

Sustainable Trade Index 2023

Advancing trade sustainability
in a fragmenting world



Foreword

At the Hinrich Foundation, we believe global trade is an essential ingredient for economic growth. But for trade to be sustainable, its economic, societal, and environmental outcomes must be in balance. The Hinrich-IMD Sustainable Trade Index (STI) is a framework for governments, businesses, and communities to shape strategies and policies that integrate global trade capabilities in ways that promote the prosperity and sustainability of economies.

The global trade system is experiencing fragmentation that threatens to erode the achievements of 70 years of globalization. Protectionist trade policies are being implemented under the guise of responding to the headwinds of post-pandemic inflation and geopolitical tensions. And while global trade continues to expand in value, that is mainly due to higher commodity prices.

Through the STI, we are measuring these policy changes. Non-tariff barriers have risen; trade costs are on the rise, with worsening logistics performance and rule of law; and we are seeing negative changes in societal indicators such as forced labor and trade in goods at risk of modern slavery. Environmental indicators showing negative trends, such as wastewater treatment and energy intensity, also represent challenges in need of collaborative solutions.

On the bright side, most STI economies are increasingly relying on renewable sources of energy, and many have reduced their air pollution levels and seen a rise in the net inflow of foreign direct investment.

We hope that by highlighting these critical issues, the STI will prompt dialogue about the future direction of trade policy and set us back on a path of sustainable globalization.

KATHRYN DIOTH



Chief Executive Officer

Hinrich Foundation



We are very happy to present you with the 2023 Hinrich-IMD STI. Our work has been made all the more relevant by recent developments in the world economy. As global trade has been challenged by geopolitical and health issues, governments and companies have been redefining the terms of their global exchanges. Subsequently, the work of streamlining supply chains and reducing costs has become paramount, and indeed even at the expense of social or environmental considerations in global trade. Our index sheds light on how this trade-off is being played out, focusing on the most active and dynamic region in the world.

At the IMD World Competitiveness Center, we believe that there is no question that trade is a driver of economic growth and development, but that it should also be a means for achieving social and environmental goals. The STI is a tool for policymakers to be able to track and manage the relationship between trade and sustainability. Our findings this year highlight that countries that balance these two well are also more developed economies where the cost that is imposed by making trade more aligned to the Sustainable Development Goals is lower.

Because it is now the second time we have published this index, we start to be able to compare the performance of countries over time. Happily, we have observed that most economies have made enormous progress in the social quality of their trade practices.

We hope this report will serve as a valuable resource and reference for all those who are interested in advancing sustainable trade for a better future.

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Executive summary

In today's ever-changing global economic landscape, we're witnessing a shift from the era of rapid globalization to what's commonly referred to as "slowbalization". It is important to note that this shift doesn't signal a retreat from international engagement; instead, it represents a deliberate and strategic response. This change is driven by a growing recognition of the intricate network of global interdependencies, as well as complex economic and geopolitical factors.

The disruptions caused by the COVID-19 pandemic, combined with geopolitical turbulence, have prompted a fundamental reevaluation. Both multinational corporations and governments are grappling with the age-old dilemma of balancing efficiency and resilience in their operational strategies, diversification objectives, and national security considerations. Consequently, we're observing a global trend toward legislative initiatives aimed at strengthening domestic industries, particularly in critical sectors such as renewable energy and semiconductors. These policy shifts extend far beyond national borders, significantly shaping the global economic landscape and influencing international relations.

At the core of this transformation lies a crucial question: how will this evolving, more fragmented approach to global integration impact the two vital aspects of global trade and sustainable practices? The Hinrich-IMD Sustainable Trade Index (STI) assesses these issues. The STI is a comprehensive tool that meticulously measures the capacity of 30 diverse economies to align global trade imperatives with long-term objectives encompassing economic growth, societal well-being, and environmental stewardship. This evaluation encompasses a comprehensive array of 71 indicators grouped into three core pillars. The economic pillar measures an economy's ability to ensure and promote economic growth through international trade, the societal pillar captures social factors, like human capital development, that contribute to an economy's capacity to trade over the long terms, and the environmental pillar measures how an economy uses its natural resources and manages the externalities of its economic activity.

Examining the 2023 STI rankings, we find New Zealand maintaining its top position, closely followed by the United Kingdom in second place. Singapore has advanced two positions to secure third place, while Hong Kong has slipped one rank to fourth. Australia has impressively climbed to fifth place.

Within the economic pillar, top-ranking economies exhibit robust infrastructure and a strong commitment to technological innovation. These attributes not only bolster an economy's overall performance but also contribute to continual improvement. Access to adequate financing is a linchpin for nurturing innovation. Economies in which the private sector enjoys ample funding opportunities thrive. Additionally, those benefiting from trade liberalization and reduced trading costs reap significant rewards. Leading the pack in this economic arena are Singapore, South Korea, Hong Kong, the United States, and the United Kingdom.

Turning to the societal pillar, the STI underscores that economies characterized by political stability, higher economic equity, high educational attainment, and social mobility tend to excel. Conversely, those grappling with low life expectancy or reliant on forced labor lag. Notable top performers in this category include Canada, New Zealand, Australia, the United Kingdom, and Japan.

In the environmental pillar, economies that uphold stringent environmental standards and effectively address critical issues like wastewater management, air pollution control, carbon emissions reduction, and energy efficiency occupy top positions. Exemplary leaders in this pivotal domain encompass New Zealand, the United Kingdom, Mexico, the Philippines, and Singapore.

While it might initially seem counterintuitive, the relationship between increased trade and heightened sustainability highlights the necessity for collaboration. Pursuing short-term trade gains at the expense of social and environmental standards ultimately leads to future policy dilemmas as environmental and social conditions deteriorate. Therefore, achieving expanded trade demands a solid foundation of fairness and equity in trade agreements, coupled with a shared commitment to global environmental protection standards.

Economies that successfully navigate the intricate intersection of trade and sustainability are set to gain substantial benefits. In this context, New Zealand, Singapore, and the United Kingdom stand out as top performers, illustrating the harmonious coexistence of trade and sustainability goals. Achieving this alignment is a multifaceted endeavor, necessitating coordinated efforts at both the national and international levels. The STI serves as an invaluable tool, shedding light on the strengths and weaknesses of diverse economies as they embark on this transformative journey. Ultimately, it charts a course toward a future where trade and sustainability are not conflicting interests but rather synergistic forces propelling global prosperity to new heights.

Figure 1
STI 2023 rankings



1.0

Introduction

Advancing trade sustainability in a fragmenting world

We are delighted to present the second edition of the Hinrich-IMD Sustainable Trade Index, offering a comprehensive overview of the challenges facing international trade today.

There is no one-size-fits-all approach to improving the sustainability of trade that can be applied to such a diverse range of economies (30 in total) as those we study. We measure their readiness and capacity to participate in the international trading system in a manner that supports long-term economic growth, social capital development, and environmental protection. It's important to remember that policy strategies must align with economies' own objectives, resources, competencies, and cultural contexts.

Three decades ago, the global landscape started to undergo profound shifts, marked by the reduction of trade barriers, advances in technological innovation, increased mobility of people, and greater fluidity of capital across borders. This era of "extensive globalization" fueled a surge in prosperity across economies, particularly in developing Asia. In China alone, there was a significant improvement in living standards, as millions of Chinese citizens rose above the poverty threshold. This new wave of globalization did more than merely open markets; it facilitated the exchange of ideas and technologies, fostering innovation and economic growth on an unprecedented scale.

Then came the 2008-2009 global financial crisis. Even as this crisis faded, US-China geopolitical competition, the trade war, the COVID-19 pandemic, and the subsequent Russian invasion of Ukraine deepened the shadow of doubt over the future of globalization. Skepticism grew over the longevity of international trade integration, a key cornerstone of globalization.

However, a look at the data reveals that more complex dynamics are at play. The 2023 trade report from the International Chamber of Commerce shows that the nominal value of global trade in goods for 2022 reached record levels, a trend further corroborated by Goldberg and Reed's research. And yet, if world imports are measured as a percentage of global GDP, since the global financial crisis of 2009 a small decline is evident. This slowdown in trade does not indicate a reversal of globalization. Instead, it points to a new phase, termed "slowbalization", meaning a more cautious pace of global integration.

This environment of slowbalization has been further complicated by geopolitical risks. The Ukraine crisis served as a stark reminder that political instability and conflict can have far-reaching economic implications, upending trade relationships, energy prices, and investor confidence.

Geopolitical uncertainty augmented the problems that economies were already experiencing from the disruptions of global value chains during the pandemic. This led enterprises and governments to reconsider the trade-off between efficiency and cost savings on the one hand and resilience in operations and the production of goods and services on the other. Multinational companies have begun to diversify their operations and are rethinking the geographical distribution of their activities.

Similarly, governments have recognized that, in addition to economic risks, national security demands a more controlled environment for manufacturing goods that may have military uses. This realization has had two significant implications. First, economies have started to decouple from one another; China and the United States being the most significant example since their tariff war of 2018, followed by the decoupling of Western Europe and the United States from Russia as a result of Russia's invasion of Ukraine. Second, public policies have become more inward-looking, aiming to strengthen domestic markets.

The consequences of these decisions on global trade are still undetermined. Bringing operations back home might adversely impact trade. Conversely, if the plan is to shift manufacturing or other tasks to friendly countries — using strategies like friend-shoring or ally-shoring— the trade implications remain unclear. It's likely that both the range of goods exchanged and the choice of trading partners will become more concentrated and less cost-efficient. Additionally, we might see a rise in regional or allied trade agreements over time. The result is a more fragmented world not only in terms of economic considerations but also geopolitical alliances and competition among states when it comes to enacting industrial policies. Recent legislative initiatives in the United States, such as the Inflation Reduction Act and the CHIPS and Science Act, are emblematic of a strategic effort to bolster domestic production in key sectors. These acts underscore a commitment to strengthening vital industries, including renewable energy production and the semiconductor sector. Similarly, the response to the European Union's tentative initiative — the European Chips Act — signals a parallel dedication to these crucial industries and either reflects a shared vision across continents, a fear of losing competitiveness to more highly subsidized producers, or both.

The introduction and implementation of these policies carry profound ramifications, beyond the impact they may have on international trade. At the forefront, geopolitical dynamics have steered nations toward a more insular approach, prioritizing their internal markets. This has resulted in the fragmentation of technology production and its overarching regulatory framework. For emerging economies, this splintering presents tangible hurdles, potentially limiting their access to technological advancements and business opportunities prevalent in developed nations.

On a brighter note, the enhanced emphasis on renewable energy production heralds a promising era. It underscores the global commitment to sustainability and offers a platform for cost-reducing innovation. Renewable energy is a major part of the solution to reversing climate change and addressing broader sustainability concerns. With extreme weather conditions now making the seriousness of climate issues irrefutable, economies and companies must rethink their strategies. This is one key area in which we expect the STI to be particularly useful, by allowing economies to use a comparative analysis of their performance in renewable energy among other sustainability indicators.

In this evolving context, policymakers, businesses, and governments are tasked with the challenge of adapting; of finding equilibrium between economic growth, societal well-being, and environmental stewardship.

