Purchasing Power Parities for Policy Making

A Visual Guide to Using Data from the International Comparison Program

WORLD BANK GROUP

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Cover design: Will Kemp, World Bank Group

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Purchasing power parities for policy making: a visual guide to using data from the International Comparison Program was prepared by the ICP Global Office at the World Bank Development Data Group, in collaboration with the following partner agencies: the African Development Bank (AfDB) , the Asian Development Bank (ADB), the Interstate Statistical Committee of the Commonwealth of Independent States (CIS-STAT), the Statistical Office of the European Union (Eurostat), the International Monetary Fund (IMF), the Organisation for Economic Co-operation and Development (OECD), the United Nations Economic Commission for Latin America and the Caribbean (UN-ECLAC), and the United Nations Economic and Social Commission for Western Asia (UN-ESCWA).

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The following colleagues provided useful contributions and feedback: Muhammad Faisal Ali Baig, Gaurav Bhardwaj, Stephane Hallegatte, Zahid Hasnain, Timothy Herzog, Haruna Kashiwase, Christoph Lakner, Hiroko Maeda, Marta Schoch, Brian Stacy, Emi Suzuki, and Usama Zafar from the World Bank; Talal El Hourani and Rohan Pathirage from the United Nations Educational, Scientific and Cultural Organization (UNESCO); Kate Pugh from the U.K. Office for National Statistics; Bettina Aten and Eric Figueroa from the U.S. Bureau of Economic Analysis; and Đỗ Thị Ngọc and Tạ Thị Thu Việt from the General Statistics Office of Vietnam.

This publication was made possible through financial support from the Trust Fund for Statistical Capacity Building III (TFSCB-III). TFSCB-III is supported by the United Kingdom's Foreign, Commonwealth & Development Office, the Department of Foreign Affairs and Trade of Ireland, and the Governments of Canada and Korea. The publication layout and cover were designed by Will Kemp, and the final editing and proofreading were done by Elizabeth Purdie.

Abbreviations

AIC	actual individual consumption
ASPIRE	Atlas of Social Protection Indicators of Resilience and Equity
ASTI	Agricultural Science and Technology Indicators
BEA	Bureau of Economic Analysis
EU	European Union
Eurostat	Statistical Office of the European Union
FAO	Food and Agriculture Organization
GCF	gross capital formation
GDI	Gender Development Index
GDP	gross domestic product
GFCF	gross fixed capital formation
GII	Global Innovation Index
GNI	gross national income
HDI	Human Development Index
HEFPI	Health Equity and Financial Protection Indicators database
ICP	International Comparison Program
ICT	information and communication technology
IEA	International Energy Agency
IFPRI	International Food Policy Research Institute
ILO	International Labour Organization
IMF	International Monetary Fund
INSEAD	Institut Européen d'Administration des Affaires
ITU	International Telecommunications Union
MJ	megajoules
NPISHs	nonprofit institutions serving households
OECD	Organisation for Economic Co-operation and Development
ONS	Office for National Statistics
PLI	price level index
PPP	purchasing power parity
RPP	regional price parity

RRCPL	relative regional consumer price level
SCOLI	spatial cost of living index
SDG	sustainable development goal
SNA	System of National Accounts
UN	United Nations
UNDP	United Nations Development Programme
UNESCO	United Nations Educational Scientific and Cultural Organisation
UNSD	United Nations Statistics Division
WDI	World Development Indicators
WEF	World Economic Forum
WHO	World Health Organization
WWBI	Worldwide Bureaucracy Indicators

Introduction

The International Comparison Program (ICP) is a global initiative to collect comparative price and expenditure data in participating economies and to subsequently produce purchasing power parities (PPPs) and price level indexes (PLIs) for each economy. PPPs are used to convert volume and per capita measures of gross domestic product (GDP) and its expenditure components into a common currency. Main results from the most recent cycle, ICP 2017, were published in May 2020 in *Purchasing Power Parities and the Size of World Economies*.[1]

As one of the world's largest, and most enduring, data programs, the ICP is reliant upon a strong partnership of global, regional, and national implementing agencies from nearly 200 economies. Through this partnership, statistical standards and methods in price data collection and validation, and in national accounts expenditure data compilation, have been developed. The ICP Global Office at the World Bank and the ICP regional implementing agencies work with the national agencies to ensure that the work carried out across all economies adheres to these standards and methods. The ICP is carried out under the auspices of the United Nations Statistical Commission and the ICP Governing Board has the ultimate oversight over the program, setting forth its strategies and policies. An independent Technical Advisory Group assures the conceptual integrity and methodological soundness of the program. Under this robust governance framework,[2] the extensive contributions of the ICP stakeholders at the national, regional and global levels ensure that the ICP provides its users with robust and relevant analytical data.

This investment in the ICP enables a host of PPP-based indicators across the socioeconomic spectrum from poverty and inequality, to health and education, to energy and climate, through to labor, productivity, trade, competitiveness, and infrastructure. Furthermore, data collected by the ICP, such as the prices of goods and services and the wages of public sector employees, inform research and analyses resulting in global datasets on food security and public sector compensation. The ICP also compiles detailed national accounts expenditure data, which have been used by researchers to analyze the effect of income on consumption patterns as well as the composition of typical food baskets around the world.

Thus, the efforts made by participating economies in conducting the ICP not only result in a global public good, but also inform their own programs and strategies including their commitments to the United Nations' 2030 Agenda for Sustainable Development.[3] The wide use of PPPs in many of the agenda's Sustainable Development Goals (SDGs) reflects their importance and relevance to monitoring national progress and making spatial comparisons. PPPs are used for monitoring how far the world has come in achieving no poverty (SDG 1); zero hunger (SDG 2); good health and well-being (SDG 3); quality education (SDG 4); affordable and clean energy (SDG 7); decent work and economic growth (SDG 8); better industry, innovation, and infrastructure (SDG 9); and reduced inequalities (SDG 10). In addition, PPPs will be used in coming years to monitor progress towards SDG 11, which seeks to make cities and human settlements inclusive, safe, resilient, and sustainable.

Purchasing power parities for policy making: a visual guide to using data from the International Comparison Program provides an overview of how PPPs, price levels and other ICP results allow national governments, policy makers, and other users in analyses to measure the effectiveness of domestic policies, compare themselves with other economies, and track development and progress over time.

The seventy visualizations presented provide a snapshot of the data and indicators currently available. Click on the  icon next to each to explore an interactive version of the figure or map and access the underlying data. A web-based version of the full guide is also available.[4]

Notes

1. https://openknowledge.worldbank.org/bitstream/handle/10986/33623/9781464815300.pdf
2. http://pubdocs.worldbank.org/en/255521487200449880/ICP-GB01-Doc-Governance-Framework-Final.pdf
3. https://sdgs.un.org/2030agenda
4. https://www.worldbank.org/en/programs/icp/brief/VC

Uses and limitations of Purchasing Power Parities

Purchasing power parities (PPPs) are primarily used to convert economies' national accounts expenditures on GDP and its components into a common currency. PPPs control for differences in price levels between economies and equalize the purchasing power of the various currencies used across economies, thus enabling cross-country comparisons that reflect only differences in the volume of national economic outputs. PPPs are also used to derive spatial price level indexes (PLIs), that is, the ratio of an economy's PPP to its market exchange rate. As such, PPPs are used in many analyses, and the applications of PPPs presented in this visual guide cover a wide range of uses by data compilers and agencies responsible for data indicators. However, compilers and users should be mindful of the appropriate use of PPPs provided by the International Comparison Program (ICP). The following guidelines, limitations, and recommended uses of PPPs set out the analyses for which they are suitable from a methodological standpoint and should guide data compilers in their production of PPP-based indicators as well as users in their scrutiny of PPP-based data. Box 1 provides a summary of these recommendations.

BOX 1 Recommendations on the use of purchasing power parities

Recommended uses:

- To make spatial comparisons of GDP and its expenditure components.
- To make spatial comparisons of price levels.
- To group economies by their volume indexes and price levels.

Recommended uses with limitations:

- To analyze changes over time in relative GDP per capita and relative prices.
- To analyze price convergence.
- To make spatial comparisons of the cost of living.
- To use PPPs calculated for GDP and its expenditure components as deflators for other values.

Uses not recommended:

- As a precise measure to establish strict rankings of economies.
- As a means of constructing national growth rates.
- As a measure to generate output and productivity comparisons by industry.
- As an indicator of the under- or overvaluation of currencies.
- As an equilibrium exchange rate.

ICP PPPs are published for GDP and selected expenditure components (see Table 1 in the technical note and the ICP Classification of Expenditures).[1] Many applications and indicators use PPPs estimated at the level of GDP or at the level of Households and Nonprofit Institutions Serving Households (NPISHs) Final Consumption Expenditure (otherwise known as private consumption), which reflect the average difference in prices between countries across the whole economy or for those goods and services that fall under private consumption, respectively. PPPs for expenditure components below these levels reflect the price differences between countries for the goods and services that fall within the expenditure component and hence they may be used for specific analyses. For example, the expenditure component for total Health is the sum of household consumption expenditure and expenditures by nonprofit institutions serving households (NPISHs) and government on medical products, appliances, and equipment, outpatient services, and hospital services actually consumed by households. Therefore, ICP PPPs at the level of total Health reflect price levels of the goods and services being consumed on health, rather than the general price levels prevalent in the economy, and hence they may be used to measure the volumes of health goods and services consumed.

In a similar way, users wishing to make comparisons of goods and services consumed by households and individuals, or the incomes needed to purchase these items, as well as comparisons of material well-being, should use PPPs at the level of private consumption or actual individual consumption, rather than at the level of GDP. A fuller discussion is devoted to this in the section Per capita measures in Chapter 1. Annual GDP and private consumption PPPs are available through the World Bank's World Development Indicators (WDI).[2] The ICP database[3] in the World Bank's Databank provides PPPs for the 44 expenditure components listed in Table 1 for the ICP reference years 2011 and 2017, while PPPs at the level of *GDP*, *Households and Nonprofit Institutions Serving Households (NPISHs) Final Consumption Expenditure*, *Actual Individual Consumption*, *General Government Final Consumption Expenditure*, *Gross Fixed Capital Formation*, and *Domestic Absorption* are provided for the interim years 2012 to 2016.

The ICP does not use the production approach nor the income approach to measuring GDP. Instead, ICP comparisons of GDP are based on the expenditure approach, where GDP is measured as the sum of the final expenditures on goods and services plus exports less imports of goods and services as defined by the United Nations System of National Accounts.[4] This expenditure approach allows comparisons of the levels and structures of the principal elements of final demand, that is, consumption and investment, at the level of GDP and at the detailed breakdown levels of GDP into its expenditure components. However, it does not allow for the estimation of PPPs for individual industries or sectors; this would only be possible if ICP PPPs were estimated from the production side, instead of from the expenditure side. Thus, productivity comparisons using ICP PPPs can only be made at the level of GDP and not separately for the individual sectors and industries that make up an economy.

While ICP PPPs are available for different expenditure components, they do not reflect the consumption habits of any particular population group, such as the affluent or those living below poverty thresholds. Instead, the basket of goods and services and expenditures used to calculate ICP PPPs represents the average consumption within an economy. Recent studies[5] have attempted to estimate PPPs for certain population groups, such as those living below poverty thresholds; however, the results indicated that these PPPs are not significantly different from the ICP PPPs, as the relative difference in price and expenditure patterns between certain population groups within an economy tend to be similar to the differences observed between comparable groups in other economies. In Chapter 2 analyses of poverty and inequality based on income or consumption levels are measured using PPPs at the level of *Households and Nonprofit Institutions Serving Households (NPISHs) Final Consumption Expenditure*.

With regards to subnational and urbanization analyses, ICP PPPs are pertinent to countries or economies as a whole and hence they cannot be used in comparisons between subnational regions or between urban and rural areas within an economy. Some economies use ICP methods and subnational data to estimate PPPs at the subnational level to illustrate intra-country differences in prices and their effect on the cost of living and the purchasing power of incomes. Examples of this type of exercise in Vietnam, the United States, and the United Kingdom are presented in the section Subnational analyses in Chapter 1.

ICP comparisons include myriad economies ranging from city-states, such as Singapore, and small islands, such as Grenada, to large and diverse economies, such as Brazil, China, India, the Russian Federation, South Africa, and the United States. Because of wide differences in the price and structure of economies and the inherent statistical variability in the methods used to calculate PPPs, comparisons between economies that are similar are more precise than comparisons between economies that are dissimilar.

ICP PPPs are estimated using prices collected in a given reference year, or cycle. Thus, ICP PPPs and PPP-based expenditures estimated at different points in time cannot be directly compared, nor be used to measure domestic inflation, as they represent both changes in volume and in price between the two periods. To isolate changes in volume it is necessary to select a base year and to extrapolate its relative volume levels over the other years by applying the relative rate of volume growth. This provides a time series of volume indices at a constant uniform price level that replicates exactly the relative movements of the volume growth of each economy. Users should note that underlying this method is the assumption that price structures and relatives do not change over time. However, relative prices do change over time and, if such changes are ignored over long periods, a biased picture of the relative growth and development of economies can result. The choice of base year can also influence the picture that emerges. The temporal analyses provided in this publication use this approach of *constant prices* - that is, a base year's PPP is applied as the conversion factor to all data points, with the expenditures over time being expressed in *constant PPP dollars*. The base year chosen is usually an ICP reference year. On the other hand, *current PPP dollars* refer to the PPPs for each year being applied to the values expressed in the *current prices* of a single year. Typically, analyses focusing on one year's data use current PPP dollars.

The convergence or divergence of prices among economies is relevant to competition policy and consumer protection. ICP PLIs provide a means of observing the movement of price levels over time, but they should be used with caution as they are influenced by market exchange rate fluctuations. Furthermore, there may be volatility when the basket of goods and services to be priced changes from one price survey to another in order to accommodate market developments. For example, the basket for food and non-alcoholic beverages is relatively stable, while that for electronic goods is updated each time it is surveyed as technology evolves at a fast rate. Volatility is also seen at lower levels of aggregation, where sample sizes are small. For these reasons, PLIs are better suited to monitoring price convergence at higher levels of aggregation over long periods of time.

ICP PPPs should not be interpreted as equilibrium exchange rates. They refer to the entire range of goods and services that make up GDP and include items such as construction, housing, health, education, and government services that are not traded internationally. Moreover, PPPs are calculated using expenditure weights that reflect domestic demand. Market exchange rates are determined by the total demand for a particular currency, and financing foreign trade and capital transfer are components of this demand. PPPs, therefore, cannot be used to indicate an economy's "correct" exchange rate and therefore cannot serve as an indication as to whether the currency of an economy is under- or overvalued.

ICP PPPs are not designed to make international comparisons of monetary flows, such as aid and foreign direct investment, or trade flows. For such comparisons, market exchange rates should be used. Note that many international comparisons require neither PPPs nor market exchange rates. For example, to compare real growth rates of GDP between economies, each economy's own published growth rate can be used. Similarly, a comparison of government debt as a ratio of GDP can be calculated in each economy's own currency.

The ICP provides users with a comprehensive and high-quality dataset of economic measures based on consistent methods being applied across all participating economies. Data are collected according to robust classifications and processes and are validated throughout data collection and compilation. Nonetheless price and expenditure data are subject to sampling, measurement, and classification errors. Additionally, the measurement of GDP is not uniform over all participating economies and the GDP of those with a high proportion of nonobserved economic activities, such as a large informal sector, could be underestimated. Furthermore, the estimation of the population size of each economy is also subject to measurement errors related to the quality of the underlying data.

Thus, PPPs are statistical estimates rather than precise measures and should be treated as approximations to true values. Users should therefore be cautious of drawing conclusions based on small differences in PPP-based expenditures or price levels between economies. Additionally, PPP-based estimates and indexes at the higher levels of aggregation are more reliable. At lower aggregation levels, estimates are likely to have slightly larger error margins. Furthermore, PPPs based on the prices of goods are more precise than PPPs based on the prices of services. Due to the complexity of the processes used to collect the data and calculate PPPs, it is not possible to directly calculate margins of error.

Further information on the recommended uses, limitations, and main applications of PPPs and other ICP data is provided on the ICP website[6] and in Chapter 3 of Purchasing Power Parities and the Size of World Economies: Results from the 2017 International Comparison Program.[7]

Notes

1. https://www.worldbank.org/en/programs/icp/brief/methodology-national-accounts
2. https://datatopics.worldbank.org/world-development-indicators/
3. https://databank.worldbank.org/source/icp-2017
4. https://unstats.un.org/unsd/nationalaccount/sna.asp
5. For example, see http://documents1.worldbank.org/curated/en/271051500404610210/pdf/WPS8150.pdf
6. http://icp.worldbank.org
7. https://openknowledge.worldbank.org/bitstream/handle/10986/33623/9781464815300.pdf

1 The size of the economy and price levels

Size of the economy

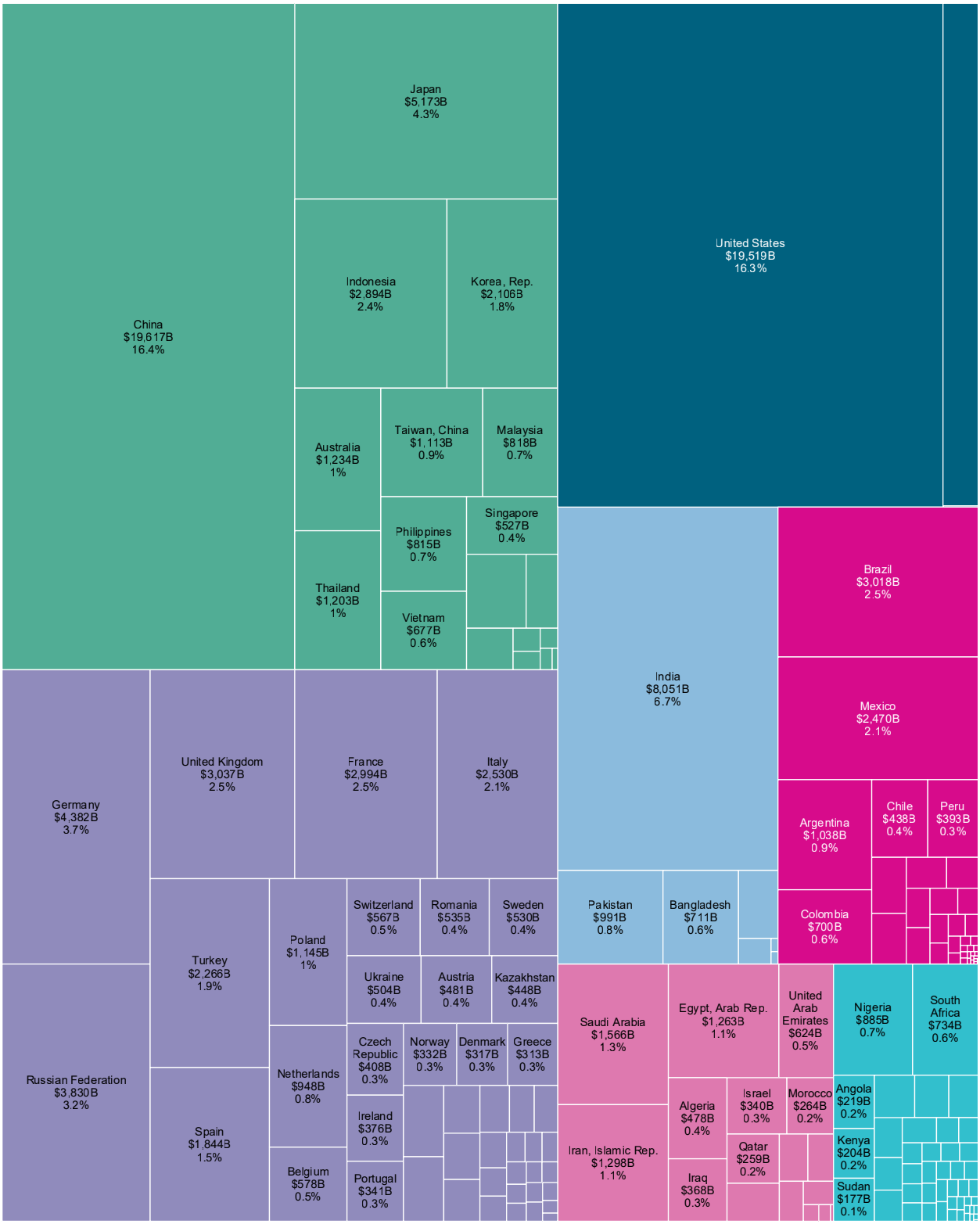
Gross domestic product (GDP) is a measure of economic output within an economy. The ICP follows the expenditure or demand approach to estimating GDP, that is, the sum of the final expenditures on goods and services plus exports less imports of goods and services. This approach allows ICP results to be used in comparisons of the levels of the principal elements of final demand, that is, consumption and investment. Thus, ICP data are appropriate for many different types of economic analysis benefitting policy making, including economic forecasting and poverty analyses.

Internationally comparable estimates of GDP expressed in PPP terms overcome the shortcomings of the alternative approach of using market exchange rate-converted estimates of GDP. The latter reflect not only differences in the volume of output but also differences in national price levels, and thus inflate the size of higher-income economies, where price levels tend to be higher for non-tradable goods, and deflate the size of lower-income economies where prices are generally lower. Furthermore, the volatility of market exchange rates and their decoupling from relative prices may result in fluctuating estimates of GDP. PPP-based estimates effectively neutralize these distortions. PPP-based cross-country comparisons of GDP (*figure 1.1*) and its expenditure components only reflect differences in economic outputs or volume, as PPPs control for price level differences between economies and account for the relative purchasing power of currencies in their national markets.

FIGURE 1.1 PPP-based GDP and share of global PPP-based GDP, 2017

2017 PPP$ (billions), and global share (%)

East Asia and Pacific
Europe and Central Asia
Latin America and the Caribbean
Middle East and North America
North America
South Asia
Sub-Saharan Africa

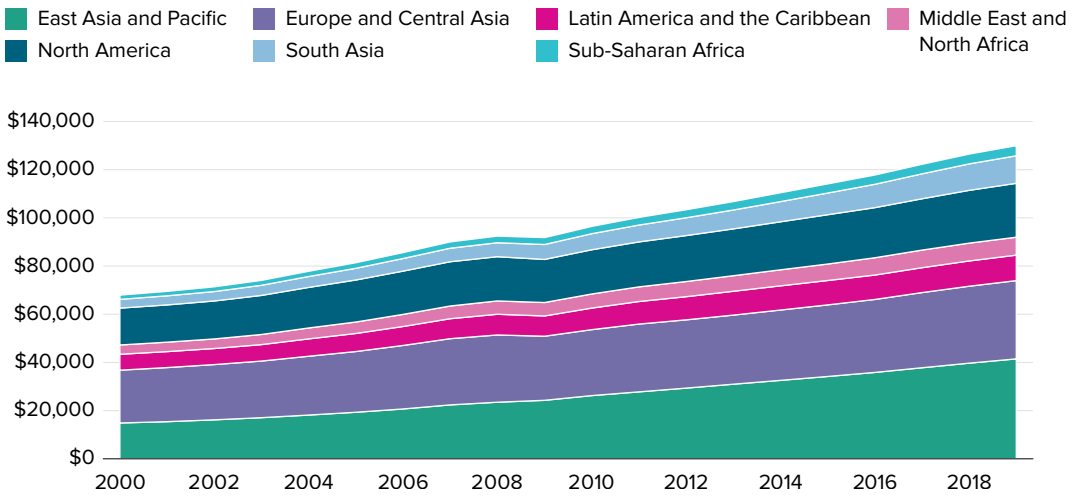


Source: ICP 2017

The change over time in the volume of output can be tracked by measuring PPP-based GDP at constant prices for a given ICP reference year such as 2017 (*figure 1.2*).

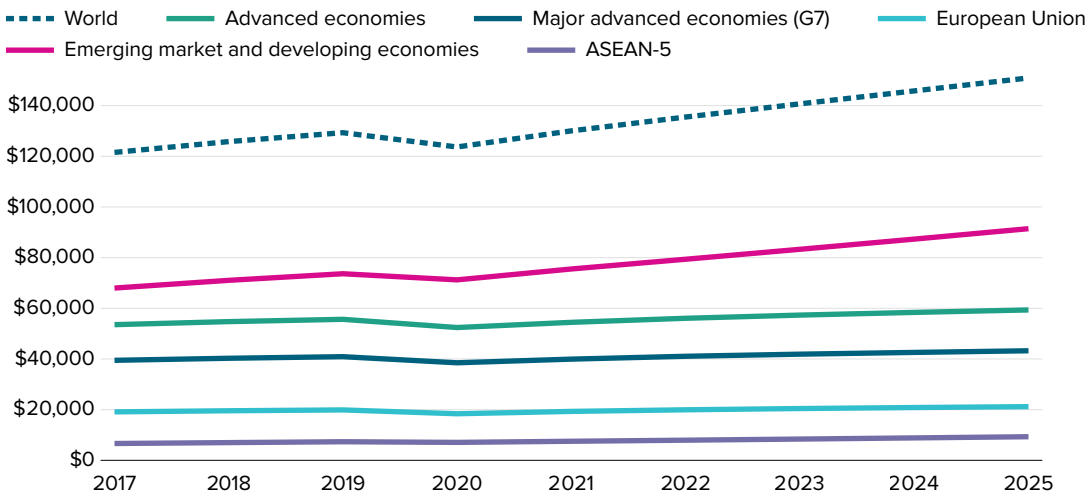
The International Monetary Fund (IMF) calculates implied PPP conversion factors[1] using the growth in relative GDP deflators (the deflator of a country divided by the deflator of the United States). These conversion factors are used to project PPP-based GDP at the country level (*figure 1.3*). Furthermore, country group

FIGURE 1.2 PPP-based GDP, by region



Source: ICP 2017; World Development Indicators (NY.GDP.MKTP.PP.KD)

FIGURE 1.3 PPP-based GDP projections, by country group



Source: World Bank staff calculations based on IMF World Economic Outlook data

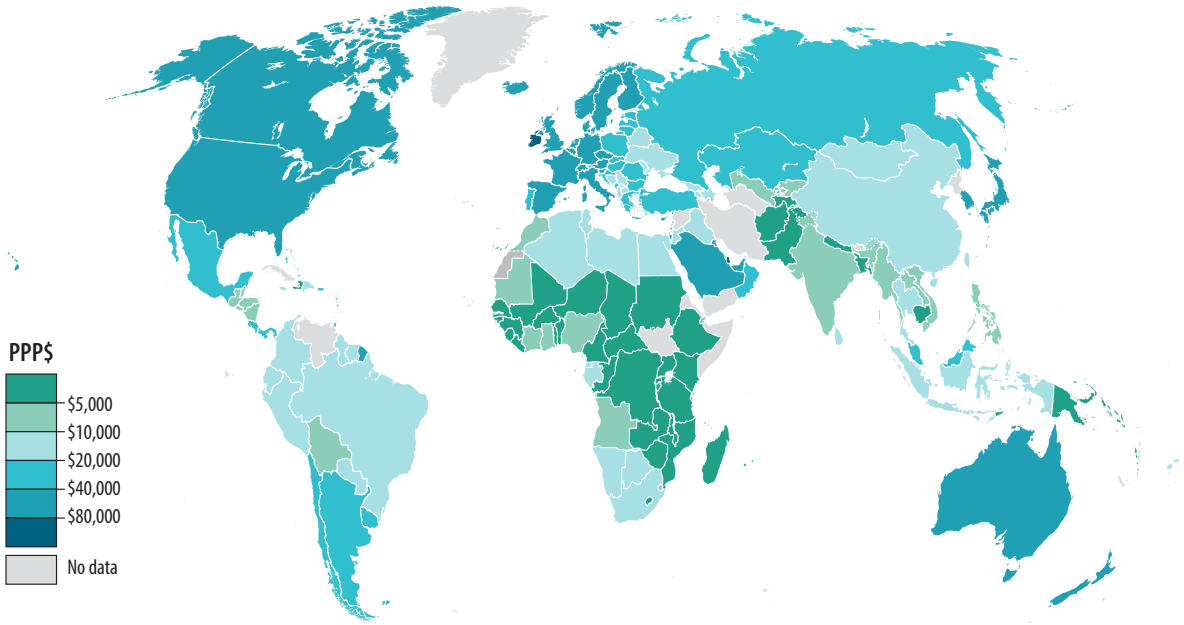
data or aggregates relating to the domestic economy, whether growth rates or ratios, are weighted by PPP-based GDP as a share of world total or country group GDP.

Per capita measures

PPP-based GDP per capita (*map 1.1*) and PPP-based household consumption per capita are sometimes considered indicators of the material well-being of individuals and households within an economy. However, both indicators have shortcomings in this regard. GDP includes certain components and transactions that are arguably less relevant when valuing a household's current material well-being. For example, the GDP measure assigns high values to "income-rich" economies, such as investment hubs or resource-based countries, where household consumption accounts for a relatively small share of total GDP. This is typically because profits account for a much larger part of national income than wages and salaries.[2] PPP-based household consumption per capita is arguably a better measure of material well-being than GDP per capita. However, this measure only values goods and services acquired by households directly through their own expenditures. This may result in a

MAP 1.1 PPP-based GDP per capita, 2019

PPP$



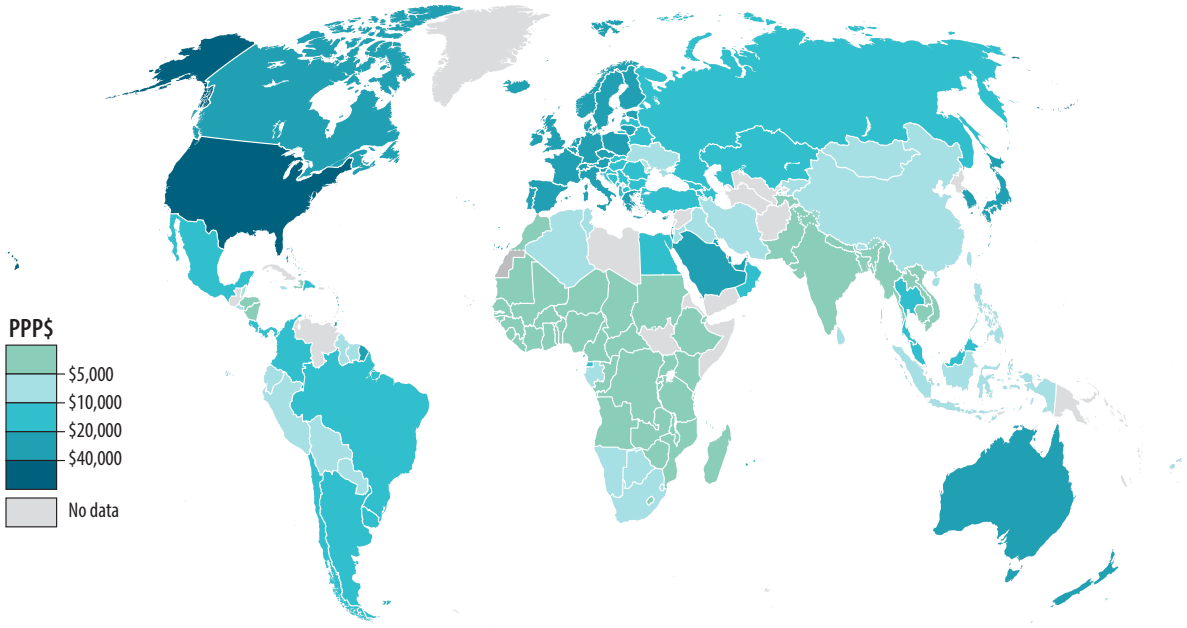
Source: ICP 2017; World Development Indicators (NY.GDP.PCAP.PP.CD)

misrepresentation of the true material well-being of households in some economies as it does not account for goods and services related to housing, health care, recreation and culture, education, and social protection provided by government, charities and nongovernmental organizations.[3]

PPP-based actual individual consumption (AIC) per capita addresses these shortcomings and provides a more accurate measure of the material well-being enjoyed by households in economies across the world. AIC is the sum of the individual consumption expenditures of households, nonprofit institutions serving households (NPISHs), and government. It accounts for goods and services actually consumed by households, irrespective of whether they were purchased and paid for by households directly, or by government, or by nonprofit organizations[4] (*map 1.2*). Per capita measures use a mid-year population.

