Private Participation in Infrastructure (PPI)

2022 Annual Report

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Acknowledgement & Disclaimer

This report was prepared by a team comprising Deblina Saha (Task Team Leader), Seong Ho Hong (Infrastructure Analyst), Apala Bhattacharya (Consultant), Teshura Nair (Consultant), with editorial inputs by Luba Vangelova and design inputs by Pablo Alfaro Chavez.

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This report describes private participation in infrastructure (PPI) as indicated in the Private Participation in Infrastructure Database. The database records investment information for infrastructure projects in low- and middle-income countries globally. The PPI Database represents the best efforts of a research team to compile publicly available information and should not be seen as a fully comprehensive resource. Some projects, particularly those involving local and small-scale operators, tend to be omitted because they are usually not reported by major news sources, databases, government websites, and other sources used by the PPI Projects Database staff.

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Foreword

As the world stumbles out of the COVID-19 crisis, we see that aggregate output in low- and middle-income countries continued to rebound in 2022. Similarly, 2022 was a pivotal year for the resumption of private infrastructure investment commitments, as more progress built on what was achieved in 2021.

Nevertheless, a long lasting slowdown have cast a shadow over the gains that have been achieved. Improvements also vary across regions. Most notably, East Asia and the Pacific, Latin America and the Caribbean, and South Asia saw a return to pre-pandemic investment levels, even while more undercurrent changes in project structures are apparent in comparison to pre-pandemic times.

Europe and Central Asia posted significantly lower investment commitments as the war in Ukraine and the energy crisis spiraled on. The impending impacts of climate change continue to threaten near-term investment as well, and the World Bank's PPI Database is evolving to keep up with global efforts in this area. The database has added a new subsector—electric vehicle charging infrastructure (under transport). The database also notes that more and more countries are posting private investment commitments, with new countries joining the list of usual investment destinations, a clear sign of recovery.

We expect 2023 to continue the overall recovery, while simultaneously acknowledging that growth will not be universal, and some regions will outperform others. As regional conflicts, economic circumstances, and national priorities make growth in private investment commitments increasingly dispersed, the PPI Database team is committed to monitoring and reporting on these trends.

Key Highlights

Investment commitments of

US$91.7 billion across 263 projects in 2022

▲ 23% from 2021

▲ 4% from the past five-year average (2017-2021)

▲ 17%

East Asia and the Pacific posted investment commitments of **US$43.4 billion, a 17% increase from the past five-year average.**

Europe and Central Asia saw investment commitments of **US$3.3 billion**, the region' lowest PPI in the past 10 years.

▼ 77%

▲ 16%

Latin America and the Caribbean experienced an **increase of 16% from the previous five-year average,** reaching **US$24.3 billion** in total investments.

▲ 214%

PPI investments in **Middle East and North Africa** amounted to **US$2.0 billion,** a **214%increase** from the 2021 level. However, it was still lower than the region's average of **US$3.1 billion** over the past five years.

▲ 59%

South Asia received **US$13.9 billion.** This was the region's largest level of PPI investment in the past 10 years.

Sub Saharan Africa received investments totaling **US$4.9 billion.** This marked a **15% decrease** from the past five-year average.

However, the number of projects and countries with PPI were the highest in the past decade.

▼ 15%

The transport sector once again led the recovery in 2022, outpacing other sectors significantly.

The trend towards renewable energy remained strong; 113 of 120 project in 2022 were centered on renewable energy, whereas only eight projects followed conventional energy methods.

Energy reported a significant share of global private infrastructure investment, comprising 28 percent of total PPI investments, amounting to US$25.9 billion across 136 projects.

Investment commitments in the water supply and sanitation sector (WSS) decreased to US$2.3 billion across 25 projects in nine countries.

Eighteen International Development Association (IDA) countries received investment commitments, amounting to US$4.7 billion across 30 projects in 2022.

This represented a 26.1 percent increase in investment levels compared to 2021.

Of investments with financing information, 35 percent of PPI financing came from public sources, 50 percent came from private sources, and 15 percent came from development and export finance institutions (DEFIs).

2022 saw an increase in DEFI participation in infrastructure projects, with 68 projects receiving some form of DEFI support.

Executive Summary

- The recovery of private sector investments in infrastructure (also called private participation in infrastructure [PPI]),[1] which began after the COVID-19 pandemic, has continued into 2022. In total, private sector investment commitments reached US$91.7 billion across 263 projects, equivalent to 0.25 percent of the gross domestic product (GDP) of all low- and middle-income countries. This represents a continued recovery towards pre-pandemic levels, with total commitments in 2022 surpassing the previous five-year average (2017-2021) by 4 percent.

- Nevertheless, the total number of PPI projects in the region has declined to 263, indicating a reduction from the pre-pandemic level of 300 projects.

- Most regions—except for Europe and Central Asia (ECA) and Sub-Saharan Africa (SSA)—recorded significant improvements in PPI compared to the previous year. Although SSA saw relatively lower PPI investment commitments compared to 2021, it achieved a noteworthy milestone of having 19 countries with PPI investment transactions, the highest recorded number in the database's history.

- Eighteen IDA countries received investment commitments, amounting to US$4.7 billion across 30 projects in 2022. This represented a 26.1 percent increase in investment levels compared to 2021, and a 22 percent lower investment level than the previous five-year average of US$6.1 billion (spread across 25 projects in 15 countries).

- The transport sector once again led the sustained recovery in 2022, outpacing other sectors significantly. Transport alone had US$66.2 billion in PPI investments across 85 projects, marking 68 percent of the total 2022 PPI investments.

- This significant increase in PPI investment commitments can be explained by a huge increase in the roads sub-sector. Investments in roads, historically the largest sub-sector in transport commitments, which doubled in value in 2021 from 2020, increased further in 2022.

- To highlight the significance of the climate change agenda, the PPI Database started collecting data on electric vehicle charging stations in 2022. Tajikistan became the first country to have an electric vehicle charging station recorded in the PPI Database.

- In 2022, the energy sector garnered a significant share of global private infrastructure investments, comprising 28 percent of total PPI investments and amounting to US$25.9 billion across 136 projects. This marks a noteworthy 21 percent increase from the previous year, when energy investments accounted for 29 percent of PPI investments.

1 The term "investment" refers to private investment commitments at the time of financial close in energy, transport, water and sanitation, municipal solid waste, and information and communication technology (ICT)-backbone projects serving the public in low- and middle-income countries, including natural gas transmission and distribution, but excluding oil and gas extraction.

- PPI investments in the energy sector are increasingly focusing on environmentally sustainable options. In terms of added capacity, 85 percent of new energy generation projects in 2022 were renewable, compared to an average of 63 percent over the previous five years.

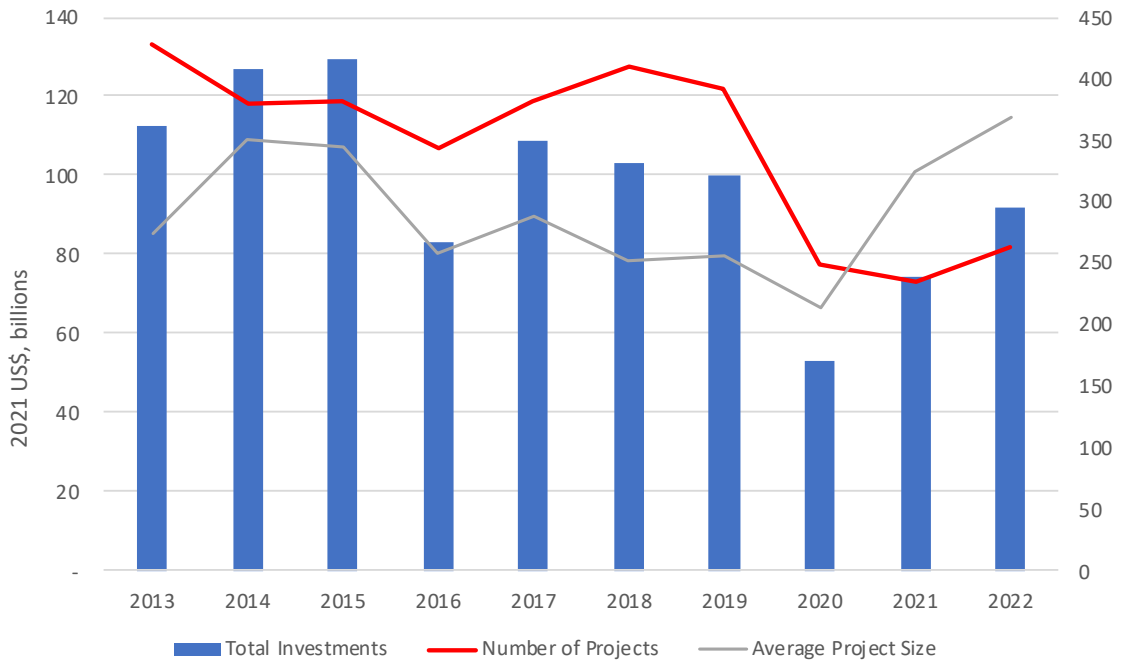
- 2022 saw an increase in DEFI participation in infrastructure projects, with 68 projects receiving some form of DEFI support. This accounted for 26 percent of all PPI projects, marking an increase from both 2020 and 2021. Approximately 35 percent of PPI financing came from public sources, 50 percent came from private sources, and 15 percent came from DEFIs.

- Of the 263 projects recorded in 2022, 114 projects (44 percent) had a majority of their stakes sponsored by foreign entities. This is on par with 45 percent in 2021 and 44 percent in 2020. Foreign sponsors focused on energy, with 85 of 136 projects (63 percent) in that sector. In terms of investment volume, 34 percent of projects (US$30 billion) were sponsored by foreign entities.

Overview

Post-pandemic private participation in infrastructure (PPI) recovery continued in 2022. PPI investment in 2022 accounted for US$91.7 billion across 263 projects, representing 0.25 percent of the GDP of all low- and middle-income countries.[2] This compares to US$74.5 billion across 235 projects in 2021. It shows a continued recovery towards pre-pandemic levels, with total commitments in 2022 surpassing the previous five-year average (2017-2021) by 4 percent. However, the total number of PPI projects declined to 263, versus the pre-COVID-19 level of 380 projects.

Figure 1: Investment Commitments in Infrastructure Projects with Private Participation in Low- and Middle-Income Countries, 2013–2022



In 2022, the number of countries with PPI investment commitments increased to 56, higher than the 48 reported in 2021 as well as the previous five-year average of 51 (2017-2021). This suggests there has been a significant rebound in the number of countries with PPI investment commitments to pre-COVID-19 levels. Notably, Benin, Lesotho, Maldives, Palau, and Tajikistan achieved their first PPI investment transactions in more than a decade.

2 The 2021 World Bank GDP (current US dollars) value has been used, because the 2022 GDP was not yet available at the time of writing this report.

Geographic Spread and Trends

All regions except for Europe and Central Asia (ECA) and Sub-Saharan Africa (SSA) recorded significant improvements in PPI compared to the previous year, with PPI investment commitments in East Asia and the Pacific (EAP), Latin America and the Caribbean (LAC), and South Asia (SAR) reaching their pre-pandemic levels in 2022. In addition, the Middle East and North Africa (MENA) witnessed a substantial increase in PPI investment commitments in 2022 compared to the previous year. However, although the SSA region had a lower level of PPI investment commitments in 2022 compared to 2021, it achieved a noteworthy milestone of having 19 countries with PPI investment transactions, the highest number since the database was established.

As a percentage of regional GDP, LAC had the highest PPI in 2022 at 0.53 percent, followed by SAR at 0.34 percent, SSA at 0.25 percent, and EAP at 0.21 percent. MENA and ECA had the lowest levels of PPI investments in terms of GDP.

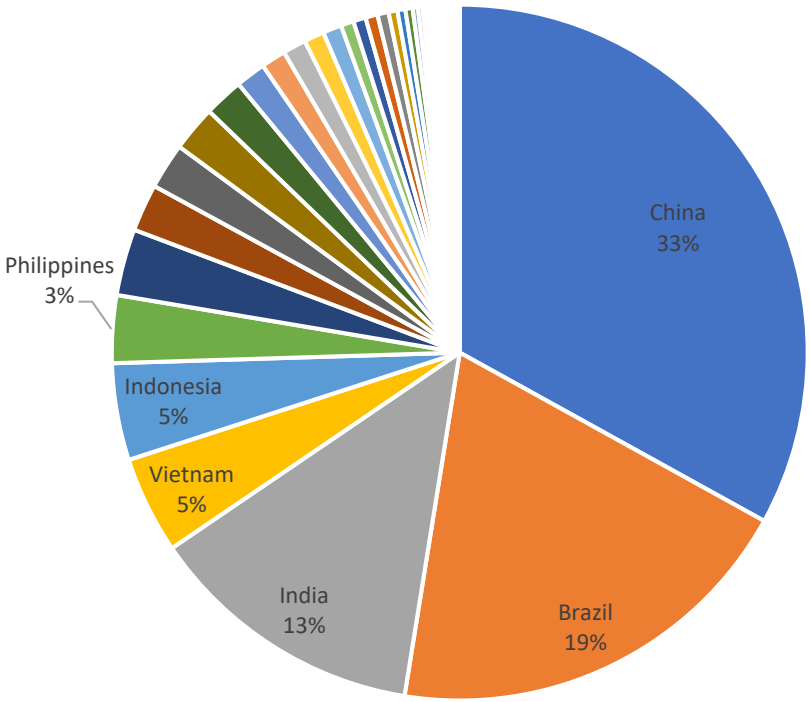
Table 1: Regional PPI in Terms of Regional GDP, 2022

Region	PPI (US$, millions)	GDP 2021 (US$, millions)	PPI/GDP
East Asia and the Pacific	43,374	20,751,789	0.21%
Europe and Central Asia	3,321	3,517,372	0.09%
Latin America and the Caribbean	24,328	4,585,104	0.53%
Middle East and North Africa	1,969	1,490,438	0.13%
South Asia	13,869	4,088,770	0.34%
Sub-Saharan Africa	4,864	1,919,444	0.25%

In absolute terms, China, Brazil, India, Indonesia and Vietnam received the largest PPI investments in 2022. These five countries together attracted US$68.3 billion, capturing 75 percent of global PPI investment (Figure 3).

