improving and expanding trade relations through bilateral and regional trade agreements with key trading partners. Viet Nam strategically invested in its NQI infrastructure to boost the quality of its exports and improve market access.

CHAPTER 4.
Unlocking Nepal's Hydropower Potential to Enable Stronger Growth

Nepal's hydropower sector has the potential to enable higher long-term economic growth and reduce the country's reliance on foreign energy sources. With an estimated capacity of 83,000 MW, of which 42,000 MW is economically viable, the country has only tapped into 4 percent of this resource. Hydropower can provide clean and reliable electricity, boost productivity across industries, attract foreign investment, and enable Nepal to export surplus electricity to neighboring countries like India and Bangladesh. This could generate substantial foreign exchange and enhance Nepal's role in regional energy trade.

To realize these benefits, Nepal must address several critical challenges that currently hinder progress. These include underdeveloped infrastructure, limitations in transmission and distribution network capacity, climate-related risks, and financing hurdles. National electricity supply remains unreliable, and many firms face frequent power outages, impacting their operations and profitability. Bureaucratic inefficiencies, an outdated legal framework, and difficulties in securing financing, particularly from foreign investors, further complicate sector development.

Recent progress has demonstrated Nepal's potential. In 2024, the country became a net exporter of electricity for the first time, driven by the completion of several larger-scale hydropower projects. However, to meet the government's ambitious goal of installing 28,500 MW of electricity capacity by 2035, further reforms and substantial investments will be necessary. Enhancing cross-border electricity trade, improving grid infrastructure, and developing smart grid technologies will be essential to support this growth.

The private sector will play a crucial role in this expansion, currently accounting for over 70 percent of newly installed capacity. Encouraging private investment through clear policies, transparent processes, and improved access to financing will be key to unlocking the sector's potential. Moreover, strengthening the legal and regulatory framework, addressing infrastructure bottlenecks, and ensuring effective risk mitigation strategies for investors can attract the capital needed to advance large-scale projects.

While hydropower offers significant benefits, it is not a quick fix for Nepal's energy and economic challenges. The sector's growth will be gradual, and the benefits will be fully realized over the long term. Hydropower is not a labor-intensive sector, with most job opportunities arising during the construction phase or in related industries. As a result, hydropower's direct contribution to job creation is modest compared to other sectors, like tourism. Nevertheless, if managed well, hydropower can become a cornerstone of Nepal's development strategy, providing energy security, generating export revenue, and laying the foundation for sustainable economic growth.

4.1. The current state of Nepal's hydropower sector

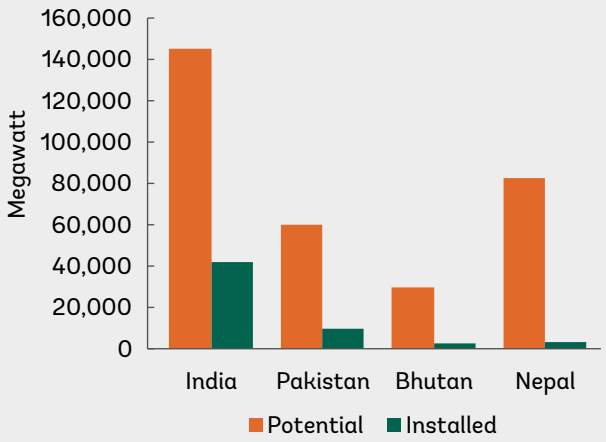
Hydropower production has increased, but remains well below its potential

Hydropower is one of Nepal's most important natural resources, with an estimated potential of 83,000 MW, one of the highest in South Asia. Nepal's geography, with its towering mountains and fast-flowing rivers, makes it an ideal location for hydropower development. The country's major rivers, including the Koshi, Gandaki, and Karnali, flow down from the Himalayas, providing a hydropower potential of 83,000 MW, of which 42,000 are considered economically viable.

The government has long identified hydropower as a cornerstone of the economy. Hydropower has been seen by governments as a cornerstone of economic growth and a pathway to energy independence and energy security. In addition to meeting domestic electricity needs, Nepal's strategic location between India and China, the two largest energy markets in the region, positions it to benefit from regional energy trade, where it can leverage its hydropower potential for economic growth.

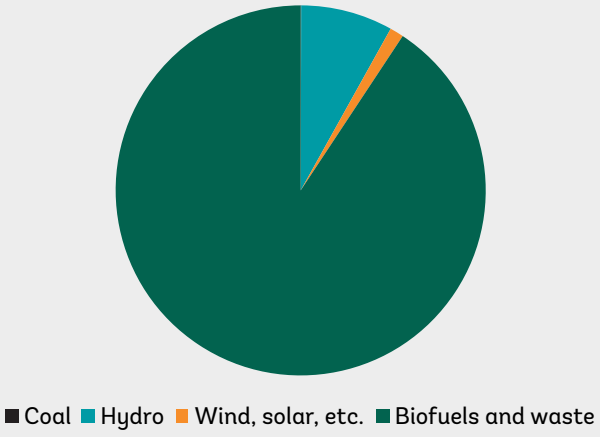
But despite the ambitions of several governments, Nepal's hydropower potential remains vastly underutilized (Figure 4.1). As of 2024, only 4 percent of hydropower resources have been harnessed, around 3,000 MW out of the potential 83,000 MW.[29] Among peers in the South Asia region, only Bhutan has similarly limited installed hydropower capacity compared to its potential, around 8 percent. Pakistan and India, on the other hand, have exploited their potential more effectively, having installed 17 percent and 29 percent of their hydropower potential.

Figure 4.1. Hydropower potential and installed capacity in MW



Source: Investment Board of Nepal, Ministry of Power India, Agence Francaise de Development, Druk Green.

Figure 4.2. Components of overall domestic energy production in 2022 in percent of total.



Source: International Energy Agency.[30]

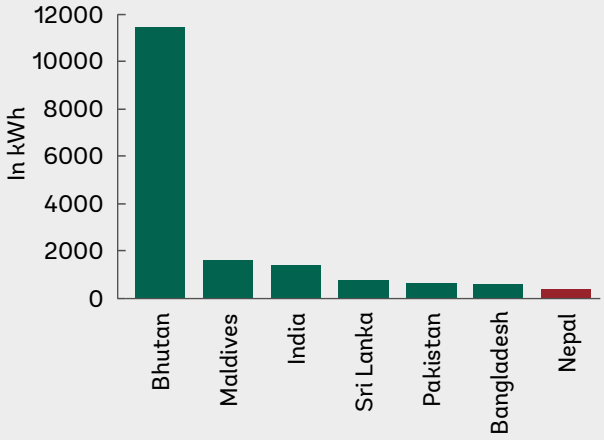
As a result of the slow development of the sector, hydroelectricity accounts for only a small fraction of Nepal's energy production. Hydropower has been the near exclusive source of electricity production in Nepal, accounting for 95 percent. However, the overall domestic production of energy is dominated by biofuels and waste such as fuelwood, agricultural residual, and animal dung, which accounted for more than 90 percent of the energy produced in Nepal in 2023 (Figure 4.2). Hydroelectricity, on the other hand, accounted for only 8 percent of Nepal's total energy production in 2022. Adding energy imports to the domestic energy production reduces the share of hydroelectricity even further, to around 6 percent of the total energy supply in Nepal.

Nepal's electricity production continues to lag that of peers. On a per capita basis, Nepal's electricity production amounted to 321 kWh in 2022, significantly less than per capita electricity generation in regional peer countries

(Figure 4.3). By 2024, per capita electricity generation in Nepal has increased to around 400 kWh, still significantly lower than in peers.

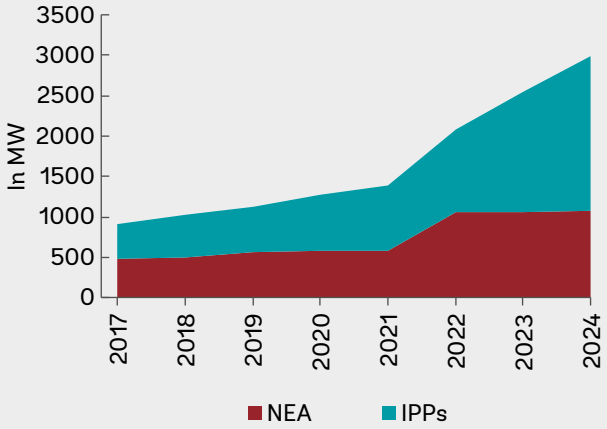
The reliability of electricity supply remains an operational hurdle for many firms, despite the eradication of scheduled load shedding. Load shedding affected industrial firms between 2007 and 2017[31] but was eliminated in May 2018. Frequent power cuts nevertheless continued to affect firms' operations, with 76 percent of firms still experiencing regular power outages. Accordingly, over one-third of firms highlighted in the 2023 World Bank Enterprise Survey that the reliability of electricity supply remains an issue for their operations.[32] One of the main reasons for the unreliable supply is the weak and constrained transmission and distribution system, with old and undercapacity transmission lines, substations, and distribution networks.

Figure 4.3. Per capita electricity generation in 2022



Source: Ember 2024, Energy Institute.

Figure 4.4. Installed hydro capacity by Nepal Electricity Authority and Private Sector in MW[33]



Source: Nepal Electricity Authority.

Unreliable electricity supply had a significant impact on firms' output and profitability. More than 13 percent of firms reported losses exceeding 10 percent of their annuals sales due to power cuts in 2022. Down from 38 percent of firms reporting such losses in 2013. As a coping mechanism, firms continue to rely on captive generators, with 36 percent of firms having used them in 2022 compared to 50.5 percent in 2012.

The uptake in electricity production in recent years gives reason for a more optimistic outlook. Total installed hydropower capacity more than tripled over the past decade and reached 2,990 MW by the end of 2024 (Figure 4.4). Several larger projects since 2021, including the Upper Tamakoshi project, have boosted hydropower capacity by nearly 30 percent on average per year, doubling installed capacity between 2021 and 2024. Total electricity production reached 12,027 GWh in 2024. The increased production of hydroelectricity led to a reduction in net-imports. Earnings from exports to India have also increased significantly since 2020, reaching 0.3 percent of GDP in 2024.

The increase in hydroelectricity production reduced Nepal's seasonal supply and demand gap. Due to the dominance of run-of-river hydropower, Nepal's electricity generation peaks during the rainy season (June-November). Demand, however, peaks during the winter/dry season (December-May). Nepal therefore tends to generate surplus electricity during the rainy season and be in deficit during the dry season. To meet demand during the dry season, Nepal needs to import electricity. In 2018, Nepal imported nearly 2,582 GWh, amounting to about 37 percent of total electricity consumption, while exporting only about 3 GWh. However, due to added generation capacity, the supply-demand gap has decreased significantly in recent years. In 2023, the country imported about 1,895 GWh amounting to about 16 percent of the total electricity consumption, while exporting 1,946 GWh, making Nepal a net electricity exporter for the first time.

Hydropower could enable stronger industrial output in the long term. Hydropower is the major component of the electricity, heat, steam, and air conditioning supply category within the industry sector, which covers the production and distribution of electricity. Overall, the subsector remains small, accounting for only 1.6 percent of Nepal's total economic output in 2024. Developing the sector is a long-term game, but the recent dynamics are promising. The subsector has expanded by nearly 13 percent on average since 2012. Growth of the subsector was particularly strong over the past five years, when several bigger projects came online, reaching roughly 22 percent on average per year.

The private sector has played the leading role in developing Nepal's hydropower sector over the past years. Independent power producers (IPPs) have accounted for more than 70 percent of the hydropower capacity added since 2018. The remaining capacity was installed by the Nepal Electricity Authority (NEA), the state-owned enterprise responsible for generating, transmitting, and distributing electricity, and its subsidiary companies. The share of IPPs in total installed hydropower capacity increased accordingly to 64 percent in 2024, up from 50 percent in 2018. Most of the projects installed by IPPs are run-of-river hydropower plants, which produce less electricity during dry season and are not able to meet peak electricity demand.

Nepal's electricity transmission and distribution network has seen improvements in recent years, but challenges remain. Improvements were driven by increasing domestic generation capacity and the government's focus on reducing load-shedding. Improved cross-border transmission links with India have enhanced grid stability and export potential. However, Nepal's transmission and distribution infrastructure still suffers from high system losses, outdated equipment and technology, and limited capacity to transmit and distribute electricity from remote hydropower plants to urban and industrial centers. Rural electrification is still lagging, with some remote areas relying on unreliable off-grid solutions. Further investments in transmission infrastructure, smart grid technology, and distribution network improvements are essential to meet rising demand and ensure reliable electricity access across the country.

On the back of recent promising dynamics, the government has set an ambitious development target for the electricity sector. Authorities announced their ambition to achieve a total installed electricity generation capacity of 28,500 MW by 2035. This target would imply a near tenfold increase over the country's current installed hydropower capacity. In comparison, capacity over the last decade increased roughly threefold.

But the current portfolio of hydropower projects, the main source of additional electricity generation, falls short of the government's target. Achieving the electricity sector development goal will hinge upon the successful expansion of the hydropower sector. Particularly IPPs will play a critical role in bringing new hydropower projects online. As of 2024, however, the pipeline of hydropower projects appears insufficient to reach the electricity target. Since end-2018, 80 projects with a total capacity of 10,575 MW have applied for a construction license, an activity that can take more than 5 years until completion.

4.2. The key impediments to hydropower development

The development of Nepal's hydropower sector has long fallen short of ambitiously set targets (Figure 5). Nepal's hydropower output has significantly underperformed when compared to past projections and ambitions. When considering Nepal's last three development plans, only 28 percent of the hydropower capacity targets were achieved on average. Hydropower development improved during the 15th development plan period, owing to the operationalization of several large-scale projects. Nevertheless, only 45 percent of the capacity target outlined in the 15th plan was achieved.

Several bottlenecks have hindered the faster development of Nepal's hydropower sector. Securing adequate financing has been a challenge, as hydropower projects require significant capital investment, and Nepal has had very limited success in attracting foreign investors. The outdated legal framework does not allow for open access to transmission and distribution and precludes power trading by private entities, hindering the faster development of

the sector. Limited domestic demand and limited network capacity to evacuate power to load centers are further contributing to this problem. Limited access to the Indian market has further complicated the sector's development. The low quality and reliability of power supply contributed to the lower uptake of electricity as industries and commercial establishments often prefer to use captive power generation infrastructure, despite their significant costs. Moreover, environmental concerns and opposition from local communities over displacement and ecological impacts create resistance and complicate project execution.

Ensuring sufficient financing to develop the sector is challenging

Between 2015 and 2024, Nepal's public and private hydropower investments amounted to around US$293 million per year on average. Nepal has used a mix of public and private investment to develop the hydropower sector. The public sector invested on average US$93 million per year since 2015 through NEA and its subsidiaries.[34] Public investments include hydropower electricity generation, transmission, and distribution. Private investments in hydropower targeted electricity generation and amounted to more than US$200 million on average per year.[35] Private investments were mainly in the form of build, own, operate, and transfer (BOOT) arrangements.

Public and private hydropower producers have leveraged their investment to an extent. NEA, the public hydropower producer, leveraged resources from institutional investors, for example the large Upper Tamakoshi Hydropower plant was developed with debt and equity investments from the Employees Provident Fund, the Citizen Investment Trust, Nepal Telecom, and Rastriya Beema Sansthan. Private producers leveraged financing from domestic and foreign financial institutions, plus multilateral and bilateral donors.

Hydropower companies have increasingly relied on the domestic capital market, primarily the equity market. By the end of 2024, 91 hydropower companies were listed on the Nepal Stock Exchange (NEPSE), the only organized stock exchange in Nepal, up from 27 a decade ago. These companies represented around 15 percent of market capitalization, a significant increase from the 7 percent recorded a decade ago. Public and private hydropower producers have raised funds through Initial Public Offerings (IPOs) to finance small to medium-sized hydropower projects.

Bond financing, on the other hand, has been a less important factor in financing hydropower projects. While the government issues longer-term development bonds in addition to Treasury Bills, they are not sufficiently liquid, and their size is too small to attract institutional investors. Deposits with commercial banks have offered superior returns compared to development bonds. Authorities have in the past tried to mobilize resources from overseas workers through remittance bonds, but due to design and marketing deficiencies these bonds were undersubscribed.

Inefficient public investment management and planning has negatively affected the financial viability of hydropower projects. Nepal's hydropower projects on average take 7 – 10 years to finish, substantially longer than in other countries, including India. Delays are often exacerbated by bureaucratic hurdles, including lengthy approval processes, delays in granting permits for clearances, and delays in securing land acquisition. Consequently, potential investors in Nepal's hydropower are often reluctant to commit significant capital, given the uncertainties around project implementation.

Foreign direct investment (FDI) in Nepal's electricity sector has been limited. The lack of currency risk mitigation mechanisms, such as US$ denominated power purchase agreements, has negatively affected incentives for foreign investors to participate in the market. As of 2023, the outstanding FDI stock in the electricity subsector amounted to around US$ 659 million, around 30 percent of the total outstanding FDI stock in Nepal. India accounted for nearly half of hydropower FDI, China for nearly one-third. India has played an important role in financing hydropower projects in Nepal. Larger, export-oriented hydropower projects like Arun 3 and Upper Karnali were financed mainly by SOEs and commercial banks from India.

Achieving an installed Electricity generation capacity of 28,500 MW by 2035 will require a significant scaling up of investment in electricity generation, transmission, and distribution. A World Bank assessment of

Nepal's electricity sector finds that annual investments of US$ 1.2 – 2.1 billion on average until 2040 will be necessary to develop the electricity sector sufficiently. Relative to Nepal's economy, the necessary annual investments amount to 3 – 5 percent of GDP. Additional investments of US$1 billion per year may be necessary for the development of larger-scale, export-oriented projects.

Market structure and policies have hindered more investment in the sector

In Nepal, the NEA functions as the sole buyer of electricity generated by IPPs. As a vertically integrated utility, NEA is responsible for both distributing electricity to domestic consumers and trading surplus power across borders, particularly with India. The bankability of power purchase agreements (PPAs) with NEA depends heavily on the inclusion of take-or-pay clauses, which guarantee that NEA will purchase a fixed amount of electricity even if it cannot sell it. Without this certainty, financial institutions are reluctant to provide funding to energy projects, making it difficult for developers to secure financing.

At times, NEA has been reluctant to enter PPAs with IPPs. NEA has been cautious about committing to take-or-pay contracts on several occasions due to the risk of being left with surplus electricity it cannot trade or sell, especially during periods of low domestic demand or limited export opportunities. This has led to NEA's discretionary approach to opening new PPAs, where it selectively decides when to sign contracts with IPPs. As a result, power producers often face delays in securing agreements, which hinders project development and slows the overall growth of Nepal's energy sector.

Nepal's current first-come, first-serve licensing regime for hydropower projects has led to suboptimal allocation of resources and project delays. This system awards licenses to developers based solely on the order of their applications, often resulting in projects being granted to those who may lack the necessary financial or technical capacity to proceed effectively. Consequently, many projects become delayed or remain stalled, preventing Nepal from fully capitalizing on its rich hydropower potential. Experts argue that this inefficient process not only discourages investment but also leads to a waste of valuable resources that could otherwise contribute to national energy production and economic growth (World Bank, 2020).

Compounding these issues is Nepal's outdated legal framework. The Electricity Act of 1992, still in force, is insufficient to meet the challenges of modern hydropower development and international energy trade. Despite years of discussions, a replacement law remains stuck in parliament, leaving the sector without a legal basis for key issues such as tariff setting, cross-border electricity sales, and private sector protections. The delay in passing this new law has undermined higher private investment in hydropower generation. Private investment in transmission and distribution has not been feasible until late 2024. Investors face uncertainties regarding returns on investment, and the government has been slow to implement incentives that could make the sector more attractive. Until legal reforms are enacted, the potential for Nepal's hydropower industry to enable economic growth and regional energy trade will remain unrealized.

As a result of policy ambiguity, the sector faces several deficiencies that hinder its effectiveness in facilitating hydropower development. One significant issue is the slow and cumbersome project approval process, which often leads to lengthy implementation delays. Bureaucratic hurdles due to unclear regulations and inconsistent policies create uncertainty for investors. Additionally, the Investment Board of Nepal (IBN) has limited capacity and resources, affecting its ability to manage and oversee large-scale hydropower projects efficiently. The lack of a comprehensive strategy for engaging local communities further exacerbates conflicts and resistance to projects. Moreover, insufficient transparency and accountability in decision-making processes have led to skepticism among stakeholders, resulting in diminished trust in IBNs commitment to facilitating investment.

Geopolitical challenges have significantly constrained Nepal's ability to expand electricity exports to India and Bangladesh. India plays a critical role in shaping Nepal's hydropower export landscape, currently receiving around 900 MWs of electricity exports from Nepal. While India has expressed interest in increasing electricity imports from Nepal, particularly to support its broader clean energy goals, it has been selective in granting market

access. India's 2018 Cross-Border Electricity Trade guidelines limit electricity imports from projects financed by third-country investors, allowing only those developed under bilateral agreements. This restriction complicates Nepal's efforts to attract foreign investment from countries like China, which have shown interest in Nepal's hydropower sector. Furthermore, securing long-term PPAs with India has been difficult, as India ensures imports align with is strategic and economic interests.

India's regulatory framework and approval process further hinder Nepal's ability to export electricity at a scale. Although some progress has been made in recent years, the quantities of power allowed for export remain limited. Additionally, India's dominant position in South Asia's electricity trade creates a dependency that leaves Nepal vulnerable to political fluctuations. Tensions or disagreements between the two nations have previously stalled energy agreements, delaying the development of more robust cross-border electricity markets. These dynamics underscore the need for Nepal to diversify its energy partnerships and pursue approaches to mitigate the risks of over-reliance on a single market.

Expanding electricity trade with Bangladesh offers a promising opportunity for Nepal to reduce its dependence on India. Bangladesh has a growing demand for electricity and has shown strong interest in importing clean energy from Nepal. However, since Nepal lacks a direct transmission link with Bangladesh, such trade must occur through Indian territory, requiring India's approval. This dependency adds another layer of complexity to Nepal's export strategy. To overcome these challenges, trilateral agreements involving Nepal, India, and Bangladesh could facilitate smoother cross-border electricity trade. Initiatives such as the Bangladesh-Bhutan-India-Nepal (BBIN) regional framework could be leveraged to promote greater energy cooperation, streamline regulatory processes, and ensure mutual benefits for all parties involved.

Low domestic electricity demand has deterred faster growth of the sector

In addition to delays in export agreements, the slow growth in domestic electricity demand has been a bottleneck for Nepal's hydropower development. The profitability of larger-scale hydropower projects relies on consistent, high-volume demand for electricity. Even though per capita electricity consumption has increased by an average 10 percent annually over the past decade, it started from a very low base, and Nepal continues to lag significantly behind regional peers (Figure 4.5). The stagnation of the manufacturing sector and limited household demand have been key reasons for limited demand, contributing to the slow expansion of the hydropower sector.