In the subsequent sections, we will delineate the findings of this year's index. After providing this year's results, we will explore the top performers and laggards in each "pillar" (see explanation below). Crucially, we will highlight the strengths and weaknesses of both high- and low-ranked economies, aiming to identify the key factors driving their performance.

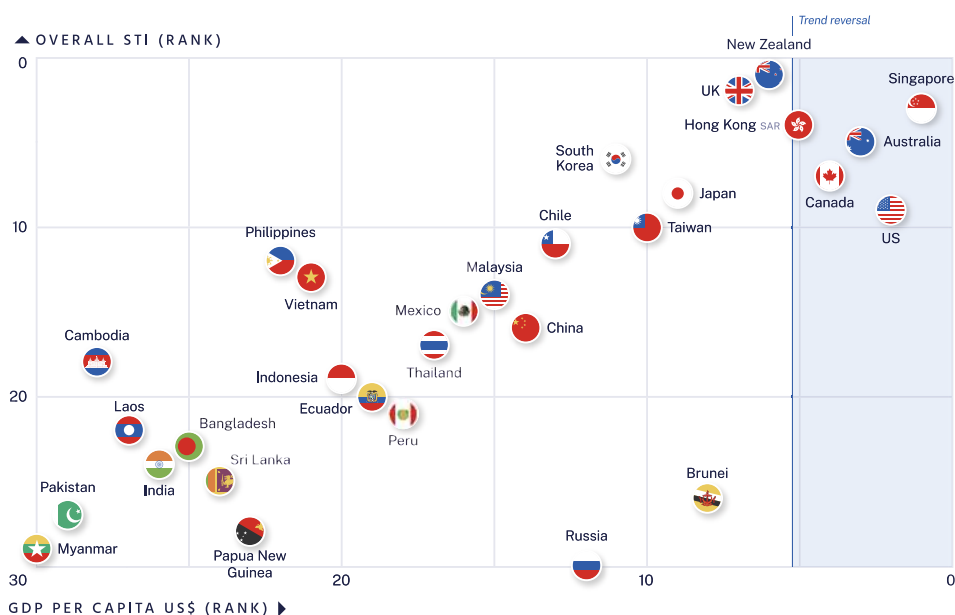
Figure 2

The relationship between STI ranks and GDP per capita

THE RELATIONSHIP

Between STI rank and per capita GDP

While there is a positive correlation between GDP per capita and STI rank, the wealthiest economies of the index are not the highest scoring.



2.0

STI results 2023

The 30 economies assessed include members and applicants of the Asia-Pacific Economic Cooperation (APEC), the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), and the Regional Comprehensive Economic Partnership (RCEP). The index uses 71 indicators grouped into three pillars: economic, societal, and environmental.

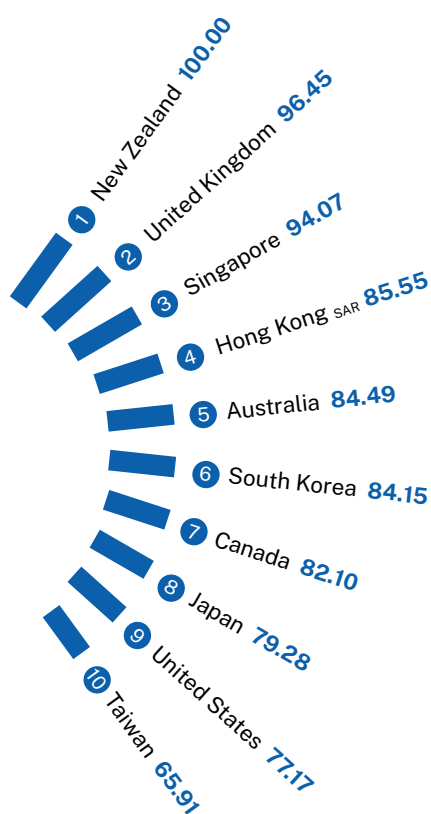
The economic pillar measures the capacity of an economy to foster economic growth through international trade. It includes measures that capture the quality of trade infrastructure, investment conditions, the ease of conducting business, trade barriers, trade diversification in bilateral trade partnerships, and export goods concentration.

The societal pillar captures social factors that contribute to an economy's development of human capital that supports international trade, such as education levels and labor standards. This pillar also captures factors that support a population's tolerance for trade expansion given the costs and benefits of economic growth. These include inequality, political stability, and exploitative practices such as child labor, forced labor, and human trafficking used in an economy's imports and exports.

Finally, the environmental pillar measures the extent to which an economy uses natural resources and manages the externalities that arise from its economic growth and participation in the global trading system. We measure the presence of "prudent stewardship" over natural resources and efforts to limit externalities in its overall environmental capital. The indicators to measure environmental capital include measures for air and water pollution, national environmental standards, carbon emissions, and the share of natural resources in exports.

Figure 3

Top 10 economies in the STI 2023



2.1 The top 10 and their evolution between 2022 and 2023

Figure 3 presents the top 10 economies in the STI 2023 while Figure 1 depicts the performance of all 30 economies, including in the aforementioned three pillars.

2.2 Key takeaways from the top 10

- **New Zealand** remains at the top of the Hinrich-IMD Sustainable Trade Index 2023. Such an achievement is the result of its robust performance in all pillars, ranking eighth in the economic pillar, first in the environmental pillar, and second in the societal pillar.

In the environmental pillar, New Zealand remains stable in the top spot between 2022 and 2023. It fell one position in the economic pillar (from seventh in 2022) and in the societal pillar (from first in 2022).

- The **United Kingdom** remains in second place and continues to perform strongly at the pillar level. It ranks fifth in the economic pillar, second in the environmental pillar, and fourth in the societal pillar.

Between 2022 and 2023, the United Kingdom remained stable in all the pillars remaining in fifth place in the economic pillar, second in the environmental pillar, and fourth in the societal pillar.

- **Singapore** places third. At the pillar level, it tops the rankings in the economic pillar, places fifth in the environmental pillar, and eighth in the societal pillar.

During the 2022-2023 period, Singapore increases by two positions in the overall STI ranking (from fifth in 2022). It also advances one place in the economic pillar (from second in 2022), one rank in the societal pillar (from ninth in 2022), and five positions in the environmental pillar (from 10th in 2022).

- **Hong Kong SAR** ranks fourth in the overall STI ranking. At the pillar level, it reaches third position in the economic pillar, 10th in the societal pillar, and seventh in the environmental pillar.

In 2023, Hong Kong SAR falls one position in the overall STI ranking (from third in 2022). It also falls two places in the economic pillar (from first place in 2022) but gains one position in the environmental pillar (moving up from eighth in 2022). In the societal pillar, Hong Kong SAR remains in the 10th place.

- **Australia** ranks fifth in the overall ranking. At the pillar level, the country ranks 12th in the economic pillar, third in the societal pillar, and 10th in the environmental pillar.

In 2023, Australia advances one position in the overall STI ranking (from sixth in 2022). It also progresses four places in the environmental pillar (moving up from 14th in 2022). In the societal pillar, Australia remains stable in the third rank. However, it declines one spot in the economic pillar (dropping from 11th in 2022).

- **South Korea** ranks sixth in the overall ranking. At the pillar level, it ranks second in the economic pillar, seventh in the societal pillar, and 17th in the environmental pillar.

In 2023, South Korea increases by two positions in the overall STI ranking (from eighth in 2022). The country advances one position in the economic pillar (from third in 2022) and one place in the societal pillar (from eighth in 2022). It drops one spot in the environmental pillar (from 16th in 2022).

- **Canada** ranks seventh overall. The country ranks ninth in the economic pillar, first in the societal pillar, and 19th in the environmental pillar.

During the period between 2022 and 2023, Canada remains stable in the overall ranking. It rises by one place in the societal pillar (from second in 2022) and one spot in the economic pillar (from 10th in 2022). Canada advances in the environmental pillar by four places (from 23rd place in 2022).

- **Japan** ranks eighth in the overall ranking. At pillar level, the country ranks 10th in the economic pillar, fifth in the societal pillar, and 12th in the environmental pillar.

In 2023, Japan declines four places in the overall STI ranking (from fourth place in 2022). This is the result of a fall of eight positions in the environmental pillar (from fourth place in 2022) and a slight drop (one spot) in the economic pillar (from ninth place in 2022). Japan remains stable in the societal pillar.

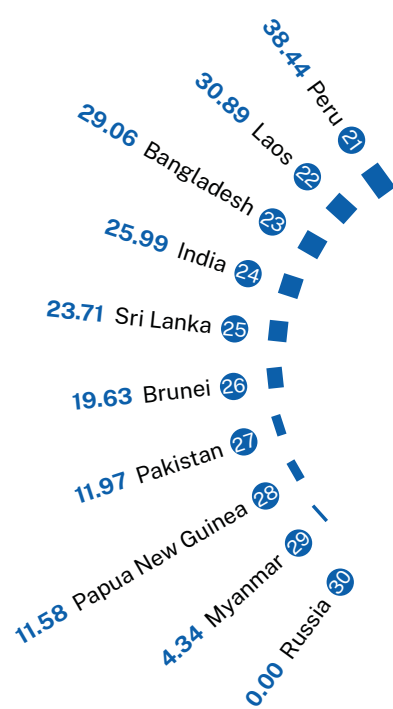
- **The United States** ranks ninth in the overall ranking. In the economic pillar, the country places fourth, it is ninth in the societal pillar, and 15th in the environmental pillar.

In 2023, the United States remains stable in the overall and economic pillar rankings and progresses four places in the environmental pillar (from 19th in 2022). The country drops two positions in the societal pillar (from seventh in 2022).

- **Taiwan** places 10th in the overall ranking. At the pillar level, it ranks sixth in the economic and societal pillars, and 27th in the environmental pillar.

In the period between 2022 and 2023, Taiwan remains stable in the overall ranking and all pillars.

Figure 4
Last 10 economies in the
STI 2023



2.3 The last 10 and their evolution between 2022 and 2023

Figure 4 presents the last 10 economies in the STI 2023

2.4 Key takeaways from the last 10

- **Peru** places 21st in the overall STI ranking. At the pillar level, the country ranks 20th in the economic pillar, 20th in the societal pillar, and 23rd in the environmental pillar.

In 2023, Peru remains stable in the overall and economic pillar rankings. It progresses two places in the environmental pillar (from 25th position in 2022). However, Peru declines six spots in the societal pillar (from 14th in 2022).

- **Laos** ranks 22nd in the overall ranking. It ranks 29th in the economic pillar, 19th in the societal pillar, and sixth in the environmental pillar.

During the 2022-2023 period, Laos advances one position in the overall STI ranking (from 23rd rank in 2022). It progresses one spot in the environmental pillar (from seventh in 2022) and one place in the societal pillar (from 20th in 2022). Laos falls two positions in the economic pillar (from 27th in 2022).

- **Bangladesh** ranks 23rd overall. The country also ranks 23rd in the economic pillar. It places 26th in the societal pillar and 22nd in the environmental pillar.

In 2023, Bangladesh advances one position (from 24th place in 2022) in the overall and economic pillar rankings. It declines one position in the environmental pillar (from 21st in 2022 and five places in the societal pillar (from 21st in 2022).

