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REPORT

Global Economic Diversification Index 2025

Navigating Economic Diversification
in a De-Globalized World



Global
**Economic
Diversification
Index**

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The Annual Global Conference on Economic Diversification (GCED)

The Mohammed Bin Rashid School of Government (MBRSG) is pleased to announce the Annual Global Conference on Economic Diversification (GCED), a first-of-its-kind global conference focused on the key strategic topic of economic diversification. GCED is a high-level conference consisting of peer reviewed research presentations, keynote speeches, panel discussions, and networking sessions amongst leading policymakers, academics and scholars working on the key strategic topic of economic diversification around the world.

In October 2024, MBRSG successfully hosted the inaugural edition of GCED in Dubai, UAE, featuring keynote addresses and panel discussions from ministers and experts including H.E. Alia Al Mazrouei, UAE Minister of State for Entrepreneurship, Prof. Cesar Hidalgo, lead author of the Economic complexity Index, and Dr. Mahmoud Mohieldin, Executive director at the IMF, among others. The conference included a call for papers inviting original research and policy papers from scholars worldwide, especially encouraging the use of the publicly available EDI datasets and reports. A program committee consisting of professors, and senior researchers from the World Bank, UN, IMF, LSE, Oxford, etc., working on Economic Diversification globally conducted a double-blind peer review on submitted papers. Accepted papers were presented during GCED 2024 and will be published in a proceedings volume.

In 2025, in collaboration with the World Government Summit, MBRSG will host the next edition of the Annual Global Conference on Economic Diversification. We will soon be opening the call for papers and once again be accepting submissions from researchers around the world. We particularly encourage researchers, academics and policymakers with interest in EDI reports, associated datasets, or other research surrounding economic diversification to participate in the conference and/or submit their work.

For information about the timelines, paper/posters submissions, partnership opportunities or to participate in the conference, please visit the conference website:

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Executive Summary

Effective governance of economic diversification efforts is highly reliant on the availability of representative and robust data that informs evidence-based development and policy directions. The Global Economic Diversification Index (EDI) 2025 report provides valuable longitudinal datasets to inform policy, research and economic development efforts across the globe. It specifically highlights the importance of economic diversification for commodity-producing nations to mitigate the risks of growth, trade, and revenue volatility. The report underscores the vulnerability of countries dependent on commodities to various shocks, such as price fluctuations, climate change, and global pandemics. Successful diversification can be accelerated through adopting new technologies and digitalisation, moving towards a services-based economy, focusing on value-added manufacturing, and investing in human capital and infrastructure.

The findings of this latest edition of the EDI emphasises the need for commodity-dependent nations, particularly those reliant on oil and gas, to adopt policies that prevent the natural resource curse and promote sustainable economic growth.

Globally, there are numerous examples of successful transitions, including Norway's diversification into high-tech sectors and Malaysia's move towards greater industrialisation. However, the report highlights that there is no one-size-fits-all approach to diversification, as the urgency and pace of reform depend on multiple factors, including institutional effectiveness and governance, among others.



The Economic Diversification Index, first published in 2022, provides a comprehensive measure of economic diversification across countries. The EDI, derived by calculating the scores of three key sub-indices: government revenue, output, and trade, allows countries to assess the state and evolution of their economic diversification, as well as compare themselves with peers, and identify factors that can foster or impede diversification. The 2025 edition covers the performance of 115 countries¹, using publicly available quantitative indicators to ensure transparency and allowing reproducibility of the results.

The top-ranked EDI nations in the current EDI edition continue to include the United States, China, and Germany. In 2023, twenty-five of the top 30 nations were high-income countries, alongside only four upper-middle-income nations (China, Mexico, Thailand, and Turkey) and a single lower-middle-income nation (India, at rank 20 globally). Only three of the eight regional groupings show an increase in EDI compared to pre-pandemic readings (Western Europe, East Asia Pacific and South Asia)². It is, however, important to highlight that while EDI and GDP per capita are generally positively correlated, high-income countries, particularly oil dependent economies, do not always have high economic diversification scores.

¹ Compared to the 2024 EDI report which covered EDI scores for 112 countries, Serbia has been removed this year due to data availability issues, and Gambia, Vietnam, Eswatini, and Algeria have been added.

² Regional groupings are detailed in Appendix C of this report.

In 2024, the Global EDI report introduced new digital trade augmented index (the 'EDI+'). In post-pandemic years, digitalisation continues to play a key role in increasing economic diversification while also enabling emerging and developing nations to catch up. The inclusion of digital indicators in the EDI (to create the 'EDI+' scores) shows that many developing nations are diversifying into digital sectors and catching up with more advanced economies. This progress is dependent on factors such as infrastructure availability, regulatory support, and the presence of a skilled workforce, among others. **The 2025 edition of the EDI+ confirms that multiple countries in the top quintile of the EDI rise even higher with the inclusion of the digital indicators within the trade sub-index (i.e. Trade+ sub-index).** Over two-thirds of the nations show greater improvements in the Trade+ sub-index (comparing 2023 to 2010) than in the overall EDI+ score. In contrast, lower income groups have not yet returned to pre-pandemic levels, in either their EDI or EDI+ scores. This underscores the challenge of achieving recovery without substantial investment in digital infrastructure and relevant enablers. The performance of the EDI+ is in line with other digital indices, with EDI+ scores showing a positive correlation with indices such as Huawei's Global Digitalisation Index (GDI) and the IMF's AI Preparedness Index (AIFI) .

Insights from the latest EDI scores point to a few policy directions. Commodity producing nations need to consider three key factors while deciding on economic policy:

- (a) the implications of climate change will have an impact on commodities production and extraction;
- (b) how energy transition is affecting the demand for commodities, including fuel and metals;
- (c) the continued risks from geopolitical tensions and trade fragmentation, particularly for low-income and emerging market countries that depend on commodities, which may potentially lead them to long-term output losses.



In this EDI edition, 40 countries in the index, nearly 35 percent of the countries covered, are commodity exporters, and within that subset, close to 50 percent of the commodity dependent nations are reliant on fuels.

While the more diversified Mexico and Malaysia retain top rankings, given the dynamic nature of diversification, other countries are also undertaking transformational policies: notable cases in 2023 compared to 2000 include Saudi Arabia (up more than 30 ranks), UAE (+24 ranks), Kazakhstan (+17 ranks), Qatar (+12 ranks) and Oman (+10 ranks). Low to middle-income nations such as Angola, Congo³ and Nigeria remain consistently within the lowest quartile (with common characteristics such as poor governance scores and/ or being politically unstable) along with upper middle-income Azerbaijan. Among the Gulf Cooperation Council (GCC) countries, Bahrain and the UAE have both scored highly in the output sub-index in recent years, while the UAE outperformed in the trade sub-index (Chart 3.8). Kuwait lags its peers in all sub-indices, making it the lowest scoring among the GCC countries.

Today, the world faces heightening environmental concerns exacerbating social inequalities and economic instability. The World Economic Forum's Global Risks Report 2025 underscores the urgent need to address these environmental concerns, with "biodiversity loss and ecosystem collapse" ranked by respondents as the second-most concerning risk over the next decade. Climate change is forcing nations to hasten low-carbon energy transition plans and policies and consumers to make gradual behavioral shifts away from fossil fuels. Geopolitical forces also reconfiguring the global energy map. Even as the GCC countries emerge as "Middle Powers" in a globally fragmented world, its member states are stand out as energy powerhouses in both fossil fuels and renewable energy amidst global fragmentation.

³ Throughout this report, the abbreviation "Congo" refers to the "Republic of Congo" (COG). When instead we want to refer to its neighbour the "Democratic Republic of Congo", the full country name or abbreviation "DRC" will be used.



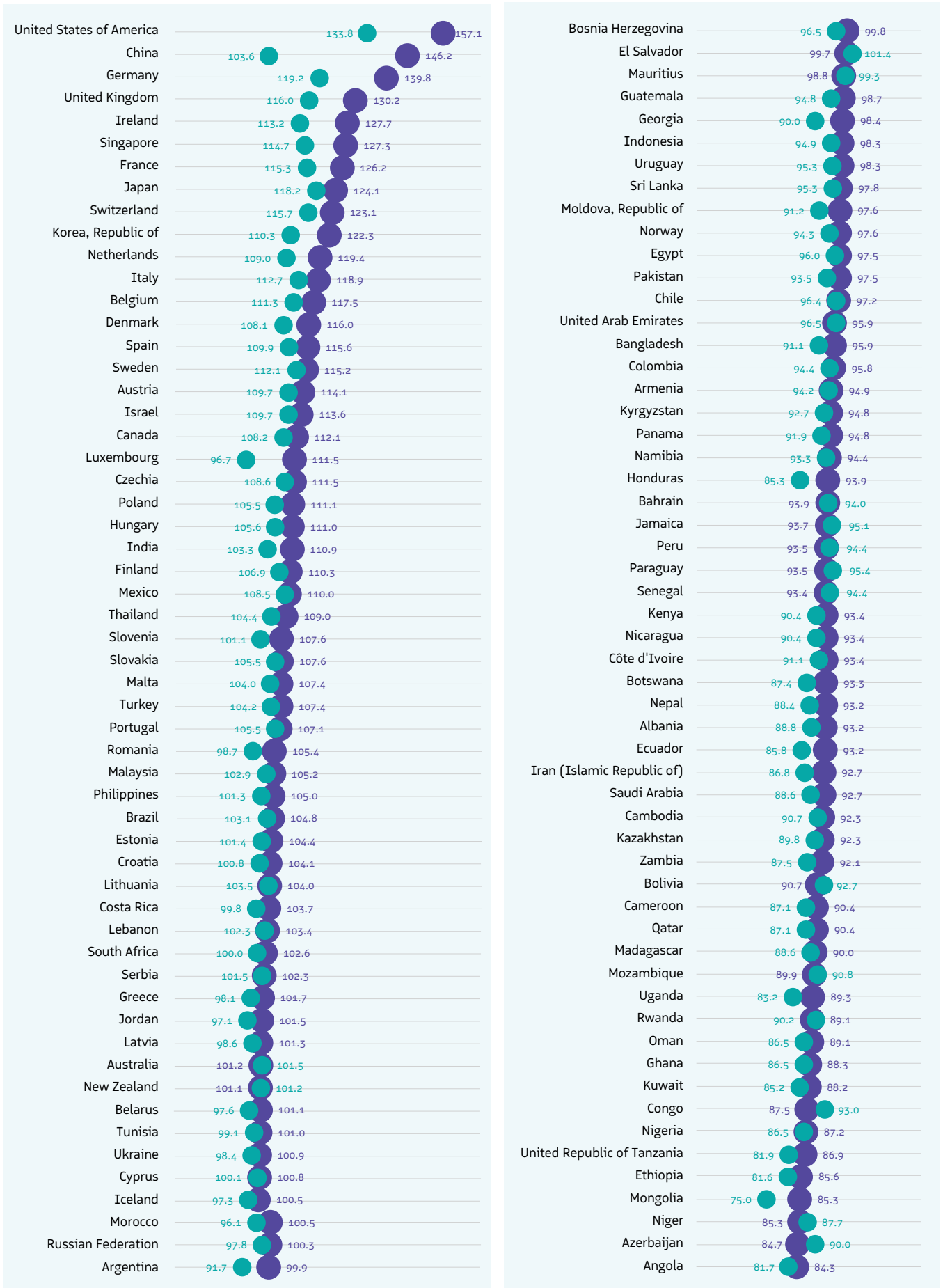
Pursuing economic diversification continues to be a catalyst for sustained development and growth, and a pillar for achieving global recovery and stability. The Global Economic Diversification Index (EDI) will continue to provide a timely and universal quantitative measure of economic diversification trajectories since the year 2000. The current edition of the Global EDI has expanded its country coverage while continuing to provide analytical lenses (e.g. EDI+) to align with global economic shifts in the digital era. The value of the EDI for policymakers, international stakeholders and researchers continues to be prominent. This was highlighted during the Global Conference on Economic Diversification (GCED 2024),⁴ where leading policy practitioners and scholars from around the world utilized the EDI dataset to develop conceptual, comparative and analytical thought leadership, while addressing future directions to expand the impact of economic diversification measurement.

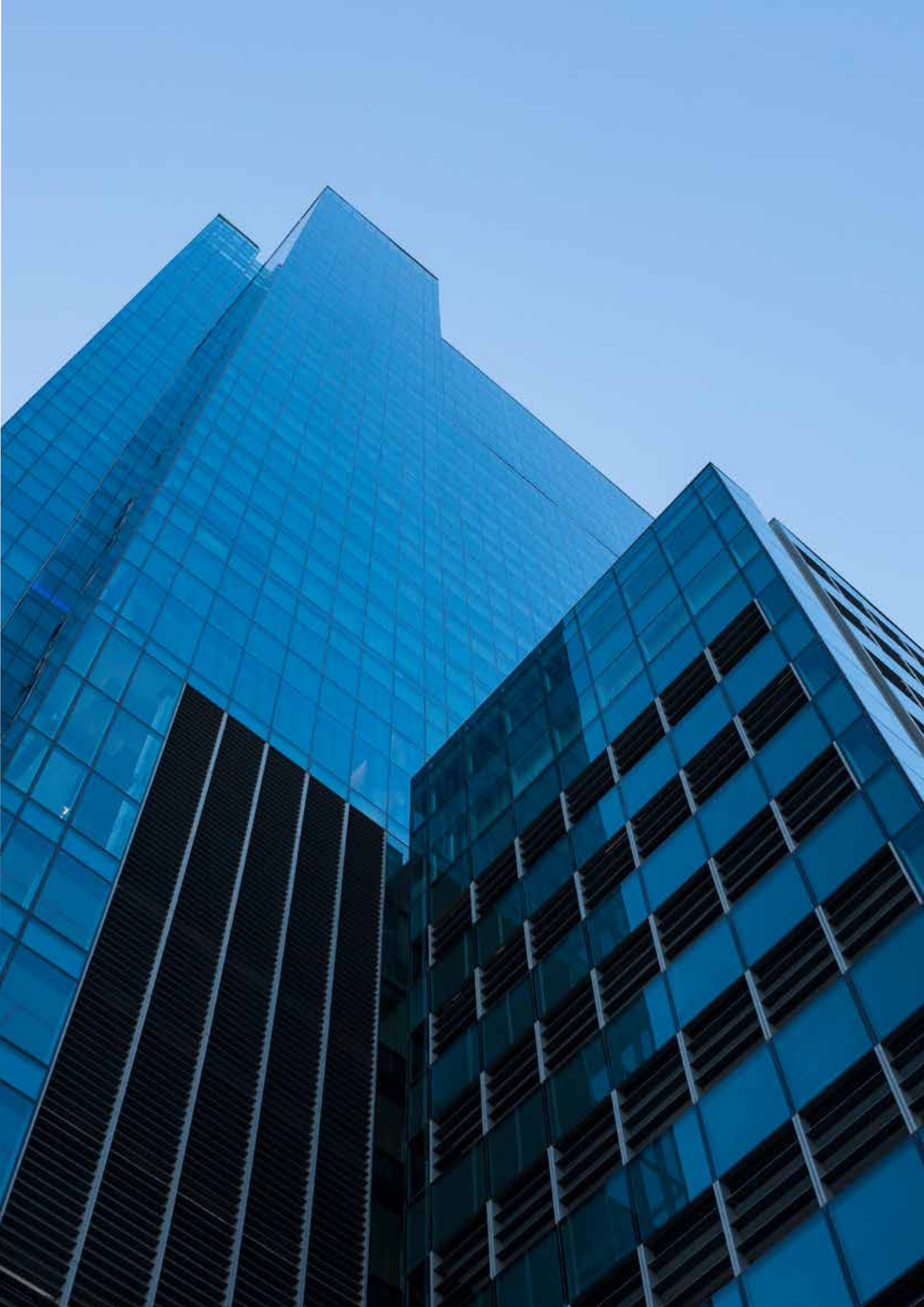
The EDI will continue to expand the thought leadership efforts and convene a global network of economic diversification practitioners to better inform economic diversification efforts and policy directions globally.

⁴ Proceedings of the annual GCED conferences will be available here: <https://economicdiversification.com/conference/>

EDI Scores 2000 vs 2023

● 2000 ● 2023





Section 1

Economic Diversification Index 2025



Why economic diversification?

Economic diversification has been a key policy priority in the commodity producing nations, largely to avoid the growth, trade and revenue volatility emanating from price and volume fluctuations. Countries that are dependent on one commodity (such as oil or a specific metal, agricultural product or mineral) would be more vulnerable to shocks – be it price levels, climate change or the pandemic. While UNCTAD (2021)⁵ estimates that the average commodity-dependent country would need 190 years just to cut in half their dependence compared with that of the average non-commodity-dependent country, there are many successful cases of countries having overcome the “resource curse”.

The transition from heavy reliance on commodity sectors can follow many pathways: adopting new technologies and fostering innovation, shifting towards a services-based economy, focusing on value-added manufacturing, diversifying into new export markets and high value-added products.

Additionally, investing in human capital and soft infrastructure, and strengthening the rule of law and governance, can create a favorable environment to attract FDI and support this transition. Amid rapid technological changes, taking advantage of opportunities – be it AI for agricultural innovation or fintech for greater financial inclusion – can also provide a boost to productivity and growth. Furthermore, diversification could enable poorer nations to transition to a higher GDP growth track supported by job creation, leading also to reductions in poverty and inequality.

⁵ UNCTAD (2021): “Escaping from the Commodity Dependence Trap through Technology and Innovation”, Commodities & Development Report 2021: <https://unctad.org/system/files/official-document/ditccom2021d1.en.pdf>

Section 1

This report also focuses on diversification in commodity dependent nations, including a subset of oil and gas resource-based economies at risk of stranded assets should the energy transition pace accelerate. Some commodity producers, especially those with critical minerals (Refer to Box 3.1 in Chapter 3), might benefit from the transition. It is important that these nations implement policies to avoid a potential natural resource curse. In the report, commodity dependent nations have been classified as such using two common measurements: a country is resource dependent if over 60 percent of its total merchandise exports in value terms consist of natural resources⁶ (UNCTAD; note that the IMF/World Bank refer to a minimum threshold of 25 percent) and the ratio of natural resources rents-to-GDP is above 10 percent⁷. Such nations' tax revenues as a percentage of GDP also fall mostly below 20 percent.

Examples of successful transitions abound, such as Norway's diversification into knowledge-intensive, high-tech and service-oriented sectors, alongside its sovereign wealth fund, investing oil revenue abroad and fiscal policy rules governing around the fund and diversified investments. Malaysia has also moved to high-tech manufacturing and industrialization, while Mexico has invested in industrialisation and services sector exports. These transitions are often determined by factors such as quality of institutions, governmental support (such as special economic zones, export promotion agencies), infrastructure deficiency, net inflows of FDI, real exchange rate, financial sector development, reducing trade barriers, tax incentives, human capital development, business capacity, distance between trading

markets and digitalisation among others (Cherif, Hasanov and Zhu 2016, Navarro-García, 2016, Giri, Quayyum and Yin 2019, Lashitew, Ross and Werker 2020, Cherif et al. 2022, Diouf et al 2024, Delechat et al 2024).

However, there are no one-size fits all set of policies for diversification. The urgency of policy reform depends on countries level of potential depletion of the non-renewable commodities, technological change making a renewable commodity obsolete, or the risk of stranded assets for oil-production nations in the backdrop of energy transition, climate mitigation trends and COP commitments, while the pace of reform would be affected by factors such as the effectiveness of its institutions, governance and business environment, among others. The Economic Diversification Index (EDI) can be a starting point for a country's assessment of its diversification status.

Using the EDI, a country can compare themselves with their regional and local peers, with countries with similar resource endowments as well as internationally with more diversified countries.

⁶ Share of agricultural products or fuels (by SITC) in total merchandise.

⁷ The list of commodity dependent nations is specified in the Appendix C.

The EDI allows oil-exporting and other commodity exporting countries to measure their existing state of economic diversification and provide insight on the factors that can foster or, alternatively, impede diversification. Some factors driving diversification for oil exporters for instance, could be the rate of depletion of oil exports or countercyclical fiscal framework. For other commodity producers it could be related to their environmental challenges, and for geopolitically risky countries it could be related to the state of low government capacity or curbing corruption. The EDI allows countries to visualize their global ranking on each measure of diversification (production, trade and government revenue), across regional and income groups and within their natural resource grouping (e.g., OPEC). Once these results are understood, digging deeper into country specific scenarios would help identify and intensify the pace of diversification and guide economic diversification strategies and policies.

Indicators and Methodology

The EDI uses only publicly available, quantitative indicators, avoiding surveys or perception metrics to ensure transparency and reproducibility. It thereby provides a quantitative benchmark and ranking of the economic diversification of countries. The set of indicators and sub-indicators of economic diversification has been defined based on research, analysis and the existing literature on economic diversification (detailed in the first edition of the EDI). The list of indicators and its metadata is detailed in the Appendix. The EDI score and ranking for a country are calculated by averaging the scores of the three sub-indices: the government revenue sub-index, the output sub-index and the trade sub-index. Each of these sub-indices consists of multiple underlying indicators and the scores of each of these sub-indices are determined using principal components analysis (PCA) a dimensionality reduction technique. The final EDI score is the simple arithmetic mean of these three values for each country, implying equal weight for each pillar in measuring economic diversification. This is the simplest and most transparent approach, as there is no a priori reason for believing that any one of the three sub-indices is more important to the overall measurement of economic diversification than the others. [Appendix A](#) expands further on the methodology.

Section 1

EDI Scores and Rankings

The top ranks in the Economic Diversification Index (EDI) are occupied by a small sub-set of nations. The United States, China and Germany maintained their top 3 rankings in 2023 (Table 1.1). The gap between the top-ranked US and second ranked China continued to narrow post-Covid, from a 22.2-point difference in 2019 to a 10.9-point difference in 2023. As in previous editions, nations ranked 4th to 10th have minimal differences in their scores: an 8.0-point difference between them in 2023 -highlighting the strength of diversification among the highly ranked countries.

Seven of the top 10 ranked nations remain consistently in that group over the years (in bold in Table 1.1), while three other nations vary from year to year: Italy and Sweden dropped off the list towards the late-2000s; more Asian nations have joined the list over time, including South Korea (a major Tech-exporting nation) and China (the world's top exporting nation) which makes an appearance in the top 10 every year after 2007, boosted by its ascension to the WTO (China ranked 29th in 2000, 20th in 2004, and stands at second in 2023). Furthermore, the appearance of smaller nations in the highly diversified list also underscores the fact that the size of the economy is not a limitation for greater diversification.

Often, for small states diversification takes the route of focusing on niche and/ or competitive sectors. For example, Singapore and Switzerland have benefitted from the large-scale financial services sector operations and from the production and export of high value-added manufacturing products⁸. Among the top 20 ranks, Western European nations account for almost two-third of the total while East Asia & Pacific have increased their presence to four nations from the three in 2000.

In 2023, 25 of the top 30 nations were high-income, alongside four upper-middle nations (China, Mexico, Thailand and Turkey) as well as a sole lower-middle income representative (India, at 20th globally).

⁸ Another example is of Ireland, where the country's generous corporate tax regime has attracted large multi-national companies that support the economy via employment and taxes, thereby leading to higher levels of growth.