MAP 1.2 PPP-based AIC per capita, 2017

PPP$



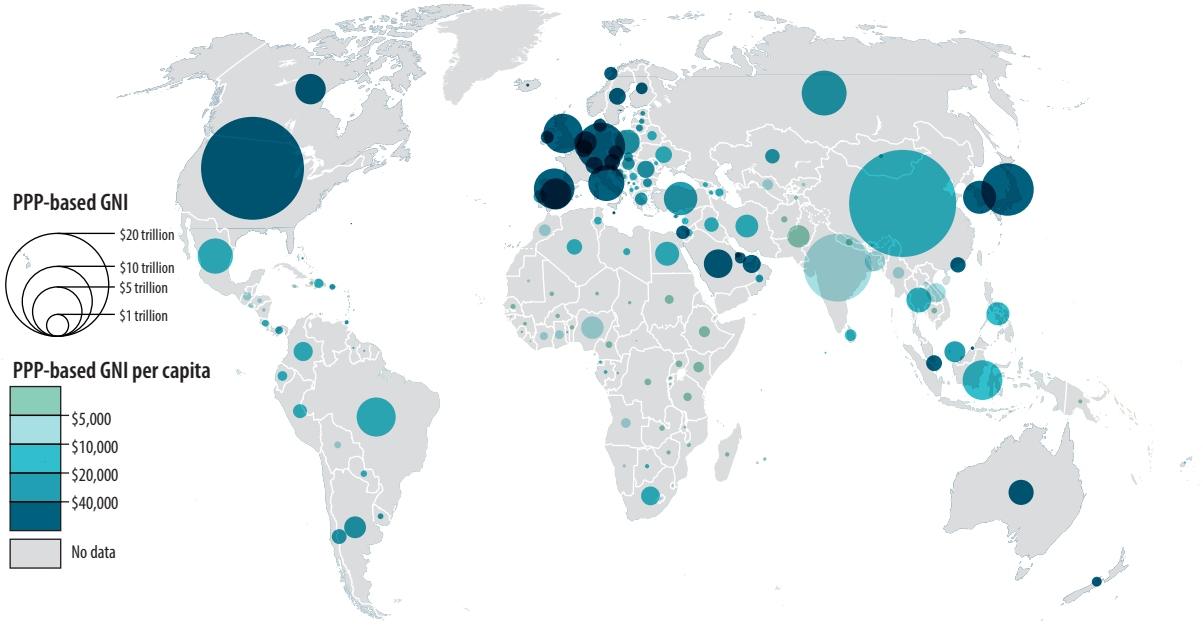
AIC = actual individual consumption. AIC expenditures in local currency units are converted to PPP-based expenditures using the PPP for the expenditure component Actual Individual Consumption.

Source: ICP 2017

Gross national income (GNI) can also be expressed in PPP terms and is defined as the sum of the value added by all resident producers plus any product taxes (less subsidies) not included in the valuation of output plus net receipts of primary income (compensation of employees and property income) from abroad (*map 1.3*).

MAP 1.3 PPP-based GNI and GNI per capita, 2019

PPP$



GNI = gross national income.

Source: ICP 2017; World Development Indicators (NY.GNP.MKTP.PP.CD; NY.GNP.PCAP.PP.CD)

Price levels

Price level indexes (PLIs) from the ICP provide a measure of the differences in price levels between economies by indicating, for a given expenditure component level, if the price level for a given economy is lower or higher than the world average. ICP PLIs are calculated as the ratio of an economy's PPP, for GDP or the relevant expenditure component, to its market exchange rate, as defined by the local currency to the US dollar market exchange rate. At the level of GDP, the PLI measures the differences in the general price levels of economies. *Figure 1.4* shows regional PLIs based on the world average set equal to 100 for GDP and major expenditure components. Typically, higher-income economies have higher price levels, while lower-income economies have lower price levels and *figure 1.5* shows the GDP level PLI against GDP per capita for each economy.

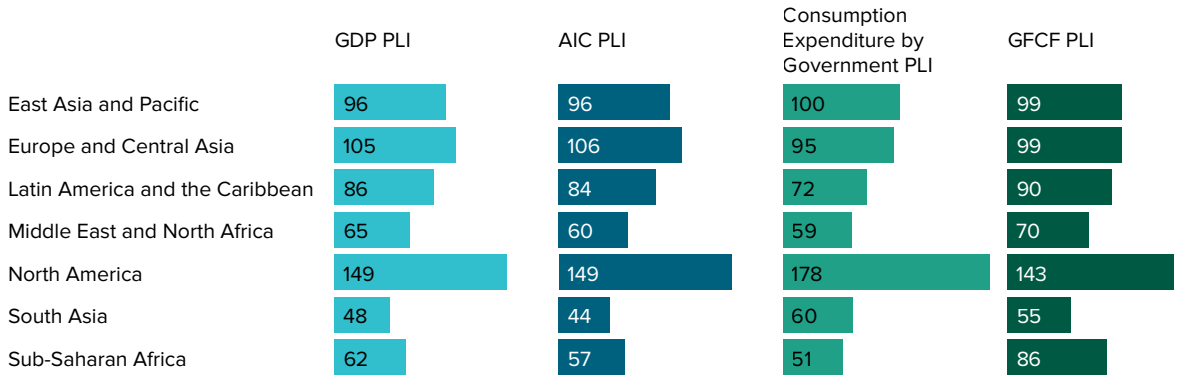
Subnational analyses

PPPs can be constructed at subnational levels to reflect the different price levels and economic structures prevalent within a country. These subnational PPPs can assist with domestic analyses at the state, province, and regional levels and help to direct appropriate locale-specific policy initiatives.

The General Statistics Office of Vietnam produces the subnational Spatial Cost of Living Index[5] (SCOLI), based on prices collected throughout the country's six economic regions (*figure 1.6* and *figure 1.7*). The SCOLI data provide a window on how living standards, economic performance, general productivity,

FIGURE 1.4 Price level indexes of major expenditure components, 2017

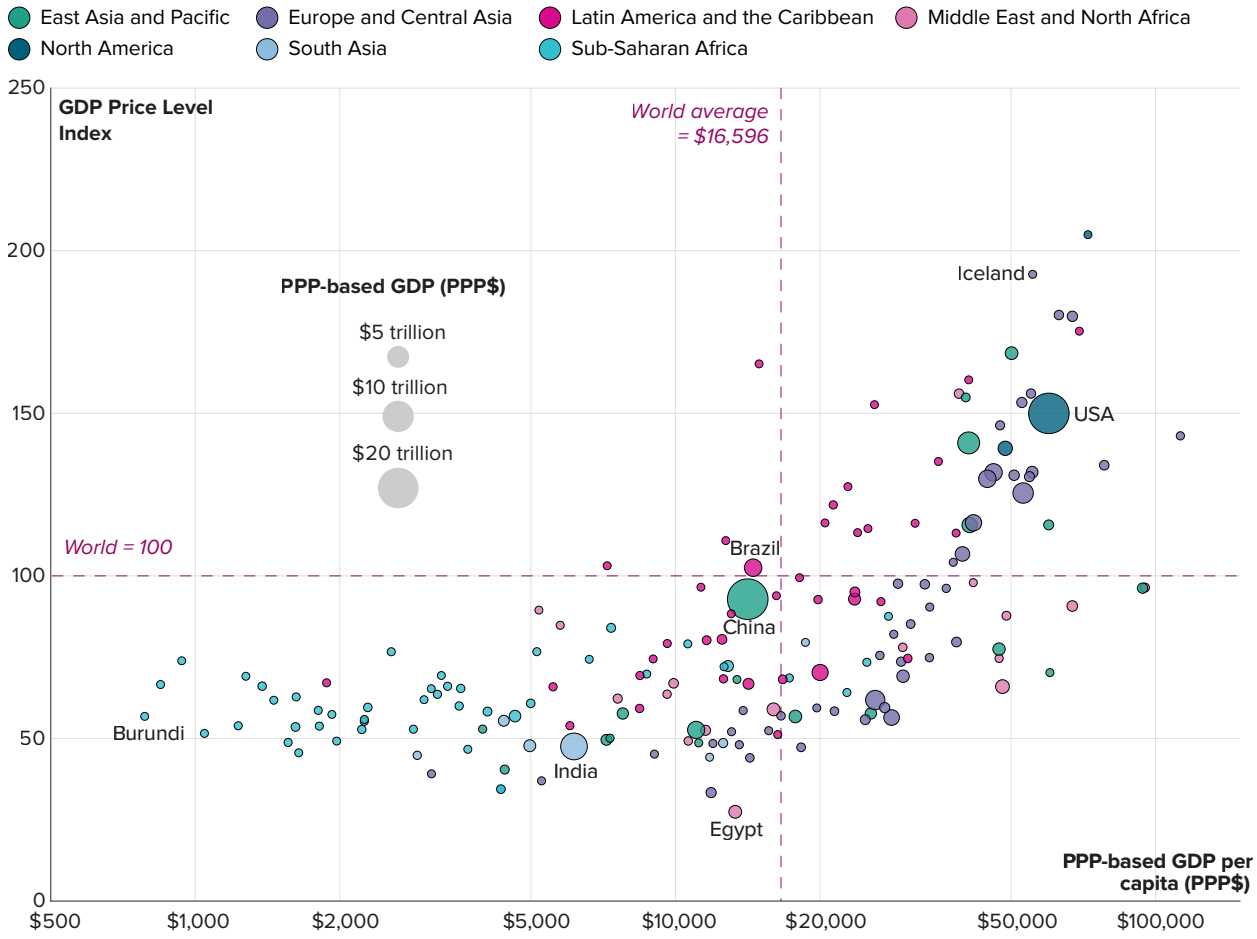
World = 100



AIC = actual individual consumption, GFCF = gross fixed capital formation, PLI = price level index. The PLI for each expenditure component is calculated as the ratio of the PPP at the given expenditure component level to the market exchange rate, with the world average PLI for each expenditure component set equal to 100.

Source: ICP 2017

FIGURE 1.5 PPP-based GDP per capita and GDP price level index, 2017

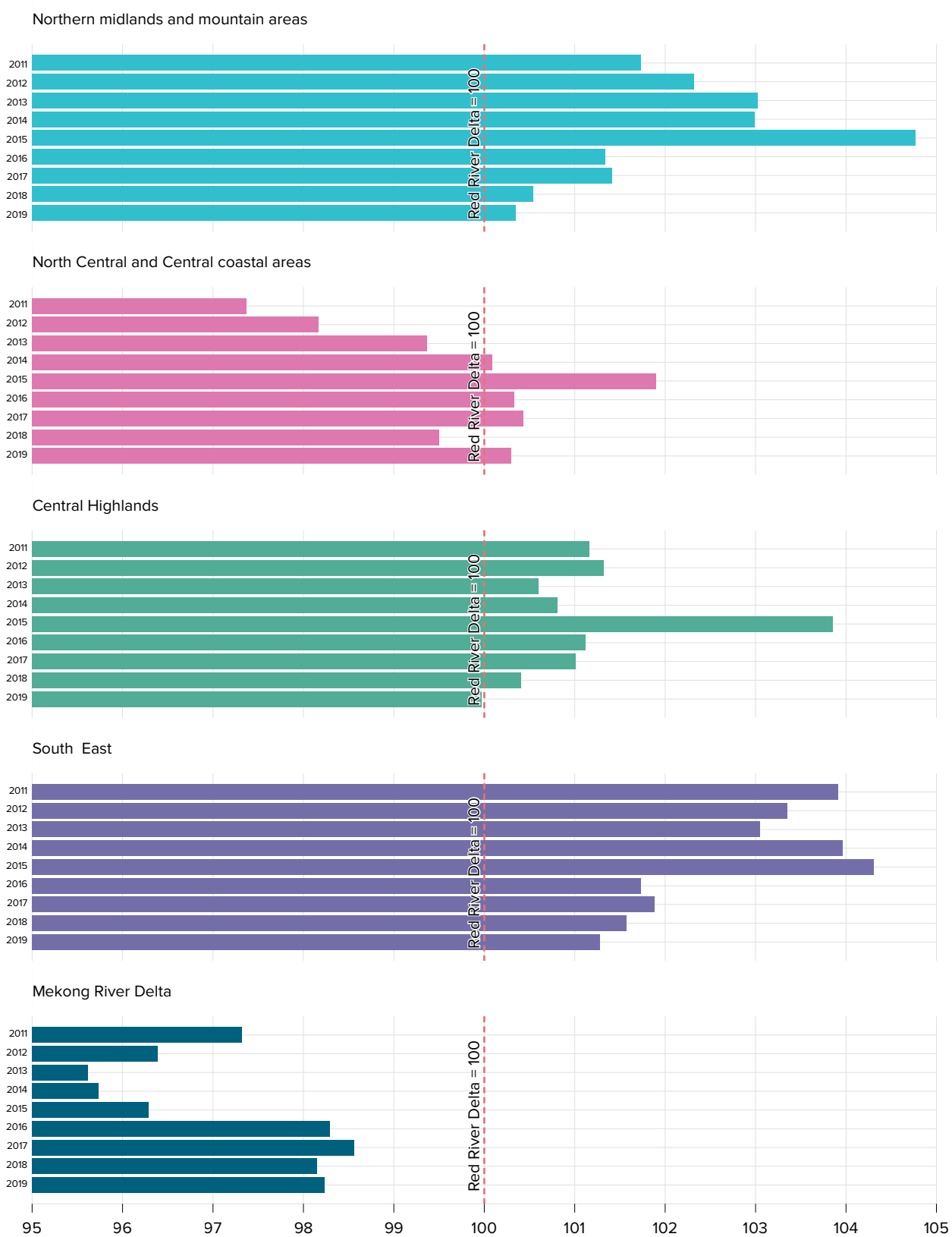


A logarithmic scale is used for PPP-based GDP per capita.

Source: ICP 2017

FIGURE 1.6 Spatial cost of living index for Vietnam regions

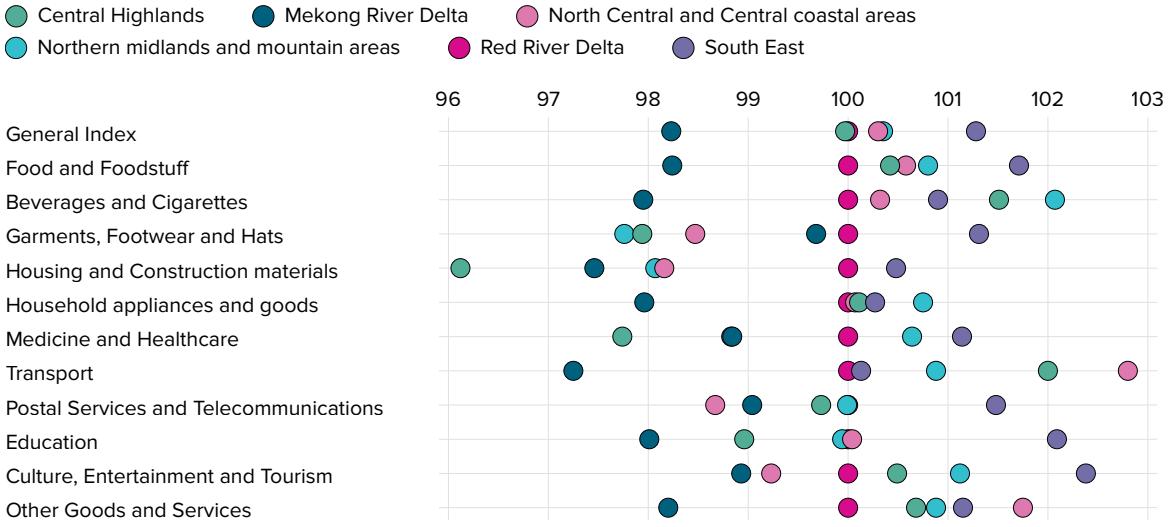
Red River Delta = 100



Source: General Statistics Office of Vietnam

FIGURE 1.7 Spatial cost of living index by commodity group for Vietnam regions, 2019

Red River Delta = 100



Source: General Statistics Office of Vietnam

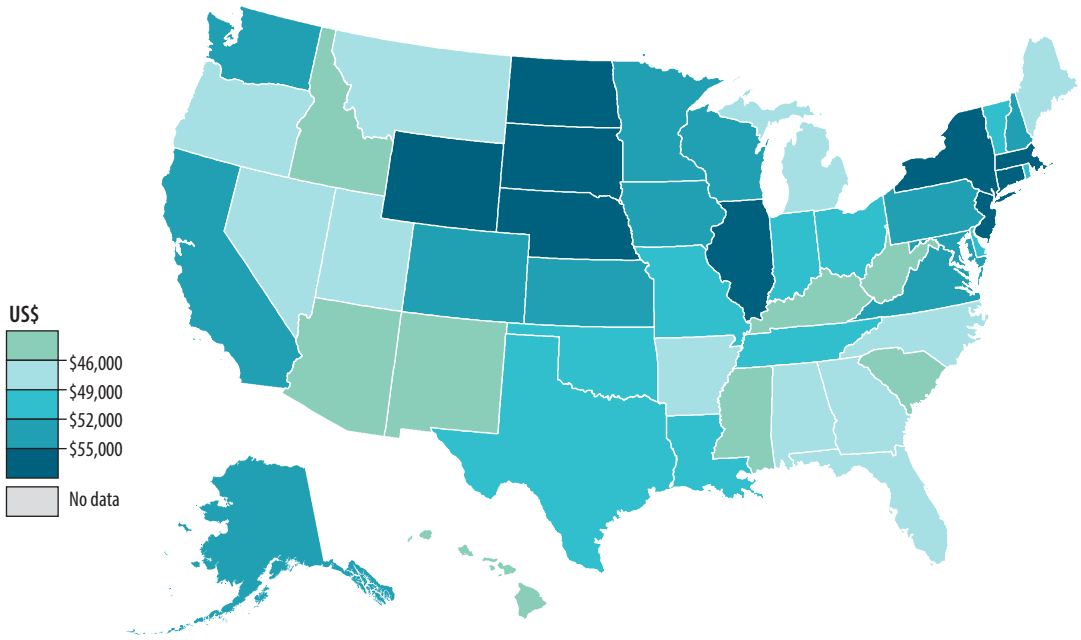
and price competitiveness vary across Vietnam. The data inform a range of regional socioeconomic development policies such as analyses of the impact of poverty reduction policies, hardship allowances, and wage subsidies in the different regions. Furthermore, business enterprises use SCOLI data to evaluate competitiveness related to price, output, market share, and product cost. Employees and employers use the index to negotiate wage rates and assess inter-provincial migration advantages and disadvantages.

The Bureau of Economic Analysis[6] (BEA) in the United States produces annual regional price parities (RPPs) by state and metro area. State RRPs and the national personal consumption expenditures price index are used to calculate real personal incomes at the subnational level, which reflect price differences across the country (*map 1.4*). RPPs are also used for adjustments to poverty estimates, comparisons of minimum wage levels, and the calculation of pension estimates in different parts of the country among other applications.

The Office for National Statistics[7] (ONS) in the United Kingdom produces relative regional consumer price levels (RRCPLs) which provide an indication of a region's price level compared with the UK average price level for a number of goods and services aggregates (*figure 1.8*).

MAP 1.4 Real per capita personal income, United States, 2019

US$



Real personal income for states is personal income divided by the regional price parities and the national personal consumption expenditure price index. Real per capita personal income is total real personal income divided by total mid-year population.

Source: BEA

FIGURE 1.8 Regional consumer price levels for selected expenditure components, United Kingdom, 2016

	All	Food & non-alcoholic beverages	Household & housing services	Transport
London	107	102.2	105.1	103.3
England (excluding London)	98.7	97.6	98.7	100.4
Scotland	100.4	99.8	99.7	99.7
Wales	98.5	100.8	99.6	100.6
Northern Ireland	97.7	99.7	97	96.1

Source: ONS

Notes

1. https://www.imf.org/external/pubs/ft/weo/faq.htm#q4a
2. See Deaton and Schreyer, 2020
3. See Chapter 3 of Purchasing Power Parities and the Size of World Economies: Results from the 2017 International Comparison Program
4. See Chapter 3 of Purchasing Power Parities and the Size of World Economies: Results from the 2017 International Comparison Program
5. https://www.gso.gov.vn/en/px-web/?pxid=E0837&theme=Trade%2C%20Price%20and%20Tourist
6. https://www.bea.gov/data/prices-inflation/regional-price-parities-state-and-metro-area
7. https://www.ons.gov.uk/economy/inflationandpriceindices/articles/relativeregionalconsumerpricelevelsuk/2016#toc

2 Poverty and inequality

Poverty

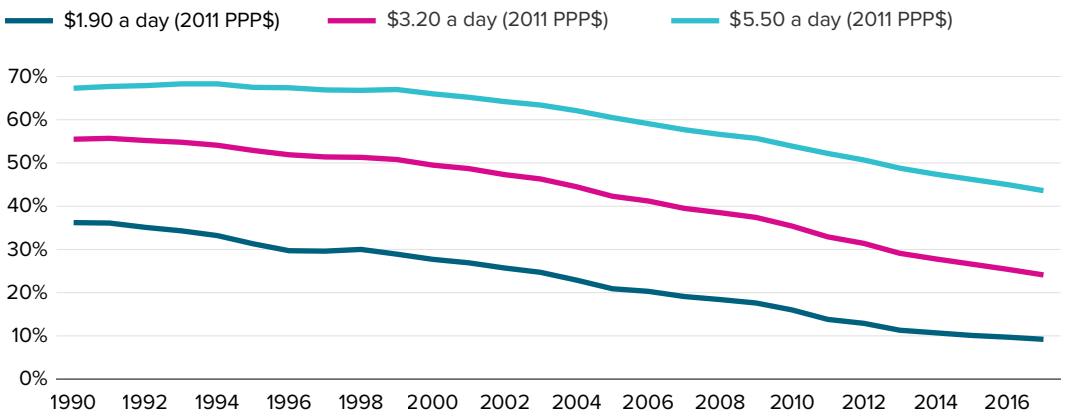
Monitoring poverty levels and the trends in poverty rates over time is important to the development agendas of many countries. Robust and consistent measures of poverty, whether they be global yardsticks allowing cross-country comparisons or national measures that reflect their own assessments of poverty, can help policy makers assess the success of poverty reduction strategies, gauge program effectiveness, and guide their development strategy.

Countries have identified poverty reduction as one of the most pressing goals under the United Nations' 2030 Agenda for Sustainable Development with Sustainable Development Goal (SDG) target 1.1[1] looking to eradicate extreme poverty for all people everywhere by 2030. International poverty lines identify the daily income or consumption level under which people struggle to provide for their basic subsistence needs. These levels are expressed in PPP dollars to enable a common measurement across all countries. The lowest of these, the extreme poverty line, is currently set at $1.90 a day in 2011 PPP terms using PPPs estimated at the level of *Households and Nonprofit Institutions Serving Households (NPISHs) Final Consumption Expenditure* and was originally based on national poverty lines found in some of the poorest countries. The $3.20 poverty line is derived from typical national poverty lines in countries classified as lower-middle-income, while the $5.50 poverty line represents typical national poverty lines in upper-middle-income countries. The poverty headcount ratio is defined as the percentage of the population living on less than these 2011 PPP-based levels of daily income or consumption (*figure 2.1)*.

In order to assess the depth of poverty alongside its incidence, policy makers can examine the poverty gap (*figure 2.2*) defined as the mean shortfall in income or consumption from the extreme poverty line, counting the nonpoor as having zero shortfall), expressed as a percentage of the poverty line.

FIGURE 2.1 Poverty headcount ratio at international poverty lines

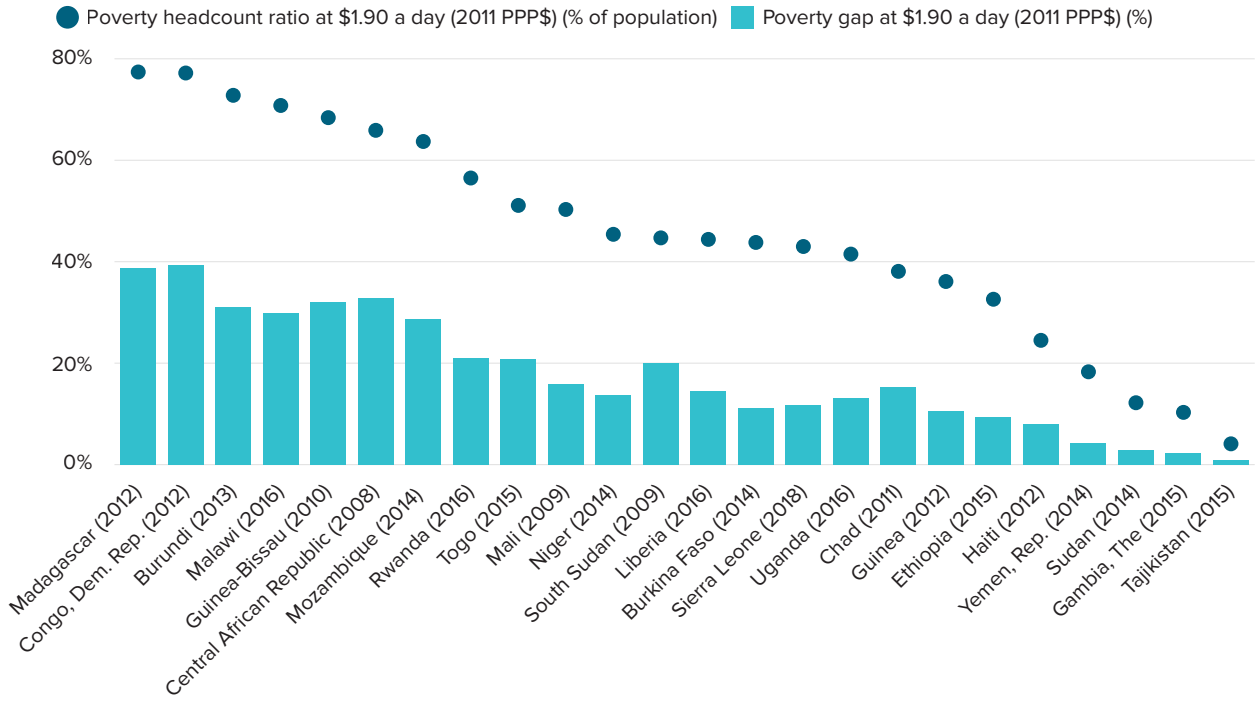
Share of global population (%)



Share of global population is the share of people living on less than $1.90 or $3.20 or $5.50 a day at 2011 PPP$. International poverty lines are calculated using revised 2011 PPPs for the expenditure component *Households and Nonprofit Institutions Serving Households (NPISHs) Final Consumption Expenditure*.

Source: World Bank, Development Research Group; World Development Indicators (SI.POV.DDAY; SI.POV.LMIC; SI.POV.UMIC)

FIGURE 2.2 Poverty gap and poverty headcount ratio at $1.90 a day (2011 PPP$) for selected low-income countries, most recent year (2008–2018)



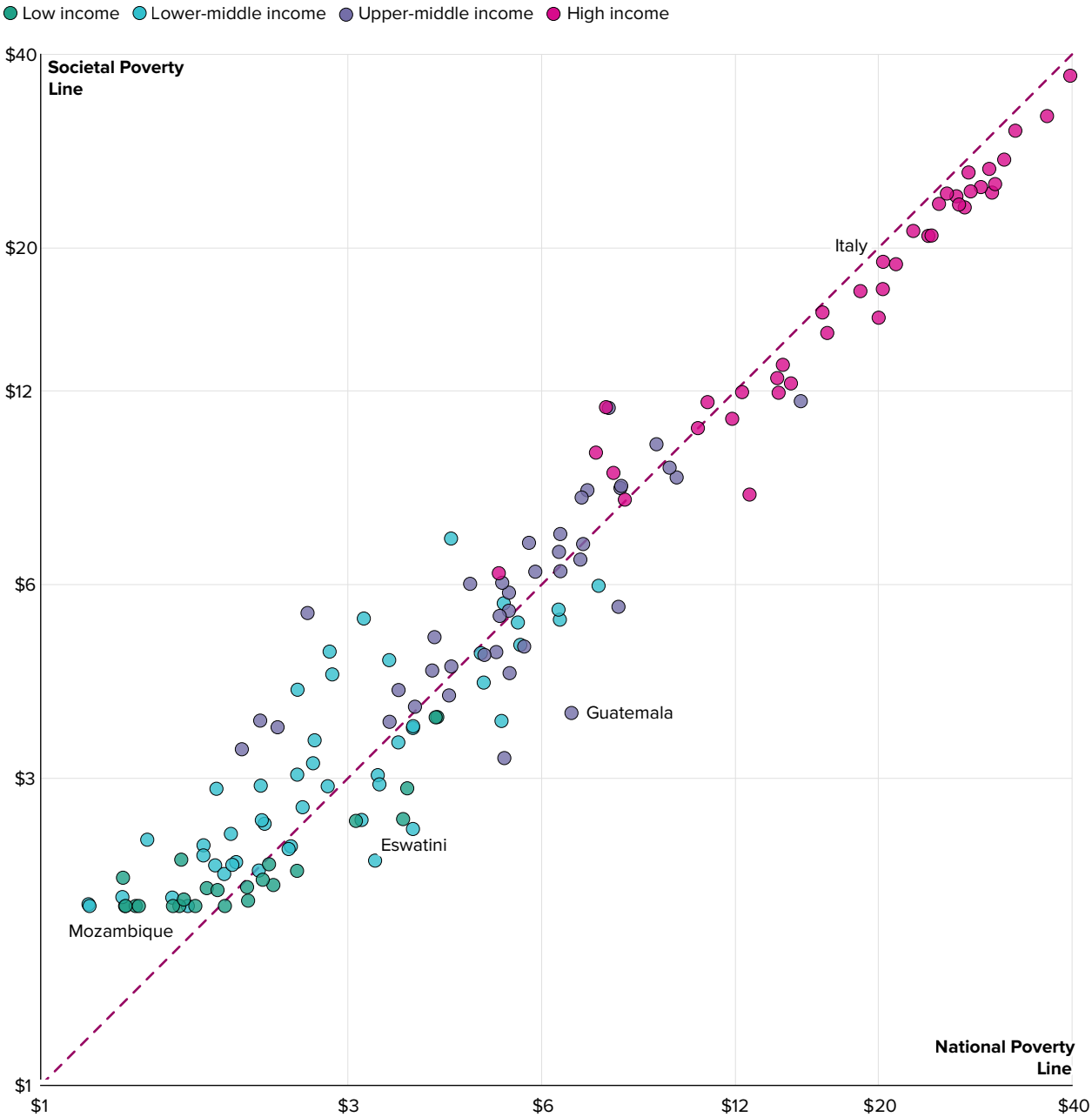
Poverty gap is the mean shortfall in income or consumption from the extreme poverty line, counting the nonpoor as having zero shortfall, expressed as a percentage of the poverty line. Poverty headcount ratio is the share of people living on less than $1.90 a day at 2011 PPP$. International poverty lines are calculated using revised 2011 PPPs for the expenditure component *Households and Nonprofit Institutions Serving Households (NPISHs) Final Consumption Expenditure*.