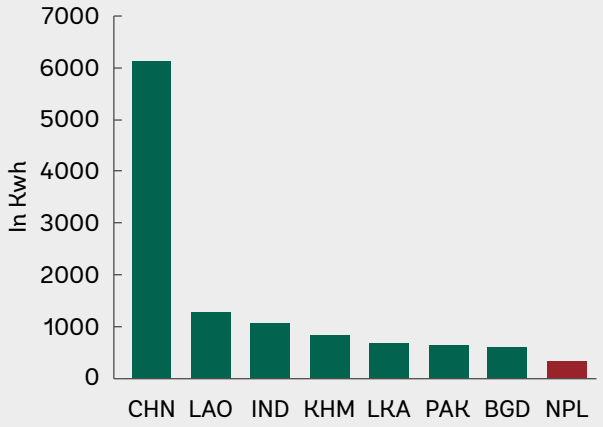
Nepal's households have relied on biomass for energy, rather than electricity

Nepal's households continue to mostly consume energy created from biofuels and waste (Figure 4.6). Residential electricity consumption has steadily increased in Nepal, around threefold between 2010 – 2022, albeit from a very low base. Overall, electricity remains small in the residential energy mix, having accounted for only around 5 percent in 2022. Biofuels and waste, despite stagnating since 2016, remain the main source of residential energy, accounting for roughly 90 percent of the energy mix.

The rise in residential electricity consumption has been primarily driven by the growing reliance on electricity for lighting. From 2011 to 2021, the share of households using electricity for lighting surged from 67.3 percent to 92.2 percent. This growth was most notable in rural areas, where the share of households relying on electricity for lighting jumped from 60.9 percent to 85 percent. Although urban areas also saw an increase, from 94.1 percent to 95.7 percent, the growth was less pronounced due to their already high electrification rates.

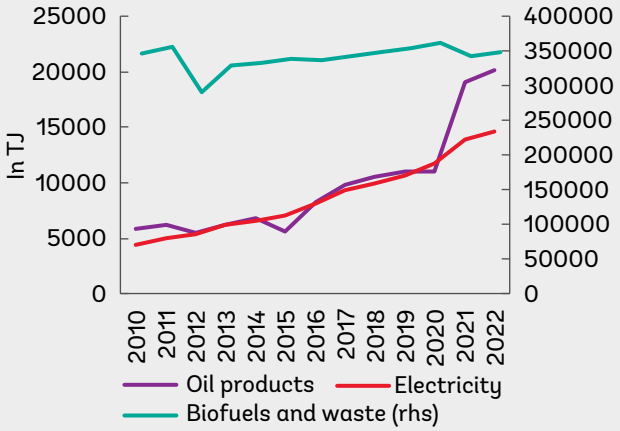
The use of electricity for cooking, on the other hand, remains negligible. In 2021, only 0.5 percent of households used electricity for cooking, a modest rise from 0.1 percent in 2011. Both rural and urban areas experienced slight increases, with rural households rising from 0.07 percent to 0.36 percent and urban households from 0.12 percent to 0.55 percent. However, most Nepali households still rely heavily on traditional fuels such as wood or firewood (51 percent) and imported Liquefied Petroleum Gas (LPG, 44.3 percent) for their cooking needs.

Figure 4.5. Per capita electricity consumption (Kwh) in 2022



Source: International Energy Agency

Figure 4.6. Household energy consumption in TJ

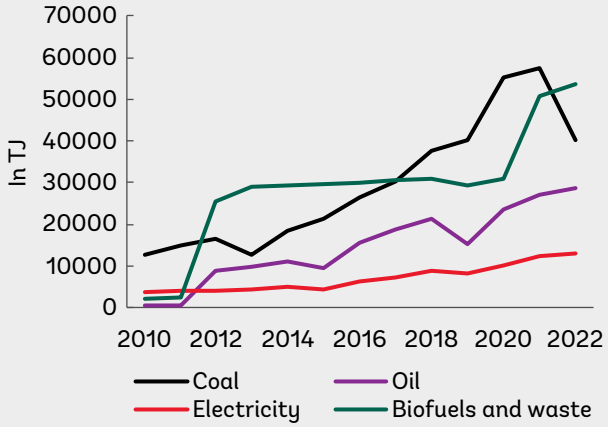


Source: International Energy Agency

Electricity demand from firms has been hampered by the weak manufacturing sector, but also services consume limited electricity

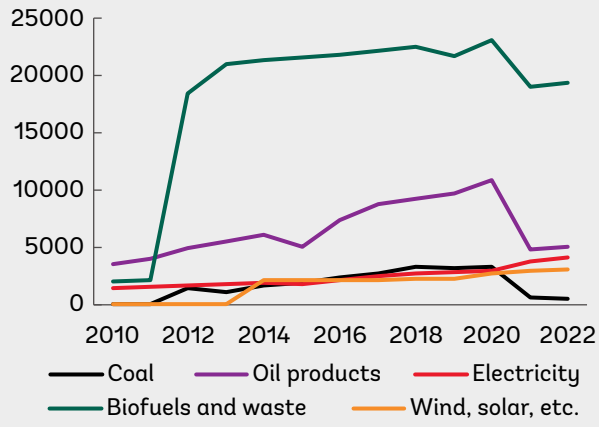
The stagnation of the manufacturing sector restrained electricity demand from industrial firms. Manufacturing output fell to around 6 percent of GDP in 2022, significantly lower than in regional and structural peer countries (see Chapter 1). The lack of dynamic in the sector restricted domestic demand for electricity. In 2022, Nepal's industry sector consumed roughly 12,800 TJ of electricity (Figure 4.7), with a peak demand of only around 2,170 MW. While electricity consumption more than doubled compared to a decade ago, it only accounted for 9 percent of final industry energy consumption in 2022, substantially lower than in regional peers. Bangladesh's industry sector, for example, consumed around 147,000 TJ of electricity in 2022, which constituted 35 percent of the sector's energy mix.

Figure 4.7. Industry energy consumption in TJ



Source: International Energy Agency

Figure 4.8. Services energy consumption in TJ



Source: International Energy Agency

Electricity consumption of Nepalese services firms has been similarly low, despite the important role the sector plays in the economy. Electricity consumption by services more than doubled over the past decade and reached 4,100 TJ in 2022 (Figure 4.8). Despite the increase, electricity accounted for only 13 percent of final services energy consumption in 2022. While the consumption of biofuels dropped during the past decade, they remain the main source of energy for services, having accounted for 60 percent of the services energy mix in 2022.

Infrastructure challenges remain

One of the main reasons for the continuous unreliability of electricity supply is Nepal's weak transmission and distribution network. The existing infrastructure is often outdated and inadequately maintained, leading to frequent power outages and inefficiencies in energy delivery. With a limited capacity to transport electricity from hydropower plants to end-users, significant energy losses occur during transmission. In 2024, for example, NEA announced system losses of 12.7 percent. This not only hampers the reliability of electricity supply but also deters potential investments in the energy sector.

Nepal's weak infrastructure associated with hydropower development poses significant challenges to harnessing its potential. Essential elements such as access roads, bridges, and transportation facilities are often lacking or poorly developed, making it difficult to transport equipment and materials to remote hydropower sites. Underdeveloped infrastructure delays project timelines, increases costs, and limits the ability to implement maintenance and upgrades on existing facilities. Infrastructure gaps compound the already challenging topography of the country.

Weak infrastructure, especially the absence of high-capacity cross-border transmission lines, is also a major obstacle to increased electricity exports. Transmission lines, such as the 400 kV Muzaffarpur-Dhalkebar line, have limited capacity to transfer power to India, and many other lines operate at lower voltages like 132 kV, which are insufficient for large-scale energy exports. This restricts Nepal's ability to fully utilize its grid for exporting electricity, with current cross-border transmission capacity limited to 1,000 MW. The lack of a comprehensive network of 400 kV or higher voltage lines hinders efficient cross-border electricity trade, as high-voltage transmission is essential for reducing losses over long distances and ensuring reliable power flow. Hence, even if electricity generation capacity were increased, with adequate transmission lines, additional surplus electricity during monsoon season could not be fully exported.

Nepal's high exposure to natural disasters significantly affects hydropower development. Nepal is prone to earthquakes, landslides, and flooding, all of which can cause substantial damage to existing infrastructure and impede the construction of new projects. The 2015 earthquake, for example, severely impacted several hydropower plants, leading to operational disruptions and costly repairs. Furthermore, the frequent occurrence of landslides and seasonal flooding can affect the reliability of water flow needed for hydropower generation. For example, the September 2024 floods and landslides resulted in damage to 11 operational hydropower projects with an installed capacity exceeding 600 MW, as well as transmission lines, thereby affecting both production and exports. These natural vulnerabilities not only increase the risks associated with hydropower investments but also require additional resources for disaster preparedness and risk mitigation.

Finally, most of Nepal's hydropower plants are run-of-river, making them vulnerable to fluctuations in river flow and sedimentation. Run-of-river hydropower plants account for more than 90 percent of the country's total hydropower capacity. The consequence is a strong seasonality in electricity production, which drops substantially during the dry season due to the lack of water in hydropower plants. Several reservoir type hydropower projects have been developed, such as the 1200 MW Budhi Gandaki or the 635 MW Dudhakoshi, but construction has stalled due to the lack of financing.

4.3. Avenues for economic growth through hydropower

Nepal's hydropower sector has the potential to transform the structure of the economy and shape long-term economic development. Hydropower can enable higher long-term economic growth through productivity increases across industries, reducing costs and enabling firms to scale up operations by supplying stable and clean energy. The availability of clean electricity can also attract both domestic and foreign investment, particularly in energy-intensive industries like manufacturing, services, and green technologies. Additionally, with the right infrastructure in place, surplus electricity can be exported to neighboring countries, such as India and Bangladesh, generating foreign exchange and enhancing Nepal's role in the regional energy market. These exports could create a new revenue stream for the government, fund infrastructure improvements, and reduce the country's reliance on foreign aid.

However, the path to fully developing Nepal's hydropower potential is neither quick nor straightforward, and without significant employment benefits. Large-scale hydropower projects are complex endeavors that take years to plan, finance, and construct, often facing delays due to infrastructure bottlenecks, regulatory hurdles, and environmental considerations. When operational, hydropower plants are not particularly labor-intensive, meaning that most job opportunities are temporary and limited to the construction phase. As a result, while hydropower can enable stronger overall economic growth and improve energy security, it is unlikely to be a major contributor to long-term job creation compared to industries like tourism or manufacturing. Patience, strategic planning, and careful management are essential to ensure that hydropower delivers sustainable benefits over time.

Yet, failure to expand its hydropower potential could undermine the country's economic growth prospects. Nepal's firms already incur significant losses due to unreliable electricity supply, limiting their competitiveness and ability to expand. Without addressing this energy bottleneck, the economy would continue to struggle with inefficiencies, missed opportunities, and higher production costs, deterring investment and further stunting industrial growth. While the benefits of hydropower, whether domestic or through exports, are substantial, they can only be fully realized through a strategic, long-term commitment to expanding and upgrading Nepal's energy infrastructure.

Hydropower could enable stronger growth by boosting productivity, currently lagging that of peer countries

The availability of green electricity from hydropower would significantly enhance firm productivity in Nepal. Reliable, low-cost electricity reduces operational expenses by eliminating the need for expensive alternatives like diesel generators, which are commonly used during power shortages. With a consistent energy supply, firms can streamline their operations, avoid costly downtimes, and increase production efficiency. Firms would also be able to invest more in energy-dependent technologies, such as automation and advanced machinery, which can boost output and improve overall efficiency. By lowering energy costs and ensuring uninterrupted power, hydropower would enable firms to allocate more resources toward growth and innovation, enhancing their competitiveness in both domestic and international markets.

Green electricity from hydropower would also have a positive impact on lagging labor productivity by creating a more stable and efficient working environment. Workers would experience fewer disruptions due to power outages, allowing them to maintain a steady workflow and meet production targets more consistently. Access to reliable electricity also supports the adoption of advanced tools and equipment that can enhance workers' output per hour. In sectors that require precision and high energy usage, such as manufacturing and information technology, access to consistent energy can directly increase the value and volume of work produced by each worker. Finally, labor productivity would also benefit from reduced pollution and improved air quality, which would lead to healthier workers, fewer sick days, and higher performance levels.

Hydropower could boost growth by stimulating domestic production of goods and services

The industrial sector in Nepal could see growth and modernization with increased access to reliable and cheap electricity from hydropower. Industries consume more energy than any other sector. The availability of stable and affordable electricity would reduce their reliance on fossil fuels, which are exposed to global price volatility and supply disruptions. This would lead to more efficient production lines, better quality control, higher production, and the ability to meet higher demand. It could attract more domestic and foreign investors seeking to capitalize on low energy costs and predictable energy supply. Finally, expanding energy-intensive sectors could also decrease reliance on imports of energy-intensive products, like fabricated metals or electrical equipment, which currently account for nearly 40 percent of merchandise imports.

The competitiveness of Nepal's goods and services would also increase due to their green and sustainable production. A shift to hydropower would allow Nepal to decouple growth from carbon emissions. This would enable Nepal to brand its goods and services as green and sustainable, which could give the country a competitive edge

in global markets. Consumers in higher-income markets, including tourists, are increasingly striving to reduce their carbon footprints. By powering industries, tourism, and services with clean, renewable energy, Nepal could appeal to eco-conscious consumers and businesses that prioritize sustainability in their purchasing decisions. This green branding would enhance the attractiveness of Nepalese products, particularly in sectors like manufacturing, agriculture, and tourism, where environmental impact plays a significant role in shaping demand. As international demand for sustainable goods and services grows, Nepal's reputation as a green energy leader could boost exports and investment, and thereby economic growth.

Particularly the tourism sector could benefit from the expansion of the hydropower sector and boost services sector output. Reliable and clean energy would enable the development of modern amenities, such as upscale hotels, restaurants, and recreational facilities, all of which are essential for attracting a higher volume of higher-income tourists. Moreover, by branding itself as a green tourism destination, Nepal could appeal to the growing demographic of eco-conscious travelers who prioritize sustainability in their travel choices. This shift would not only improve infrastructure and services but also facilitate the promotion of environmentally friendly activities, such as eco-trekking, wildlife conservation, and cultural tourism. As tourists increasingly seek out destinations with low environmental impact, the integration of green hydropower could position Nepal as a leader in sustainable tourism.

Directly exporting hydropower to neighboring countries India and Bangladesh

Nepal could export significant amounts of hydropower even after meeting domestic demand. The government's target of installing 28,500 MW by 2035, with a projected domestic demand of 13,000 MW, aligns with this export potential. India recently agreed to import 10,000 MW from Nepal in the next decade. Bangladesh agreed to import 40 MW of electricity during the rainy season. However, key challenges exist. For example, existing arrangements for cross-border electricity trade in South Asia and long-term power purchase agreements with India need improvement. Additionally, India currently restricts Nepal from exporting electricity produced with foreign investment, excluding India.

Studies by the World Bank and Asian Development Bank (ADB) corroborate the positive economic impact of hydropower exports. A World Bank study estimates that direct electricity exports could contribute US$ 3 billion to Nepal's GDP between 2024 and 2033, representing a 4.83 percent increase (WB 2022). ADB analysis suggests that developing 20 percent of Nepal's economically viable hydropower potential by 2030 could lead to an 87 percent increase in GDP compared to a baseline scenario (ADB, 2020). Government revenue and royalties from electricity generation would increase accordingly and allow for higher capital expenditure, which would provide an additional stimulus to economic growth.

In theory, Nepal would have the potential to produce and export green hydrogen. The government of Nepal has recently introduced a green hydrogen policy to promote hydrogen production in Nepal.[36] Several studies (e.g., Bhandari and Subedi, 2023; Thapa et al. 2021) suggest that utilizing surplus hydropower for hydrogen production could be cheap and highly profitable in Nepal. Bhandari and Subedi (2023) estimate that surplus hydropower can produce 464,000 tons of hydrogen by 2028 at globally competitive prices, with a value of round €1.76 to €2.07 billion in 2028.

However, several significant challenges would need to be addressed for Nepal to competitively produce and export green hydrogen. Nepal would need to heavily invest in the infrastructure required to produce, store, and transport hydrogen. The initial capital cost to start hydrogen production would hence be significant. For Nepal to be competitive in such circumstances, facing stiff competition from China and India, would require a significant scaling of production and careful consideration of niche markets and value-added products. Additionally, exporting hydrogen would require efficient transport routes and an agreement with India. The latter appears challenging, given Nepal's experience on developing hydropower capacity for exports without Indian investments.

4.4. Looking ahead: How to boost hydroelectricity for economic growth

Developing Nepal's hydropower sector is a long-term game that requires clear policies and commitment. Policy ambiguities have undermined a more rapid and effective development of Nepal's hydropower potential. While governments have identified hydropower as a pillar of long-term economic development, more must be done. Governments need to provide clear long-term policies and a comprehensive legal and institutional framework to facilitate increased private sector investment in hydropower. Paving the way for increased hydroelectricity exports requires stronger engagements with India and Bangladesh.

Sufficient financing is a necessary precondition to achieve the development of the hydropower sector. Nepal will need to stimulate domestic investment in hydropower and attract more foreign investors. Achieving this scaling-up will require a strengthened IBN and increased capacity among public and private hydropower stakeholders. Finally, increased domestic demand will be necessary to absorb additional hydropower generation capacity.

Table 4.1. Policy recommendations to boost hydropower development

	POLICY RECOMMENDATIONS			
	Recommendation	Fiscal Impact	Recommendation	Fiscal Impact
	Creating Opportunities			
Tier 1	Strengthen the regulatory framework and harmonize policies.	● Low	Reduce bureaucratic hurdles for the private sector.	● Low
Tier 1	Strengthen the financing model for hydropower projects.	● Low	Invest in transmission and distribution infrastructure.	● High
Tier 2	Stimulate domestic electricity demand.	● Low		
	Creating Capabilities			
	Enhance the capacity of key hydropower stakeholders.	● Low		

Recommendation 1: Strengthen the regulatory framework and harmonize policies.

Summary of the issue: The current structure of the market, the lack of a clear legal framework, and delays in the implementation of the revised Electricity Act have significantly hindered hydropower development in Nepal. Without a robust regulatory structure, the industry faces challenges such as delayed project approvals, legal ambiguities in licensing, and difficulty securing private investment given the regulatory and bureaucratic challenges. Private investment in transmission and distribution has been barred.

How: Update the legal framework by enacting the pending Electricity Bill. Review existing energy legislation and policies with a view to harmonize them and facilitate private sector investment in electricity generation. Enable IPPs to trade power, allowing them to directly transmit and distribute electricity to buyers. This would also facilitate higher investment in the grid. Streamline the current project licensing process to prioritize project readiness and developer capability, which would enhance efficiency, attract more investment, and ultimately accelerate the growth of Nepal's hydropower sector.

Example: India updated its legal framework to facilitate the development of renewable energy, including hydropower

and solar. The 2003 Electricity Act promoted competition, increased transparency, and facilitated private sector investment. The 2015 National Tariff Policy provided additional stimulus to hydropower development.

Recommendation 2: Reduce bureaucratic hurdles for the private sector.

Summary of the issue: Hydropower projects in Nepal require significantly more time from inception to completion that in peer countries. One important factor for these delays are lengthy approval processes for private investment in hydropower generation. Bureaucratic hurdles delay hydropower projects and private investors require multiple approvals from several agencies.

How: Establish a one-stop-shop for all necessary approvals and clearances, effectively reducing the bureaucratic burden for the private sector. Fast-track projects that meet specific criteria determined by IBN. Develop new campaigns to promote Nepal's hydropower sector to potential foreign and domestic investors. Centralize the permitting and approval of infrastructure PPPs.

Example: Viet Nam created a National Investment Corporation (NIC) to attract and facilitate private investment in infrastructure, including hydropower. NIC promoted private investments in hydropower, facilitated joint investments between domestic and international investors, provided feasibility analysis, and assisted private investors on regulatory compliance. Georgia is a notable example of a country that reformed the regulatory framework to reduce bureaucratic red tape.

Recommendation 3: Strengthen the financing model for hydropower projects.

Summary of the issue: Developing the hydropower sector will require significant financing, up to US$ 46.5 billion based on authorities' estimates. To mobilize the required funds, Nepal will need to revamp its hydropower financing model and attract additional private investments. Nepal's capital market is currently not sufficiently developed to provide the required funds, governments' ability to raise financing through long-term bonds is limited. Foreign investors face bureaucratic and legal hurdles.

How: Develop a clear strategy with a time-stamped implementation plan for financing the development of the hydropower sector, including: (i) the use of multilateral guarantees to maximize financing; (ii) a roadmap for developing the domestic bond market to establish long-term benchmark bonds; (iii) a framework for implementing larger-scale PPPs. Review the legal and institutional framework with a view to facilitate larger foreign currency investments by (i) reducing bureaucratic red tape; (ii) increasing foreign currency investment limits; and (iii) providing effective currency risk mitigation tools.

Example: Chile developed a clear financing framework to develop the renewable energy sector. The strategy included a clear framework for PPPs, the issuance of green bonds, and the use of multilateral guarantees to enhance infrastructure financing.

Recommendation 4: Invest in transmission and distribution infrastructure, including cross-board lines.

Summary of the issue: Nepal's weak electricity grid has been a roadblock to faster hydropower development and reliable electricity supply. Domestic electricity supply remains unreliable due to insufficient transmission and distribution infrastructure. Limited quality of cross-border transmission lines stands in the way of scaling up electricity exports to Bangladesh and India.

How: Allocate more resources to strengthening the electricity grid, leveraging grants and concessional loans from multilateral creditors, and aim at attracting FDI. NEA should build more capacity and dedicate resources to developing smart grid technologies with a view to reduce system losses and improve the efficiency of the grid. Open transmission and distribution for private investors.

Example: Bangladesh made substantial investments to improve its electricity infrastructure in the 2000s, implemented a series of energy sector reforms, and attracted FDI. Rwanda's Energy Sector Strategic Plan may offer useful guidance for Nepal such as Germany's energy transition, which included investment in renewable energy integration and smart grid technologies.

Recommendation 5: Stimulate domestic electricity demand.

Summary of the issue: Nepal's per capita consumption of electricity is the lowest in the region, despite Nepal's abundant hydropower potential. Households have not yet adopted electricity for cooking, firms continue to consume substantially less electricity than in peer countries. The reliability of electricity supply has contributed to Nepal's low electricity consumption. The government has announced several initiatives to stimulate the demand for electricity in the past. However, the implementation of these initiatives-such as promoting electric stoves in households and increasing the use of both private and public electric vehicles-has been relatively slow.