The five countries with the highest levels of investment in 2022 as a percentage of national GDP were: Palau, with 10.1 percent of its GDP committed to PPI investments; Lao People's Democratic Republic (Lao PDR), with 5.6 percent; Senegal, with 4.6 percent;

Figure 2: Investment Commitments in Infrastructure Projects with Private Participation In Low- and Mid-Income Countries, by Country, 2022

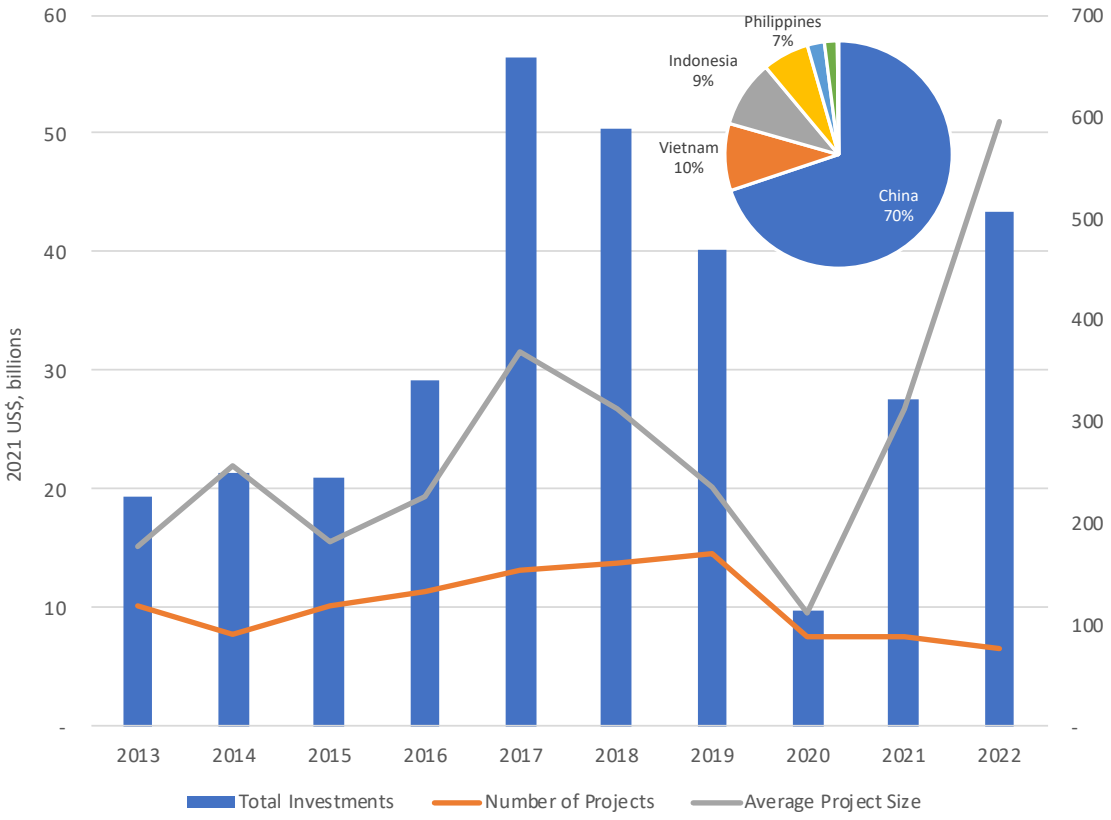


East Asia and the Pacific

In 2022, the EAP region received a total of US$43.4 billion in investments across 78 projects, representing an increase of 57 percent from 2021 levels and an increase of 341 percent from 2020, when investment levels were particularly low. This indicates a full recovery to pre-pandemic investment, with levels reaching 18 percent higher than the previous five-year average of US$36.9 billion. However, the number of projects in the region remains at its lowest point in the past 10 years.

The high investment commitments in China were the main driver behind this post-COVID-19 recovery pace (with China's PPI share reaching 70 percent). China received US$30.3 billion in PPI investment commitments, 85.4 percent of which were channeled into 25 road projects, adding 2,370 kilometers (km) of highway.

Figure 3: Investment Commitments in Infrastructure Projects with Private Participation in Low- and Middle-Income Countries in EAP, 2013–2022, and PPI Shares by Country in 2022



Association of Southeast Asian Nations (ASEAN) member states have fared relatively well, with PPI investments increasing to pre-pandemic levels. Vietnam, Indonesia and the Philippines were among the top 10 destinations for PPI in 2022.

Lao PDR also closed a notable cross-border project. The Monsoon Wind Power Project involves the development, construction, and operation of an approximately 600-megawatt (MW) wind generation facility, an associated 500-kilovolt substation, and a 500-kilovolt transmission line in the Sekong and Attapeu provinces in Lao PDR. The generated electricity is expected to be sold to Vietnam Electricity (EVN).

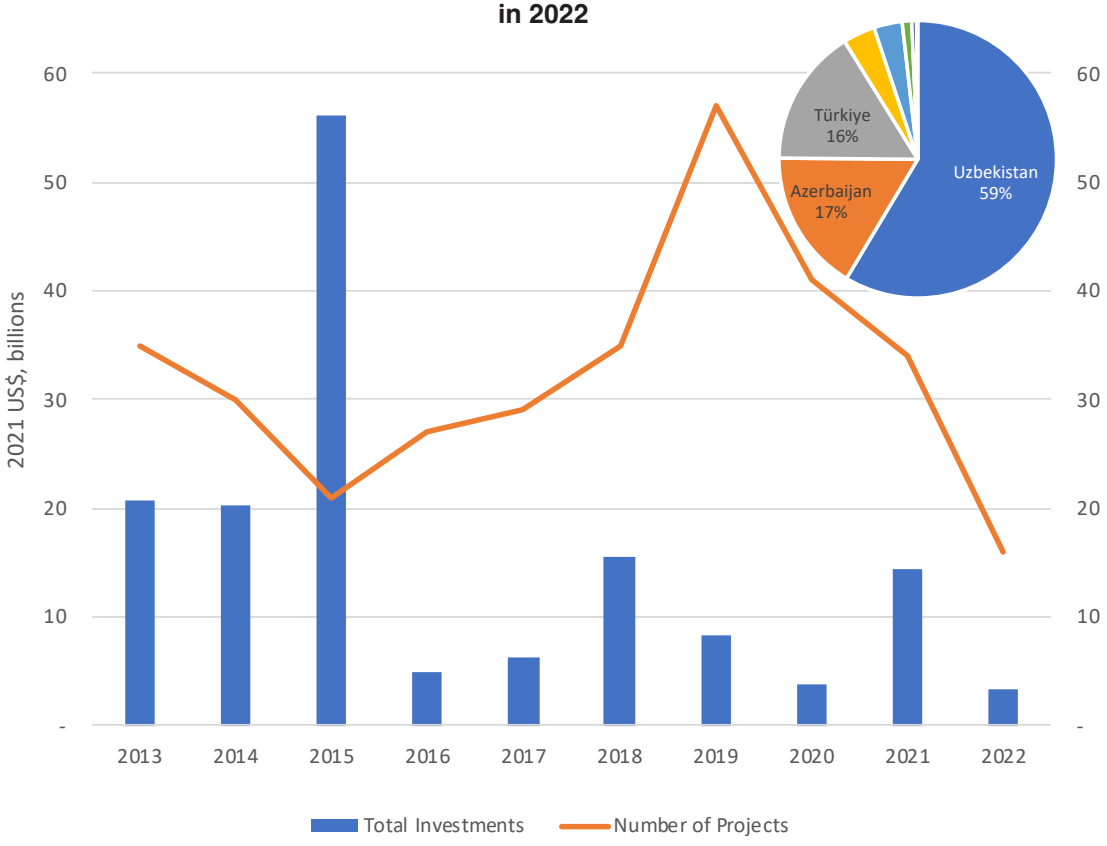
Other countries with PPI investments in the region include Cambodia, Malaysia, Palau, and Thailand. The Babeldaob solar plant and battery storage system represents Palau's inaugural solar power plant on a large scale. Upon its completion, the project will qualify as the biggest hybrid solar photovoltaic establishment and battery energy storage system in the Western Pacific region.

Europe and Central Asia

In 2022 ECA saw US$3.3 billion of investment commitments, the lowest PPI investment

commitments in the past 10 years, both in terms of the region's investment value and the number of projects. This represents a significant decrease from 2021's level of US$14.4 billion and the five-year average (2017-2021) of US$9.7 billion. The downturn is primarily due to geopolitical tensions in the region, with Russia and Ukraine not reporting any PPI projects for the first time in five years.

Figure 4: Investment Commitments in Infrastructure Projects with Private Participation in Low- and Middle-Income Countries in ECA, 2013–2022, and PPI Shares by Country in 2022



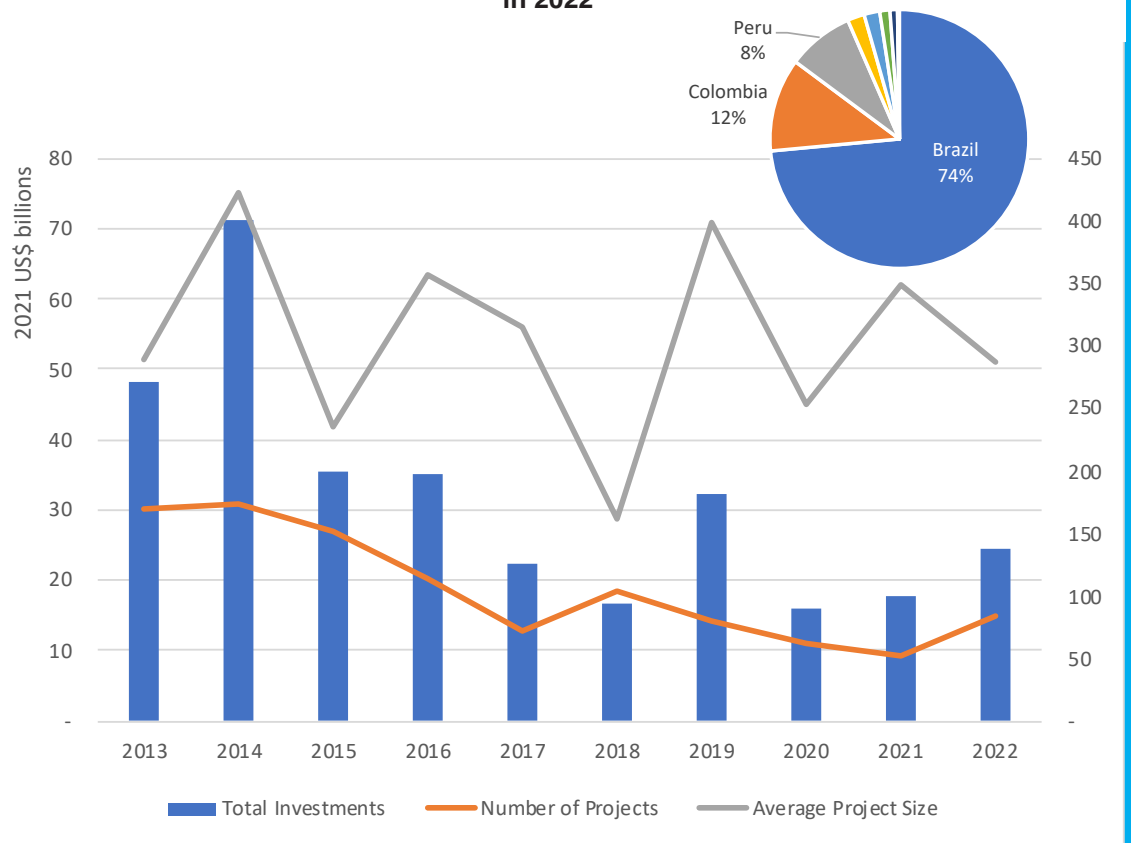
Despite this, Uzbekistan has attracted PPI investments for four consecutive years, receiving US$1.9 billion for three projects, all focused on wind power plants. In 2022, ACWA Power, a Saudi Arabian energy company, via its three wind power subsidiaries, signed power purchase agreements (PPAs) and investment agreements to develop the 1.5 gigawatt (GW) Kungrad wind farm, previously known as the Karakalpakstan Wind Independent Power Project (IPP). This wind farm, when completed, will be the biggest single-site wind farm in Central Asia and among the largest globally. The project aims to offset 2.4 million tons of carbon emissions per year and provide electricity to 1.65 million households. The value of the project is estimated to be US$2.4 billion. The United Arab Emirates and Saudi

Arabia are becoming prominent players in Uzbekistan and wider Central Asia, particularly in the energy sector, as they invest billions of dollars in renewable energy projects. Other ECA countries with PPI transactions were Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Bulgaria, Serbia, Tajikistan and Türkiye.