- **India** places 24th in the STI ranking. At the pillar level, the country ranks 19th in the economic pillar, and 28th in both the societal and environmental pillars.

In the 2022-2023 period, India advances two positions in its overall STI ranking (moving up from the 26th place in 2022). It progresses three positions in the economic pillar (from 22nd in 2022) and one place in the societal pillar (from the 29th place in 2022). In the environmental pillar, India's position remains stable.

- **Sri Lanka** ranks 25th in the overall ranking. It places 30th in the economic pillar, 13th in the societal pillar, and 16th in the environmental pillar.

In 2023, Sri Lanka falls three positions in the overall STI ranking (from 22nd place in 2022). It drops four places in the economic pillar reaching the bottom of the ranking (from 26th place in 2022). Sri Lanka also declines one spot in the societal pillar (from 12th place in 2022) and one rank in the environmental pillar (from 15th in 2022).

- **Brunei** ranks 26th overall. It ranks 21st in the economic pillar, 18th in the societal pillar, and 29th in the environmental pillar.

During the 2022-2023 period, Brunei declines one spot in the overall STI ranking (from 25th place in 2022). It steeply falls in the economic pillar (from 14th place in 2022) and remains stable in the environmental pillar. It advances by one rank in the societal pillar (from 19th place in 2022).

- **Pakistan** ranks 27th in the overall STI ranking, 28th in the economic pillar, and 27th in the societal pillar. In the environmental pillar, Pakistan remains in the 26th position.

During the 2022-2023 period, Pakistan gained two positions in the overall ranking (from 29th in 2022) and gained one position in both the economic pillar (from 29th in 2022) and the societal pillar (from 28th in 2022). Its rank in the environmental pillar did not change.

- **Papua New Guinea** ranks 28th overall. The country ranks 27th in the economic pillar, 29th in the societal pillar, and 25th in the environmental pillar.

During the 2022-2023 period, Papua New Guinea falls one position in the overall STI ranking (from 27th in 2022). It decreases two positions in the societal pillar (from 27th in 2022) and falls one rank in the environmental pillar (from 24th in 2022). The country improves one spot in the economic pillar (from 28th place in 2022).

- **Myanmar** places 29th overall. In the economic pillar, it ranks 26th, 30th in the societal pillar, and 21st in the environmental pillar.

In 2023, Myanmar decreases one place (from 28th in 2022) in the overall STI ranking. It remains at the bottom of the ranking (30th) in the societal pillar and falls three spots in the environmental pillar (from 18th in 2022). Myanmar improves four places in the economic pillar (from 30th place in 2022).

- **Russia** ranks at the bottom of the overall STI ranking. The country ranks 25th in the economic pillar, 24th in the societal pillar, and 30th in the environmental pillar.

In 2023, Russia remains at the bottom of the overall ranking and in the environmental pillar. It remains unchanged in the economic pillar but falls two positions in the societal pillar (from 22nd in 2022).

3.0 Pillar-by-pillar analysis

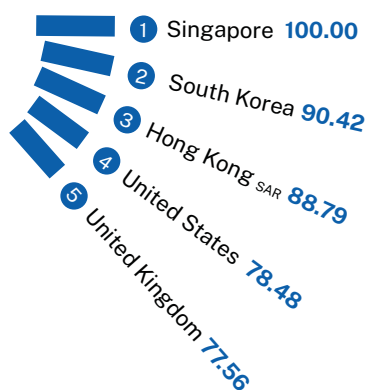
Figure 5

Economic pillar indicator list

	Indicator
5.01	Consumer price inflation
5.02	Real GDP Growth per capita, % GDP
5.03	Growth in labor force, %
5.04	Foreign direct investment, net inflows, % GDP
5.05	Gross fixed capital formation, % GDP
5.06	Tariff & non-tariff barriers
5.07	Trade liberalization
5.08	Exchange rate stability, parity change from national currency to SDR, 2020/2018
5.09	Domestic credit to private sector, % of GDP
5.10	Foreign trade and payments risk
5.11	Trade costs
5.12	Monetary policy intervention
5.13	Export concentration
5.14	Exports of goods and services
5.15	Technological innovation
5.16	Technological infrastructure

Figure 6

Top five economies in the economic pillar



3.1 Economic pillar

Top five economies

Figure 6 presents the top five economies in the economic pillar.

Singapore moves up to the top place (from second) in the economic pillar which contributes to its improvement in the overall STI. The boost to its ranking comes from reductions in tariff and non-tariff barriers to trade. In addition, its rankings improved in the availability of domestic credit to the private sector as a percentage of GDP and in the exports of goods and services indicators. Singapore's monetary policy management is disciplined, reaching the top place in this indicator. Stable performance in other dimensions of the economic pillar also contributed to Singapore's overall advancement. Among the economies ranked, the island state maintains the lowest level of trade costs arising from inefficiencies such as corruption and breakdown of the rule of law. It also remains one of the economies that is most open to trade, ranking second in trade liberalization.

Singapore continues to be a top destination for foreign investment, ranking second in attracting capital from foreign investors (with net inflows of foreign direct investments at more than 34% of its GDP). There are, however, some negative trends. Labor force growth (27th) continues to be negative, real GDP growth per capita is steeply declining, and export concentration increases, but only slightly.

South Korea rose to second place (from third) in this pillar as the result of stable performance in some indicators and improvements in others. It continues to lead in technological innovation with a focus on research and investment as well as the production and export of knowledge-intensive goods and services. Its performance remains stable in technological infrastructure (second) and in the provision of adequate financing to its private sector (fifth) in domestic credit to the private sector as a percentage of GDP. The country improved in attracting foreign investment (26th to 22nd, 1.22% of GDP), labor force growth (20th to 14th), real GDP growth (14th to 12th, 2.78% of GDP), and gross fixed capital formation (fourth to third, 31.57% of GDP).

Downsides include barriers to trade (16th), the effective management of its current account balance and foreign currency reserves (monetary policy intervention, 23rd), and the level of exchange rate volatility for its national currency (17th place in exchange rate stability).

Hong Kong SAR lost its 2022 top spot in this pillar, dropping to third place which also drove down its overall ranking. The decline stems from real GDP growth (29th, -2.61% GDP), export concentration (29th), gross fixed capital formation (26th, 17.43% of GDP), tariff and non-tariff barriers (25th), and monetary policy intervention (20th). Other declines were due to foreign trade and payment risks (second), exports of goods and services (ninth), exchange rate stability (sixth), and trade liberalization (12th).

There were, nevertheless, some improvements. Hong Kong enjoyed low consumer price inflation, moving up to the third place in trade costs. It retained first place in domestic credit to the private sector as a percentage of GDP and technological infrastructure and is fourth in technological innovation.

The **United States** remained in fourth in the economic pillar. It improved in several indicators including consumer price inflation, labor force growth, and attracting foreign direct investment. In addition, the country's rankings advance in foreign trade and payment risk, monetary policy intervention, export concentration, and technological infrastructure. That said, it declined due to trade costs (ninth), exports of goods and services (second), and sharply fell due to trade barriers. Other areas that experienced a downturn include growth of real GDP (ninth to 18th, 1.70% of GDP), gross capital formation (19th to 22nd, 21.19% of GDP), and exchange rate stability (seventh to 11th).

However, trade liberalization and domestic credit to the private sector (fifth and second, respectively) as well as technological innovation (sixth), remain stable.

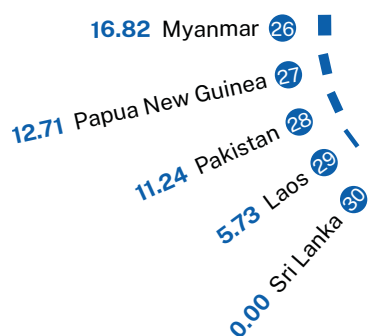
The **United Kingdom** retained fifth position in this pillar. It rose to the top rank in exchange rate stability and improved in labor force growth (20th). Its rank fell due to real GDP growth (eighth to ninth, 3.26% of GDP) and consumer price inflation (13th to 24th). Gross fixed capital formation (26th to 27th, 17.38% of GDP) and foreign direct investment (21st to 29th, 0.19% of GDP) brought the United Kingdom close to the bottom of the ranking in both indicators. Its position also fell in domestic credit to the private sector (ninth to 10th) and foreign trade and payment risk (10th to 13th).

Although the United Kingdom remained top in trade liberalization, second in export concentration, and third in exports of goods and services, it still maintains significant barriers to trade (24th).

Figure 7
Economic pillar rankings



Figure 8
Last five economies in
the economic pillar



Bottom five economies

Figure 8 depicts the economies that ranked in the last five places.

Myanmar improves in the economic pillar, moving from the bottom of the ranking to the 26th position. Such an improvement originates mainly from a positive performance in real GDP growth, gross fixed capital formation, exchange rate stability, foreign trade and payments risks, and monetary policy intervention. Myanmar also slightly boosts its rankings in trade liberalization and technological innovation. It remains stable in several indicators including foreign direct investment in which it ranks relatively high (10th, 3.17% of GDP). Myanmar, however, suffers from low labor force growth and high trade costs. It remains in 25th position in the provision of adequate financing to its private sector. Other weaknesses include consumer price inflation (28th), exports of goods and services (27th), and technological infrastructure (26th).

Papua New Guinea is at 27th place due to unattractiveness to foreign direct investment (-0.04% of GDP), poor monetary policy, and lack of technological innovation. In addition, in the provision of domestic credit to the private sector, it remains in 26th position (17.09% of GDP). It has, however, improved by one place overall (from 28th in 2022) due to positive trends such as lower consumer price inflation, an increase in real GDP growth (to 2.40% of GDP), and an improvement in trade costs.

Pakistan at 28th suffers from low labor force growth, unattractiveness to foreign direct investment (0.60% of GDP), and low gross fixed capital formation (12.93% of GDP). It also has exchange rate instability and export concentration. Pakistan's rankings are stagnant and precariously low in barriers to trade (26th), domestic credit to the private sector (27th), foreign trade and payments risk (27th), technological innovation (25th), and technological infrastructure (29th). It has, however, improved by one place overall (from 29th in 2022) due to positive trends such as lower consumer price inflation, an increase in real GDP growth (to 3.90% of GDP), and an improvement in trade costs.

Laos at 29th suffers from poor performance in consumer price inflation, trade costs, export concentration, exchange rate stability, and foreign trade and payments risk. It remained at the bottom of the ranking in the export of goods and services, in 28th place in technological infrastructure, and in 26th in trade liberalization. There are, however, some improvements in the country's performance. In real GDP growth, Laos increases from 27th place to 22nd (1.54% of GDP), and in technological innovation from 18th to 17th. Other improvements are in monetary policy intervention (14th to eighth) and foreign direct investment (fifth to fourth, 5.69% of GDP).

Sri Lanka dropped to the bottom of the ranking (from 26th) in this pillar as a result of feeble performance in consumer price inflation, real GDP growth, and trade liberalization. Other poor indicators were in labor force growth (15th to 29th, at -1.08% of the population), monetary policy intervention (fourth to 14th), and tariff and non-tariff barriers (12th to 19th). Despite improvements in foreign direct investment (24th, at 0.67% of GDP), exchange rate stability (27th), and foreign trade and payments risk (29th), the country's performance in these indicators remains insufficient. Sri Lanka stays in 19th place in domestic credit to the private sector (49.82% of GDP) and in 12th in export concentration.