Source: World Bank, Development Research Group; World Development Indicators (SI.POV.GAPS; SI.POV.DDAY)

National poverty lines reflect social and economic assessments made in each country of how much a person needs per day in order to meet their basic needs. Additionally, the World Bank has defined societal poverty lines[2] that are tailored to the specific level of economic development of each country. This is calculated as $1 + 50 percent of the daily national median consumption or income in 2011 PPP terms for each country, with a lower bound set at the extreme poverty line of $1.90 (*figure 2.3*).

FIGURE 2.3 Societal poverty vs. national poverty lines, most recent year (2003–2018)

2011 PPP$

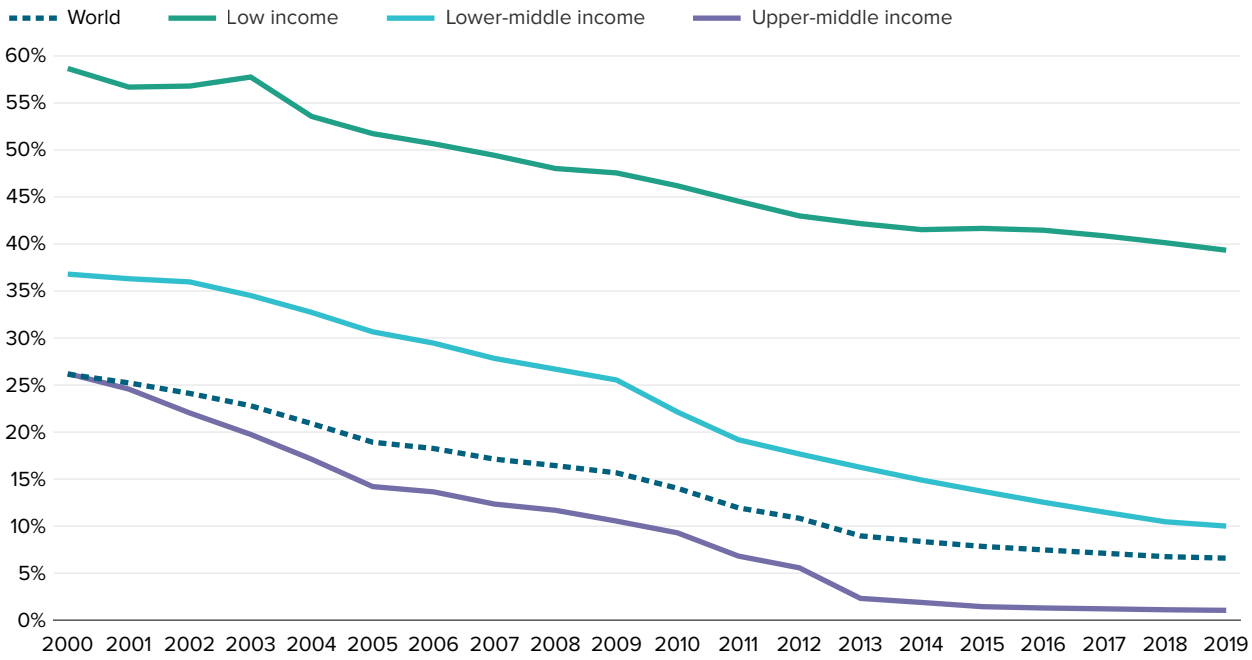


Societal poverty is calculated as $1 + 50% of median consumption. Income or consumption per day in local currency units are converted using PPPs for the expenditure component *Households and Nonprofit Institutions Serving Households (NPISHs) Final Consumption Expenditure*. A logarithmic scale is used for the national poverty line and the societal poverty line.

Source: Jolliffe and Prydz 2019

SDG target 1.1[3] also examines the working poverty rate which identifies those that live in poverty despite working. This metric, from the International Labour Organization (ILO), indicates the adequacy of employment-related incomes, the quality of employment, and the state of the labor market's health, and provides a baseline from which to measure the success of targeted policies (*figure 2.4*).

FIGURE 2.4 Working poverty rate – share of employed living below $1.90 a day (2011 PPP$)



International poverty lines are calculated using PPPs for the expenditure component *Households and Nonprofit Institutions Serving Households (NPISHs) Final Consumption Expenditure*. Working poverty rate for high-income countries is less than 0.1% and not shown.

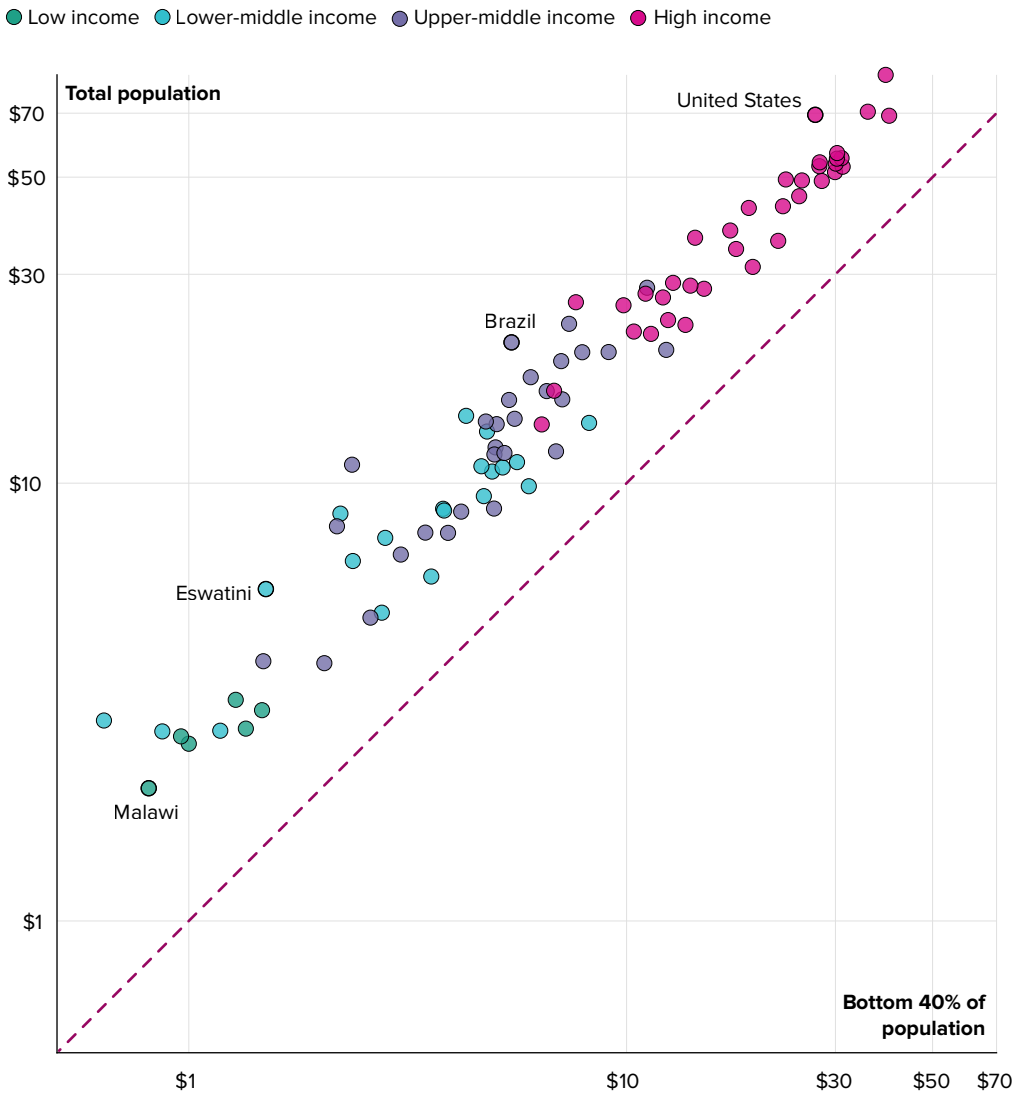
Source: International Labour Organization ILOSTAT database.

Inequality and shared prosperity

The goal of shared prosperity recognizes that while growth is necessary for improving economic welfare in a society, progress is measured by how those gains are shared with its poorest members. It reflects the degree of social inclusion and well-being within a population, and improvements in shared prosperity correlate with reductions in poverty and inequality.

PPP-based measures of income or consumption for different populations, using PPPs estimated at the level of *Households and Nonprofit Institutions Serving Households (NPISHs) Final Consumption Expenditure,* enable cross-country comparisons. These inform initiatives aimed at achieving a more equitable distribution of wealth through targeting social security programs, jobs growth, and tax regimes. *Figure 2.5* shows the PPP-based daily income or consumption mean average for the poorest 40 percent against the total population, with the countries further from the dotted line having a larger gap between the mean incomes or consumptions of the two populations. These data, collected at different points in time, can be used to monitor progress towards SDG target 10.1[4] and the second of the World Bank's twin goals,[5] both of which seek to foster income growth of the bottom 40 percent of the population.

FIGURE 2.5 Mean consumption or income per capita of poorest 40% of population vs. total population, most recent year (2011–2018)



Values in local currency units are converted using revised 2011 PPPs for the expenditure component *Households and Nonprofit Institutions Serving Households (NPISHs) Final Consumption Expenditure*. A logarithmic scale is used for the bottom 40% of the population and the total population.

Source: World Bank Global Database of Shared Prosperity; World Development Indicators (SI.SPR.PCAP; SI.SPR.PC40)

The World Bank also publishes PPP-based estimates of the mean consumption or income of the top 60 percent and top 10 percent of the population in addition to the two cohorts mentioned above. Together these provide an indication of the distribution of wealth within a country (*figure 2.6*).

FIGURE 2.6 Mean consumption or income per capita by population cohort, most recent year (2010–2019)

2011 PPP $ per day

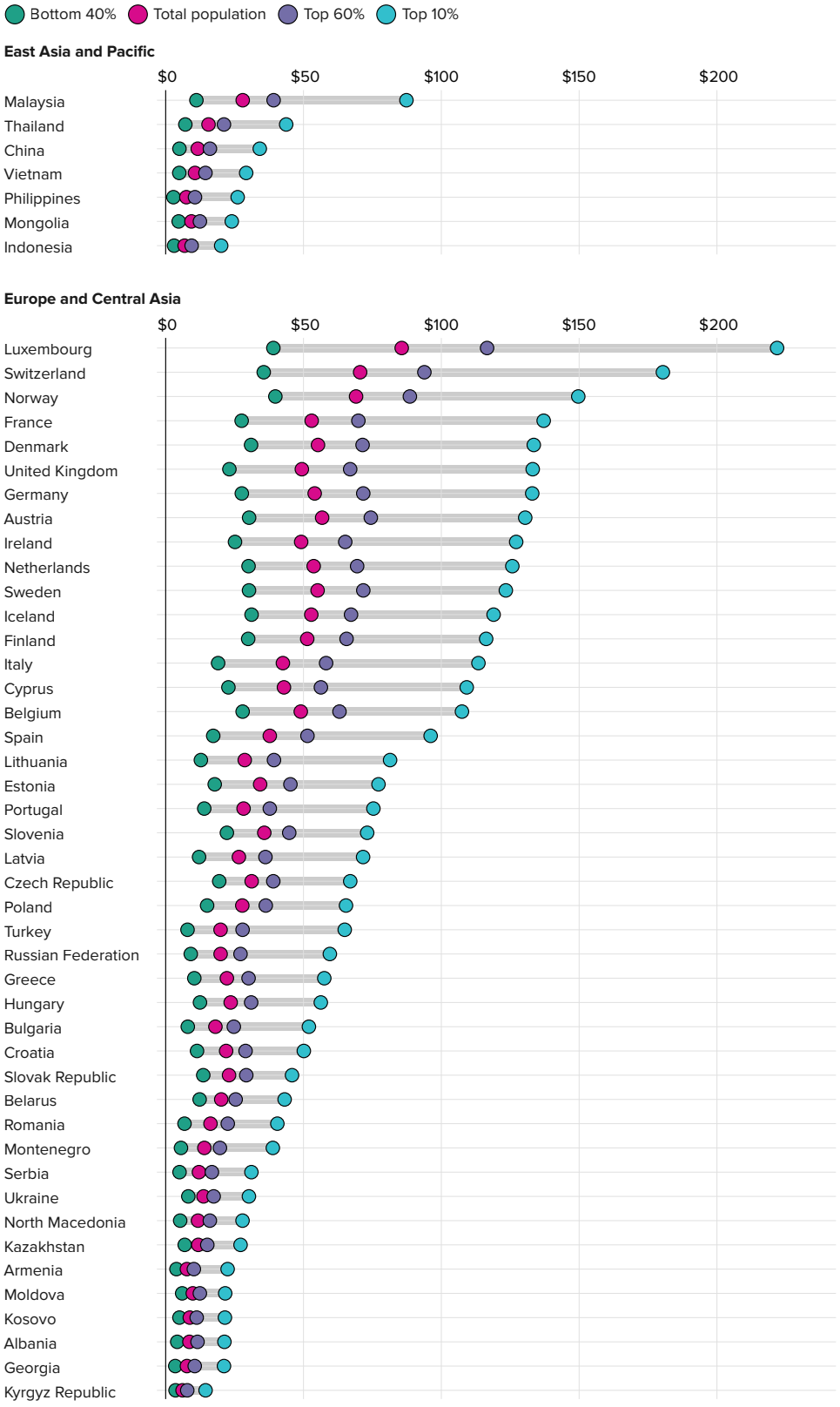
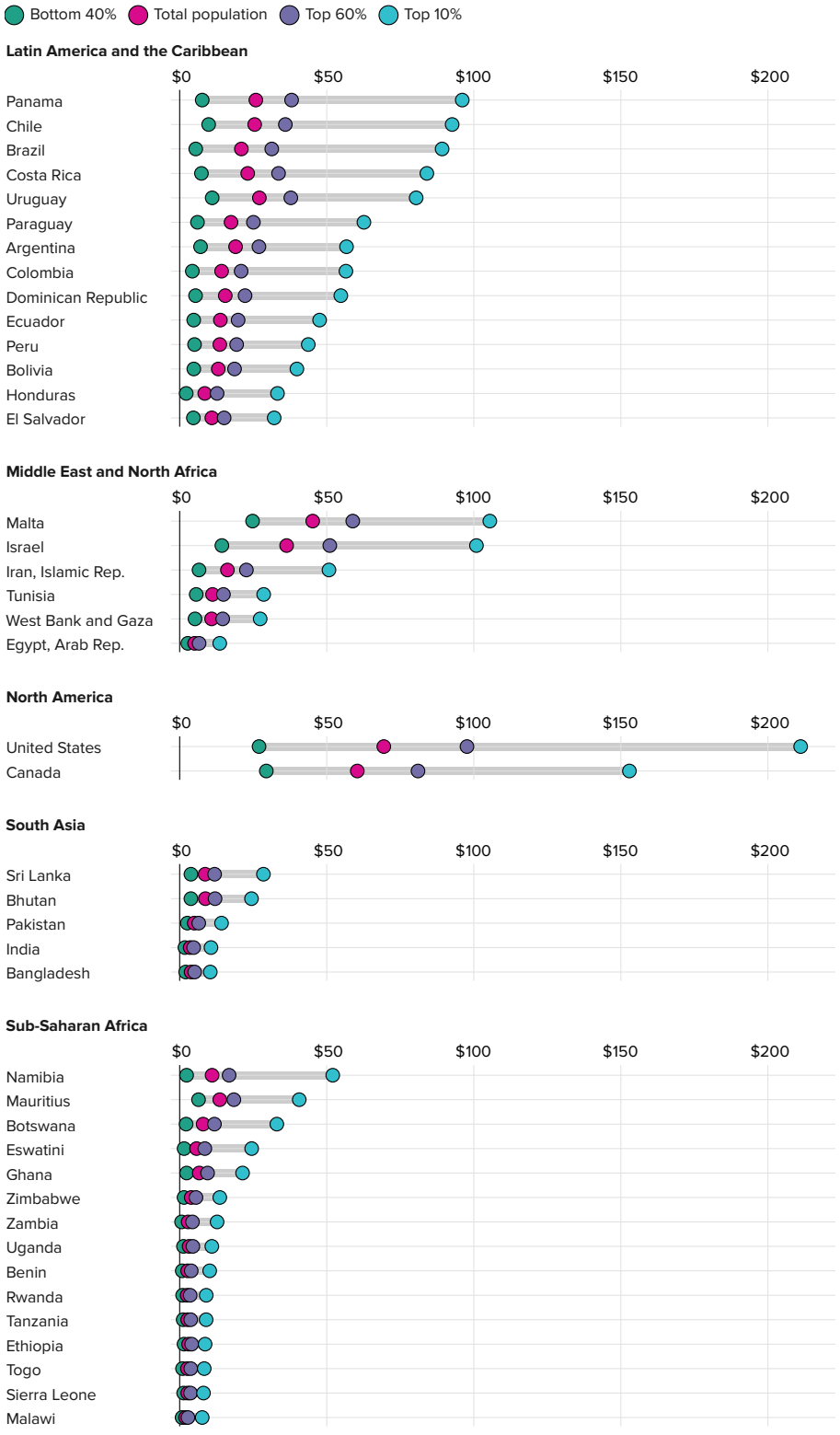


FIGURE 2.6 (continued)

2011 PPP $ per day



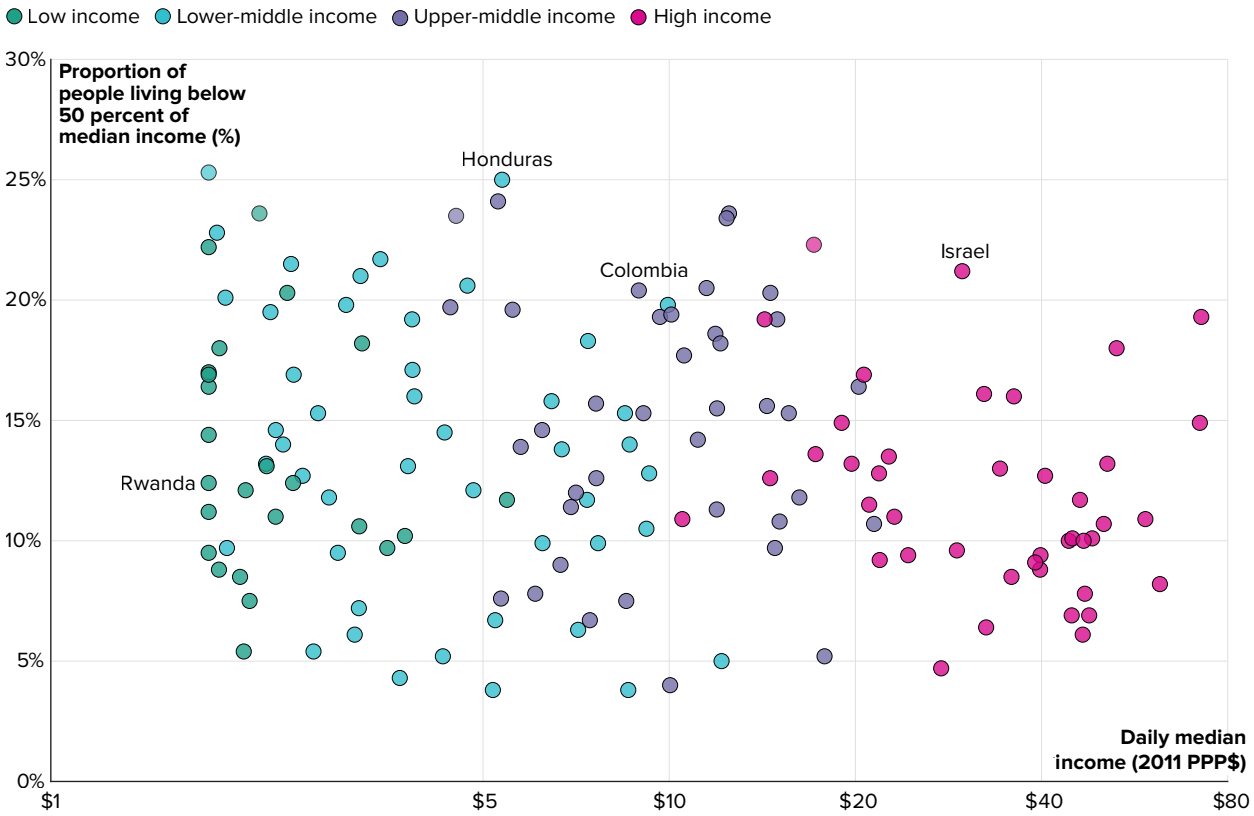
Values in local currency units are converted using revised 2011 PPPs for the expenditure component *Households and Nonprofit Institutions Serving Households (NPISHs) Final Consumption Expenditure*.

Source: World Bank PovcalNet; Poverty and Equity database (SI.SPR.PCAP; SI.SPR.PC40; SI.SPR.PT60; SI.SPR.PT10)

Another measure of inequality within and among countries is captured by the share of people living below 50 percent of the PPP-based daily median consumption or income level of a country's population (*figure 2.7*). This metric is useful for assessing the level and trends of social inclusion, relative poverty, and inequality within a country and allows policy makers to monitor progress towards SDG target 10.2,[6] which looks to empower and promote the social, economic, and political inclusion of all.

FIGURE 2.7 Daily median income and share of population living below 50 percent of the median, most recent year (2008–2018)

2011 PPP$



Median incomes in local currency units are converted using revised 2011 PPPs for the expenditure component *Households and Nonprofit Institutions Serving Households (NPISHs) Final Consumption Expenditure*. A logarithmic scale is used for daily median income.

Source: World Bank, Development Research Group; World Development Indicators (SI.DST.50MD)

Notes

1. https://unstats.un.org/sdgs/metadata/files/Metadata-01-01-01a.pdf
2. http://datatopics.worldbank.org/world-development-indicators/stories/societal-poverty-a-global-measure-of-relative-poverty.html
3. https://unstats.un.org/sdgs/metadata/files/Metadata-01-01-01b.pdf
4. https://unstats.un.org/sdgs/metadata/files/Metadata-10-01-01.pdf
5. https://www.worldbank.org/en/news/feature/2013/04/17/ending_extreme_poverty_and_promoting_shared_prosperity
6. https://unstats.un.org/sdgs/metadata/files/Metadata-10-02-01.pdf

3 Trade and competitiveness

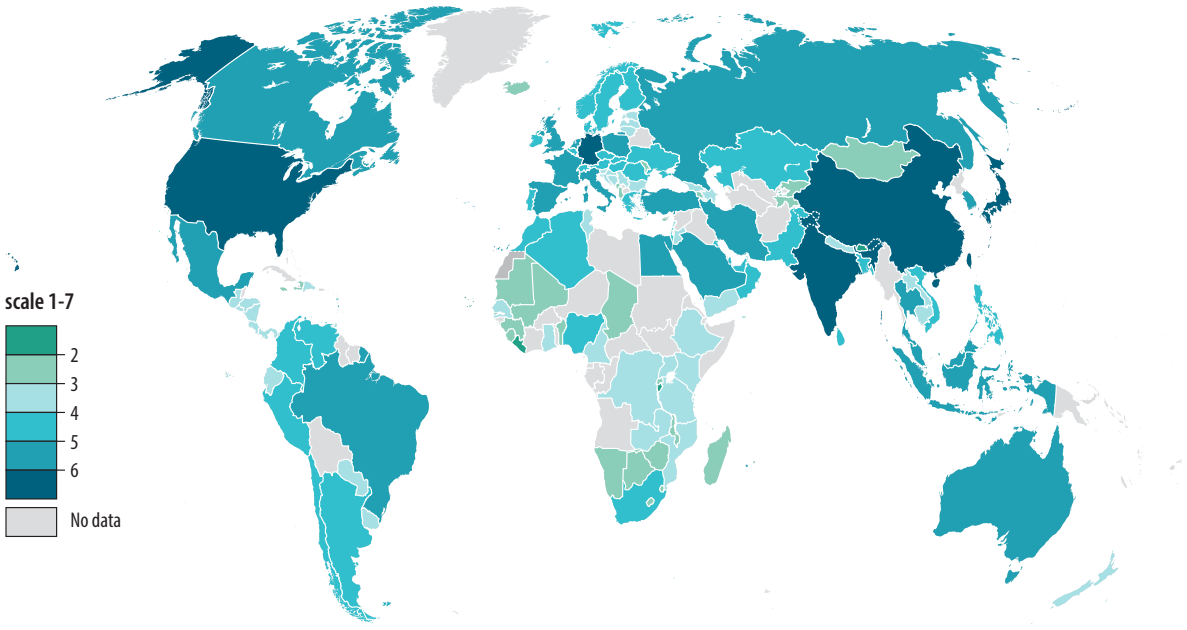
Competitiveness

The World Economic Forum (WEF) uses PPPs and PPP-based indicators in two indexes measuring competitiveness.

First, the Global Competitiveness Index[1] identifies twelve main drivers of productivity or *pillars*, and *pillar 10* assesses market size (*map 3.1*). The inputs for this indicator include PPP-based GDP.

MAP 3.1 Market size, 2017-2018

Scale 1-7



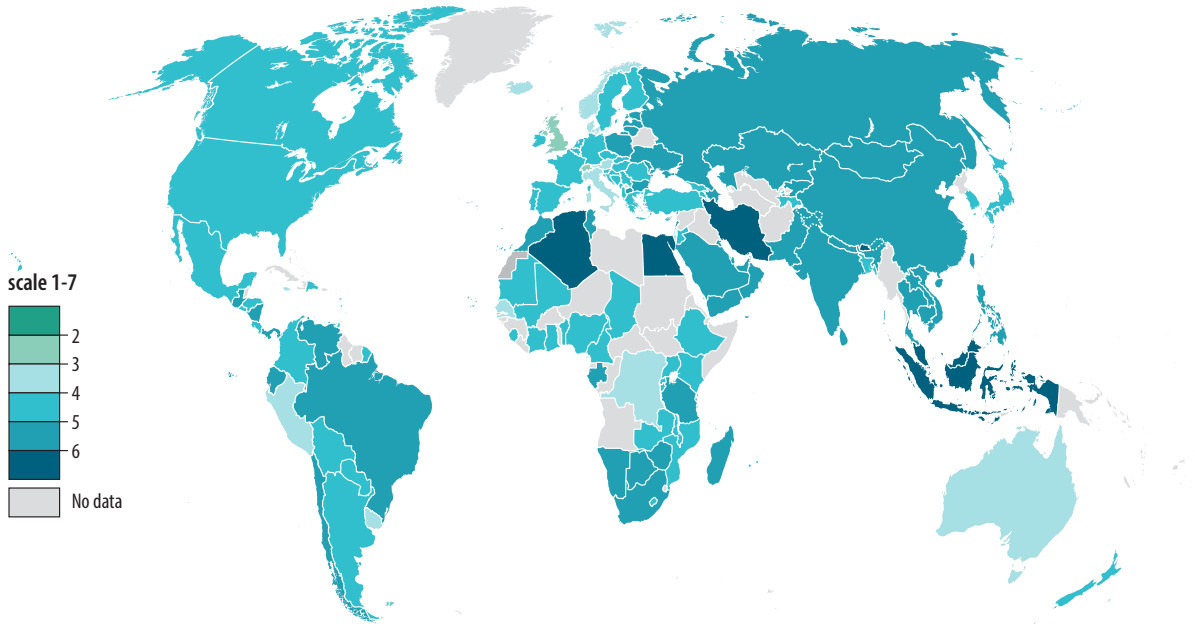
PPP-based GDP is an input into *Pillar 10: Market size* of the *Global Competitiveness Index*. A high index score indicates a larger market size.

Source: WEF

Second, the Travel and Tourism Competitiveness Index[2] measures the set of factors and policies that enable the sustainable development of the travel and tourism sector which, in turn, contributes to the development and competitiveness of a country. *Pillar 8* of the index covers price competitiveness and is composed of four indicators measuring how costly it is to travel or invest in a country. They include the ratio of a country's PPP to the official market exchange rate alongside the index of the relative cost of access (ticket taxes and airport charges) to international air transport services, the hotel price index, and fuel price levels. The higher the index value, the more competitive the country is on price (*map 3.2*).