Latin America and the Caribbean

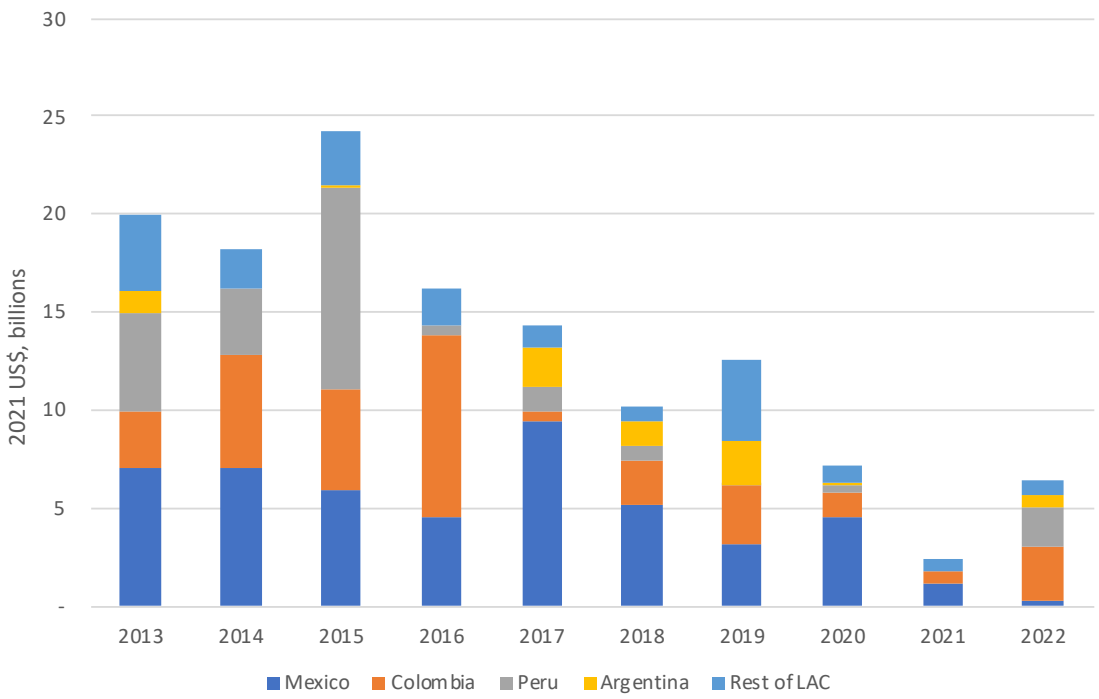
With US$24.3 billion across 85 projects in 2022, LAC received the second largest investment commitment among all the regions in nominal terms. This represents 0.53 percent of regional GDP, making it the largest per-GDP PPI investment among the six regions. Private investment commitments in LAC increased by 37 percent from 2021. The investment level was 16 percent higher than the previous five-year average (2017-2021). In LAC, the largest investments were made in the power sector, followed by the roads sub-sector. Seventy-four percent of LAC's PPI investments were in Brazil.

Figure 5: Investment Commitments in Infrastructure Projects with Private Participation in Low- and Mid-Income Countries in LAC, 2013–2022, and PPI Shares by Country in 2022



After experiencing a significant decline in private investment in infrastructure due to the impact of COVID-19, Brazil's PPI bounced back in 2022, increasing by 17 percent compared to 2021 levels, and by 53 percent compared to the previous five-year average. Several factors contributed to this increase, including the country's ongoing privatization efforts, the government's commitment to attracting foreign investment, and the implementation of several regulatory reforms aimed at improving the business environment. The government has also implemented policies to encourage private sector participation in public infrastructure projects, such as the Investment Partnership Program and the Growth Acceleration Program (PAC). As the country continues to recover from the pandemic and implement pro-business policies, it is expected that private investment in infrastructure will continue to grow in the coming years.

Figure 6: Investment Commitments in Infrastructure Projects with Private Participation in Low- and Middle -Income Countries in LAC Excluding Brazil, 2013–2022



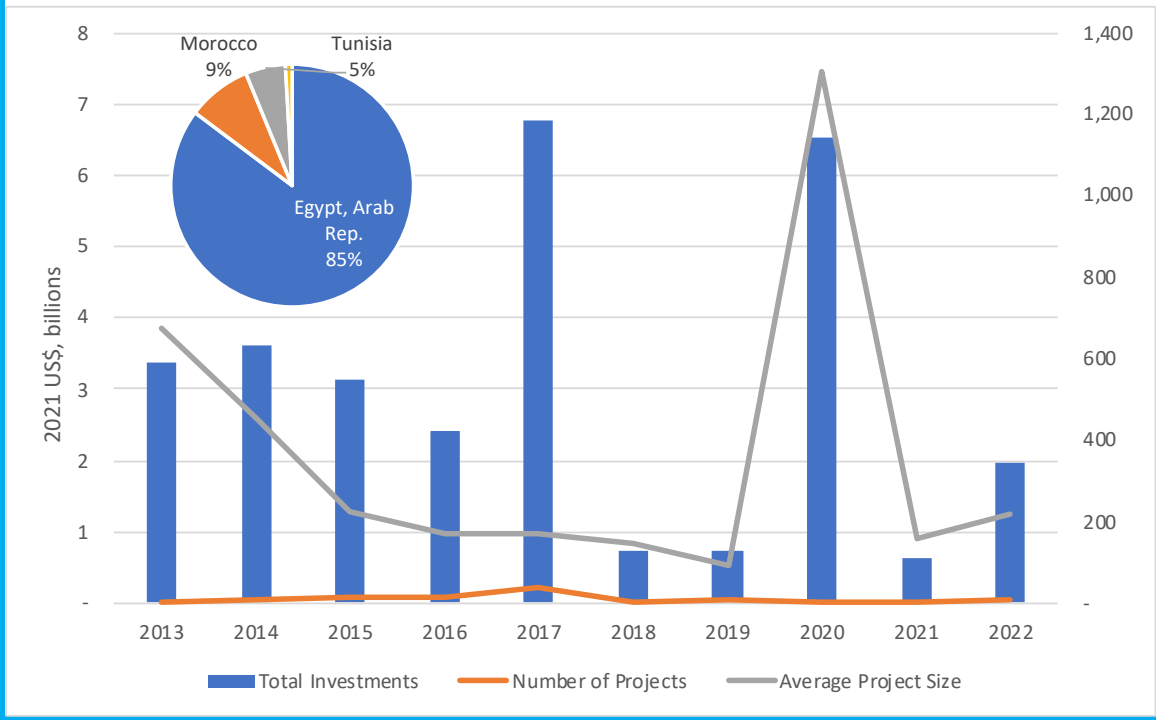
Excluding Brazil, LAC recorded an increase in PPI investments compared to 2021. Nonetheless, the region has experienced a noticeable downward trend in PPI since 2015, mainly attributed to Mexico's significant drop in PPI in the energy sector since 2017 (Figure 6). Previously, Mexico had become a favored location for private sector-led energy infrastructure investments. However, the government has taken several measures that have affected private sector investments in vital sectors of the Mexican economy.

The government is currently following through on its promise to the energy sector by undoing the previous reforms that brought more investment into the sector and regaining control of the sector through nationalization using state-controlled entities. Overall, the combination of policy uncertainty and project delays has made it challenging for the private sector to invest in infrastructure in Mexico.

Middle East and North Africa

In 2022, PPI investments in MENA amounted to US$2.0 billion, an increase of 214 percent from the 2021 level of US$626 million. However, it is still lower than the region's average of US$3.1 billion over the previous five years. PPI investments in MENA represented only 0.13 percent of the region's GDP in 2022.

Figure 7: Investment Commitments in Infrastructure Projects with Private Participation in Low- and Middle-Income Countries in MENA, 2013–2022, and PPI Shares by Country by Country in 2022



The Arab Republic of Egypt was responsible for 85 percent of the PPI investments in the region. In 2022, the European Bank for Reconstruction and Development (EBRD) provided support for Egypt's decarbonization and for meeting the Paris Agreement goals by offering an $80 million loan to Egypt Green to construct the country's first green hydrogen facility.

The largest project in Egypt was the Amunet Wind Farm. The US$ 700 million onshore power plant will be developed in a single phase and is expected to be operational in 2023. Other countries such as Jordan, Morocco, and Tunisia also received PPI investments in the region.

South Asia

In 2022, South Asia received US$13.9 billion in investment commitments for 37 private infrastructure projects, which is the third-highest amount globally in absolute value and represents 0.34 percent of the region's 2021 GDP. This was the largest level of PPI investment in the past 10 years and indicates a recovery that exceeds pre-COVID-19 times, with investment levels 21 percent higher than the five-year average of US$11.5 billion. Although investment exceeded pre-pandemic levels, the number of projects was still low, with only 37 projects reaching financial closure in 2022 compared to the previous five-year average of 49 projects (2017-2021). In SAR, the largest investments were made in the roads sub-sector. Eighty-six percent of SAR's PPI investments were in India.

India witnessed a significant surge in PPI investments in 2022, marking the highest level of investment in the past decade. The government's push for large-scale infrastructure projects to help revive the economy, such as the National Infrastructure Pipeline (NIP), is one possible explanation for this significant upsurge. In addition, the government has also implemented reforms such as the National Monetization Pipeline, which aims to unlock the value of existing public assets through asset recycling schemes, by monetizing them through instruments such as leasing, concessions, and infrastructure investment trusts. These policies have helped to attract private investors that are keen to invest in infrastructure assets in India.

The transport sector received 78 percent of total investments, with 16 road projects successfully securing financial closure and adding 1,308 km of highways across the country. In addition, the Navi Mumbai International Airport Phase 1 project achieved financial close in 2022. This multi-billion-dollar project to develop a second airport in Mumbai is expected to be completed by December 2024 and will bring much-needed additional aviation capacity to one of India's busiest and most congested cities.

Figure 8: Investment Commitments in Infrastructure Projects with Private Participation in Low- and Middle-Income Countries in SAR, 2013–2022, and PPI Shares by Country in 2022

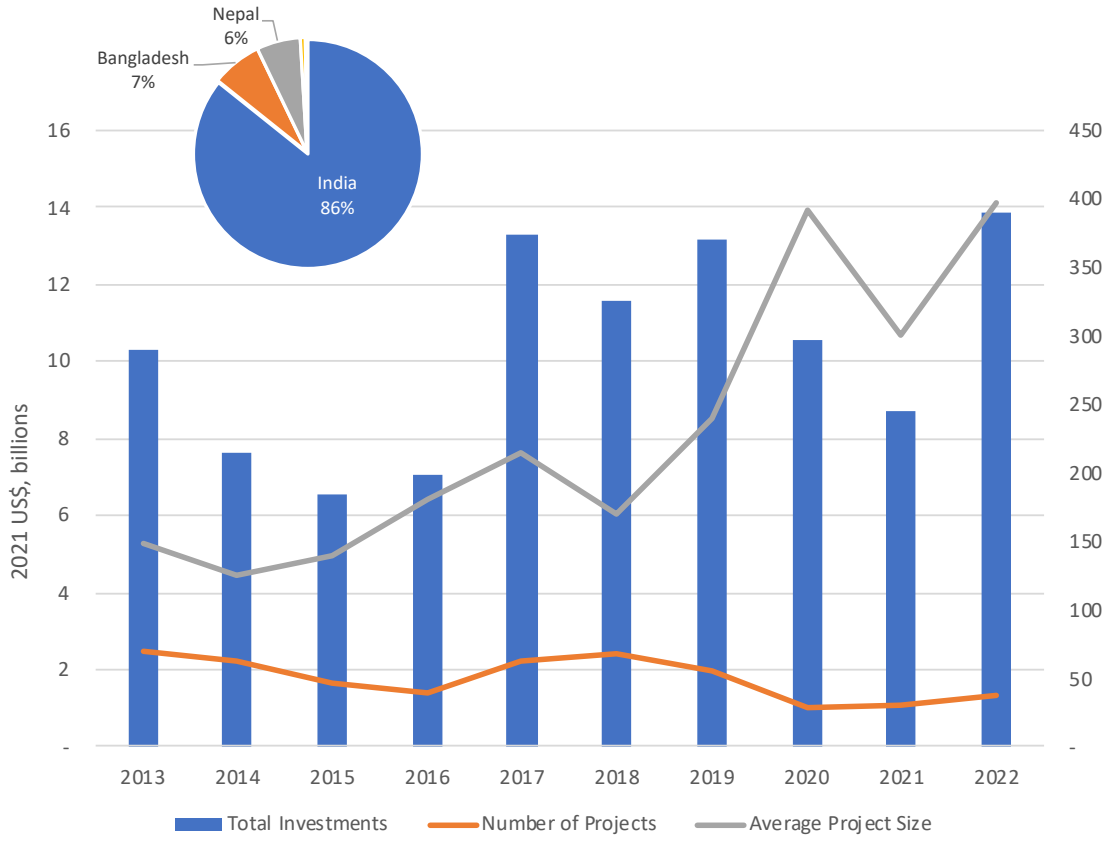
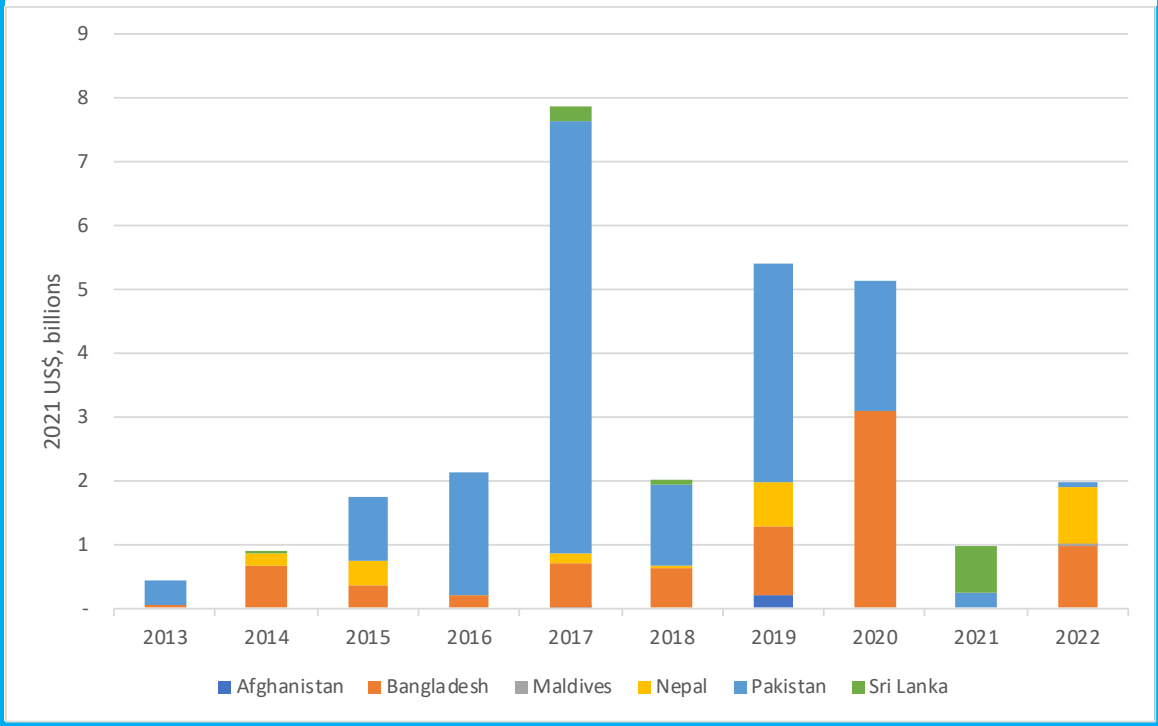