We observe from the overall results in the economic pillar results overall that countries that improved show robust performances in technological innovation and infrastructure, trade liberalization, levels of financing for the private sector, and falling trade costs. Conversely, most countries that experience declines in this pillar are negatively affected by inflation, slow economic growth, and high foreign trade and payment risks. In addition, they are slow to liberalize trade and don't export much.

Figure 9
Relationship between economic pillar rankings and GDP per capita

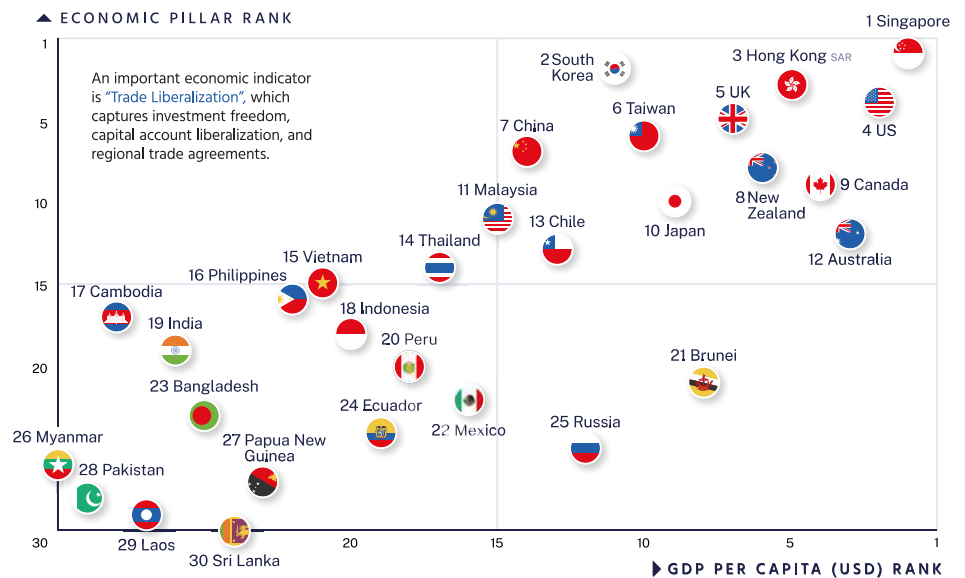


Figure 10
Country credit ratings

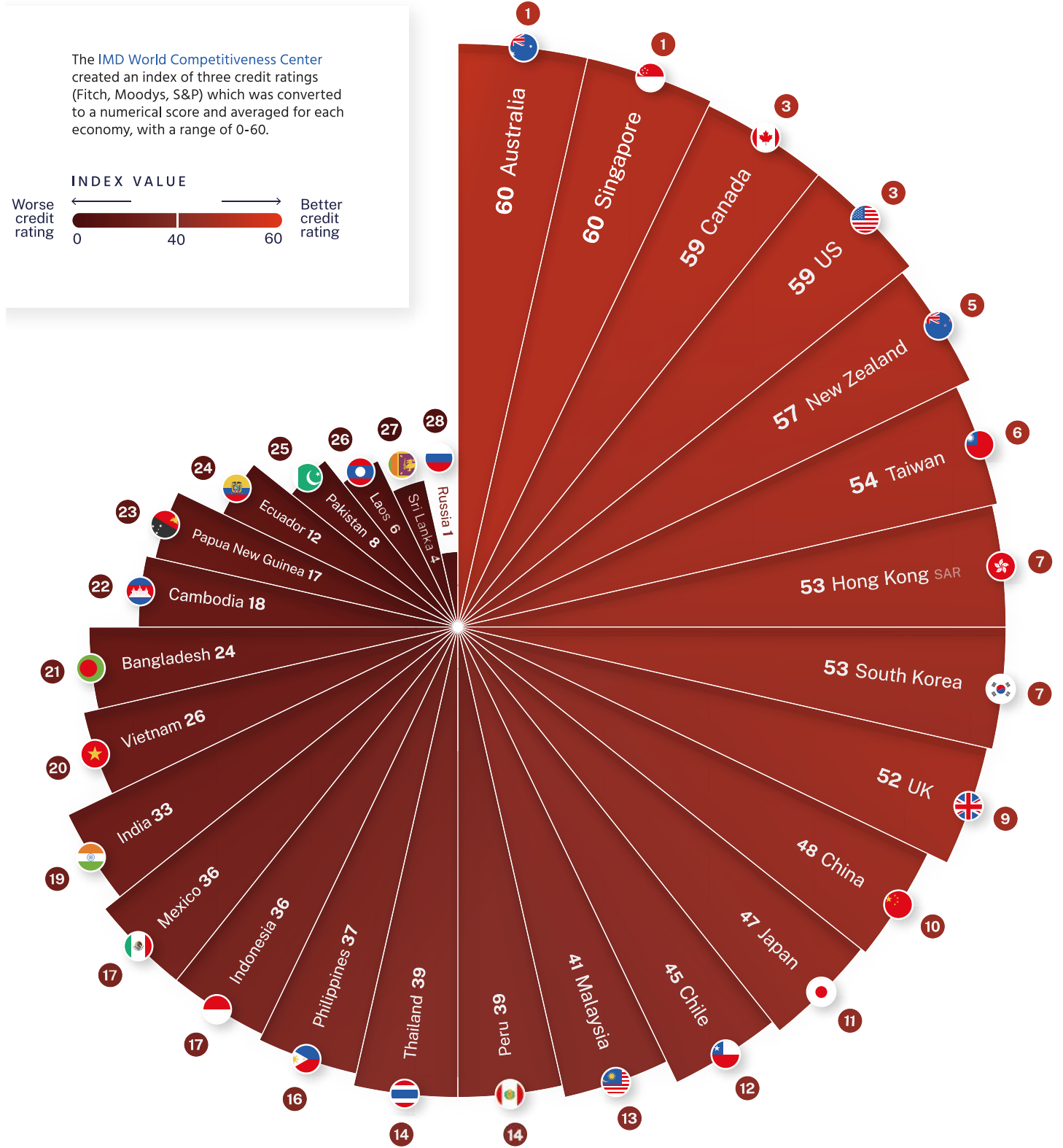


Figure 11
Societal pillar indicator list

	Indicator
11.01	Inequality (Gini coefficient)
11.02	Educational attainment
11.03	Labor standards
11.04	Political stability and absence of violence
11.05	Goods produced by forced labor or child labor
11.06	Government response to human trafficking
11.07	Trade in goods at risk of modern slavery
11.08	Social mobility, Index
11.09	Life expectancy at birth
11.10	Uneven Economic Development

3.2 Societal pillar

Top five economies

Figure 12 presents the scores of the top five economies

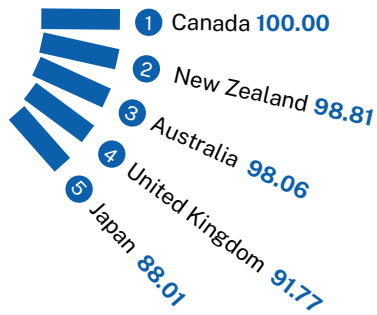
Canada moved up to the top position in the societal pillar. The rise is rooted in its continuously robust performance in labor standards, social mobility, and evenness in economic development. Canada also performed robustly in educational attainment (fourth), government response to human trafficking (fifth), and life expectancy at birth (sixth). Although the country ranks highly in political stability and absence of violence (fifth) and avoiding trade in goods produced by forced labor or child labor (sixth), these areas do experience slight declines. Canada's lowest ranking in this pillar is in trade in goods at risk of modern slavery (15th) which is driven by its import of goods at risk (24th in this sub-indicator).

New Zealand fell to second position in this pillar. The decline is mainly the result of decreases in political stability and absence of violence (first to second), goods produced by forced labor or child labor (third to fourth), the response of the government to human trafficking has improved (sixth to 12th), and trade in goods at risk of modern slavery (seventh to eighth) has decreased. New Zealand performs robustly in the evenness of economic development (second), labor standards (third), social mobility (sixth), and life expectancy at birth (seventh).

Australia remained in third position thanks to strong displays in evenness of economic development (second), social mobility (third), and life expectancy at birth (third). Australia's achievements in this pillar are also aided by its stable performance in educational attainment (second), the response of the government to human trafficking (third), political stability and absence of violence (sixth), and labor standards (eighth). The country improved in avoiding goods produced by forced labor or child labor (fourth to third).

The **United Kingdom** remained fourth in this pillar, sustained by improvements in the government response to human trafficking (second to first), avoidance of goods produced by forced labor or child labor (10th to fifth), and life expectancy at birth (ninth to eighth). Equality (as measured by the Gini Coefficient -- third), educational attainment (third), and social mobility (fifth) remain core strengths of the United Kingdom. Although its rankings in labor standards (ninth), uneven economic development (ninth), and political stability and absence of violence (10th) are relatively low, they do some traction to the country's performance and thus contribute to the retention of its position in this pillar. The United Kingdom's lowest-ranking indicator in the societal pillar is trade in goods at risk of modern slavery (16th) which represents a decline (from 14th).

Figure 12
Top five economies in the societal pillar



Japan also maintains the same ranking position (fifth) in this pillar, due to avoidance of goods produced by forced labor or child labor (first), social mobility (first), life expectancy at birth (second), political stability, and absence of violence (fourth) and overcoming uneven economic development (fifth). A lowering of trade in goods at risk of modern slavery also contributes to the country’s achievement in this pillar. Educational attainment (11th) and labor standards (17th) remain relatively low, the latter falling from 16th place.

Another decline in Japan’s performance in the societal pillar is in government response to human trafficking in which it slightly drops from 18th place to 19th. Coincidentally, this indicator is Japan’s lowest ranking in this pillar.

Figure 13
Societal pillar rankings



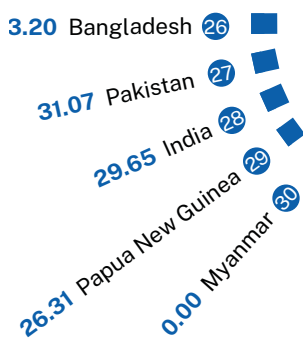
Figure 14**Last five economies in the societal pillar****Bottom five economies**

Figure 14 offers the performance of the five economies that ranked in the last positions in the societal pillar.

Bangladesh dropped to 26th position due to weak performance in educational attainment (25th), labor standards (27th), political stability and absence of violence (28th), and social mobility (23rd). Bangladesh's highest-ranking indicator in this pillar is trade in goods at risk of modern slavery (12th), followed by government response to human trafficking (14th).

Pakistan was in 27th place due to poor labor standards and educational attainment. It eked out slight advances in political stability and absence of violence (30th to 29th), life expectancy at birth (28th to 27th), and avoidance of goods produced by forced labor or child labor (27th to 26th), and government response to human trafficking (28th to 20th). Conversely, it displays declines in labor standards (13th to 14th) and educational attainment (26th to 27th).