How: Implement the 2024 High Level Tax Committee's recommendation on removing subsidies on Liquefied Petroleum Gas and revise electricity tariffs for household consumption. Mandate that new residential and industrial constructions utilize electricity for ventilation, heating, and air conditioning. Consider tax incentives for firms that switch from diesel or fossil fuel-powered generators to electric alternatives. Provide incentives through tariffs, such as lower rates during off-peak hours, for industrial firms.

Example: Brazil, India, and South Africa all implemented relevant policies to stimulate domestic demand. Brazil's "light for all" initiative focused on connecting households to the electricity grid, in addition the country provided tariff incentives and tax breaks to industries that adopted renewable energies. India subsidized electric cooking appliances for households and incentivized energy efficiency for firms. South Africa provides subsidies for the adoption of electric appliances and tax deductions for firms improving energy efficiency.

Recommendation 6: Enhance capacity of key hydropower stakeholders.

Summary of the issue: Capacity building for key hydropower stakeholders in Nepal is a pressing issue due to the technical, regulatory, and financial complexities involved in developing large-scale projects. Many stakeholders, including government agencies and private sector, would benefit from enhanced capacity, evidenced by the significant delays in Nepal's hydropower projects. Strengthening technical and managerial capacities could streamline project development, improve regulatory oversight, enhance investor confidence, and help Nepal maximize its vast hydropower potential.

How: Develop a capacity building roadmap for the public sector in collaboration with the World Bank and Asian Development Bank, focusing amongst others on: (i) improving skills in structuring and managing large-scale PPPs; (ii) managing the contingent liabilities arising from PPP-like structures; (iii) strengthening inter-agency coordination and collaboration; and (iv) attracting foreign investment in the sector. Capacity building could also be offered to domestic financial institutions on appraising hydropower projects.

Example: Bhutan's experience in building hydropower capacity could serve as a valuable example to Nepal. Bhutan collaborated with India, academic institutions, and multilateral development banks to strengthen financial management, project management, international financing mechanisms, and PPP management.

CHAPTER 5.
The Digital Sector: A Driver of Growth and Job Creation

Nepal's digital sector remains small compared to regional peers but has shown strong potential for growth and job creation. Between 2005 and 2023, exports of digitally delivered services grew at an impressive annual rate of 12.3 percent, placing Nepal favorably most South Asian countries. The country's Information and Communication Technology (ICT) sector also outperforms many regional peers, with a higher percentage of employment in ICT services.

Harnessing the full economic and employment benefits of digital technologies depend on their widespread adoption and intensive use by both firms and households. Despite some progress, significant gaps remain. For instance, as of 2023, 48 percent of firms still lack a website, and only 9.6 percent of payments and 23.3 percent of customer sales are conducted electronically. ICT capital remains low, accounting for just 1.1 percent of total capital in 2019, while high internet costs and frequent outages particularly affect smaller firms in 2023. Internet penetration among households is also limited, with adoption at just 37.8 percent and computer usage at only 15 percent in 2021. A pronounced digital divide exists across sectors, firm sizes, and households, influenced by factors such as income, location, education, and gender. transformative effects of digital technologies on economic growth and job creation hinge on their widespread adoption and intensive use by both firms and households.

Several obstacles continue to impede progress. These include the high cost of digital technologies, a weak regulatory environment in the ICT sector, slow expansion of fixed broadband infrastructure to rural areas, low digital skill levels, and slow adoption of digital IDs and digital signatures. These factors contribute to significant coverage and usage gaps in Nepal's digital landscape.

To unlock the full potential of the digital sector and meet the government's ambitious goals for IT exports and job creation over the next decade, Nepal must address both the coverage and usage gaps. The coverage gap stems from the commercial challenges of serving remote populations without government support, while the usage gap reflects barriers that limit the demand for and adoption of digital technologies. Overcoming these challenges will require a comprehensive approach, including regulatory reforms, accelerated development of digital public infrastructure, reformation of the Rural Telecommunication Development Fund (RTDF), expansion of digital skills programs, increased affordability of digital devices, and support for the transition to advanced networks and technologies.

5.1. The current state of Nepal's digital sector

The digital sector encompasses a broad range of goods and services but is treated in this chapter as equivalent to the ICT sector. It includes Business Process Outsourcing and IT-enabled Services (BPO-ITES), such as call centers and data entry (Figure 5.1), as well as digital platforms beyond the traditional ICT sector, including digital financial services, e-commerce, education platforms, ridesharing, and homestay services. However, this chapter adopts a narrower focus on ICT services and manufacturing, unless otherwise specified, due to limited data on BPO-ITES and other digital platforms.

Figure 5.1. Key segments in the digital sector

SECTOR	SEGMENT	FIRM EXAMPLES	
ICT manufacturing	Electronic components	Intel, Nvidia, Qualcomm, TSMC	
	Computers and peripheral equipment	Apple, Dell, Lenovo	
	Communications equipment	Apple, Ericsson, Huawei, Samsung	
	Consumer electronics	Apple, Samsung, Sony	
ICT services	Publishing, broadcasting, audiovisual	BBC, Blizzard, Netflix	
	Telecommunication	NTC, Ncell	
	Data centers and cloud computing	Alphabet, AWS, Microsoft	IT Services
	AI and big data analytics	DeepMind, OpenAI	
	IT consulting services	Accenture, IBM	
	IT outsourcing	Infosys, Wipro	
	Operating software	Meta, Microsoft, Apple	
	Application software (including information platforms, search engines, social media, and others)	Citrix, Meta, Microsoft, Oracle, SAP, Tencent, Zoom	
BPO-ITES	Call centers, accounting, human resources, marketing, and others	Concentrix, Teleperformance	
Other digital platform	Digital financial services	Connectips	
	E-commerce	Daraz	
	Employment and sharing platforms	Airbnb, TaskRabbit, Uber, Upwork	
	Other digital platforms	Coursera, Redfin, Teladoc, EdX	

The ICT sector

The digital sector

Source. World Bank (2024a).

5.1.1. Overview of the digital economy

Nepal has been successful in exporting ICT services but not ICT goods

Nepal's private sector has increasingly invested in ICT, around NPR 7.1 billion between 2017 and 2023 across 109 industries.[37],[38] This capital was estimated to have created 6,746 jobs. The diverse range of industries involved, from small-scale enterprises to large-scale corporations, reflects the multifaceted nature of the ICT sector in Nepal. For classification purposes, small industries are defined as those with fixed capital less than NPR 150 million, excluding micro-enterprises and cottage industries. Medium industries have fixed capital between NPR 150 million and NPR 500 million, while large industries possess fixed capital exceeding NPR 500 million.

Box 5.1. Fiscal incentives provided by the government to boost private sector investment in the digital sector

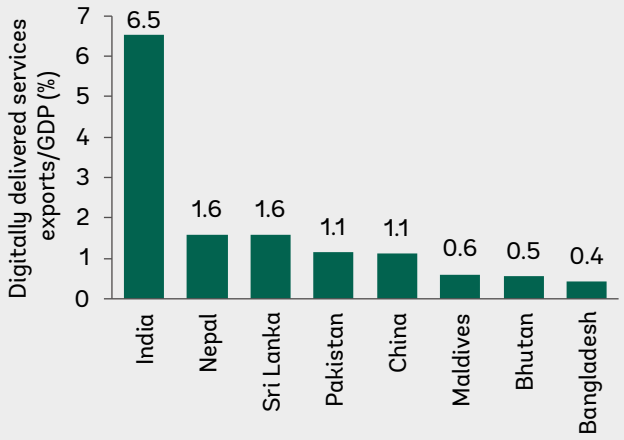
1. A 50 percent exemption on income tax applies to foreign currency earned through the export of Business Process Outsourcing (BPO), software programming, cloud computing, and other IT-enabled services.
2. A 2 percent tax is levied on digital services provided by non-residents to Nepali citizens.
3. There is no digital service tax on annual transactions up to NPR 3 million.
4. There is no minimum investment threshold for foreign direct investment (FDI) in the ICT sector.
5. IT Parks operating within Special Economic Zones are eligible for additional exemptions applicable to industries located in those zones.

Nepal's ICT service sector remains small overall but has contributed to real GDP growth. National accounts data reveal that the ICT services sector accounted for 1.7 percent of Nepal's nominal GDP in 2022, though larger than in most South Asian countries except India (World Bank, 2024a). While its relative size may be modest, the sector has contributed an average of 0.3 percentage points to real GDP growth annually from 2012 to 2024. The private sector plays a dominant role, accounting for nearly 80 percent of the sector's value added (FNCCI and IFC, 2023).

ICT services present a significant opportunity for Nepal to drive export-led growth. This sector, which includes telecommunications, computer, and information services, has consistently contributed to the country's export revenues. Over the past six years, ICT service exports have made up an average of 10 percent of Nepal's total service exports, amounting to 0.3 percent of GDP. This positions Nepal competitively within South Asia, with only Pakistan surpassing it in ICT service exports as a percentage of GDP.

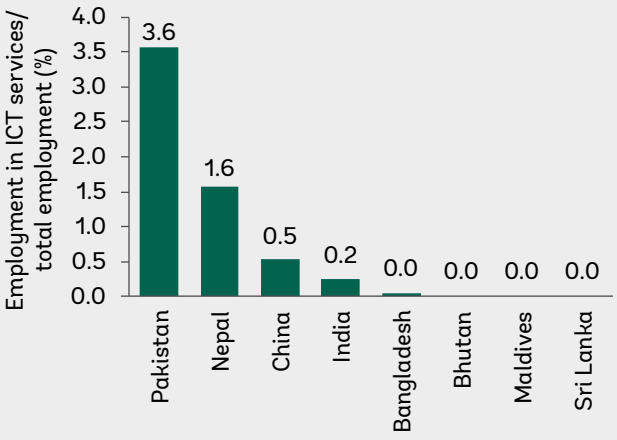
Nepal has outperformed most of its South Asian peers in the export of digitally delivered services (Figure 5.2). This broader category includes all international trade transactions delivered remotely via computer networks, primarily over the internet. Nepal's digitally delivered service exports represent a significantly higher percentage of GDP compared to most countries in the region. From 2005 to 2023, these exports achieved a compound annual growth rate of 11.6 percent, outpacing the 5.8 percent growth rate of non-digital services exports. By the end of 2023, digitally delivered services accounted for over 50 percent of Nepal's total services exports, underscoring their critical role in driving the country's export-led growth.

Figure 5.2. Nepal is competitive in exporting digitally delivered services…



Source: UNCTAD and World Bank Staff calculations.

Figure 5.3. … and employment in ICT services, while still small, is higher than in many peers.



Source: World Bank (2024a).

Despite the success of ICT services, Nepal encounters significant challenges in producing and exporting ICT goods. This mirrors the broader challenges facing the country's export-oriented industries (see Chapters 1 and 3 for details). A key factor contributing to this issue is the low level of FDI in the sector.[39] ICT goods manufacturing is largely dominated by multinational corporations, which operate within complex global value chains that create substantial barriers for Nepalese firms (World Bank, 2024a). In contrast, leading ICT goods exporters like China and Viet Nam have developed their manufacturing industries through substantial FDI, focusing on labor-intensive production and assembly (World Bank, 2024a). As a result, Nepal's ICT goods exports remain minimal, while imports of these goods account for 4 percent of the country's merchandise imports, averaging 1.2 percent of GDP from 2014 to 2024. Notably, communication equipment, including mobile phones, constitutes over half of total ICT goods imports, with computers and peripheral equipment making up more than a quarter of the imports.

Employment in ICT remains small, partly due to a significant skill gap

Nepal's ICT sector labor force has increased steadily but remains small (Figure 5.3).[40] Data from the National Population and Housing Census (2011 and 2021) show that the economically active population in the ICT sector grew at a compounded annual growth rate of 5.1 percent, from 31,849 people in 2011 to 52,145 in 2021. This growth rate is notably higher than the overall labor force growth rate of 4.2 percent, indicating a growing attraction to the ICT sector. However, the ICT labor force remains small, accounting for only 0.35 percent of the total labor force in 2021. Nevertheless, Nepal's ICT services employment rate has been higher than in most other South Asian countries.

A significant gender gap persists, despite an increase in the number of economically active women in the sector. The compound annual growth rate of economically active women in the ICT sector was 7.2 percent between 2011 and 2021, surpassing the employment growth rates for men and women across all sectors. However, the share of women active in the ICT sector remains lower than for men. While the ICT sector accounted for around 0.2 percent of the female labor force in 2021, it accounted for 0.5 percent of the male labor force.

A critical bottleneck to Nepal's digital aspirations and stronger employment in the ICT sector is the lack of skills among workers. Few Nepalis with intermediate and higher education possess the necessary skills to become ICT and Science, Technology, Engineering, and Mathematics (STEM) professionals. Only 0.16 percent and 2 percent of the population have completed education (intermediate equivalent and above) in the ICT and STEM fields, respectively. This shortage of skilled professionals, coupled with the outmigration of existing skilled workers, hinders the sector's growth and potential contribution to the economy.

Student enrollment in Computer and IT engineering programs under the Council for Technical Education and Vocational Training (CTEVT) has also consistently remained below the allocated quota. Although enrollment in CTEVT Diploma and Pre-Diploma Level Computer Engineering programs steadily increased from FY19 to FY22, it declined in FY23, staying below capacity throughout. On the other hand, CTEVT Diploma Level IT programs experienced significant growth, with enrollment increasing more than sixfold during the same period. However, even with this notable growth, enrollment still reached only half of the allocated quota. This persistent gap is driven by several factors, including limited domestic job opportunities, the perceived diminishing value of TVET education, and the increasing appeal of foreign education and employment prospects. [41]

5.1.2. Progress in digital infrastructure

Digital infrastructure is crucial for the growth of the ICT sector, enabling effective communication and connectivity. It comprises both hard (physical) and soft (software and regulatory) components. Reliable internet access, robust telecommunications networks, and secured data centers represent hard infrastructure, while supportive policies, regulatory frameworks, and devices constitute soft infrastructure. Together, these elements facilitate seamless information exchange and the development of innovative digital services. Inadequate infrastructure leads to slow connectivity and limited access to resources, stifling growth, and competitiveness. Furthermore, strong digital infrastructure attracts foreign investment and fosters a vibrant ecosystem for both start-ups and established companies, enhancing productivity and driving economic development within the ICT sector and the broader economy.

Nepal faces a broadband internet coverage gap

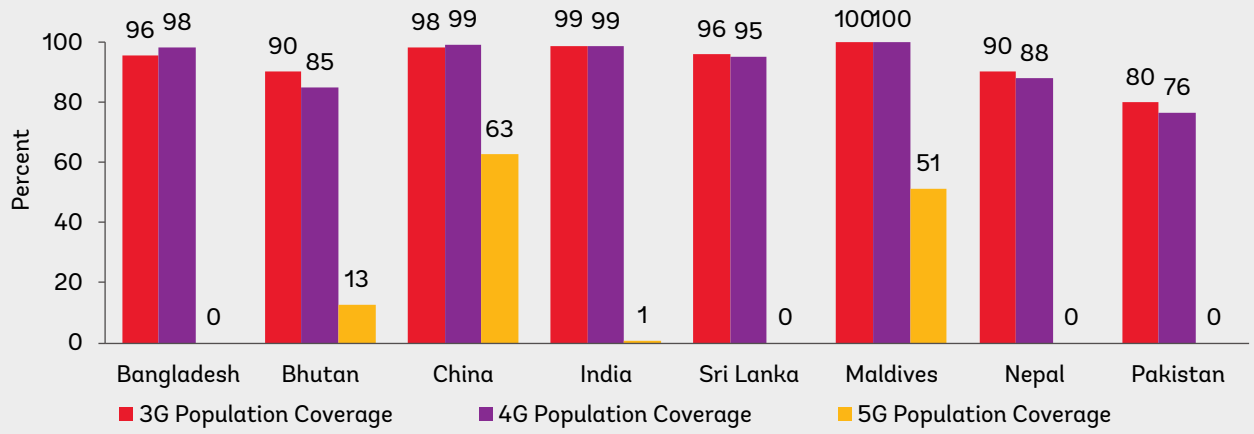
Nepal's landlocked geography prevents direct access to global submarine cables, which are critical for high-speed and reliable global internet connectivity. These cables drive investments in backbone infrastructure, like internet exchange points, data centers, and fiber optic lines. As a result, Nepal relies on India and China for international bandwidth, leading to additional costs due to taxes, tariffs, and foreign currency fluctuations, and subjecting the country to the telecommunications laws of its neighbors. In 2023, Nepali companies spent NPR 4.7 billion importing bandwidth, highlighting the economic impact of this dependence.

Nepal faces a significant coverage gap for fixed broadband internet. Nearly half of the country's population lives more than 10 kilometers away from fiber-optic infrastructure.[42] Fiber-optic backbones, essential for modern high-speed connectivity, span only 4,932 km, limiting the capacity and speed of the country's digital networks and network coverage. While this figure is concerning, it is relatively better than neighboring countries like Bangladesh (41 percent), Pakistan (43 percent), and Sri Lanka (27 percent).

The government aims to tackle the fixed broadband coverage gap through the RTDF. This fund aims to expand fixed broadband internet coverage by adding 6,300 km of optical fiber cables to connect the mid-hill eastern highway with 77 district headquarters and to provide non-dedicated broadband services with a minimum speed of 20 Mbps in selected areas. However, the project's implementation has encountered delays, partly due to legal disputes.

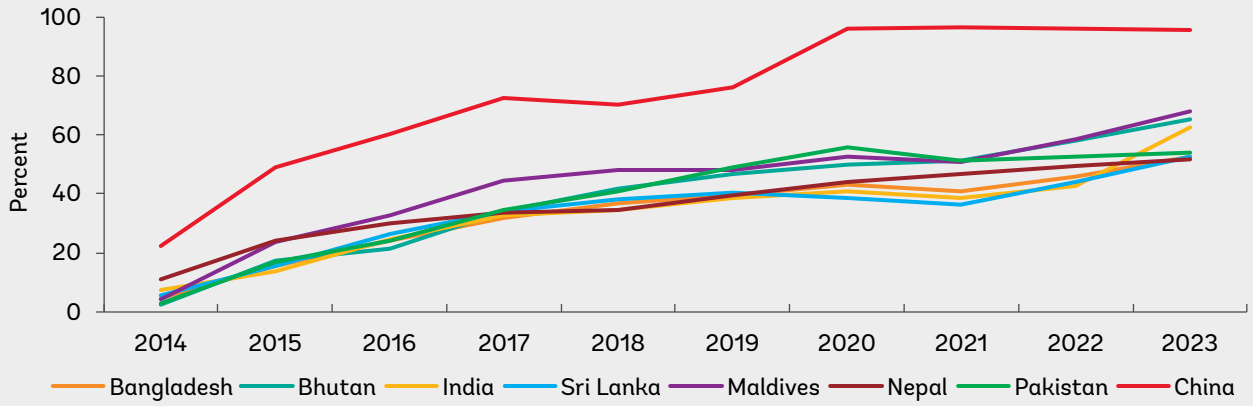
Nepal's mobile network coverage on the other hand has expanded significantly (Figure 5.4). Since 2014, 3G coverage has increased by 10 percentage points, reaching 90 percent of population in 2023. 4G coverage, which was introduced in 2017 and has reached approximately 88 percent of the population by 2023. 5G technology, which promises connection speeds of up to 1,000 megabits per second, has yet to become commercially available, covering currently only 5 percent of the population.

Figure 5.4. Mobile broadband network coverage has expanded…



Source: https://www.mobileconnectivityindex.com/assets/excelData/MCI_Data_2024.xlsx.

Figure 5.5. … but the network quality lags peers.



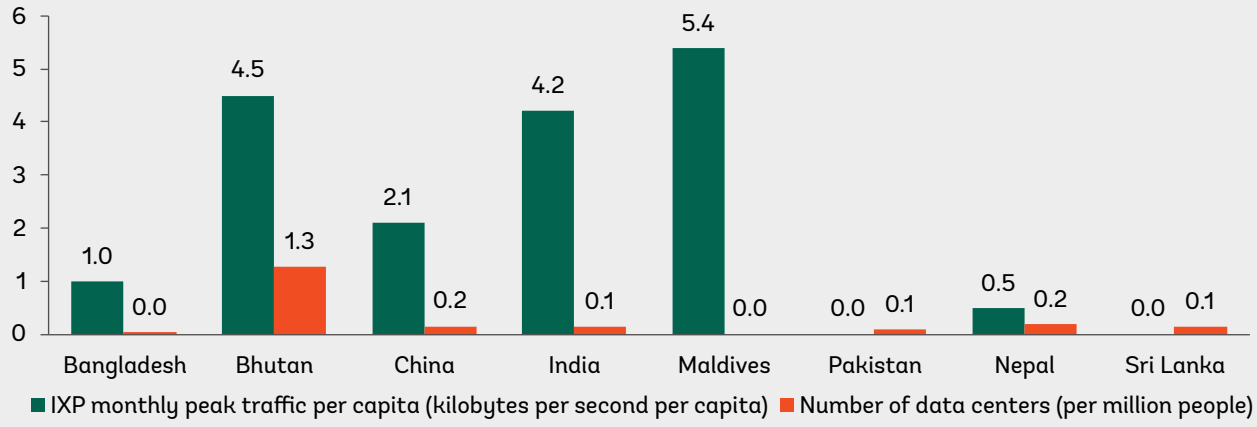
Source: https://www.mobileconnectivityindex.com/assets/excelData/MCI_Data_2024.xlsx.

The quality of Nepal's mobile broadband network has improved in recent years but still lags regional peers (Figure 5.5). The expansion of 4G infrastructure and increased consumer adoption have been key drivers of this progress. Download speeds have nearly doubled, and upload speeds have seen a remarkable sixfold increase, partially fueled by expanded spectrum allocation. Despite these advancements, Nepal's network performance, as measured by a mobile network index, remains below average in the region, primarily due to slower download and upload speeds compared to other South Asian countries.

Nepal's data infrastructure development surpasses that of many regional neighbors

Data infrastructure, including internet exchange points (IXPs), data centers, and cloud computing, is critical for improving the affordability and quality of fixed broadband service. Nepal Internet Exchange (NIXP) was established in 2002 and serves as the country's sole IXP. With two locations in Lalitpur and Kathmandu, NIXP facilitates internet traffic between major telecommunication companies, internet service providers, and government agencies. By enabling data to be exchanged locally instead of routing it through international transit providers, NIXP helps reduce overall data transit costs leading to more affordable internet services. While NIXP boasts a higher-than-average number of members compared to other South Asian IXPs, its limited traffic per capita indicates lower internet usage (Figure 5.6).

Figure 5.6. Monthly traffic of internet exchange point (ISXP) and number of connected data center per million people



Source: World Bank (2024a) and https://datacentercatalog.com/countries.