Table 1.1. Top 20 nations, EDI

	2000	2004	2008	2012	2016	2019	2023
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
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16							
17							
18							
19							
20							

- | | | | | |
|---------------|----------------|-------------|-------------|---------|
| United States | United Kingdom | Ireland | South Korea | Austria |
| Germany | France | Sweden | Belgium | Israel |
| Japan | Singapore | Netherlands | Denmark | Canada |
| Switzerland | Italy | China | Finland | Spain |
| Luxembourg | Czechia | Hungary | India | |

Section 1

Table 1.2. Bottom 20 nations, EDI

	2000	2004	2008	2012	2016	2019	2023
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
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17							
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20							

- | | | | | | | | | | |
|--|------------|--|--------------|--|------------|--|---------------|--|----------|
| | Ghana | | Saudi Arabia | | Oman | | Zambia | | Congo |
| | Qatar | | Kuwait | | Angola | | Cote d'Ivoire | | Rwanda |
| | Nigeria | | Ethiopia | | Iran | | Uganda | | Niger |
| | Kazakhstan | | Azerbaijan | | Bolivia | | Madagascar | | Mongolia |
| | Kyrgyzstan | | Cambodia | | Albania | | Paraguay | | Cameroon |
| | Zambia | | Nepal | | Mozambique | | Tanzania | | Botswana |
| | Rwanda | | Ecuador | | Algeria | | Gambia | | |

For the lowest ranked nations, however, the diversification process has been long and slow. Four nations – two from Sub-Saharan Africa (Angola, Ethiopia), Azerbaijan from Eastern Europe and Central Asia and Mongolia from East Asia & the Pacific – remain in the bottom 10 ranks of the Economic Diversification Index over the period (Table 1.2). Not only are all these bottom ten countries commodity-exporters, but most countries (other than the GCC, Azerbaijan and Kazakhstan) also fall under the lower-middle or low-income nations. Four other Sub-Saharan nations⁹ (Congo, Ghana, Niger, Rwanda) also appear consistently in the bottom 20-ranked nations over the period along with Algeria from the Middle East & North Africa region. The share of MENA nations in the bottom 20 ranks fell to 15 percent in 2023 from 25 percent in 2000. At the same time, Sub-Saharan African nations have increased their presence to 70 percent of the bottom-20 from around 45 percent in 2000.

Among the lowest ranked 30 nations, half are from Sub-Saharan Africa and the bulk of them are low and lower-middle income countries (7 and 13 respectively). Many of these nations are also characterized by high levels of economic concentration and are often small or geographically remote and/ or landlocked.

High-income nations also appear in the bottom 30 list for 2023: this includes 3 GCC nations of Kuwait, Oman and Qatar.

About a decade ago, Saudi Arabia was among the bottom 30 nations but has since made significant improvements in both trade and revenue diversification, underscoring the potential of reforms in a relatively short period of time (Moreau and Aligishiev, 2024).

⁹ Sobrinho, N. and Thakoor, V. (2019) find that the governance dividend for countries in Sub-Saharan Africa is two to three times larger than for the average country in the rest of the world—even in regions perceived to have equally weak governance. Improving the region's governance to be on par with the world average is estimated to raise GDP per capita by 1 to 2 percentage points per year.

Section 1

Table 1.3. Comparing “Middle” Diversifiers

	2000	2004	2008	2012	2016	2019	2023
New Zealand	40	36	37	46	51	56	48
Tunisia	53	55	58	52	45	46	49
Norway	47	44	49	48	40	42	50
Belarus	50	51	55	57	57	55	51
Cyprus	43	41	39	39	47	52	52
Bosnia Herzegovina	54	56	57	56	58	58	53
Ukraine	60	46	43	41	59	57	54
Iceland	52	48	50	54	55	54	55
United Arab Emirates	80	79	82	71	46	53	56
Morocco	57	58	59	63	54	47	57
Argentina	38	53	53	47	52	59	58
Uruguay	46	64	62	62	62	63	59
Indonesia	67	60	66	61	65	62	60
Viet Nam	90	82	77	64	56	45	61
Guatemala	66	61	61	60	64	64	62
El Salvador	64	65	56	58	61	61	63
Egypt	63	76	71	67	63	66	64
Moldova	81	77	65	65	70	65	65
Georgia	71	70	54	55	67	68	66
Mauritius	61	63	60	59	60	60	67

Least Improvement  Most Improvement

Table 1.3 analyses the performance of countries ranked 48 to 67 in 2023. Among these, Moldova, the UAE and Vietnam’s performance stand out as they have moved from the bottom 30 –ranked: as expected, it is a gradual move over the 24-year time period. Moldova’s gains have stemmed from a sectoral reallocation from agriculture to low-skill manufacturing and services sectors while Vietnam’s diversification story was aided by its entry into WTO in 2007, tax incentives to attract FDI and government strategies to boost

industrialization and promote export-oriented industries. On the flip side, countries such as Argentina and Uruguay have seen ranks drop by more than 10 places (2023 vs 2000). In the case of Uruguay, there was a decline in the contribution of industry and manufacturing over time along with a period of increased export concentration (attributed to various factors including real exchange rate appreciation and decline in non-commodity exports).

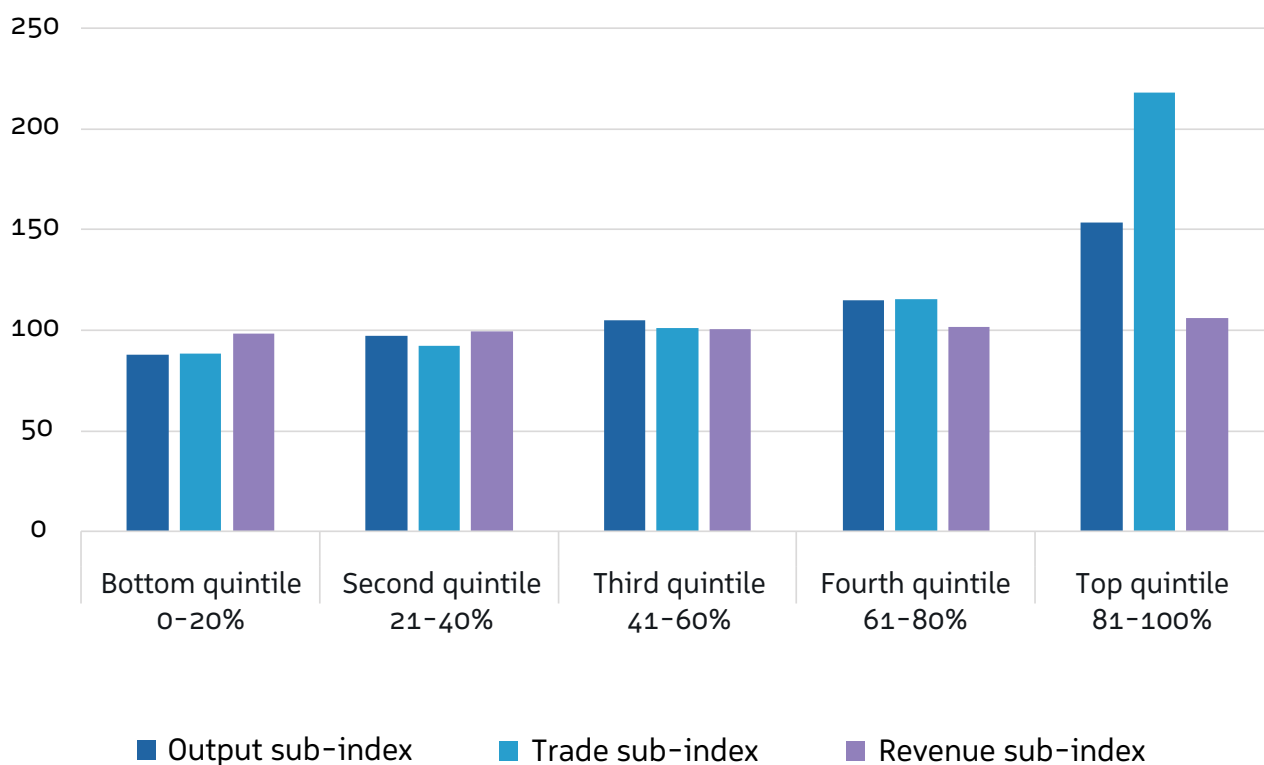
Table 1.4. Top 10 average & lowest 10 average EDI scores

	2000	2004	2008	2012	2016	2019	2023
Top 10 Average	117.1	119.4	123.8	125.8	127.1	130.5	132.4
Bottom 10 Average	81.8	82.8	82.0	83.4	86.1	85.0	84.3

The average unweighted EDI scores increased overtime (Table 1.4), with a recovery underway after a slight drop in the Covid-affected year 2020 (to 129.3). However, there is a clear divergence in performance: the top ranked nations have recovered much faster, surpassing pre-pandemic scores while those ranked lowest are only inching closer to the pre-pandemic figure. Furthermore, higher the EDI rank, the better the nations’ abilities to recover from shocks (such as the pandemic or natural disasters). In 2023, the average EDI score was 101.7 versus the top and bottom performers scores of 157.1 and 79.5 respectively. This compares to an average score of 97.5 in 2000 alongside the highest and lowest scores of 133.8 and 72.8 respectively. The catch up for lower ranked nations post-Covid will be slow, given the long-term economic scarring, output loss, fiscal constraints and existing debt burdens.

Chart 1.1 shows the trade component outperforming the other sub-indices by a significant margin in the top quintile, while both output and trade are particularly weak in the bottom two quintiles.

Chart 1.1. EDI Component scores, by quintile, 2023



Section 1

Regional Performance of the EDI

Table 1.5 tracks diversification results over time and by region. Only three of the eight regions show an increase in EDI scores compared to pre-pandemic readings (Western Europe, East Asia Pacific and South Asia) though others are close - ranging between 0.1 (Eastern Europe & Central Asia) to 1.2 points (MENA) away from 2019's score. North America tops the table consistently, despite its overall score staying below pre-pandemic levels while Sub-Saharan Africa lags all other regions, despite having shown an improvement over time. South Asia has improved from being the second-lowest scoring region in 2000 to just behind Eastern Europe &

Central Asia. This is largely due to the significant jump in India's score (moving up from 56th rank in 2000 to 20th in 2023). Separately, MENA's improvement in scores can be traced back to the accelerated pace of structural reforms and diversification efforts undertaken by the GCC. A further breakdown by sub-indices shows despite close EDI scores, MENA is outperformed by Latin America in both output and revenue sub-indices by a large margin.

Table 1.5. EDI scores, by region and over time

	2000	2004	2008	2012	2016	2019	2023
North America	121.7	122.7	128.3	131.3	133.1	136.0	135.3
Western Europe	109.0	110.5	112.6	112.2	113.4	114.5	115.4
East Asia Pacific	101.3	102.7	103.7	105.9	107.1	108.3	108.7
Eastern Europe & Central Asia	96.9	98.0	99.2	100.0	100.9	101.3	101.2
MENA	92.8	94.7	95.2	95.8	96.8	97.4	98.3
South Asia	95.9	95.7	96.1	96.6	97.6	97.6	97.2
Latin America & the Caribbean	93.4	93.7	93.7	95.1	98.3	98.4	97.2
Sub-Saharan Africa	88.6	88.9	89.2	89.7	90.9	90.5	89.8

Least Improvement  Most Improvement



Section 1

Output, Trade and Revenue Rankings

Table 1.6 lists the top 10 nations for the year 2023 – ranked for overall EDI and by its three sub-components: output, trade, and government revenue. The US leads in both output and trade sub-indices but is not among the top ranks for revenue diversification. The Nordic countries dominate revenue diversification, as they have high levels of taxation, used for spending on health, education, and social security. The US is ranked 56th (in 2023) in the revenue sub-index: tax and total revenue as percent of GDP in the US stood at 22 percent and 33 percent respectively versus Denmark’s readings of around 50 percent. For the output sub-index, in addition to the usual G7 nations (including US, Japan, Germany

and the UK), services-centric Switzerland, Ireland and Singapore appear within the top five ranks¹⁰. The trade sub-index is unsurprisingly dominated by the US, China and Germany. The Netherlands and Singapore score highly in the indicator merchandise exports as a percentage of GDP (159 percent and 179 percent respectively in 2023). Additionally, India and Ireland benefited in recent years from the surge in services exports (20-times over versus 2000) and manufacturing exports as percent of total merchandise exports (to 90 percent in 2023) respectively. Table 1.6. Performance by sub-index: Top 10 nations, by overall EDI and output, trade and revenue sub-indices (2023)

	Output Sub-index	Trade Sub-index	Revenue Sub-index	EDI (Avg of the 3 sub-indices)
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

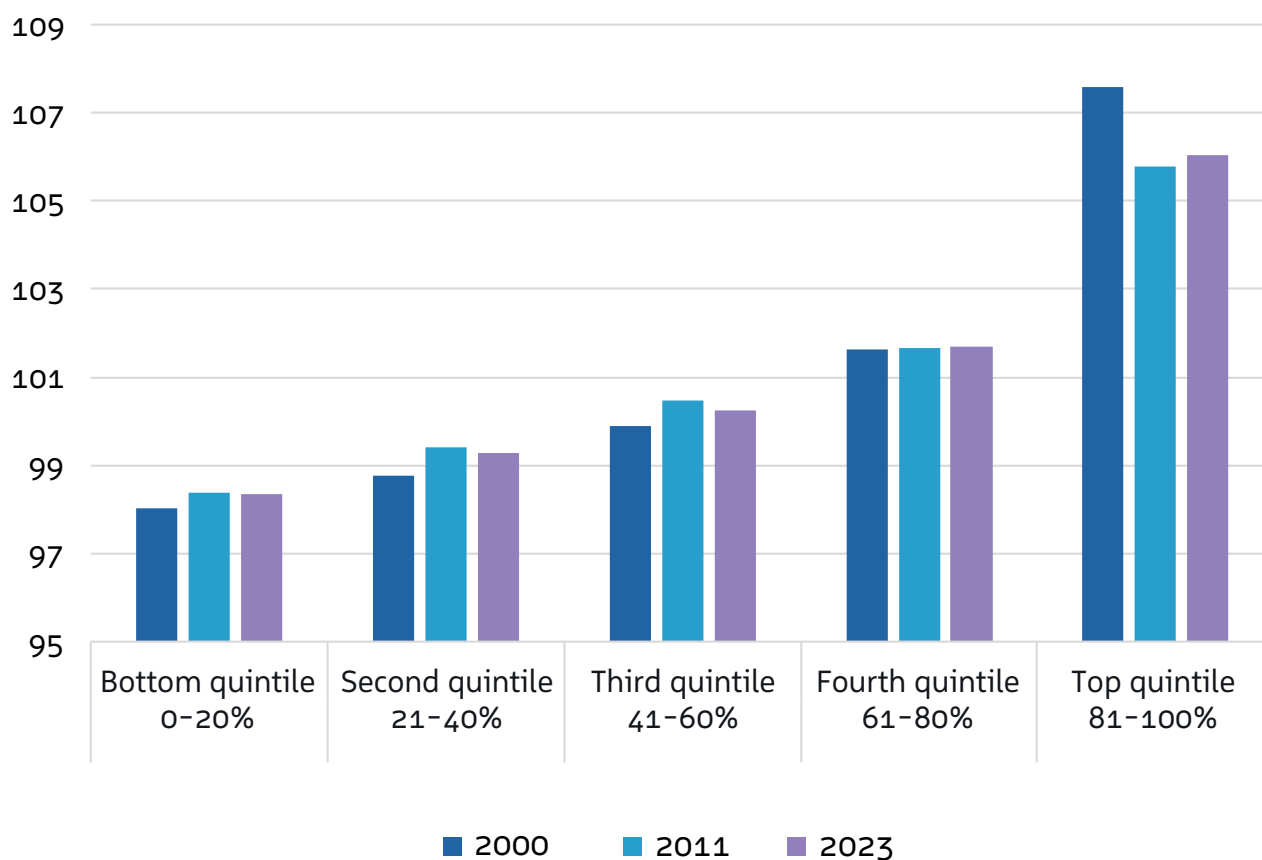
United States	Denmark	China	Austria
Ireland	France	Italy	South Africa
Switzerland	United Kingdom	South Korea	Luxembourg
Singapore	Netherlands	Finland	Croatia
Japan	Norway	Iceland	Hungary
Germany	Sweden	Belgium	India

10 These three countries – Switzerland, Ireland and Singapore – also have very high readings in the share of medium- and high-tech manufacturing value added in total manufacturing value added as well as manufacturing value added per capita.

Chart 1.2 shows the revenue sub-index performance for 2000, 2011 and 2023. Comparing 2011 to 2023, the revenue sub-index fell in all quintiles except in the top two. However, between 2000 and 2011, all quintiles rose due to new taxes in developing countries, higher tax rates, reduced complexity, improved

tax administration, efficiency, and collection efforts, except the topmost. Benedek, Benitez and Vellutini (2022) find that there has been a marked improvement in low-income developing countries' tax-to-GDP ratios in the decades leading up to the pandemic, thanks to reliance on a broader set of tax instruments.

Chart 1.2. Revenue sub-index scores, by quintile, across years



Section 1

Regional performance over time

As in previous editions, the best and worst performing regions for the EDI and its sub-indices are the North American and Sub-Saharan Africa regions respectively. Chart 1.3 shows that all regional groups have diversified compared to 2000 though South Asia, Latin America and the MENA regions have fluctuated around a small band. Latin America remained relatively stable

during the period, while MENA improved during two periods: 2015-2016 and then 2019-2020 (both times when the oil prices had declined significantly). South Asia has outperformed both Latin America and MENA in recent years 2022-2023, supported by the uptick in the trade diversification sub-index (see Chart 1.5) and India's ascent.

Chart 1.3. Performance of the Economic Diversification Index across regions, 2000-2023

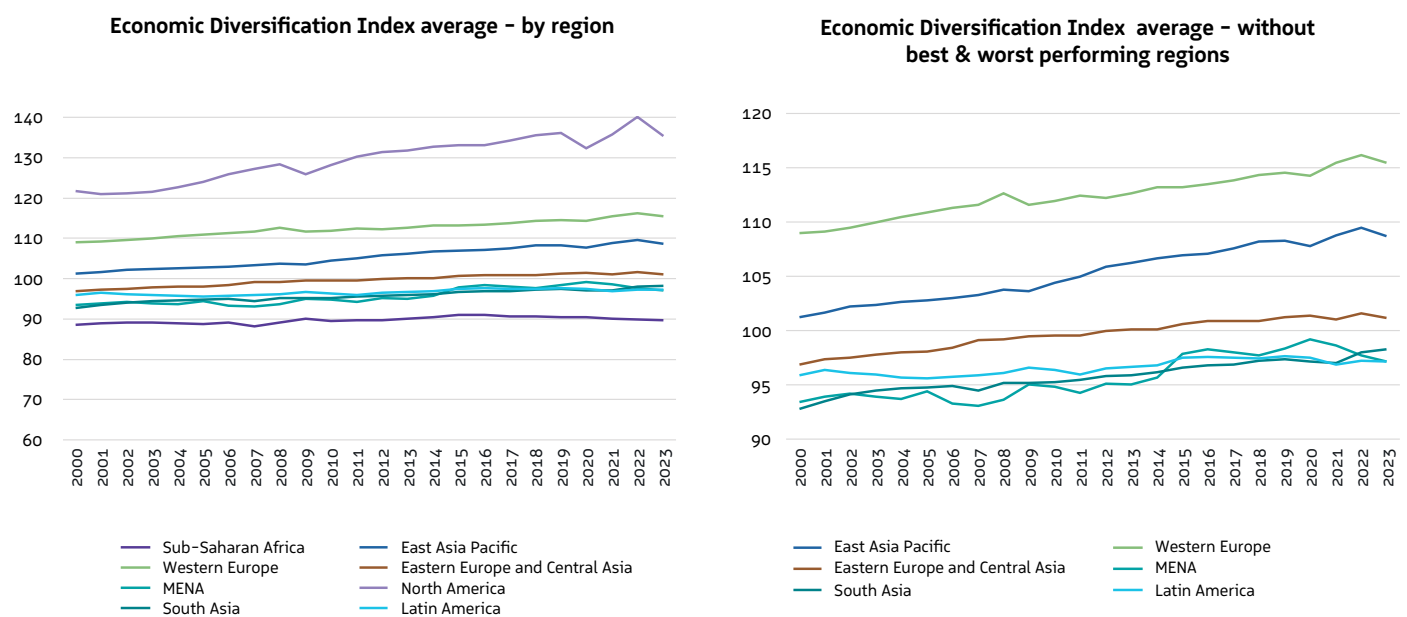


Chart 1.4. Performance of the output diversification sub-index across regions, 2000-2023

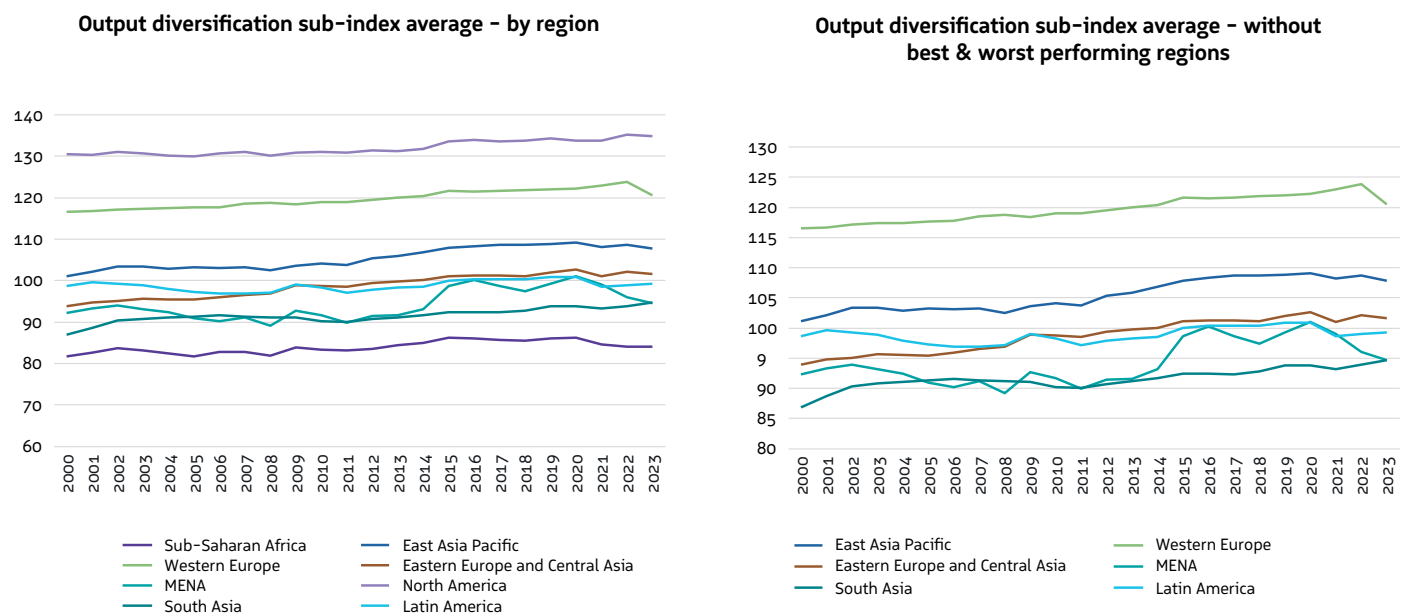
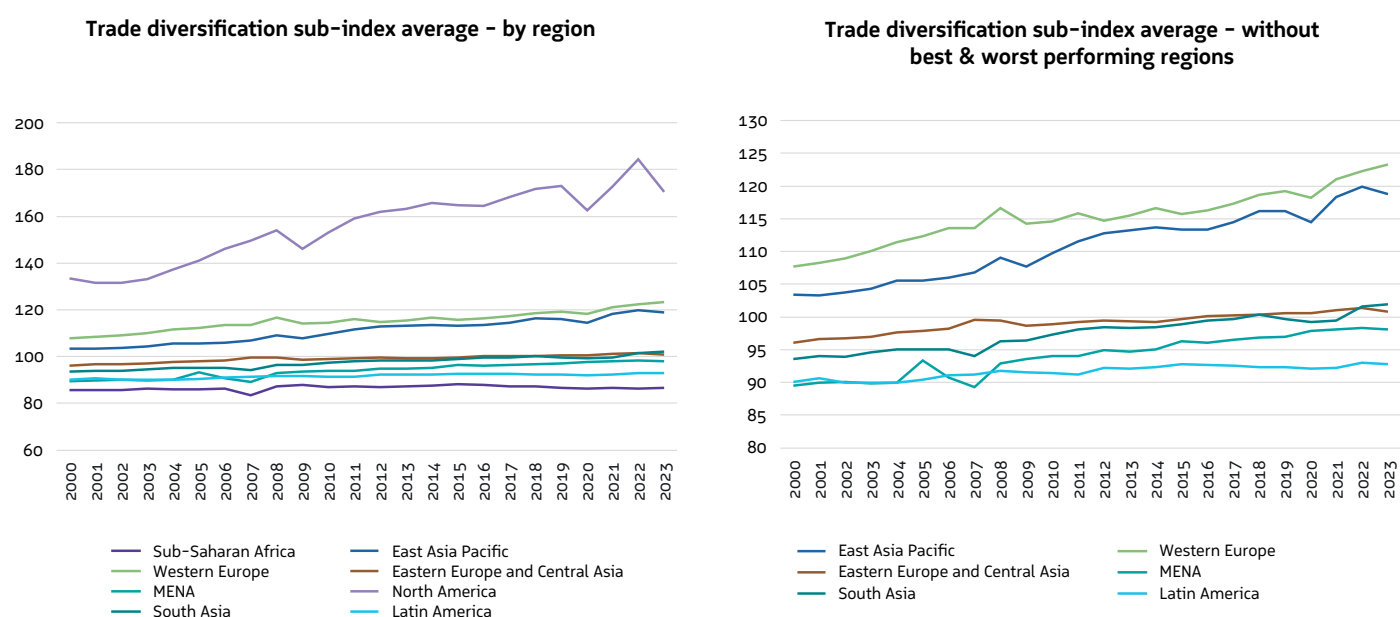


Chart 1.4 highlights the **output diversification sub-index**, showing a consistent increase in Western Europe, East Asia Pacific (at a much faster pace after 2011) and Eastern Europe & Central Asia. While MENA's performance has fluctuated with oil price movements, Western Europe's decline in 2023 can be partially traced to a slight drop in industry and manufacturing as a percentage of GDP, potentially a precursor of

deindustrialisation. Excluding the best and worst performing regions, South Asia has recorded the slowest increase: despite its growth in services (as a percentage of GDP, services share stands at over 52 percent in 2020-2023), other indicators show high divergence – for example, the manufacturing value added per capita, at an average USD 319.0 in 2020-2023, is just about one-seventeenth that of North America and one-third of Latin America.