Figure 9: Investment Commitments in Infrastructure Projects with Private Participation in Low- and Middle-Income Countries in SAR Excluding India, 2013–2022



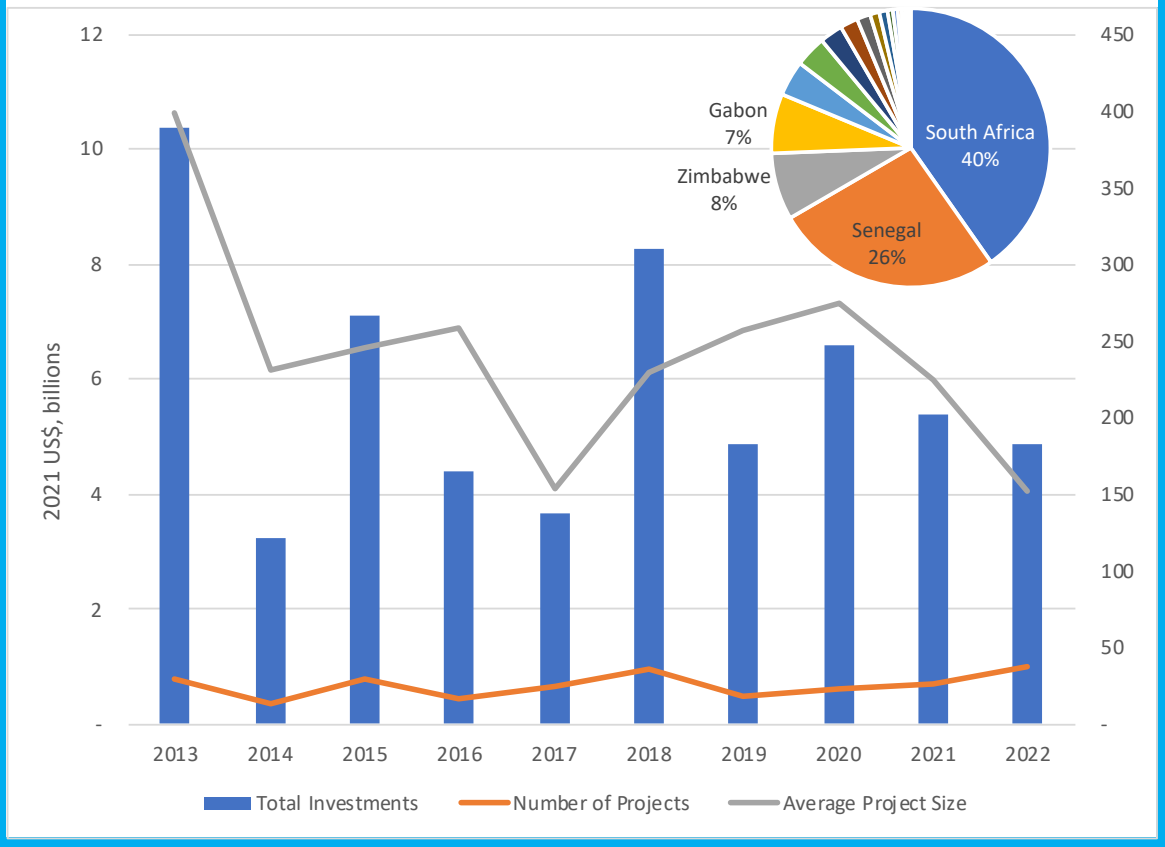
Excluding India, the South Asia region witnessed an increase in PPI investments in comparison to 2021. However, overall, the region has experienced a significant decline in PPI since 2017, which can be mainly attributed to a substantial reduction in PPI in Pakistan. The country's very weak fiscal position has discouraged foreign as well as domestic private sector investors from supporting PPI in the country.

Bangladesh typically reports consistent levels of private investment commitments. However, the country did not report any PPI in 2021. In 2022, the recent financial closure of the Hatirjheel-Amulia-Demra Expressway project, accounting for US$378 million, marked the return of private investment commitments in the country.

Other countries in the region with PPI transactions in 2022 included Nepal and Maldives. Maldives saw the financial closure of a solar photovoltaic (PV) portfolio under the World Bank-financed Accelerating Sustainable Private Investment in Renewable Energy (ASPIRE) operation, its first reported PPI in more than 10 years.[3]

3 Although there have been other private sector investments in Maldives (including in the digital and tourist sectors), this was the first PPI investment picked up in the PPI Database in more than 10 years.

Figure 10: Investment Commitments in Infrastructure Projects with Private Participation in Low- and Middle-Income Countries in SSA, 2013–2022, and PPI Shares by Country in 2022



In 2022, 37 projects in Sub-Saharan Africa (SSA) received investments totaling $4.9 billion, which represented 0.25 percent of the region's GDP. This marked a 10 percent decrease in investment levels from the previous year and a 15 percent decrease from the average investment levels over the previous five years. However, the number of projects and countries with PPI transactions in the region were the highest in the past decade. This can be attributed to the flow of investment levels surging in SSA during the pandemic, when more popular investment regions such as EAP and LAC were facing the brunt of the crisis. As these regions' economies return to pre-pandemic levels, investments will tend to be more evenly spread out across the globe. Nevertheless, the disparate effects of the pandemic have led to a landmark number of countries establishing PPI projects in SSA, a trend we expect to continue.

The largest investments were made in the power sector, with a significant portion of investments directed towards South Africa, which had experienced low levels of

investment. The government has lifted embedded generation requirements, introduced emergency programs for the state-owned power utility agency, Eskom, and eliminated the requirement for a license for power generators. The state has also pledged to double its procurement of renewable energy to more than 5,000 MW in 2022

Other countries in SSA with PPI transactions in 2022 included Benin, Botswana, Burkina Faso, Cameroon, the Democratic Republic of Congo, Côte d'Ivoire, Gabon, Kenya, Lesotho, Madagascar, Malawi, Mali, Mozambique, Nigeria, Senegal, Togo, Uganda, and Zimbabwe.

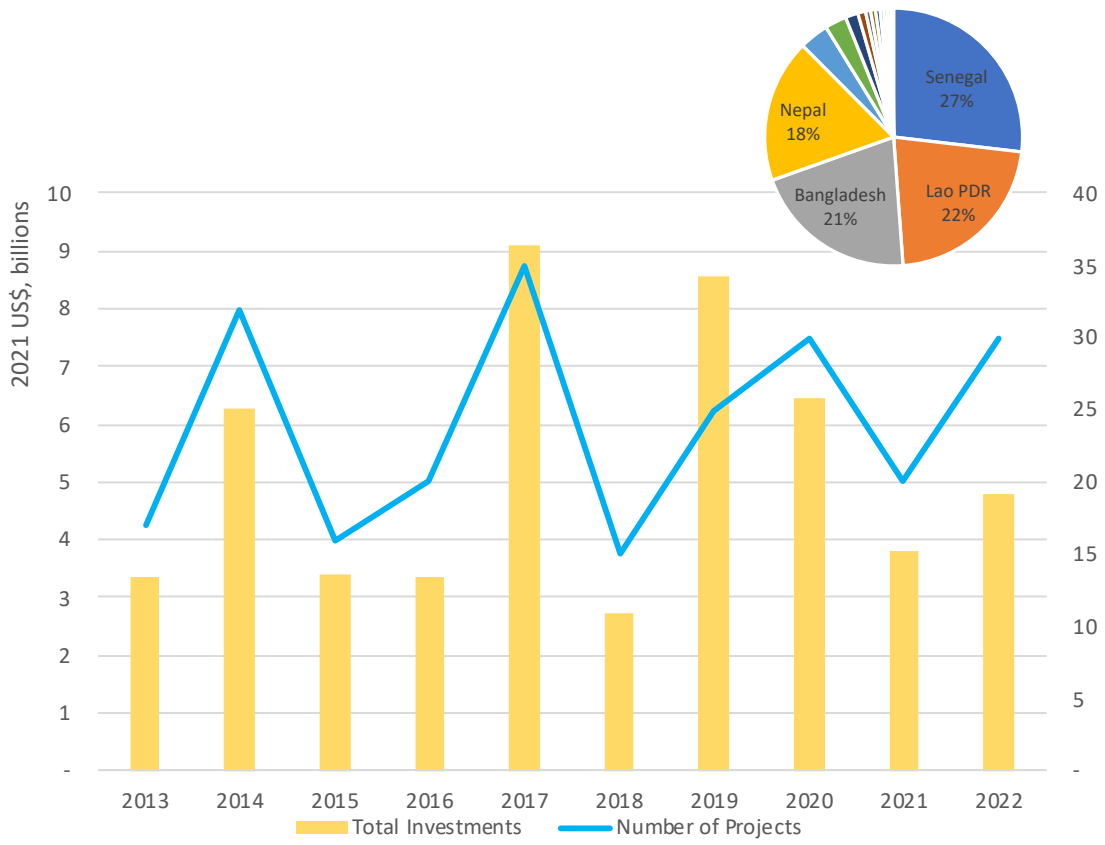
Benin and Lesotho saw their first PPI transactions in the past 10 years.[4] In Benin, four concession agreements were signed with the Beninese authorities for the development, financing, construction, and operation of photovoltaic plants with a total capacity of 50 MW. Meanwhile, in Lesotho, the Electrification Financing Initiative (EDFI ElectriFI, a European Union [EU]-funded impact investment facility) and the United Kingdom's Renewable Energy Performance Platform (REPP) invested in a project-finance vehicle led by OnePower (1PWR), an electricity access provider, to construct 11 solar mini-grids for rural communities.

4 Although there have been other private sector investments in Benin (including in the digital and tourist sectors), this was the first PPI investment picked up in the PPI Database.

Investments in International Development Association (IDA) Countries

Eighteen IDA countries received investment commitments amounting to US$4.7 billion across 30 projects in 2022. This represented a 26.1 percent increase in investment levels compared to 2021, and a 22 percent lower investment level than the past five-year average of US$6.1 billion. Additionally, this compares with the five-year average of 25 projects across 15 countries. As a percentage of global PPI investments, IDA countries' share slightly increased from 5.1 percent in 2021 to 5.2 percent in 2022. However, it was less than the five-year average share of 7.3 percent.

Figure 11: Investment Commitments in Infrastructure Projects with Private Participation in IDA Countries, 2013–2022



In Senegal, two significant PPI investment projects were completed, namely, the Malicounda dual fuel power plant and the port of Ndayane, amounting to a total investment of US$1.3 billion. The government of Senegal has signed agreements with a global private sector port operator to develop a deep-water port at Ndayane, with an investment of US$1.1 billion. This is expected to boost the PPI investment commitments in Senegal in the coming years as the country plans to undertake several capital expenditure projects.

Other IDA countries with PPI transactions in 2022 included Bangladesh, Burkina Faso, Cambodia, Chad, Ghana, Madagascar, Malawi, Mali, Mozambique, Uganda and Zambia. Notably, Bangladesh has managed to sustain PPI investment commitments every year since 2005. Also, it is worth noting that 12 of 20 projects had some type of DEFI support, reaffirming the importance of such support in IDA countries.