Nepal, together with India, is at the forefront of data infrastructure development in South Asia. Nepal has achieved a high level of sophistication characterized by the presence of an IXP, a diverse array of IXP participants, large content providers, colocation data centers, and cloud service providers. According to Srinivasan, Comini, and Minges (2021), countries with a greater number of data centers typically benefit from lower latency and reduced data prices. Bhutan is positioned at an intermediate stage, featuring IXPs and diverse participants but lacking colocation data centers. Bangladesh and Pakistan are still in the early phases of development, with only IXPs established to date.

Nepal's colocation data center density is notably higher than the South Asian average. Colocation data centers offer shared infrastructure, including power, cooling, bandwidth, and communications, along with robust security. Thereby, they eliminate the need for individual companies to invest in and maintain their own data centers, reducing costs and improving operational efficiency. They also play a crucial role in the adoption of cloud services by acting as essential "on-ramps" for businesses. Six colocation data centers currently offer essential data storage and processing capabilities for Nepal's firms.[43]

Nepal is committed to developing a robust digital public infrastructure

Nepal's digital public infrastructure (DPI) is still in its early stages (Box 5.2) but has the potential to transform the country's digital landscape. DPI aims to create a secure, interconnected network of systems to ensure equal access to public and private services. It bridges physical infrastructure like broadband networks with applications such as e-commerce and social services (World Bank, 2024a). Key components include a digital identity system, a payment system, and data exchange, providing community-wide benefits. As DPI develops, it is expected to improve public services, enhance individual welfare, and drive commerce and innovation.

Box 5.2. Challenges in building a robust digital public infrastructure

Nepal's digital landscape reflects a fragmented governance structure, with multiple ministries, departments, and agencies (MDAs) managing various aspects of digitalization. The Ministry of Communication and Information Technology (MoCIT) provides the overarching policy framework, overseeing infrastructure development and service deployment. Within MoCIT, the Department of Information Technology (DoIT) focuses on the research, development, and regulation of information technology, acting as both a regulator and a catalyst in the sector. The National Cyber Security Center under MoCIT addresses cybersecurity concerns, investigations, and regulations, while the Integrated Data Management Center (IDMC) under DoIT serves as a central data repository, supporting government digitization efforts. Other key players include the Ministry of Home Affairs, responsible for managing the national ID system, and Nepal Rastra Bank, which oversees digital payments. To enhance coordination and ensure good governance, the E-governance Commission was established in 2022 under the chairpersonship of the Prime Minister and is currently preparing an eGovernment blueprint. Sectoral ministries are also tasked with digitalizing their respective services. The World Bank is collaborating with MoCIT and other MDAs to improve institutional coordination. This collaboration aims to drive a whole-of-government transformation and the creation of digital public infrastructure for good governance and improve service delivery.

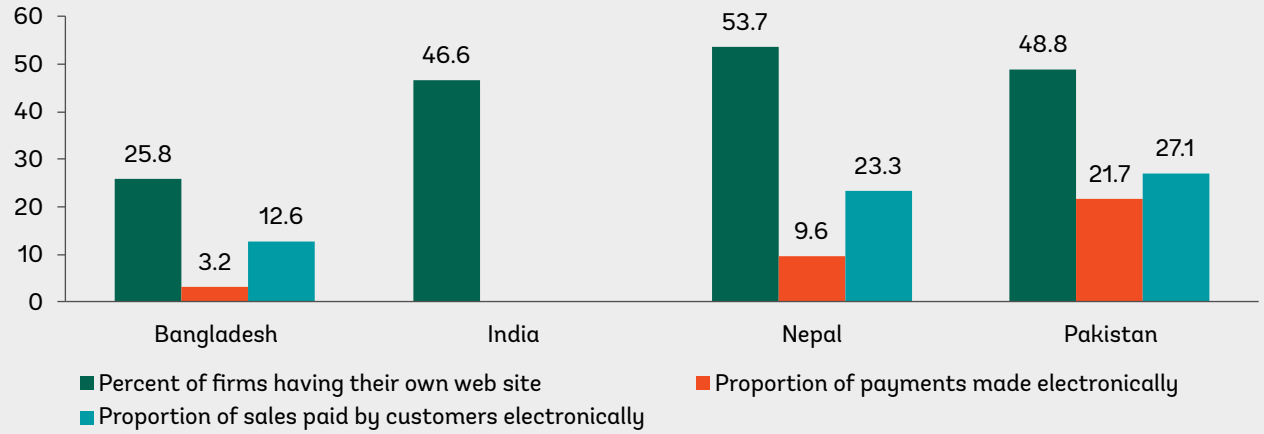
Nepal has made notable progress in building its DPI ecosystem. Initiatives such as the National ID program, Nagarik Mobile App, and connectIPS platform show the country's commitment to digital transformation. The Nagarik App, launched in 2021, now has over 800,000 users, offering access to services from 30+ government bodies. ConnectIPS, introduced in 2018, enables seamless payments and fund transfers for 3.8 million users. Its growing transaction volume reflects the increasing adoption of digital services, highlighting Nepal's progress toward a more digital future.

5.1.3. Progress in digital adoption by firms[44]

Most formal firms in Nepal[45] had high-speed fixed broadband internet in 2023, according to the World Bank Enterprises Survey. Large firms, with over 100 employees led the way with 96.7 percent fixed broadband internet usage, followed closely by medium-sized firms (20 to 99 employees) at 93.7 percent and small firms (5 to 19 employees) at 92.1 percent. Internet usage was also higher in the services sector compared to manufacturing.

Yet only around half of firms had an online presence in 2023, leaving much room for improvement (Figure 5.7). This nevertheless represents a significant increase from 2013, driven primarily by higher website adoption among small businesses (Figure 5.8). The retail sector has witnessed the most substantial growth, with a remarkable 47.2 percentage point increase in website usage over the decade (Figure 5.9). These trends highlight a growing awareness among Nepali businesses of the importance of a strong online presence for customer engagement and sales.

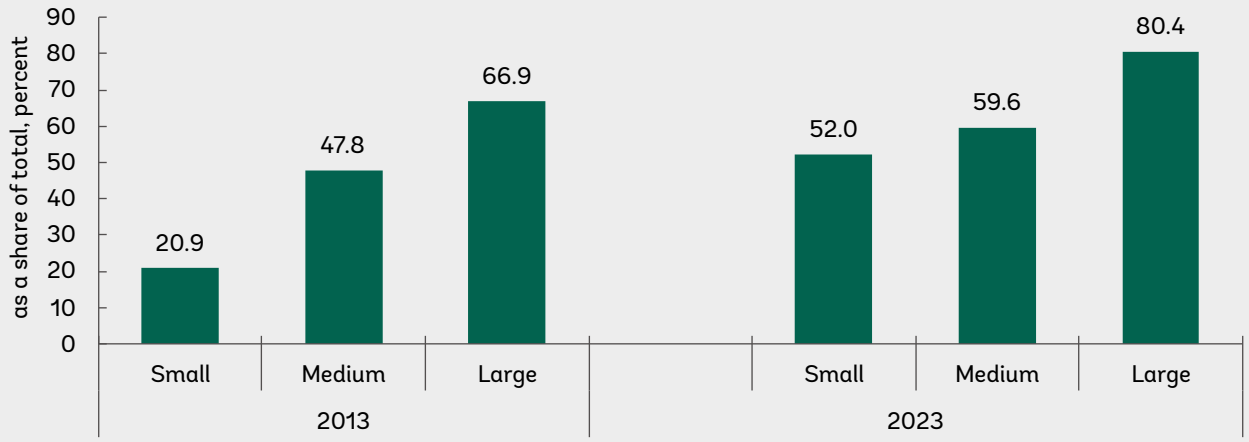
Figure 5.7. Digital technologies adoption by firms in South Asia



Sources: World Bank Enterprises Survey and World Bank staff calculations.

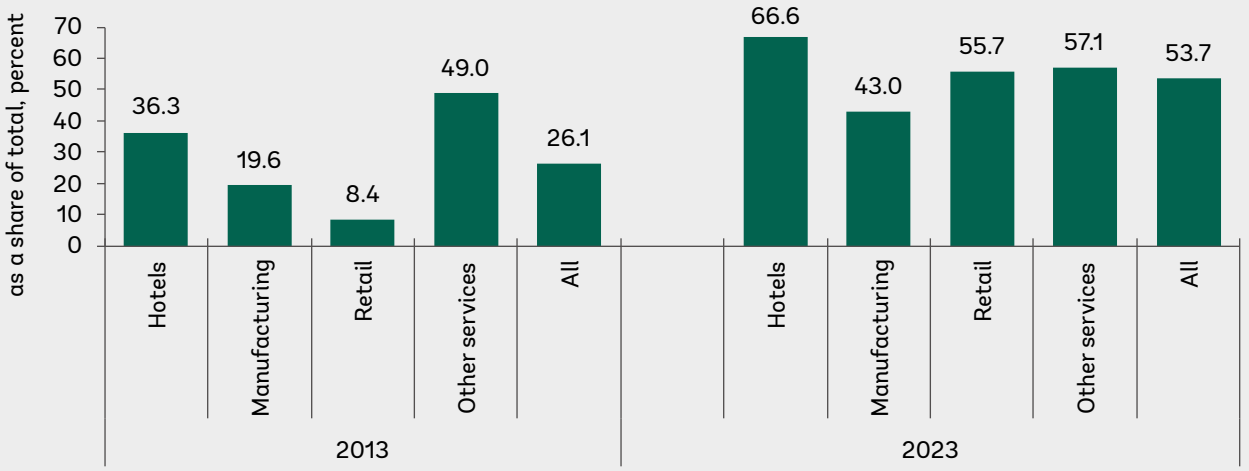
Notes: The data for Nepal is for 2023, while the data for other countries is for 2022.

Figure 5.8. Small firms saw the largest increase in website usage between 2013 and 2023…



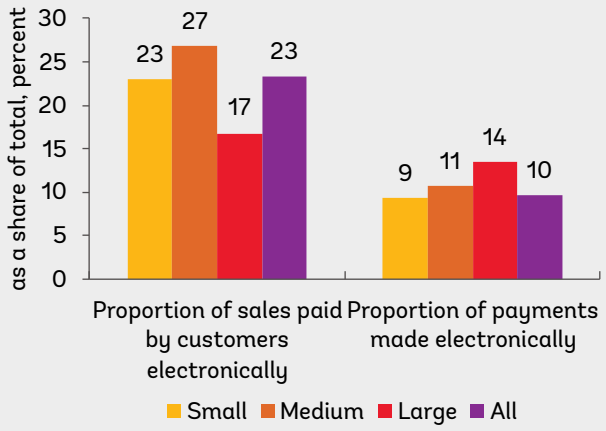
Sources: World Bank Enterprises Survey and World Bank staff calculations.

Figure 5.9. … and the retail sector experienced the largest usage increase between 2013 and 2023



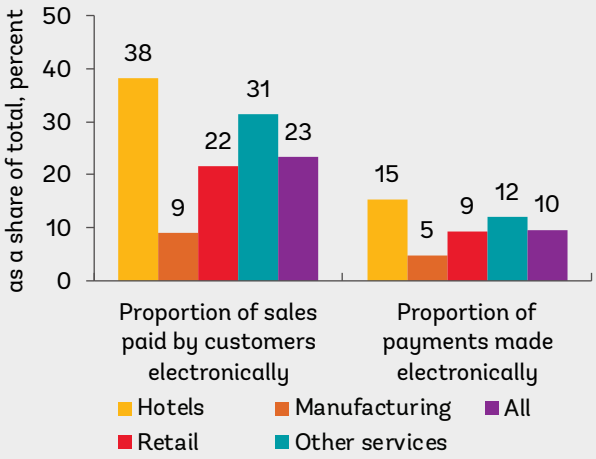
Sources: World Bank Enterprises Survey and World Bank staff calculations.

Figure 5.10. Digital payment usage varies widely across firm sizes...



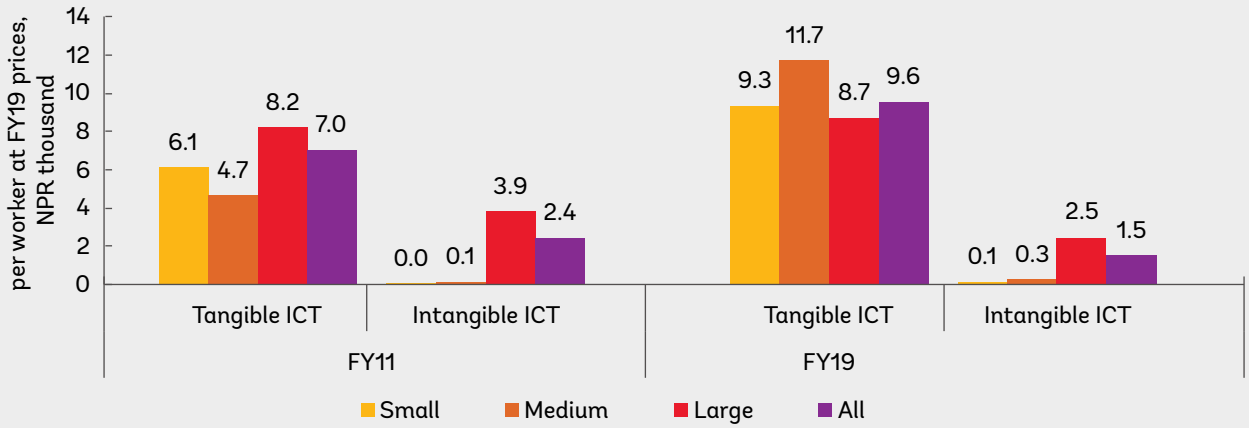
Sources: World Bank Enterprises Survey and World Bank staff calculations.

Figure 5.11. ... and sectors.



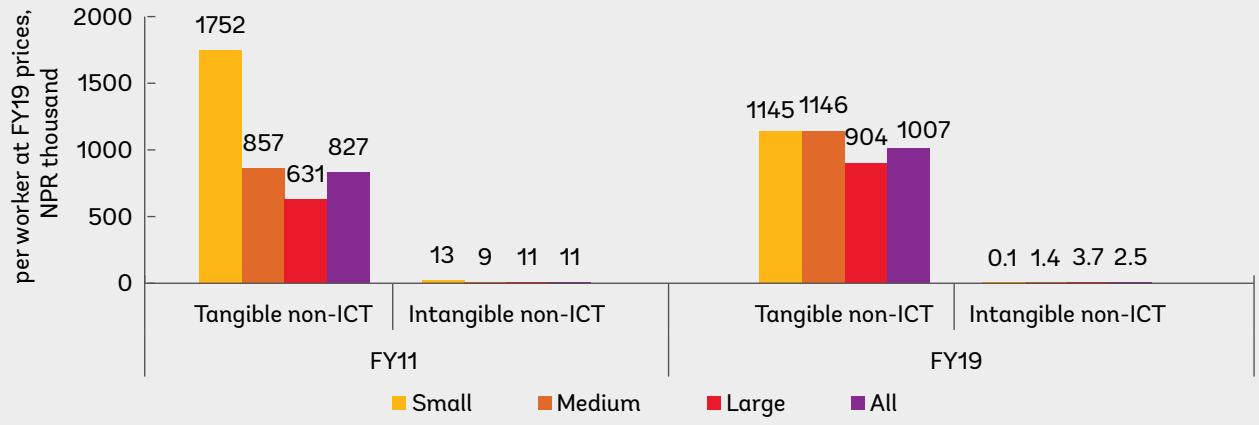
Sources: World Bank Enterprises Survey and World Bank staff calculations.

Figure 5.12. Tangible ICT capital per worker grew faster...



Sources: Manufacturing Census 2011/12, Nepal National Industry Survey 2019/20, and World Bank staff calculations.

Figure 5.13. ... than that of intangible ICT capital per worker



Sources: Manufacturing Census 2011/12, Nepal National Industry Survey 2019/20, and World Bank staff calculations.

Nepal's firms, especially in manufacturing, have not yet broadly adopted digital payments. In 2023, only 9.6 percent of firms made payments electronically (Figure 5.10). This rate is significantly lower than the regional average and even below the percentage of sales paid electronically by customers (23.3 percent). Digital payment usage varies widely across firm sizes and sectors (Figures 5.10 and 5.11). Larger firms had the highest share of payments made digitally but may face higher transaction costs for receiving them, while medium-sized firms received a greater proportion of their sales revenues through digital channels. Among sectors, manufacturing firms recorded the lowest share of both payments made and sales revenues received digitally, whereas the hotel sector showed the highest level of digital payment adoption.

The use of ICT capital per worker in Nepal's manufacturing sector remains low, despite a modest increase between 2011/12 and 2018/19. Tangible ICT capital, which includes computers and related machinery, rose from NPR 7,049 in 2011/12 to NPR 9,562 in 2018/19 (at 2019 constant prices), reflecting a compound annual growth of just 3.9 percent (Figure 5.12). However, the situation is bleaker when it comes to intangible ICT capital, such as software, which saw a concerning annual decline of 5.8 percent per worker. While these growth rates are slightly better than the 2.5 percent and -16.7 percent recorded for tangible and intangible non-ICT capital per worker, respectively (Figure 5.13), the overall picture is grim. ICT capital still accounted for a mere 1.1 percent of total capital in both 2011/12 and 2018/19, highlighting a troubling stagnation in the adoption of crucial digital tools in the manufacturing sector. This is lower than the over 5 percent for China (David, Harry, and Fukao, 2022) and the average of around 4 percent for the OECD, for which data are available.[46]

The COVID-19 pandemic, however, pushed more firms to invest in digital solutions[47]. Data from the Nepal Business Pulse Survey reveals that firms across all sizes and sectors increasingly adopted digital technologies during the pandemic. The share of firms investing in new equipment, software, or digital solutions jumped from 15.3 percent to 27.4 percent between June 2021 and May 2022. This increase was consistent across various sectors and firm sizes, highlighting a widespread commitment to digital enhancement during the crisis.

5.1.4. Progress in digital adoption by households

The adoption of digital technologies by Nepal's households increased, albeit from a low base and penetration rates remain low, leading to a notable usage gap.[48] Internet usage soared from a minimal 3.3 percent in 2011 to a still modest 37.8 percent in 2021, reflecting a compounded annual growth rate of 30.1 percent. Alongside a population coverage of 48 percent (see section 5.1.3), this resulted in a usage gap of 10.2 percent. Ownership of mobile phones and computers also grew, with compounded annual growth rates of 10.8 percent and 9.7 percent, respectively. However, the overall adoption rate for computers remains insufficiently low at 15 percent.[49]

Despite the near universal coverage of mobile broadband, market penetration also remains low. As of the end of 2023, 3G market penetration stood at 25 percent, while 4G penetration was at 69.3 percent.[50] This created considerable usage gaps of 65 percent for 3G and 18.7 percent for 4G.

The use of digital technologies among households varies significantly across Nepal's seven provinces. According to the Nepal Living Standard Survey 2022/23, Bagmati leads both in internet and computer usage with rates of 59.6 percent and 29.1 percent, respectively. In sharp contrast, Madhesh lags woefully in computer usage with a share of 1.1 percent, Karnali trails significantly in internet penetration with just 14 percent of households.

Socioeconomic factors like wealth, residence, age, education, and gender are the key drivers of disparities in the use of digital technology. Wealthier households demonstrate vastly higher rates of internet and computer usage compared to their less affluent counterparts. 11.5 percent of urban households use computers and 49.3 the internet, compared to 2.5 percent and 17.5 percent of rural households, respectively. Older households (age 50+) show markedly lower rates of digital technologies usage. Educational attainment compounds these differences,

with individuals having secondary education or higher being significantly more likely to use digital technologies than those with only basic or no education. Gender disparities are also pronounced, with male-headed households reporting higher computer usage compared to female-headed ones.

The use of digital payment methods among households has increased, but less than in peers. Digital payments offer a more cost-effective alternative to cash transactions and are crucial for expanding financial inclusion. The share of adults making or receiving digital payments in Nepal climbed from 9.9 percent in 2014 to 28.6 percent in 2021.[51] This is lower than in other lower-middle income countries (LMICs) and South Asian peers, where digital payment adoption rates were 38.3 percent and 33.7 percent on average. There are significant gender, age, education, and income disparities.[52]

The COVID-19 pandemic accelerated the adoption of digital payments among adults.[53] Global Findex data for 2021 indicates that nearly 1.5 million adults (5.1 percent of the population) began using digital payments post-pandemic, with urban areas experiencing a more significant increase compared to rural regions. Data from Nepal Rastra Bank (NRB) corroborates this trend, showing a substantial increase in both the number and volume of digital transactions between July 2020 and July 2022.

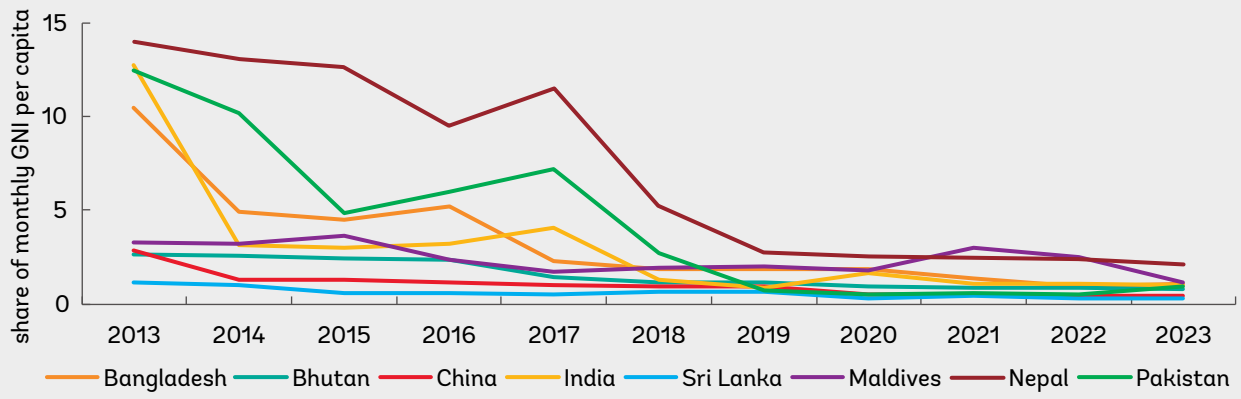
5.2. The key impediments to digital adoption

Progress in digital technology adoption has been hindered by several significant challenges. Key factors include the lack of affordability of digital technologies, a weak regulatory environment in the ICT sector, slow expansion of fixed broadband infrastructure in rural areas, low digital skill levels among the population, and limited advancements in the adoption of digital IDs and digital signatures. These issues have resulted in considerable coverage and usage gaps, underscoring the urgent need for comprehensive reforms to harness the full potential of digital technologies.