Chart 1.5. Trade diversification sub-index across regions, 2000-2023

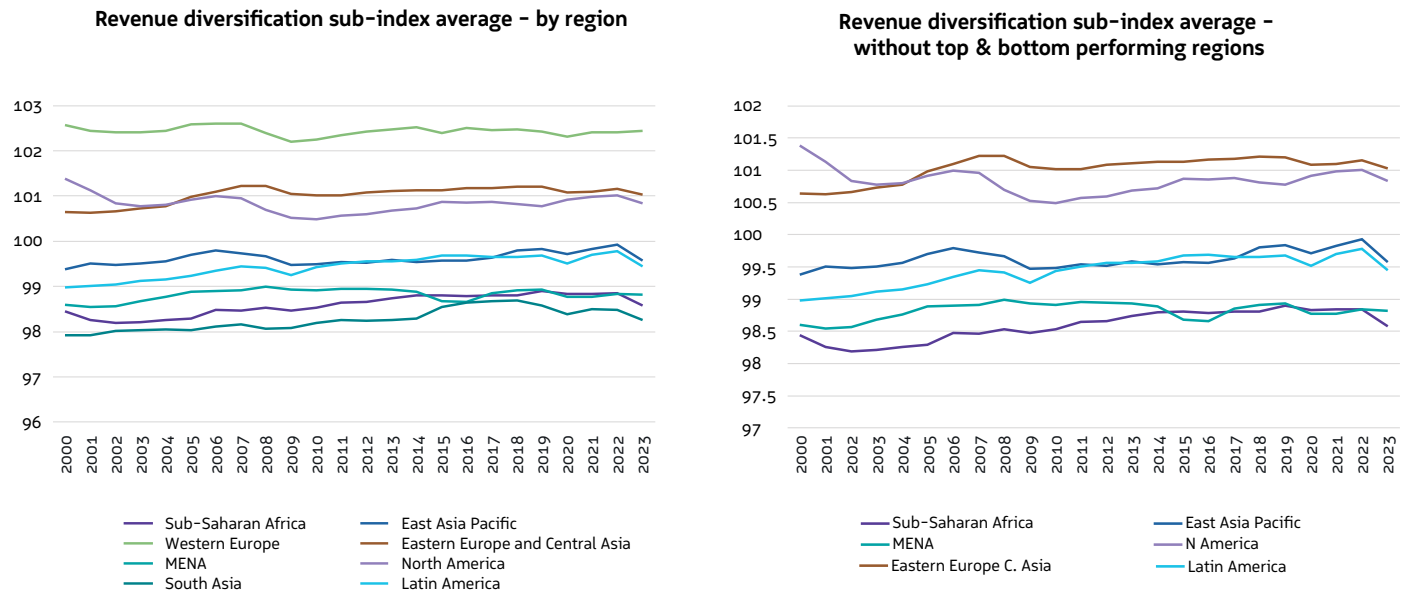


The **trade diversification** sub-index has already overcome the dip during the pandemic-affected 2020 (Chart 1.5). North America is the clear frontrunner, with Western Europe and East Asia Pacific as the nearest leaders – which is not surprising considering the presence of the world's leading exporters Germany and China in the latter groups. South Asia's gains in the overall EDI were due to the substantial growth in the trade sub-index mainly from overall exports and services exports (which grew by an average 16.0 percent and 18.2 percent in 2021-2023). The MENA region also recorded a steady increase in the trade sub-index over time¹¹, albeit at a slower pace, driven by multiple factors including: (a) drop in its fuel exports as a share of merchandise exports (40.5 percent in 2020-2023 from 47.5 percent in 2000-2003); (b) an increase in medium and high technology manufactured exports as a percentage of manufactured exports (23.8 percent in 2000-2003 to 35.9 percent in 2020-2023); and (c) an increase in manufactured exports as a percentage of total merchandise exports (to 40.6 percent in 2020-2023 from 35.2 percent in 2000-2003).

11. Several non-oil exporting nations in the Middle East have performed better than the GCC within the trade sub-index – notably Morocco, Tunisia and Jordan which have a more diversified export basket and diverse set of trade partners.

Section 1

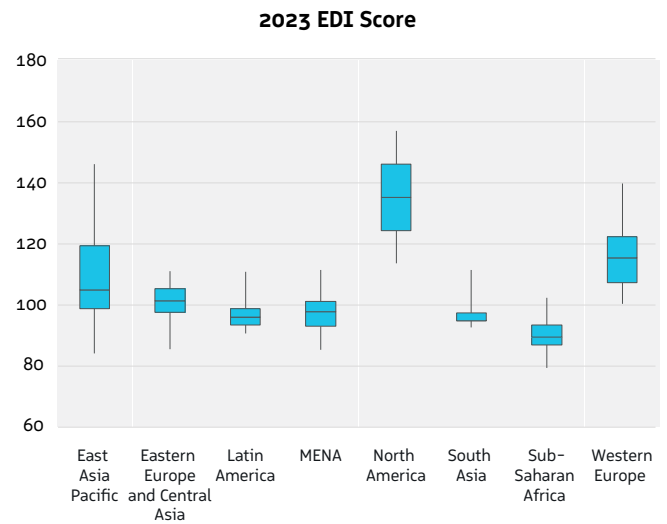
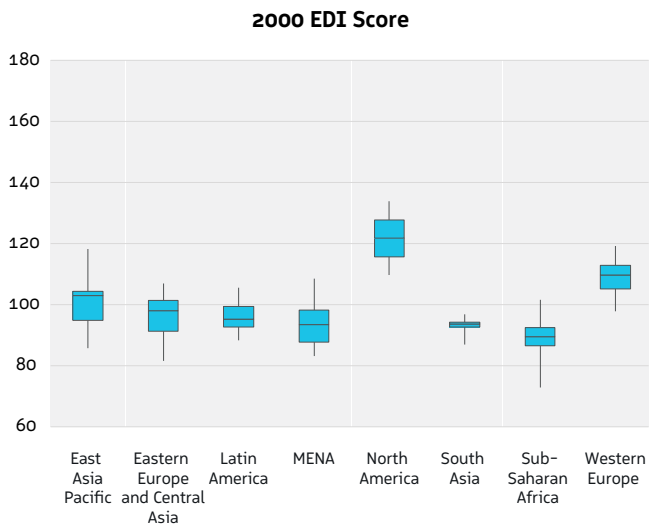
Chart 1.6. Revenue diversification sub-index across regions, 2000-2023



Revenue diversification has followed a relatively steady performance path over time (Chart 1.6), with Western Europe posting the highest and South Asia the lowest regional scores. OECD revenue statistics reports indicate that the tax structure or mix has been remarkably stable over the past decades in high income nations. North America's revenue diversification scores have declined over time, in line with the reduction

in tax rates (such as income tax), while in the MENA region, the introduction of VAT and excise taxes in the GCC nations have resulted in greater diversification. Separately, Mansour and Zolt (2023) recommend that fragile states, with political volatility and weaker fiscal institutions, must focus on simple tax designs and effective collection to raise revenues, which will increase their diversification scores.

Chart 1.7. Regional disparities in EDI scores (2000 vs 2023)



Sub-Saharan Africa continues to have the lowest median EDI score across all regional groups in both 2000 and 2023 (Chart 1.7), but the region's least score also increased the most across regions during the period (followed closely by South Asia). Both India and Nepal reported substantial gains over time: Nepal's uptick can be traced to the jump in its output sub-index, driven by both an increase in services share of 55 percent in 2023 from 35 percent in 2000 and a similar rise in manufacturing value added.

The gap between the maximum and minimum score narrowed only in Sub-Saharan Africa.

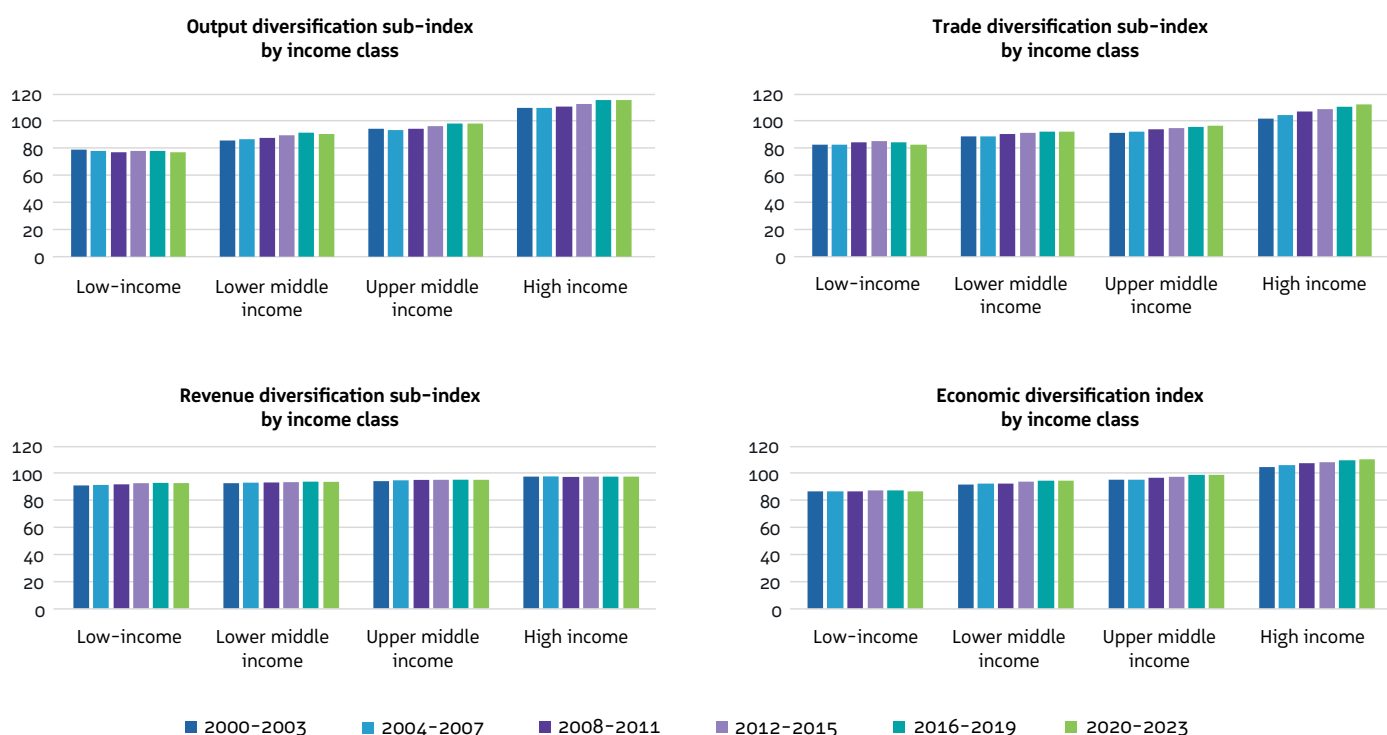
Further, the minimum score worsened slightly for East Asia, due to Mongolia's drastic fall in score (resource rents as a percent of GDP for example surged to 33 percent in 2021 from just 5 percent in 2000). With China among the top ranked

nations, East Asia also saw the gap between the top and lowest scores widen the most when comparing 2023 with 2000.

The inter-quartile range (the height of the blue box in Chart 1.7) indicates the least variability in South Asia in 2000, and the most in MENA. Across time, the range narrowed in three of the eight regions (MENA by the most) while it widened the most in East Asia, followed closely by North America and Western Europe regions – the high scoring nations have recovered from the COVID-19 pandemic at a much faster pace, enabling the top scorers to gain more. Additionally, the distribution for East Asia is skewed to the right in 2023 (i.e. higher EDI scores are more spread out). Understandably, the commodity producing nations in each regional group score lower than the median value – be it Mongolia in East Asia Pacific, Algeria in MENA, or Bolivia in Latin America. In Sub-Saharan Africa, many low scorers are both low income (or lower middle-income) and commodity exporting nations such as Niger or Angola.

Section 1

Chart 1.8. EDI performance by income class (& by sub-index) over time



As expected, high-income nations outscore all others during the 24-year duration (Chart 1.8). The top 25 highly diversified nations are high-income economies, except for China (upper middle-income, ranked 2nd in 2023), India (low middle-income, ranked 20th) and Mexico (upper middle-income, ranked 23rd). Both high and upper-middle income nations have improved their post-Covid EDI scores, supported by increased trade diversification. However, a few high and upper middle-income nations that are commodity-exporters (such as Kuwait or Mongolia) also feature in the bottom 25 percent of the index.

The output and trade sub-index scores for low-income countries between 2020-2023 were among the lowest, indicating slow recovery from the pandemic. This suggests that low-income diversifiers are more vulnerable to pandemics and natural shocks. On the other end of the spectrum, high-income nations have recovered and surpassed the 2016-2019 scores for both output and trade. Thus, the difference between high- and low-income group scores is the widest during 2020-2023 in the trade diversification (more than 30 points, versus a 19-point difference in 2000-2003) and output

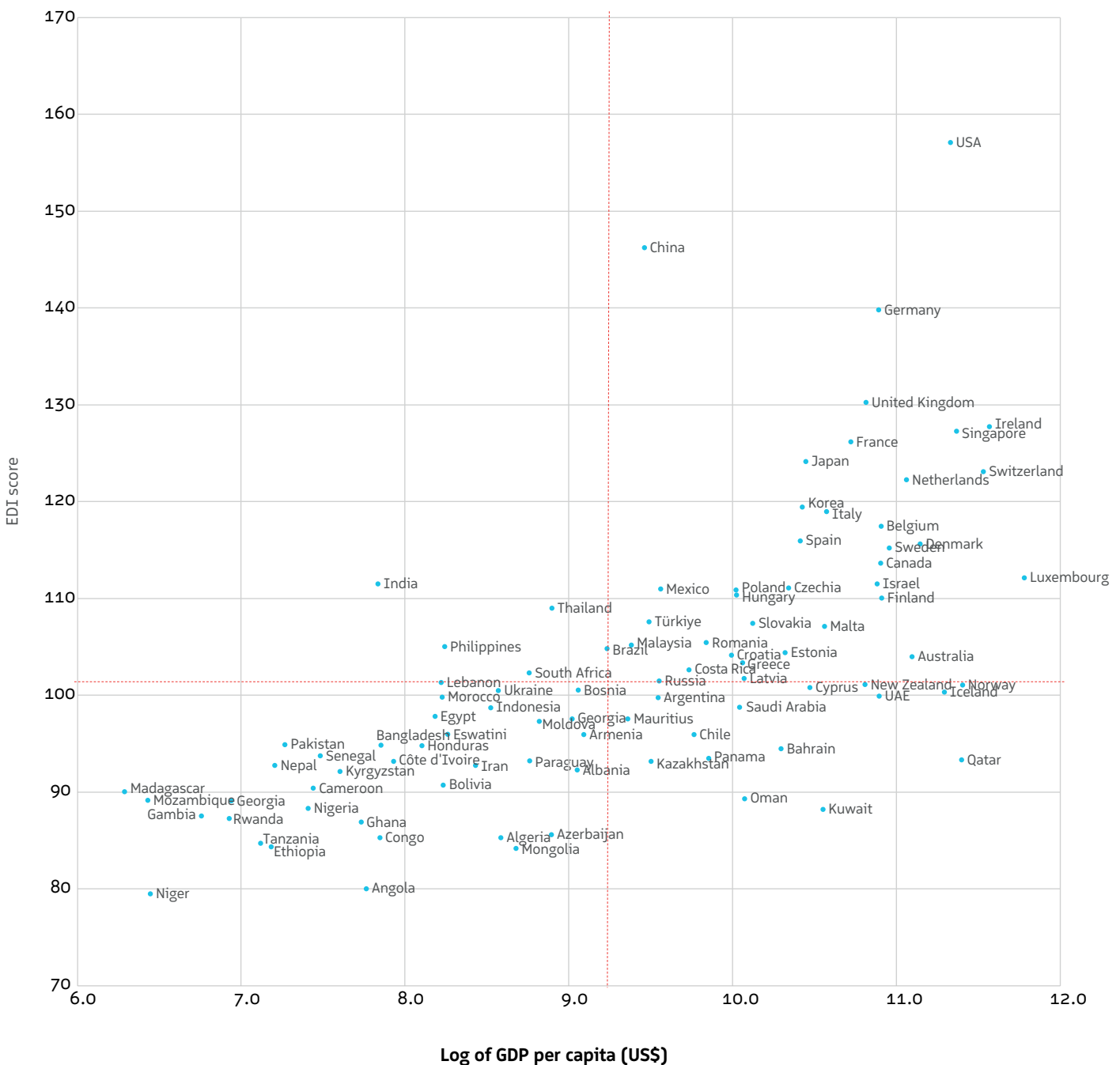
(39 points versus 31 points in 2000-2003) sub-index scores. Compared to the pre-pandemic period, the revenue diversification sub-index scores declined across all income groupings in the 2020-2023 period and the output sub-index declined across all income groupings except the high-income grouping.

Imbs and Wacziarg (2003) find an inverted U-relationship between diversification and GDP per capita as well as that the turning point between specialisation and diversification was generally found to be near the income level of USD 10,000 per capita in 1985. Assem, Gatti and Lederman (2024) find that resource-rich countries tend to concentrate employment and value-added at lower development levels while exports are generally more concentrated across all development stages. In contrast, resource-poor countries show more concentration in economic activities at higher development levels. Zarach and Parteka (2024) find that while resource-rich countries can diversify, many remain concentrated in resource and resource-related exports, especially at lower income levels; this is found to hinder technological advancement and the development of other sectors, perpetuating a cycle of dependency.

A positive correlation between EDI and GDP per capita is evident in the scatterplot of EDI and income level¹² for 2023 (Chart 1.9). It should be noted, however, that being a high-income country does not always correlate with a high economic diversification score. The chart below shows that many high-income oil-exporting nations, such as Kuwait and Kazakhstan, have

a below-average EDI score (bottom right quadrant of Chart 1.9). Mexico and Malaysia are examples of economies that have successfully diversified away from over-reliance on exports of commodities and are now in the top-right quadrant of the chart, while New Zealand, UAE and Norway are nations that are inching closer to the mean EDI score.