MAP 3.2 Price competitiveness index, 2017

Scale 1-7



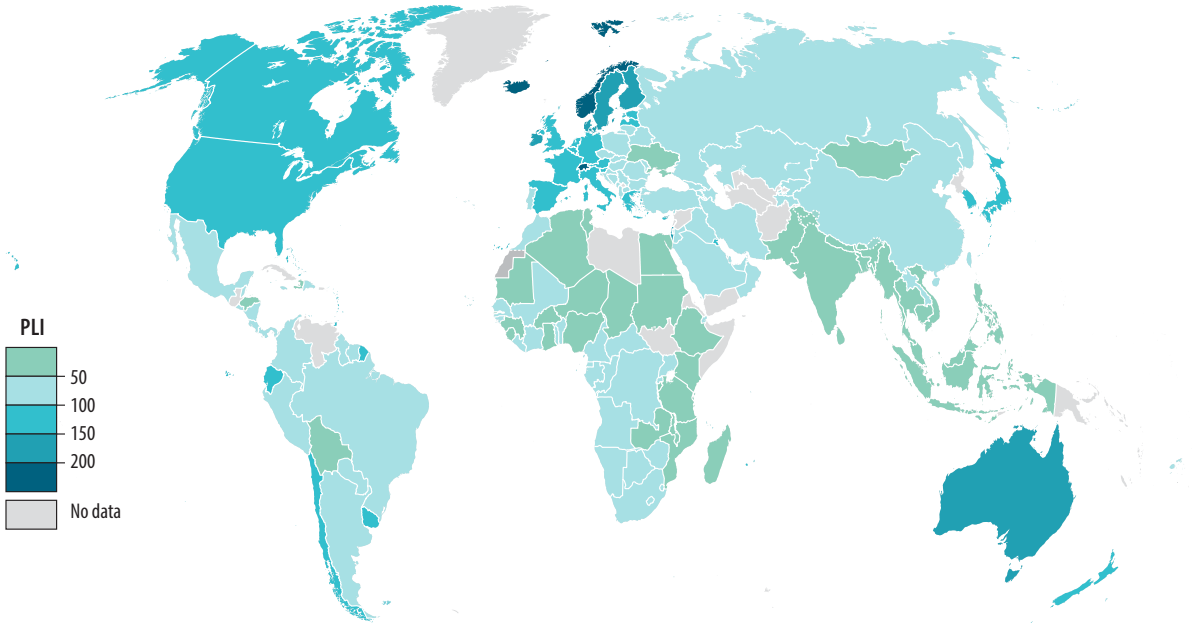
The ratio of the PPP to the market exchange rate is an input into *Pillar 8: Price competitiveness* of the *Travel and Tourism Competitiveness Index*. A high index score indicates the country is more competitive on price.

Source: WEF

Furthermore, ICP price level data on restaurants and hotels in each of its participating economies can also add to the information available to policy makers looking to boost tourism to their country (*map 3.3*).

MAP 3.3 Price level index for restaurants and hotels, 2017

World = 100



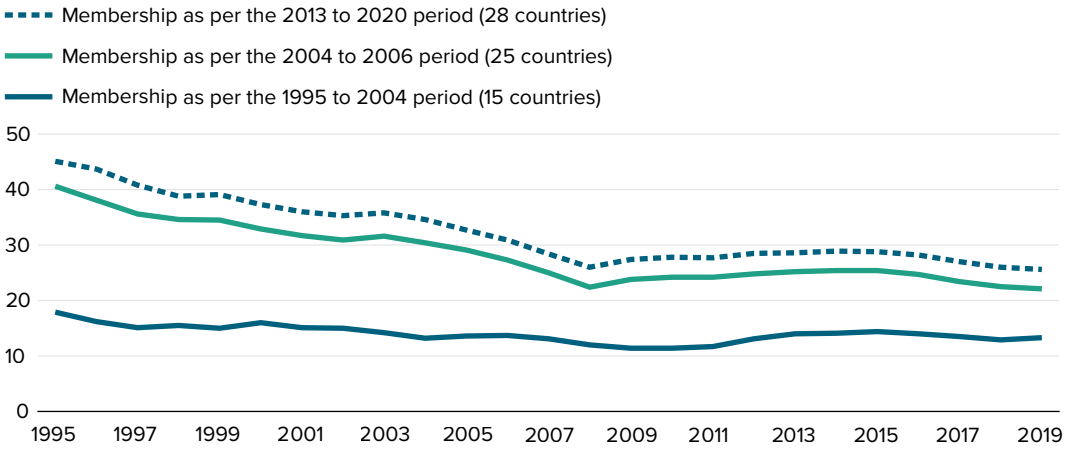
PLI = price level index. The PLI for restaurants and hotels is the ratio of the PPP for the expenditure component *Restaurants and Hotels* to the market exchange rate.

Source: ICP 2017.

Market convergence

The Statistical Office of the European Union (Eurostat) uses PPP-based PLIs to measure price level convergence within the European Union and Euro area. Convergence is assessed by the coefficient of variation for PLIs for each group of countries, where the EU average PLI is set equal to 100. Both inflation convergence, as defined in the accession criteria to the eurozone, and price level convergence can be used to measure progress in improving effective competition in the distributive trades sector and to guide policy initiatives to reduce border effects, narrow price differentials, strengthen the Single Market and enhance the effectiveness of monetary policy (*figure 3.1*).

FIGURE 3.1 Coefficient of variation of price level indexes of household final consumption expenditure for the European Union



EU average price level index = 100

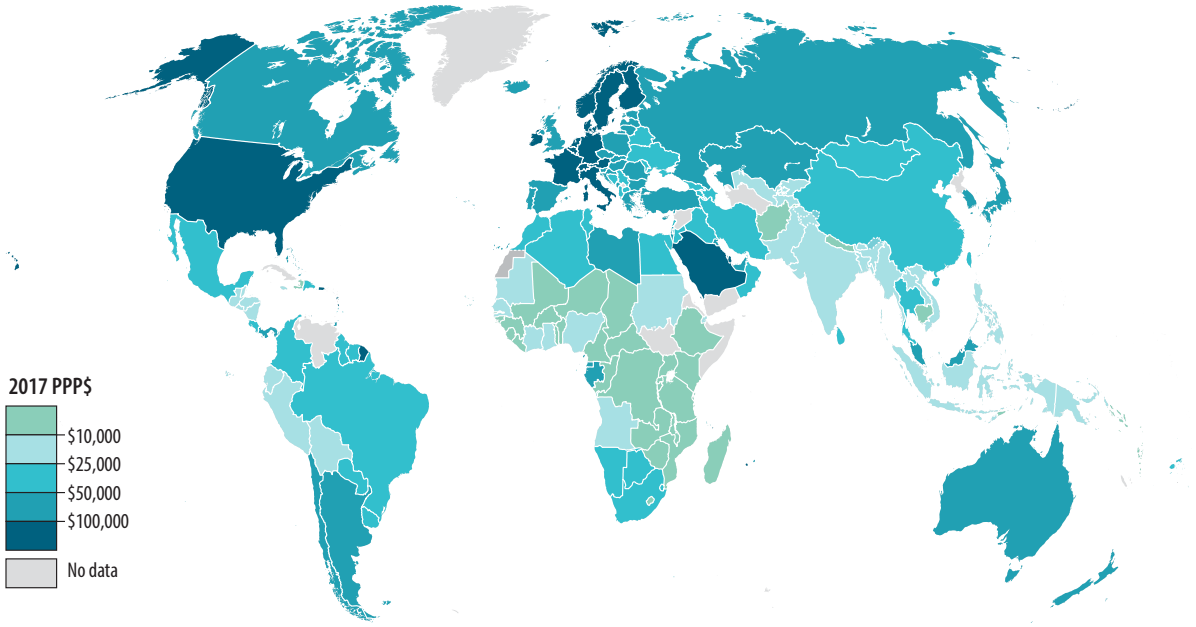
Source: Eurostat

Productivity

PPP-based GDP per employed person, or value added per employee, represents a measure of labor productivity and provides information on the evolution, efficiency, and quality of human capital in the production process (*map 3.4*). However, cross-country comparisons of labor productivity levels can also reflect differences in underlying capital stock. Economic growth in a country can be ascribed to many factors, including increased employment and more productive work by those who are employed. Labor productivity and growth estimates can support the formulation of labor market policies and monitor their impact and success. They can also contribute to an understanding of how labor market performance affects living standards. The Organisation for Economic Co-operation and Development (OECD) also provides these data by firm size (*figure 3.2*).

MAP 3.4 PPP-based GDP per person employed, 2019

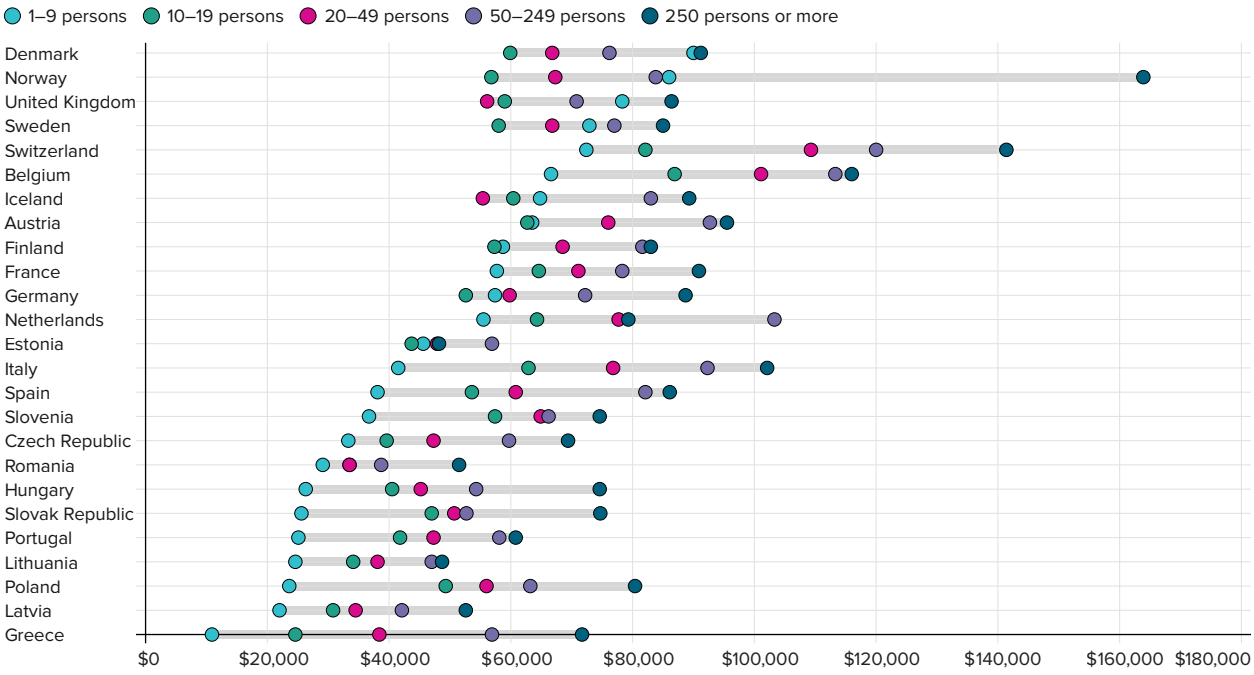
2017 PPP$



Source: International Labour Organization, ILOSTAT database; World Development Indicators (SL.GDP.PCAP.EM.KD)

FIGURE 3.2 Value added per person employed by firm size for selected countries, 2016

PPP$



Source: OECD Structural and Demographic Business Statistics

Notes

1. https://www.weforum.org/reports/how-to-end-a-decade-of-lost-productivity-growth
2. https://www.weforum.org/reports/the-travel-tourism-competitiveness-report-2019

4 Labor costs, wages, and social safety nets

Labor costs

Labor cost data[1] from the International Labour Organization (ILO) provide an estimate of employers' expenditure toward the employment of their workforce, and reflect wages paid to employees, the cost of employee benefits, and payroll taxes paid by an employer. Labor costs are a crucial factor in the ability of enterprises and countries to compete at national, regional, and global levels. Furthermore, the level and structure of the cost of employing labor, and the way costs change over time, play a central role in wage negotiations and also in defining, implementing, and assessing employment, wage, and other social and fiscal policies that target the distribution and redistribution of income. Labor cost data also inform policy considerations regarding labor market flexibility, analyses of cost disparities and, when expressed in PPP terms, allow comparisons of productivity levels across countries (*figure 4.1*).

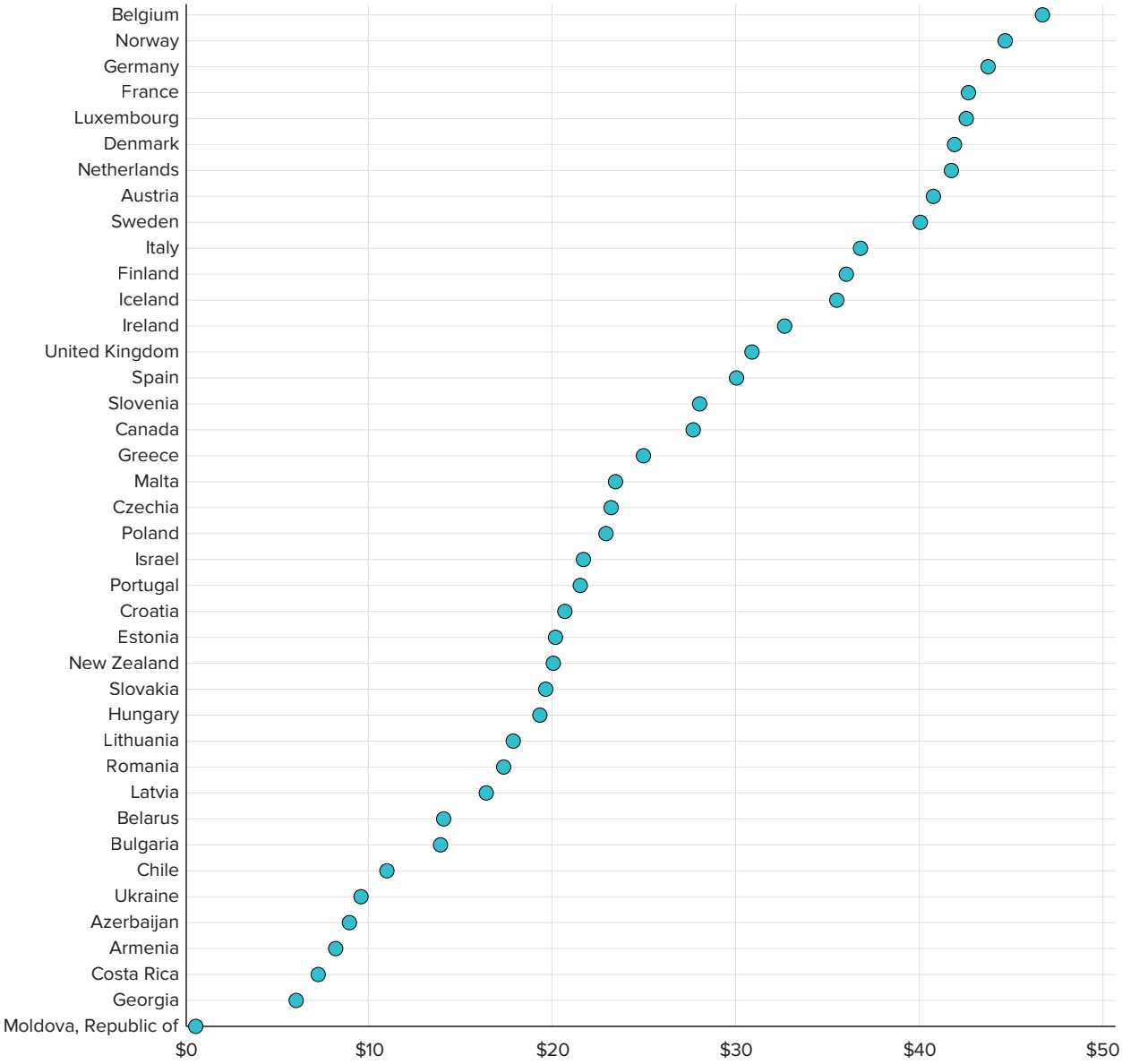
Wages

Access to employment and good working conditions are core elements of people's livelihoods and lives, and remuneration is a crucial aspect of working conditions. Decent and productive work provides workers with adequate earnings, ensuring satisfactory living conditions for themselves and their families. At the same time, monitoring the evolution of wages and earnings provides insights for policy makers into the extent to which workers benefit from gains in productivity. Furthermore, non-discrimination and equal pay for work of equal value can be assessed through the examination of wages for women and men across the occupational spectrum.

Sustainable Development Goal (SDG) 8[2] calls for sustained, inclusive, and sustainable economic growth and full and productive employment and decent work for all, and highlights the importance of achieving equality of pay and protecting labor rights. SDG 10[3] seeks to reduce inequality within and among countries, and urges the adoption of policies, especially fiscal, wage, and social protection policies, to progressively achieve greater equality. PPP-based data on labor income and wages are key tools enabling policy makers to monitor progress towards these goals.

FIGURE 4.1 Mean hourly labor costs per employee for selected countries, 2018

2017 PPP$



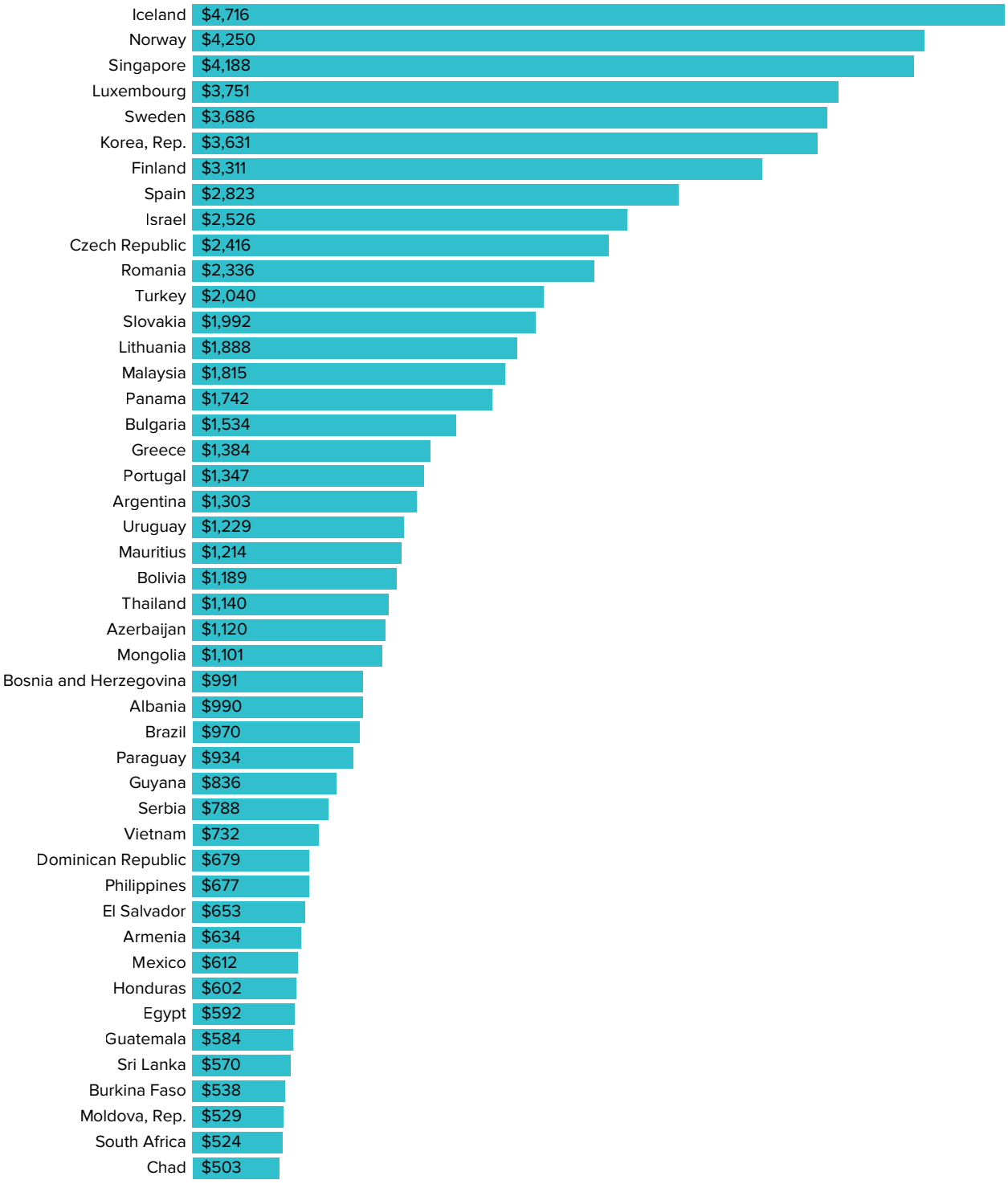
Labor costs in local currency units are converted using PPPs for the expenditure component *Households and Nonprofit Institutions Serving Households (NPISHs) Final Consumption Expenditure*.

Source: International Labour Organization ILOSTAT database.

The ILO provides monthly and hourly earnings in PPP terms[4] (*figure 4.2*), while the Organisation for Economic Co-operation and Development (OECD) publishes PPP-based average wages[5] for each of its member states

FIGURE 4.2 Mean monthly earnings for selected countries, 2018

2017 PPP$



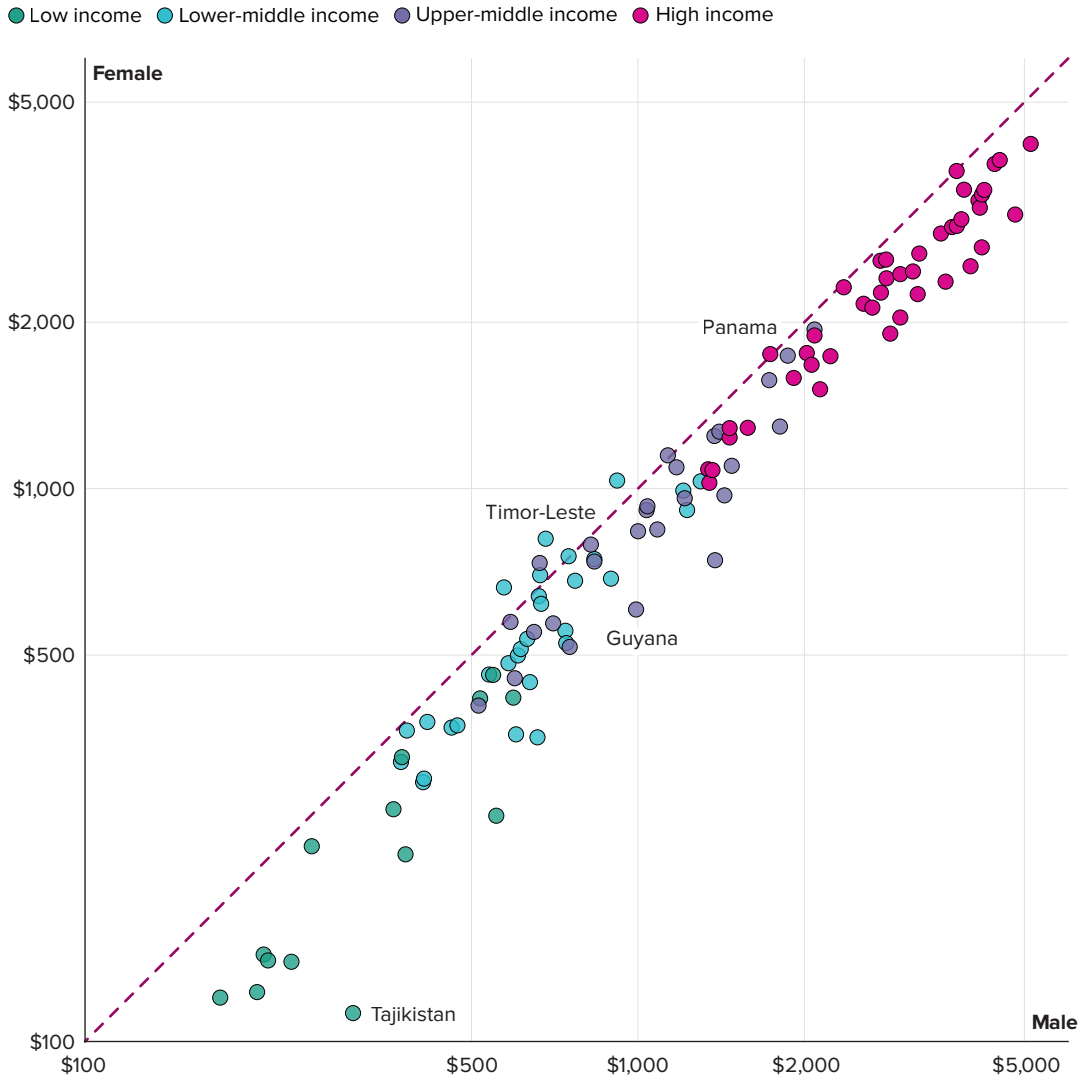
Monthly earnings in local currency units are converted using PPPs for the expenditure component *Households and Nonprofit Institutions Serving Households (NPISHs) Final Consumption Expenditure*.

Source: International Labour Organization ILOSTAT database.

PPP-based data on the earnings of both women and men[6] provide policy makers with a tool to review pay differentials and progress towards gender parity (*figure 4.3*).

FIGURE 4.3 Mean monthly earnings of employees by sex, most recent year (2014–2018)

2017 PPP$



Monthly earnings for each sex in local currency units are converted using PPPs for the expenditure component *Households and Nonprofit Institutions Serving Households (NPISHs) Final Consumption Expenditure*. A logarithmic scale is used for male and female.

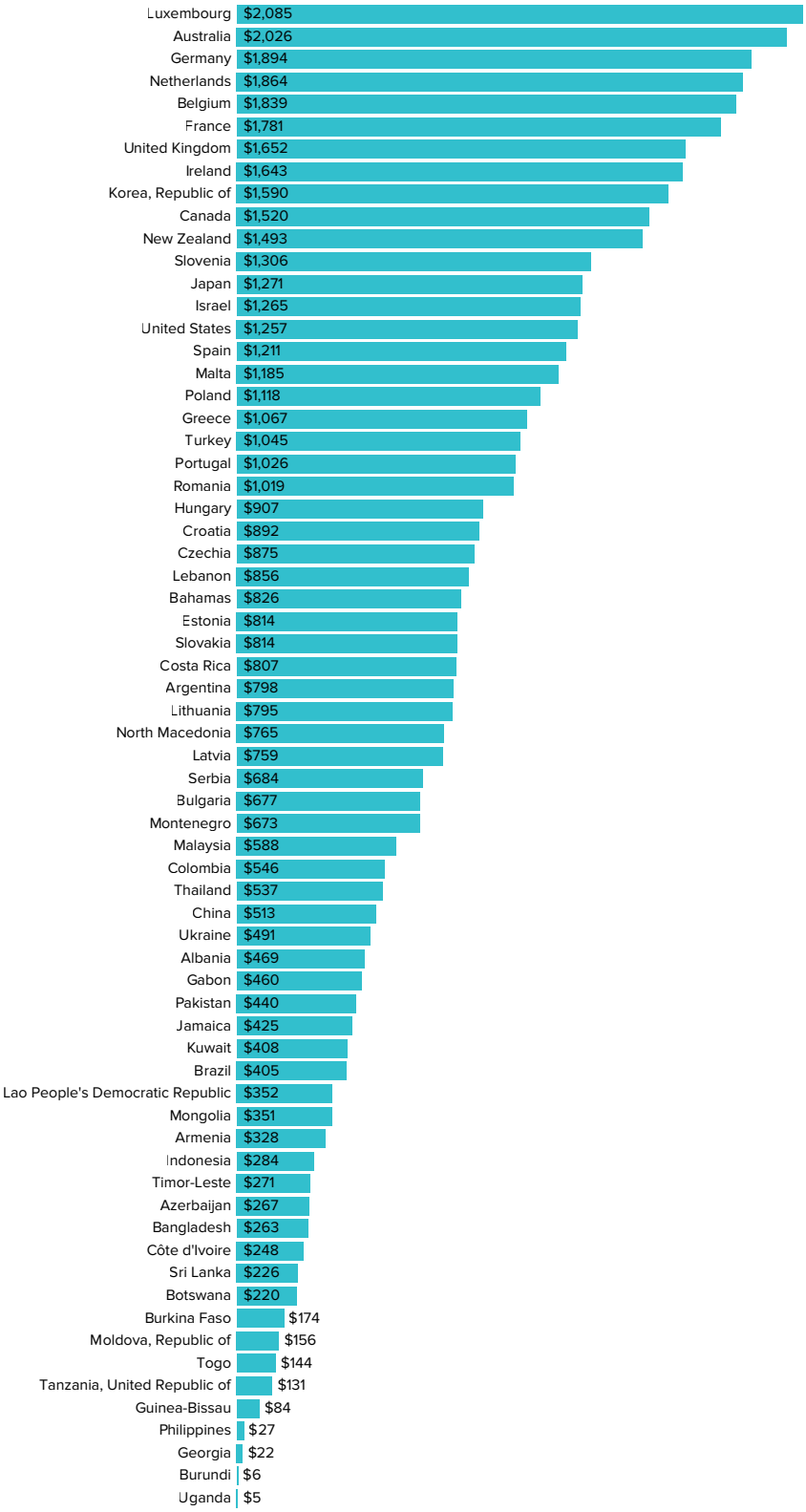
Source: International Labour Organization ILOSTAT database.

Furthermore, SDG target 5.4[7] recognizes the value of unpaid care and domestic work, and the ILO also reports PPP-based data[8] in this regard to assist policy makers in addressing persistent gender inequalities in paid and unpaid work, as a necessary foundation for inclusive growth and development.

The ILO publishes PPP-based data on statutory minimum wages[9] for countries where these exist, and policy makers can use these data to review whether implementing minimum wage frameworks adequately supports low-wage earners and promotes inclusive growth (*figure 4.4*).

FIGURE 4.4 Statutory gross monthly minimum wage for selected countries, 2018

2017 PPP$



Statutory gross monthly minimum wages in local currency units are converted using PPPs for the expenditure component *Households and Nonprofit Institutions Serving Households (NPISHs) Final Consumption Expenditure*.

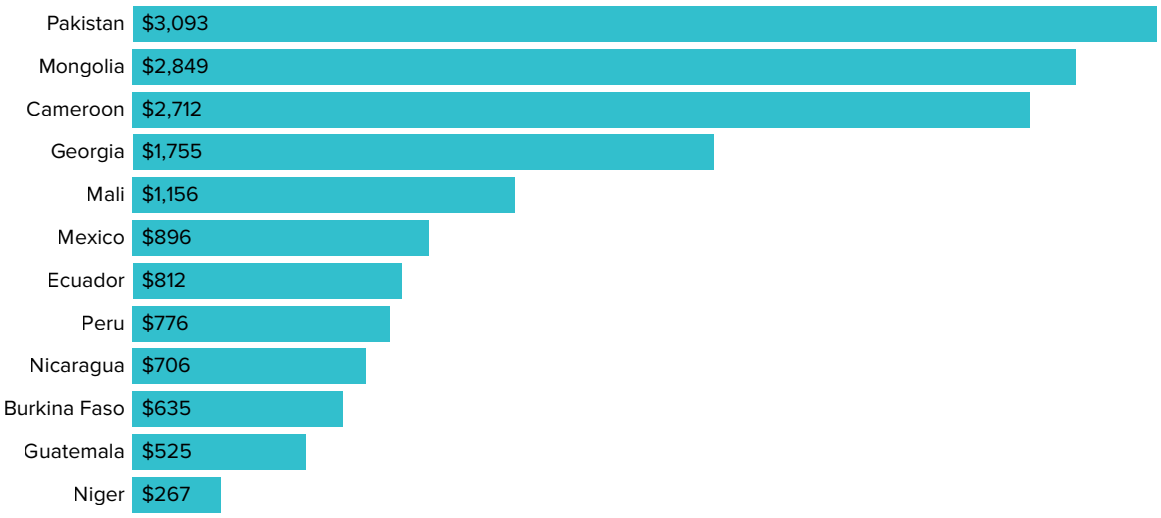
Source: International Labour Organization ILOSTAT database.