Lack of affordability of digital technologies

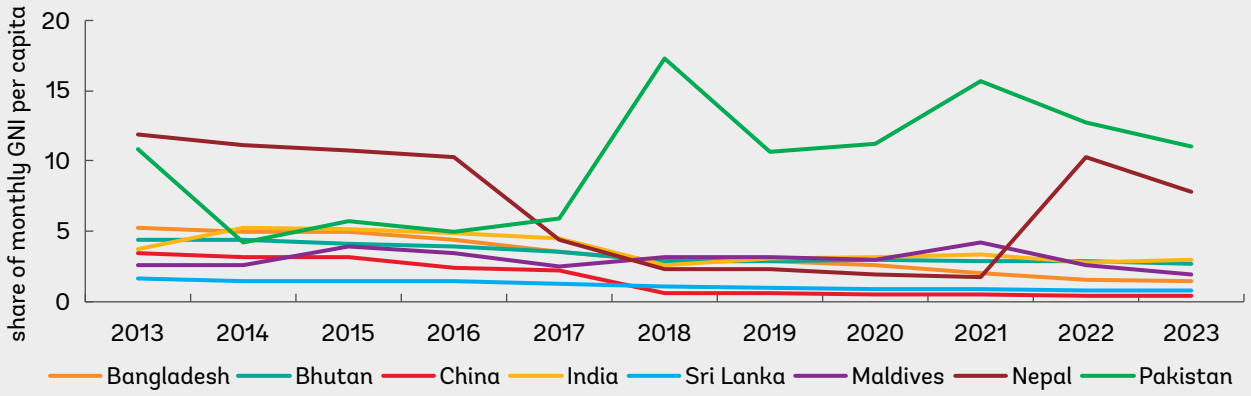
Nepal's fixed broadband prices remain relatively high while mobile broadband affordability has improved significantly. The cost of mobile broadband has decreased substantially in relation to average Gross National Income (GNI) per capita, to 2.14 percent in 2023, just above the UN Broadband Commission's affordability target of 2 percent GNI per capita (Figure 5.14). Fixed broadband, on the other hand, remains less affordable with a cost of 7.8 percent of average monthly GNI per capita (Figure 5.15).

Figure 5.14. Prices for data-only mobile-broadband basket (2GB) remain high as a share of monthly GNI per capita…



Sources: https://www.itu.int/en/ITU-D/Statistics/Dashboards/Pages/IPB.aspx.

Figure 5.15. … as do prices for fixed broadband basket (5GB) as a share of monthly GNI per capita.



Source: https://www.itu.int/en/ITU-D/Statistics/Dashboards/Pages/IPB.aspx.

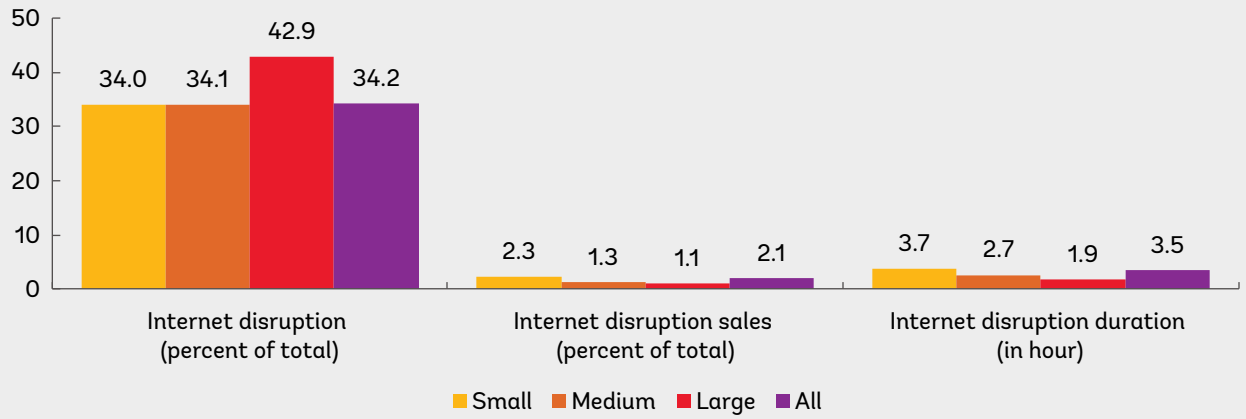
Higher fixed broadband prices in Nepal are partly due to heavy taxation. The ICT sector faces a 30 percent corporate tax rate, on par with the rates for alcohol and tobacco, in addition to a 13 percent value added tax (VAT) rate. Moreover, several sector-specific taxes exacerbate the financial burden, including: i) license and renewal fees; ii) spectrum fees of 0.4 percent of revenues; iii) a 2 percent contribution to the Rural Telecommunication Development Fund, levied on Internet Service Provider; iv) 4 percent royalty fees, levied on Internet Service Provider; v) a 13 percent telecommunication service charge; vi) a 100 percent internet fee as a support and maintenance charge; vi) a Telephone Ownership Tax of NPR 500 for installing a telephone or 2 percent on every SIM card and recharge card for prepaid phones; vii) a 10 percent tax deducted at service for international bandwidth entry into Nepal; viii) a 10 percent fee charged by network service providers for internet bandwidth; ix) a 15 percent customs duty on optical fiber cable and drop cable; and x) a VAT on digital payment services. These cumulative costs are ultimately passed on to consumers.

Device affordability has also continuously worsened. The affordability of entry-level smartphones has deteriorated in recent years, presenting a significant barrier to digital inclusion. The average cost of an internet-enabled phone now amounts to 33 percent of monthly income in 2023, making it increasingly difficult for low-income individuals and households to access digital devices. A major factor contributing to the decline in affordability is the high tax burden on phones, which reached 71.4 percent in 2023, far exceeding that of India (3.1 percent), Sri Lanka (29.9 percent), and Bangladesh (0 percent).

The average annual cost of internet services poses a significant burden to smaller firms. Average annual costs amount to approximately NPR 31,500 or US$ 236. For small firms, internet expenses accounted for 0.7 percent of overall input costs, while it was only 0.1 percent for large firms. This cost disparity is evident across sectors, with hotels facing the highest internet expenses at 2 percent of input costs, in stark contrast to manufacturing firms, which recorded the lowest level of 0.1 percent of input costs.

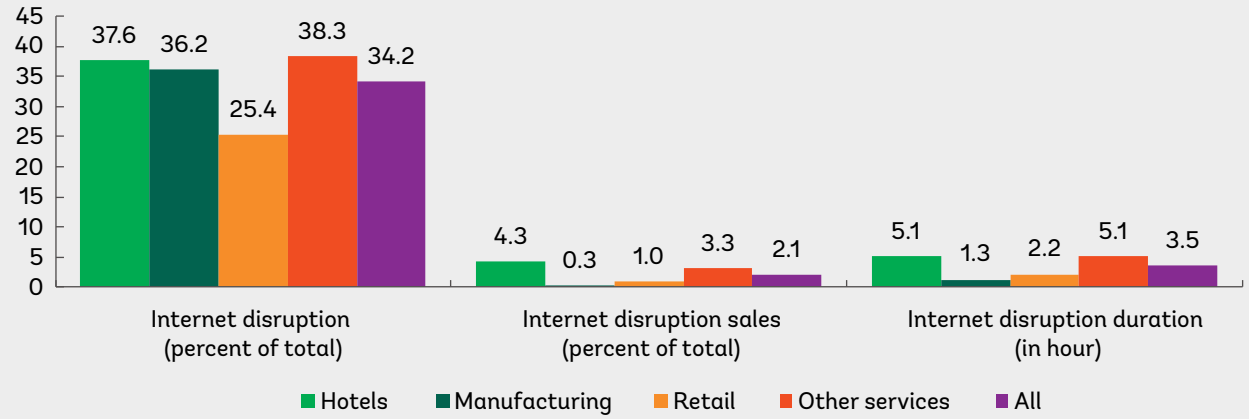
Frequent internet outages continue to disrupt business operations and hinder sales. Over 30 percent of firms experienced significant internet disruptions during the 2022, with an average downtime of 3.5 hours (Figure 5.16).[54] This unreliability had a substantial negative impact on businesses, resulting in a notable 2.1 percent annual sales loss for the average firm.

Figure 5.16. Duration of internet disruption and the impact of disruption on sales were larger for small firms...



Sources: World Bank Enterprises Survey and World Bank staff calculations.

Figure 5.17. ... and firms in "other services" sector.



Sources: World Bank Enterprises Survey and World Bank staff calculations.

The impact of internet outages varies across firm sizes and sectors. Larger firms are disproportionately affected by internet outages, although their disruptions tend to be shorter and less damaging (Figure 5.16). Smaller firms, while facing internet outages less frequently, experience both longer downtime and a more significant decline in sales when disruptions occur. Among sectors, firms in the "other services" sector[55] are most vulnerable to internet outages, suffering from longer downtime and a greater impact on revenue compared to other sectors (Figure 5.17).

Weak regulation and high market concentration

Nepal's Telecommunications Act from 1997 was designed for the pre-digital era and is outdated. The law was established before the widespread adoption of data-based communications and the emergence of digital infrastructure. NTA's regulatory effectiveness is further hindered by its lack of independence. Its members are appointed by the Ministry of Communication and Information Technology, which gives rise to potential conflicts of interest, complicating the regulatory landscape.

Nepal's ICT regulatory environment is therefore weaker than in other LMICs and has not improved over the past 15 years. In 2022, the International Telecommunication Union's (ITU) ICT Regulatory Tracker (ICT-RT) scored Nepal's overall regulatory framework at 60 out of 100, below the 66.1 average for LMICs. The lower score was primarily due to weaknesses in the regulatory regime and competition framework and characterizes Nepal as a Generation 2 early open market with basic reforms and partial liberalization and privatization.[56] Alarmingly, Nepal's

categorization has not improved but remained constant over the last 15 years, while the share of LMICs in Generations 1 and 2 has decreased from 94 percent in 2007 to 46 percent in 2022.

The weak competition framework score reflects a highly concentrated broadband market. Currently, mobile broadband services are dominated by just two players. The state-owned operator Nepal Telecom controls 57.5 percent of the market while Ncell, a private company, controls the remaining 42.5 percent. The lack of competition extends to the fixed broadband internet sector, where over 20 companies exist, but six major players capture nearly 80 percent of the market share. A high concentration can stifle innovation, lead to higher prices for consumers, limit service expansion, and ultimately hinder the quality of the service offered.

Recognizing this challenge, the Nepal Telecommunication Authority (NTA) is taking steps to introduce a third mobile operator. A Frequency Auction[57] will allow new players to participate and potentially disrupt the current market dynamics. The winner of the auction will receive a spectrum allocation and a license to operate as a mobile broadband service provider, offering a full range of services approved by the NTA. Additionally, Nepal recently eliminated the minimum threshold for FDI in the ICT sector, aiming to attract more foreign investment in its telecommunication services. These initiatives have the potential to foster a more competitive landscape, ultimately benefiting consumers through improved services and potentially lower prices.

The weak regulatory regime score reflects the lack of infrastructure sharing and secondary trading of spectrum, which authorities intend to address through a new regulation. According to ITU, infrastructure sharing can lead to significant cost savings, up to 30 percent for passive infrastructure and 50-60 percent for active infrastructure. Nepal has already established the "Bylaws Related to Infrastructure Sharing and Fee Determination of Infrastructure Sharing, 2021," which outlines the active (e.g., base stations, routers, switches) and passive (e.g., towers, shelters, buildings, land) infrastructure eligible for sharing. However, a major issue with the regulation is the reluctance of dominant players to share their infrastructure and the lack of effective enforcement mechanisms.

The new spectrum policy introduced by government in 2023 does not allow for spectrum trading. While the policy recognizes emerging technologies like Internet of Things (IoT) and Machine-to-Machine (M2M) it falls short of international best practices by not allowing spectrum trading, a crucial component especially for high-demand spectrum typically associated with long license terms and high premiums (e.g., mobile spectrum). [58] This omission is significant, with nearly one-third of economies globally permitting spectrum trading.[59] Secondary spectrum trading enables companies to sell or lease unused spectrum, maximizing resource efficiency and value.[60] It also grants licensees with long-term licenses the flexibility to adjust their holdings in response to changing market demand and technological advancements. Finally, a secondary market ensures more accurate spectrum valuation as prices adjust to reflect real market conditions.

Slow progress in expanding fixed broadband infrastructure in rural areas

The commercial viability of expanding internet coverage to rural areas is limited in Nepal. The rugged terrain, remote locations, sparse populations, and low-income levels all contribute to high infrastructure costs and limited market potential. Nepal's low population density reduces the number of potential customers per kilometer of network and further discourages investment. Finally, the economic constraints in rural areas make it difficult to offer services at affordable rates, worsening the digital divide.

In 2012, the government established the RTDF as a universal service fund to support rural areas. The RTDF aims at developing, expanding, and operating telecommunications in Nepal's rural areas. It is designed as a self-sustaining system, with all licensed telecommunication service providers required to contribute 2 percent of their annual revenue to the fund. The fund's resources are allocated strategically through competitive bidding.

Currently, the RTDF is focused on two key initiatives. First, the construction of an optical fiber network aims at connecting the mid-hill (eastern) highway with district headquarters. Progress, however, has been slow, with only

1,694.1 km out of the targeted 4,669.2 km of optical fiber installed so far. The second initiative aims at providing non-dedicated broadband services that can be shared among multiple users with a minimum speed of 20 Mbps in selected areas. As of January 2024, only 165 out of 732 local levels have been connected, with 387 km of optical fiber cable installed out of the targeted 1,634 km. The Broadband Access Connectivity project provided broadband access to local government offices, ward offices, secondary schools, and health centers across 708 local levels.

Despite these efforts, data from the Center for Education and Human Resource Development (CEHRD) highlight a concerning gap. By the end of 2024, 41.8 percent of the 27,990 community schools lacked computers, and 56.9 percent did not have broadband internet.

Low level of digital skills

A digitally skilled workforce is crucial for Nepal to unlock its technological potential, foster innovation, and drive the country's digitalization efforts forward. Wiley's Digital Skill Gap Index assesses the availability of digital skills across countries and evaluates how prepared the workforce in various nations is to meet the demands of an increasingly digital and tech-driven economy. The index measures digital skills across five key areas including information and data literacy, communication and collaboration, digital content creation, safety in digital environments, and problem solving. Mastering these competencies is crucial for developing a digitally skilled workforce and enhancing digitalization in Nepal.

Based on the 2021 digital skill gap assessment, Nepal has one of the largest digital skill gaps in South Asia and globally. Out of 134 economies assessed in the index, Nepal ranks 124th, lower than other South Asian countries. Nepal performed particularly poorly in the areas of information and data literacy, communication and collaboration, and digital content creation. With a score of just 2 out of 10, where 10 represents excellent digital skills, Nepal ranks considerably lower than India, which scored a 5. This poor ranking highlights Nepal's urgent need to develop a more digitally skilled workforce to harness its technological potential and drive innovation.

Nepal's adult population demonstrates a limited ability to perform even basic digital tasks. According to 2023 data from the United Nations Educational, Scientific, and Cultural Organization (UNESCO), only 9 percent of Nepal's adults (ages 15 and older) can execute fundamental tasks like copying and pasting text within documents. A mere 5 percent can use basic formulas in spreadsheets, and only 1 percent can write computer programs, well below the averages of 3 percent for LMICs and 6 percent for high-income countries (HICs). 2023 data from the Ministry of Education, Science and Technology reveals another concerning trend that less than 1 percent of students in grades 11 and 12 opt to major in computer science.

Digital literacy challenges are a key impediment to improving digital skills in Nepal. A household survey conducted in Nepal in 2017/18 identified digital literacy as the main barrier to internet use among adults. Among non-users, 77 percent cited digital literacy as the main obstacle, with two-thirds unaware of what the internet was and 10 percent unsure of how to use it (LIRNEasia, 2018). Other obstacles included affordability concerns (9 percent), with 8.5 percent lacking access to a computer or smartphone and 0.5 percent finding costs prohibitive. Additionally, 12 percent noted relevance issues, while other factors accounted for 2 percent of the responses.

Delay in adoption of key digital public infrastructure elements

The adoption of digital identities (IDs) is still lagging, primarily because it has not been widely integrated into use cases. Despite 15 million registrations so far, access restrictions to the digital ID platform have hindered its widespread use. The focus on issuing physical ID cards has been a key obstacle to broader digital ID adoption. However, the government's recent decision to increase the use of digital IDs for various services from 2025 should improve adoption rates. It will be critical to ensure that access to services remains unimpeded for those yet without IDs during the transitional period.

Digital signatures were legally recognized in 2006 but remain underutilized in Nepal. Although the Electronic Transaction Act 2006 and Electronic Transaction Rules 2007 provide for digital signatures, their use remains low. Banking institutions continue to rely on physical signatures, highlighting the need for regulatory reforms to equate digital signatures with physical ones. While there has been progress, such as the Office of Company Registrar adopting digital signatures in October 2023, it has taken nearly eight years since their official recognition in December 2015.

Security issues like server and data breaches have fueled a notable lack of trust in digital payment systems. The lack of confidence data breaches caused in the past is further reflected in the rising use of paper-based payment instruments in Nepal between 2018 and 2022, as reported by the Alliance for Financial Inclusion (2024), which stands in contrast to declining trends in other South Asian countries.

5.3. How digital technologies can boost growth and jobs

Digital technologies can significantly enhance firm productivity, the key driver of sustained economic growth. These technologies, including the internet, computers, or mobile phones, serve as powerful tools for efficiently gathering, storing, analyzing, and transmitting data. They significantly reduce various economic costs (Goldfarb et al., 2019), including search, replication, transportation, and verifications costs. By reducing these expenses, firms can boost profitability, promote economic inclusion, enhance efficiency, and drive innovation, all of which contribute to increased productivity and, ultimately, economic growth.

During the pandemic, digital technology adoption and investment were closely linked to an increase in digital sales. An analysis of panel data from the Nepal Business Pulse Surveys, using a fixed-effects estimator, revealed that firms investing in new equipment, software, or digital solutions during the pandemic experienced an over 8 percent increase in their share of digital sales compared to those that did not invest (Annex Table A1). Similarly, firms that began using or intensified their use of the internet, online social media, specialized apps, or digital platforms saw a more than 5 percent rise in digital sales within the past 30 days, relative to firms that did not invest in digital solutions (Annex Table A1). These findings underscore that digital adoption is as vital as digital investment for fully unlocking the economic growth potential of digital technologies.

Firms adopting digital technologies also demonstrated significantly higher labor productivity than non-adopters. Digital technologies can boost labor productivity by automating routine and repetitive tasks and freeing up workers to concentrate on more complex, strategic, and high-value activities. An analysis of cross-sectional data from the World Bank Enterprises Survey 2023 using an Ordinary Least Squares (OLS) estimator (Annex Box 1) revealed that website usage is associated with approximately 27 percent higher labor productivity on average among manufacturing firms (Column 1, Annex Table A2a). Additionally, OLS analysis of cross-sectional data from the Nepal National Industry Survey 2019/20 indicated that a 1 percent increase in ICT capital leads to a roughly 10 percent increase in labor productivity, ceteris paribus (Column 1, Annex Table A2b). Further analysis accounting for both tangible and intangible ICT capital showed a 10.4 percent increase in labor productivity linked to tangible ICT capital, while intangible ICT capital had a -3.3 percent effect, though the latter was statistically insignificant (Column 2, Annex Table A2b). These findings highlight the substantial impact of digital technology adoption on enhancing labor productivity in Nepalis firms.

These findings are robust to the use of panel data of firms from World Bank Enterprises Surveys. The results, derived from a fixed-effects estimator, indicate that firm-level characteristics that do not change over time do not alter the outcomes observed in the cross-sectional data (Columns 3-4, Annex Table A2a). Additionally, using a fixed-effects estimator on panel data from manufacturing sub-sectors[61] suggests an even greater impact of ICT capital on labor productivity than what was observed in cross-sectional data (10.8 percent for ICT capital). However, the impact is smaller when both tangible and intangible ICT capital are included in the analysis (Columns 3 and 4, Annex Table A2b). It is important to note that these results should not be interpreted as a causal effect on labor productivity, given the potential for simultaneous determination between ICT capital and labor productivity.

Digital technologies can also boost job creation in Nepal, both directly and indirectly. By reducing transaction costs and fostering entrepreneurship and self-employment, these technologies open new avenues for employment. Examples like Daraz Nepal, a foreign-owned e-commerce platform and a subsidiary of Alibaba Group, showcasing a surge in registered sellers from 2,500 in 2019 to 20,000 [62] within five years, illustrate this potential. Similarly, Foodmandu, an online food delivery service, demonstrates the impact on job creation. Starting with a small team, they now process an average of 2,000 orders daily and directly employ 450 people, including 300 delivery staff.[63] The low-wage structure, flexibility offered by remote work, and the availability of an English-speaking young population make Nepal attractive for Business Process Outsourcing (BPO) companies. CloudFactory, a leading foreign-owned BPO established in 2010, serves as a prime example. Their workforce grew from just three Nepali developers in 2010 to 325 full-time employees in 2019, with an additional 4,000 outsourced workers globally, primarily consisting of college students in Nepal and Kenya.[64]

5.4. Looking ahead: Policy recommendation to close the coverage and usage gaps

Nepal has officially declared 2024 to 2034 as the Information Technology Decade, signaling a strong commitment to digital transformation. The government previously demonstrated this dedication in the Digital Nepal Framework (DNF) for 2019 – 2023, a comprehensive strategy that outlined 80 digital initiatives across eight sectors. Nepal's 16th Development Plan aims to increase the share of IT in nominal GDP to 5 percent and generate an additional 250,000 jobs by 2029.

However, significant efforts are still needed, as demonstrated by the sluggish implementation of the DNF. Key initiatives such as digital signatures, 5G deployment, and establishing the internet as an essential service have not advanced as anticipated. To adapt to the rapidly evolving digital landscape, the government is revising the DNF to include emerging trends in artificial intelligence, digital public infrastructure, and cloud computing.

Nepal's digital transformation efforts face several challenges, including a broadband internet coverage and usage gaps. The coverage gap stems from the commercial unviability of serving remote populations without government intervention. The usage gap highlights the demand-side barriers that hinder the adoption of digital technologies. Nepal's digital transformation, however, hinges on the widespread digital adoption by both firms and households. Despite progress, only 52 percent of firms have websites and only a small portion uses electronic payments. ICT capital investment is low, the cost of internet high, and outages affect particularly smaller firms. Internet adoption by households remains limited, with only 37.8 percent using the internet and 15 percent owning computers. Digital divides persist across firm sectors, firm sizes, and household demographics.

Overcoming these challenges will require a multifaceted approach. Nepal needs to improve the regulatory environment, accelerate the development of digital public infrastructure, reform the RTDF, expand digital skills, make digital devices more affordable, and promote the transition to advanced networks and technologies. By addressing these gaps, Nepal can unlock the full potential of digital transformation for economic growth and job creation.