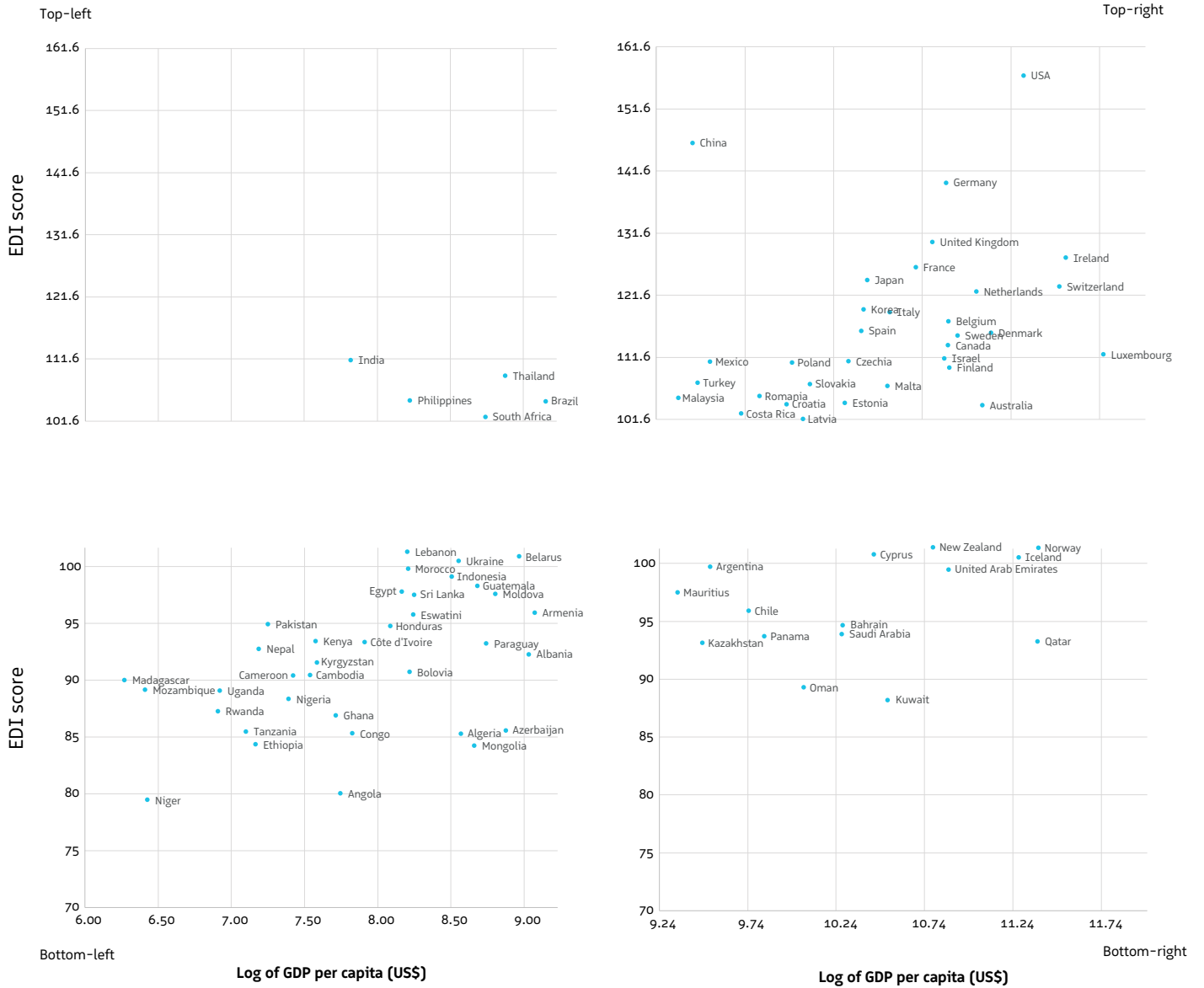
Chart 1.9. A positive correlation between EDI and GDP per capita



12 Income levels are measured by GDP per capita, PPP basis and transformed into log.

Section 1

Chart 1.9. A positive correlation between EDI and GDP per capita





Chapter 2

The Digital EDI+





Why is Digitalisation important?

Adoption of digital technology, digitalization policies and related discussions have gained momentum since the COVID-19 pandemic. Digitalisation can serve as a key pillar to increase economic diversification while also enabling emerging and developing nations to catch up. Digitalization plays an important role, given its ability to nurture new industries (such as China's e-commerce boom, Estonia's cybersecurity expertise, and UAE's fintech growth), expand into new markets (with new products, thus supporting cross-border trade), foster innovation (e.g. incubators and accelerators supporting entrepreneurs) and improve productivity (e.g. Chile's AgTech, Kenya's mobile payments and banking).

These advancements create new opportunities for growth and job creation thereby also improving a country's resilience and encouraging transformation.

Alper & Mitkus (2019), for instance, find that better business-enabling and regulatory environment, financial access, and urbanization are associated with higher digital connectivity in the context of Sub-Saharan Africa.

The UNCTAD Secretariat (October 2024) identifies that while the use of technology can assist developing countries to diversify, by enhancing productivity and competitiveness, fostering new industries around data-driven services and digital platforms (such as fintech, blockchain, AI), and promoting digital and green transition, many challenges remain. These challenges include reduced offshoring (that would affect developing countries participation in global value chains), decreased demand for low-skill jobs (which can be automated or performed by robots), and exacerbation of the digital divide given barriers to access new technologies.

Section 2

Chart 2.1. Select digital indicators by region 2010 vs 2023

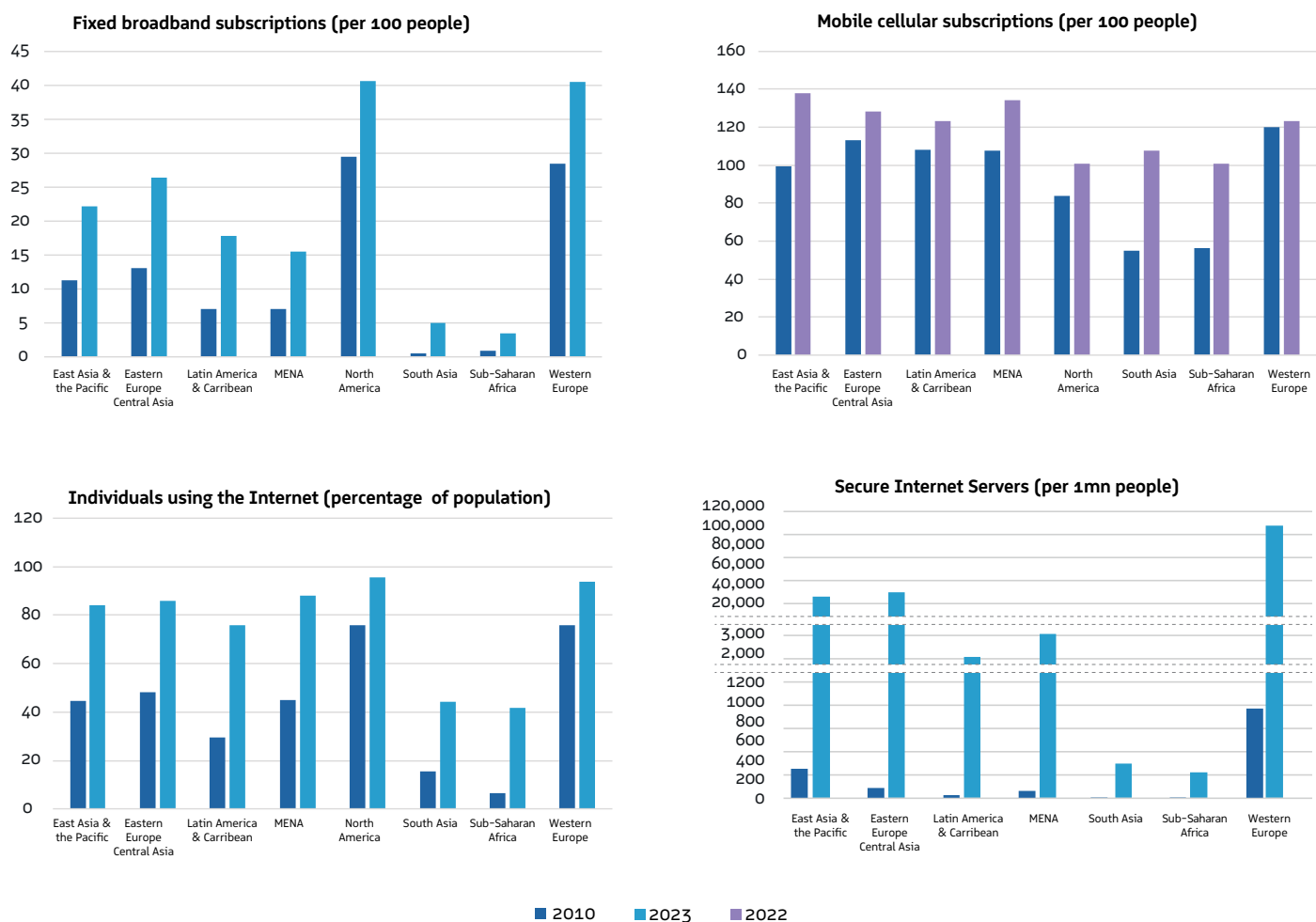


Chart 2.1 shows existing gaps in mobile and internet penetration, fixed broadband availability and availability of secure servers that continue to be diverging. South Asia and Sub-Saharan Africa tend to lag in the usage of internet compared to their peers – but there are large regional variations. Countries like India and Kenya, leaders in IT services and mobile banking/ payments respectively, offer insight into how to overcome relatively lower initial conditions. Gender gaps also exist in the digital economy: UN women estimates that over the past decade, gender variations have resulted in the reduction of GDP of low- and middle-income countries by

USD 1 trillion¹³. This also worsens inequalities, both between and within countries and regions. However, digitalization can support all three pillars of economic diversification by: (i) by raising productivity gains and supporting employment during periods of disruption, supporting GDP growth (Jaumotte et al 2023); (ii) introducing digital tools that can significantly reduce trade barriers, trade costs and facilitate faster movements of goods (WTO World Trade Report 2024); (iii) use of digital technologies in tax administration that can improve collection and efficiency (Nose and Mengitsu 2023, Okunogbe and Santoro 2023).

13 <https://www.unwomen.org/en/digital-library/publications/2022/09/progress-on-the-sustainable-development-goals-the-gender-snapshot-2022>



Section 2

Digital Indicators & EDI+ results

The EDI-plus (EDI+) includes three digital-specific indicators added as part of the trade-plus sub-index:

(a) trade of digitally deliverable services (i.e. services that can be delivered remotely over computer networks such as the Internet) – its exports as a percentage of trade;

(b) ICT goods exports as a percentage of the economy's total merchandise exports and

(c) international trade in ICT services as a percent of total trade in services (exports flow). The period covered for EDI+ scores is limited to 2010 to 2024 to ensure sufficient data availability, while ensuring that a large set of countries are included in the dataset (110 in this current edition¹⁴).

The World Bank's Digital Progress and Trends forecast report (2023) finds that the information technology (IT) services sector, such as software development and tech consulting, grew twice as fast as the global economy and created jobs six times faster. This growth was highly concentrated, with six economies: the United States, China, India, Japan, Germany, and the United Kingdom accounting for over 70 percent of global value added in IT services. Since 2005, the export of IT services also grew nearly seven-times, with India being mostly specialized in IT services exports, contributing to one-third of its total services exports¹⁵.

This is reflected in Chart 2.2

South Asia dominates ICT services as a percentage of trade in services, and the post-pandemic years show a significant improvement across all regions.

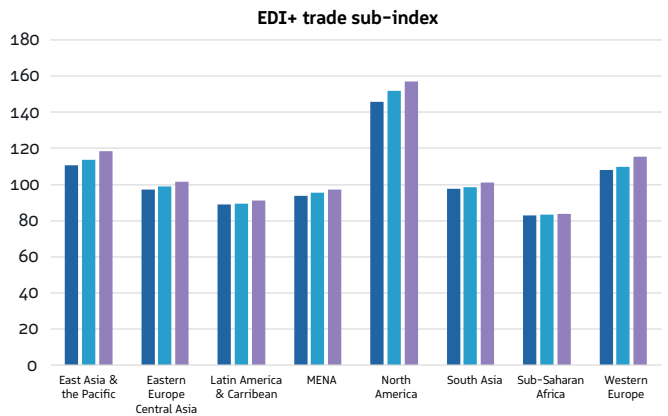
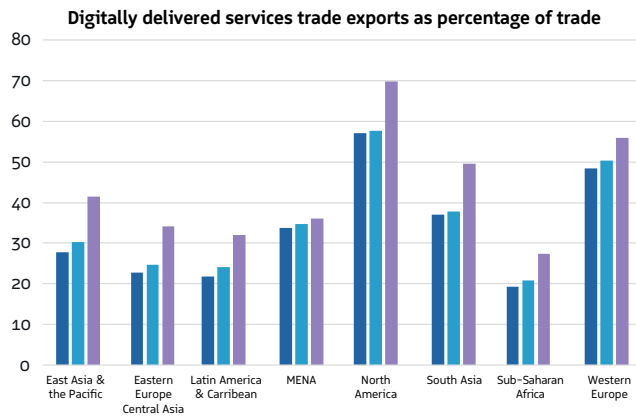
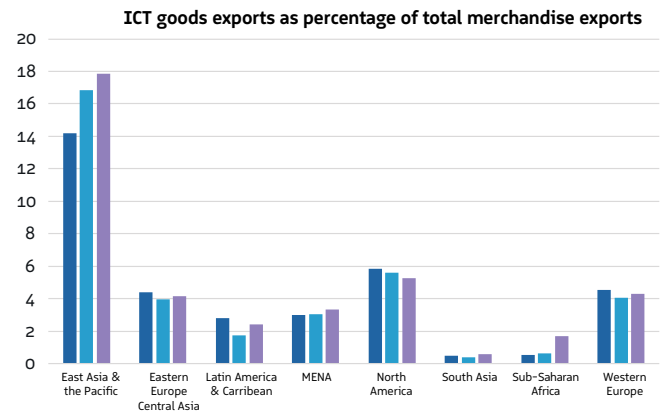
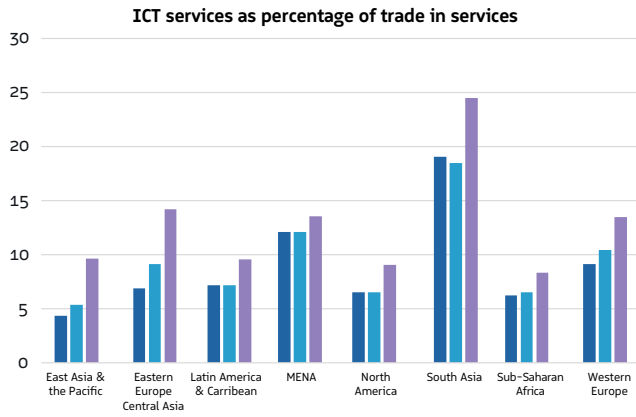
The shares of both East Asia Pacific and Eastern Europe & Central Asia regions more than doubled in 2020-2023 compared to 2010-2014.

The East Asia Pacific region leads in ICT goods exports as a percentage of total merchandise exports, primarily due to contributions from countries such as China, Korea, Singapore, and Vietnam. Its closest competitor is North America, which holds less than one-third of the share from 2020-2023. Furthermore, the MENA and Sub-Saharan Africa regions show gains in each time period, although they started from very low readings, while North America's seems to have an ongoing declining trend. However, North America dominates the digitally delivered services trade exports even as MENA gained the least in 2020-2023 compared to the previous period. MENA's performance can be traced back to the performance of a few countries such as Lebanon which was partly affected by the regional conflict, and the UAE which had an average of 35.4 percent in 2020-2023 down from 40.3 percent in 2016-2019.

14 Iran, Jordan, Qatar, Saudi Arabia & South Africa were in the EDI dataset but missing from the EDI+ dataset due to data constraints.

15 Developing countries in the East Asia and Pacific region posted the fastest growth in IT services exports, according to the World Bank. Export values expanded by 17 times from 2005 to 2022, largely driven by China. The Bank's country coverage and definition is slightly different from that of the EDI.

Chart 2.2. Digital trade indicators and the EDI+ trade sub-index



■ 2010-2014 ■ 2015-2019 ■ 2020-2023

Section 2

The addition of three digital indicators and the corresponding Trade+ sub-index shows gains for all regions in 2020-2023 compared to the pre-pandemic period.

Once again, North America, Western Europe and East Asia Pacific are the top three regional groupings for the Trade+ sub-index over time.

This is also reflected in the overall EDI+ score (see Table 2.1).

Additionally, the disparity between regions is narrower in the Trade+ sub-index and not widening over time as rapidly. While there is a 86-points difference in trade sub-index scores between the best and least performing regions in the 2020-2023 period (up from 60.2 in 2010-2014), the Trade+ sub-index has a narrower 73-points difference in the latest period (however, this is up just 10 points from 2010-2014). This implies that many developing nations are diversifying into the digital space and can catch up, depending on factors such as availability of infrastructure, regulatory support, and skilled workforce. These are further discussed towards the end of the chapter.

Table 2.1 EDI+ scores, by region and over time (heatmap)

	2010	2014	2018	2023
North America	123.0	125.9	128.1	129.7
Western Europe	105.4	106.4	107.2	114.4
East Asia Pacific	103.1	105.1	106.8	107.7
South Asia	98.6	99.1	100.0	101.3
Eastern Europe & Central Asia	94.4	95.5	96.2	97.9
Latin America & the Carribean	93.5	94.2	96.4	96.3
MENA	95.1	95.4	96.2	96.1
Sub-Saharan Africa	87.0	88.1	88.2	87.9

Least Improvement  Most Improvement

EDI+ scores are broadly in line with overall EDI scores in terms of ranking, except for MENA and Latin America regions which switch places by small margins. Specifically, in 2023, in terms of the

EDI+ scores,

96.3 MENA

is slightly ahead of

96.1 Latin America

EDI scores,

97.18 Latin America

is slightly ahead of

97.16 MENA

Similar to EDI scores, the MENA, Latin America and Sub-Saharan Africa regions experienced a decline in their EDI+ scores in 2023 compared to 2018. However, significant variations exist within countries, as can be seen from Table 2.2.

There is a strong positive correlation between the EDI and EDI+ trade sub-indices¹⁶.

Table 2.2 reaffirms the consistency of the four top-ranked nations, which maintained their rankings even with the inclusion of digital indicators.

Multiple countries in the top quintile of the EDI rose even higher with the inclusion of the digital indicators within the trade sub-index. Examples include the Philippines and Czech Republic, whose digitally deliverable services trade exports exceeded 45 percent of total trade in 2020-23, compared to slightly above 25 percent for Mexico and around 70 percent for the US.

Conversely, Canada, Austria and Thailand dropped out of the top 20. Among the bottom ranked nations, while many saw a decline in their rankings (in blue), some, such as Madagascar, Cameroon and Ghana, improved their positions from the bottom 20 ranks. Ghana, for example, has as digitally deliverable services trade exports share at more than 75 percent in 2020-23 compared to just 10 percent in Zambia's case while Madagascar's ICT services exports stood at more than 20 percent in 2020-23 versus around just 1 percent in Tanzania.

¹⁶ The Spearman rank correlation between the two series was 0.796 in 2023.

Section 2

Table 2.2. Twenty of the top and bottom ranked countries in the trade sub-index for the year 2023 (excluding and including the digital indicators)

Top 20-ranked nations		Bottom 20-ranked nations	
Trade sub-index	Trade+ sub-index	Trade sub-index	Trade+ sub-index
United States	United States	Kyrgyzstan	Kyrgyzstan
China	China	Madagascar	Ethiopia
Germany	Germany	Ecuador	Peru
United Kingdom	United Kingdom	Paraguay	Mozambique
France	Singapore	Tanzania	Botswana
Netherlands	Ireland	Cameroon	Panama
Singapore	France	Gambia	Tanzania
Ireland	Netherlands	Rwanda	Angola
Japan	Japan	Ghana	Paraguay
India	India	Panama	Ecuador
Italy	Korea, Republic of	Azerbaijan	Azerbaijan
Korea, Republic of	Italy	Bolivia	Nigeria
Spain	Belgium	Algeria	Gambia
Belgium	Sweden	Nigeria	Algeria
Mexico	Spain	Zambia	Rwanda
Canada	Poland	Jamaica	Zambia
Poland	Israel	Botswana	Bolivia
Austria	Czech Republic	Mongolia	Niger
Sweden	Philippines	Niger	Jamaica
Thailand	Mexico	Angola	Mongolia

Note: the green coloured text represents where nations have gained positions when including the digital indicators; blue when the rankings have fallen. In the bottom-ranked nations, those nations in bold represent countries that have better rankings including digital indicators (where they do not fall in the bottom 20).

If one considers the gains over the period 2010–2023, the nations that gained the most in their Trade+ scores are unsurprisingly China, the US, Germany, India and the UK. Just over two-thirds of the nations post better gains in the trade+ sub-index (comparing 2023 versus 2010) than gains in the overall EDI+. The top 20 largest gains in Trade+ have been spread across regions: eight from Western Europe and seven from East Asia Pacific along with the US,

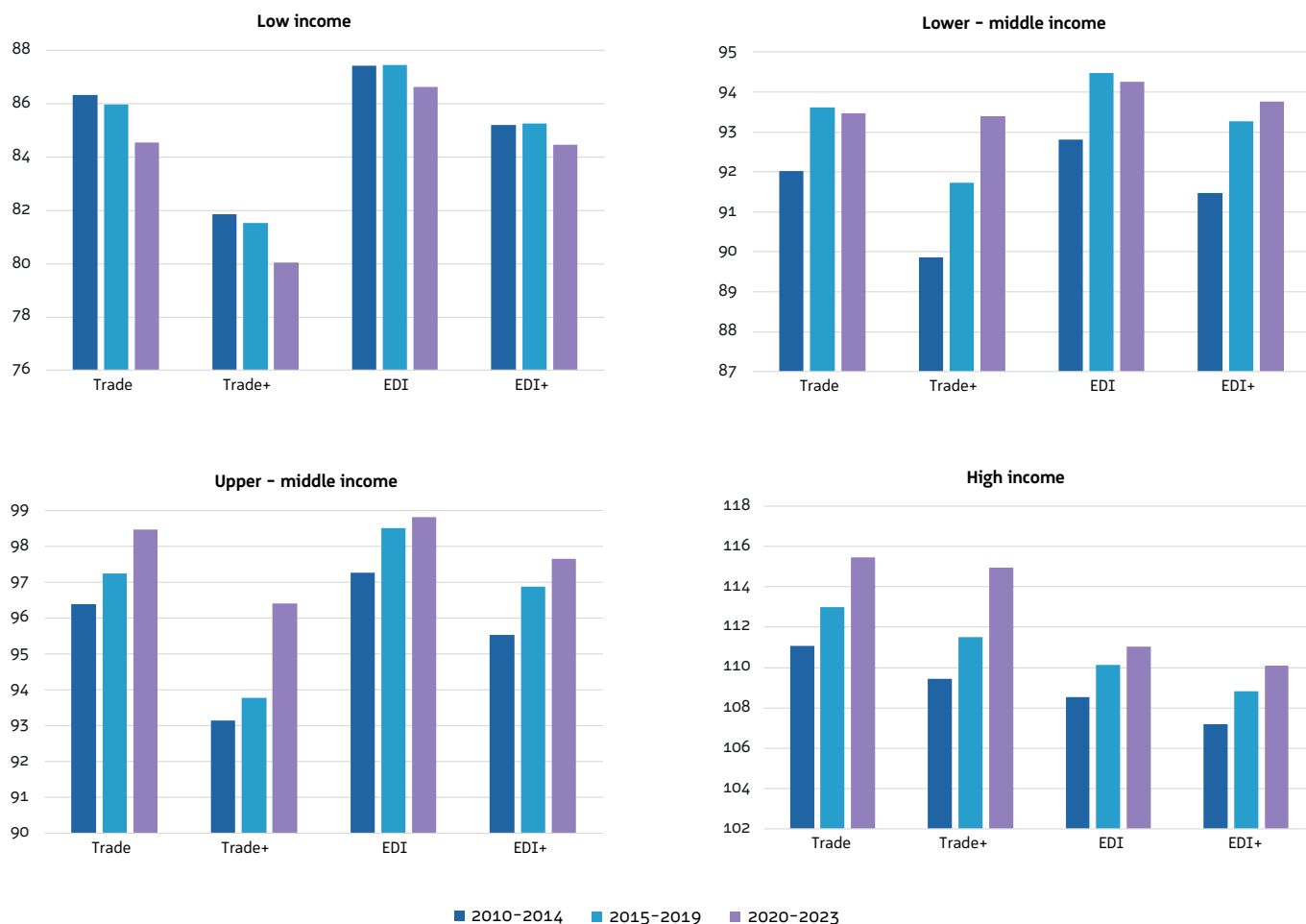
Poland from Eastern Europe & Central Asia (ICT services jumped to 14 percent in 2023 from 5 percent in 2010), Mexico from Latin America, India from South Asia (digitally delivered services jumped to 86 percent in 2023 vs 71 percent in 2010) and the Congo from Sub-Saharan Africa (digitally delivered services jumped to over 40 percent in 2020–2021 vs 11 percent in 2010)¹⁷.