SDG target 2.3 looks to double, by 2030, the agricultural productivity and incomes of small-scale food producers, who are often poor and are frequently found to be close to subsistence conditions but play an important role in the global production of food.

SDG indicator 2.3.2[10] published by the Food and Agricultural Organization (FAO) measures the incomes of small-scale food producers in PPP terms *(figure 4.5)*.

FIGURE 4.5 Average annual income from agriculture of small-scale food producers for selected countries, 2014

2011 PPP$



Source: FAO

A sound understanding of the structure and affordability of public sector compensation practices is essential to ensure that public sector wages are high enough to attract and motivate qualified individuals into the public service, but competitive enough to not crowd-out candidates from the private sector, while not exerting undue pressures on precious fiscal resources. The World Bank's Worldwide Bureaucracy Indicators (WWBI),[11] a project of the World Bank Bureaucracy Lab, can help researchers, development practitioners, and policy makers gain a better understanding of the personnel dimensions of state capability and of the investment a country makes in its public sector employees. WWBI provides a view of the incentives and the competitiveness of public sector wages compared to the private sector, and of the wage differentials across occupations. Data collected by the ICP on the compensation of public sector occupations in its participating economies are used to calculate pay compression ratios for occupations benchmarked to the average wage of clerical occupations and *figure 4.6* shows the variation in these ratios for each income group of countries. Cross-country public sector pay comparison ratios by occupation are also available.

FIGURE 4.6 Pay compression ratios in the public sector, by occupation, 2017

Clerk = 1

ICP data on the compensation of public sector occupations are used to calculate pay compression ratios. The pay compression ratio is the ratio of the wage of the indexed occupations to all clerical occupations (as the benchmark category).

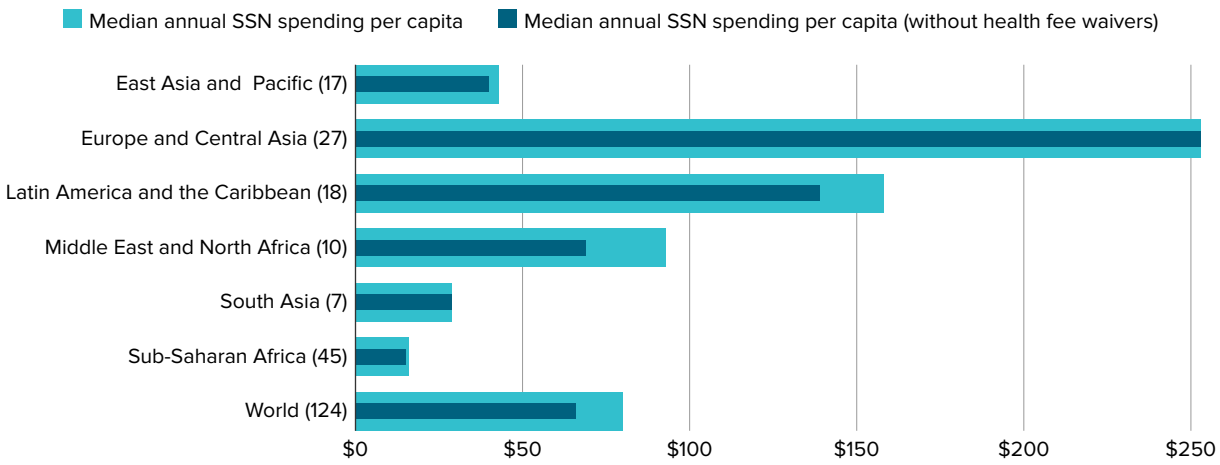
Source: ICP 2017; WWBI

Social safety nets

The World Bank's Atlas of Social Protection Indicators of Resilience and Equity[12] (ASPIRE) database compiles indicators on social safety nets and noncontributory social assistance programs that are designed to help individuals and households cope with chronic poverty, destitution, and vulnerability. These include unconditional and conditional cash transfers, noncontributory social pensions, food and in-kind transfers, school feeding programs, public works, and fee waivers. PPP-based indicators are available on social safety net spending (*figure 4.7*). Policy makers can use these data to assist with directing social security strategies and to inform discussion on progress towards SDG 1.3[13] which seeks to implement nationally appropriate social protection systems and measures for all and by 2030 achieve substantial coverage of the poor and the vulnerable.

FIGURE 4.7 Annual social safety net (SSN) spending per capita by region, most recent year (2008 - 2016)

2011 PPP$



The number of countries appears in parentheses.

Source: World Bank Atlas of Social Protection Indicators of Resilience and Equity; The State of Social Safety Nets 2018

Notes

1. https://ilostat.ilo.org/topics/labour-costs/
2. https://sdgs.un.org/goals/goal8
3. https://sdgs.un.org/goals/goal10
4. https://ilostat.ilo.org/topics/wages/
5. https://stats.oecd.org/Index.aspx?DataSetCode=AV_AN_WAGE
6. https://www.ilo.org/shinyapps/bulkexplorer52/?lang=en&segment=indicator&id=EAR_4MTH_SEX_OCU_CUR_NB_A
7. https://unstats.un.org/sdgs/metadata/files/Metadata-05-04-01.pdf
8. https://ilostat.ilo.org/topics/unpaid-work/
9. https://www.ilo.org/shinyapps/bulkexplorer26/?lang=en&segment=indicator&id=EAR_4MMN_CUR_NB_A
10. https://unstats.un.org/sdgs/metadata/files/Metadata-02-03-02.pdf
11. https://datacatalog.worldbank.org/dataset/worldwide-bureaucracy-indicators
12. https://www.worldbank.org/en/data/datatopics/aspire
13. https://unstats.un.org/sdgs/metadata/?Text=&Goal=&Target=1.3

5 Food and nutrition

Food prices, consumption shares, and expenditure data from the ICP can inform studies on how income and prices influence dietary patterns, the prevalence of undernutrition and overnutrition or obesity, and the gap in healthy and nutritious diets between rich and poor. Policy makers can use these data to examine how these costs vary with economic development and structural factors including sectoral composition, urbanization, rural infrastructure, and access to international trade.

Food security and nutrition

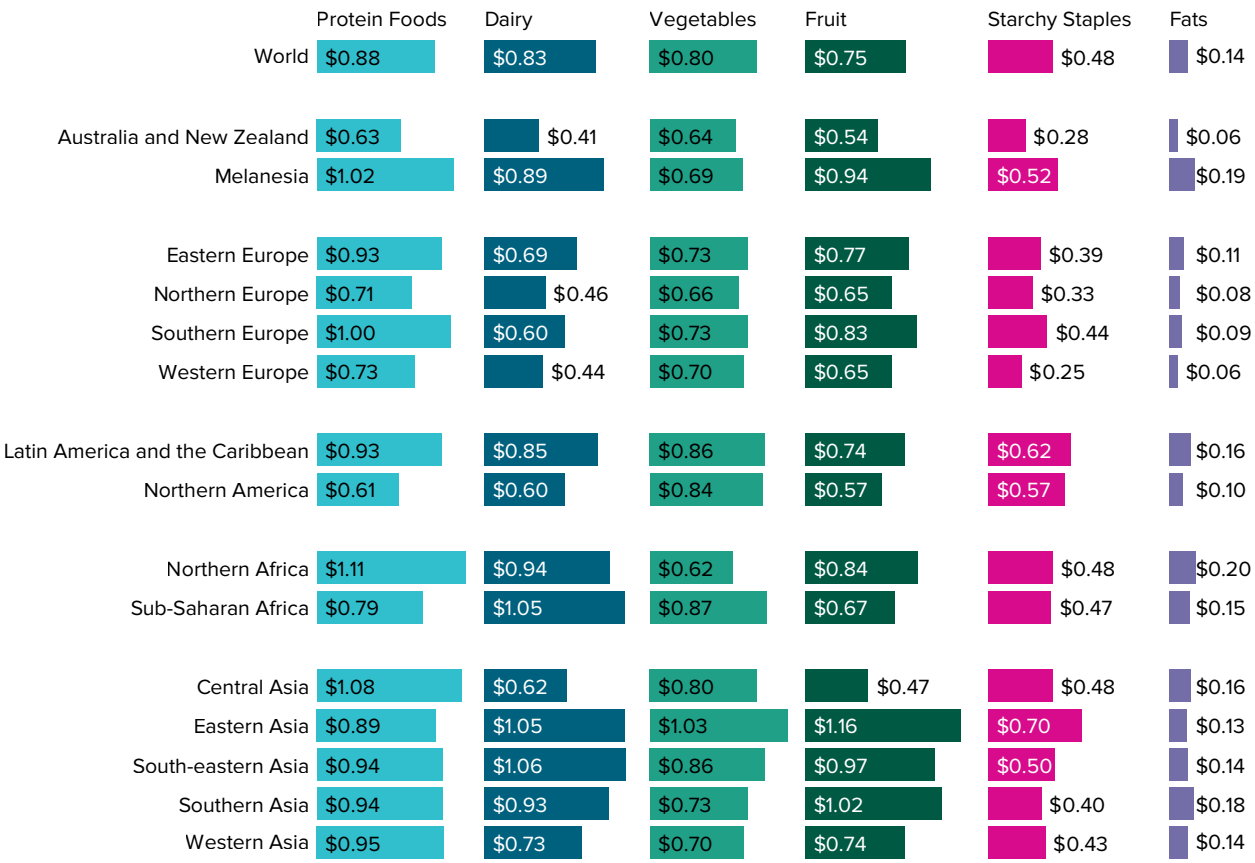
Food prices collected by the ICP have been used to inform the least costs of different food groups (*figure 5.1*), of nutrient-dense foods, and of energy-adequate, nutrient-adequate, and healthy diets across the globe, and the burden of these costs on the global poor.

ICP food prices can be used to establish the most affordable cost of the EAT-Lancet diet as recommended by the EAT-Lancet Commission.[1] When expressed in PPP terms, these costs can be compared with metrics such as the PPP-based international poverty lines and PPP-based household income data to establish affordability. *Figure 5.2* plots the cost of the diet in each country relative to the mean daily household per capita income, grouped by World Bank income group. Other studies have compared the cost of a caloric-adequate diet, meeting energy needs, against a nutrient adequate diet and *figure 5.3* plots the average daily cost of each in PPP$ by region.

ICP food price data have also been used to establish a relative caloric price of a given food in different countries and to illustrate how the price of nutrient-dense foods differs from nutrient-sparse staple foods across countries (*map 5.1*).

FIGURE 5.1 Cost per person per day by food group by region, 2017

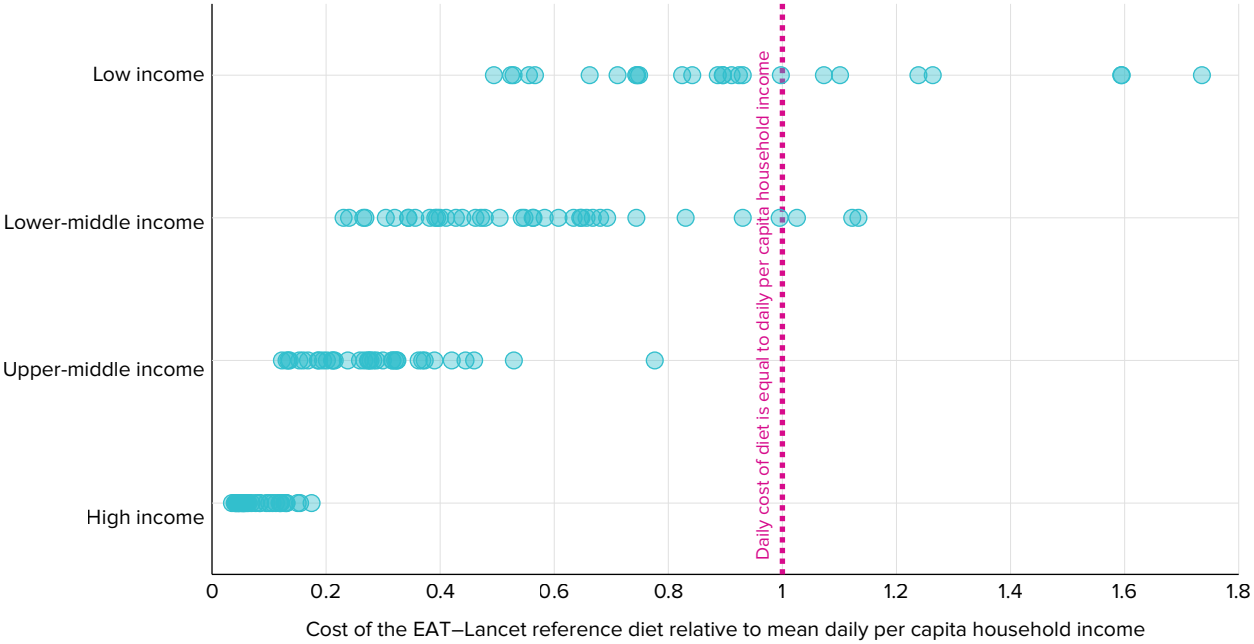
2017 PPP$



ICP 2017 food price data are used to estimate cost of food groups. Costs in local currency units are converted to PPP-based costs using the PPP for the expenditure component *Households and Nonprofit Institutions Serving Households (NPISHs) Final Consumption Expenditure*.

Source: ICP 2017; Herforth, Bai, Venkat, Mahrt, Ebel and Masters 2020; FAO, IFAD, UNICEF, WFP and WHO. 2020.

FIGURE 5.2 Cost of the EAT-Lancet reference diet relative to mean daily per capita household income by country within income group, 2011

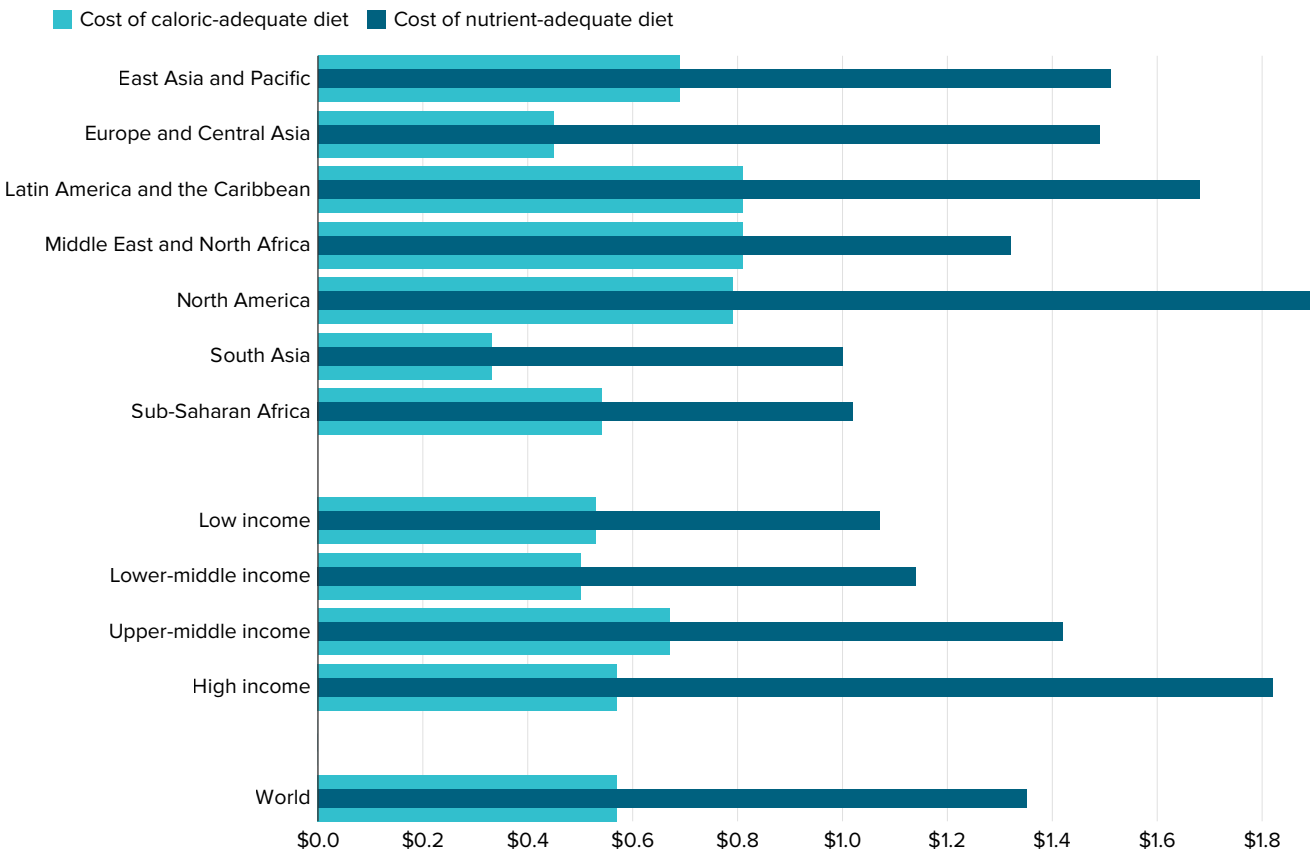


ICP 2011 food price data are used to estimate the daily cost of the diet. Costs in local currency units are converted to PPP-based costs using the PPP for the expenditure component *Households and Nonprofit Institutions Serving Households (NPISHs) Final Consumption Expenditure*. Each dot represents a country grouped by World Bank income group as at FY17. A value of 1 indicates that the cost of the diet is the same as the daily per capita household income.

Source: ICP 2011; World Bank PovcalNet; Hirvonen, Bai, Headey and Masters 2020.

FIGURE 5.3 Costs per day of diets meeting caloric and nutrient adequacy

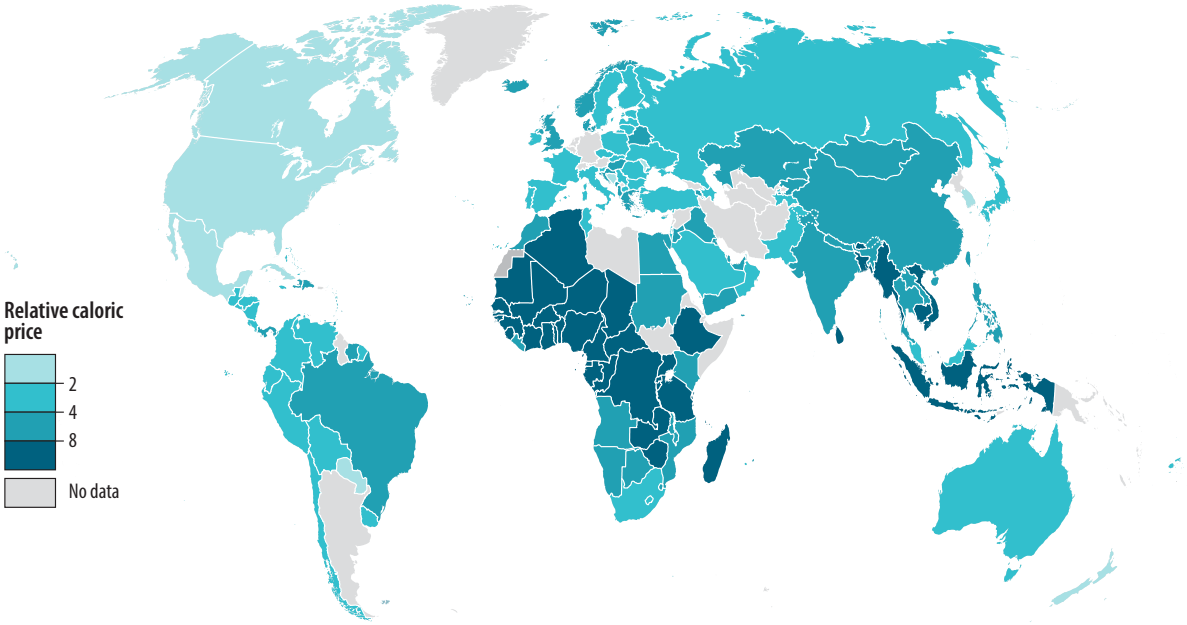
2011 PPP$



ICP 2011 food price data are used to estimate the cost of the diet. Costs in local currency units are converted to PPP-based costs using the PPP for the expenditure component *Households and Nonprofit Institutions Serving Households (NPISHs) Final Consumption Expenditure*. World Bank income groups are as at FY13. The cost of nutrient adequacy is defined as the minimum cost of foods that meet all known requirements for essential nutrients and dietary energy requirements for a woman of reproductive age. The cost of caloric adequacy is defined as the price of the least-cost foods that are required to meet their caloric needs. Cost per day in PPP dollars are population-weighted means.

Source: ICP 2011 and Bai, Alemu, Block, Headey, and Masters 2020

MAP 5.1 Relative caloric price (CPR): eggs to staple food, 2011



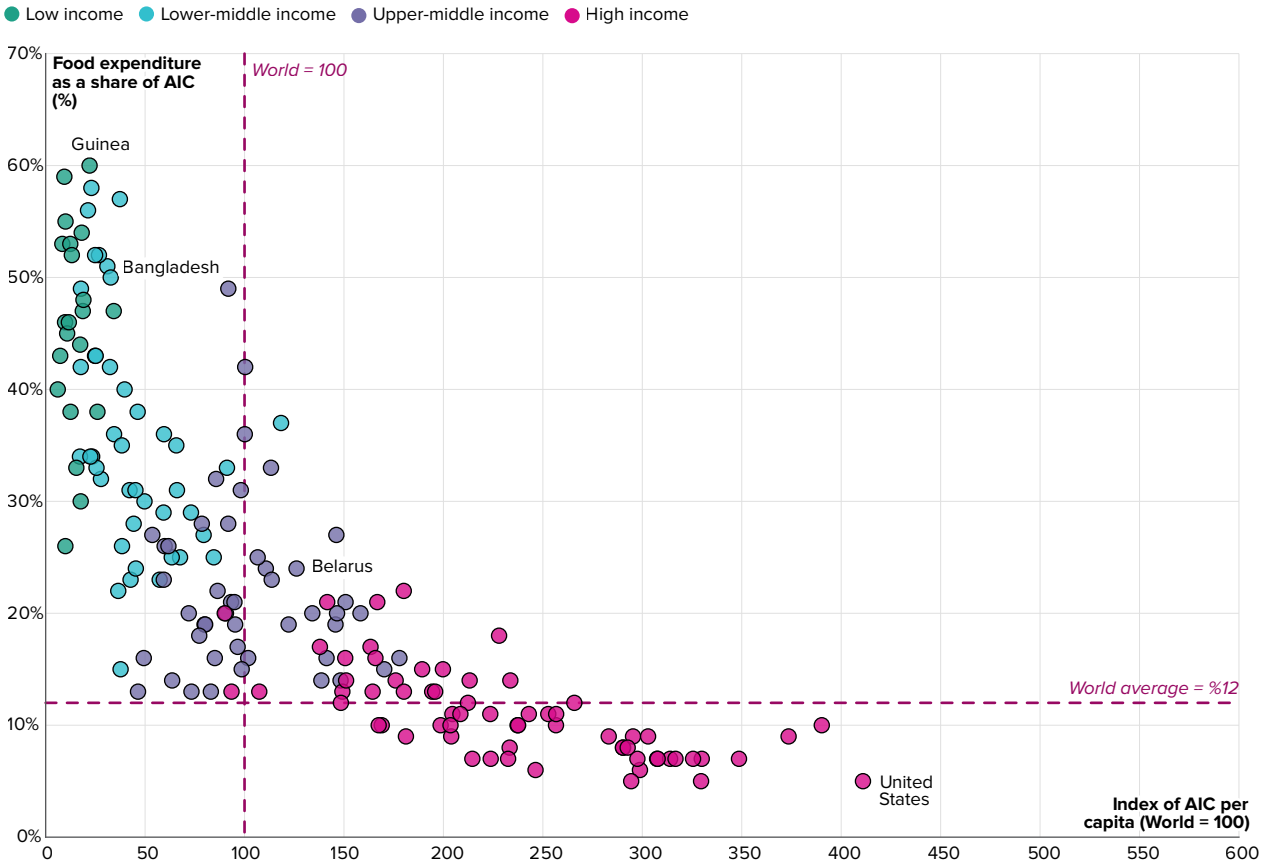
ICP 2011 food price data are used to measure the *relative caloric price* - that is, the ratio of the price of one calorie of a given food to the price of one calorie of a representative basket of starchy staple food.

Source: ICP 2011 and Headey and Alderman 2019

Food consumption

ICP data can also be used to investigate how the share of actual individual consumption expenditure spent on food differs with increasing consumption or income per capita, illustrating Engel's Law which states that as incomes rise, the proportion of income spent on food decreases (*figure 5.4*). ICP data can also be used to examine the expenditure share of different food groups within a total "food basket" by region and country (*figure 5.5*).

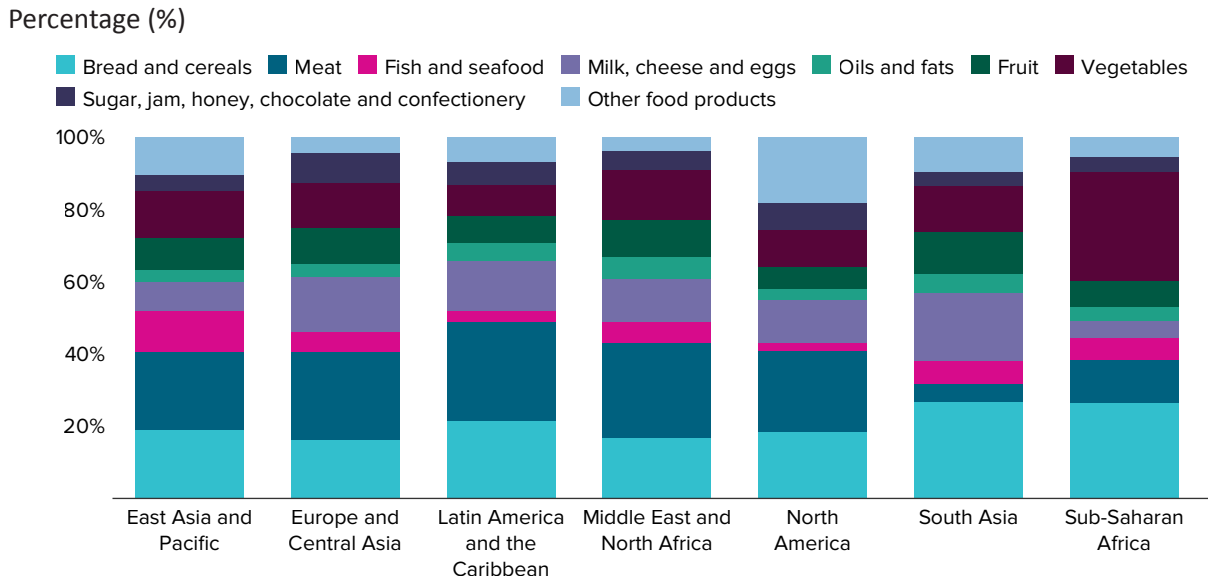
FIGURE 5.4 Food expenditure share of AIC by AIC per capita index, 2017



AIC = actual individual consumption. Index of AIC per capita based on PPP-based expenditures of AIC per capita with World average set equal to 100. AIC expenditures in local currency units are converted to PPP-based expenditures using the PPP for the expenditure component *Actual Individual Consumption*. ICP data on food expenditure as a share of AIC is based on nominal expenditures.

Source: ICP 2017

FIGURE 5.5 Component share of food basket expenditure by region, 2017



ICP data on expenditure shares. Component expenditure as a share of food is based on nominal expenditures.

Source: ICP 2017

Data from the ICP can also reveal the change in consumption of more disaggregated food groups, such as rice and poultry, as incomes rise. These data have assisted studies[2] of demand-led production and market potential as countries move from low-income to lower-middle-income status, and have the potential to inform jobs transformation, infrastructure, and agricultural investment policies.

Notes

1. https://eatforum.org/eat-lancet-commission/eat-lancet-commission-summary-report/
2. https://www.jobsanddevelopment.org/which-comes-first-the-chicken-the-egg-or-the-demand-for-poultry-products-engels-law-and-the-design-of-jobs-strategies-in-low-income-countries-lics/

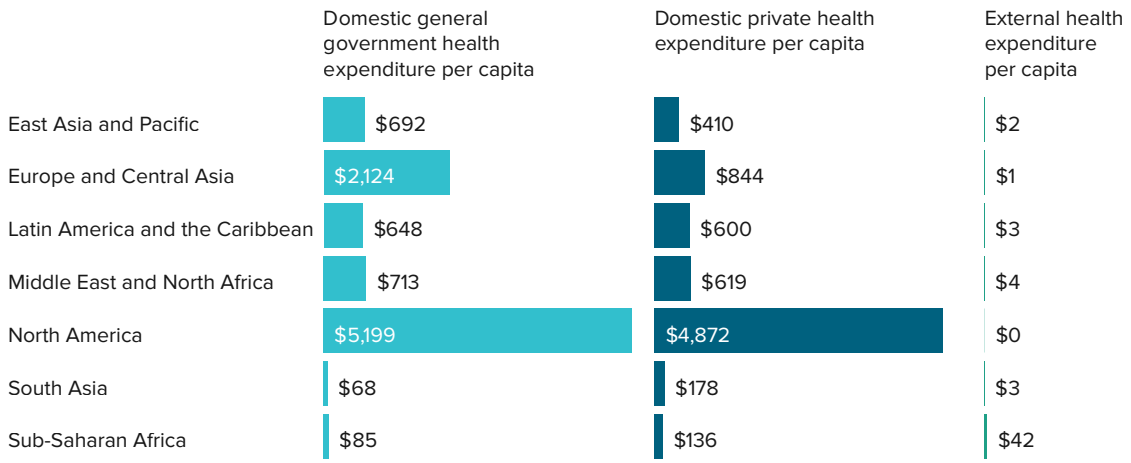
6 Health

Health expenditures

Strengthening health financing is an objective of Sustainable Development Goal (SDG) target 3.c[1] and policy makers directing initiatives to reduce both inequalities in health care and the impact of health care costs on the most vulnerable can access PPP-based measures of health expenditures.[2] The levels and trends of health expenditure data identify weaknesses and strengths in health systems as well as areas that need investment such as additional health facilities, better health information systems, or better trained human resources. These indicators allow health administrators to learn from past expenditure outcomes and improve planning and allocation of resources throughout the system, thereby increasing efficiency and accountability. Countries can track changes in policy priorities and compare their performance with other countries and regions. The World Health Organization (WHO) publishes many PPP-based indicators including per capita data on domestic government and private health expenditures and on expenditures from external sources encompassing financial inflows into the national health system from outside the country (*figure 6.1*).