Table 5.1. Policy recommendations to boost digitalization

	POLICY RECOMMENDATIONS – BOOSTING THE DIGITAL SECTOR			
	Recommendation	Fiscal Impact	Recommendation	Fiscal Impact
	Creating Opportunities			
Tier 1	Improve the regulatory environment.	● Low	Accelerate the development of digital public infrastructure.	● Low
Tier 1	Reform the RTDF.	● Low		
Tier 2	Make digital technologies more affordable.	● Low	Promote the transition to advanced networks and technologies.	● High
	Creating Capabilities			
Tier 1	Expand digital skills.	● Low		

Recommendation 1: Improve the regulatory environment.

Summary of the issue: The ICT regulatory environment in Nepal is relatively weak compared to neighboring countries and other LMICs. The result is a concentrated broadband market, the absence of infrastructure sharing and secondary spectrum trading, an outdated Telecommunications Act, and a lack of regulatory independence.

How: Foster a more competitive landscape through the establishment of a dedicated competition authority and strengthen the financial and structural independence and rule-making authority of Nepal Telecom Authority. Update the 1997 Telecommunications Act and the digital strategy to reflect the evolving digital landscape, emphasizing the transition from voice to data-centric services, as well as addressing cybersecurity, personal data protection, and ethical AI. Enable the leasing and secondary trading of spectrum and amend existing bylaws related to infrastructure sharing to strengthen enforcement measures and encourage participation.

Example: Italy has a robust ICT regulatory environment with an overall score of 99 out of 100 on the ICT regulatory tracker. The country features full competition in both mobile and fixed broadband markets, mandates infrastructure sharing, enables secondary spectrum trading, and has a dedicated competition authority.

Recommendation 2: Accelerate the development of digital public infrastructure.

Summary of the issue: Nepal's progress in building a robust DPI has been hampered by the slow adoption of digital identity and digital signatures, coupled with concerns about digital payment security.

How: Promote the use of digital IDs for various government services while ensuring inclusion. Integrate digital signatures in existing processes, such as banking transactions. To build trust in digital payments, prioritize user protection and security by implementing robust measures for personal data and consumer protection, enforce existing electronic transaction laws, and enhance cybersecurity infrastructure.

Example: India Stack, a pioneering digital public infrastructure initiative, has significantly transformed the nation's digital landscape.[65] Its core components, including Aadhaar, Unified Payments Interface (UPI), eSign, DigiLocker, eKYC, and the consent layer, have collectively empowered citizens and businesses. By providing secure digital identity, facilitating seamless payments, enabling electronic document management, and empowering data privacy, India Stack has fostered innovation, improved efficiency, and promoted financial inclusion.

Recommendation 3: Reform the Rural Telecommunication Development Fund.

Summary of the issue: Progress in utilizing the RTDF has been slow, coupled with a lack of transparency in reporting its usage. While the Nepal Telecommunication Authority publishes annual and quarterly reports on project implementation, these documents are often not user-friendly and lack detailed information about the specific projects being funded.

How: Increase transparency of the fund by ensuring that all project documents, including agreements, are presented in a more reader-friendly format. Shift the emphasis of the RTDF towards providing demand-responsive services tailored to the actual needs of rural communities, thereby addressing the existing usage gap. This could involve funding low-cost data plans with special "friends and family" rates and facilitating access to devices such as smartphones, tablets, or computers.

Example: India sets a strong example by publishing comprehensive details of all project documents funded by its Universal Services Fund, including agreements, thereby ensuring transparency and accountability.[66] Malaysia has effectively utilized its Universal Services Fund to support underprivileged communities, financing over 1.6 million netbooks for low-income students and households between 2010 and 2015 and providing more than 2.5 million smart devices from 2014 to 2020 at prices below retail, along with free internet subscriptions for rural areas and low-income groups.[67]

Recommendation 4: Make digital technologies more affordable.

Summary of the issue: Nepal's digital adoption is hindered by the high cost of fixed broadband internet and mobile devices, which is partly due to heavy taxation.

How: Leverage the RTDF to subsidize device purchases, making technology more accessible for underserved communities. Evaluate the trade-offs between short-term fiscal revenue from digital infrastructure and services and their potential long-term impact on digital technology adoption. Encourage the use of refurbished computers and tablets as affordable options for schools and institutions.

Example: Malaysia successfully subsidized over 2.5 million smart devices from 2014 to 2020 for rural areas and low-income groups through its Universal Service Fund.[68] Canada's Computers for Schools Plus (CFS+) program has refurbished and distributed nearly 2 million computers and other digital devices for over 30 years.[69] The program targets schools, libraries, not-for-profit organizations, Indigenous communities, and eligible low-income Canadians.

Recommendation 5: Promote the transition to advanced networks and technologies.

Summary of the issue: The deployment of new technologies such as 5G networks, was a key initiative of the DNF. 5G mobile technologies offer much higher speeds, lower latency in data transmission, and enhanced capacity to connect large numbers of users simultaneously with minimal interference (World Bank, 2024b). Nepal has begun piloting 5G technology, which was originally planned for rollout in 2021 but was postponed due to geopolitical issues.

How: Address spectrum costs by reforming the spectrum policy. Nepal's 2024 spectrum policy permits all operators to deploy 5G using existing or auctioned frequencies, starting in 2025. However, operators must clear all government dues before participating in auctions. The government must balance increased spectrum revenue with potential impacts on coverage and pricing. Share public infrastructure. High investment costs exceeding NPR 50 billion, largely due to the expensive establishment of mobile sites, have hindered 5G deployment by mobile operators. Government support in providing public infrastructure could significantly reduce these costs (World Bank, 2024b).

Example: According to the Global System for Mobile Communications Association, 5G adoption is rapidly expanding, with 98 countries having 5G networks and over half exceeding 50 percent coverage by December 2023.

Examples include the Maldives (58 percent), India (30 percent), and China (90 percent). In 2018, India's Department of Telecommunications recommended creating uniform guidelines for state and local governments and improving the clearance process through online applications and prompt responses to facilitate 5G deployment.

Recommendation 6: Expand digital skills

Summary of the issue: Nepal ranks very low in digital skills, both in South Asia and globally. Over two-thirds of the adult population report difficulties related to digital literacy that prevent them from using the internet.

How: Integrate digital skills into school curricula and implement tailored training programs for different age groups and demographics. CTEVT to develop demand-oriented training programs in partnership with industry that are focused on high-end IT skills to create an employable talent pool.

Example: Singapore serves as a strong example of a country that has effectively promoted digital skills development. The National Digital Literacy Program, launched in March 2020, targets schools and Institutes of Higher Learning, focusing on a comprehensive approach to digital skills through the "Find, Think, Apply, Create" framework.[70] This framework is broken down into nine digital competencies, which aim to deepen digital literacy among students as part of the EdTech Masterplan 2030. Additionally, the Digital Skills for Life program is designed to equip all Singaporeans with essential digital knowledge and skills, enabling them to perform daily online tasks, navigate the digital landscape, and protect themselves against online risks.[71] Another significant initiative, the Skills Framework for ICT, promotes mastery of ICT skills and supports lifelong learning for individuals, employers, and training providers.[72]

References

Chapter 1

Chinn, M.D., and Ito, H. (2006). What Matters for Financial Development? Capital Controls, Institutions, and Interactions. *Journal of Development Economics*. Volume 81, Issue 1: 163-192.

Darvas, Z. (2021). Timely Measurement of Real Effective Exchange Rates. Working Paper 2021/15. Bruegel.

Eckstein, D., Künzel, V. and Schäfer, L. (2021). Global Climate Risk Index 2021: Who Suffers Most from Extreme Weather Events? Weather-Related Loss Events in 2019 and 2000–2019. Berlin. Germanwatch.

Gollin, D. (2018). Structural Transformation and Growth without Industrialization. Pathways for Prosperity Commission Background Paper Series. No. 2 Oxford. United Kingdom.

Hasan, R., Mitra, D. and Ramaswamy, K. (2007). Trade Reforms, Labor Regulations, and Labor-Demand Elasticities: Empirical Evidence from India. Review of Economics and Statistics 89 (3): 466–81.

Ministry of Labor, Employment and Social Security. (2022). *Nepal Labor Migration Report 2022*. Kathmandu. Nepal.

Phadera, L. (2019). Impact of International Migration on Labor Supply in Nepal. Policy Research Working Paper No. 9014. World Bank Policy Research Paper.

Rodrik, D. (2015). Premature Deindustrialization. Working Paper 20935. Cambridge. Massachusetts.

Ruppert Bulmer, E., Shrestha, A., and Marshalian. M. (2020). Nepal Jobs Diagnostic. Washington, DC: World Bank.

Sapkota, S., Shrestha, M., and Shrestha, S. Returnees: A primer on a data and research agenda for Nepal. Unpublished mimeo: World Bank Staff estimates NLSS IV.

World Bank. (2021a). South Asia Economic Focus: Shifting Gears: Digitization and Services-Led Development. Fall. Washington, DC: World Bank.

World Bank. (2021b). Risks to Poverty, Vulnerability, and Inequality from COVID-19: Nepal Light Poverty Assessment. Washington, DC: World Bank.

World Bank. (2021c). Nepal Development Update. Harnessing Export Potential for a Green, Inclusive, and Resilient Recovery. Kathmandu. Nepal.

World Bank. (2022). Nepal Country Climate and Development Report. Washington, DC: World Bank.

World Bank. (2023). Nepal Development Update, October 2023: Restoring Export Competitiveness. Washington, DC: World Bank.

World Bank. (2024). South Asia Development Update: Jobs for Resilience. April. Washington, DC: World Bank.

World Bank. forthcoming. Jobs for Development: Facts and a Framework for Policy. Washington, DC: World Bank.

Chapter 2

Adams, R. H., & Cuecuecha, A. (2013, 10). The Impact of Remittances on Investment and Poverty in Ghana. *World Development, 50*, 24-40. Retrieved from https://doi.org/10.1016/j.worlddev.2013.04.009

Adhikari, J., Rai, M. K., Baral, C., & Subedi, M. (2023). Labour Migration from Nepal: Trends and Explanations. In S. I. Rajan (Ed.), *EditorMigration in South Asia* (pp. 67-81). Springer Cham. doi:https://doi.org/10.1007/978-3-031-34194-6

Ahmed, S. A., & Bossavie, L. (2022). *Toward Safer and More Productive Migration for South Asia*. Washington, DC: World Bank.

Ang, A. A., & Tiongson, E. R. (2023). Philippine migration journey: Processes and programs in the migration life cycle. *Background paper to the World Development Report 2023: Migrants, Refugees, and Societies*.

Antman, F. M. (2013). The impact of migration on family left behind. In *The impact of migration on family left behind* (pp. 293--308). Edward Elgar Publishing.

Aryal, P., & Kharel, A. (2023). *Does Pre-departure Orientation Protect Labor Migrants? Examining Pre-departure Interventions in Nepal*. AGRUMIG Policy Brief Series.

ASEAN (2022). *Women Migrant Workers in the Laws and Policies of ASEAN Member States*. [online] ASEAN, p.92. Available at: https://asean.org/wp-content/uploads/2023/02/ASEAN_REPORT_Final.pdf [Accessed 11 Dec. 2024]

Assistance (2023). *National Reintegration Center for OFWs (NRCO)*. [online] Assistance.PH. Available at: https://assistance.ph/national-reintegration-center-for-ofws-nrco/

Banerjee, A., & Gaurav, C. (2018). How important are matching frictions in the labour market? experimental & non-experimental evidence from a large indian firm.

Barsbai, T. e. (2016). Fostering the Benefits of International Migration: A Randomized Evaluation of Pre-Departure Training for Migrants from the Philippines to the US. *13th IZA Annual Migration Meeting*. Bonn.

Binzel, C., & Assaad, R. (2011). Egyptian men working abroad: Labour supply responses by the women left behind. *Labour Economics*, 18, S98--S114.

Bossavie, L. a. (2023, 4). Impacts of Temporary Migration on Development in Origin Countries. *The World Bank Research Observer, 38*(2). doi:https://doi.org/10.1093/wbro/lkad003

Bossavie, L. a. (2023b). Low-skilled temporary migration policies: The case of Bangladesh. Impacts of Temporary Migration on Development in Origin Countries. Background paper to the World Development Report 2023: *Migrants, Refugees, and Societies*.

Cho, Y., & Majoka, Z. (2020). *Pakistan Jobs Diagnostic: Promoting Access to Quality Jobs for All*. Washington, DC.: World Bank.

Démurger, S. (2015). Migration and families left behind. *IZA World of Labor 2015, 144*. doi:doi: 10.15185/izawol.144

Duflo, E., Dupas, P., & Kremer, M. (2021). The impact of free secondary education: Experimental evidence from Ghana. (No. w28937).

Fellmeth, G., Rose-Clarke, K., Zhao, C., Busert, L. K., Zheng, Y., Massazza, A., . . . others. (2018). Health impacts of parental migration on left-behind children and adolescents: a systematic review and meta-analysis. *The Lancet, 392*(10164), 2567--2582.

Froilan T. Malit, J., & Tiwari, A. (2022). Small State, Big Agenda? Nepal in the Gulf Labor Migration Market. *The Diplomat*.

Ghimire, D., & Bhandari, P. (2020). Study of migration and later life health in Nepal. *Journal of Migration and Health*, 1-2. doi:https://doi.org/10.1016/j.jmh.2020.100018

Gibson, J., McKenzie, D., & Stillman, S. (2011). The Impacts of International Migration on Remaining Household Members: Omnibus Results from a Migration Lottery Program. *The Review of Economics and Statistics, 93*(4), 1297–1318.

Global Forum on Migration and Development (2023). *UAE-India: Harmonised Framework for Skill Recognition and Certification | Global Forum on Migration and Development*. [online] Gfmd.org. Available at: https://www.gfmd.org/pfp/ppd/19491

International Trade Union Confederation. (2023). *Survey analysis: Monitoring recruitment of Nepalese migrant workers to Qatar*. Retrieved from https://www.ituc-csi.org/IMG/pdf/mra_nepal_v5.pdf

IOM. (2021). *Profiling Returnee Migrant Workers for Labour Market Integration*. Kathmandu: International Organization for Migration.

IOM. (2023). *Migration and Skills Development*.

Kathmandu Post. (2024, 1 17). Concerns mount over rising Nepali migrant deaths. doi:https://kathmandupost.com/gandaki-province/2024/01/17/concerns-mount-over-rising-nepali-migrant-deaths

Kharel, A., Bhattarai, S., & Tumsa, D. (2023a, 08). Recruitment Cost, Fraud and Redressal in Foreign Labour Migration from Nepal. *Policy Brief*(9). Retrieved from https://www.ceslam.org/uploads/backup/Policy-Brief-9.pdf

Kharel, A., Bhattarai, S., Tumsa, D., Gupta, S., & Sen, P. (2022). *Migration Profile - Province 1 of Nepal*. Kathmandu: Centre for the Study of Labour and Mobility, Social Science Baha.

Lokshin, M., & Glinskaya, E. (2009). The Effect of Male Migration on Employment Patterns of Women in Nepal. *The World Bank Economic Review, 23*(3), 481-507. doi:https://www.jstor.org/stable/40647401

Lokshin, M., Bontch-Osmolovski, M., & Glinskaya, E. (2010). Work-Related Migration and Poverty Reduction in Nepal. *Review of Development Economics, 14*(2). doi:https://doi.org/10.1111/j.1467-9361.2010.00555.x

Migration for development. (2023). Stories of Nepali Migrants: Foreign Employment: My Experience, My Story. Retrieved from https://migration4development.org/en/resources/stories-nepali-migrants-foreign-employment-my-experience-my-story

Ministry of Expatriaes' Welfae and Overseas Employment, G. o. (2014). Pre-departure Orientation Program of Bangladesh.

Ministry of External Affairs, Government of India, Media Center. (2018, April 04). *Ministry of External Affairs, Government of India, Media Center*. Retrieved from Ministry of External Affairs, Government of India, Media Center: https://www.mea.gov.in/lok-sabha.htm?dtl/29746/QUESTION+NO536+INDIAN+WORKERS+RESOURCE+CENTRE

Mobarak, A. M., Sharif, I., & Shrestha, M. (2023, 10). Returns to International Migration: Evidence from a Bangladesh-Malaysia Visa Lottery. *AMERICAN ECONOMIC JOURNAL: APPLIED ECONOMICS, 15*(4), 353-88. doi:10.1257/app.20220258

MoLESS. (2020). *Nepal Labour MIgraiton Report 2020*. Kathmandu: Ministry of Labour, Employment and Social Security.

MOLESS. (2022). *NEPAL LABOUR MIGRATION REPORT 2022*. Kathmandu: Ministry of Labour, Employment and Social Security.

OWWA (2024). *Pre-Departure Orientation Seminar (PDOS) | OWWA - Overseas Workers Welfare Administration*. [online] Owwa.gov.ph. Available at: https://owwa.gov.ph/pre-departure-orientation-seminar-pdos/

Pandey, P. (2023, April 16). Social and economic reintegration programmes for returnee migrant workers set to begin. *The Kathmandu Post*. Retrieved from https://kathmandupost.com/money/2023/04/16/social-and-economic-reintegration-programmes-for-returnee-migrant-workers-set-to-begin#:~:text=Pawan%20Pandey&text=Around%20nine%20months%20after%20bringing,levels%20to%20start%20the%20programmes.

Pandey, P. (2023, June 14). UAE requests Nepal to resume sending domestic helpers. *The Himalayan Times*. Retrieved from https://kathmandupost.com/money/2023/06/14/uae-requests-nepal-to-resume-sending-domestic-helpers

People's Forum for Human Rights. (2021). *Study report on Nepal's bilateral labor agreements with destination countries*. Retrieved from https://feb.gov.np/multimedia_upload/6325524d6e5ae_MOU_BLA_Labor%20migration.pdf

Phadera, L. (2019). Impact of International Migration on Labor Supply in Nepal. Policy Research Working Paper;No. 9014. *World Bank Policy Research Working Paper*(9014). Retrieved from http://hdl.handle.net/10986/32422

POEA (2016). *POEA - Philippine Overseas Employment Administration*. [online] dmw.gov.ph. Available at: https://dmw.gov.ph/archives/programs/programs&services.html

Pokhrel, B. (2024). *New Memorandum of Understanding to be signed between Nepa and Qatar, where has the process reached on amdending old agreement? (In Nepali)*. BBC Nepali. Retrieved from https://www.bbc.com/nepali/articles/ckm3m0y74lxo

Ruppert Bulmer, E., Shrestha, A., & Marshalian, M. (2020). *Nepal Jobs Diagnostic*. Washington, DC.: World Bank. Retrieved from https://hdl.handle.net/10986/33956

Sapkota, S. (2020). *Introduce flexibility in education*. The Kathmandu Post.

Sapkota, S., Shrestha, M., & Shrestha, S. A. (2021). *Returnees: A primer on data and research agenda for Nepal*. World Bank.

Sharma, U., Sherpa , M., & Goyal, S. (2020). *Understanding the skills needs of migrant workers from Nepal*. Retrieved from https://documents1.worldbank.org/curated/en/103831611117571692/pdf/Understanding-the-Skills-Needs-of-Migrant-Workers-from-Nepal.pdf

Shrestha, M. (2017a). The Impact of Large-Scale Migration on Poverty, Expenditures, and Labor Market Outcomes in Nepal. *Policy Research Working Paper*(No. 8232). Retrieved from http://hdl.handle.net/10986/28625

Shrestha, M. (2017b). Push and pull: A study of international migration from Nepal. *World Bank Policy Research Working Paper*(No. 7965). Retrieved from http://hdl.handle.net/10986/26024

Shrestha, M. (2020). Get Rich or Die Tryin': Perceived Earnings, Perceived Mortality Rates, and Migration Decisions of Potential Work Migrants from Nepal. *The World Bank Economic Review, 34*(1). doi: https://doi.org/10.1093/wber/lhz023

Shrestha, M. (2022, 06 27). *Push and pull factors: Evidence from international migration from Nepal*. Retrieved from VoxDev: https://voxdev.org/topic/migration-urbanisation/push-and-pull-factors-evidence-international-migration-nepal

Shrestha, S. (2023, 5 17). *Nepal's Foreign Employment Saving Bonds: Sluggish for 13 years.* Retrieved 6 7, 2024, from Nepal Economic Forum: https://nepaleconomicforum.org/14261-2/

Shrestha, S. A. (2017). No Man Left Behind: Effects of Emigration Prospects on Educational and Labour Outcomes of Non-migrants. *The Economic Journal, 127*(600). doi:https://doi.org/10.1111/ecoj.12306

The Star (2023). *M-Pesa transacted Sh36 trillion, three times Kenya's GDP - report.* [online] The Star. Available at: https://www.the-star.co.ke/business/2023-07-10-m-pesa-transacted-sh36-trillion-three-times-kenyas-gdp-report?utm_source=chatgpt.com

The Five Corridors Project. (2021). *Nepal to Kuwait and Qatar: Fair recruitment in Review.*

The World Bank. (2024, April 18). *The World Bank, Remittance Prices Worldwide.* Retrieved from https://data.worldbank.org/indicator/SI.RMT.COST.IB.ZS?locations=N-P&most_recent_value_desc=false

Tiwari, S. (2016). Moving up the ladder : poverty reduction and social mobility in Nepal. Retrieved from http://documents.worldbank.org/curated/en/171641467117954924/Overview

United Nations Capital Development Fund. (2022). *Nepal Country Assessment: Report on inclusive innovation strategies in migrant remittances and financial services.* Retrieved from https://migrantmoney.uncdf.org/wp-content/uploads/2023/02/Nepal-Country-Assessments.pdf

Valdero-Gil, J. (2009). Remittances and The Household's Expenditures On Health. *Journal of Business Strategies, 26*(1), 119-140. Retrieved from https://doi.org/10.54155/jbs.26.1.119-140

Velmie (2024). *TOP Remittance Providers for Fintechs 2024 | Velmie.* [online] Velmie. Available at: https://www.velmie.com/top-remittance-providers

Wickramasekara, P. (2018). *Good practices and provisions in multilateral and bilateral labour agreements and memoranda of understanding.* ILO Country Office for Bangladesh. Retrieved from https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@asia/@ro-bangkok/@ilo-dhaka/documents/publication/wcms_683740.pdf

Williams, N. E., Bhandari, P., Young-DeMarco, L., Swindle, J., Hughes, C., Chan, L., . . . Sun, C. (2020). Ethno-Caste influences on migration rates and destinations. *World Development, 130*(104912). doi:https://doi.org/10.1016/j.worlddev.2020.104912

World Bank. (2018). *Nepal - Systematic country diagnostic.* Washington, D.C.: World Bank Group. Retrieved from http://documents.worldbank.org/curated/en/361961519398424670/Nepal-Systematic-country-diagnostic

World Bank. (2020). *Understanding the Skills Need of Migrant Workers in Nepal.* Background paper. Kathmandu: World Bank.