¹⁷ A further breakdown or composition of digital services exports shows that: for Congo, about 95% falls under "other business services", followed by telecoms and insurance & pension services. Separately, India's digital services is dominated by "other business services" (53%) followed by computer services (40%). In contrast, UAE's digital service comprises 51% insurance and pension services.

Chart 2.3 highlights the EDI and trade sub-index, both original and the version including digital indicators, by income group. For the upper-middle income and high-income countries, scores for the 2020-2023 period are higher than those recorded in 2015-2019, which are themselves higher than in 2010-2014. Post-pandemic, lower-middle-income countries have shown an increase in the Trade+ index scores (including digital indicators) and a slight decline in the trade sub-index scores (excluding digital indicators) as compared

to pre-pandemic. A similar pattern appears when comparing the EDI vs. EDI+ readings. This is not surprising the lower-middle income group consists of many countries which show substantial gains when digital indicators are included, such as Congo, India, Philippines and Vietnam. **On the other hand, the low-income group of countries have yet to recover to pre-pandemic levels of diversification in terms of both the EDI and EDI+ scores, highlighting the need for significant investment in digital infrastructure and related enablers.**

Chart 2.3. Comparison of trade sub-index and EDI scores, by income group, with and without digital indicators



Section 2

Table 2.3. Commodity dependent nations EDI vs EDI+ performance, highlighting trade sub-index scores

	Trade+	EDI+	Trade	EDI
2010-2014	84.6	89.5	88.1	91.5
2015-2019	85.6	91.4	89.1	93.3
2020-2023	86.7	91.4	89.0	92.9

Lowest Score  Highest Score

The EDI+ includes 37 commodity-dependent nations, or one-third of the total list of nations. These nations saw an increase in the trade+ sub-index in the period 2020-2023, though their EDI+ scores remain similar to the 2015-2019 period. Excluding the digital indicators related to trade, commodity producing nations have not yet returned to pre-pandemic levels of economic diversification.



Performance of EDI+ compared to other digital indices

Having the right infrastructure – both hard and soft – is critical to developing the digital economy. The charts 2.4 and 2.5 compare the EDI+ scores to two other digital indices: both show a strong positive correlation.

Huawei's Global Digitalisation Index (GDI) tracks the progress across 77 countries, measuring the maturity of a country's ICT industry by factoring in indicators across 4 segments including:



Ubiquitous Connectivity

(e.g. fixed & mobile broadband, mobile data per connection)



Digital Foundation

(e.g. data centres, cloud computing, e-government index),



Green Energy

(e.g. charging convenience, renewable electricity utilisation rate), and

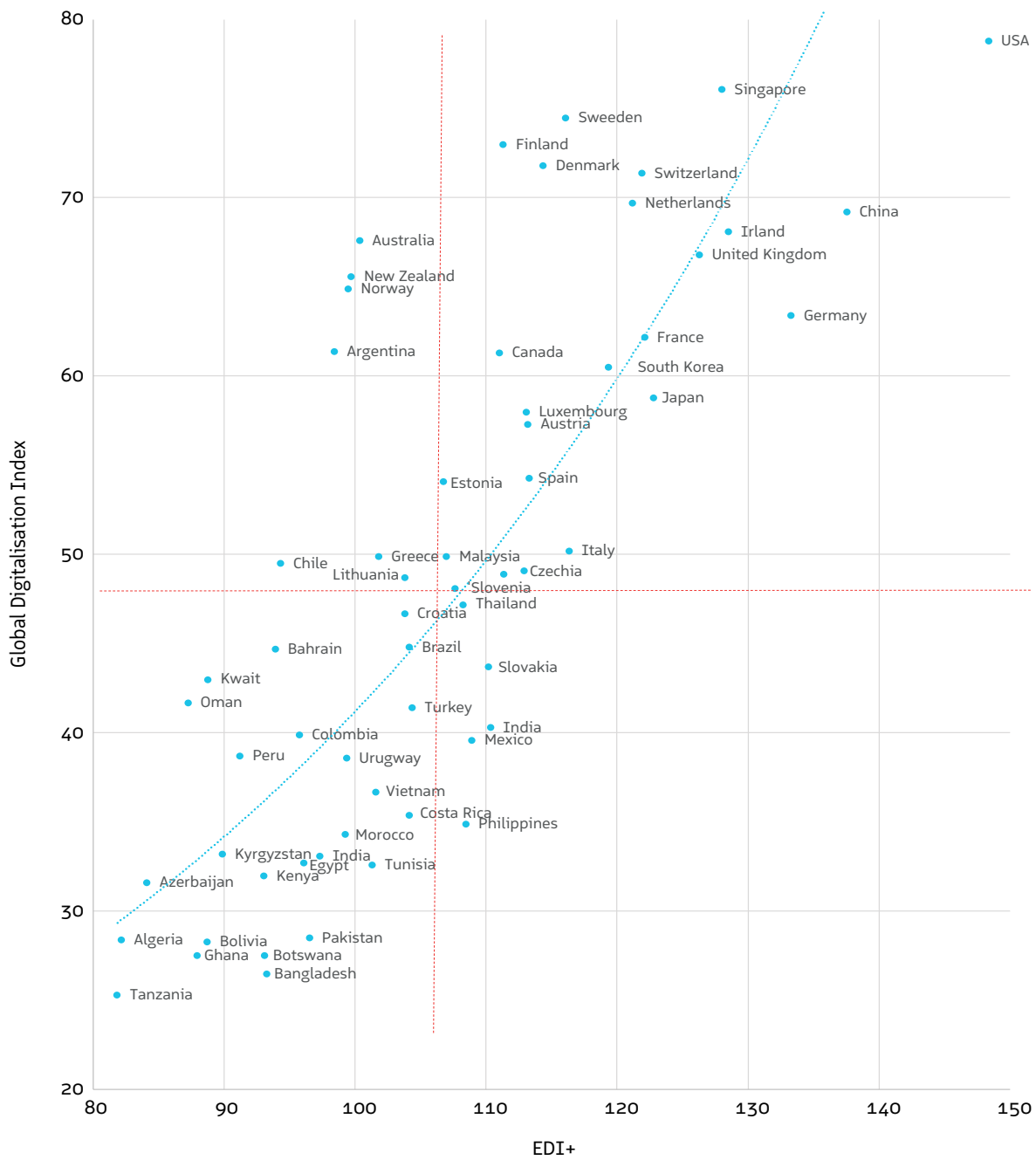


Policy & Ecosystem

(ICT investments, patents, STEM graduate ratio).

The GDI 2024 report finds that a USD 1 investment in digital transformation results in a USD 8.3 return in a country's digital economy. Correlation between the GDI and EDI+ series is 0.6, indicating a strong positive relationship. The top-performing countries in both indices are similar and include the US, Singapore, and Finland, while the worst-performing nations overlap in both indices as shown in the bottom-left quadrant of chart 2.4. Interestingly, many commodity-dependent nations, like Australia and the UAE, appear on the top-left quadrant of the chart, scoring high on the global digitalisation index, suggesting diversification possibilities.

Chart 2.4. EDI+ and Digitalisation Index



Section 2

The IMF's AI Preparedness Index (APII) tracks level of AI preparedness across 174 countries based on indicators spread four dimensions: digital infrastructure (e.g. internet users, use of phone for mobile transactions), human capital (e.g. digital skills, STEM graduates, social protection), technological innovation (e.g. R&D spending, non-tariff barriers), and legal frameworks (e.g. government effectiveness, legal framework's adaptability to digital business models etc). While wealthier nations are better prepared to adopt AI, there are variations even across wealthy countries: some are better

positioned to reap the benefits given their strength in digital infrastructure, regulatory frameworks and/ or human capital. Singapore, Denmark and the US are the highest-ranking countries in APII while eight countries from Western Europe, five from East Asia Pacific and one from Eastern Europe (Estonia) are in the top 15. On the other end of the spectrum, 12 of the bottom-ranked nations are from Sub-Saharan Africa. There is a high positive correlation between the EDI+ and the APII (0.637) indicating that countries scoring higher on EDI+ are likely to be better prepared for the adoption of Artificial Intelligence.

Chart 2.5. EDI+ and AI Preparedness



The more prepared the countries are for incorporating AI into existing sectors, the better positioned they will be to potential productivity gains, boosting economic diversification possibilities.

Once again, many higher-income commodity-producing countries are well-positioned to improve their diversification scores by incorporating such projects into segments tracked by the EDI+ (top part of the bottom left quadrant, above the gradient line).

Countries on the bottom-left have a long way to catch-up, especially the lower-income low-ranked countries in the AI Preparedness Index.

Given global green transition plans, for countries starting from scratch, it would be prudent to use green energy technologies to support their digital economies and/ or the eventual applications of AI.

Concluding remarks

UNCTAD's Trade and Development 2024 report highlights new general-purpose technologies and forms of corporate and social organization that arise from greater digitalization as two of the three critical inflection points for the global economy, in addition to energy transition. Baldwin and Forslid (2023) anticipate that services-led development would become the norm rather than the exception in the future.

In recent decades following the financial crisis of 2008, there has been a decline of manufacturing-led export growth and a concurrent rise in services-led export growth.

ICT-enabled services are primarily dominated by advanced economies, with few non-high income developing nations participating significantly. The introduction of ChatGPT has popularized GenAI, a technology claimed to be as revolutionary as the internet and modern computers.

Its rollout is expected to boost GDP and significantly alter the global labour market. The contribution of generative AI to GDP forecasts ranges from a median estimate of under one trillion USD annually (Goldman Sachs 2023 report, Accenture 2024 report) to between USD 2.6 to 4.4 trillion annually (McKinsey 2023). Brynjolfsson, Li and Raymond (2023) find that GenAI can increase productivity, although its effects on across workers varies. Cazzaniga et al (2024) finds that about 60 percent of jobs in advanced economies are exposed to AI, compared to 40 percent in emerging markets and 26 percent in low-income economies. They further note that the more exposed to immediate AI-disruptions a country is, the better its ability to exploit benefits from AI – meaning a further increase in cross-country disparity. To address these developmental challenges, it is imperative for countries to be better prepared for the digital revolution by creating the right hard and soft infrastructure²¹.

¹⁸ In aggregate, developing economies accounted for less than 30 per cent of world services export revenues; the figure for merchandise exports is 44 per cent (Source: UNCTAD Trade and Development 2024).

¹⁹ There is much uncertainty related to the impact of Gen AI. Alongside forecasts of massive GDP gains, other scenarios have its impact on productivity to be minimal compared to other existing AI technology.

²⁰ The paper reports minimal impact of new AI tools for skilled and experienced workers when looking at the impact of a specific AI-based assistant on customer support agents.

²¹ "Hard" infrastructure refers to the large physical networks of a modern industrial nation. "Soft" infrastructure refers to institutions required to maintain the economic, health, and cultural and social standards of a country, such as the financial system, the education system, the health care, the system of government, law enforcement, and emergency services.

To help developing countries catch up and close the digital gap, it is important to identify barriers and opportunities in order to create effective policy proposals. This effort should not only address issues of access to technology but also encompass a range of necessary reforms.



Infrastructure development:

investing in broadband expansion, rollout of 5G networks & satellite internet;



Affordable access to digital devices:

offering subsidies for devices, low-cost internet plans;



Trade facilitation and logistics:

cross-border digital trade policies, boost e-commerce potential and cross-border cooperation;



Legal and regulatory framework:

e-government initiatives, reforms to encourage competition, reduce fees and enhance quality, increase trust in digital financial services, strengthening capacity in areas like cybersecurity and personal data protection;



Skill development: build digital skills of the workforce to cater to the evolving technology and job roles, training programs for underserved communities; and



Access to finance via digital finance and payments - to increase financial inclusion, electronic payment adoption (among others).

Building the right infrastructure will also be critical to the development the digital economy beyond current capabilities.

For example, internet exchange points²² (IXP) are crucial for enabling cloud computing, big data analytics, and AI – technologies that could reshape how the world operates in the future. However, the existing IXP gap is severe: globally, high-income countries share of public IXP stands at 60 percent of global total and nearly three-quarters of connected data centres in contrast with versus some two percent in the MENA region and seven percent in Sub-Saharan Africa. Oil-exporting Saudi Arabia and the UAE²³ are investing heavily in data centres with an eye towards diversification and future prospects.

²² Internet exchange points or IXPs are physical structures that facilitate connection to global internet traffic, while data centres store and process data. About 51 countries and territories, representing 5 percent of the world's population, do not have any IXP access.

²³ UAE has USD 1.2bn worth active data centre projects and a future project pipeline of USD 433mn (as of Sep 2024). Microsoft plans to set up new AI data centers in Abu Dhabi while Saudi Arabia attracted USD 10bn in investments from Amazon and other tech companies to build data centers.

Chapter 3

Commodity Producers' Economic Diversification in the backdrop of energy transition



Economic Diversification is critical for commodity producing nations that want to mitigate the risks of the natural resource curse.

Since 2020, commodity prices have been affected by multiple global shocks such as the COVID-19 pandemic, Russia's attack on Ukraine and the surge in inflation across several regions. In addition, volatile commodity prices, driven by climate-related shocks, threaten fiscal stability, especially in commodity-dependent developing countries with high debt levels. The World Bank (2024)²⁴ found that global supply shocks, such as structural reforms leading to productivity gains, caused commodity prices to increase significantly—by up to 10.3 percent within seven months—with effects lasting over a year. In contrast, a global demand shock, such as one resulting from fiscal stimuli, had more temporary effects) which drove prices by up to 4.8 percent over six months before the effect faded.

Commodity price movements and outlook

In 2023, commodity prices remained high relative to pre-pandemic years and were further influenced by factors such as:

War in the Middle East: Oil prices fluctuated due to concerns of supply disruptions alongside the OPEC+ policy decision of continuing voluntary cuts;

Resilient Chinese demand for commodities despite subdued growth: In 2023, oil demand from China accounted for around four-fifths of the global increase in consumption, while China's rising industrial and infrastructure investment partly offset weakness in its property sector (affecting prices of iron ore). More generally, the World Bank (2024) found China's growth to be a key driver of commodity market performance between 2000-2019²⁵;

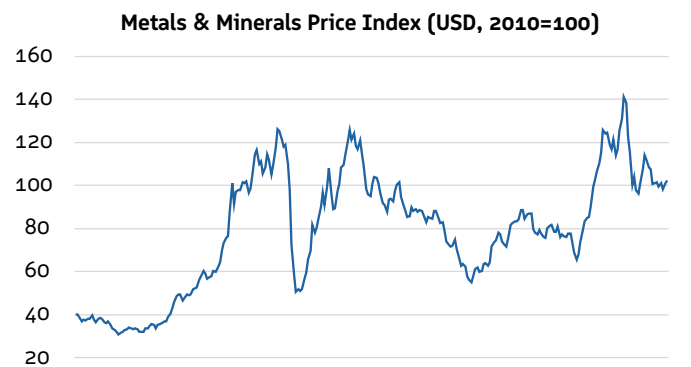
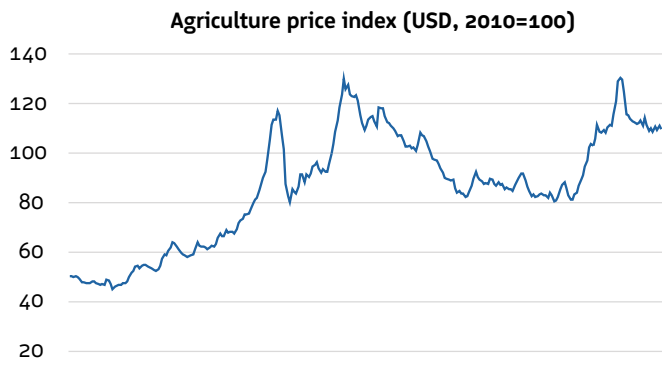
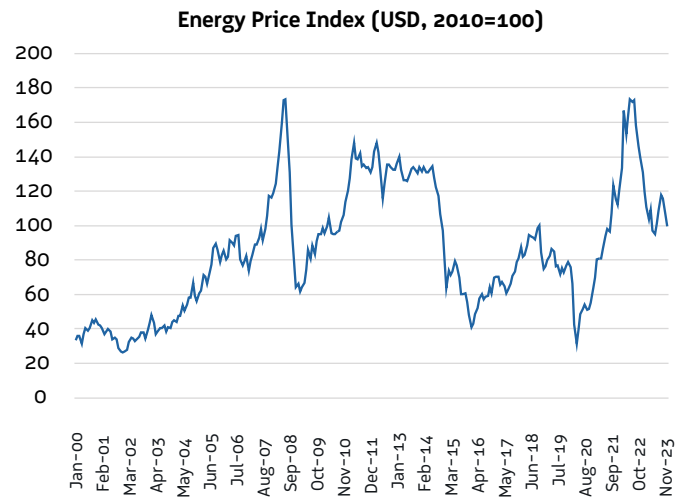
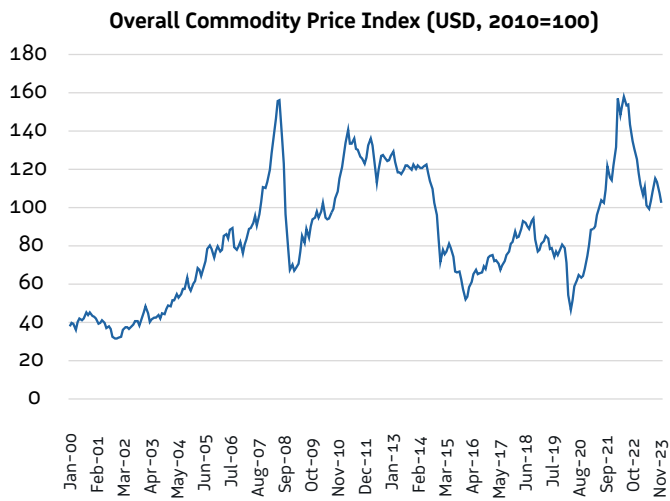
Climate change driving transition towards clean energy: Metals-intensive investment in clean energy technologies and products drove up the demand for base metals, creating incentives for increasing metal production;

Climate change leading to agricultural supply disruptions: Food prices trended lower in 2023, but prices of certain crops (e.g. cocoa) have raised concerns related to climate change and global trade fragmentation – two factors likely to worsen in the near-term; and

Increased protectionism and support for national industrial policies: This could affect the price of certain base metals, particularly aluminium and copper, via the automotive and construction sectors.

²⁵ Quarters when China's GDP growth was in its bottom quintile were typically accompanied by a 5 percent decline in commodity prices, while top-quintile growth was marked by average increases of 7 percent in overall commodity prices and 12 percent in copper prices.

Chart 3.1. Monthly price movements of major commodities.



Source: World Bank Commodity Price data

Section 3

Moving forward, commodity-producing nations must consider three factors:

1. Weather and climate change:

Growing weather volatility will have an impact on commodities production/ extraction. Changes to temperatures can affect crop production (via longer growing seasons), air pollution can damage crops, and extreme weather events can negatively affect supply chains. PwC (2024)²⁶ finds that the production of three critical minerals – copper, cobalt and lithium are likely to face rising levels of drought risk including in Australia, the Democratic Republic of Congo, Chile and Peru. Ilyasu and Sanusi (2024) argue that climate change could be a challenge for monetary policy strategy: climate calamities could raise food prices. For net importers of food staples this could lead to higher inflation, thus negatively impacting their real GDP.

2. Energy transition and demand for commodities (fuels and metals):

The shift to renewable energy lowers costs and pollution but challenges fossil fuel producers, necessitating economic diversification. Without reform, fuel exporters may face pressure on fiscal balances, current accounts, depleting foreign exchange reserves, increased public debt levels as well as rising non-performing loans and bank funding costs. More diversified producers could see a shift in economic activity i.e. to other sectors/ industries (Kinda et al, 2016, Americao et al, 2023). For metal producers the energy transition will be net positive. Chile and Peru experienced important benefits in the 2000s as the world's largest copper producers, with higher wages, improved labour market conditions, better fiscal positions, and a reduction in poverty. Long-term demand for metals and minerals will boost exports and growth: examples include Bolivia (Lithium) and the Democratic Republic of Congo (Cobalt).

Critical minerals, energy transition and diversification

Critical minerals such as lithium, cobalt and rare earth elements are used in the production of batteries, wind turbines and electric vehicles – key elements in the transition to clean energy and with applications in ICT and related digital transformation. Countries with rich reserves in these commodities are expected to benefit from increased demand as the world aims to meet objectives such as the tripling of renewable energy capacity and doubling of energy efficiency by 2030 (goals agreed at the COP28 climate summit in Dubai). The International Energy Agency (IEA) estimates that global demand for critical minerals is expected to triple by 2030 and quadruple by 2040.

Over the past 20 years, annual trade in energy-related critical minerals has increased from USD 53 billion to USD 378 billion²⁷. The IEA finds that although production has been expanding over time, it remains significantly geographically concentrated in 2023: particularly, for nickel, from Indonesia, and for cobalt from the DRC. China is expected to play a major role in critical minerals in the medium term, and currently dominates the supply chain, accounting for around 60 percent of the global rare earth mining production, 85 percent of battery cell production capacity, over 90 percent of cathode and anode material production capacity and close to 90 percent of processing and refining.

27 WTO blogpost "High demand for energy-related critical minerals creates supply chain pressures", https://www.wto.org/english/blogs_e/data_blog_e/blog_dta_10jan24_e.htm

Additionally, China is a significant international investor in mining projects across Africa (e.g. cobalt mines in the DRC) and Asia. In terms of asset ownership, along with China, US and European companies are also increasingly investing US heavily in lithium and copper and Europe in cobalt, copper and nickel.

To benefit from mineral reserves and diversify, countries need to move from being only a supplier of the raw material to increasing value addition²⁸ and integrating into clean energy and high-tech value chains. The Democratic Republic of Congo (DRC), for example, tripled the value of its cobalt by processing it locally. Although Africa, holds one-fifth of the world's reserves of metals needed for the energy transition²⁹, it is not a major player in producing or trading materials essential for the transition i.e. not a contributor to the value-added manufacturing in green technology. If advances in renewable energy technologies reduce the need for critical energy transition minerals as necessary components, the continent could thus lose out on its current revenue stream. Activities related to the critical mineral industry have significant environmental footprint: greenhouse gas emissions arising from energy-intensive mining and processing activities, accompanied by biodiversity loss and pollution. As production increases to meet burgeoning demand, critical mineral industries are likely to shift towards more energy-intensive methods.³⁰

In recent years there has been rising geopolitical tensions and political pressure over the control of critical minerals. China banned shipments of antimony, gallium and germanium to the US in December 2024, following US-led export controls on advanced computing and semiconductor products. Protectionism is also on the rise. The OECD reports a five-fold increase in export restrictions on critical minerals³¹ between 2009–2020. The International Energy Agency (IEA), in its 2024 risk assessment framework, highlights that lithium and graphite have high risk scores. Lithium and copper are most exposed to supply and volume risks, while graphite, cobalt, rare earth elements, and nickel could face substantial geopolitical risks.