Table 2: Investment Commitments and Number of Infrastructure Projects with Private Participation in IDA Countries, 2022

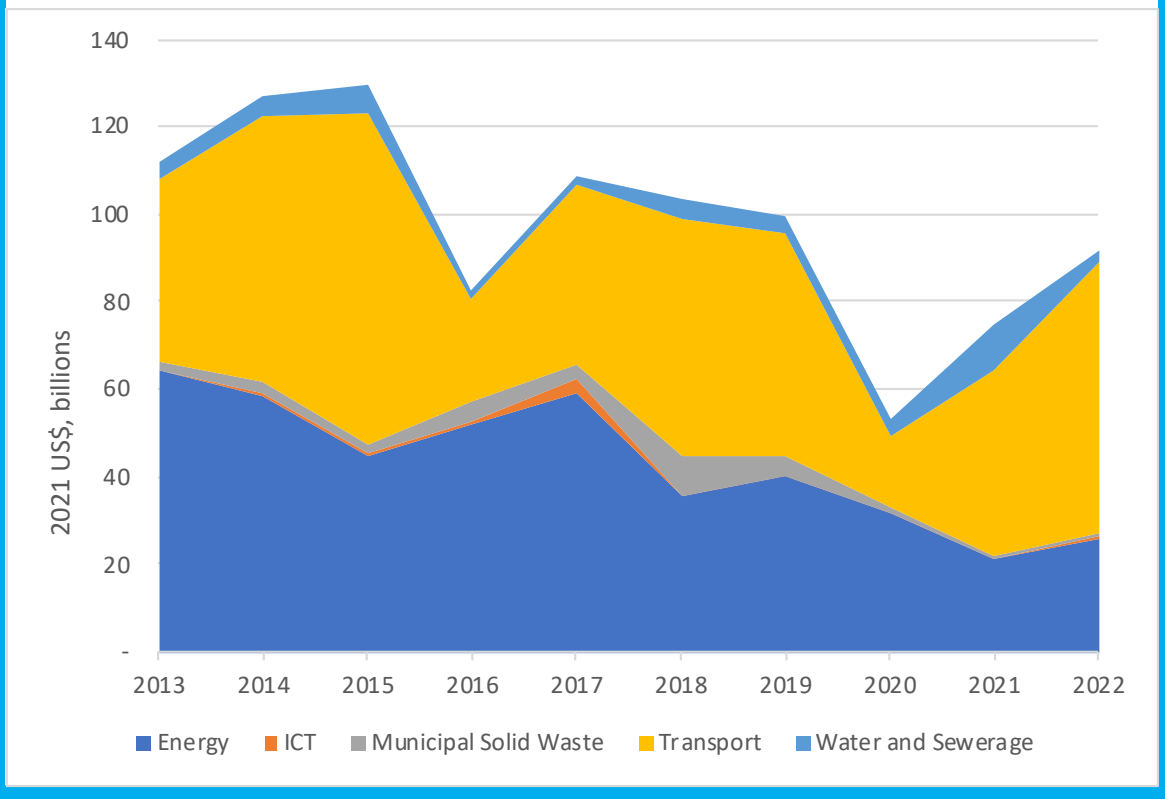
Country	Total Investment (US$ Millions)	Number of Projects
Senegal	1,283	2
Lao PDR	1,051	2
Bangladesh	991	2
Nepal	859	2
Cote d'Ivoire	176	1
Mozambique	130	1
Togo	76	3
Burkina Faso	46	1
Maldives	30	2
Madagascar	30	1
Malawi	28	1
Uganda	22	1
Congo, Dem. Rep.	21	1
Benin	16	6
Lesotho	10	1
Cambodia	7	1
Tajikistan	5	1
Mali	N/A	1
Grand Total	**4,778**	**30**

Sector Trends

The transport sector once again led the sustained recovery in 2022, outpacing other sectors significantly. Transport alone had US$62.1 billion in PPI investments across 85 projects, representing 68 percent of total 2022 PPI investments. This was the second-largest investment volume in the past decade. The boom in PPI investment for transport can be explained by a series of large road public-private partnership (PPP) projects in China and India.

Although its gains were not as significant as those of the transport sector, the energy sector saw a considerable increase in PPI, with US$25.9 billion across 136 projects. Nonetheless, the 2022 energy sector PPI investment level was the second lowest in the past 10 years.The water and sewerage sector had investment commitments of US$2.3 billion across 25 projects. Municipal solid waste amounted to US$795 million across nine projects, marking an almost 300 percent increase from 2021 investment levels. Lastly, information and communication technology (ICT) saw PPI investment commitments of US$545 million across eight projects.

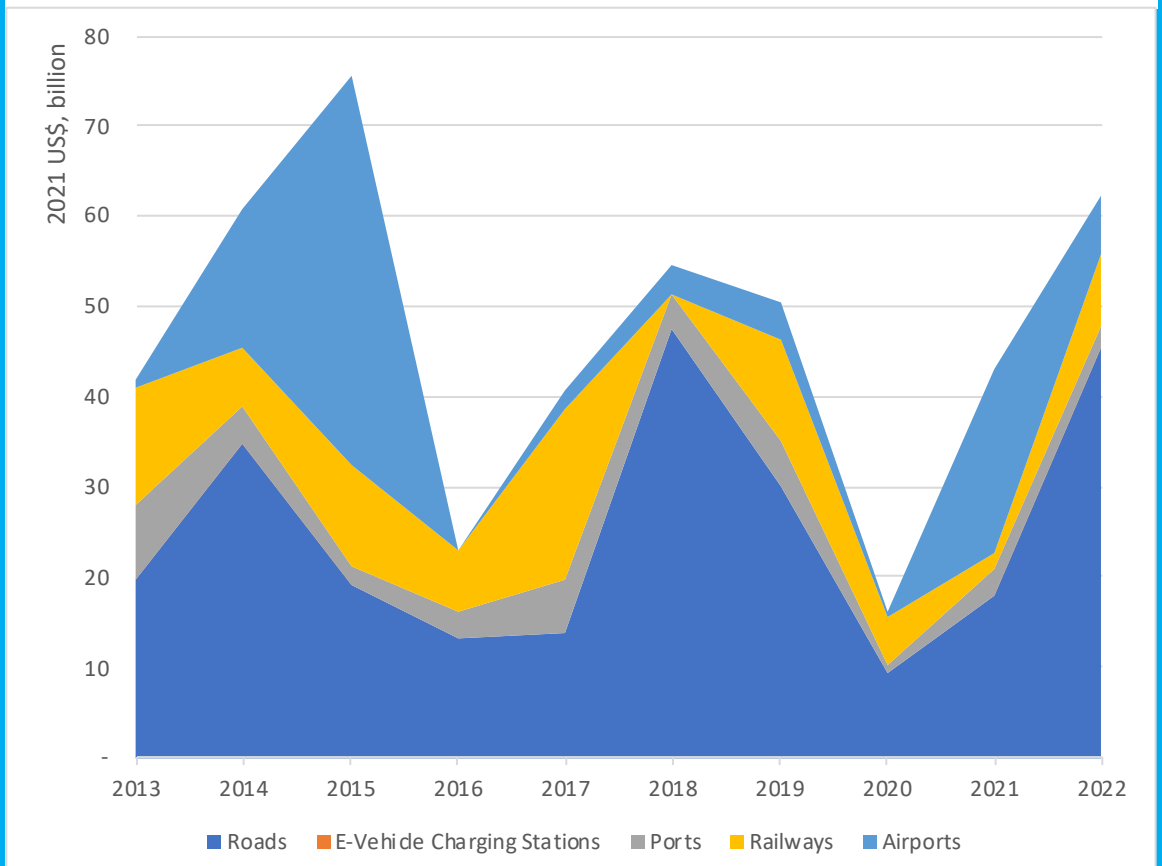
Figure 12: Investment Commitments in Infrastructure Projects with Private Participation in Low- and Middle-Income Countries by Sector, 2013-2022



Transport

PPI investments in transport recorded the second-highest investment level since 2013 (Figure 12). At US$62.1 billion across 85 projects, investment commitments in the transport sector increased by 44 percent from 2021 and by 52 percent from the previous five-year average. This marks a significant rebound from the severe drop in investment levels in 2020, during which the transport sector was severely impacted by drastic declines in international travel, worldwide lockdown measures, and supply chain disruptions.

Figure 13: Investment Commitments in Transport Infrastructure Projects with Private Participation in Low- and Middle-Income Countries by Sub-Sector, 2013-2022

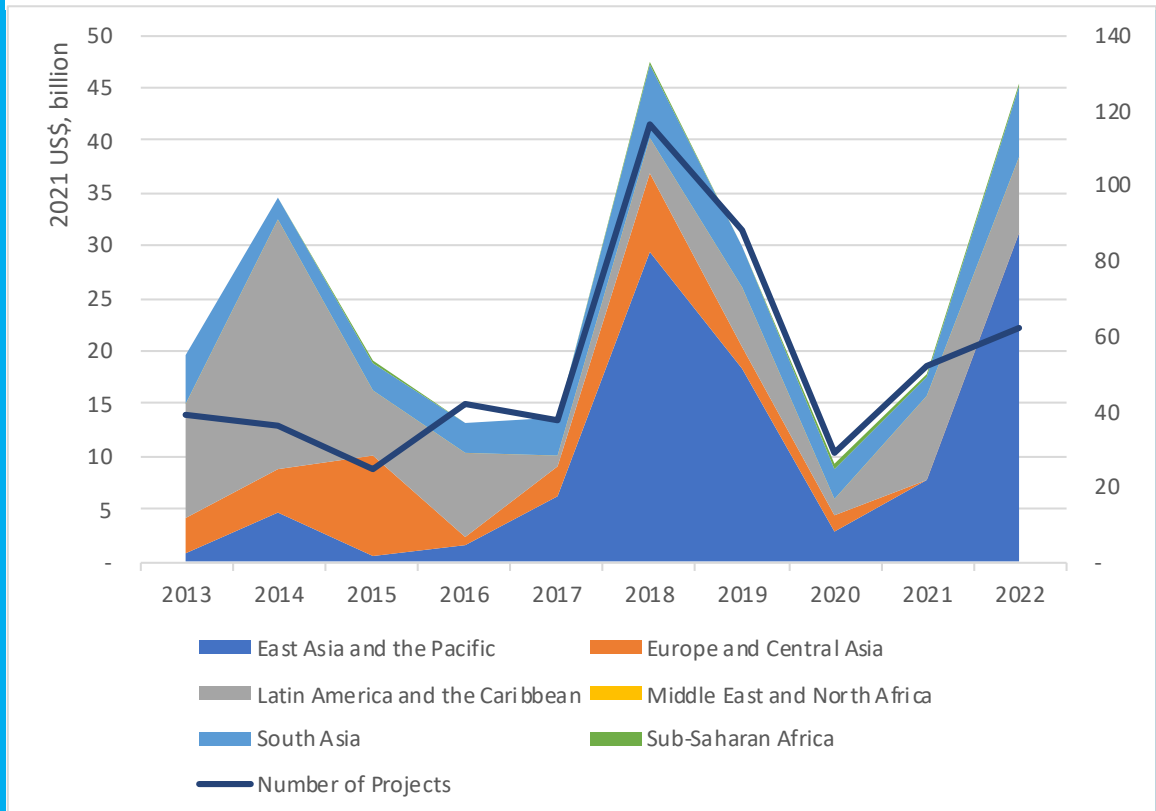


Roads

This significant increase in PPI investment commitments can be explained by a huge increase in the roads sub-sector. Investments in roads—historically the largest sub-sector in transport commitments—doubled in value in 2021 from 2020, and increased further in 2022.

The high investment commitments in China were the main driver behind this post-COVID-19 recovery pace for the roads sub-sector. China received US$25.9 billion in PPI investment commitments, channeled into 25 road projects, adding 2,370 km of highway.

Figure 14: Investment Commitments in Roads Infrastructure Projects with Private Participation in Low- and Middle-Income Countries by Region, 2013-2022



South Asia, particularly India, saw a significant increase in road PPI investments, driving the overall increase in investment levels in the transport sector in the region. The Indian government has introduced several reforms, including the National Monetization Pipeline, to monetize existing public assets through leasing, concessions, and infrastructure investment trusts. These reforms have helped to attract private investors eager to invest

in India's infrastructure assets. The transport sector received the majority of the country's investments, with 16 road projects securing financial closure accounting for US$6.3 billion and adding 1,308 km of highways.

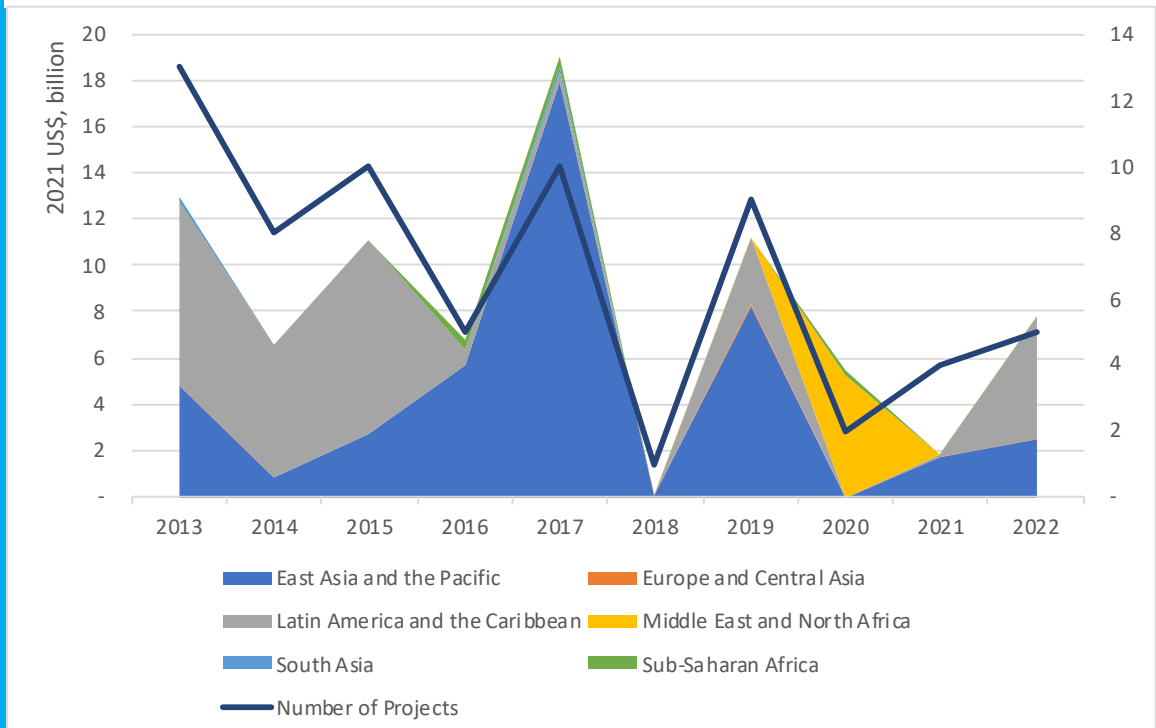
In recent years, the amount of investment in infrastructure through road PPPs has risen significantly. However, the number of projects has remained relatively stable, leading to an increase in average project costs. There are several possible reasons for the significant increase in investments in larger infrastructure projects such as roads in recent times. One such reason could be the rise in commodity and labor costs, which may have prompted investors to seek out more stable long-term investment opportunities. Governments' emphasis on utilizing PPPs to rejuvenate their economies could be another explanation. Infrastructure projects have long been recognized as effective tools for boosting economic growth, and PPPs have emerged as a key approach for financing and implementing such projects.