FIGURE 6.1 Health expenditures per capita, 2018

PPP$

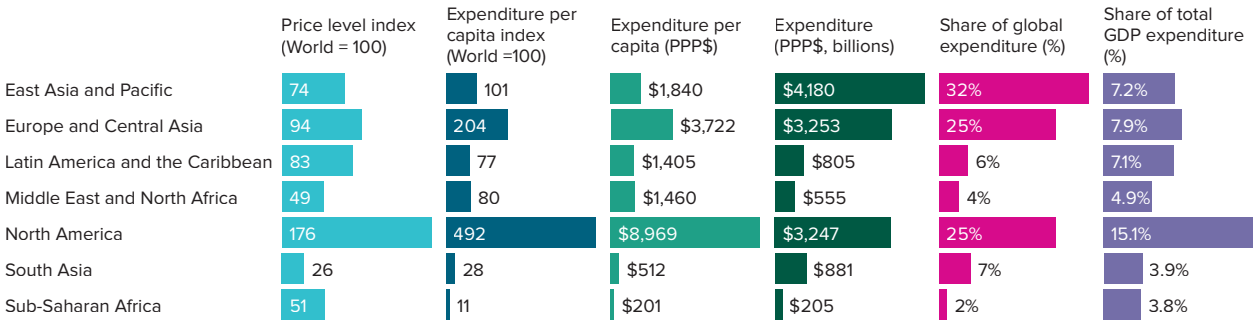


External sources are composed of direct foreign transfers and foreign transfers distributed by government encompassing all financial inflows into the national health system from outside the country.

Source: WHO Global Health Expenditure database; World Development Indicators (SH.XPD.GHED.PP.CD; SH.XPD.PVTD.PP.CD; SH.XPD.EHEX.PP.CD)

The ICP calculates PPPs for health-related goods and services and provides indicators on the price levels and expenditures for health, covering household expenditure on pharmaceuticals; medical products, appliances, and equipment; outpatient services; and hospital services plus expenditure of nonprofit institutions serving households (NPISHs) on health plus general government expenditure on health benefits and reimbursements, and the production of health services (*figure 6.2*). Using these ICP indicators to explore health spending can provide policy makers with a better understanding of what drives the cross-country differences and what responses can be put in place to increase value for money and target better health outcomes for their citizens.

FIGURE 6.2 Price levels and PPP-based expenditures for health, 2017



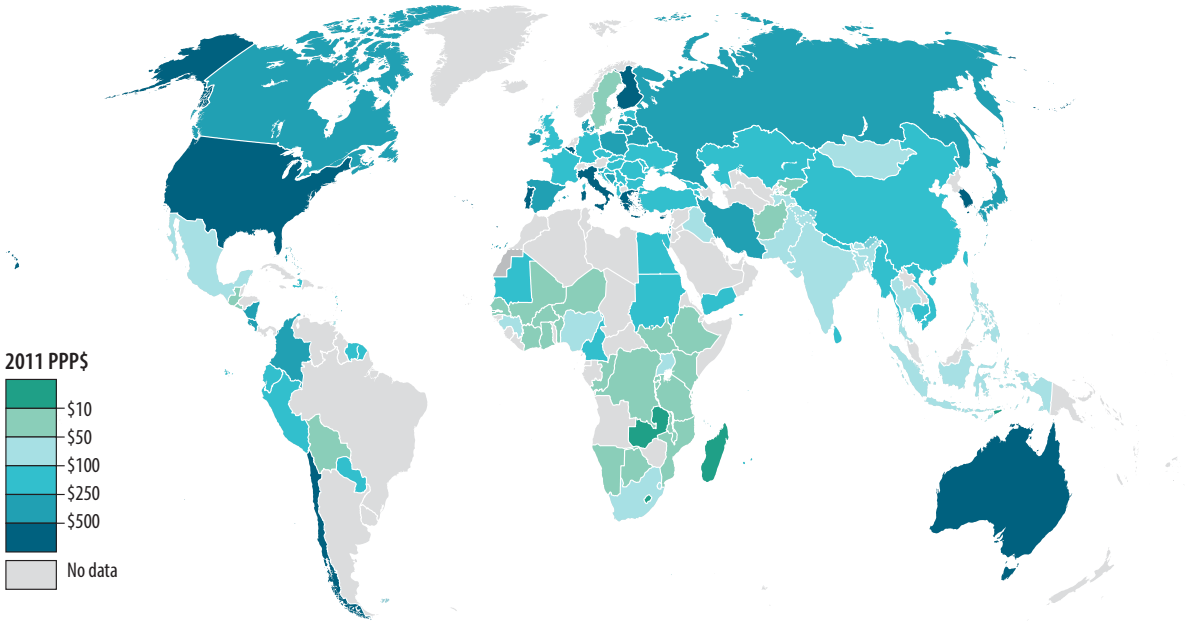
The price level index for health is the ratio of the PPP for the expenditure component *Actual Health* to the market exchange rate. Expenditure on *Actual Health* reflects the sum of household consumption expenditure and expenditures by nonprofit institutions serving households (NPISHs) and government on goods and services within the health component actually consumed by households. Health expenditures in local currency units are converted to PPP-based expenditures using the PPP for the expenditure component *Actual Health*. Share of total GDP expenditure is based on nominal expenditures.

Source: ICP 2017

Health financing is also critical for enabling people to obtain quality health services without suffering financial hardship. SDG target 3.8 looks to achieve universal health coverage, including financial risk protection, access to quality essential health-care services, and access to safe, effective, quality, and affordable essential medicines and vaccines for all. SDG target 3.8.2[3] attempts to measure whether all people and communities receive the quality health services they need (including medicines and other health products), without financial hardship, and looks at the proportion of the population with large household expenditures on health. The World Bank's Health Equity and Financial Protection Indicators[4] (HEFPI) dataset holds many detailed indicators including the average household out-of-pocket expenditure on health, expressed in 2011 PPP dollars (*map 6.1*).

MAP 6.1 Mean household per capita out-of-pocket health spending, most recent year (2009–2018)

2011 PPP$



Source: World Bank Health Equity And Financial Protection Indicators dataset (HF.UHC.OOP.CG)

The effects of these out-of-pocket expenditures on households also vary and *figure 6.3* shows the proportion of households within a region for which these are a large part of their household income, as well as consequences of these expenditures when they are impoverishing and push people below a poverty line threshold.

FIGURE 6.3 Out-of-pocket health expenditures and impoverishment, 2015

	Out-of-pocket expenditure per capita (PPP$)	Share of population spending more than 10% of household consumption or income on out-of-pocket health care expenditure (%)	Share of population spending more than 25% of household consumption or income on out-of pocket health care expenditure (%)	Share of population pushed below the $1.90 (2011 PPP$) poverty line by out-of-pocket health care expenditure (%)	Share of population pushed below the $3.20 (2011 PPP$) poverty line by out-of-pocket health care expenditure (%)
East Asia and Pacific	$260	13.9%	3.5%	0.8%	0.5%
Europe and Central Asia	$518	7.4%	1.2%	0.0%	0.1%
Latin America and the Caribbean	$360	15.1%	2.5%	0.2%	0.7%
Middle East and North Africa	$370	13.5%	2.3%	0.2%	0.5%
North America	$1,026	4.4%	0.7%	0.0%	0.0%
South Asia	$130	17.2%	4.1%	3.1%	3.8%
Sub-Saharan Africa	$95	7.7%	1.9%	1.5%	1.3%

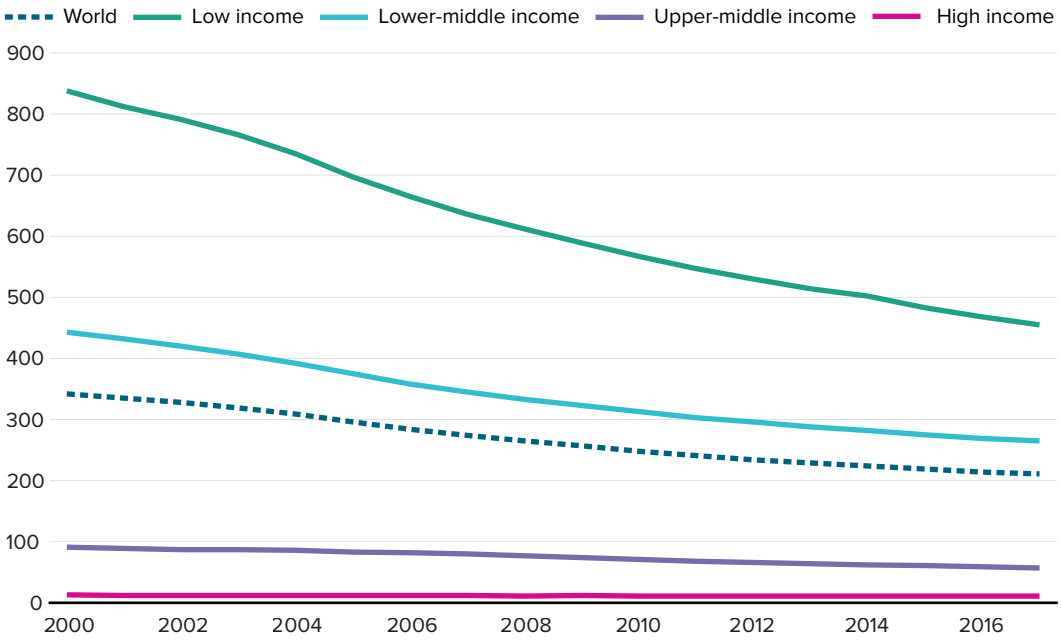
Source: WHO Global Health Expenditure database; World Development Indicators (SH.XPD.OOPC.PP.CD; SH.UHC.OOPC.10.ZS; SH.UHC.OOPC.25.ZS; SH.UHC.NOP1.ZS; SH.UHC.NOP2.ZS)

Health outcomes

Health outcomes often correlate with the per capita income or wealth of a populace and PPP-based GDP per capita is used within a modeled estimate used to measure progress towards SDG target 3.1[5] which looks to reduce the global maternal mortality ratio to less than 70 per 100,000 live births by 2030. While this ratio can be calculated directly from data collected through vital registration systems, household surveys, or other sources there are often data availability and quality issues, particularly related to the underreporting and misclassification of maternal deaths. The modeled estimates were produced to fill in these gaps (*figure 6.4*).

FIGURE 6.4 Maternal mortality ratio

Modeled estimate, per 100,000 live births



Maternal mortality ratio is the number of women who die from pregnancy-related causes while pregnant or within 42 days of pregnancy termination per 100,000 live births. The data are estimated with a regression model using information on the proportion of maternal deaths among non-AIDS deaths in women ages 15-49, fertility, birth attendants, and PPP-based GDP.

Source: WHO, UNICEF, UNFPA, World Bank Group, and the United Nations Population Division; World Development Indicators (SH.STA.MMRT)

Notes

1. https://unstats.un.org/sdgs/metadata/files/Metadata-03-0c-01.pdf
2. https://www.who.int/health-topics/health-accounts/
3. https://unstats.un.org/sdgs/metadata/files/Metadata-03-08-02.pdf
4. http://datatopics.worldbank.org/health-equity-and-financial-protection/
5. https://unstats.un.org/sdgs/metadata/files/Metadata-03-01-01.pdf

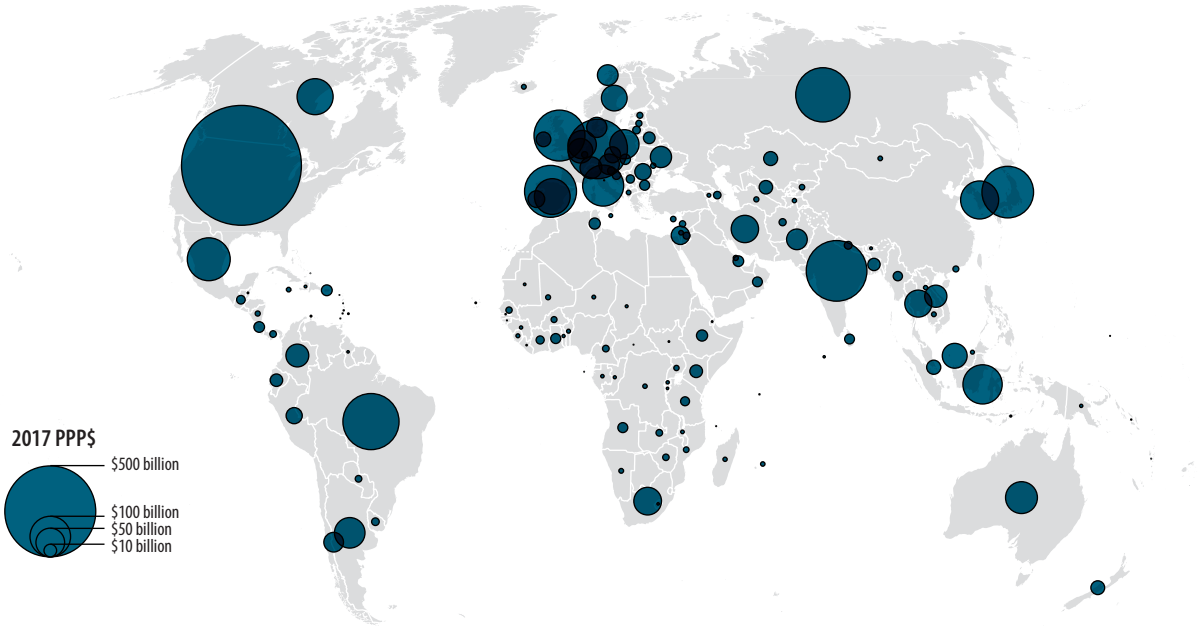
7 Education

Education expenditures

Policy makers can assess the impact of investment in public education systems through the use of PPP-based measures of education expenditure from the United Nations Educational Scientific and Cultural Organisation (UNESCO) (*map 7.1*).

MAP 7.1 PPP-based government expenditure on education, most recent year (2010-2019)

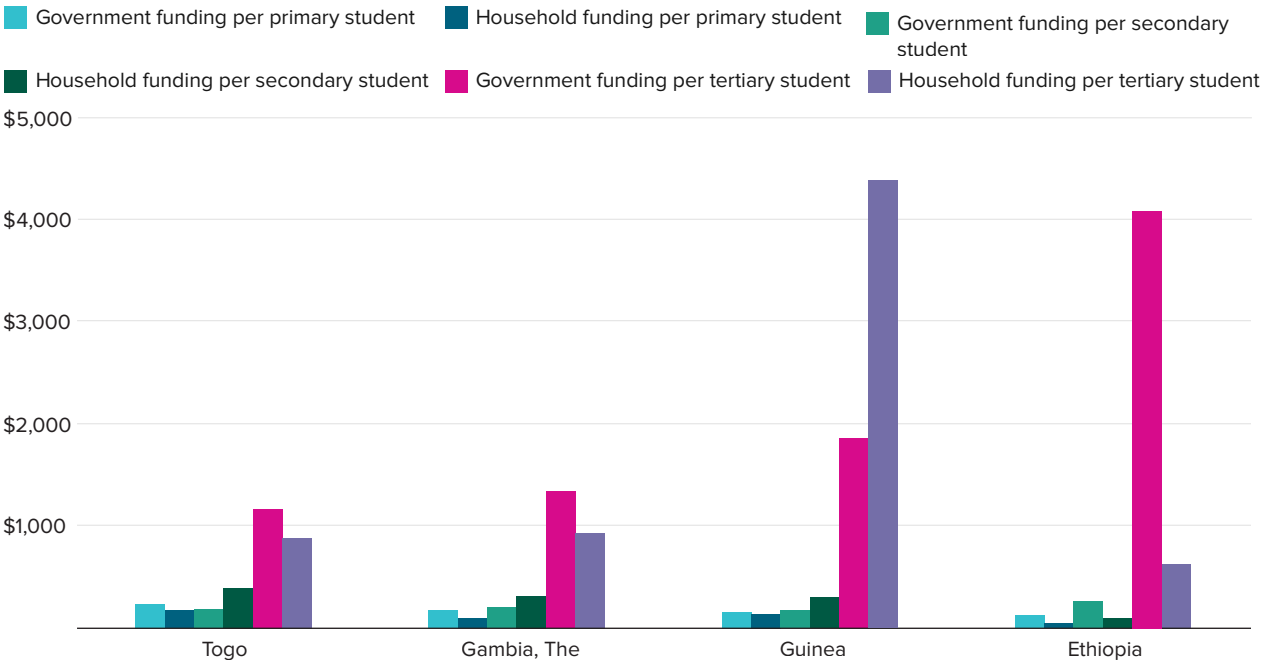
2017 PPP$



Source: UNESCO Institute for Statistics; World Bank EdStats (UIS.X.PPPCONST.FSGOV)

Sustainable Development Goal (SDG) 4 looks to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. UNESCO has identified indicator SDG indicator 4.5.4[1] – PPP-based education expenditure per student by level of education and source of funding – to reflect the amount of resources invested on average in the education of a single student, going beyond government sources so that an actual unit cost can be calculated. Using a per student basis is useful for comparison, whether between levels of education, over time, or between countries (*figure 7.1*).

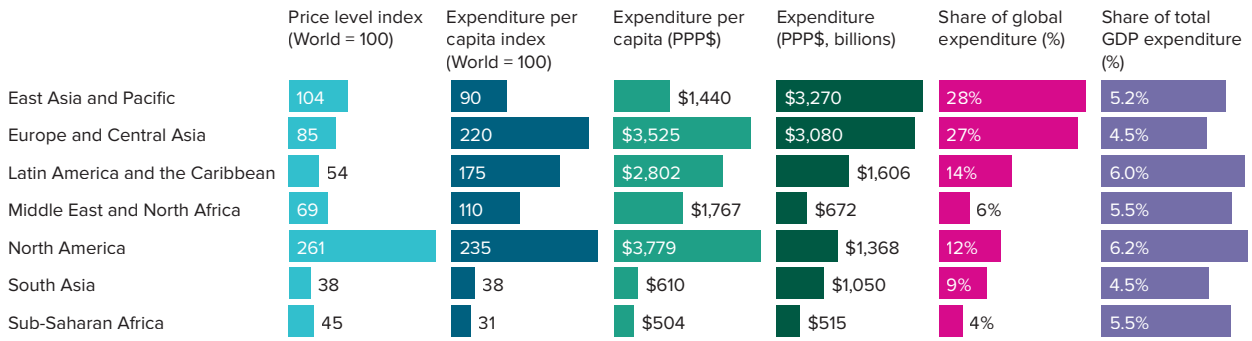
FIGURE 7.1 Government and household funding per student by education level for selected low-income countries, most recent value (2010 to 2019).



Source: UNESCO Institute for Statistics; World Bank EdStats (UIS.XUNIT.PPPCONST.1.FSGOV; UIS.XUNIT.PPPCONST.23.FSGOV; UIS.XUNIT.PPPCONST.5T8.FSGOV; UIS.XUNIT.PPPCONST.1.FSHH; UIS.XUNIT.PPPCONST.23.FSHH; UIS.XUNIT.PPPCONST.5T8.FSHH)

The ICP also calculates PPPs at the level of education and provides indicators on the price levels and expenditures on education, defined as household expenditure on pre-primary, primary, secondary, post-secondary, and tertiary education plus expenditure of nonprofit institutions serving households (NPISHs) on education plus general government expenditure on education benefits and reimbursements and the production of education services (*figure 7.2*).

FIGURE 7.2 Price levels and PPP-based expenditures for education, 2017



The price level index for education is the ratio of the PPP for the expenditure component *Actual Education* to the market exchange rate. Expenditure on *Actual Education* reflects the sum of household consumption expenditure and expenditures by nonprofit institutions serving households (NPISHs) and government on goods and services within the education component actually consumed by households. Education expenditures in local currency units are converted to PPP-based expenditures using the PPP for the expenditure component *Actual Education*. Share of total GDP expenditure is based on nominal expenditures.

Source: ICP 2017

The Organisation for Economic Co-operation and Development (OECD) publishes PPP-based data on the salaries of teachers and school heads to enable comparisons between countries and between different stages of an educator's career, and can be used by policy makers to assess the disbursement of financial inputs into education against outcomes (*figure 7.3*).

FIGURE 7.3 Annual average salaries of school heads and teachers for selected OECD countries, 2019

Data are actual salaries for lower secondary full-time school heads and teachers in public institutions. Salaries in local currency units are converted to PPP-based salaries using OECD's PPP conversion factor for *Households and Nonprofit Institutions Serving Households (NPISHs) Final Consumption Expenditure*.

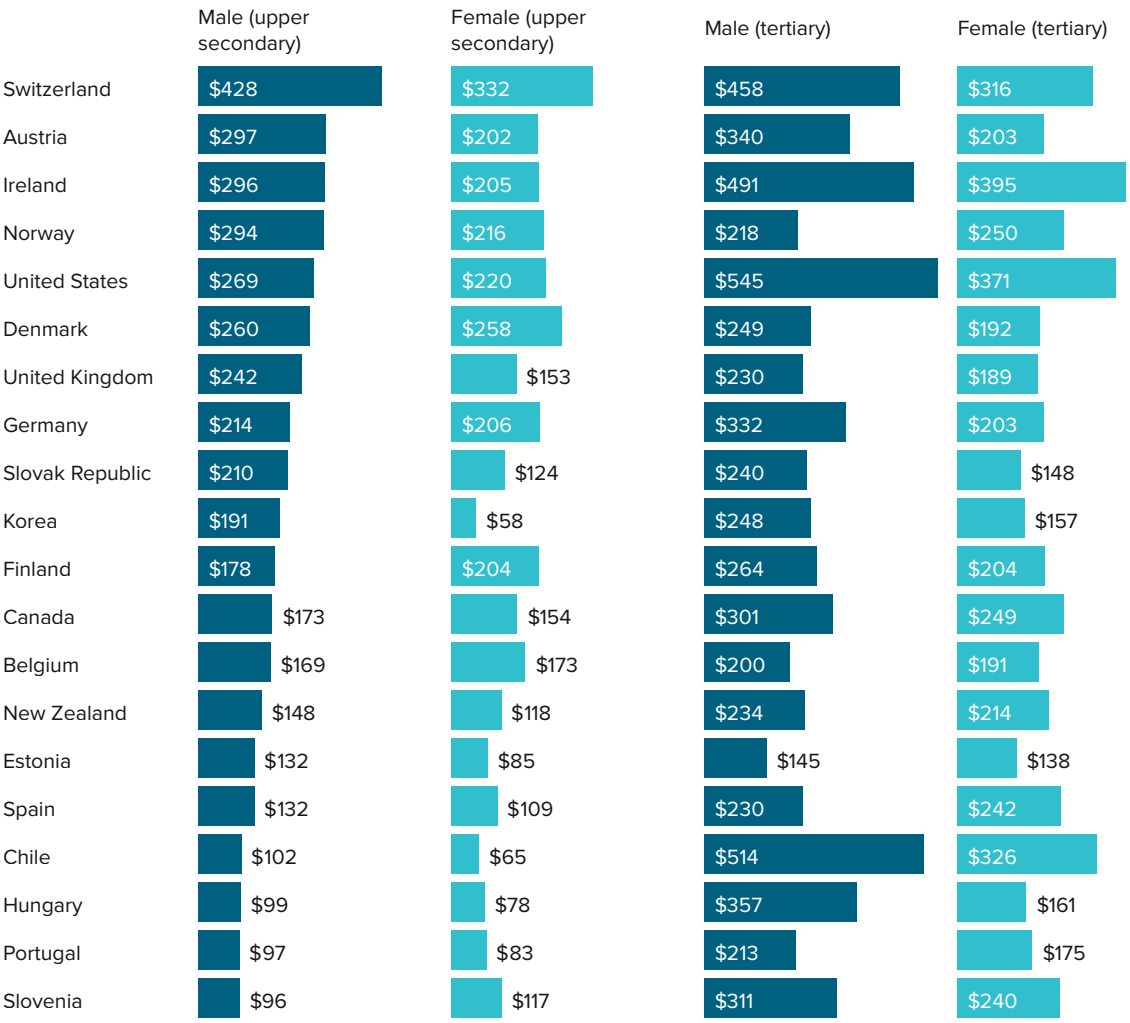
Source: OECD Education at a Glance 2020

Education outcomes

The OECD quantifies the financial returns to an individual achieving a certain level of education as compared to someone completing the education level below, and cross-country comparisons are enabled by expressing these in PPP terms (*figure 7.4*). Policy makers can use these data to assess the economic benefits to growth, society, and individuals through education investments.

FIGURE 7.4 Private net financial returns for person attaining upper secondary or tertiary education by sex for selected OECD countries, 2017

PPP$ (thousands)



Returns for upper secondary level reflect the benefit compared with returns to below upper secondary level, and returns for tertiary level reflect benefit compared with upper secondary level. Returns estimated up to a theoretical retirement age of 64.

Source: OECD Education at a Glance 2020

Note

1. http://uis.unesco.org/sites/default/files/documents/quick-guide-education-indicators-sdg4-2018-en.pdf

8 Energy and climate

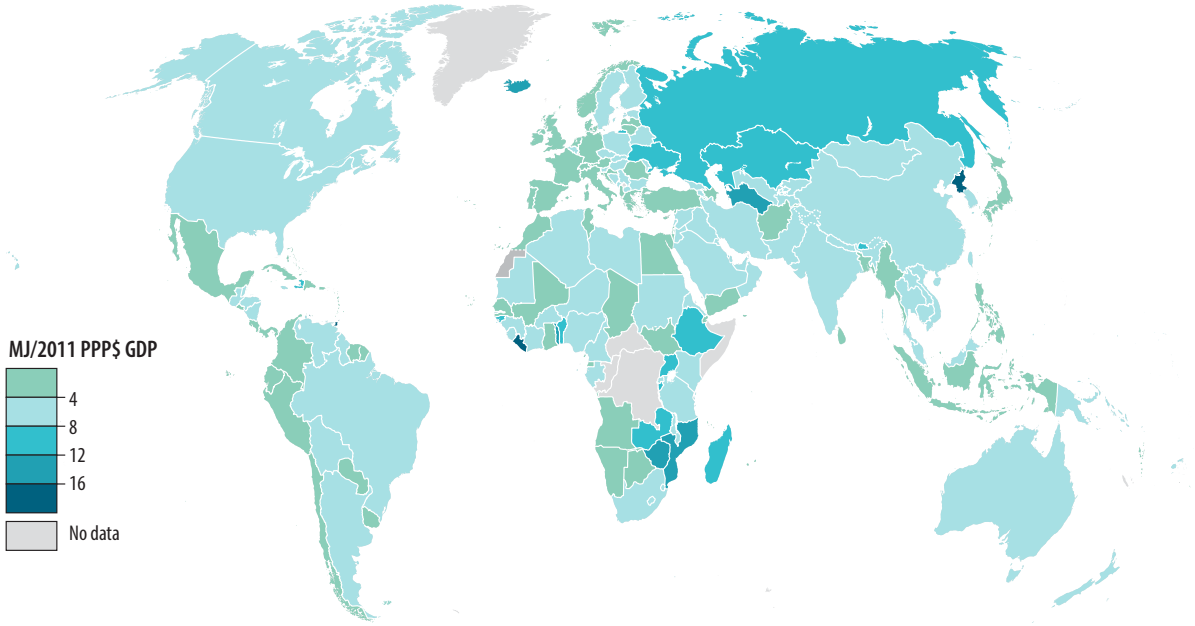
Energy efficiency

Energy efficiency is key to strategies seeking to guarantee secure, sustainable, and inclusive economic growth, boost competitiveness and welfare, and to reduce the environmental footprint of the energy system.

Countries have pledged to double the global rate of improvement in energy efficiency by 2030, as articulated by Sustainable Development Goal (SDG) target 7.3,[1] by making energy efficiency measures a policy and investment priority. The energy intensity level of primary energy, defined as the ratio of energy supply to PPP-based GDP, is the official SDG indicator used for measuring progress towards this target and is an indication of how much energy is used to produce one unit of economic output. It is a proxy for the efficiency with which a country is able to use energy to produce economic output. A lower ratio indicates that less energy is used to produce one unit of output. Using PPP-based GDP allows cross-country comparisons and *map 8.1* shows the variation of energy intensity across countries.

MAP 8.1 Energy intensity of primary energy, 2017

MJ/ 2011 PPP$ GDP



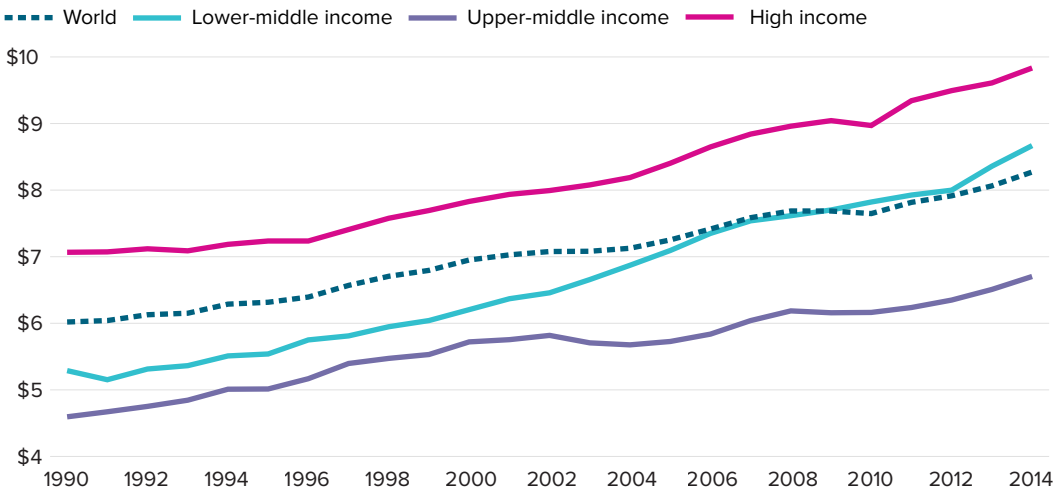
MJ = megajoules.