3. Trade fragmentation:

Alongside geopolitical tensions, trade fragmentation adds further risk. Trade fragmentation in commodity markets could lead to higher and more volatile prices³², especially as the production is concentrated³³ and the product is difficult to substitute. For low-income and emerging market commodity dependent countries, fragmentation could lead to long-term output losses exceeding two percent, according to Alvarez et al. (2023). The looming threat of increased tariffs could make clean energy transition a more costly endeavour, as noted by the IMF World Economic Outlook in October 2023. It could also hinder further investments in renewable energy, thereby slowing the clean energy transition.

28 Examples of policies on increasing local value addition in minerals-producing countries include Critical Minerals Strategy 2023–2030 in Australia, the National Lithium Strategy in Chile and Mineral Beneficiation Strategy 2021 in Namibia.

29 According to UNCTAD data, Africa holds significant reserves: 55% of the world's cobalt, 47.65% of manganese, 21.6% of natural graphite, 5.9% of copper, 5.6% of nickel and 1% of lithium.

30 IEA (2021) report titled "Sustainable and responsible development of minerals" states that lithium production has been moving from brine-based recovery (mostly in Chile) to concentrate production from hardrock (mostly in Australia) – the emissions intensity of the latter is three times higher than that of brine-based production. Demand is also moving from lithium carbonate towards lithium hydroxide with higher emissions profiles, as the latter is more suitable for batteries with higher nickel cathode chemistries. Likewise, future growth of nickel is increasingly coming from laterite resources, which require more energy to produce. More: <https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions>

31 <https://www.oecd.org/en/publications/raw-materials-critical-for-the-green-transition/c6bb598b-en.html>

32 Trade fragmentation that is driven by geopolitics will lead to higher imported goods prices and lower real incomes but need not necessarily be inflationary in nature (Ambrosino et al, 2024). The impact on domestic and aggregate CPI inflationary pressures depends on how demand adjusts to lower incomes, which in turn depends on whether the fragmentation process is gradual or frontloaded.

33 The three biggest suppliers of minerals account for about 70 percent of global production, on average.

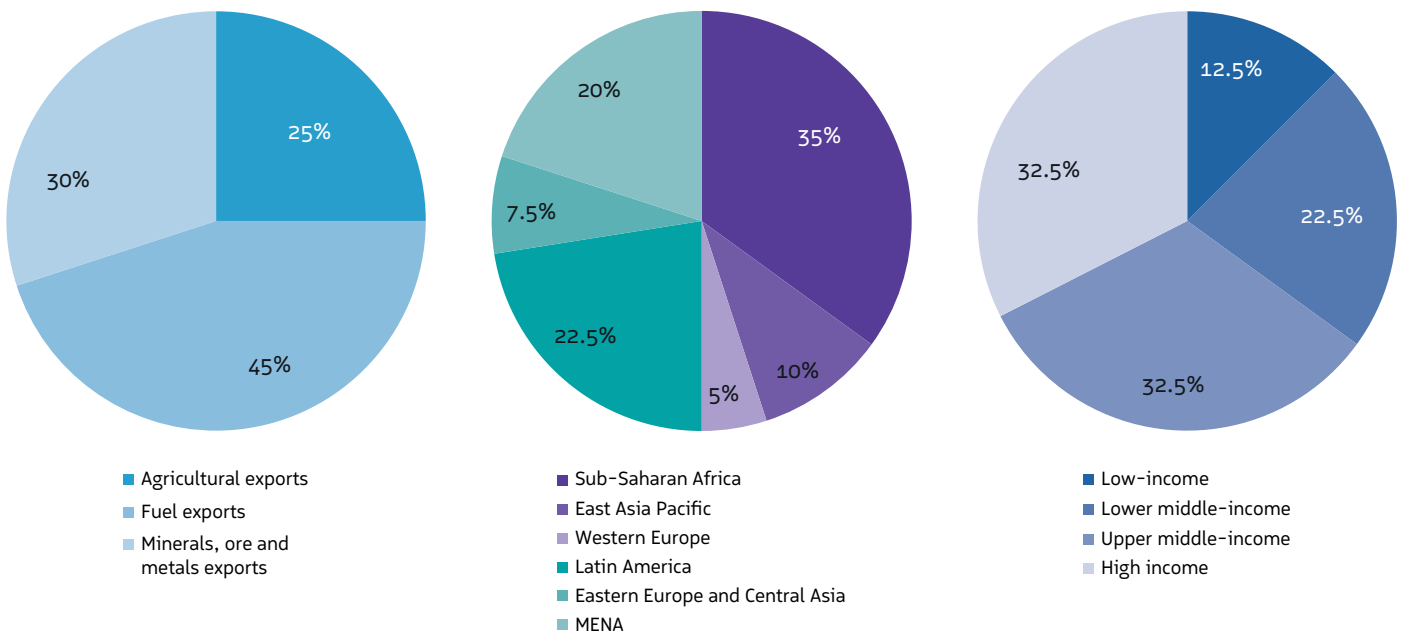
Commodity Exporters' EDI Performance

40 out of the 115 countries covered in this EDI report are commodity exporters³⁴.

The list includes an equal number of high and upper-middle income nations, with high-income nations from the MENA region dominating as fuel-exporters. The low-income nations are largely exporters of minerals, ores and metals in addition to agricultural goods, such as Uganda and Ethiopia.

Sub-Saharan African nations account for around 35 percent of the total (Chart 3.2), followed by Latin America and the Middle East, together accounting for over 40 percent of the total. Western Europe is represented by only Norway and Iceland (both relatively more diversified commodity producing nations). In the EDI sample, close to 50 percent of the commodity dependent nations are reliant on fossil fuels. Within these commodity exporters, Norway is the better ranked nation while UAE and Bahrain stand out from the Middle East (though both their rankings have declined compared to pre-pandemic readings).

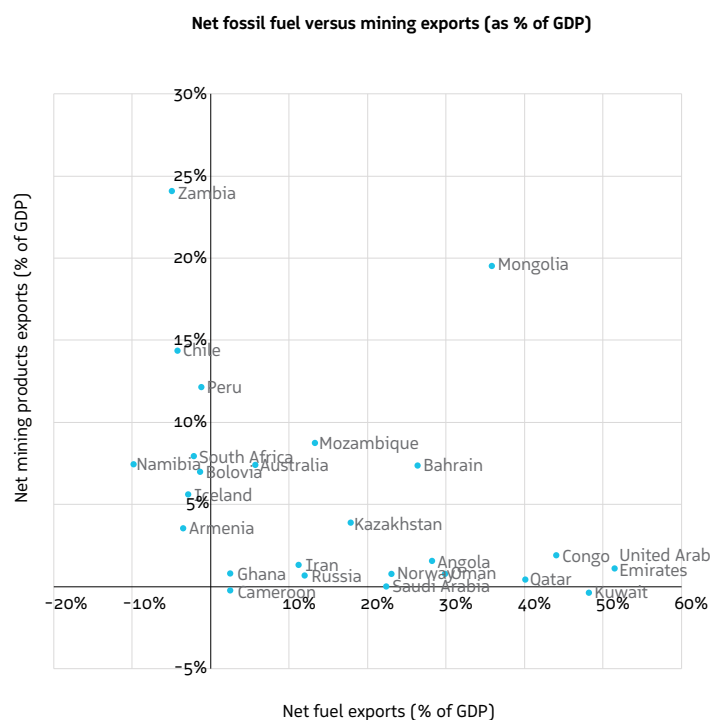
Chart 3.2. An overview of EDI's commodity dependent nations



³⁴ Some commodity-exporting nations including Brunei, Chad, Equatorial Guinea, Iraq, Gabon, Libya, Venezuela and Yemen among others are not part of the overall list due to insufficient data in one or more of the sub-components.

With renewable energy becoming more economical than fossil fuels, there is a strong need for economic diversification for the oil exporting nations – many of which are in the Middle East. These economies also do not have a significant metal production that is required in the energy transition (Chart 3.3). As energy transition gains pace, there will be an eventual decline in the relative demand for fossil fuels. Low-cost fuel producers, such as in the Middle East, are expected to remain competitive for longer than high-cost peers. The flipside, however, is that the lower fossil fuel prices would impact both the fiscal and current account balances, causing the accumulation of foreign exchange reserves to decline and leading to worsening debt levels (in many cases). In some cases, countries could end up with stranded assets. Hence the clean energy transition, be it at a faster or a slower pace than in the current scenario, necessitates increased economic diversification, making it a mandatory pursuit instead of an optional one.

Chart 3.3. Minimal overlap between net fossil fuel and mining products exporters



Source: Data from the World Trade Organisation

Mongolia: moving towards mining

Mongolia stands out in Chart 3.3. Mongolia's mining sector, its largest, contributes over 90 percent of merchandise exports, 73 percent of foreign direct investment inflows, and 61 percent of total industrial production since 2011 (ADB, 2024)³⁵. Exports are dependent on five major mineral commodities: coal, copper concentrate, monetised gold, iron ore, and crude oil, with coal and copper accounting for more than 75 percent of exports and over a third of government revenue³⁶. Due to heavy reliance on mineral exports to China and the lack of economic diversification, Mongolia has been through multiple boom-bust cycles when faced with volatile commodity prices and/or economic slowdowns in China. With global decarbonization efforts, Mongolia would potentially lose coal exports but could benefit from its copper exports as well as uranium and lithium exports – if the latter components continue to be used in battery production (World Bank, 2024)³⁷. The World Bank (2020) noted that Mongolia consumed 99 cents out of every dollar of mineral output, thereby saving only one cent (eating up intergenerational wealth). The country could learn from the experience of Chile that developed several export industries based on its natural resource endowments, pursued trade liberalization policies, maintained fiscal accountability and established the Economic and Social Stabilisation Fund to avoid the “resource curse” (Villafuerte (2004), Maranon & Kumral (2021)).

35 <https://www.adb.org/sites/default/files/publication/1019676/adb-brief-326-mongolia-mining-supply-chain.pdf>

36 Fitch Ratings 2024. <https://www.fitchratings.com/research/sovereigns/mongolia-commodity-political-cycles-26-03-2024>

37 <https://thedocs.worldbank.org/en/doc/fa307284f25e964690f3781faa0d875b-0070012024/original/Mongolia-CCDR-Overview-ENG.pdf>

Section 3

Table 3.1. Commodity producers, EDI rankings heatmap

	2000	2004	2008	2012	2016	2019	2023
Mexico	105.59	105.56	106.12	107.54	109.84	110.78	110.95
Malaysia	102.86	103.12	101.52	103.37	104.60	105.29	105.18
Australia	103.51	103.44	102.78	103.21	103.26	102.73	103.95
Russian Federation	97.08	97.66	99.81	101.35	101.34	101.96	101.45
New Zealand	101.23	102.78	101.88	101.34	101.29	100.99	101.10
Norway	99.09	100.43	100.90	101.21	103.37	103.00	101.04
Iceland	97.84	99.79	100.64	99.98	100.88	101.04	100.30
United Arab Emirates	91.74	92.56	91.63	95.37	101.73	101.29	99.92
Argentina	101.39	98.13	99.71	101.22	101.10	100.16	99.74
Uruguay	99.30	96.16	97.14	97.21	98.51	98.57	98.76
Colombia	96.44	96.79	96.16	94.77	97.89	97.72	97.19
Chile	96.46	96.46	94.47	94.62	95.53	96.26	95.94
Bahrain	93.34	93.02	91.36	92.21	97.05	95.87	94.45
Saudi Arabia	85.32	87.12	85.96	88.32	95.94	96	93.93
Jamaica	93.96	93.66	94.33	95.75	94.32	93.79	93.93
Peru	94.41	93.61	92.50	92.83	94.05	94.13	93.51
Namibia	94.43	95.00	93.63	94.54	94.54	94.63	93.42
Kenya	90.39	91.55	92.35	94.05	94.27	94.08	93.42
Ecuador	90.43	90.98	89.28	90.40	94.32	93.83	93.39
Qatar	87.45	87.71	86.93	91.46	96.78	95.39	93.30
Paraguay	88.37	88.89	91.05	93.06	93.66	94.81	93.22
Côte d'Ivoire	88.78	91.03	88.86	89.18	92.52	92.66	93.16
Kazakhstan	85.84	89.96	90.32	92.27	94.51	93.43	93.16
Iran	88.62	89.17	89.31	93.07	95.00	95.06	92.73
Bolivia	92.71	90.51	88.10	88.41	91.90	91.39	90.73
Cameroon	87.13	88.36	89.70	89.28	90.57	90.28	90.40
Zambia	90.80	89.42	87.37	89.06	89.98	90.10	89.85
Oman	83.20	83.36	83.32	88.33	91.46	92.68	89.32
Mozambique	90.24	88.55	88.82	89.90	90.67	87.48	89.14
Uganda	86.54	89.65	88.51	90.77	89.86	87.98	89.06
Nigeria	86.47	88.41	89.79	88.24	90.78	91.32	88.32
Kuwait	85.20	86.53	85.63	85.52	90.90	88.62	88.23
Rwanda	86.46	82.63	87.54	87.83	88.01	87.81	87.24
Ghana	81.93	81.10	86.53	86.83	88.02	88.37	86.90
Azerbaijan	81.58	81.88	77.77	80.78	85.67	84.73	85.57
Congo	75.03	81.60	78.93	80.40	90.67	81.95	85.30
Algeria	87.72	84.65	83.96	84.64	87.56	86.58	85.28
Ethiopia	81.70	82.21	83.19	83.40	85.69	86.46	84.34
Mongolia	85.68	85.17	81.57	83.08	85.84	83.71	84.22
Angola	72.77	79.45	76.51	79.58	84.36	81.55	80.03
Niger	85.94	85.92	83.30	82.93	84.50	83.90	79.47





Compared to previous editions, there are no significant changes in the rankings of commodity producers.

Mexico and Malaysia maintain their top positions across most years due to significant economic diversification.

Given the dynamic nature of diversification, other countries are also undertaking transformational policies: notable improvement cases in 2023 compared to 2000 include

Saudi Arabia by more than 30 places

UAE by 24 ranks,

Kazakhstan by 17 places,

Qatar by 12 ranks, and

Oman by 10 ranks.

These changes have occurred over a 24-year time-period.

Some countries have experienced declines: for example, Argentina saw its ranking move from within the fourth quintile (i.e. the top 60–80 percent range) in 2000 to within the third quintile (i.e. 40–60 percent range) in 2023. Algeria remained in the bottom quintile in 2023, with its ranking at 110, down 14 ranks from 2000 influenced by factors such as a highly centralized economy, dominant state-owned enterprises, ongoing trade restrictions (imports), in addition to red tape and reported corruption.

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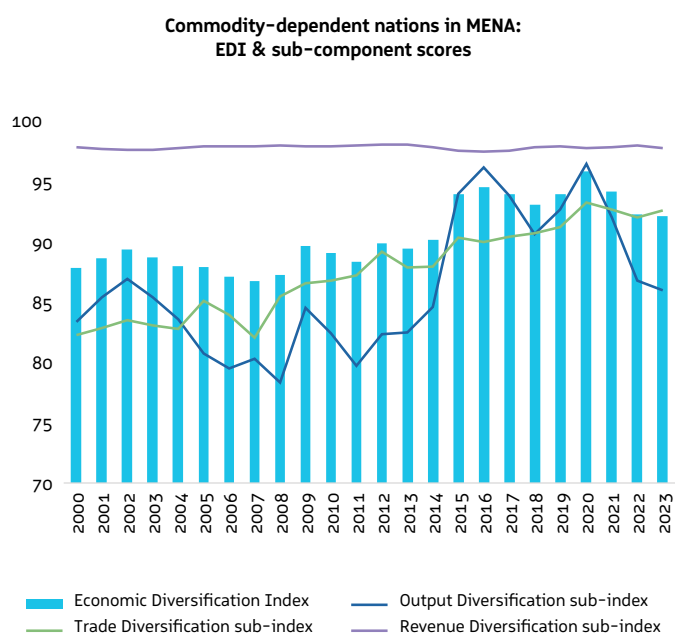
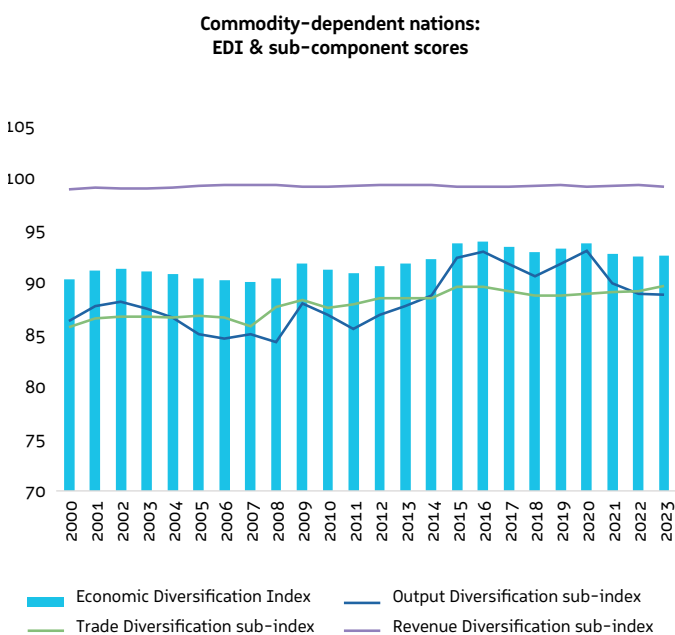
Chart 3.4. Economic Diversification Index across commodity producers



Among commodity producers, those in the Western Europe and East Asia regions are relatively more diversified. While the MENA region (which comprises largely of fossil fuel producers) has diversified the most compared to the base year 2000, it still lags all others except for Sub-Saharan Africa. Sub-Saharan Africa's

commodity exporters clocked in the lowest scores over the 2000-2023 period, whereas only the Eastern Europe & Central Asia region (all fuel exporters) posted an improvement in 2020-2023 as compared to the 2016-2019 pre-pandemic period.

Chart 3.5. Commodity dependent nations' overall EDI performance (& by sub-index)



The EDI scores for commodity producers showed a steady rise, from 90.8 in 2000-2003 to around 93 in pre- and post-pandemic periods (see Chart 3.5, left panel). While output scores were more volatile, revenue diversification scores changed minimally, staying around 99 due to stable tax structures. The latter stems from the fact that tax structures generally tend to remain stable over time, unless new taxes are introduced (e.g. VAT and excise taxes were rolled out in a few GCC countries in 2018. GCC countries are also introducing corporate

taxes, though this will only get reflected in 2024-2025). In contrast, the MENA region’s commodity exporters, significantly increased their average EDI scores from 88.6 in 2000-2003 to 93.6 in 2020-2023, mainly due to the steady pickup in trade scores (up almost 10 points in the initial period versus 2020-2023). The IMF (2022)³⁸ finds that the Middle East and Central Asia region lags in tax collection, estimating that the difference between actual and potential tax collection equals about 14 percent of GDP, excluding oil and gas.

38 <https://www.imf.org/en/Publications/Departmental-Papers-Policy-Papers/Issues/2022/06/30/Revenue-Mobilization-for-a-Resilient-and-Inclusive-Recovery-in-the-Middle-East-and-Central-513773>

OPEC, its allies & EDI scores

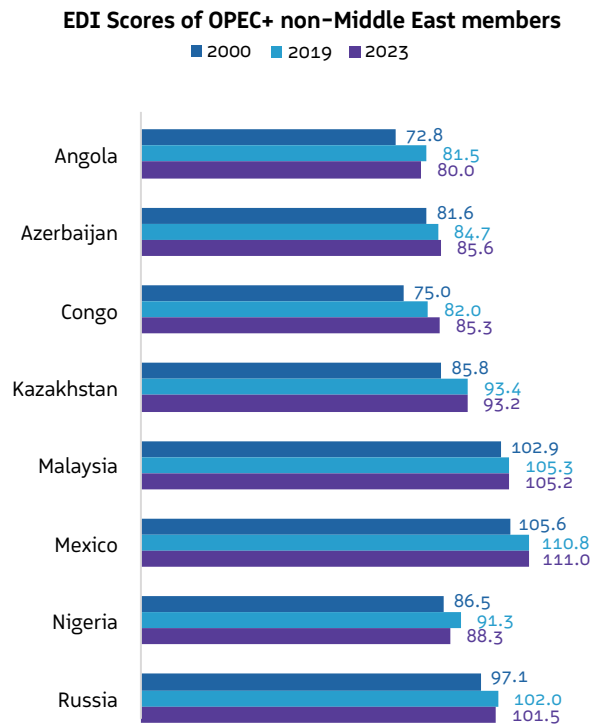
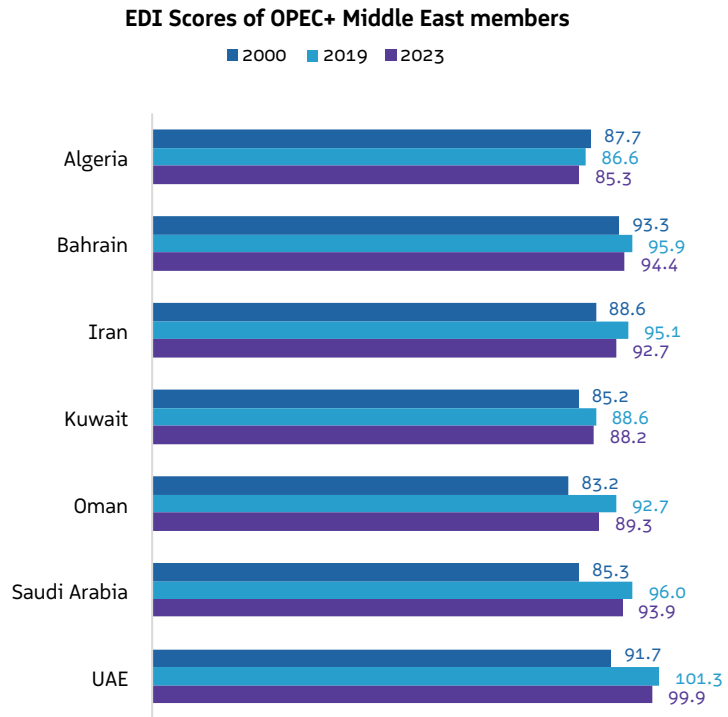
OPEC and OPEC+ countries together contributed to about 56.5 percent of global oil production, or 46.8 million barrels per day in 2023.

Despite the OPEC+ production cuts in November 2022 and May 2023, global crude oil production ticked up due to higher production in the US and Brazil, among others. Chart 3.6 tracks the performance of OPEC+ oil producers' EDI scores, showing Middle East and non-Middle East members separately. Saudi Arabia, the UAE and Oman have gained the most in EDI scores since 2000, with an increase in 2020-2023 scores of over nine points. UAE and Bahrain posted the highest EDI scores among their peers. Among non-Middle East OPEC+ members, Mexico and Malaysia are the highest ranked, both exemplifying successful diversification away from oil even prior to 2000³⁹. Low to middle-income nations such as Angola, Congo and Nigeria have remained consistently within the lowest quartile. These countries, alongside Azerbaijan, share common characteristics such as poor governance scores and/ or low policy stability.

³⁹ Reform measures include horizontal and vertical diversification, forming manufacturing/ investment clusters and investing in human skills among others.



Chart 3.6. Economic Diversification Index Scores across OPEC+ members



Section 3

Commodity Producers EDI Output sub-index

New Zealand, Iceland and Australia have consistently remained in the top 3 ranks in the output diversification sub-index.