Railways

In 2022, there was a noteworthy surge in investments in the railway sector compared to the previous year. A total of US$7.8 billion was invested in five railway projects over the course of the year, slightly higher than the previous five-year average of US$7.5 billion. Among these projects, the São Paulo Metro Line 6 in Brazil was the most significant, with reported investments of US$3.4 billion. The Concessionária Linha Universidade (CLU) consortium, led by ACCIONA from Spain and its partners, secured the financing deal with Brazil's National Bank for Economic and Social Development (BNDES) to develop this project.

Other countries with railways PPI projects included China and Türkiye.

Figure 15: Investment Commitments in Railways Infrastructure Projects with Private Participation in Low- and Middle-Income Countries by Region, 2013-2022

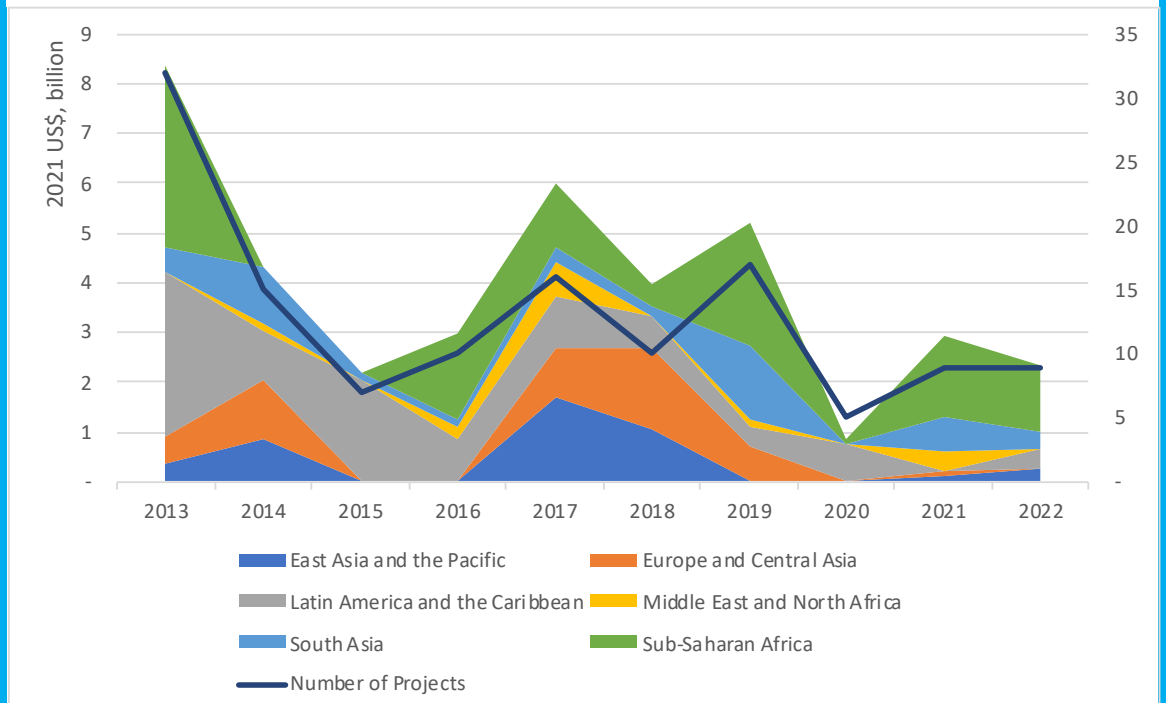


Ports

In 2022, there were nine port projects across seven countries that received investments worth US$2.3 billion. This figure represents a decrease of 21 percent from the 2021 investment level, which was US$2.9 billion, and a 39 percent decline from the five-year average. The SSA region had the highest private investment level for ports, with US$1.3 billion, primarily due to the Port of Ndayane project in Senegal, whereby a global private sector port operator has partnered with the Senegalese government to build a deep-water port with a total investment of US$1.1 billion.

In addition to Senegal, other countries that reported port PPI projects in 2022 included Brazil, China, Côte d'Ivoire, India, Indonesia, and Lao PDR.

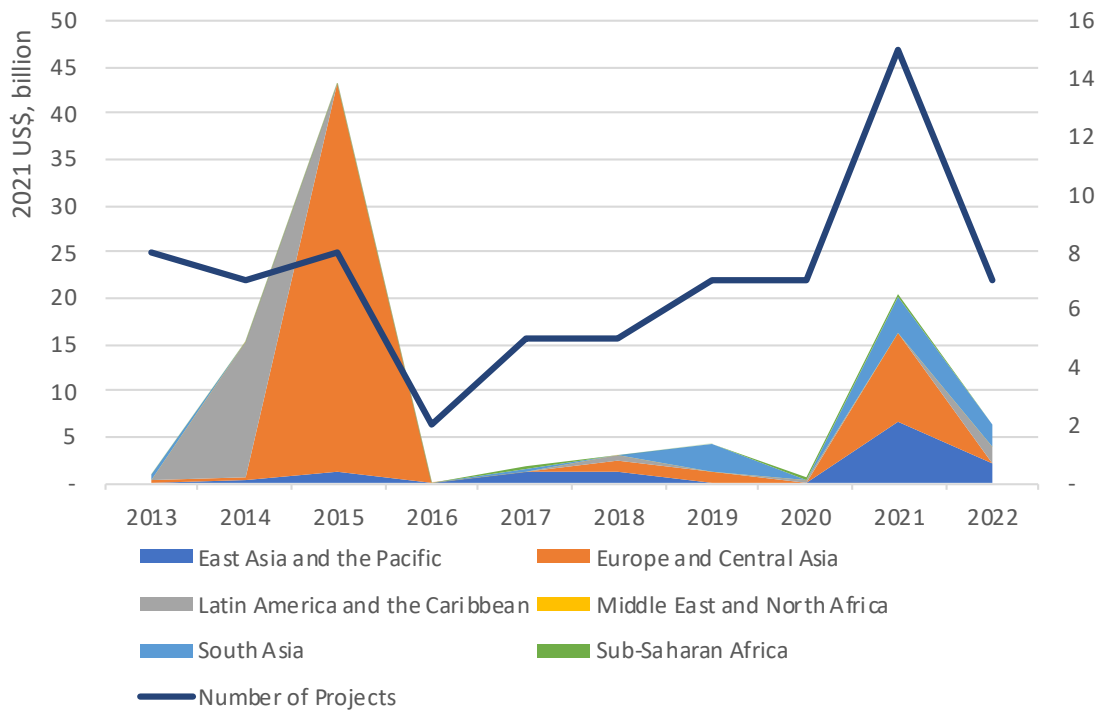
Figure 16: Investment Commitments in Ports Infrastructure Projects with Private Participation in Low- and Middle-Income Countries by Region, 2013-2022



Airports

In 2022, investment commitments in airports amounted to US$6.5 billion across seven projects in four countries—Brazil, India, Peru, and the Philippines. This was a 68 percent decrease from 2021 but was still 8 percent higher than the previous five-average. In 2020, airport-related PPI experienced a significant decline due to the decrease in international travel caused by the pandemic. However, with the easing of most travel restrictions, these private sector-led airport projects began to show growth in the post-pandemic period in 2021. Investment commitments in airport projects through PPPs recorded a notable level in 2022, albeit not as high as in 2021. This indicates that despite the challenges posed by the pandemic, the airport sector still attracts considerable interest from private investors. The largest airport project in 2022 was the Navi Mumbai International Airport Phase 1 project. This multi-billion-dollar project to develop a second airport in Mumbai is expected to be completed by December 2024 and will bring much-needed additional aviation capacity to one of India's busiest and most congested cities.

Figure 17: Investment Commitments in Airport Infrastructure Projects with Private Participation in Low- and Middle-Income Countries by Region, 2013-2022



E-Charging Stations

To highlight the significance of the climate change agenda, the PPI Database started collecting data on electric vehicle (EV) charging stations in 2022. Tajikistan became the first country to have an electric vehicle charging station recorded in the PPI Database, through the Dushanbe E-Mobility project. This project is a leading initiative in Tajikistan's transition towards electric mobility and is expected to have a broad impact on the country's EV ecosystem.

Energy

In 2022, the energy sector garnered 28 percent of total global PPI investments, amounting to US$25.9 billion across 136 projects. This marks a 21 percent increase from the previous year, when energy investments accounted for 29 percent of PPI investments. Notably, LAC, MENA, and SAR witnessed a considerable rebound in energy investments in 2022. However, the EAP and ECA regions experienced a decline, with EAP seeing the steepest fall at 33 percent, followed by ECA at 29 percent.

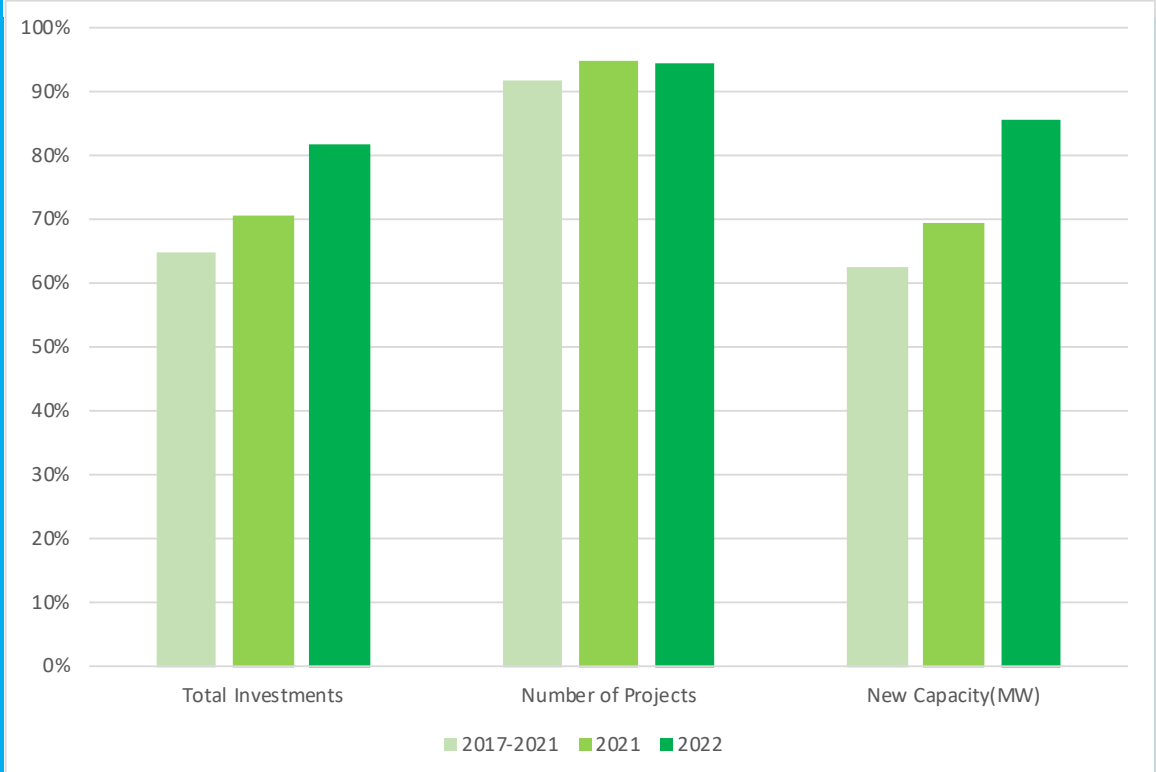
Electricity

In 2022, the vast majority of energy projects were focused on electricity, with 88 percent of them involving power generation, 10 percent dedicated to transmission, and the remaining 2 percent allocated to distribution. This represented a significant decrease compared to 2021, when electricity projects comprised 97 percent of total investment value. Notably, the trend towards renewable energy remains strong: 113 out of the 120 projects in 2022 were centered on renewable energy, whereas only eight projects involved conventional energy methods.