India also improves from the 29th to the 28th position in the societal pillar due to improvements in indicators such as low life expectancy at birth, trade in goods produced by forced or child labor, and upward shuffles in the government response to human trafficking (29th to 15th), political stability and absence of violence (from 27th to 24th), life expectancy at birth (from 27th to 26th) and goods produced by forced labor or child labor (from 30th to 27th). The rankings in labor standards (16th), and to a lesser extent uneven educational attainment (19th), contribute to overall improvements in this pillar. The country scores critically low in the indicator measuring trade in goods at risk of modern slavery (29th), consistent with last year's performance.

Papua New Guinea at 29th posted unsatisfactory performance in labor standards (from 20th to 21st), goods produced by forced labor or child labor (16th to 25th), and government response to human trafficking (from 27th to 29th). It also performs inadequately in educational attainment (30th), government response to human trafficking (29th), and life expectancy (29th).

Myanmar remained at the bottom of the rankings in this pillar. The stagnation in the country's performance in the pillar is largely the result of declines in political stability and absence of violence (29th to 30th), goods produced by forced labor or child labor (29th to 30th), and trade in goods at risk of modern slavery (17th to 21st). Labor standards (29th), life expectancy (28th), uneven economic development (27th), as well as educational attainment and government response to human trafficking (both at 26th), contributed to the country's lack of progress in this pillar.

In summary, countries that boost their standing in the societal pillar tend to have a stable political system combined with even economic development. High educational attainment, social mobility, and a healthy population (as measured by life expectancy) drive their trade sustainability. The performance of economies that experience a decline in the pillar is largely influenced by low political stability, a significant portion of goods produced by forced labor or child labor, and uneven economic development. They are also hindered by limited social mobility and relatively low educational attainment and life expectancy.

Figure 15

Relationship between societal pillar rankings and GDP per capita

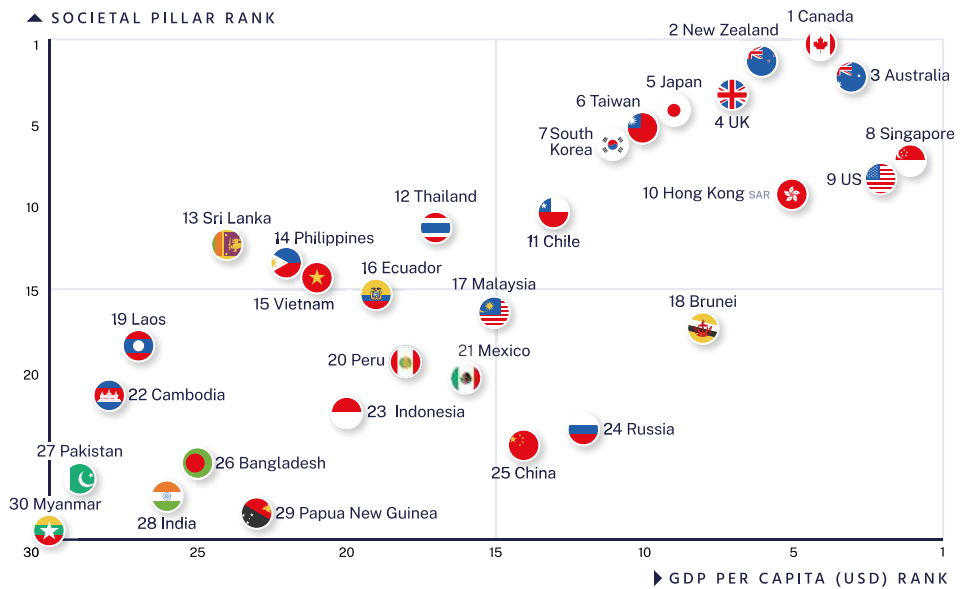


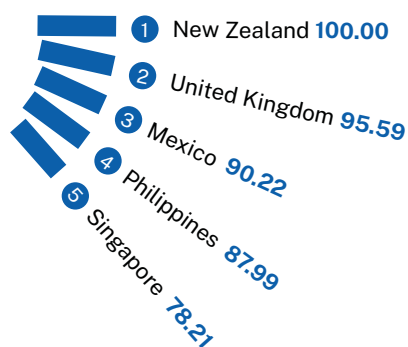
Figure 16

Environmental pillar indicator list

	Indicator
16.01	Air pollution
16.02	Deforestation
16.03	% of wastewater treated
16.04	Energy intensity
16.05	Ecological footprint
16.06	Renewable energy
16.07	Environmental standards in trade
16.08	Transfer emissions
16.09	Share of natural resources in trade
16.10	Carbon

Figure 17

Top five economies in the environmental pillar



3.3 Environmental pillar

Top five economies

Figure 17 portrays the five highest-ranked economies in the environmental pillar.

New Zealand remained at the top of the environmental pillar, driven by its outstanding performance in air pollution (first), environmental standards in trade (first), and share of natural resources in trade (second). The latter is an improvement from its position last year. New Zealand also advanced in transfer emissions (18th to 17th), while its performances in renewable energy (fifth) and energy intensity (sixth) also contributed to its overall position in the pillar. Despite a slight increase in transfer emissions (18th to 17th), the country ranks relatively low in this indicator. In addition, it shows a minimal drop in carbon (fourth to fifth) and the percentage of wastewater treated (ninth to 10th).

The **United Kingdom** retained second place due to strong displays in environmental standards in trade (first), energy intensity (second), transfer emissions (third), carbon (fourth), percentage of wastewater treated (fourth), and air pollution (sixth). Results for ecological footprint (17th), renewable energy (17th), and share of natural resources in trade (20th), show areas for improvement in this pillar.

Mexico kept its third position in the environmental pillar. Its performance in environmental standards in trade (first), carbon (second), energy intensity (eighth), and transfer emissions (eighth) underline the country's strength in the pillar. Air pollution (10th), the share of natural resources in trade (12th), the percentage of wastewater treated (14th), and ecological footprint (15th) also supported Mexico's success in the environmental ranking. Renewable energy (19th) remains the country's lowest-ranking indicator.

The **Philippines** rose to fourth position by continuing to perform strongly in environmental standards in trade (first), ecological footprint (fourth), renewable energy (seventh), and transfer emissions (ninth). Advances in energy intensity (10th to ninth), the share of natural resources in trade (10th to ninth), and the percentage of wastewater treated (15th to 12th), also helped the Philippines. Deforestation, carbon (which measures the extent of carbon dioxide emissions, considered an externality and the presence of a carbon pricing regime), and air pollution all weakened its performance.

Singapore rose to fifth position in this pillar. Improvements in transfer emissions (fifth to fourth), air pollution (14th to ninth), and environmental standards in trade (23rd to 20th) played an important part in boosting Singapore's overall position in the pillar. Robust results in percentage of wastewater treated (first), energy intensity (third), transfer emissions (fourth), deforestation (sixth), and carbon (eighth) contributed to Singapore's rise in this pillar. Singapore's performance in renewable energy (27th), ecological footprint (24th), and environmental standards in trade (20th) highlighted potential areas for improvement.

Figure 18

Resource dependency by economy

RANKED

Resource Dependency By Economy

RELIANCE ON NON-RENEWABLE NATURAL RESOURCES CAN MAKE A COUNTRY VULNERABLE to market fluctuations, diminishing reserves, and evolving consumer preferences.

Here's how resource dependency differs across 30 major economies.

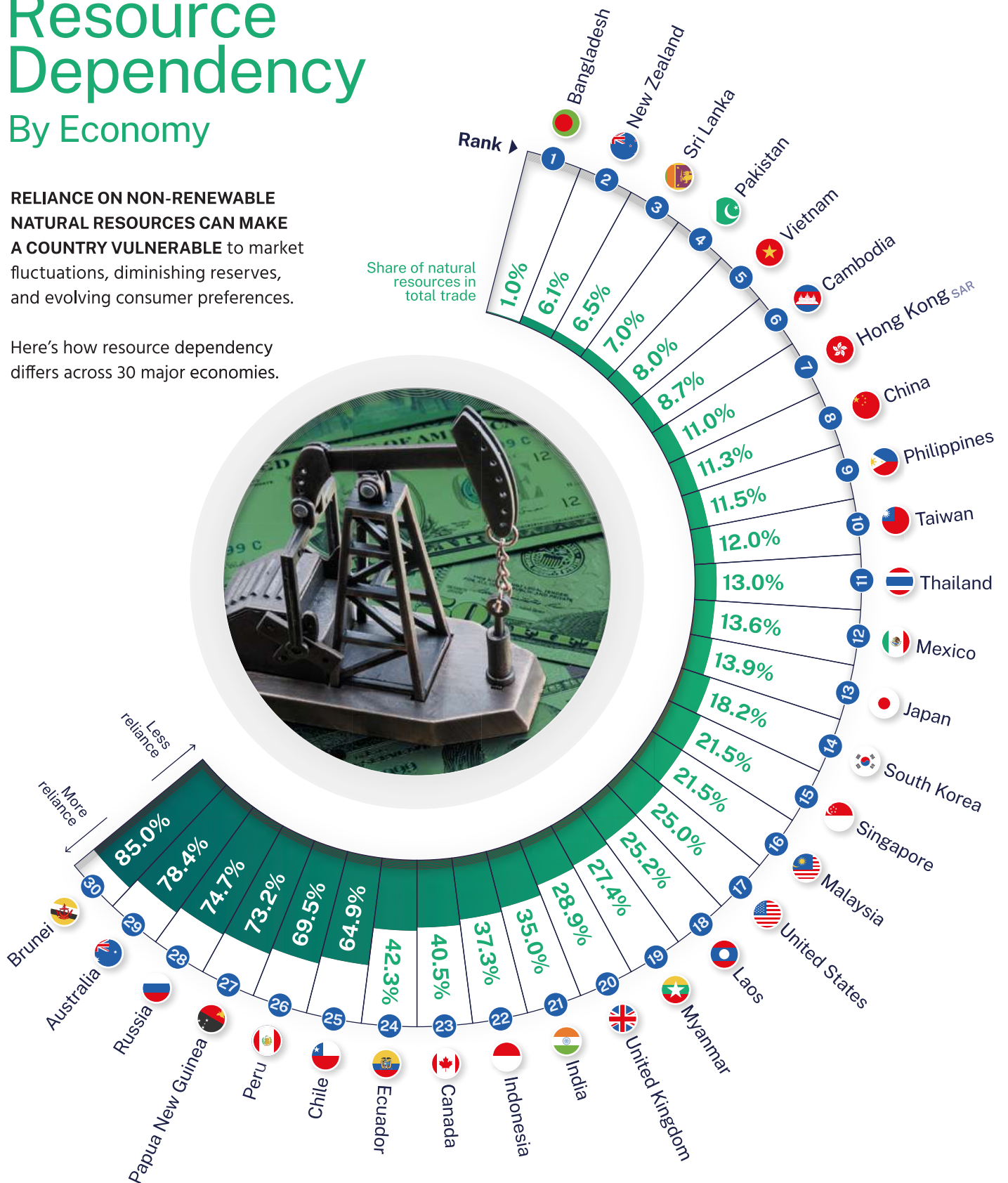
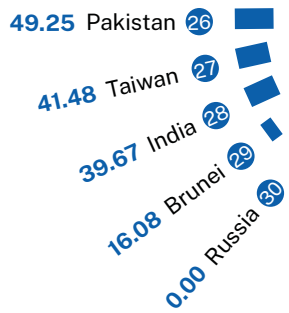


Figure 19

Last five economies in the environmental pillar



Bottom five economies

Figure 19 shows the economies that were placed in the last five of the environmental pillar

Pakistan remained 26th due to continuously poor results in air pollution (29th), deforestation (30th), percentage of wastewater treated (19th), and environmental standards in trade (20th).