Source: International Energy Agency; United Nations Statistical Division; World Bank; UN SDG Database (EG_EGY_PRIM)

Another published indicator of energy efficiency is PPP-based GDP per kilogram of energy use. *Figure 8.1* shows the change over time of this efficiency measure by income group.

FIGURE 8.1 GDP per unit of energy use by income group

2017 PPP$ per kg of oil equivalent



Data for low-income countries are not available.

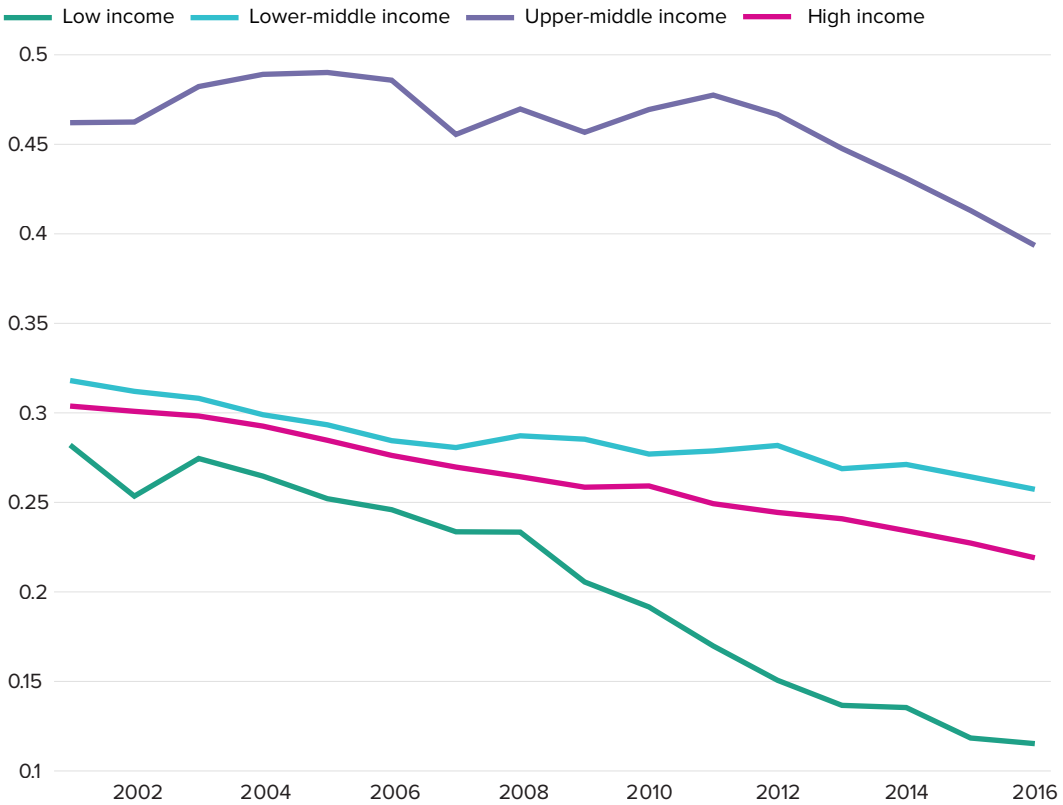
Source: International Energy Agency; World Development Indicators (EG.GDP.PUSE.KO.PP.KD)

Emissions and climate change

The extreme socioeconomic consequences of climate change have brought fossil fuel emissions and mitigation and adaptation efforts to the fore in both national and international policy making. Emissions are correlated with the volume of activity and production of a country and PPP-based GDP growth is identified as a major driver of increasing emissions.[2] The indicator CO2 emissions per unit of value added is used to measure progress towards Sustainable Development Goal (SDG) target 9.4,[3] which looks to upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes. When calculated at the level of the whole economy, PPP-based GDP is used as the denominator and the measure reflects the effects of the average carbon intensity of the energy mix, the structure of an economy, and the average efficiency in the use of energy.[4] Measuring GDP in constant 2017 PPP terms allows an examination of the change in emission intensity over time. *Figure 8.2* shows changes by income group since 2001.

FIGURE 8.2 CO2 emissions per unit of PPP-based GDP by income group

Kg per 2017 PPP$ of GDP



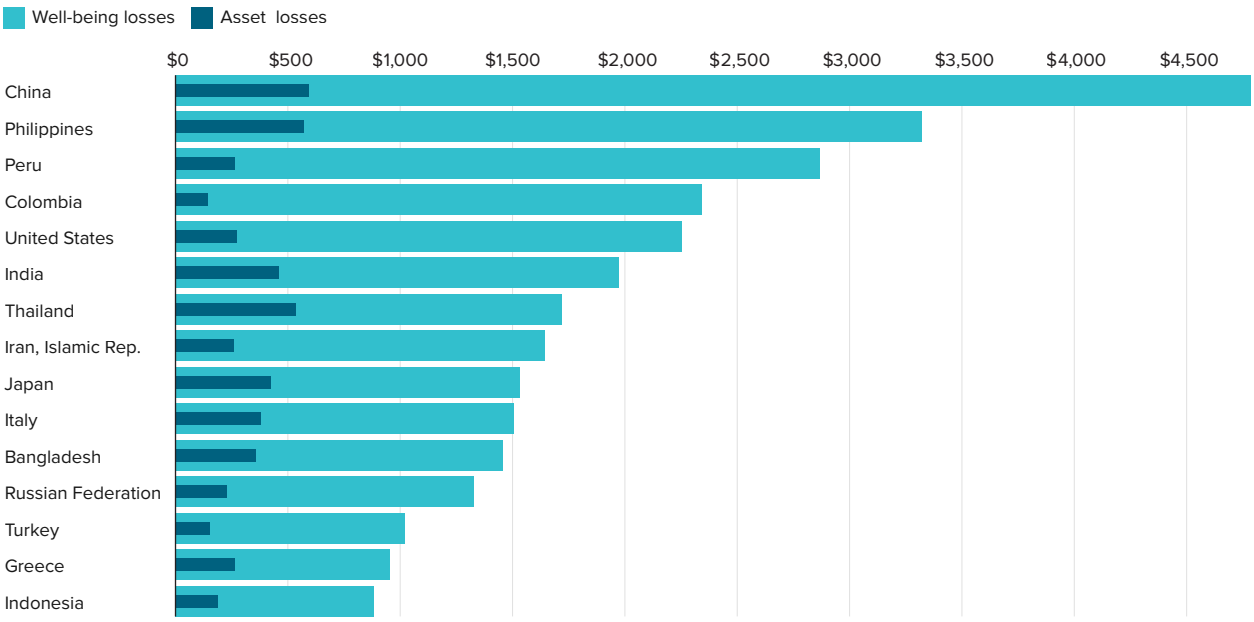
Source: Carbon Dioxide Information Analysis Center; World Development Indicators (EN.ATM.CO2E.PP.GD.KD)

The World Bank quantifies the impact of natural hazards and disasters on the most vulnerable in PPP terms.[5] It does so by first assessing the risk to assets as the average monetary value of the damages that disasters inflict on assets (often measured as replacement or repair value). Second, it also assesses the potential loss to well-being, which is expressed as the loss in national consumption. These data enable policy makers to monitor the social resilience of a country – that is, its ability to minimize the impact of

asset losses on well-being. They can also use the data to set intervention priorities such as expanding financial inclusion, disaster risk and health insurance, social protection and adaptive safety nets, contingent finance and reserve funds, and universal access to early warning systems. *Figure 8.3* shows the estimated losses avoided by reducing by 5 percent the share of the population exposed to natural hazards by targeting the poorest 20 percent of people in each country.

FIGURE 8.3 Estimated annual average losses avoided by reducing exposure of the poorest to natural hazards

2011 PPP$ (millions)



Data are shown for fifteen countries with the highest estimated avoided well-being losses from a 5 percent reduction in exposure, achieved by reducing the exposure of the poorest 20 percent of people.

Source: Unbreakable: Building the Resilience of the Poor in the Face of Natural Disasters, World Bank.

Notes

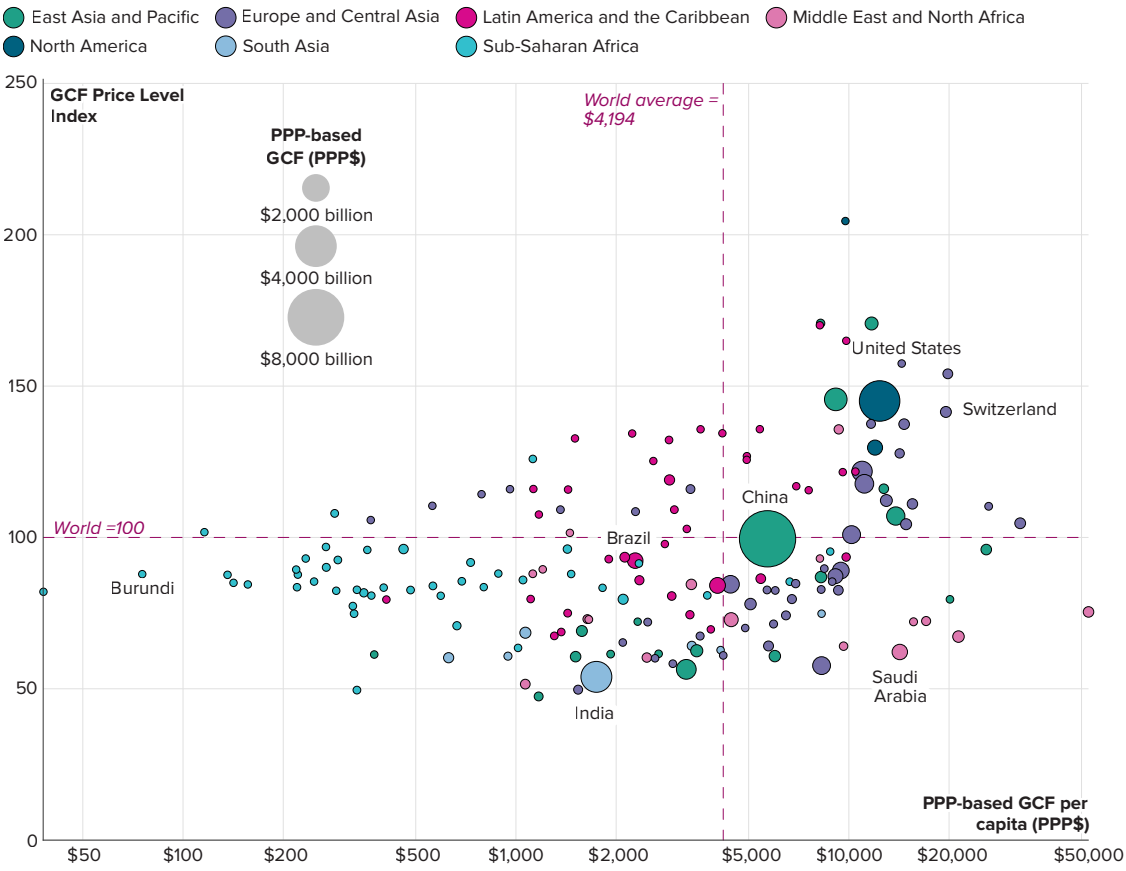
1. https://unstats.un.org/sdgs/metadata/files/Metadata-07-03-01.pdf
2. https://blogs.worldbank.org/opendata/purchasing-power-parities-essential-tool-climate-monitoring
3. https://unstats.un.org/sdgs/metadata/files/Metadata-09-04-01.pdf
4. https://www.unece.org/fileadmin/DAM/stats/documents/ece/ces/ge.33/2019/mtg2/S2_2_Ind_9_4_1_CO2_EN.pdf
5. https://openknowledge.worldbank.org/handle/10986/25335

9 Infrastructure

Investment

Gross capital formation (GCF) is a driver of economic growth. Policy makers can examine ICP price levels and expenditures on GCF and its components of machinery and equipment, construction, change of inventories and acquisitions less disposals of valuables to inform investment strategies (*figure 9.1* and *figure 9.2*).

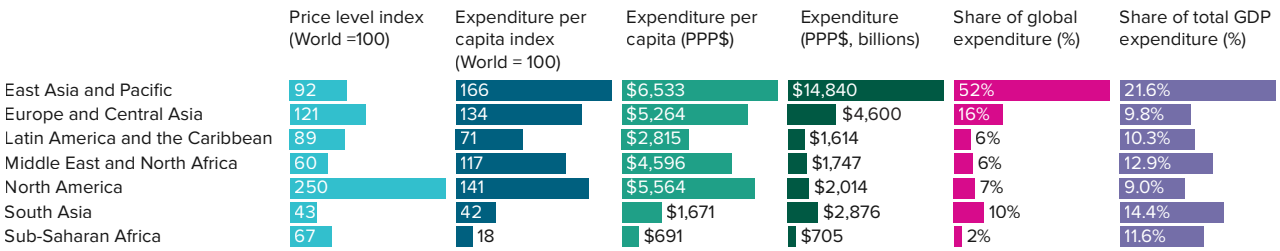
FIGURE 9.1 Gross Capital Formation: Price level index and PPP-based expenditure per capita, 2017



GCF = gross capital formation. The price level index for gross capital formation is the ratio of the PPP for the expenditure component *Gross Capital Formation* to the market exchange rate. Gross capital formation expenditures in local currency units are converted to PPP-based expenditures using the PPP for the expenditure component *Gross Capital Formation*. A logarithmic scale is used for PPP-based GCF per capita.

Source: ICP 2017

FIGURE 9.2 Price levels and PPP-based expenditures for construction, 2017



The price level index for construction is the ratio of the PPP for the expenditure component *Construction* to the market exchange rate. Construction expenditures in local currency units are converted to PPP-based expenditures using the PPP for the expenditure component *Construction*. Share of total GDP expenditure is based on nominal expenditures.

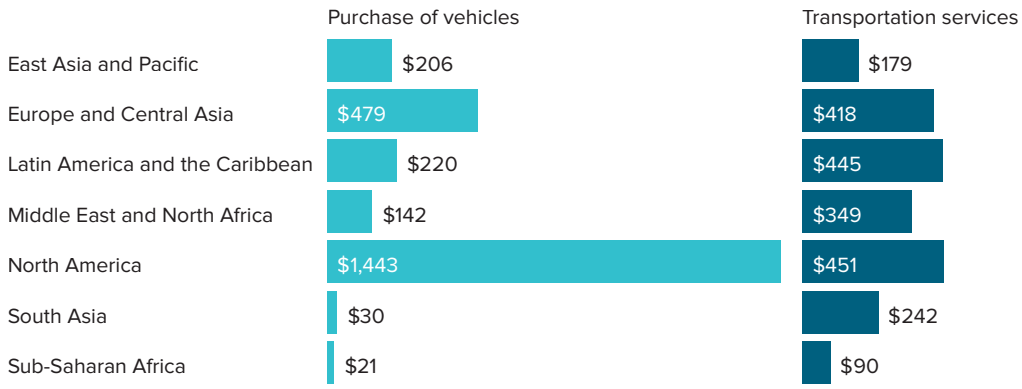
Source: ICP 2017

Transport

Transport is a crucial driver of economic and social development, bringing opportunities for the poor and enabling countries to be more competitive. Transport infrastructure connects people to jobs, education, and health services; it enables the supply of goods and services around the world; and it allows people to interact and generate the knowledge and solutions that foster long-term growth. The ICP calculates PPPs for transport goods and services and collects price and expenditure data on the purchase of vehicles and transport services (*figure 9.3* and *map 9.1*), which policy makers can utilize to help examine the effect of high mobility costs on the poor, the impact of transport affordability on climate change and air pollution, and the cost of transport infrastructure investment to meet the needs of increasingly urbanized societies.

FIGURE 9.3 PPP-based transport expenditure per capita by region, 2017

PPP$

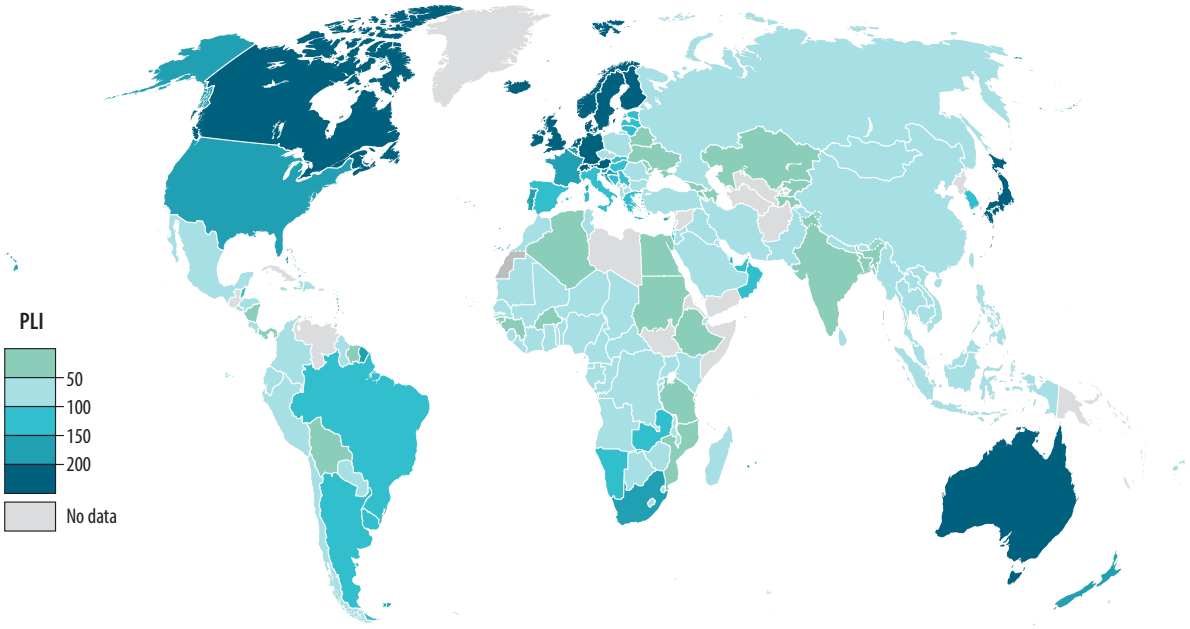


Purchase of vehicles expenditures in local currency units are converted to PPP-based expenditures using the PPP for the expenditure component *Purchase of Vehicles*. Transportation services expenditures in local currency units are converted to PPP-based expenditures using the PPP for the expenditure component *Transportation Services*.

Source: ICP 2017

MAP 9.1 Price level indexes for transportation services, 2017

World = 100



PLI = price level index. The PLI for transportation services is the ratio of the PPP for the expenditure component *Transportation Services* to the market exchange rate.

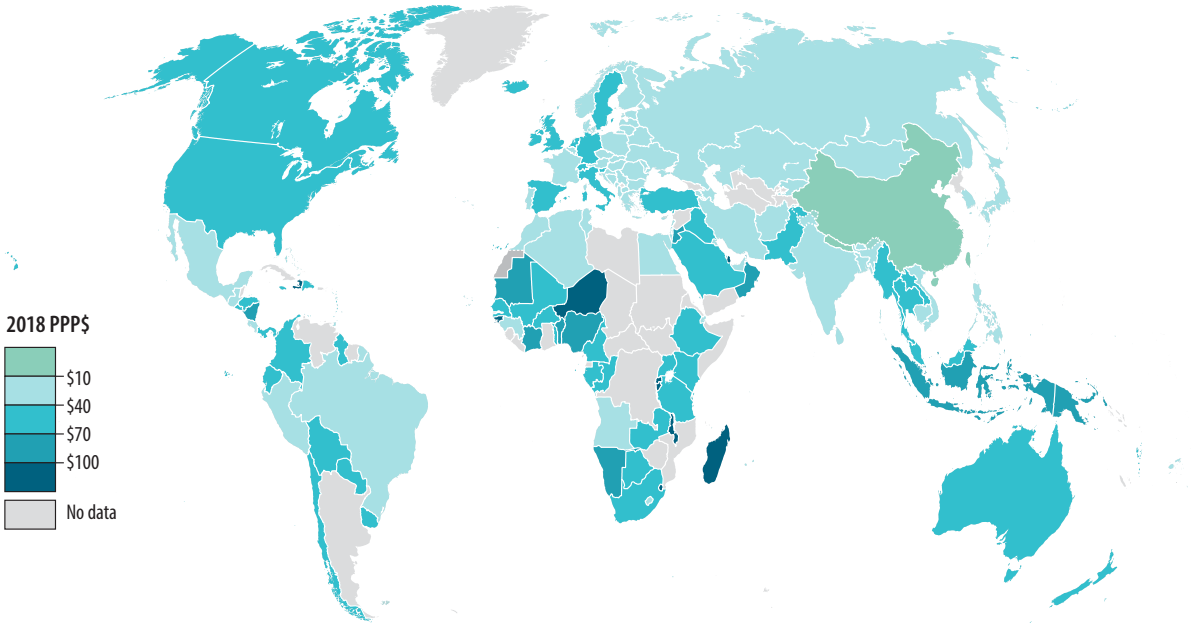
Source: ICP 2017

Information and communication technology

Ensuring that all parts of society can access information and communication technology (ICT) underpins the Broadband Commission's 2025 goals for Sustainable Development. Goal 2 states that entry-level broadband services be made affordable in developing countries at less than 2 percent of monthly GNI per capita. Policy makers can monitor affordability through data on the price, expressed in PPP terms, of mobile-voice services, mobile data and fixed broadband[2] for countries and regions published by the International Telecommunication Union (ITU) (*map 9.2* and *figure 9.4*). Furthermore, the Organisation for Economic Co-operation and Development (OECD) provides PPP-based prices for other mobile and fixed broadband baskets reflecting the range of options available in its member states.

MAP 9.2 Monthly cost of fixed broadband 5GB, 2019

2018 PPP$



Fixed-broadband basket with a monthly data usage of (a minimum of) 5 GB.

Source: ITU

FIGURE 9.4 Cost of ICT services, 2019

2018 PPP$

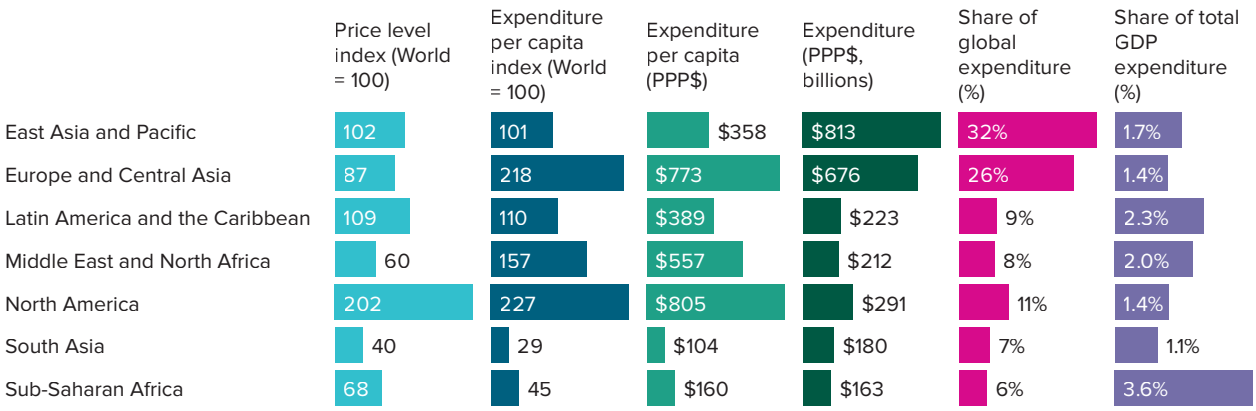
	Fixed broadband	High usage voice and data	Low usage voice and data	Data-only mobile broadband	Mobile cellular, low usage
Developed countries	$34	$31	$22	$19	$20
Developing countries	$46	$40	$25	$21	$18
Least developed countries	$54	$45	$25	$16	$18
World	$42	$38	$24	$20	$19
Africa	$60	$50	$29	$21	$19
The Americas	$45	$43	$31	$26	$25
Arab States	$51	$39	$21	$26	$15
Asia and Pacific	$34	$31	$20	$15	$14
Europe	$34	$29	$21	$18	$19
Commonwealth of Independent States	$21	$18	$13	$14	$11

The ICT baskets priced are: fixed-broadband basket 5GB; high usage voice and data basket (140 min + 70 SMS + 1.5GB); low usage voice and data basket (70 min + 20 SMS + 500 MB); data-only mobile broadband basket 1.5 GB; and mobile-cellular basket low usage (70 min + 20 SMS).

Source: ITU

The ICP collects price and expenditure data under the category of *Communications*, which includes, among other items, wireless telephone services, including voice and video calls, messages, and the cost of packages, and internet access provision services (*figure 9.5*).

FIGURE 9.5 Price levels and PPP-based expenditures for communications, 2017



The price level index for communications is the ratio of the PPP for the expenditure component *Communications* to the market exchange rate. Communications expenditures in local currency units are converted to PPP-based expenditures using the PPP for the expenditure component *Communications*. Share of total GDP expenditure is based on nominal expenditures.

Source: ICP 2017

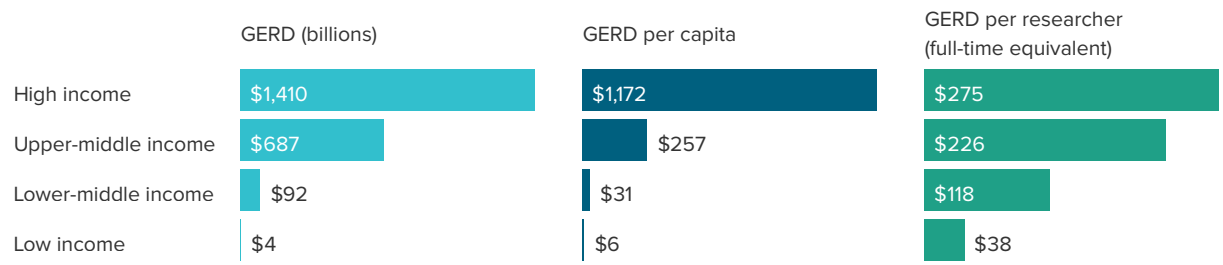
Research and development

Investment in research and development (R&D) and encouraging innovation can enable knowledge-based economic development and growth. Through Sustainable Development Goal (SDG) 9, countries have pledged to build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation. SDG target 9.5 seeks to encourage innovation and substantially increase the number of researchers, as well as public and private spending on research and experimental development.

Expressing expenditures on R&D and its components in PPP terms allows comparisons between sectors, countries, and over time. The United Nations Educational Scientific and Cultural Organisation (UNESCO) provides several PPP-based indicators to support policy making to achieve this target (*figure 9.6* and *map 9.3*). These are made available by sector and by source of financing (business enterprise, government, higher education, and private nonprofit), and by field (natural sciences, engineering and technology, medical and health sciences, agricultural and veterinary sciences, social sciences, and humanities and the arts).

FIGURE 9.6 Gross domestic expenditure on research and development (GERD) by income group, 2017

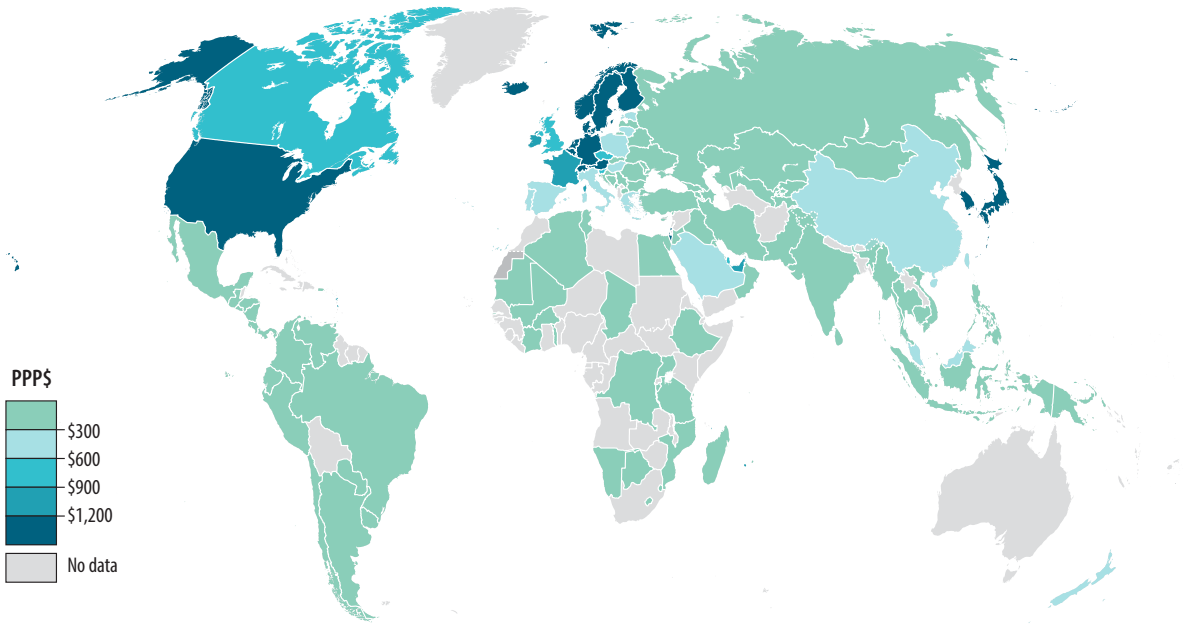
PPP$



Source: UNESCO Institute for Statistics

MAP 9.3 Gross domestic expenditure on research and development per capita, most recent year (2013–2018)

PPP$

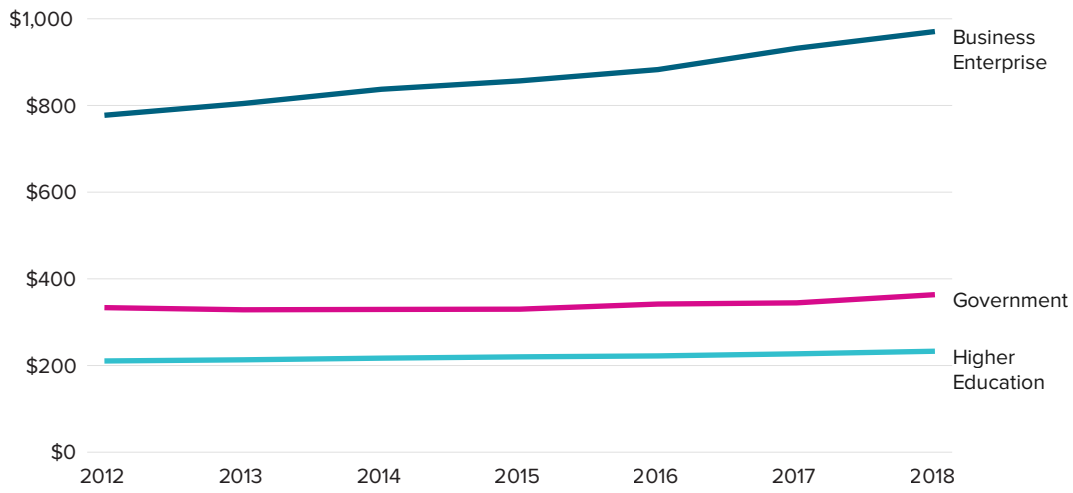


Source: UNESCO Institute of Statistics

The Organisation for Economic Co-operation and Development (OECD) Main Science and Technology Indicators database provides indicators that reflect the level and structure of efforts in the field of science and technology. The database includes PPP-based expenditures on research and development by performing sector (*figure 9.7*).