World Bank. (2021). *Risks to Poverty, Vulnerability, and Inequality from COVID-19: Nepal Light Poverty Assessment.* Washington: World Bank. Retrieved from https://hdl.handle.net/10986/36358

World Bank. (2023). *World Development Report 2023: Migrants, Refugees, and Societies.* Washington, DC: World Bank. Retrieved from https://openknowledge.worldbank.org/handle/10986/39696

World Bank. (Forthcoming). *Decomposing poverty in Nepal: High remittances inflows and low private sector growth.* Washington: World Bank.

Yang, D., & Choi, H. (2007). Are Remittances Insurance? Evidence from Rainfall Shocks in the Philippines. *The World Bank Economic Review, 21*(3), 219-248. doi:doi:10.1093/wber/lhm003

Chapter 3

Amiti, M., Itskhoki, O., and Konings, J. (2014). Importers, exporters, and exchange rate disconnect. *American Economic Review, 104*(7), 1942-1978.

Amiti, M., and Konings, J. (2007). Trade liberalization, intermediate inputs, and productivity: Evidence from Indonesia. *American economic review, 97*(5), 1611-1638.

Amuedo-Dorantes, C., and Pozo, S. (2004). Workers' remittances and the real exchange rate: a paradox of gifts. *World development, 32*(8), 1407-1417.

Arenas, G. C. (2016). Nepal integration into value chains: stylized facts and policy options (No. 106829, pp. 1-21). The World Bank.

Bas, M. (2012). Input-trade liberalization and firm export decisions: Evidence from Argentina. *Journal of Development Economics, 97*(2), 481-493.

Central Bureau of Statistics (2011). Nepal Living Standards Survey 2010/11. *Statistical Report Volume Two*

Chatterjee, A., Dix-Carneiro, R., and Vichyanond, J. (2013). Multi-product firms and exchange rate fluctuations. *American Economic Journal: Economic Policy, 5*(2), 77-110.

Clark, P. B., and MacDonald, R. (1999). Exchange rates and economic fundamentals: a methodological comparison of BEERs and FEERs. *In Equilibrium exchange rates* (pp. 285-322). Dordrecht: Springer Netherlands.

Defever, F., Reyes, J. D., Riaño, A., and Varela, G. (2020). All these worlds are yours, except India: The effectiveness of cash subsidies to export in *Nepal. European Economic Review,* 128, 103494.

International Monetary Fund (2020). Nepal: Staff Report for the 2020 Article IV Consultation, Country Report No. 2020/96.

International Monetary Fund (2023). Nepal: Staff Report for the 2023 Article IV Consultation, Country Report No. 2023/158.

Kharel, P., and Dahal, K. (2021). SMEs in Nepal: Examining constraints on exporting. *Enhancing SME Participation in Global Value Chains,* 367.

Li, H., Ma, H., and Xu, Y. (2015). How do exchange rate movements affect Chinese exports? -A firm-level investigation. *Journal of International Economics, 97*(1), 148-161.

Narain, A., and Varela, G. (2017). Trade Policy Reforms for the Twenty First Century. World Bank Group.

Pandey, P. R., Kharel, P., Dahal, K., Singh, D., and Aryal, S. (2022). Nepal's graduation from the LDC category: Implications for international trade and development cooperation (No. rp/22/01).

Paudel, R. C., and Burke, P. J. (2015). Exchange rate policy and export performance in a landlocked developing country: The case of Nepal. *Journal of Asian Economics,* 38, 55-63.

Rajkarnikar, P. R. (2010). Adequacy and effectiveness of logistic services in Nepal: Implication for export performance.

Sapkota, C. (2013). Remittances in Nepal: boon or bane? *The Journal of Development Studies, 49*(10), 1316-1331.

Sharma, R. R. (2023). An anatomy of Nepal's remarkable export decline: A note. *Journal of Asian Economics,* 89, 101663.

Topalova, P., and Khandelwal, A. (2011). Trade liberalization and firm productivity: The case of India. *Review of economics and statistics*, *93*(3), 995-1009.

Chapter 4

Asian Development Bank. (2020). *Hydropower Development and Economic Growth in Nepal.* ADB South Asia Working Paper Series. https://www.adb.org/sites/default/files/publication/612641/hydropower-development-economic-growth-Nepal.pdf

Awasthi, S. and Adhikari, N. (2018). Potential Inter-Fuel Substitution between Hydroelectricity and Fossil Fuels in Nepal. *Economic Journal of Development Issues*, Vol. 25 and 26 No. 1-2.

Bhandari, R. and Pandit, S. (2018). Electricity as a Cooking Means in Nepal—A Modelling Tool Approach, *Sustainability*, MDPI, vol. 10(8), pages 1-17.

Department of Railway, Nepal (2018). *Railway Projects in Nepal.* https://www.unescap.org/sites/default/files/Item5_Nepal_0.pdf

Irwin, D. A. (2021). The Rise and Fall of Import Substitution. *World Development*, Vol 139, DOI: 10.1016/j.worlddev.2020.105306

Shakya, S.R. and Shrestha, R.M. (2011). Transport sector electrification in a hydropower resource rich developing country: Energy security, environmental and climate change co-benefits. *Energy for Sustainable Development*, Volume 15, Issue 2, Pages 147-159.

Timilsina, G. R., and Toman, M. (2016). Potential Gains from Expanding Regional Electricity Trade in South Asia. *Energy Economics* 60: 6–14. https://doi.org/10.1016/j.eneco.2016.08.023.

Timilsina, G. R. and Steinbuks, J. (2021). Economic costs of electricity load shedding in Nepal. *Renewable and Sustainable Energy Reviews*. Vol. 146, 111112.

World Bank (2022). Nepal Country Climate and Development Report. World Bank, Washington, DC. https://openknowledge.worldbank.org/entities/publication/7b-6f49e3-5431-5d48-94bb-c22ac1d3dcd1

Chapter 5

Adarov, A., Klenert, D., Marschinski, R., and Stehrer, R. (2022). Productivity drivers: empirical evidence on the role of digital and intangible capital, FDI and integration. *Applied Economics*, *54*(48), 5515-5531

Alliance for Financial Inclusion (2024). Payment Innovations and Risks in South Asia. https://www.afi-global.org/wp-content/uploads/2024/03/Payment-Innovations-and-Risks-South-Asia_April.pdf

Atkinson, R. D. (2007). Boosting European prosperity through the widespread use of ICT. I*nformation Technology and Innovation Foundation*, 1-2.

Bellucci, C., Rubínová, S., and Piermartini, R. (2023). *Better together: How digital connectivity and regulation reduce trade costs* (No. ERSD-2023-07). WTO Staff Working Paper.

Bertschek, I., Cerquera, D., and Klein, G. J. (2013). More bits–more bucks? Measuring the impact of broadband internet on firm performance. *Information Economics and Policy*, *25*(3), 190-203.

Borowiecki, M., Pareliussen, J., Glocker, D., Kim, E. J., Polder, M., and Rud, I. (2021). The impact of digitalization on productivity: Firm-level evidence from the Netherlands.

Colombo, M. G., Croce, A., and Grilli, L. (2013). ICT services and small businesses' productivity gains: An analysis of the adoption of broadband Internet technology. *Information Economics and Policy*, *25*(3), 171-189.

Commander, S., Harrison, R., and Menezes-Filho, N. (2011). ICT and productivity in developing countries: new firm-level evidence from Brazil and India. R*eview of Economics and Statistics*, *93*(2), 528-541.

Czarnitzki, D., Fernández, G. P., and Rammer, C. (2023). Artificial intelligence and firm-level productivity. *Journal of Economic Behavior and Organization*, *211*, 188-205.

David, T. L., Harry, X. W., and Fukao, K. (2022). *Estimation of China's investment in ICT assets and accumulated ICT capital stock* (No. 833). Institute of Developing Economies, Japan External Trade Organization (JETRO).

DeStefano, T., Kneller, R., and Timmis, J. (2023). The (fuzzy) digital divide: the effect of universal broadband on firm performance. *Journal of Economic Geography*, *23*(1), 139-177.

Falentina, A. T., and Resosudarmo, B. P. (2019). The impact of blackouts on the performance of micro and small enterprises: Evidence from Indonesia. W*orld Development*, *124*, 104635

FNCCI and IFC (2023). S*tate of Private Sector in Nepal: Contributions and Constraints.* https://fncci.org/uploads/publication/file/Report_StatePSNepal_20230519064735.pdf

Goldfarb, A., and Tucker, C. (2019). Digital economics. *Journal of Economic Literature*, *57*(1), 3-43.

Kılıçaslan, Y., Sickles, R. C., Atay Kayış, A., and Üçdoğruk Gürel, Y. (2017). Impact of ICT on the productivity of the firm: evidence from Turkish manufacturing. *Journal of Productivity Analysis*, *47*, 277-289.

Li, Q., and Wu, Y. (2020). Intangible capital, ICT, and sector growth in China. *Telecommunications Policy*, *44*(1), 101854.

LIRNEasia. (2018). AfterAccess: ICT access and use in Asia and the Global South. https://lirneasia.net/wp-content/uploads/2018/10/LIRNEasia-AfterAccess-Asia-Report.pdf

Ministry of Education, Science, and Technology (2023). Flash I Report. https://cehrd.gov.np/file_data/mediacenter_files/media_file-17-428622471.pdf

OECD (Organization for Economic Co-operation and Development). (2019a). "Going Digital: Shaping Policies, Improving Lives." OECD, Paris. https://www.oecd.org/digital/going-digital-synthesis-summary.pdf

OECD (Organization for Economic Co-operation and Development). (2019b). *ICT investments in OECD countries and partner economies: Trends, policies, and evaluation.* OECD Publishing.

Srinivasan, S., Comini, N., and Minges, M. (2021, March). The Importance of National Data Infrastructure for Low and Middle-Income Countries. In TPRC49: The 49th Research Conference on Communication, Information and Internet Policy.

UNESCO (2023). Technology in Education: A Tool on Whose Terms? https://www.unesco.org/gem-report/en/technology

Vuorikari Rina, R., Kluzer, S., and Punie, Y. (2022). DigComp 2.2: The Digital Competence Framework for Citizens-With new examples of knowledge, skills and attitudes. https://publications.jrc.ec.europa.eu/repository/handle/JRC128415

World Bank Group. (2016). W*orld development report 2016: Digital dividends*. World Bank Publications.

World Bank Group. (2021). D*ata for Better Lives*. World Bank Publications.

World Bank Group. (2024a). D*igital Progress and Trends Report 2023*. World Bank Publications.

World Bank Group. (2024b). *The Path to 5G in the Developing World*. World Bank Publications.

Annexes

Chapter 2

Table A1: Nepal migration cycle and governance.

	MIGRATION STAGE		
Activities	Before migration	During migration	After migration
Education/ Training	Vocational and Skill Development Training Centre (VSDTC), Council for Technical Education and Vocational Training (CTEVT), Foreign Employment Board (FEB), Skill Development and Training Section, Migrant Resource Center (MRC)1	On-the-job training from employer for the first few months	
Job search/ recruitment/ matching	MoLESS for Government-to-Government programs, Employment Information Centres (EICs)2, Private recruitment agencies, family and personal migrant networks	Personal network/recruitment agencies	
Destination country/consular/ remittances/other rights protection and welfare		FEB/Ministry of Foreign Affairs -Embassy and consulates/MoLESS-Labor Attaches and counsellors/Insurance companies	
Return and reintegration			FEB, Employment Coordination and Information Section, Employment service centres (ESCs) are established under the Prime Minister Employment Program (PMEP) of MoLESS with management from local governments, MRCs

Source: MoLESS, Nepal Labor Migration Report (2022), pg 11-50.

Notes: Agencies in blue are units housed within the Ministry of Labor, Employment, and Social Security (MoLESS). Although under MoLESS, the larger departments VSDTC and DoFE are housed outside the ministry. FEB is an autonomous body under MoLESS but governed through a Board comprising several stakeholders.

[1]MRCs have been established under the bilateral support of Switzerland with management from Helvetas Nepal under technical assistance. Its objective is to provide support throughout the full cycle of migration including skills training, financial literacy, legal/paralegal, and psychosocial support, but is not present only in 38 districts (out of 77) within the premises of the district administration offices (DAOs) (and one in the Department of Passport in Kathmandu).

Chapter 3

Annex 3.1

Table A1: Key Regression Variables

VARIABLE	MEAN	MIN	MAX
BRER (2011)	1.4	0.0	271.9
BRER (2021)	2.4	0.0	262.6
Input Tariff (2011)	0.010	0.000	0.084
Tariff on Nepal (2011)	0.022	0.000	3.030
Tariff on Nepal (2021)	0.014	0.000	5.136
Average Tariff in Destination Market (2011)	0.043	0.000	3.027
Average Tariff in Destination Market (2021)	0.052	0.000	5.130

Table A2: BRER and Exports, Baseline

	(1)	(2)	(3)
VARIABLES	Exports	Exports	Exports
log(BRER)	-0.294***		-0.299**
	(0.111)		(0.136)
log(BRER), CPI		-0.284**	
		(0.122)	
Observations	91,408	91,315	44,041
R-squared	0.524	0.524	0.633
Fixed Effects	Baseline	Baseline	Extended
Standard errors are clustered at the destination level			
**** p<0.01, ** p<0.05, * p<0.1*			

Table A3: BRER and Exports, Interactions

VARIABLES	(1) Exports	(2) Exports	(3) Exports	(4) Exports
log(BRER)	-0.265**	-0.298***	-0.311***	-0.294***
	(0.109)	(0.110)	(0.112)	(0.110)
log(BRER) x Larger	-0.0707***			-0.0829***
	(0.0112)			(0.0113)
log(BRER) x Many Destinations		0.0115**		0.0135**
		(0.00554)		(0.00557)
log(BRER) x Many Products			0.0354***	0.0471***
			(0.00650)	(0.00759)
Observations	91,408	91,408	91,408	91,408
R-squared	0.525	0.524	0.524	0.526
FE	Baseline	Baseline	Baseline	Baseline
Standard errors are clustered at the destination level				
**** p<0.01, ** p<0.05, * p<0.1*				

Table A4: BRER and Exports, Extensions

VARIABLES	(1) Exports	(2) Exports	(3) Exports (WLS)
log(BRER), t-1 (default)	-0.292**	-0.295***	-0.423*
	(0.112)	(0.111)	(0.227)
log(BRER), t-2		0.00159	
		(0.00386)	
log(BRER), t		0.00766*	
		(0.00393)	
log(BRER) x India	-0.935***		
	(0.156)		
Observations	91,408	91,393	91,408
R-squared	0.524	0.524	0.735
FE	Baseline	Baseline	Baseline
Standard errors are clustered at the destination level			
**** p<0.01, ** p<0.05, * p<0.1*			

Table A5: Robustness Tests

	(1)	(2)	(3)
VARIABLES	Exports	Exports	Exports
log(BRER)	-0.259**	-0.393***	-0.289***
	(0.105)	(0.0965)	(0.0998)
log(GDP)	0.104		0.362***
	(0.218)		(0.0887)
Input Tariff		-2.917***	-3.000***
		(0.670)	(0.670)
Tariff on Nepal		-0.790***	-0.778***
		(0.110)	(0.110)
Average Tariff		0.861***	0.871***
		(0.125)	(0.125)
Observations	91,408	66,335	66,335
R-squared	0.524	0.506	0.507
FE	Baseline	Baseline	Baseline
Standard errors are clustered at the destination level			
**** p<0.01, ** p<0.05, * p<0.1*			

Table A6: Input Tariffs and Exports, Baseline

	(1)	(2)	(3)
VARIABLES	Exports	Exports	Exports
Input Tariff	-2.080**	-3.283***	-4.251***
	(1.024)	(1.128)	(1.377)
Observations	90,985	62,197	57,589
R-squared	0.521	0.679	0.720
FE	Baseline	Extended I	Extended II
Standard errors are clustered at the product level			
**** p<0.01, ** p<0.05, * p<0.1*			

Table A7: Input Tariffs and Exports, Interactions

VARIABLES	(1) Exports	(2) Exports	(3) Exports	(4) Exports
Input Tariff	-4.616***	-0.236	0.572	-1.942**
	(1.147)	(0.695)	(0.581)	(0.970)
Input Tariff x Larger	5.229***			6.995***
	(0.983)			(1.079)
Input Tariff x Many Destinations		-2.462***		-2.791***
		(0.710)		(0.791)
Input Tariff x Many Products			-4.230***	-4.938***
			(0.631)	(0.726)
Observations	90,985	90,985	90,985	90,985
R-squared	0.523	0.520	0.521	0.524
FE	Baseline	Baseline	Baseline	Baseline
Standard errors are clustered at the product level				
**** p<0.01, ** p<0.05, * p<0.1*				

Table A8: Input Tariffs and Exports, Extensions

VARIABLES	(1) Exports	(2) Exports	(3) Exports
Input Tariff	-8.371***	-2.124**	-1.921*
	(1.448)	(1.018)	(0.991)
Input Tariff x Size 25-50	6.325***		
	(0.879)		
Input Tariff x Size 50-75	8.648***		
	(1.348)		
Input Tariff x Size 75-100	10.12***		
	(1.766)		
Import Competing Tariff		0.909**	
		(0.433)	
Input Tariff x Lagged High Imp Sh			-4.754**
			(2.007)
Observations	90,985	90,985	90,985
R-squared	0.524	0.522	0.522
FE	Baseline	Baseline	Baseline
Standard errors are clustered at the product level			
**** p<0.01, ** p<0.05, * p<0.1*			

Table A9: Input Tariffs and Exports, Extensive Margin

	(1)	(2)	(3)	(4)
VARIABLES	# Prod	# Prod	# Dest	# Dest
Input Tariff	-2.796**	-0.618	-2.785***	0.305
	(1.252)	(0.484)	(0.825)	(0.288)
Observations	29,933	29,932	29,933	29,932
R-squared	0.270	0.421	0.387	0.479
FE	No Industry FE	Baseline	No Industry FE	Baseline
Standard errors are clustered at the product level				
**** p<0.01, ** p<0.05, * p<0.1*				

Table A10: Partner Country Tariffs and Exports, Baseline

	(1)	(2)	(3)
VARIABLES	Exports	Exports	Exports
Tariff on Nepal	-0.835***	-0.851***	-0.744**
	(0.237)	(0.245)	(0.313)
Average Tariff	0.813**	0.854**	0.532
	(0.330)	(0.336)	(0.327)
Observations	68,413	68,308	64,810
R-squared	0.503	0.508	0.543
FE	Baseline	Extended I	Extended II
Standard errors are clustered at the product-destination level			
*** p<0.01, ** p<0.05, * p<0.1			

Table A11: Partner Country Tariffs and Exports, Interactions I

	(1)	(2)	(3)	(4)
VARIABLES	Exports	Exports	Exports	Exports
Tariff on Nepal	-0.452**	-0.876***	-0.912***	-0.647***
	(0.179)	(0.226)	(0.241)	(0.182)
Nepal Tariff x Larger	-0.893***			-1.042***
	(0.308)			(0.291)
Average Tariff	-0.00587	1.096***	1.080***	0.525*
	(0.278)	(0.373)	(0.357)	(0.306)
Average x Larger	1.710***			2.060***
	(0.241)			(0.265)
Nepal Tariff x Many Destinations		0.193		0.460
		(0.283)		(0.333)
Average x Many Destinations		-0.656***		-1.006***
		(0.246)		(0.243)
Nepal Tariff x Many Products			0.393*	0.480
			(0.218)	(0.371)
Average x Many Products			-0.948***	-0.985***
			(0.292)	(0.319)
Observations	68,413	68,413	68,413	68,413
R-squared	0.504	0.503	0.503	0.504
FE	Baseline	Baseline	Baseline	Baseline

Standard errors are clustered at the product-destination level

*** p<0.01, ** p<0.05, * p<0.1

Table A12: Partner Country Tariffs and Exports, Interactions II

VARIABLES	(1) Exports	(2) Exports	(3) Exports
Tariff on Nepal	-0.424**	-1.411***	-1.442***
	(0.188)	(0.430)	(0.397)
Nepal Tariff x Pref. Margin	-0.192		
	(0.539)		
Average Tariff	-0.0640	-0.0128	-0.0125
	(0.398)	(0.453)	(0.407)
Average x Pref. Margin	1.020**		
	(0.493)		
Nepal Tariff x Agriculture/Food		0.712	
		(0.471)	
Average x Agriculture/Food		1.159**	
		(0.571)	
Nepal Tariff x Homogeneous			0.563
			(0.431)
Average x Homogeneous			1.713***
			(0.495)
Observations	68,413	68,413	66,510
R-squared	0.503	0.504	0.504
FE	Baseline	Baseline	Baseline
Standard errors are clustered at the product-destination level			
*** p<0.01, ** p<0.05, * p<0.1			

Table A13: Partner Country Tariffs and Exports, Extensive Margin

VARIABLES	(1) # Firms	(2) # Firms
Tariff on Nepal	-0.269***	-0.239**
	(0.101)	(0.0933)
Average Tariff	0.439***	0.405**
	(0.152)	(0.158)
Observations	18,995	18,885
R-squared	0.508	0.524
FE	Baseline	Extended
Standard errors are clustered at the product-destination level		
*** p<0.01, ** p<0.05, * p<0.1		

Table A14: Im-Pesaran-Shin Panel Unit Root Test

	LEVEL		FIRST DIFFERENCE	
Variable	Statistic	p-value	Statistic	p-value
log REER	2.1	0.981	-10.1	0.000
log GDP/capita	5.2	1.000	-8.9	0.000
Terms of Trade	0.1	0.542	-8.6	0.000
Aid/Capita	-3.8	0.000	-12.9	0.000
Remit/Capita	-0.7	0.241	-10.5	0.000

Table A15: Remittances and REER, Baseline

	(1)	(2)
VARIABLES	log REER	REER
log gdp per capita	0.0982	7.472
	(0.0958)	(10.68)
log terms-of-trade	0.0671*	8.118**
	(0.0358)	(3.996)
log financial aid per capita	0.0188**	1.967**
	(0.00813)	(0.907)
log remittances per capita	0.0145**	1.957**
	(0.00714)	(0.796)
Observations	333	333
R-squared	0.312	0.323
Country FE	Yes	Yes
Year FE	Yes	Yes
Robust standard errors in parentheses		
**** p<0.01, ** p<0.05, * p<0.1*		