Taiwan remained 27th in this pillar. Results in deforestation (29th), environmental standards in trade (27th), carbon (27th), and renewable energy (26th) drove Taiwan's feeble performance. Declines in energy intensity (14th to 16th), air pollution (10th to 11th), and the share of natural resources in trade (seventh to 10th), also prevented Taiwan from improving its environmental standing.

Despite a robust display in ecological footprint (third) and an improvement in renewable energy (11th to 10th), **India** stayed in 28th place in this pillar. Downturns in environmental standards in trade (eighth to ninth), the share of natural resources in trade (20th to 21st), and the percentage of wastewater treated (20th to 23rd) inhibited the country's performance in this pillar. Further hindrances were air pollution (30th), transfer emissions (26th), energy intensity (25th), deforestation (20th), and carbon (20th).

Brunei was 29th due to poor displays in carbon management (30th), the share of natural resources in trade (30th), renewable energy (29th), environmental standards in trade (27th), and deforestation (25th).

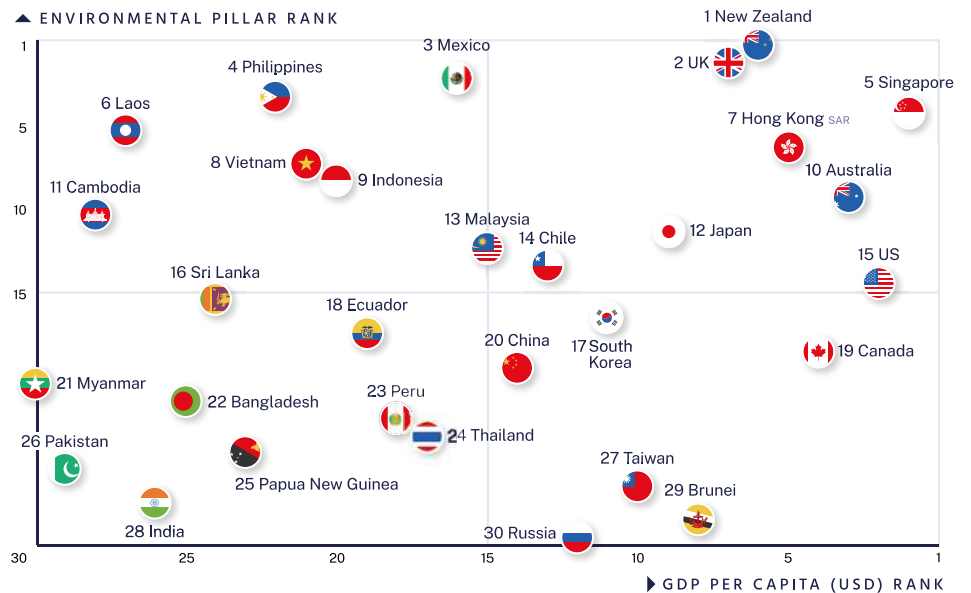
Figure 20

Environmental pillar rankings



Russia remained at the bottom of this pillar due to poor results in environmental standards in trade (30th), energy intensity (29th), the share of natural resources in trade (28th), carbon (28th), transfer emissions (27th), and percentage of wastewater treated (26th). To recap, economies that rank highly or improve in the environmental pillar tend to perform well in environmental standards, percentage of wastewater treated, air pollution, carbon, and energy intensity. Among the low-ranking countries in this pillar, it is the share of natural resources in trade, the percentage of wastewater treated, and the environmental standards in trade indicators that seem to halt their advancement.

Figure 21
Relationship between environmental pillar rankings and GDP per capita



4.0

Conclusion

The era of reflective globalization

The global landscape is morphing from rapid globalization into a more nuanced and gradual process of integration. This era, aptly termed slowbalization, represents not a withdrawal from global engagement but a more reflective and deliberate path forward. It has been forged not through happenstance but through an acute awareness of the intricate interconnectedness of our world, and of its complexities and inherent economic and geopolitical risks.

In this dynamic environment, public and private decision-makers are confronted with the imperative to adjust and transform. They must identify a balance that encompasses economic expansion, societal prosperity, and safeguarding our natural environment for future generations. The hurdles are substantial, but they are matched by promising opportunities for innovation, collaboration, and sustainable development in this emerging global era.

High-ranking economies in the 2023 STI share discernible commonalities. Under the **economic pillar**, those with robust infrastructure and a strong inclination towards technological innovation have not only performed well but, in some instances, improved their standing. The path from innovation to commercialization requires adequate financing, a critical factor in nurturing innovation. Economies in which the private sector enjoys sufficient financing sit in the higher echelons of the pillar. Those benefiting from trade liberalization and consequently lower trading costs follow suit. In a year dominated by concerns over inflation, it was to be expected that economies plagued by high inflation levels or hindered by low trade liberalization would not fare well.

In the **societal pillar**, the index reveals that economies characterized by political stability, economic equality, high educational attainment, and social mobility are the strongest performers. Conversely, those with low life expectancy or where a significant portion of goods is produced through forced labor, lag.

In the **environmental pillar**, the top ranks are occupied by economies that uphold high environmental standards and effectively address challenges related to wastewater, air pollution, carbon, and energy intensity.

The relationship between increasing trade and greater sustainability may, at a cursory glance, appear contradictory. However, if short-term gains in trade are pursued by, for instance, compromising social and environmental standards, this will inevitably lead to future policy challenges as environmental and social conditions become intolerable. It follows that a vital element in the pursuit of more trade is collaboration, characterized by fair and equitable trade agreements, and by jointly setting standards for environmental protection. Since environmental stewardship is a global concern, it demands a global solution.

Economies that successfully align their efforts to enhance both trade and sustainability stand to reap substantial benefits; New Zealand, Singapore, and the United Kingdom being the three top-performing economies in pursuit of sustainable trade. Achieving this alignment requires a broad and coordinated effort, both within individual economies and on an international scale. The Hinrich-IMD Sustainable Trade Index serves as a valuable tool to highlight the strengths and weaknesses of various economies as they strive in this direction. It provides a compass guiding us toward a future in which trade and sustainability are not competing interests but complementary forces driving global prosperity.

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 - ii. International Chamber of Commerce (ICC). 2023. *Trade report: A fragmenting world*. <https://iccwbo.org/news-publications/policies-reports/icc-2023-trade-report-a-fragmenting-world/>.
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5.0

Methodology

A. Definitions

The Hinrich-IMD Sustainable Trade Index

The Hinrich-IMD Sustainable Trade Index measures 30 economies' readiness and capacity to participate in the global trading system in a manner that supports the long-term goals of economic growth, environmental protection, and societal development.

The economic pillar

The economic pillar measures an economy's ability to ensure and promote economic growth through international trade. In this category, economies receive scores for indicators that demonstrate a link between the trading system and economic growth.

Some indicators capture the quality of trade infrastructure, while others measure the ease of conducting international trade, such as current account, exchange rate stability, and trade costs.

We measure export diversification by evaluating an economy's trade destinations and how heavily its exports are concentrated by sector – because economies with diversified export markets and products are better equipped to absorb external economic shocks.

Furthermore, we consider the technological infrastructure and innovation capabilities of an economy by assessing its emphasis on research and development investments and digital technologies, which are key drivers for the production of sophisticated and sustainable goods and services.

The societal pillar

Social factors matter in an economy's capacity to trade internationally over the long term. Economies are evaluated on the encouragement and support of the development of human capital, such as the extent of education and labor standards.

This pillar also captures factors that influence public support for trade expansion. These include income inequality, political stability, goods produced by forced and child labor, and the government response to human trafficking.

The environmental pillar

The environmental pillar measures the extent to which an economy's trade supports sustainable resources. The factors include measurements of non-renewable natural resources in trade and the management of externalities that arise from economic growth and participation in the global trading system.

While an economy's capacity to participate in the global trading system is dependent on economic development, achieving sustainable trade requires prudent stewardship of natural resources and acknowledgment of the externalities to promote its overall environmental capital. The indicators chosen in this section measure an economy's environmental capital and include measures for air and water pollution. In terms of future impact, we measure national environmental standards, carbon emissions, and share of natural resources in exports.

B. Data preparation

We establish a reference year for each indicator or sub-indicator. Generally, it is the previous full year, but it may be earlier for some data. For the reference year:

- 1.0 We first check if data is available for the reference year, if this is the case the data will be considered for calculation.
- 2.0 If data for the reference year is unavailable, we check the previous five years before the reference year. We choose the closest year to the reference year or we categorize that particular indicator as not available, and the data field is left empty.
- 3.0 An economy showing an empty data field for a certain indicator will therefore not be listed and ranked for that specific indicator.

C. Data processing

In this document, 'values' denote the raw data of indicators in their original measurement units. 'Scores' represent these values rescaled between 0-100, as derived in the third step of our data processing procedure. For all indicators, pillars, and the overall STI, a higher score indicates superior performance in that specific category, while a lower score suggests subpar performance. Lastly, 'rankings' are determined by arranging the scores of each indicator in descending order, from highest to lowest.

- 1.0 We check each indicator for outliers:
 - 1.1 For each indicator, we determine its average, standard deviation, and standard values for every observation, specifically for each economy. An economy is deemed an outlier for a particular indicator if its standard value (the difference between the country's value and the indicator's average) exceeds four.
 - 1.2 To ensure data normality, when an outlier is detected for an indicator, we take the logarithm of that value. This logarithmic value then replaces the original one in the ranking computation, narrowing the disparity between outliers and the rest of the economies in the sample.

We chose to define outliers as values exceeding four times the standard deviation, rather than the more conventional three times. This decision was made because our data exhibits minimal variability. Using a threshold of three times the standard deviation would result in a high number of indicators being labeled as outliers. By extending the threshold to four times, we reduce the likelihood of this occurrence.

- 2.0** For those indicators that contain sub-indicators (or sub-sub indicators):
 - 2.1** At the sub-indicator level, values are rescaled between 0 and 100. The optimal value receives a score of 100, while the least favorable gets 0. If a higher value for an indicator signifies a better outcome, the economy with the highest value scores 100, and the one with the lowest scores 0. Conversely, if a lower value indicates a better outcome, the economy with the lowest value scores 100, and the highest scores 0. For specifics on what determines the best or worst outcome for each indicator, refer to the Notes and Sources section.
 - 2.2** Sub-indicator values are then averaged to form the primary indicator.
 - 2.3** For indicators comprising sub-sub-indicators, we first construct the sub-indicator as per step 2.2. Once the sub-indicators are established, the same process is applied to derive the sub-sub-indicator.
- 3.0** All indicators are rescaled between 0 and 100, with the best value scoring 100 and the worst 0. This rescaling facilitates indicator comparisons.
- 4.0** Within each pillar all indicators are averaged to construct the pillar.
- 5.0** All pillars undergo rescaling between 0 and 100. This step minimizes the influence of uneven indicator distribution within pillars, ensuring comparability.
- 6.0** The three pillars are averaged to determine the overall score, presented as a value between 0 and 100. This consistent scoring range, from sub-sub-indicators to the overall score, ensures uniformity across all analysis levels.