Only seven commodity producers registered gains in the output subindex in 2020-2023 compared to the pre-pandemic years, including New Zealand and Malaysia. A faster pace of recovery in the services sector post-pandemic, and growth in medium- and high-tech manufacturing, as well as in the manufacturing value added per capita contributed to these gains. Mozambique, Azerbaijan and Congo were amongst the laggards.

High-income oil producers like Norway, UAE, and Bahrain experienced declines due to a shrinking services sector share of GDP. For instance, Norway's and the UAE's services sector share dropped to 50 percent and 51 percent in 2020-2023 from 57 percent and 56 percent in 2016-2019, while their industry sector shares rose to 38 percent and 48 percent from 30 percent and 44 percent.



Table 3.2. Commodity producers, EDI output sub-index scores, heatmap

	2000- 2003	2004- 2007	2008- 2011	2012- 2015	2016- 2019	2020- 2023
New Zealand	108.2	109.7	109.0	109.4	109.4	109.7
Iceland	103.7	105.1	108.4	109.2	109.1	108.6
Australia	109.9	108.9	108.1	108.9	108.9	107.3
Malaysia	102.6	100.0	99.2	102.0	105.3	106.0
Uruguay	103.4	99.1	100.5	101.5	105.5	104.9
Argentina	105.1	99.7	102.3	104.1	105.4	103.4
Norway	102.7	101.6	102.9	104.4	105.8	101.5
Russia	95.9	94.9	96.6	99.7	100.9	101.0
United Arab Emirates	95.4	89.2	86.6	93.2	102.6	99.8
Bahrain	97.0	94.9	93.5	95.6	102.8	99.5
Colombia	98.7	96.3	95.7	96.6	99.7	99.3
Jamaica	101.6	100.9	103.1	101.7	99.3	98.0
Ecuador	92.8	89.4	89.2	90.7	97.7	97.0
Chile	103.0	92.9	94.5	97.2	99.3	96.5
Paraguay	88.3	89.1	93.0	95.4	96.5	95.4
Qatar	83.7	77.1	78.2	92.7	99.5	95.1
Namibia	93.6	92.3	91.9	93.5	95.3	93.5
Côte d'Ivoire	83.9	85.4	83.5	86.6	92.3	92.5
Peru	96.6	91.2	90.0	93.1	95.3	91.7
Kazakhstan	83.8	82.5	84.8	91.5	92.8	91.0
Kenya	85.1	86.7	90.7	91.3	91.0	89.8
Saudi Arabia	80.2	75.2	76.1	81.8	94.1	89.7
Bolivia	89.6	85.1	84.2	84.1	89.7	89.3
Iran	89.9	86.7	91.0	93.3	92.2	88.5
Oman	72.9	71.5	75.9	79.4	89.1	88.2
Cameroon	84.5	86.6	87.1	87.3	87.6	87.7
Nigeria	78.9	82.4	85.6	92.0	93.2	86.1
Kuwait	83.6	80.5	74.3	74.4	87.7	85.4
Zambia	88.2	81.3	82.6	86.8	87.0	85.1
Ghana	63.0	69.6	76.9	76.9	80.9	80.6
Uganda	77.1	78.8	78.9	80.4	80.9	80.3
Rwanda	78.0	78.5	82.7	81.9	81.3	80.1
Algeria	79.6	73.1	74.4	76.4	78.8	76.3
Mozambique	86.0	84.8	80.8	78.9	74.6	76.2
Azerbaijan	66.3	59.0	63.0	70.3	73.8	75.3
Mongolia	78.4	67.8	69.3	78.0	76.6	73.4
Congo	58.0	58.8	55.8	62.2	69.3	72.7
Angola	58.9	62.8	65.4	72.9	73.5	69.4
Niger	78.6	75.5	71.7	71.8	72.3	69.2
Ethiopia	66.6	65.2	65.8	68.0	70.5	68.9

Lowest Score  Highest Score

Commodity Producers

EDI Trade sub-index

The WTO reports that global trade volume declined by 1.2 percent year-on-year in 2023, following an expansion of three percent in 2022, despite the war in Ukraine. In 2023, import demand fell in most regions, due in part to falling prices for commodities such as natural gas. However, the fuel-exporting Middle East & CIS regions⁴⁰ did not experience this decline. Export volumes were lower in Europe and Asia due to weaker demand. In the MENA region, countries such as Iran and Qatar have benefited from a surge in services exports, particularly transport and tourism. In 2023, both the UAE and Saudi Arabia were among the leading global exporters and importers in commercial services trade⁴¹.

This improvement in trade scores can be traced back to lower exports concentration as well as a change in the composition of exports, especially during the post-pandemic years. The UAE's trade sub-index notably increased, due to accelerated pace of trade agreements via the Comprehensive Economic and Partnership Agreements (CEPA) , and a near doubling of its non-oil exports between 2017 and 2023. As another successful example in the region, Oman has reduced its fuel exports as a share of total from a high 90 percent in the early 2000s to less than three-fourths in recent years.

On the other end of the spectrum, Mongolia's trade sub-index has declined from 84.4 in the 2000-2004 period to 76.4 in the post-pandemic years, largely due to the surge in minerals and fuel exports, with fuel exports making up 54 percent of total exports in 2022, from single digit readings in early 2000s.

⁴⁰ CIS refers to the Commonwealth of Independent States consisting of Armenia, Azerbaijan, Belarus, Kazakhstan, Kirghizstan, Moldavia, Uzbekistan, Russia, Tajikistan, Turkmenistan, Ukraine and Georgia.

⁴¹ UAE ranked 9th largest and Saudi Arabia 20th largest exporters of commercial services in 2023, when including intra-EU trade.

Table 3.3. Commodity producers, EDI Trade sub-index scores, heatmap

	2000-2003	2004-2007	2008-2011	2012-2015	2016-2019	2020-2023
Malaysia	108.2	109.9	109.7	110.2	110.6	110.3
Russia	96.1	98.4	102.4	104.9	104.0	105.6
United Arab Emirates	84.2	85.4	93.0	99.3	102.7	103.5
Iran	81.2	83.7	86.5	89.7	91.9	98.1
Norway	94.8	95.7	98.5	99.0	99.0	97.9
Australia	98.3	98.3	97.9	98.9	98.5	97.8
Saudi Arabia	84.7	87.3	90.4	93.2	96.6	96.4
Argentina	95.5	96.3	98.7	98.9	97.3	95.3
Qatar	83.1	85.2	86.0	86.8	89.8	94.5
Colombia	93.5	95.3	92.2	91.0	93.3	94.2
Kenya	88.9	89.3	92.5	92.2	91.8	91.6
Oman	85.4	82.0	86.9	88.0	88.6	91.4
New Zealand	94.5	94.6	93.3	92.5	92.1	91.4
Bahrain	86.1	83.6	85.6	86.7	88.9	90.9
Uruguay	92.6	90.9	91.8	91.4	90.4	90.2
Kazakhstan	84.4	86.5	87.5	88.0	89.2	89.5
Congo	81.7	84.3	87.6	91.7	90.7	88.4
Chile	88.9	87.7	88.1	88.8	88.3	88.3
Namibia	89.4	89.4	92.5	92.1	88.3	87.9
Iceland	88.2	91.6	90.3	88.4	88.7	87.9
Côte d'Ivoire	87.2	89.1	86.1	89.3	88.0	87.9
Paraguay	78.6	82.2	84.0	86.2	88.1	87.8
Ethiopia	83.4	85.3	89.8	88.8	90.5	87.7
Peru	88.2	87.0	87.8	88.5	86.9	87.2
Mozambique	83.6	82.3	86.6	90.7	88.9	87.0
Nigeria	84.8	80.8	82.0	82.2	82.9	86.7
Uganda	87.4	89.1	90.2	91.1	87.8	86.7
Ecuador	85.5	82.8	83.9	83.9	85.0	85.2
Cameroon	82.3	78.7	84.8	83.3	84.8	84.4
Ghana	84.7	83.6	86.5	87.1	85.0	84.4
Azerbaijan	79.4	81.2	77.0	77.9	80.5	84.0
Bolivia	86.4	82.6	81.9	81.7	83.9	83.7
Kuwait	77.9	80.5	82.7	84.4	83.2	83.4
Rwanda	82.6	79.9	83.4	83.2	82.4	83.1
Algeria	81.1	79.9	81.1	82.4	83.1	82.9
Zambia	83.0	80.8	80.1	82.0	82.2	81.9
Jamaica	80.0	78.5	81.7	81.4	80.1	81.4
Mongolia	84.4	79.6	75.9	75.1	76.3	76.4
Niger	80.2	83.6	80.3	81.1	82.9	76.3
Angola	74.0	72.9	73.6	75.7	76.5	76.1

Lowest Score  Highest Score

Section 3

Commodity Producers EDI Revenue sub-index

Among commodity producers, Norway and Iceland have the highest scores in the revenue subindex in 2023, ranking fourth and fifth globally. They stand among only 11 countries with scores surpassing 100.

On the other hand, Bahrain lines up close to the bottom of the revenue diversification table in 2020–2023: it was ranked last in 2023, scoring 96.8 versus Denmark’s top score of 106.0.

Norway’s tax revenue as a percent of GDP stands out high, at over 30 percent compared to Bahrain’s 3 percent – although this itself is an improvement for Bahrain, following its introduction of VAT in 2018.

In recent years, GCC countries have been diversifying their tax structure: for example, the UAE recently introduced a federal corporate income tax of nine percent. However, there is still room for improvement: for instance, Kuwait and Qatar are yet to introduce the VAT.



Table 3.4. Commodity producers, EDI revenue sub-index scores, heatmap

	2000-2003	2004-2007	2008-2011	2012-2015	2016-2019	2020-2023
Norway	103.7	103.8	103.5	103.0	102.9	103.3
Iceland	103.2	104.1	102.7	102.9	103.4	102.9
New Zealand	102.7	102.8	102.0	101.8	101.9	102.1
Jamaica	100.1	100.6	101.0	101.2	101.8	101.7
Australia	102.1	102.1	101.5	101.5	101.5	101.5
Chile	99.9	100.4	100.1	100.2	100.3	100.4
Russia	100.7	100.3	99.8	99.8	100.3	100.3
Namibia	99.6	99.6	100.0	100.4	100.3	100.3
Mongolia	99.9	101.4	100.2	99.3	99.6	100.1
Argentina	99.1	100.0	100.2	100.2	100.0	100.1
Uruguay	99.8	100.1	99.8	99.8	99.9	100.0
Mozambique	97.9	98.3	99.1	100.2	100.0	99.9
Colombia	98.9	99.3	99.4	99.8	100.0	99.9
Bolivia	99.8	100.3	100.6	101.1	100.3	99.8
Rwanda	98.3	98.4	98.9	99.5	99.7	99.5
Peru	99.2	99.5	99.6	99.6	99.2	99.5
Azerbaijan	99.1	99.3	99.8	99.5	99.4	99.4
Zambia	99.6	99.4	98.9	99.2	99.2	99.3
United Arab Emirates	98.8	99.5	99.9	99.4	98.7	99.1
Kazakhstan	99.3	100.3	100.2	99.6	98.8	99.0
Ecuador	98.3	98.4	98.9	99.2	99.1	98.9
Kenya	98.5	98.8	99.0	99.0	99.1	98.8
Uganda	98.2	98.2	97.9	98.1	98.6	98.7
Algeria	98.4	98.4	98.5	98.5	98.8	98.6
Cameroon	98.2	98.4	98.2	98.5	98.5	98.5
Malaysia	98.9	98.9	99.0	99.1	98.6	98.4
Ghana	97.3	97.6	97.7	98.0	98.4	98.3
Paraguay	97.8	97.9	98.0	98.1	98.2	98.1
Saudi Arabia	97.4	97.8	97.7	97.6	97.6	98.1
Kuwait	98.1	98.3	98.3	98.1	97.9	97.9
Congo	97.7	98.0	98.3	98.4	98.0	97.9
Côte d'Ivoire	97.0	97.3	97.5	97.4	97.8	97.9
Angola	98.3	97.9	98.4	97.9	97.4	97.8
Niger	97.0	97.4	97.4	98.0	97.8	97.6
Ethiopia	97.7	97.7	97.6	97.9	97.9	97.6
Oman	97.4	97.4	97.4	97.4	97.2	97.6
Qatar	97.2	97.5	97.9	98.2	97.4	97.4
Bahrain	97.0	96.8	96.7	96.7	96.7	97.0
Iran	97.1	97.1	97.1	97.1	97.3	96.9
Nigeria	97.7	97.4	97.1	97.0	96.7	96.9

Lowest Score  Highest Score

Section 3

Performance of the GCC

The Economic Diversification Index (EDI) scores for the GCC indicates that the UAE had a higher score than the other countries of the region in both 2023 and the period from 2020-2023, although this score was lower compared to its pre-pandemic level scores in 2019 (see Chart 3.7).

Over time, **Bahrain and UAE** have been the most diversified countries, with EDI scores of both moving in tandem until 2011 after which their paths diverged.

The EDI scores of **Oman and Saudi Arabia** have increased the most during the initial four-year period of 2000-2003.

Additionally, **Oman and Qatar**'s EDI increased in 2020-2023 versus pre-pandemic levels, with most gains accruing from gains in their trade sub-index scores.

Chart 3.7. EDI scores across the GCC

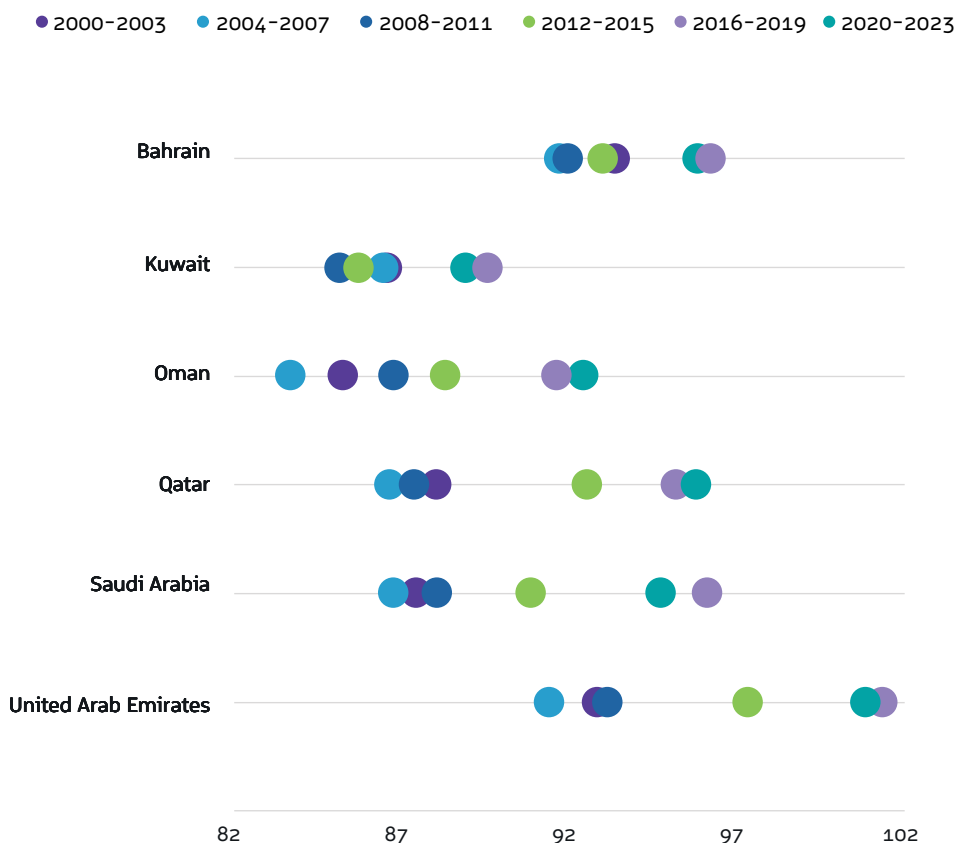
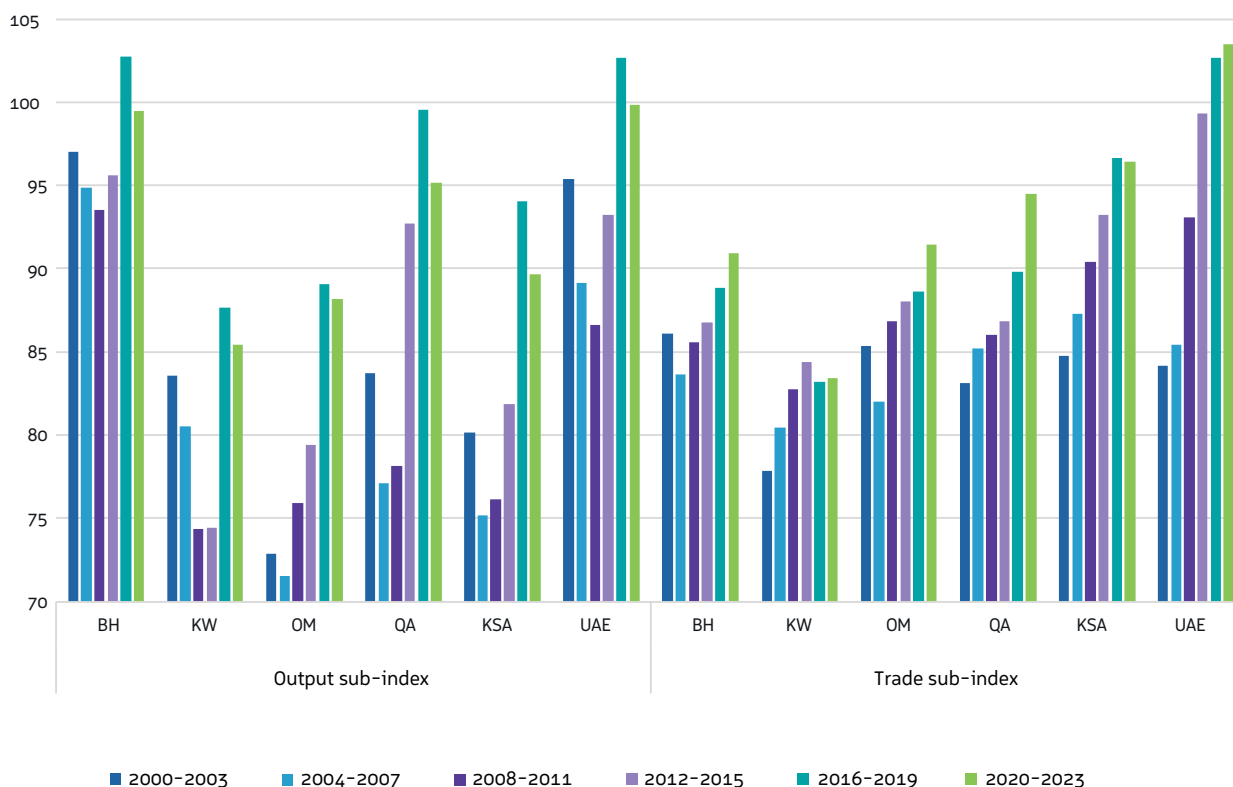


Chart 3.8. GCC Economic Diversification: output and trade sub-indices scores



A breakdown indicates that Bahrain and the UAE have both achieved high scores in the output sub-index in recent years, with the UAE outperforming in the trade sub-index (Chart 3.8).

Kuwait lags its peers in all sub-indices, making it the lowest scoring among the GCC countries.

In the post-pandemic years, the GCC nations have implemented various reforms to boost non-oil sector activity, albeit at a varying pace. These reforms include a new investment code in Saudi Arabia, privatisation efforts in the UAE and Oman, improvements to regulatory and business environments and labour market reforms such as through the provision of long-term visas, increased labour market flexibility, support for greater female labour force participation and encouragement of nationals’ employment in the private sector. These reforms, along with the pursuit of big projects have made the GCC more resilient. For instance, the World cup in Qatar has supported its growth and encouraged investments, (Kularatne, Miyajima and Muir, 2024); the giga projects, FDI-led activity and gradual opening up of previously closed sectors in Saudi Arabia (Moreau, and Aligishiev, 2024) and non-oil led growth in trade in Saudi Arabia and UAE, have all contributed to economic diversification.

Section 3

The emergence of “new” sectors (pursuant to digitalization policies and use of AI) can potentially lead to productivity improvements. Verdier et al (2022) find that due to extensive tax exemptions⁴² and low tax rates in the GCC, tax potential in hydrocarbon economies ranges from 14 to 25 percent of nonhydrocarbon GDP, compared to an average of 48 percent in advanced economies and 30 percent in emerging market economies. The introduction of new sources of revenue, such as the UAE’s corporate tax, the introduction of VAT in Kuwait and Qatar, should help the GCC improve its revenue diversification scores (IMF 2024).

Going forward, the energy transition will also provide the GCC with ample opportunities.

The GCC has been leveraging solar and wind power to diversify into various segments within renewable energy. Given, solar photovoltaic (PV) systems emerge as the most cost-effective option for power production in the GCC, outpacing natural gas, liquefied natural gas, oil, coal and nuclear. Further, the region has been implementing innovative solutions covering renewable-energy based desalination, district cooling, desert agriculture, solar-powered data centres, biofuels for aviation and production of green and blue hydrogen among others.

GCC countries have also been investing in other countries to support energy transition and achieve energy security⁴³. This not only aids the economic diversification efforts but also accelerates the shift towards a greener economy. According to the World Bank⁴⁴ implementing a green growth strategy in the GCC could increase GDP to over USD 13 trillion by 2050 compared to USD 6 trillion under a business-as-usual scenario.

Job creation is an additional benefit: the International Renewable Energy Agency (IRENA⁴⁵ forecasts that of the 40 million jobs created worldwide in renewable energy by 2050 - a three-fold increase from 2021- the MENA region will account for 6 percent, with nearly two-thirds of the jobs in solar (PV & CSP) sectors. Even if the energy transition slows in the near term due to geopolitical tensions, declining investments and slow progress in innovative solutions, the demand for fuel from the GCC will likely surpass demand from other fuel producers. This is attributable to two advantages:

first, the cost of hydrocarbon production. Onshore Middle East offers the cheapest source of new upstream oil production, with an average breakeven price of just USD 27 per barrel of Brent crude compared to an average breakeven cost of USD 47 per barrel⁴⁶ for a non-OPEC oil project.

Second, GCC nations also focus on maintaining relatively low carbon intensity.

42 Corporate income tax exemptions are widely used to encourage investment, such as in special economic zones. This is likely to change with the adoption of a global minimum corporate tax.

43 Of GCC’s total investment of USD 3.6bn in renewable projects globally during the period 2016-2020, the largest share was in the MENA region (USD 1.4bn), followed by South Asia (USD 1.0bn) and Sub-Saharan Africa (USD 388mn). Source: IRENA report on Renewable Energy Markets GCC 2023.

44 World Bank report “Gulf Economic Update — Green Growth Opportunities in the GCC”, issued in Oct 2022. <https://www.worldbank.org/en/country/gcc/publication/gulf-economic-update-october-2022>

45 IRENA World Energy Transitions Outlook 2023. Available at: https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2023/Jun/IRENA_World_energy_transitions_outlook_2023.pdf

46 Source: Rystad Energy. <https://www.ogj.com/general-interest/economics-markets/article/55171807/rystad-energy-cost-of-new-upstream-oil-projects-rises-further>


The GCC countries are currently deploying industrial policies to support economic diversification.