Electricity Generation

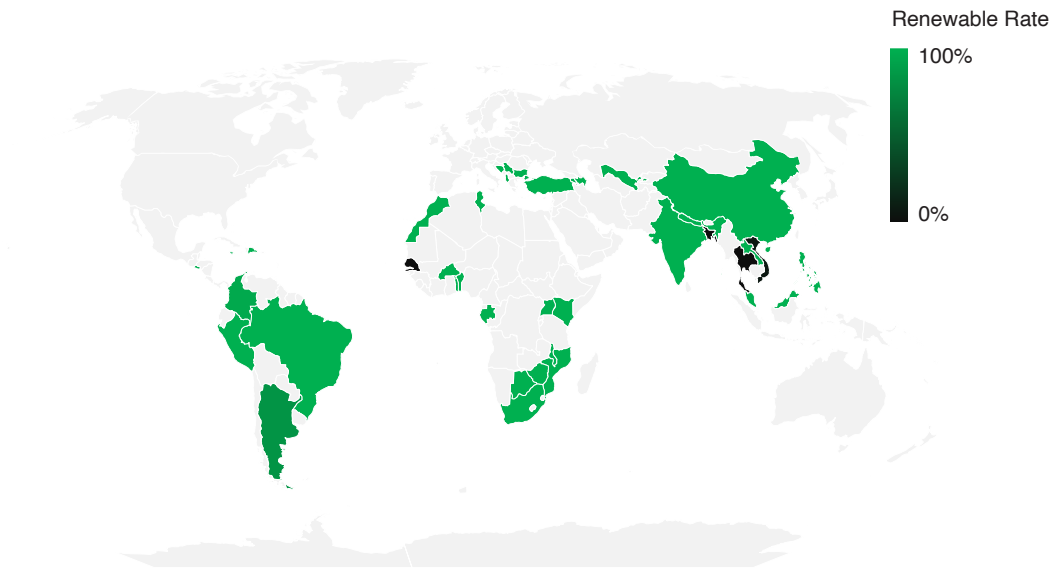
PPI investments in the energy sector are increasingly focusing on environmentally sustainable options. In terms of the number of projects, 94 percent of electricity generation projects were renewable in 2022, compared to 92 percent for the previous five-year average. This is equivalent to 81 percent as measured by total investment, up from 65 percent for the previous five-year average (2017-2021). In terms of added capacity, 85 percent of new energy generation projects in 2022 were renewable, compared to an average of 63 percent over the previous five years.

Figure 18: Share of Electricity Generation Projects in Low- and Middle-Income Countries that Use Renewable Resources, by PPI Investment Volume, Number of Projects, New Capacity, Five-Year Average (2017-2021), 2021, and 2022



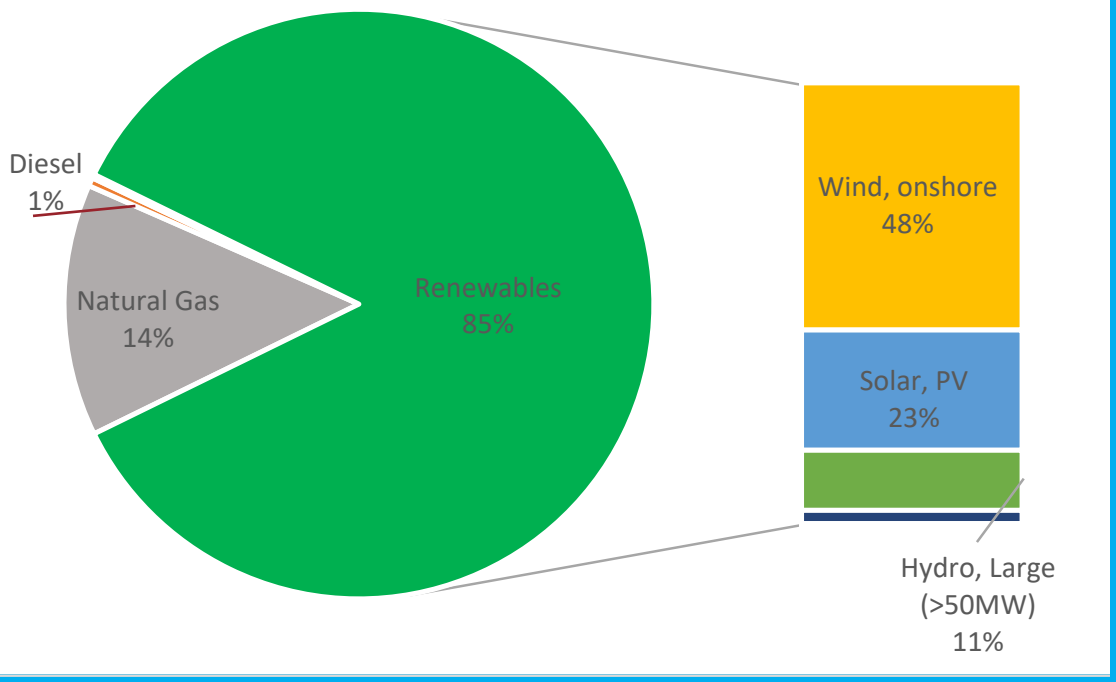
At a country level, most countries had a renewable energy investment rate of 100 percent, ith the exception of Argentina, Bangladesh, Colombia, Senegal, Thailand, and Vietnam. Bangladesh, Senegal, and Vietnam had higher investments in conventional projects than in renewable ones.

Figure 19: Rate of Renewable Energy Sources Used in Newly Added PPI Electricity Generation (MW)



Onshore wind technology accounted for 48 percent of all power generation capacity in low- and middle-income countries. Wind technology offers a cost-effective and reliable source of renewable energy. Wind projects have also gained popularity due to advancements in technology that have increased their efficiency and reduced their operational costs, making them an attractive option for private sector investors and governments seeking to reduce carbon emissions and mitigate climate change.

Figure 20: Energy Mix of New PPI Power Generation Projects, 2022



Water and Sewerage

Investment commitments in the water supply and sanitation sector (WSS) decreased to US$2.3 billion across 25 projects in nine countries, a 48 percent drop compared to the previous five-year average. Water utility projects accounted for 82 percent of total WSS investments, whereas water treatment accounted for 18 percent. Investment commitments in WSS were made in Benin, Brazil, Cambodia, China, Gabon, India, Indonesia, Mali, and the Philippines. The country with the largest PPI investment commitments in WSS was Brazil, which saw the financial closures of WSS projects worth US$900 million. The largest project was Rio de Janeiro Water & Sanitation Bloc 3.

Municipal Solid Waste

Investment commitments in municipal solid waste (MSW) saw a significant increase from 2021, with investments totaling US$796 million across nine projects in six countries. However, this was substantially lower than the previous five-year average of US$3.7 billion. The countries with investments in MSW included Brazil, Bulgaria, China, Egypt, Vietnam, and Zimbabwe.

The majority of projects were in China and Zimbabwe. The largest MSW project to achieve financial closure was Pomona Waste Management, with investment commitments of US$334 million.

Information and Communication Technology

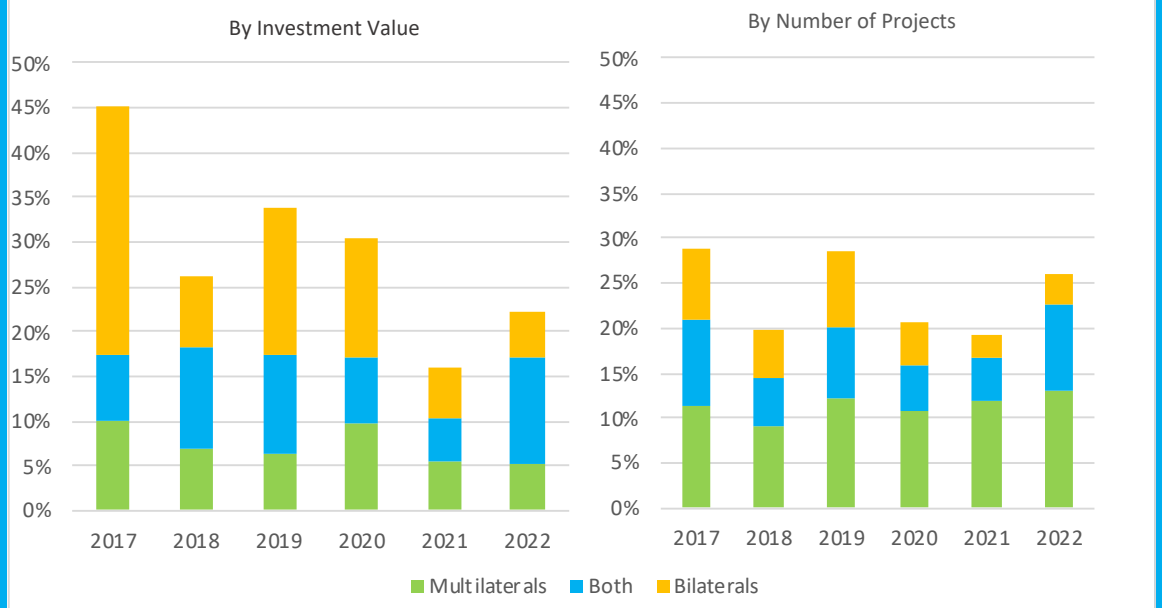
Investment commitments in information and communication technology (ICT) saw a slight increase to US$545 million across eight projects in six countries. However, this is a significant decrease from the previous five-year average of US$1.1 billion. Investment commitments in ICT were made in the Democratic Republic of Congo, Jordan, Maldives, Nigeria, the Philippines and South Africa.

Financing Trends

Development and Export Finance Institution (DEFI) Support [5]

2022 saw an increase in DEFI participation in infrastructure projects, with 68 projects receiving some form of DEFI support. This accounted for 26 percent of all PPI projects, marking an increase from both 2020 and 2021 (Figure 20). By investment value, projects with DEFI support accounted for 22 percent of total investment commitments. There were four megaprojects that received DEFI support as well, in Brazil, the Philippines, Senegal and Colombia.

Figure 21: Share of Infrastructure Commitments with Private Participation in Low- and Middle-Income Countries that Received Support from Multilateral/Bilateral DEFIs, 2017–2022



As in previous years, DEFI support was focused on the energy sector, representing 65 percent of projects receiving support in 2022. Specifically, support tended to be directed to renewable energy projects, in line with the continued global push to reduce greenhouse gas emissions and combat climate change. Thirty-nine of the 42 energy generation projects that had DEFI participation dealt with renewable sources of energy. Strong emphasis was

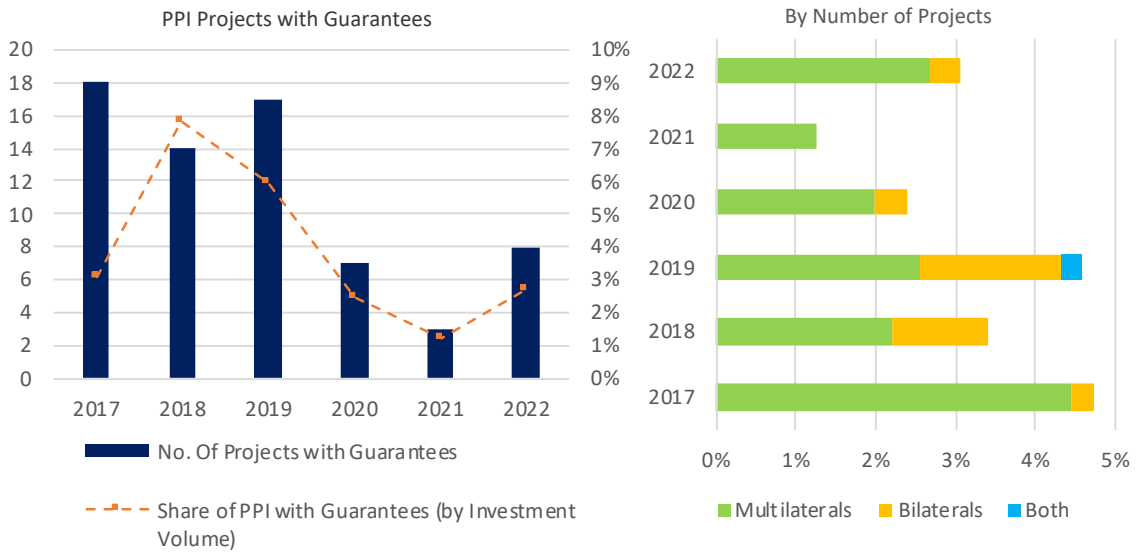
5 DEFI, for the purposes of this report, refers to multilateral institutions and bilateral agencies with a development mandate, as well as export credit agencies with a mandate to support domestic businesses in pursuing investments abroad. Henceforth in this report, the term bilaterals will include bilateral institutions as well as export credit agencies.

again seen in the solar sector, with 27 solar projects; the remaining projects were in wind energy (10 projects) and hydropower (two projects). DEFIs also continued to play a key role in stimulating investment in low- and lower-middle-income countries; 63 percent of projects in low-income countries and 40 percent of projects in lower-middle-income countries had some form of DEFI support.

DEFIs provided direct debt support of US$6.2 billion in 2022. Of this, 32 percent (US$2.0 billion) was provided by bilateral institutions to 26 projects. Multilateral institutions provided US$4.2 billion in direct loans to 53 projects, as well as equity, grants, guarantees, insurance, risk management, and syndication to 23 projects. The Inter-American Development Bank, International Finance Corporation (IFC), and European Bank for Reconstruction and Development (EBRD) provided half of multilateral support (52 percent), with a total of US$2.2 billion in loans.