Table A16: Remittances and REER, Labor Force Participation

	(1)	(2)
VARIABLES	log REER	log REER
log gdp per capita	0.00735	-0.00596
	(0.109)	(0.109)
log terms-of-trade	0.0431	0.0415
	(0.0361)	(0.0362)
log financial aid per capita	0.0214***	0.0219***
	(0.00805)	(0.00807)
log remittances per capita	0.0232***	0.108***
	(0.00846)	(0.0406)
high lfp	0.0182	
	(0.0136)	
high lfp x log remit per capita	-0.0357**	
	(0.0161)	
Lfp		0.0871
		(0.116)
lfp x remit per capita		-0.168**
		(0.0706)
Observations	332	332
R-squared	0.312	0.312
Country FE	Yes	Yes
Year FE	Yes	Yes
Robust standard errors in parentheses		
**** p<0.01, ** p<0.05, * p<0.1*		

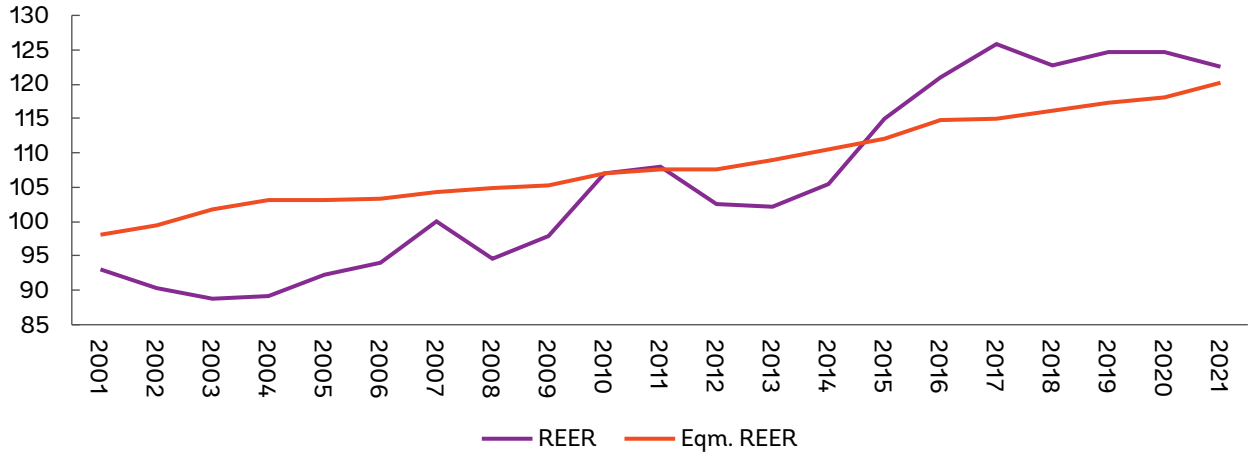
Table A17: Remittances and REER, Additional Interactions

	(1)	(2)	(3)	(4)
VARIABLES	log REER	log REER	log REER	log REER
log gdp per capita	-0.0548	-0.0802	-0.0202	-0.00807
	(0.114)	(0.115)	(0.110)	(0.110)
log terms-of-trade	0.0547	0.0517	0.0542	0.0476
	(0.0416)	(0.0413)	(0.0362)	(0.0364)
log financial aid per capita	0.0190**	0.0187**	0.0196**	0.0210**
	(0.00798)	(0.00795)	(0.00811)	(0.00813)
log remittances per capita	0.0227	0.0354	0.00534	-0.00861
	(0.0182)	(0.0307)	(0.0122)	(0.0183)
high import share	0.0237**			
	(0.0111)			
high imp share x log remit per capita	-0.0337			
	(0.0207)			
imp share		0.141***		
		(0.0478)		
imp share x log remit per capita		-0.0760		
		(0.0562)		
high serv share			0.0130	
			(0.0115)	
high serv share x remit per capita			0.0109	
			(0.0151)	
service share				-0.0695
				(0.124)
serv share x log remit per capita				0.0458
				(0.0366)
Observations	294	294	332	332
R-squared	0.379	0.387	0.302	0.301
Country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Robust standard errors in parentheses				
**** p<0.01, ** p<0.05, * p<0.1*				

Annex 3.2: Exchange Rate Misalignment

The panel data model estimated in Section 3.3 can be used to estimate exchange rate misalignment.[73] The path of the REER is estimated using the model and compared to the actual path of the REER for 2001-2021.[74] This comparison is shown in Figure A1. The results imply that Nepal's real exchange rate has in general been overvalued. The peak overvaluation is about 11 percent in 2017, with the overvaluation down to 7 percent in 2020 and 4 percent in 2021. The magnitude of the estimated overvaluation here is relatively modest compared to IMF (2020, 2023), which report values in the 18 – 20 percent range, though IMF (2020) does suggest that their calculated gap may be an overestimate.

Figure A1: REER vs. Equilibrium Estimated REER in Nepal



Chapter 5

Table A1: Impact of adoption of digital technologies and investment in digital solutions on digital sales.

DEPENDENT VARIABLE: DIGITAL SALES	
Adoption of digital technologies adoption	5.031** (1.910)
Investment in digital solutions	8.036*** (2.940)
Firm FE	**Yes**
Year FE	**Yes**
Sector FE	**Yes**
Number of observations	**822**
Adj. R-squared	**0.4105**

*Notes: Table A1 examines the impact of digital technologies and investment in digital solutions on digital sales. The dependent variable is the share of firm's last 30 days sales (in percent) that were based on external digital platforms, apps, or establishment's website. The main explanatory variables include adoption of digital technologies and investment in digital solutions. Adoption of digital technologies is a binary variable that takes a value of 1 if a firm has started using or increased the use of internet, online social media, specialized apps, or digital platforms in the last 12 months, and zero otherwise. Investment in digital solutions is a binary variable that takes a value of 1 if a firm invested in any new equipment, software, or digital solution in the last 12 months, and zero otherwise. Robust standard errors clustered at the municipality level are in parentheses. Regression includes firm fixed effects and survey years fixed effects. *** and ** indicate significance at the 1 and 5 percent level. The data includes 274 firms from Nepal Business Pulse Surveys that were surveyed in all three waves (May 2020, May-June 2021, and June 2022).*

Box A1: Impact of ICT on labor productivity

ICT increases labor productivity through capital deepening. Workers that have access to more capital are generally more productive. Recent studies have linked ICT to the general-purpose technology (GPT) hypothesis, which suggests that ICT, due to its broad applicability, can lead to a higher total factor productivity (Atkinson, 2007; Li, 2020). This happens by spurring innovation, computerizing business processes, and creating network effects.

To examine the effect of ICT on labor productivity, the analysis follows existing literature (Commander, Harrison and Menezes-Filho, 2011; Kilicaslan, Sickles, Kayis, and Gürel, 2017; Czarnitzki, Fernández, and Rammer, 2023) and estimates the following firm-level augmented Cobb-Douglas production function:

$$Y_{it}=A_{it}L_{it}^{\alpha L}K_{it}^{\alpha K}ICT_{it}^{\alpha ICT} \quad (1)$$

Dividing equation 1 by L and then taking logs of the production function:

$$y_{it}=\beta+\alpha_k k_{it}+\alpha_{ict} ict_{it}+\epsilon_{it} \quad (2)$$

Here, y is labor productivity proxied by value added per worker, A is the total factor productivity, L is employment proxied by the total number of employees. K is capital stock proxied by the replacement value of machinery, vehicles, and equipment for the regression that uses World Bank Enterprises Survey data and non-ICT capital stock for the regression that uses Manufacturing census data and Nepal National Industrial Survey data. ICT is the ICT use proxied using digital technologies, namely having a business website, and adopting the digital payment for making a payment and/or receiving a payment for the regression that uses World Bank Enterprises Survey data and ICT capital (computer and accessories and software) for the regression that uses Manufacturing census data and Nepal National Industrial Survey data. is an error term. The main coefficient of interest is and measures the impact of ICT on labor productivity, ceteris paribus (elasticity of output with respect to ICT).

Table A2a: Impact of website and digital payment adoptions on labor productivity (Equation 2)

	DEPENDENT VARIABLE: LOG OF LABOR PRODUCTIVITY			
	(1) Manufacturing	(2) Services	(3) Manufacturing	(4) Services
Website adoption	0.2704** (0.1052)	0.1857 (0.1632)	0.3126* (0.1651)	0.0326 (0.4839)
Capital	0.3826*** (0.0727)	-	0.2569*** (0.0318)	-
Proportion of payments made electronically	0.0251 (0.0387)	-0.0330 (0.0559)	-	-
Proportion of sales paid by customers electronically	-0.0452 (0.0343)	0.0421 (0.0590)	-	-
Year FE	**No**	**No**	**Yes**	**Yes**
ISIC code FE	**Yes**	**Yes**	**Yes**	**Yes**
Panel	**No**	**No**	**Yes**	**Yes**
Number of observations	**194**	**349**	**145**	**117**
Adj. R-squared	**0.5275**	**0.3215**	**0.5160**	**0.2862**

*Notes. The dependent variable is the log of labor productivity. Website adoption is a dummy variable that takes a value of 1 if a firm uses website and zero otherwise. Capital is the log of capital per worker. Proportion of payments made electronically[75] is the logarithm of logarithm of the proportion of payments made by the firm through digital technologies. Proportion of sales paid by customers electronically is the logarithm of the logarithm of the proportion of sales revenue received from customers through digital technologies. Robust standard errors clustered at the ISIC code are in parentheses. Regression includes ISIC code fixed effects for column 1 and survey years fixed effects for column 2. Column 1 uses the data for manufacturing firms from 2023 Enterprises Survey, and Column 2 uses the data for firms in services sector from 2023 Enterprises Survey. Column 3 uses the panel data of manufacturing firms from 2009, 2013, and 2023 Enterprises Survey, and Column 4 uses the panel data of firms in services sector from 2009, 2013, and 2023 Enterprises Survey. All columns include following controls : whether manager is a female, whether a firm is an exporter, age of operation of a firm, whether firm has a foreign ownership, log of year of experience of manager, whether firm has an international management certificate, whether firm is a sole proprietor, and whether a firm has introduced any new or improved process, whether a firm has faced power outage, whether a firm used a generator, size of firm, and region where a firm is located. Columns 1 and 3[76] also include capital stock per worker. ***, **, and * indicate significance at the 1, 5, and 10 percent level.*

Table A2b: Impact of ICT capital on labor productivity (Equation 2)

DEPENDENT VARIABLE: LOG OF LABOR PRODUCTIVITY				
	(1)	(2)	(3)	(4)
ICT capital	0.1024*** (0.0214)		0.1084** (0.0249)	
Tangible ICT capital		0.1039*** (0.0210)		0.0827** (0.0245)
Intangible ICT capital		-0.0325 (0.0762)		0.0437 (0.1438)
Non-ICT capital	0.0992*** (0.0115)		0.1185** (0.0120)	
Tangible non-ICT capital		0.0992*** (0.0116)		0.1121*** (0.0148)
Intangible non-ICT capital		0.0089 (0.0586)		0.1544** (0.0448)
Year FE	**No**	**No**	**Yes**	**Yes**
Industry (NSIC) FE	**Yes**	**Yes**	**Yes**	**Yes**
Province	**Yes**	**Yes**	**Yes**	**Yes**
Panel	**No**	**No**	**Yes**	**Yes**
Number of observations	**6747**	**6747**	**702**	**702**
Adj. R-squared	**0.3502**	**0.3501**	**0.3457**	**0.3520**

*Notes: The dependent variable is the log of labor productivity. ICT capital includes log of computer and accessories (tangible ICT capital) and software (intangible ICT capital) per worker. Columns 1 and 2 use the firm-level data from Nepal National Industrial Survey 2019/20, and Columns 3 and 4 use the panel-level data of manufacturing sub-sectors, defined by NSIC four-digit manufacturing industries, and the provinces. The panel data is constructed using Manufacturing Census 2011/12 and Nepal National Industrial Survey 2019/20. Columns 1 also controls for legal status of firms, ownership of firm, firm size, and whether a firm is an exporter. Robust standard errors clustered at the NSIC four-digit manufacturing industries are in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 percent level.*

Endnotes

1 Nepal's data are on a fiscal year basis, e.g., 1996 refers to FY1996.

2 During the post-conflict period, governments lasted on average only one year.

3 Sri Lanka's pre-pandemic and pre-crisis average growth was higher than Nepal's.

4 GNI per capita is based on the Atlas method.

5 Eckstein, D., V. Künzel, and L. Schäfer. 2021. Global Climate Risk Index 2021: Who Suffers Most from Extreme Weather Events? Weather-Related Loss Events in 2019 and 2000–2019. Berlin: Germanwatch.

6 Nepal Labor Migration Report 2022.

7 Sapkota, S., Shrestha, M., and Shrestha, S. "Returnees: A primer on a data and research agenda for Nepal". Unpublished mimeo: World Bank Staff estimates NLSS IV.

8 World Bank Staff estimates NLSS IV; Nepal Labor Force Survey 2017.

9 World Bank. 2021. "Risks to Poverty, Vulnerability, and Inequality from COVID-19: Nepal Light Poverty Assessment, World Bank, Washington, DC."

10 https://www.worldbank.org/en/country/nepal/brief/key-highlights-country-climate-and-development-report-for-nepal

11 The conflict period in this subsection covers 2002 to 2006 due to the absence of expenditure data at constant prices.

12 Kyrgyz Republic and Lao PDR are excluded in the peer analysis due to data limitations.

13 Real exports data for Nepal is only available from 2001 onwards.

14 Exports are classified according to their production technology. The classification is based on the importance of research and development expenditure relative to the gross output and value added of the specific industry.

15 Employment data includes non-wage jobs. Data are consistent with the 13th International Conference of Labor Statisticians (ICLS) and includes work for subsistence reasons. For Nepal, employment data comes from Ruppert Bulmer, Shrestha, and Marshalian (2020), who converted employment data from 2018 Nepal Labor Force Survey to include subsistence employment. Employment between survey years is interpolated. For all other countries, employment data comes from Penn World Tables 10.01.

16 Nepal's services employment ratio grew faster than all South Asian countries expect for Bangladesh and Bhutan, and its industry employment ratio grew faster than all except Bangladesh.

17 A World Bank report from 2021 estimates that missing exports amount to US$ 9.2 billion, around 12 times the annual merchandise exports at that time. Most missing exports stem from potential trade with countries in the region that have currently low trade links with Nepal.

18 Nepal is one of the few countries remaining at a low risk of external and overall debt distress, as assessed by the low-income country debt sustainability framework (LIC DSF).

19 All migrants seeking foreign employment, except in India, require an employment permit from the Department of Foreign Employment (DOFE), and the information is collected in the FEIMS.

20 Nepal Rastra Bank has issued FESBs since 2009; however, the program remains consistently undersubscribed. Low confidence in the government, less liquid bonds, and currency depreciation are other reasons cited for the sluggish take-up rates (Shrestha S. , 2023).

21 This is also true for other periods. For example, between 1995 and 2004, Lokshin et al. (2010) found that one-fifth of the poverty reduction was due to increased work-related migration and remittances. When accounting for local spillovers, Shrestha M. (2017a) found that migration to the Gulf and Malaysia explained 40 percent of the overall poverty reduction in Nepal between 2001 and 2011 and more significant poverty reduction in villages with higher emigration during the period.

22 A new edition of the Nepal Labor Force survey is being initiated as of April 2024.

23 Methodologically, this broadly follows a prominent literature studying the effects of trade policies and exchange rates on export-related outcomes using firm-level data. For example, see Chaterjee et al. (2013), Amiti et al. (2014) or Li et al. (2015) on the firm-level effects of exchange rates. On the effect of input tariffs, see for example Amiti and Konings (2007), Topalova and Khandelwal (2011), and Bas (2012).

24 The estimated effects here are broadly in line with existing firm-level estimates from developing countries. Li et al. (2015) report a value elasticity of 0.25-0.41 for Chinese firms and Chaterjee et al. (2013) find a volume elasticity of 0.24.

25 The regressions in Annex Tables A2 –A5 examine the effect of (log) bilateral RERs on (log) USD exports at the firm-product-destination-year level The bilateral RER is lagged one year throughout to avoid mechanical simultaneity, and standard errors are clustered at the destination level. By default, all the regressions include firm, product, destination, and year fixed effects (i.e., dummy variables) to control for potential omitted variables. These are referred to as the "baseline" set of fixed effects. The "extended" set of fixed effects for the RER regressions include firm-product-year interaction fixed effects and destination fixed effects.

26 The approach in all regressions focus on controlling for potential confounding factors primarily by using fixed effects. An additional potential control would be destination GDP (Annex Table A5, column 1). The results are robust to the inclusion of destination GDP.25 The remaining columns of table 6 will be used and explained at the end of section 2.5.

27 Columns 1 - 3 of Annex Table A6 include different fixed effects, however, all find a statistically significant impact of tariffs on exports, higher when using the more extensive set of controls.

28 The countries included are Afghanistan, Bhutan, Cambodia, India, Lao PDR, Mongolia, Nepal, Pakistan, Papua New Guinea, Philippines, Solomon Islands, Sri Lanka, Vanuatu, and Viet Nam.

29 Nepal data is in fiscal years, e.g., 2022 refers to FY2022.

30 https://www.iea.org/countries/nepal/energy-mix.

31 Timilsina and Steinbuks (2021) estimates that Nepal's annual nominal GDP would have been 7 percent higher during 2008 – 2016, had there been no load shedding.

32 Data on the reliability of electricity supply and its effect on firms' operations stems from the 2013 and 2023 World Bank Enterprise Surveys.

33 Data are represented on a fiscal year basis.

34 Public investment was derived from stock numbers on plants and equipment, reported in NEA audited reports.

35 Private investment was derived from the World Bank Private Participation in Infrastructure (PPI) database.

36 The policy is available in local language at https://www.moewri.gov.np/storage/listies/January2024/green-hydrogen-policy-2080.pdf.

37 Based on the documents submitted by investors during the registration of their industries and approved by the Department of Industry. The data regarding industrial capital and the number of employees presented here are proposed or estimates.

38 Nepal data is in fiscal years, e.g., 2022 refers to FY2022.

39 As of the end of 2023, ICT services accounted for 6.7 percent of the total FDI stock (see Nepal Rastra Bank, 2022/23).

40 The economically active population (labor force) is defined as individuals aged 10 and above who have participated in economic activities within the sector in the past 12 months. The census data does not disaggregate between employed and unemployed individuals; therefore, we used the economically active population as a labor market indicator.

41 https://ctevt.org.np/public/uploads/kcfinder/files/Situation%20of%20Students%20Attraction%20towards%20Engineering%20Programs%20A%20Case%20Study.pdf

42 https://bbmaps.itu.int/bbmaps/

43 These include Data Hub (Kathmandu and Butwal), Cloud Himalaya, Dataspace, AccessWorld, and Government Integrated Data Center.

44 This section is based on Nepal Business Pulse Surveys (2020, 2021, and 2022), World Bank Enterprises Surveys (2013 and 2023), the Nepal National Industrial Survey (2019/20), and the Manufacturing Census (2011/12),

45 According to the National Economic Census 2018, there are a total of 923,356 firms in Nepal, of which 462,605 are formally registered, while the remaining are unregistered. The World Bank Enterprise Survey 2023 focused on all formal private sector businesses, defined as those with at least 1 percent private ownership and a minimum of five employees, totaling 49,102 firms. This represents 10.6 percent of all firms in the formal sector. Consequently, the nearly universal internet usage reported among these firms in this study may not be indicative of the entire formal sector and certainly does not reflect the situation in the informal sector.

46 https://euklems-intanprod-llee.luiss.it/download/. Data are not available for South Asian countries. However, data from the Asian Productivity Organization show that the contribution of ICT to economic growth is low.

47 Digital investment refers to whether firms have invested in any new equipment, software, or digital solutions.

48 This is based on National Population and Housing Census data conducted in 2011 (June 17-22, 2011) and 2021 (November 11-25, 2021).

49 This stood at 73 percent for smart mobile phone.

50 https://nta.gov.np/uploads/contents/MIS%20Report_2081%20Ashadh.pdf

51 World Bank Global Findex Database

52 Central Bank Baseline Survey of Financial Literacy.

53 Digital payments refer to whether individuals aged 15+ paid digitally for an in-store purchase for the first time after COVID-19 or paid online for an online purchase for the first time after COVID-19.

54 2023 World Bank Enterprise Survey

55 Other services primarily encompass transportation, motor vehicle services, publishing activities, as well as legal and accounting service.

56 Countries are classified into four generations based on the maturity of their ICT regulation. Generation 1 includes countries with scores below 40, characterized by regulated public monopolies and a command-and-control approach. Generation 2 consists of countries scoring between 40 and 69.6, representing early open markets that have implemented basic reforms, such as partial liberalization and privatization. Generation 3 encompasses countries with scores between 70 and 84.9, which focus on enabling investment, fostering innovation, and enhancing access, while simultaneously promoting competition in service and content delivery, and consumer protection. Finally, Generation 4 includes countries scoring between 85 and 100, known for their integrated telecom regulation that aligns with broader economic and social policy goals.

57 https://www.nta.gov.np/uploads/contents/White%20Paper%20on%20Current%20Usage%20and%20Future%20Planning%20of%20Radio%20Spectrum%20in%20Nepal.pdf

58 https://digitalregulation.org/spectrum-pricing-and-trading/

59 https://datahub.itu.int/data/?i=100058

60 https://digitalregulation.org/spectrum-pricing-and-trading/

61 This data is derived from the Nepal Standard Industrial Classification for four-digit manufacturing industries, as reported in the Manufacturing Census of 2011/12 and the Nepal National Industrial Survey of 2019/20.

62 https://kathmandupost.com/videos/2024/08/14/nepali-e-commerce-idea-of-nepal-with-aanchal-kunwar

63 https://ekantipur.com/en/feature/2024/07/14/fudmandu-has-been-cooking-national-and-international-dishes-for-a-decade-and-a-half-51-02.html

64 https://restofworld.org/2023/cloudfactory-nepal-layoffs/

65 https://indiastack.org/

66 https://usof.gov.in/en/project-documents

67 https://www.krinstitute.org/assets/contentMS/img/template/editor/230330%20USP%20Fund%20v2.0.pdf

68 https://www.krinstitute.org/assets/contentMS/img/template/editor/230330%20USP%20Fund%20v2.0.pdf

69 https://ised-isde.canada.ca/site/computers-for-schools-plus/en

70 https://www.moe.gov.sg/education-in-sg/educational-technology-journey/edtech-masterplan/digital-literacy-and-technological-skills

71 https://www.digitalforlife.gov.sg/About/Our-Projects/Be-digitally-ready-with-Digital-Skills-for-Life

72 https://www.imda.gov.sg/how-we-can-help/techskills-accelerator-tesa/skills-framework-for-infocomm-technology-sfw-for-ict

73 This is a panel data implementation of the behavioral real exchange rate (Clark and MacDonald, 1999).

74 A level regression is used to obtain the initial (i.e. 2001) value.

75 The data on this variable is available only for 2023 Enterprises Survey.

76 Capital stock data is not available for firms in services sector in Enterprises Survey.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