D. New and updated indicators

We have added some new indicators and updated other components to further refine the index from prior iterations.

- 1.0 Under the societal pillar, a new indicator, 2.10, Uneven Economic Development has been introduced (see Notes and Source below).
- 2.0 Under the economic pillar, for the indicators 1.06.01 b New tariff barriers, and 1.06.02 b New non-tariff barriers, the year has been updated from 2021 (in STI 2022), to 2022 for STI 2023.
- 3.0 Under the economic pillar, for the indicator 1.08 Exchange rate stability, parity change from national currency to SDR, the year is updated from 2020/2018 to 2022/2020.
- 4.0 Under the economic pillar, indicator 1.16.03 has been updated from 'Fixed broadband subscriptions' to 'Fixed broadband subscriptions (per 100 people)'.
- 5.0 Under the economic pillar, for indicator 1.10.01 Country credit rating, from STI 2023, SWI has been dropped as a source.
- 6.0 Under the economic pillar, for indicator 1.12 Monetary Policy Intervention, sub-indicator 1.12.02 has been changed to reflect the change in total reserves from year to year rather than the total reserves of an economy.

Notes and sources

[H] High value promotes global trade

[L] Low value promotes global trade

[Sum] Indicator has sub-indicators

Background data	Source	Definition	
Population	IMF WEO	Population in millions (estimates for 2022)	
GDP per capita	IMF WEO	The total value at current prices of final goods and services produced within a country (in USD) during a specified time period divided by the average population for the same one year.	
Indicator	Source	Definition	
1.01	Consumer price inflation	WEO	Harmonized inflation rates, year average. [L]
1.02	Real GDP Growth per capita, % GDP	WEO, Taiwan: DGBAS	GDP is expressed in current US dollars per person. Data are derived by first converting GDP in national currency to US dollars and then dividing it by total population. [H]
1.03	Growth in labor force, %	Growth in labor force, %	People aged 15+, who are currently employed and people who are unemployed but seeking work as well as first-time jobseekers. Unpaid workers, family workers, and students are often omitted, and some countries do not count members of the armed forces. [H]
1.04	Foreign direct investment, net inflows, % GDP	World Bank, Taiwan: Central Bank, Balance of Payments Quarterly	Net inflows of foreign investment to acquire a lasting management interest (10%+ of voting stock) in an enterprise. Sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. [H]
1.05	Gross fixed capital formation, % GDP	World Bank, Taiwan: DGBAS	Includes land improvements; plant, machinery, and equipment purchases; construction of roads, railways, schools, offices, hospitals, private residences, and commercial & industrial buildings. Net acquisitions of valuables are considered capital formation. [H]
1.06	Tariff & non-tariff barriers	Global Trade Alert	Six indicators measuring tariff and non-tariff barriers. [sum]
1.06.01	Tariff barriers	Global Trade Alert	Three indicators measuring tariff barriers. [sum]
1.06.01.a	Tariff barriers in force	Global Trade Alert	Count of 'harmful' tariff measures currently in force. [L]
1.06.01.b	New tariff barriers 2022	Global Trade Alert	Count of new (2022) 'harmful' tariff measures currently in force. [L]
1.06.01.c	Percentage of trade affected by tariff barrier (up to 2018)	Global Trade Alert	Estimates of the import shares potentially affected 'harmful' tariff measures currently in force (up to 2018). [L]
1.06.02	Non-tariff barriers	Global Trade Alert	Three indicators measuring non-tariff barriers. [sum]
1.06.02.a	Non-tariff barriers in force	Global Trade Alert	Count of 'harmful' non-tariff measures currently in force. [L]

	Indicator	Source	Definition
1.06.02.b	New non-tariff barriers 2022	Global Trade Alert	Count of new (2022) 'harmful' non-tariff measures currently in force. [L]
1.06.02.c	Percentage of trade affected by non-tariff barrier (up to 2018)	Global Trade Alert	Estimates of the import shares potentially affected 'harmful' non-tariff measures currently in force (up to 2018). [L]
1.07	Trade liberalization	WTO, KAOPEN, Freedom House	Three indicators measuring trade liberalization. [sum]
1.07.01	Regional Trade Agreements, number in force	WTO	Any reciprocal trade agreement between two or more partners, not necessarily belonging to the same region. [H]
1.07.02	Capital account liberalization, Index	KAOPEN	The Chinn-Ito index (KAOPEN) is an index measuring a country's degree of capital account openness. The index was initially introduced in Chinn and Ito (Journal of Development Economics, 2006). KAOPEN is based on the binary dummy variables that codify the tabulation of restrictions on cross-border financial transactions reported in the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER). [H]
1.07.03	Investment Freedom, Index	Heritage Foundation	Investment freedom evaluates a variety of regulatory restrictions that typically are imposed on investment. Points are deducted from the ideal score of 100 for each of the restrictions found in a country's investment regime. [H]
1.08	Exchange rate stability, parity change from national currency to SDR, 2022/2020	IFS	Parity changes are in absolute values. Period average for all countries. [L]
1.09	Domestic credit to private sector, % of GDP	IMF (via World Bank)	Domestic credit to private sector refers to financial resources provided to the private sector by financial corporations, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment. For some countries these claims include credit to public enterprises. The financial corporations include monetary authorities and deposit money banks, as well as other financial corporations where data are available (including corporations that do not accept transferable deposits but do incur such liabilities as time and savings deposits). Examples of other financial corporations are finance and leasing companies, money lenders, insurance corporations, pension funds, and foreign exchange companies. [H]
1.10	Foreign trade and payments risk	IMF, SP, Moody's, Fitch	Two indicators measuring foreign trade and payment risk. [sum]
1.10.01	Country credit rating	SP, Moody's, Fitch	IMD WCC created an Index of three country credit ratings (Fitch, Moody's, S&P). Each, including the outlook, is converted to a numerical score, and averaged for each country, with a possible range 0-60. For STI 2022, SWI was also used as a source. [H]
1.10.02	Gross debt, % GDP	WEO	Private nonguaranteed external debt comprises long-term external obligations of private debtors that are not guaranteed for repayment by a public entity. Data are in current US dollars. [L]

	Indicator	Source	Definition
1.11	Trade costs	Transparency International, World Bank	Three indicators measuring country specific external, indirect costs on trade (rule of law, corruption, logistics) [sum]
1.11.01	Logistics performance, index	World Bank	LPI 2018 ranks countries on six dimensions of trade, including customs performance, infrastructure quality, and timeliness of shipments. The data used in the ranking comes from a survey of logistics professionals. [H]
1.11.02	Corruption perceptions, index	Transparency International	The CPI is calculated using 13 different data sources from 12 different institutions that capture perceptions of corruption within the past two years. The data sources are standardized to a scale of 0-100 where a 0 equals the highest level of perceived corruption and 100 equals the lowest level of perceived corruption. [H]
1.11.03	Rule of law, index	World Bank	Perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. [H]
1.12	Monetary policy intervention	IMF	Two indicators measuring an economy's potential capacity to intervene in and influence exchange rates. [sum]
1.12.01	Current account balance, % GDP	IMF	Current account balance is the sum of net exports of goods and services, net primary income, and net secondary income. [L]
1.12.02	Change (1-year) in total reserves (includes gold), % GDP	IMF	Total reserves comprise holdings of monetary gold, special drawing rights, reserves of IMF members held by the IMF, and holdings of foreign exchange under the control of monetary authorities. The gold component of these reserves is valued at year-end (December 31) London prices. Data are in current US dollars. [L]
1.13	Export concentration	UNCTAD	Two indicators measuring the export concentration in markets and products. [sum]
1.13.01	Export market concentration, Top 5 as % total	UNCTAD	The top five named export countries as a percentage of total exports. [L]
1.13.02	Export product concentration, Top 5 as % total	UNCTAD	The top five named export products, as a percentage of total exports, using the UNCTAD product data based on the SITC commodity classification, Revision 3, at the two-digit level: giving 65 product categories. [L]
1.14	Exports of goods and services	WTO	Two indicators measuring merchandise and commercial services exports. [sum]
1.14.01	Merchandise exports, US\$	WTO	Compiled from national data sources, WTO, IMF International Financial Statistics, and the Trade Data Monitor online database. If data from national sources are not available at the time of release, estimates are produced based on partner trade statistics. [H]
1.14.02	Commercial services exports, US\$	WTO	Commercial services include transport, travel, and other private services (communication; construction; insurance; financial; computer and information (including news), royalties and license fees; other business services (legal, accounting, consulting, public relations, advertising, market research, architectural, engineering, and other technical services) [H]
1.15	Technological innovation	UNESCO, WIPO, COMTRADE, NSF	Five indicators measuring research and development. [sum]

	Indicator	Source	Definition
1.15.01	R&D expenditure, % GDP	UNESCO, Taiwan: OECD MSTI	The sum of financial resources (national and foreign) used for the execution of research and experimental development (R&D) works on the national territory by the public sector and by the business enterprise sector. It includes current expenditure (annual wages and salaries of R&D personnel and operating expenses) and capital expenditure (purchases of equipment required for R&D). [H]
1.15.02	Researchers in R&D, per capita	UNESCO, Taiwan: OECD MSTI & WEO, Peru: National Council for Science, Technology and Technological Innovation	Researchers in R&D are professionals engaged in the conception or creation of new knowledge. Products, processes, methods, or systems and in the management of the projects concerned. [H]
1.15.03	Patent applications, per million inhabitants	WIPO, WEO, Taiwan: TIPO	Total patent applications (Direct and PCT national phase entries per million inhabitants. [H]
1.15.04	High-technology exports, % of manufactured exports	COMTRADE	High-technology exports are products with high R&D intensity, such as in aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery. [H]
1.15.05	Scientific articles, per million people	NSF National Science & engineering Indicators Hong Kong, SAR: University Grants Committee	Article counts are from a selection of journals, books, and conference proceedings in S&E from Scopus. [H]
1.16	Technological infrastructure	ITU (via World Bank), Ookla, M-Labs, The Bandwidth Place	Four indicators measuring the technological infrastructure, internet quality and penetration, and mobile penetration. [sum]
1.16.01	Fixed internet speed, Mbps	Ookla, M-Labs, The Bandwidth Place	Average connection speed in Mbps: data transfer rates for Internet access by end users. The values presented are a weighted average of three internet speed tests Ookla, M-Lab, SpeedTestNet.io. [H]
1.16.02	Internet users, % population	ITU via World Bank, Taiwan: National Communications Commission	Internet users are individuals who have used the Internet (from any location) in the last 3 months. The Internet can be used via a computer, mobile phone, personal digital assistant, games machine, digital TV etc. [H]
1.16.03	Fixed broadband subscriptions (per 100 people)	ITU via World Bank, Taiwan: National Communications Commission	Fixed broadband subscriptions refer to fixed subscriptions to high-speed access to the public Internet (a TCP/IP connection), at downstream speeds equal to, or greater than, 256 kbit/s. This includes cable modem, DSL, fiber-to-the-home/building, other fixed (wired)-broadband subscriptions, satellite broadband and terrestrial fixed wireless broadband. This total is measured irrespective of the method of payment. It excludes subscriptions that have access to data communications (including the Internet) via mobile-cellular networks. It should include fixed WiMAX and any other fixed wireless technologies. It includes both residential subscriptions and subscriptions for organizations. [H]