These industrial policies should be imbued with climate adaptation and climate risk mitigation measures and designed to be Green industrial policies. The GCC's experience with developing and using climate tech can enable the export of technologies such as desalination, district cooling and desert agriculture. Active investments in both "new" and "old" energy -solar, hydrogen, nuclear complementing oil and gas - will offer the GCC a new footing in accelerating diversification efforts while meeting its climate commitments.

Chapter 4

Risks, rewards and the way forward





Economic diversification is a gradual process. No country can shift from commodity dependence to high diversification in just a few years. It is an uphill task, as progress requires long-term reforms in multiple areas.

Output-related reforms could include a sectoral transition such as the use of AgriTech or precision farming to maximize yields, industrial policy reforms or the opening up of the services sector. Evidence of progress in trade diversification results from tapping new markets and exporting new products in addition to reducing non-tariff barriers and improving trade-related infrastructure and logistics. Tax reform – including introduction of new taxes, expansion of the tax base and/ or consolidation of fees and charges – has been the most common means to increase revenue diversification, supported by improvements in tax administration. Increased digitalization, a positive outcome from the pandemic period, can aid these efforts through the new technologies such as AI to boost productivity, using fintech for greater financial inclusion, increased cross-border trade in digital goods and services, acceptance of electronic logistics to improve cross-border mobility and trade and electronic invoicing for increasing tax efficiency are but a few examples. Such reforms, however, need to be accompanied by education reforms, efficient labour markets, strong regional economic and financial linkages and integration as well as high quality physical and digital infrastructure.

Section 4

The global economy is currently adapting to growing trade and investment fragmentation, an unfolding AI transformation and increasingly severe climate change problem (2024 was the first year above 1.5C of global warming).

While the global economy adjusts to a new world order, countries face varied policy challenges and priorities, ranging from burgeoning debt and interest payments to climate mitigation policies. While commodity producers, like OPEC+ countries, may not have a choice when it comes to increasing diversification due to low oil prices, others benefit from high prices for resources such as Latin America, the stronghold for copper reserves. Critical minerals, which are fundamentally different from fossil fuels, will remain in demand so long as energy transition is needed to achieve climate commitment targets. Critical and rare minerals supply chains are vulnerable to export restrictions and geopolitical risks given that a few countries and companies dominate both the mining and processing stages. To avoid the pitfalls of commodity dependence, such countries should move up the global value chain. For example, Latin America could invest in becoming a major player in the mining and processing of minerals).

The World Economic Forum's Global Risks Report 2025 highlights environmental concerns, with "biodiversity loss and ecosystem collapse" ranked the second-most concerning risk by respondents over a 10-year horizon – with the possibility to exacerbate social inequalities and economic instability. Climate change is forcing nations to hasten low-carbon energy transition plans leading to policy and consumer behavioural shifts away from fossil fuels. Geopolitical forces are reconfiguring the global energy landscape.

The GCC countries are emerging as "Middle Powers" in a globally fragmented world, particularly due to their status as major energy producers in both oil & gas and renewable energy. In addition to its immense oil and gas reserves (more than 40 percent of oil reserves and more than 20 percent of natural gas reserves) and its position in the global sunbelt, the UAE's Mubadala was one of the largest state-owned investors in renewable energy in 2023. In 2024, it was recognized as the top global sovereign investor in 2024, according to GlobalSWF.

GCC countries are also currently deploying industrial policies to support economic diversification. It is critical that these policies are green by design and include climate adaptation and risk mitigation measures.

Climate risk mitigation includes energy transition investment and fossil fuel asset de-risking, focused on clean energy, electric mobility, carbon capture and storage and clean tech. These innovations can be led by the private sector.

Climate-resilient infrastructure can be developed through public investment, public-private partnerships, or market-based incentives like carbon pricing. Examples include green hydrogen, solar-powered desalination and district cooling. **The GCC already has a comparative advantage in these exportable technologies, highlighting additional avenues to diversify.**



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Appendix A

Why? Components, Methodology⁴⁷





Economic diversification is key to addressing these macroeconomic stability, economic growth, and development issues.

To address these risks, oil & gas exporters and other commodity exporters have focused on economic diversification as a policy priority and objective of their economic strategies.

Economic diversification leads to more balanced economies and is key to sustained economic growth and development. For the GCC and other fossil fuel producers and exporters it would help reduce exposure to volatility and uncertainty in the global oil market and avoid the related boom-bust cycles. More diversified economies are less volatile in terms of outputs, while lower output volatility is associated with lower overall economic uncertainty for households, businesses and governments and higher economic growth prospects.

⁴⁷ The detailed version of this Appendix can be found in the Global Economic Diversification Index 2022 report, Chapters 1 to 3. Access the report online <https://economicdiversification.com>

Appendix A

Economic diversification can further support:

- A. Re-orienting economies towards more knowledge based and innovation-led activities.
- B. Greater private sector activity, including in the tradables sector.
- C. Lead to greater skill diversity in the labour force, facilitate mobility and lower transition costs, job creation, raise productivity growth and generate more sustainable growth.
- D. Provide more sustainable public finances that are less dependent on revenues from natural resources.
- E. Encourage private sector investment given more stable economic growth rates.
- F. Generate greater overall macroeconomic stability including of disposable income and consumption.

Economic diversification is a multi-dimensional, complex and dynamic phenomenon, involving the diversification of economic activity, the diversification of international trade (products, services and countries) as well as the diversification of government revenues away from a dependence on natural resource or commodity revenue: the three components of the Economic Diversification Index.

A. COMPONENTS

B. TRADE DIVERSIFICATION

C. GOVERNMENT REVENUE DIVERSIFICATION

A. COMPONENTS

The basis for the output or activity diversification stems from the fact that structural transformation from the natural resource sector to sectors that generate higher value added and higher productivity is considered imperative for a sustainable development path. To this end, such sectors can be a source of long-term growth only if these are able to generate a sustained increase in productivity over time. Identifying the sectors of economic activity – agriculture, industry/ manufacturing, and services – is the main set of indicators within this category. The share of each sector's value added to GDP has been used, so that comparisons can be made across countries and time. Many oil-exporting nations group petroleum/ mining and quarrying under the broader industry category, so, additional indicators – manufacturing value added per capita and medium- and high-tech manufacturing value added in total manufacturing value added – are used to gauge industrialization intensity and a shift to high-tech manufacturing.

Production/ Activity Diversification Indicators

Real GDP

Agriculture value added as a percentage of GDP

Gross fixed capital formation as a percentage of GDP

Industry value added as a percentage of GDP

Manufacturing value added as a percentage of GDP

Resource rents as a percentage of GDP

Services value added as a percentage of GDP

Medium- and high-technology manufacturing value added share in total manufacturing value added

Manufacturing value added per capita

B. Trade diversification

The diversification is intrinsically linked to output diversification. The combination of a high concentration of exports (by product, commodity, or country) and a large share of commodities in those exports has important implications for development. Trade diversification can occur via: (1) growth in existing “traditional” export products accompanied by quality improvements and higher value-added transformations; (2) export of existing products to new markets; and (3) growth in exports of new products to new markets, or a combination. Given that several energy exporters “diversified” their export baskets by building capacity and investing in the production of energy-intensive products that use crude petroleum or natural gas as inputs (e.g., petrochemicals, refined fuels, aluminum), the discussion of diversification needs to be expanded further than trade.

C. GOVERNMENT REVENUE DIVERSIFICATION

Government revenue diversification is another dimension of a nation’s extent of diversification. Countries with limited economic diversification typically also have a highly concentrated government revenue (tax and non-tax) structures, with a high dependence on limited sources of revenue, such as trade and natural resource taxation. Governments with a highly concentrated tax/revenue base dependent on natural resource revenues become fiscally constrained, with limited fiscal space to address economic shocks or undertake investment. The literature on the procyclical nature of fiscal policy in commodity-producing nations is clear: public spending increases (declines) during periods of higher (lower) commodity prices leading to pro-cyclical fiscality; lack of automatic stabilizers and low non-oil tax bases add to the problem.

Trade Diversification Indicators

Total value of exports
Fuel exports as a percentage of merchandise exports
Export market concentration index (Hirschman-Herfindal Index, HHI)
Total value of imports
Manufactured exports as a percentage of total merchandise exports
Medium- and high-technology manufactured exports as a percentage of manufactured exports
Merchandise exports as a percentage of GDP
Total value of services exports
Export product concentration index
Import product concentration index

Government Revenue Diversification Indicators

Excise tax revenue as a percentage of GDP
Income tax revenue as a percentage of GDP
Goods & services tax revenue as a percentage of GDP
Tax revenue as a percentage of GDP
Total revenue as a percentage of GDP
Trade revenue as a percentage of GDP

Methodology

The econometric setting for the EDI is a panel with a significant number of cross-sections: this consists of a large number of indicator series and relatively short time series. The objective is to design a weighting scheme such that the large number of indicators can be reduced to a smaller number of diversification indices: potentially three (output, trade, and government revenue), and/or one (diversification).

In developing an index like the EDI, a key requirement is that scores be comparable across countries and through time.

As such, each EDI observation must be based on the same underlying indicators. While many statistical techniques can deal easily with missing values for one of a set of indicators, the case of a multi-indicator index is different. To take a simple example, consider an index based on two indicators, A and B, which are aggregated by taking the arithmetic (simple) mean. If B is missing for one country, then the mean is simply A. If A is missing for another country, then the mean is simply B. If both series are observed for a third country, then the mean is $(A+B)/2$. So, the three index scores in this case are not comparable, even if all variables are measured on the same scale: each observation is based on different information sets.

In the context of the EDI, this requirement would mean that the index could only be calculated for those country and year pairs where all component indicators are observed. This constraint is a major one, which would significantly reduce coverage in both the country and time dimensions.

To ensure the broadest coverage of countries and years in this exercise, the dataset is pre-treated using linear interpolation and extrapolation to fill in missing observations to the extent possible⁴⁸.

The output is hence a complete input dataset for 115 countries for the 2000–2023 period.

The Principal Components Analysis⁴⁹, a standard dimensionality-reduction technique, was used to generate the results. The strategy for applying PCA to the detailed indicators relied on two steps. The first was to use PCA to produce the three sub-indices: output, trade, and revenue⁵⁰. The second was then to aggregate the three sub-indices into an overall EDI by taking the arithmetic (simple) mean.

⁴⁸ Where linear interpolation and extrapolation could not provide appropriate readings, the series mean was used.

⁴⁹ An indicator produced using PCA is the linear combination of the indicators that accounts for the maximum possible proportion of the total variance in the set of underlying indicators.

⁵⁰ Indices are produced using the standard sum of squares approach, and are converted from variables with mean zero and unit standard deviation to variables with mean 100 and standard deviation 10.

The rationale for using the simple mean in the second stage is that it is the simplest and most transparent approach, and there is no a priori reason for believing that any one of the three sub-indices is more important to the overall measurement of economic diversification than the others. The factor loadings produced by the PCA are shown below.

The loadings in Table A.4 show that real GDP, manufacturing and services as a percentage of GDP, medium and high technology manufacturing as a percentage of GDP, and manufacturing value added per capita correlate positively with the EDI output sub-index, while the remaining variables correlate negatively. This finding is intuitive in most cases, but the contrast between industry and services shows that the data tend to support the importance of the services sector as a determinant of output diversification.

Table A.4. PCA loadings for the EDI output sub-index

Variable	Loading
Real GDP	0.2389
Agriculture value added as a percentage of GDP	-0.3798
Gross fixed capital formation as a percentage of GDP	-0.0693
Industry value added as a percentage of GDP	-0.1851
Manufacturing value added as a percentage of GDP	0.2227
Resource rents as a percentage of GDP	-0.3377
Services value added as a percentage of GDP	0.4696
Medium and high technology manufacturing value added share in total manufacturing value added	0.4372
Manufacturing value added per capita	0.4293

Appendix A

The loadings in Table A.5 shows that export market concentration, product concentration of exports and imports, and fuel exports are all negatively correlated with trade diversification, but the remaining variables are positively correlated.

This result is intuitive, as the positively correlated variables all capture aspects of country performance that suggest deeper integration into the global trade system. The case of fuel exports is important, as it suggests that countries with significant reliance on that sector tend to be less diversified from a trade point of view. It therefore complements the finding on revenue diversification (in Table A.6), where resource rents (for instance, from extractive industries) are negatively correlated with revenue diversification.

Table A.5. PCA loadings for the EDI trade sub-index

Variable	Loading
Total value of exports	0.4701
Fuel exports as percentage of merchandise exports	-0.0087
Export market concentration index (Hirschman-Herfindahl Index, HHI)	-0.1213
Total value of imports	0.4735
Manufactured exports as a percentage of total merchandise exports	0.3207
Medium and high technology manufactured exports as a percentage of total manufactured exports	0.3634
Merchandise trade as a percentage of GDP	0.0465
Total value of services exports	0.4580
Export product concentration index	-0.2981
Import product concentration index	-0.0656

Table A.6. PCA loadings for the EDI revenue sub-index

Variable	Loading
Excise tax revenue as a percentage of GDP	0.3682
Income tax revenue as a percentage of GDP	0.4395
Goods and services tax revenue as a percentage of GDP	0.4695
Tax revenue as a percentage of GDP	0.5057
Total revenue as a percentage of GDP	0.4198
Trade revenue as a percentage of GDP	-0.1373

Table A.7 provides the loadings for the trade-plus (trade+) sub-index, which includes three additional indicators that capture activity related to the digital economy. All three digital indicators are seen to be positively correlated with trade diversification.

Table A.7. PCA loadings for the trade+ sub-index (including digital indicators)

Variable	Loading
Total value of exports	0.4048
Fuel exports as percentage of merchandise exports	-0.0153
Export market concentration index (Hirschman-Herfindahl Index, HHI)	-0.1474
Total value of imports	0.4032
Manufactured exports as a percentage of total merchandise exports	0.3294
Medium and high technology manufactured exports as a percentage of total manufactured exports	0.3595
Merchandise trade as a percentage of GDP	0.0812
Total value of services exports	0.3933
Export product concentration index	-0.2830
Import product concentration index	-0.0527
ICT services as a % of trade in services	0.0967
Exports of ICT Goods as a % of total exports	0.2617
Digitally deliverable services exports as a % of total trade in services	0.3031

Appendix B

Data Indicators & Metadata



Table B.1. EDI sub-indicators

Sub Index	Variables	Sources (latest available year)
OUTPUT	Real GDP	WDI (2023)
	Agriculture, value added, as a percentage of GDP	WDI (2023)
	Gross fixed capital formation as a percentage of GDP	WDI (2023)
	Industry as a percentage of GDP	WDI (2023)
	Manufacturing value added, as a percentage of GDP	WDI (2023)
	Total natural resource rents as a percentage of GDP	WDI (2021)
	Services value added, as a percentage of GDP	WDI (2023)
	Medium and high technology manufacturing value added share in total manufacturing value added	UNIDO CIP (2022)
	Manufacturing value added per capita	UNIDO CIP (2022)
TRADE	Total value of exports	WDI (2023)
	Fuel exports as percentage of merchandise exports	WDI (2023)
	Export market concentration index (Hirschman-Herfindahl Index, HHI)	WDI (2022)
	Total value of imports	WDI (2023)
	Manufactured exports as a percentage of total merchandise exports	WDI (2023)
	Medium and high technology manufactured exports as a percentage of total manufactured exports	UNIDO CIP (2022)
	Merchandise trade as a percentage of GDP	WDI (2023)
	Total value of services exports	WDI (2023)
	Export product concentration index	UNCTAD (2023)
	Import product concentration index	UNCTAD (2023)
REVENUE ⁵¹	Excise tax revenue as a percentage of GDP	IMF (2022)
	Income tax revenue as a percentage of GDP	IMF (2022)
	Goods and services tax revenue as a percentage of GDP	IMF (2022)
	Tax revenue as a percentage of GDP	IMF (2022)
	Total revenue as a percentage of GDP	IMF (2022)
	Trade revenue as a percentage of GDP	IMF (2022)

Table B.2. EDI+ sub-indicators

Sub Index	Variables	Sources (latest available year)
TRADE	Digitally deliverable services exports as a % of total trade in services	UNCTAD (2023)
	Exports of ICT Goods as a % of Total Exports	UNCTAD (2023)
	ICT services as a % of trade in services	UNCTAD (2023)

⁵¹ Data for indicators in the revenue series have been replaced with latest data from IMF's WoRLD dataset November 2024 release. Source link: <https://www.imf.org/en/Topics/fiscal-policies/world-revenue-longitudinal-database>. As a general rule, we replace all the existing series with the new data;

Except in cases where there is a series missing more than 70% data points, and where we previously had a somewhat complete series (using IMF WORLD 2022 data release).

Appendix C

Regional, Income & Commodity Producers Groupings

Table C.1. Regional Grouping*

East Asia & the Pacific	Eastern Europe & Central Asia	Latam & Caribbean	MENA	North America	South Asia	Sub-Saharan Africa	Western Europe
Australia	Albania	Argentina	Algeria	Canada	Bangladesh	Angola	Austria
Cambodia	Armenia	Bolivia	Bahrain	United States of America	India	Botswana	Belgium
China	Azerbaijan	Brazil	Egypt		Nepal	Cote d'Ivoire	Cyprus
Indonesia	Belarus	Chile	Iran		Pakistan	Cameroon	Denmark
Japan	Bosnia	Colombia	Israel		Sri Lanka	Congo	Finland
Korea, Republic of	Croatia	Costa Rica	Jordan			Eswatini	France
Malaysia	Czechia	Ecuador	Kuwait			Ethiopia	Germany
Mongolia	Estonia	El Salvador	Lebanon			Gambia	Greece
New Zealand	Georgia	Guatemala	Morocco			Ghana	Iceland
Philippines	Hungary	Honduras	Oman			Kenya	Ireland
Singapore	Kazakhstan	Jamaica	Qatar			Madagascar	Italy
Thailand	Kyrgyzstan	Mexico	Saudi Arabia			Mauritius	Luxembourg
Vietnam	Latvia	Nicaragua	Turkey			Mozambique	Malta
	Lithuania	Panama	Tunisia			Namibia	Netherlands
	Moldova, Republic of	Paraguay	United Arab Emirates			Niger	Norway
	Poland	Peru				Nigeria	Portugal
	Romania	Uruguay				Rwanda	Spain
	Russian Federation					Senegal	Sweden
	Slovakia					South Africa	Switzerland
	Slovenia					Tanzania	United Kingdom
	Ukraine					Uganda	
						Zambia	

* World Bank classifies Malta as part of MENA & Turkey as Europe

* IMF classifies Malta as part of Euro area & Turkey as Emerging Europe

Appendix C

Table C.2. Income Grouping **

High income	Low income	Lower middle income	Upper middle income
Australia	Ethiopia	Angola	Albania
Austria	Gambia	Bangladesh	Algeria
Bahrain	Madagascar	Bolivia	Argentina
Belgium	Mozambique	Cambodia	Armenia
Canada	Niger	Cameroon	Azerbaijan
Chile	Rwanda	Congo, Rep.	Belarus
Croatia	Uganda	Côte d'Ivoire	Bosnia
Cyprus		Egypt, Arab Rep.	Botswana
Czech Republic		Eswatini	Brazil
Denmark		Ghana	China
Estonia		Honduras	Colombia
Finland		India	Costa Rica
France		Jordan	Ecuador
Germany		Kenya	El Salvador
Greece		Kyrgyz Republic	Georgia
Hungary		Lebanon	Guatemala
Iceland		Morocco	Indonesia
Ireland		Nepal	Iran, Islamic Rep
Israel		Nicaragua	Jamaica
Italy		Nigeria	Kazakhstan
Japan		Pakistan	Malaysia
Korea, Rep.		Philippines	Mauritius
Kuwait		Senegal	Mexico
Latvia		Sri Lanka	Moldova
Lithuania		Tanzania	Mongolia
Luxembourg		Tunisia	Namibia
Malta		Vietnam	Paraguay
Netherlands		Zambia	Peru
New Zealand			Russian Federation
Norway			Serbia
Oman			South Africa
Panama			Thailand
Poland			Turkey
Portugal			Ukraine
Qatar			
Romania			
Russian Federation			
Saudi Arabia			
Singapore			
Slovak Republic			
Slovenia			
Spain			
Sweden			
Switzerland			
United Arab Emirates			
United Kingdom			
United States			

** The regional groupings are based on the World Bank's country classifications by income level, the July update using the GNI per capita, Atlas Method. Retrieved in Dec 2023 from: <https://datahelpdesk.worldbank.org/knowledgebase/articles/-906519world-bank-country-and-lending-groups>

Given the 20-year time series, resource dependent nations have been classified as those where natural resource rents are, on average, at least 10 percent of their GDP throughout the years. Resource rents as percentage of GDP has been obtained from the World Bank (World Development Indicators). Additionally, the UNCTAD's definition has been used to define a country as dependent on commodities when these account for more than 60% of its total merchandise exports in value terms (on average for the full period). Share of commodities has been sourced from the WTO – using the merchandise exports by product group (SITC 3-digit) data.

The report identifies all the below-mentioned nations as commodity dependent:

Either with resource rents greater than 10% of GDP

OR share of commodities in exports greater than 60%. The ones highlighted in bold are those that meet both criteria.

Table C.3. Commodity-producer groupings

Country Name	Main Resource/ Commodity	Resource Rents "% GDP	% share of all commodities in total merchandise exports
Algeria	Fuel exports	23.9	97.0
Angola	Fuel exports	33.9	96.5
Argentina	Agricultural exports	3.2	65.4
Australia	Minerals, ores and metals exports	5.4	74.2
Azerbaijan	Fuel exports	28.0	95.6
Bahrain	Fuel exports	19.0	81.5
Bolivia	Minerals, ores and metals exports	8.1	84.3
Cameroon	Fuel exports	6.7	87.8
Chile	Minerals, ores and metals exports	8.4	84.2
Colombia	Fuel exports	5.7	69.8
Congo	Fuel exports	39.9	51.1
Côte d'Ivoire	Agricultural exports	3.7	76.3
Ecuador	Agricultural exports	10.9	90.8
Ethiopia	Agricultural exports	16.2	81.9
Ghana	Minerals, ores and metals exports	11.5	51.1
Iceland	Agricultural exports	0.0	84.2
Iran	Fuel exports	25.7	72.5
Jamaica	Minerals, ores and metals exports	1.7	89.2
Kazakhstan	Fuel exports	21.9	83.9
Kenya	Agricultural exports	2.9	67.5
Kuwait	Fuel exports	46.0	92.9
Malaysia	Fuel exports	9.5	29.3
Mongolia	Minerals, ores and metals exports	18.9	78.5
Mozambique	Minerals, ores and metals exports	11.1	89.4
Namibia	Minerals, ores and metals exports	2.0	59.7
New Zealand	Agricultural exports	1.6	72.3
Niger	Minerals, ores and metals exports	8.0	60.7
Nigeria	Fuel exports	12.9	93.2
Norway	Fuel exports	8.5	78.2
Oman	Fuel exports	34.4	79.9
Paraguay	Agricultural exports	1.7	87.8
Peru	Minerals, ores and metals exports	7.2	69.5
Qatar	Fuel exports	31.9	88.8
Russia	Fuel exports	14.8	70.6
Rwanda	Minerals, ores and metals exports	6.0	67.5
Saudi Arabia	Fuel exports	37.4	83.3
Uganda	Agricultural exports	11.8	64.1
United Arab Emirates	Fuel exports	20.9	44.8
Uruguay	Agricultural exports	1.3	73.6
Zambia	Minerals, ores and metals exports	14.5	83.3

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