DEFI Support Guarantees[6]

Figure 22: Projects with Private Investment Commitments Involving Guarantees in EMDEs, 2017-2022



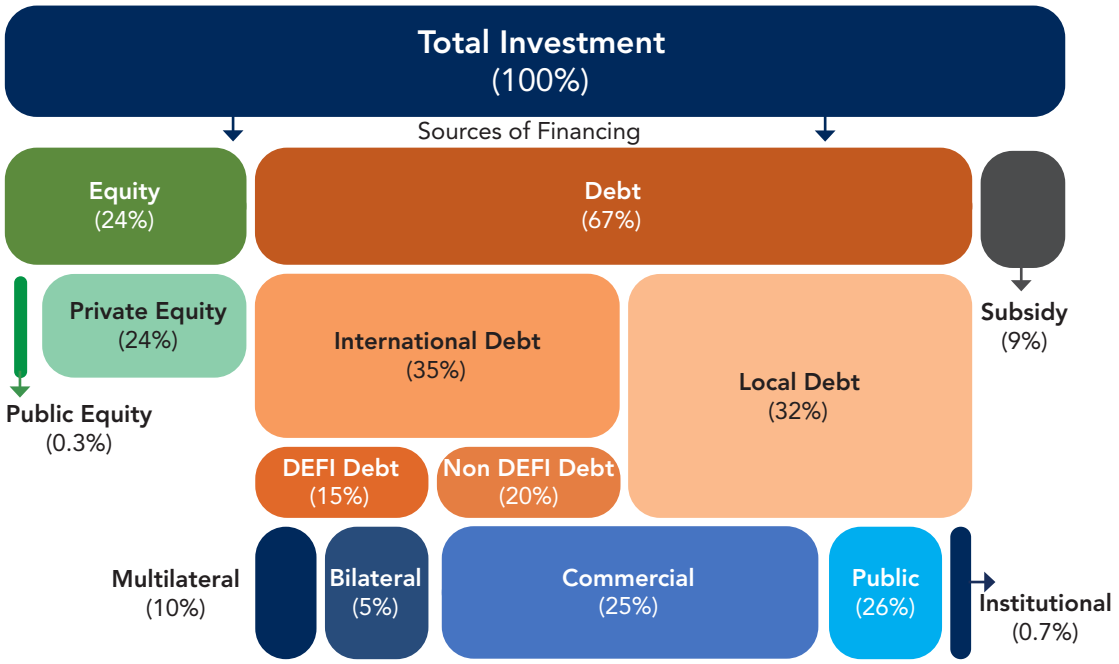
In 2022, eight projects received guarantee support in Brazil, Colombia, Cameroon, Kenya, Malawi, Maldives, South Africa and Uzbekistan. Both the share of total PPI investment

6 At this stage, the PPI Database only indicates which projects received guarantees from which entities, without providing details on the guarantees covered or the guarantee amounts. Hence, for the projects receiving guarantee support, the debt for such projects is categorized according to the debt provider classification.

volume receiving guarantee support and the share of projects receiving guarantee support saw an increase from the previous two years, signalling a shift in investment outlook towards a positive recovery. Three projects received guarantees from the World Bank Group—two from Multilateral Investment Guarantee Agency (MIGA) (the Golomoti solar plant and Kenya Roads Lots 15 & 18 construction and maintenance) and one from IDA (Maldives solar PV portfolio).

Financing Mix

Figure 23: Sources of Financing for Infrastructure Projects with Private Participation in EMDEs in 2022



* All figures as a percentage of total investment

Source: PPI Database, World Bank, as of January 2022.

In 2022, detailed financing information was available for nearly 70 percent of projects (147 projects), amounting to 65 percent of PPI projects by investment value (US$36.9 billion of US$57.1 billion[7]). All information in this section is based on the projects for which investments went solely towards building physical assets.

Of the US$36.9 billion in financing mentioned above, approximately 35 percent (US$13.0 billion) came from public sources, 50 percent (US$18.3 billion) came from private sources,

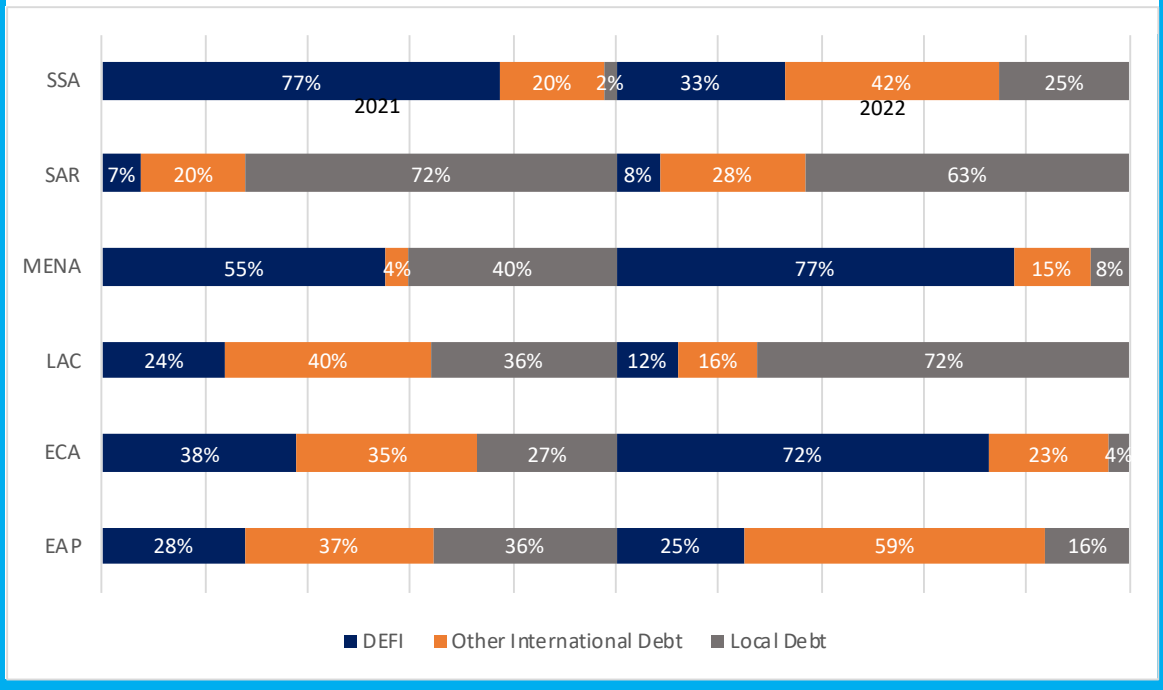
7 Figures exclude the 47 projects in China because financing information was not available.

and 15 percent (US$5.5 billion) came from DEFI sources. Figure 23 provides a detailed breakdown of the investment sources. The increase in public sources of financing was largely due to the larger role played by public banks and a rise in government subsidies.

Of the US$9.0 billion in total equity provided in 2022, financing largely came from private sources. These accounted for 99 percent of total equity, with the remaining 1 percent of equity, or US$103 million, financed by state-owned enterprises or governments that participated in joint-venture projects.

Interestingly, direct government support increased to 9 percent of total investment, with US$3.3 billion given in capital subsidies to 12 transport projects. This support was mainly seen in India (nine highway projects), due to India's commitment to connecting districts via highways to boost economic activities.[8] The remaining projects were in Vietnam (two highway projects) and Brazil (one light rail project).

FIgure 24: Share of International and Local Debt by Region for Infrastructure Projects with Private Participation in EMDEs, 2021 and 2022



8 Dash, Dipak K. 2022. "In 5 years, almost all districts in India to get connected with 4-lane NHs boosting connectivity." Times of India, July 25, 2022. https://timesofindia.indiatimes.com/india/in-5-years-almost-all-districts-in-india-to-get-connected-with-4-lane-nhs-boosting-connectivity/articleshow/93120116.cms.

Infrastructure projects continued to be highly debt reliant in 2022 as per norms of infrastructure financing, with a total debt of US$24.5 billion. Compared to previous years, the role of local debt providers increased, with nearly half (48 percent) of debt coming from local sources. In particular, LAC and SAR led the charge with US$6.2 billion and US$4.2 billion in local debt, respectively. Local debt providers also played a larger role in upper-middle-income countries. Comparatively, ECA, MENA, EAP and SSA saw high levels of international debt. As in previous years, MENA was largely reliant on DEFI investment. MENA also saw an increase in international commercial debt, with three projects receiving investment from commercial lenders—one wind energy project in Egypt and two projects in Morocco, one each in solar and wind energy. ECA saw a large rise in DEFI investment, with eight of the 10 projects with financing information having loans from DEFI partners. SSA saw an increase in international commercial debt, with 10 projects receiving loans from international commercial lenders.

Multilateral, bilateral and international commercial lenders continued to be more inclined to provide loans to renewable energy generation projects in 2022. Fifty-one percent of international commercial debt (US$3.7 billion) was lent to renewable energy projects, compared to 14 percent lent to conventional energy projects. Multilateral and bilateral debt providers kept to similar trends, with 58 percent and 60 percent of debt directed towards renewable energy projects, compared to 18 percent and 16 percent of debt directed towards conventional energy, respectively. Overall, commercial debt[9] accounted for 25 percent of investment flows.

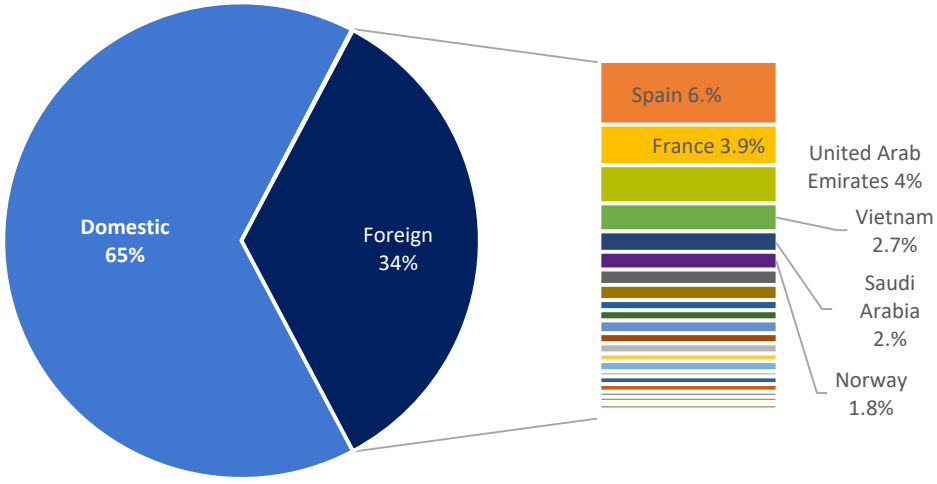
Although there is still room for recovery to pre-COVID-19 levels, commercial debt played a significant role in EAP and SAR in 2022, providing 63 percent and 66 percent of debt, respectively. Overall, EAP had the highest level of commercial debt at US$2.9 billion, followed by LAC at US$2.7 billion, SAR at $1.6 billion, and SSA at US$1.2 billion. The Philippines had almost US$2.0 billion from commercial lenders and India, Brazil, and South Africa saw more than US$1.0 billion in commercial debt. Mexico, Kenya, Cameroon, Malaysia, El Salvador, Botswana, and Benin raised all their debt from commercial sources.

Domestic Versus Foreign Sponsors

Of the 263 projects recorded in 2022, 114 (44 percent) had a majority of their stakes sponsored by foreign entities. This was on par with 45 percent in 2021, and 44 percent in 2020. Foreign sponsors focused on energy, with 85 of 136 projects (63 percent) in that sector. In terms of investment volume, 34 percent of projects (US$30 billion) were sponsored by foreign entities (Figure 24).

9 Commercial debt refers to only the debt raised from commercial banks and not necessarily all debt raised on commercial terms. Multilateral and bilateral agencies, such as IFC and the Asian Development Bank, and export credit agencies or state-owned banks lending overseas, may also in some cases extend debt on commercial terms, but they are classified here as multilaterals, bilaterals, or public entities, reflecting their government ownership (and development mandate in the case of multilaterals and bilaterals).

Figure 25: Proportion of International and Local Sponsors in Low- and Mid-Income Countries with Private Investment Commitments, 2022



The region with the largest number of internationally sponsored projects in 2022 was LAC, with 45 projects out of 83 (54 percent). In that region, the United Kingdom (10 projects) was the main country of origin. The region with the second largest number of foreign-sponsored projects was SSA, with 30 of 37 projects (81 percent). In SSA, France was the main country of origin, sponsoring 10 projects.

Overall, France was the country that sponsored the most international projects (20). Entities based in the United Kingdom sponsored 12 international projects, whereas the United Arab Emirates and Spain both sponsored nine international projects. In terms of investment volume, Spain and France were the main countries of origin, sponsoring international projects worth US$5.2 billion and US$3.4 billion, respectively.

The high number of domestically sponsored projects (144 projects; 55 percent) can be explained by China, India and Brazil. In China, there were 47 projects in 2022, lower than 60 in 2021, and almost all of them were sponsored by domestic entities (43). In India as well, out of 30 projects, 22 were domestically sponsored, whereas in Brazil there was a near split, with a total of 55 projects and 28 domestically sponsored projects.

About the Private Participation in Infrastructure Projects Database

The Private Participation in Infrastructure Database is a product of the World Bank Group's Infrastructure Finance, PPPs and Guarantees Global Practice. Its purpose is to identify and disseminate information on private participation in infrastructure projects in low- and middle-income countries. The database highlights the contractual arrangements used to attract private investment, the sources and destinations of investment flows, and information on the main investors. The site currently provides information on more than 10,000 infrastructure projects dating from 1984 to 2022. It contains over 50 fields per project.

For more information, please visit: ppi.worldbank.org

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