	Indicator	Source	Definition
1.16.04	Mobile subscriptions (per 100 people)	ITU via World Bank, Taiwan: National Communications Commission	Mobile cellular telephone subscriptions are subscriptions to a public mobile telephone service that provides access to the PSTN using cellular technology. The indicator includes (and is split into) the number of post-paid subscriptions, and the number of active prepaid accounts (i.e., that have been used during the last three months). The indicator applies to all mobile cellular subscriptions that offer voice communications. It excludes subscriptions via data cards or USB modems, subscriptions to public mobile data services, private trunked mobile radio, telepoint, radio paging and telemetry services. [H]
2.01	Inequality (Gini coefficient)	World Bank, Taiwan: Report on the Survey of Family Income and Expenditure, R.O.C., 2020, Hong Kong, SAR: Census and Statistics Department, New Zealand: OECD	The Gini index measures the extent to which the distribution of income (or, in some cases, consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution. A Lorenz curve plots the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest individual or household. The Gini index measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. Thus, a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality. [L]
2.02	Educational attainment	HDR, THES, World Bank	Three indicators measuring the attainment and quality of education. [sum]
2.02.01	Mean years of schooling	UN HDR, Taiwan: Directorate-General of Budget, Accounting, and Statistics, Taiwan (ROC)	The average number of years of education received by people ages 25 and older, converted from education attainment levels using official durations of each level. [H]
2.02.02	University education Index	THES	IMD constructed index to capture the quality of universities. Measures the (1) number, (2) score, (3) score per capita, of the universities in THES 1'000. [H]
2.02.03	Tertiary enrollment	World Bank, Taiwan: Ministry of Education	Gross enrollment ratio is the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the level of education shown. Tertiary education, whether to an advanced research qualification, normally requires, as a minimum condition of admission, the successful completion of education at the secondary level. [H]
2.03	Labor standards	World Bank, Global State of Democracy Indices	Two indicators measuring employee rights, including gender equality and collective bargaining. [sum]
2.03.01	Gender non-discrimination in hiring	World Bank, Global State of Democracy Indices	Two indicators measuring employee rights, including gender equality and collective bargaining. [sum]
2.03.02	Freedom of association and assembly	Global State of Democracy Indices	Existence and enforcement of laws that allow citizens the right to assemble freely and associate into groups such as political parties and trade unions among others. [H]

	Indicator	Source	Definition
2.04	Political stability and absence of violence	World Bank Political Stability and Absence of Violence	Political Stability and Absence of Violence/Terrorism measures perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism. [H]
2.05	Goods produced by forced labor or child labor	US Bureau of International Labor Affairs (ILAB), Global Slavery Index	Three indicators measuring the extent of forced labor or child labor. [sum]
2.05.01	Goods produced by forced labor	US Bureau of International Labor Affairs (ILAB), Global Slavery Index	Two indicators measuring the extent of forced labor. [sum]
2.05.01.a	Goods produced by forced labor, number of goods categories	US Bureau of International Labor Affairs (ILAB), Global Slavery Index	Matrix of goods and their source countries which ILAB has reason to believe are produced by child labor or forced labor in violation of international standards, as required under the Trafficking Victims Protection Reauthorization Act (TVPRA). [L]
2.05.01.b	% population in forced labor	Global Slavery Index	% population in forced labor. [L]
2.05.02	Goods produced by child labour, number of goods categories	US Bureau of International Labor Affairs (ILAB), Global Slavery Index	Matrix of goods and their source countries which ILAB has reason to believe are produced by child labor or forced labor in violation of international standards, as required under the Trafficking Victims Protection Reauthorization Act (TVPRA). [L]
2.06	Government response to human trafficking	US Department of State, Global Slavery Index	Three indicators measuring the government response to human trafficking. [sum]
2.06.01	Government response to human trafficking, Criminalization	US Department of State, Hong Kong, SAR: Same as China	Number of conventions Ratified or Accession. [H]
2.06.02	Government response to human trafficking, Strategy	Global Slavery Index	Government response score. [H]
2.06.03	Government response to human trafficking, Action	US Department of State	The country's tier ranking is based on the government's efforts to combat trafficking as measured against the TVPA minimum standards and compared to its efforts in the preceding year. Score 1-4 corresponding to countries Tier. [L]
2.07	Trade in goods at risk of modern slavery	Comtrade + Global Slavery list	Two indicators measuring the extent that imports and exports adhere to international labor standards. [sum]
2.07.01	Imports of goods at risk of modern slavery, US\$ millions	Comtrade + Global Slavery list, Taiwan: Comtrade recorded as 'Other Asia, nes'	Value of imports in goods and country combinations identified as at risk of modern slavery. [L]

	Indicator	Source	Definition
2.07.02	Exports of goods at risk of modern slavery, US\$ millions	Comtrade + Global Slavery list, Taiwan: Comtrade recorded as 'Other Asia, nes'	Value of exports in goods and country combinations identified as at risk of modern slavery. [L]
2.08	Social mobility, Index	World Economic Forum	The Index measures the intergenerational social mobility in different countries in relation to socioeconomic outcomes. [H]
2.09	Life expectancy at birth	UN HDR, Taiwan: Directorate-General of Budget, Accounting, and Statistics, Taiwan (ROC)	Life expectancy at birth indicates the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life. [H]
2.10	Uneven Economic Development	The Fund for Peace-Fragile States Index	The Uneven Economic Development Indicator considers inequality within the economy, irrespective of the actual performance of an economy. It considers perceptions of inequality as well as the opportunities for groups to improve their economic status.
3.01	Air pollution	OECD, Taiwan: EPA, Hong Kong, SAR: Environmental Protection Department	Levels of particulate matter 2.5 (PM 2.5), to capture the air pollution in a country. [L]
3.02	Deforestation	Yale Environmental Performance Index	Index of the change in a country's forest cover. (NOTE: index, not the value of change). [H]
3.03	% of wastewater treated	UN SDG Indicators Database, Taiwan: The Statistical Yearbook of Construction and Planning Agency, Ministry of the Interior	% of wastewater treated. [H]
3.04	Energy intensity	IEA	The amount of energy consumed (production + imports - exports - bunkers - stock changes) for each dollar of gross domestic product. [L]
3.05	Ecological footprint	Global Footprint Network	The Ecological Footprint adds up all the productive areas for which a population, a person or a product competes. It measures the ecological assets that a given population or product requires to produce the natural resources it consumes (including plant-based food and fiber products, livestock and fish products, timber and other forest products, space for urban infrastructure) and to absorb its waste, especially carbon emissions. [L]
3.06	Renewable energy	IEA	Share of renewables in total energy requirements, %. [H]

	Indicator	Source	Definition
3.07	Environmental standards in trade	UN Treaty Collection, Taiwan: Management Regulations for the Import and Export of Industrial Waste	Count of whether seven conventions are ratified, implemented or not. [sum]
3.07.01	Convention: Hazardous Wastes	UN Treaty Collection, Taiwan: Management Regulations for the Import and Export of Industrial Waste	Count of whether the convention is (1) ratified, (2) implemented or (0) not. [H]
3.07.02	Convention: Prevention of Marine Pollution	UN Treaty Collection, Taiwan: Marine Pollution Control Act	Count of whether the convention is (1) ratified, (2) implemented or (0) not. [H]
3.07.03	Convention: Protection of the Ozone Layer (Vienna)	UN Treaty Collection, Taiwan: https://www.epa.gov.tw/eng/5BF64A445908C525	Count of whether the convention is (1) ratified, (2) implemented or (0) not. [H]
3.07.04	Convention on Climate Change (Kyoto)	UN Treaty Collection	Count of whether the convention is (1) ratified, (2) implemented or (0) not. [H]
3.07.05	The International Timber Agreement	UN Treaty Collection, Taiwan: Regulations for Management of Protection Forest	Count of whether the convention is (1) ratified, (2) implemented or (0) not. [H]
3.07.06	Convention: International Trade in Endangered Species	UN Treaty Collection, Taiwan: Regulations on Import and Export of Endangered Species of Wild Fauna, Flora and Related Products	Count of whether the convention is (1) ratified, (2) implemented or (0) not. [H]
3.07.07	Convention: Prior Informed Consent -Hazardous Chemicals (Rotterdam)	UN Treaty Collection	Count of whether the convention is (1) ratified, (2) implemented or (0) not. [H]
3.08	Transfer emissions	Global Carbon Project	Transfer emissions, in million tonnes carbon. Countries with dirty export industries contribute to an unsustainable model for global trade. [L]

	Indicator	Source	Definition
3.09	Share of natural resources in trade	UNCTAD	Natural resources (ores and metals, mineral fuels, lubricants, and related materials) as a percentage of a country's total trade. [L]
3.10	Carbon	World Bank, EDGAR	Two indicators measuring the extent of CO2 emissions, and accounting for the externalities. [sum]
3.10.1	Carbon pricing	World Bank Carbon Pricing Dash Board	Count of whether the (2) Carbon pricing is currently in effect at the national level, (1) Carbon pricing is scheduled for implementation but is not currently in effect, or (0) Carbon pricing is neither scheduled for implementation nor currently in effect. [H]
3.10.2	CO2 emissions per capita	EDGAR -Emissions Database for Global Atmospheric Research	CO2 emissions by country/region name and include all human activities leading to climate relevant emissions, except biomass/biofuel combustion (short cycle carbon). [L]

About us

Global trade has helped lift hundreds of millions of people around the world out of poverty, but the benefits of trade do not come without their risks. If an economy is unprepared for the consequences of trade growth, it may result in labor disruption, environmental degradation, and worsening inequality. Proactive and responsible government policy and farsighted corporate decision-making can harness the benefits of trade and mitigate its excesses.

The Hinrich Foundation and the IMD World Competitiveness Center have combined their expertise to build the Hinrich-IMD Sustainable Trade Index, a framework for policymakers, business executives, and civil society leaders to understand and advance sustainable global trade.

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The Hinrich Foundation is an Asia based philanthropic organization that works to advance mutually beneficial and sustainable global trade.

We believe sustainable global trade strengthens relationships between nations and improves people's lives. We support original research and education programs that build understanding and leadership in global trade. Our approach is independent, fact-based, and objective. We are an authoritative source of knowledge, sharp analysis, and fresh thinking for policymakers, business, media, and scholars engaged in global trade.

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The Hinrich-IMD Sustainable Trade Index (STI) measures how effectively 30 major trading economies are prepared for long-term economic growth, environmental protection, and societal development across 71 indicators. The STI 2023 is the index's fifth edition.

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