FIGURE 9.7 Total OECD expenditure on R&D by performing sector

2015 PPP$ (billions)

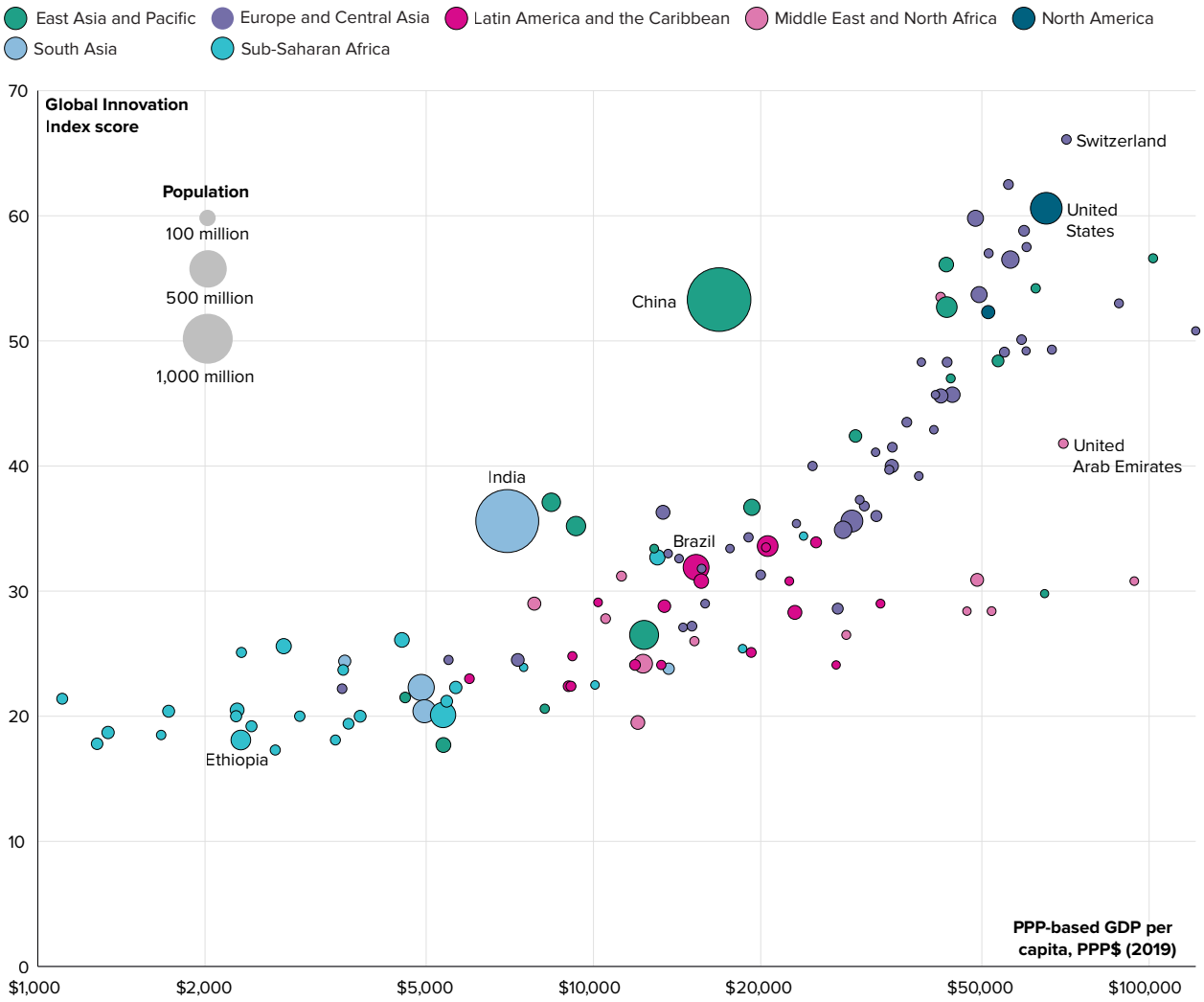


Government = Total Government Allocations for R&D.

Source: OECD Main Science and Technology Indicators

The aim of the Global Innovation Index (GII), published by Cornell University, Institut Européen d'Administration des Affaires (INSEAD), and the World Intellectual Property Organization (WIPO), is to provide insightful data on innovation and, in turn, assist countries in evaluating their innovation performance and making informed innovation policy considerations. Many of the index's metrics are measured per unit of PPP-based GDP. These include management systems certificates awarded, venture capital deals, joint ventures and strategic alliances, patents, applications and trademarks, global downloads of mobile apps, and the number of scientific and technical journal articles. Additional inputs include the growth rate of PPP-based GDP per person employed, the gross capital formation share of PPP-based GDP, PPP-based GDP per unit of energy use, and domestic market scale as measured by PPP-based GDP. *Figure 9.8* shows the GII score against PPP-based GDP per capita for countries.

FIGURE 9.8 Global Innovation Index score by PPP-based GDP per capita, 2020



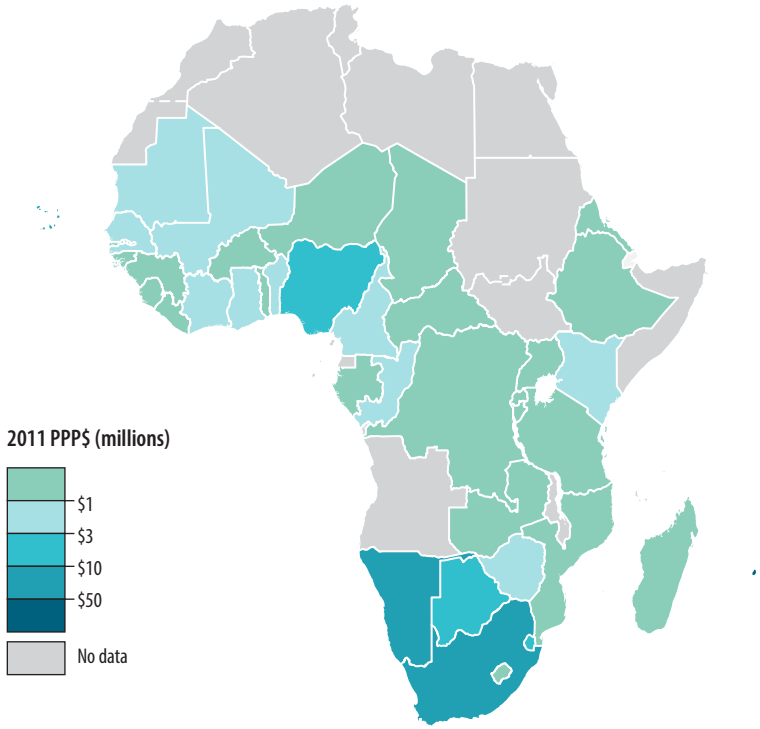
A logarithmic scale is used for PPP-based GDP per capita.

Source: GII; World Development Indicators (NY.GDP.PCAP.PP.CD; SP.POP.TOTL)

The Agricultural Science and Technology Indicators (ASTI) database from the International Food Policy Research Institute (IFPRI) collects data on agricultural research expenditure in low- and middle-income countries to assist policy makers in understanding the contribution of agricultural science and technology to agricultural growth and help them in formulating policy, setting priorities, and undertaking strategic planning, monitoring, and evaluation (*map 9.4*). The largest components of a country's agricultural R&D expenditures are staff salaries and local operating costs, and thus PPPs are chosen over market exchange rates to compare expenditures across countries and with other sectoral R&D expenditures.

MAP 9.4 National agricultural research expenditure per 100,000 farmers, Sub-Saharan African countries, most recent year (2011–2016)

2011 PPP$ (millions)



Source: IFPRI Agricultural Science and Technology Indicators Database

Notes

1. https://www.broadbandcommission.org/Documents/publications/wef2018.pdf
2. https://www.itu.int/net4/ITU-D/ipb/#ipbtimeseries-tab
3. https://www.oecd.org/sti/broadband/broadband-statistics/
4. https://unstats.un.org/sdgs/metadata/files/Metadata-09-05-01.pdf
5. http://data.uis.unesco.org
6. https://www.oecd.org/sti/msti.htm
7. https://www.globalinnovationindex.org/home
8. https://www.ifpri.org/publication/asti-website

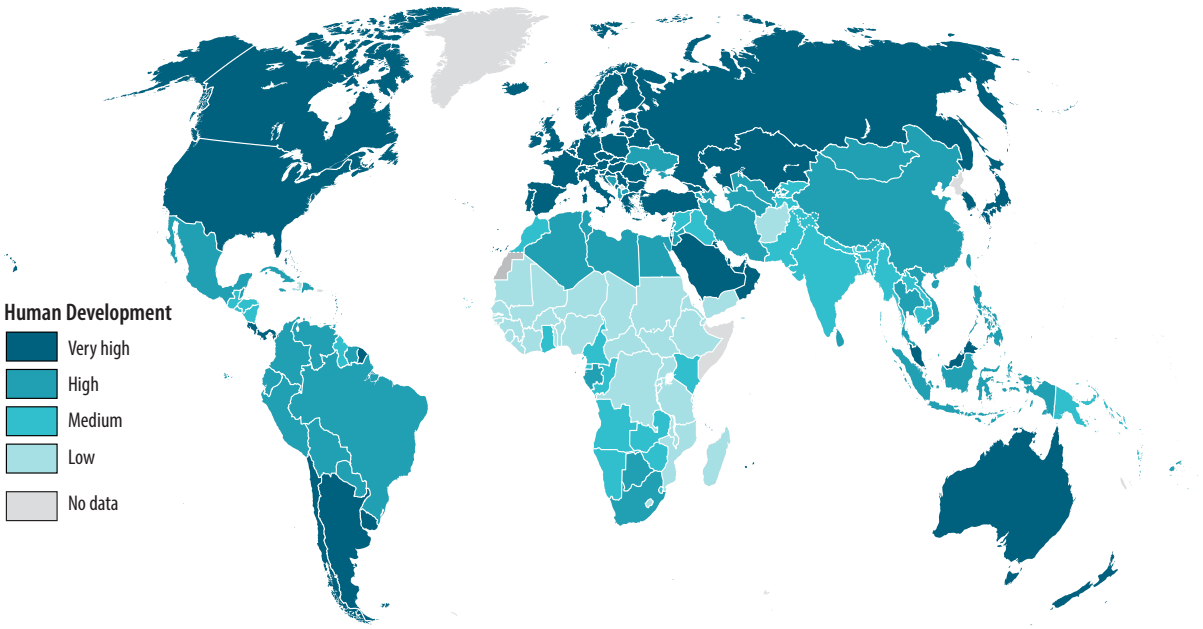
10 Human Development

Human Development Index

The Human Development Index[1] (HDI) published by the United Nations Development Programme (UNDP) provides an assessment of countries' development performance through a summary measure of average achievement in three key areas of human development: a long and healthy life; being knowledgeable; and a decent standard of living. The HDI score is the geometric mean of normalized indices for each of three dimensions, one of which is PPP-based gross national income (GNI) per capita, chosen to reflect living standards and enable cross-country comparisons. The composite HDI score is used to classify countries into one of four groups of human development level (*map 10.1*). Furthermore, the Inequality-adjusted Human Development Index (IHDI) calculates an index score for each of these dimensions which adjust for the level of inequality within the country. *Figure 10.1* shows both the HDI and the IHDI income index score as measured by PPP-based GNI per capita for each of the four human development groups. The greater the relative difference between the two, the more inequality exists within countries in that group.

INTERACTIVE

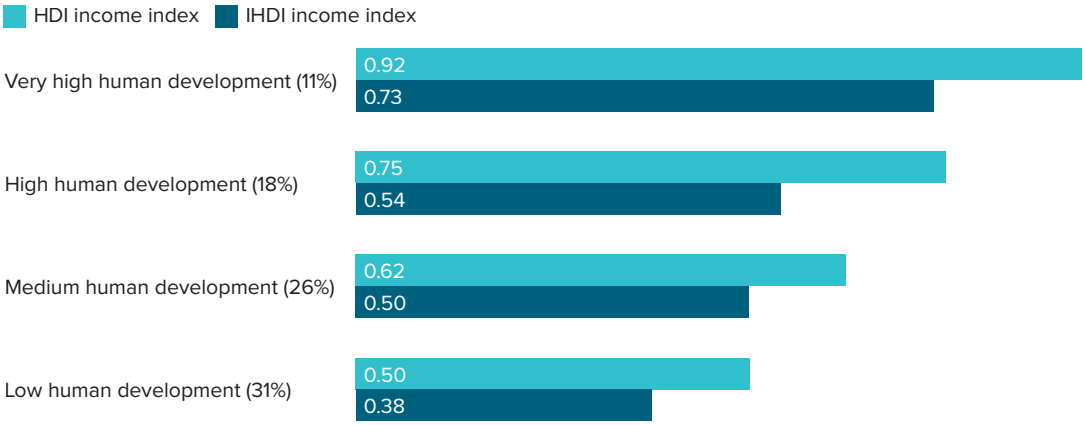
MAP 10.1 Human Development Index, 2019



GNI = gross national income. PPP-based GNI per capita in constant 2017 PPP terms is one of three dimensions used to calculate the HDI score. The HDI score is used to classify countries into one of four groups of human development level.

Source: UNDP Human Development Index.

FIGURE 10.1 Income indexes by human development level, 2019



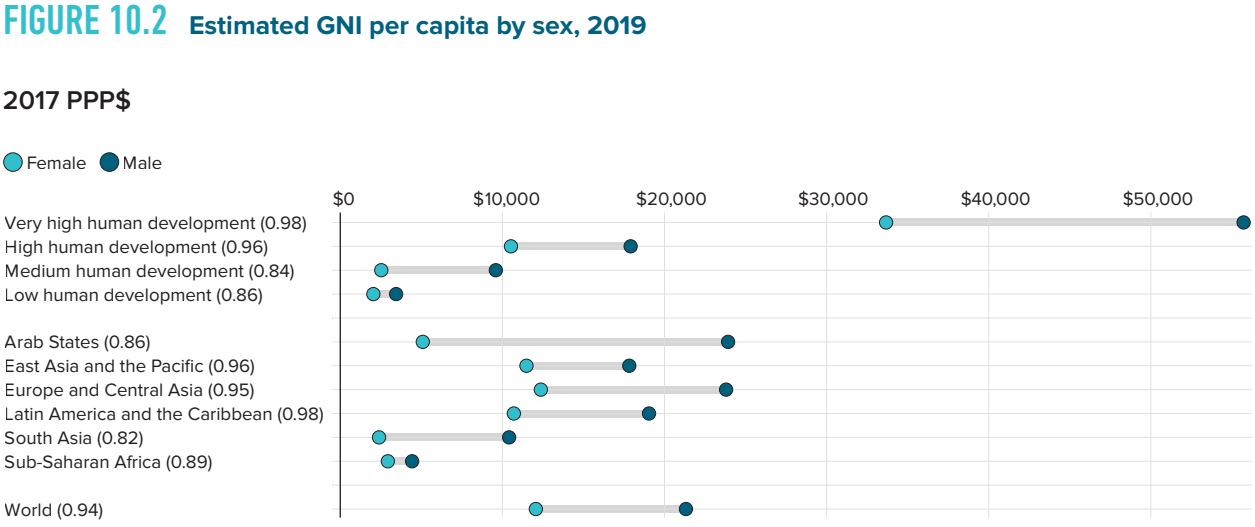
HDI = Human Development Index; IHDI = Inequality-adjusted Human Development Index. The percentage loss to the HDI income index due to inequality is given in parentheses.

Source: UNDP Human Development Index and Inequality-adjusted Human Development Index

Gender Development Index

The Gender Development Index[2] (GDI) measures gender gaps in human development. It does so by calculating a human development index score separately for men and women for each participating country. GNI per capita is estimated separately for both genders as part of this process and converted using the PPP at the GDP level for each country. The resulting GDI value is expressed as the female HDI score as a percentage of the male HDI score (*figure 10.2*) and informs efforts to design policy tools to close the gender gap.

FIGURE 10.2 Estimated GNI per capita by sex, 2019



GNI = gross national income. Gender Development Index values are shown in parentheses.

Source: UNDP Gender Development Index

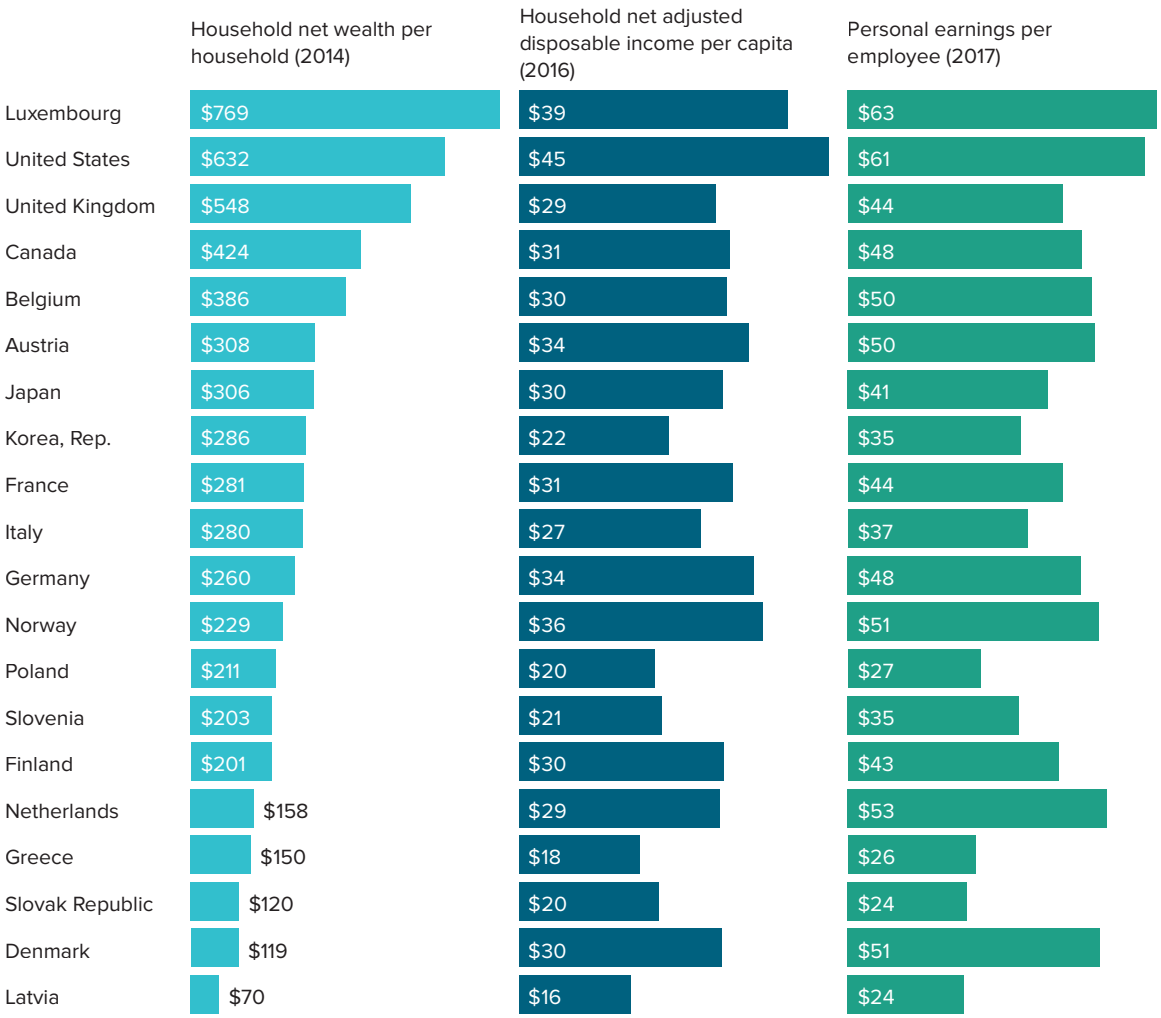
Additionally, the Gender Inequality Index[3] (GII) employs the maternal mortality ratio as an input which uses PPP-based GDP in its estimation.

Better Life Index

The Organisation for Economic Co-operation and Development's (OECD) Better Life Index[4] is an initiative that seeks to help governments put well-being at the center of policy making. It aims to involve citizens in the debate on measuring the well-being of societies and to empower them to become more informed and engaged in the policy making processes that shape their lives. It brings together key factors that contribute to well-being such as education, housing, and the environment. Three PPP-based indicators are used within the index: household net adjusted disposable income, household net wealth, and personal earnings (*figure 10.3*).

FIGURE 10.3 PPP-based indicators in the Better Life Index for selected OECD countries

PPP$ (thousands)



Data for household net wealth is 2016 for Canada and the United States, and 2015 for Denmark, Korea, Rep., the Netherlands, and the United Kingdom. Household net adjusted disposable income data in local currency units are converted to PPP-based expenditures using the PPP for the expenditure component *Actual Individual Consumption*. Household net wealth data in local currency units are converted to PPP-based expenditures using the PPP for the expenditure component *Households and Nonprofit Institutions Serving Households (NPISHs) Final Consumption Expenditure*. Personal earnings data in local currency units are converted to PPP-based expenditures using the PPP for GDP.

Source: OECD Better Life Index

Notes

1. http://hdr.undp.org/en/content/human-development-index-hdi
2. http://hdr.undp.org/en/content/gender-development-index-gdi
3. http://hdr.undp.org/en/content/gender-inequality-index-gii
4. https://stats.oecd.org/Index.aspx?DataSetCode=BLI#

11 Administrative uses

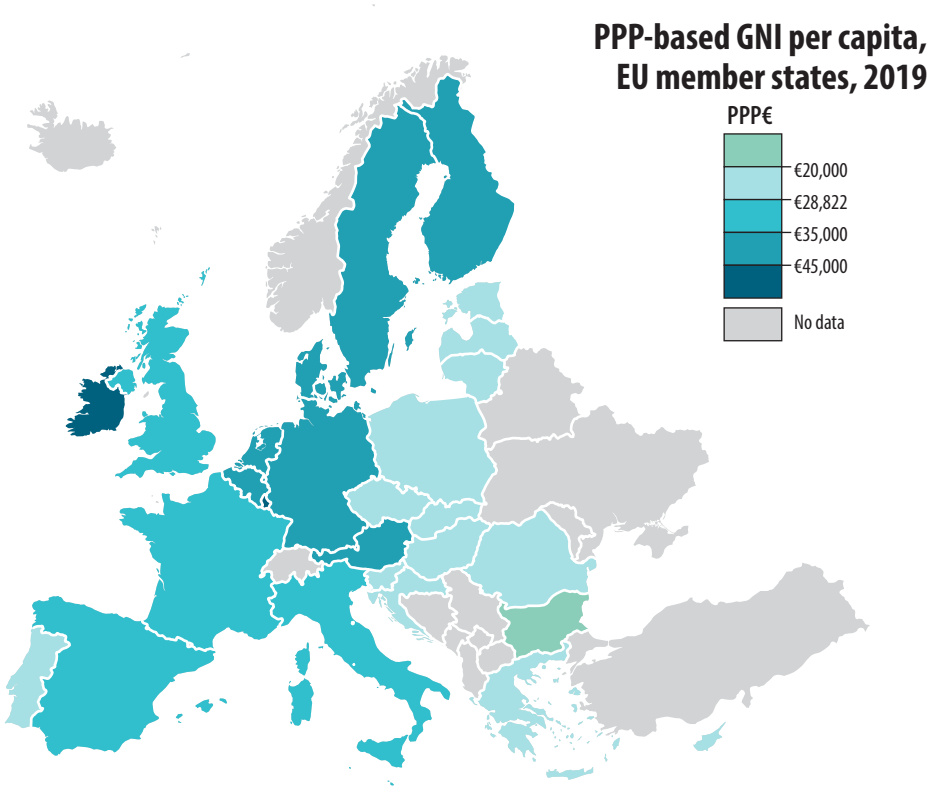
The European Commission, International Monetary Fund (IMF), and World Bank all employ PPP-based indicators for administrative purposes. The European Commission Cohesion Fund is aimed at European Union (EU) member states whose PPP-based GNI per inhabitant is less than 90 percent of the EU average. It seeks to reduce economic and social disparities and to promote sustainable development (*map 11.1*).

The IMF's permanent financial resources come mostly from quota subscriptions. Quotas determine the maximum financial resources that member countries are obliged to provide the IMF, the amount of financing that members can obtain from the IMF, and their voting power in IMF decisions. Each member country is assigned a quota, measured in special drawing rights,[1] based broadly on its relative size in the world economy (*figure 11.1*). A blended GDP measure contributes a weight of 50 percent to the quota formula,[2] with PPP-based GDP making up 40 percent of this blended measure, and thus contributing 20 percent overall.

Similarly, the World Bank Group incorporates PPPs into its dynamic formula[3] which provides the necessary anchor and a data-driven analysis for shareholding discussions reflecting the evolution of the global economy and countries' contributions to the World Bank Group mission. The shareholding rights of the International Bank for Reconstruction and Development member countries are largely based on economic weight at the global level of which PPP-based GDP contributes 40 percent and market exchange rate-based GDP 60 percent.

MAP 11.1 PPP-based GNI per capita, EU member states, 2019

PPP€

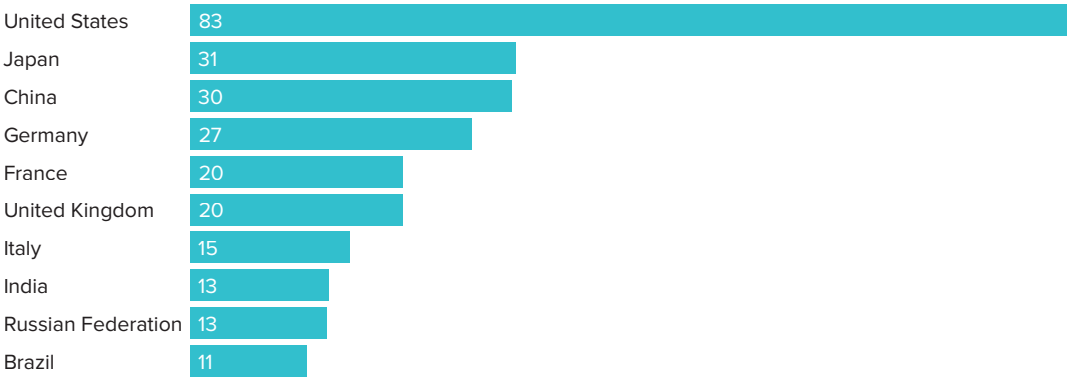


The Cohesion Fund is aimed at member states whose PPP-based Gross National Income (GNI) per inhabitant is less than €28,822 (90% of the EU28 average).

Source: Eurostat

FIGURE 11.1 IMF quotas, top ten member countries

Special drawing rights (billions)



Data are absolute values as at the 14th review completed in 2010. The quota formula, which includes a 20 percent weight for PPP-based GDP, helps guide quota distribution among member countries.

Source: IMF

Notes

1. https://www.imf.org/en/About/Factsheets/Sheets/2016/08/01/14/51/Special-Drawing-Right-SDR
2. https://www.imf.org/external/np/spr/glossary.pdf
3. https://www.devcommittee.org/sites/dc/files/download/Documentation/DC2016-0010.pdf

Technical note

Presentation of data

The figures presented in this publication reflect data available as of December 2020. The data are published by the referenced sources and are presented here for illustrative purposes only. For the most recent data please visit the referenced source. Note that many of the indicators are available via the World Bank's *World Development Indicators* (WDI),[1] and the indicator codes are given in the source footnotes. *ICP 2017* refers to ICP results from the 2017 cycle, released in May 2020. Otherwise, the data compiler or agency producing the indicator is given as the source. The static maps presented in this publication were produced by the Cartography Unit of the World Bank Group. The boundaries, colors, denominations and any other information shown on these maps do not imply, on the part of the World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries. The interactive maps are for illustrative and data access purposes only.

PPPs expressed in dollar terms are based on US$ = 1. PPP-based expenditures reflect conversions of expenditures in local currency units using PPP estimates at the level of GDP unless otherwise noted.

The ICP publishes data for a given reference year or *ICP cycle*. The three most recent ICP cycles are ICP 2017, ICP 2011, and ICP 2005. The ICP 2011 data first published in 2014 were revised as part of the ICP 2017 cycle mainly to reflect updated national accounts expenditure data. A limited set of PPPs is published for the intervening years 2012 to 2016. Several indicators in this publication use ICP 2017 PPPs, while some use ICP 2011 and ICP 2005 PPPs. In addition, the Statistical Office of the European Union (Eurostat)[2] and the Organisation for Economic Co-operation and Development (OECD)[3] publish annual PPPs for their member countries. Furthermore, WDI uses ICP results to extrapolate PPPs[4] at the levels of GDP[5] and Households and Nonprofit Institutions Serving Households (NPISHs) Final Consumption Expenditure (private consumption)[6] for years other than ICP cycles, as does the International Monetary Fund (IMF) at the level of GDP.[7]

Data reported in current terms refer to the PPPs for each year being applied to the values expressed in the prices of a single year, for example, 2016 PPPs, reflecting 2016 prices, are used for 2016 data in current prices, and 2017 PPPs, reflecting 2017 prices, are used for 2017 data in current prices and so forth. Data reported in constant terms refer to a base year's PPP being applied to the values expressed in the prices of that base year, for example 2017 PPPs, reflecting 2017 prices, are applied to data in constant 2017 prices for all years within the range shown. Data presented in the figures are in current terms unless otherwise noted.

Regions follow the World Bank's geographical region classification, and income groups reflect the World Bank Group's current 2021 fiscal year classification based on gross national income (GNI) per capita, calculated using the World Bank Atlas method.[8] Appendix J of the ICP 2017 report *Purchasing Power Parities*

and the Size of World Economies[9] provides a list of the constituent countries for each region and current income groups are available from the World Bank's data helpdesk.[10]

Concepts and definitions

Purchasing power parities (PPPs)

PPPs are both currency conversion factors and spatial price indexes. They convert different currencies to a common currency and, in the process of conversion, equalize their purchasing power by controlling for the differences in price levels between economies. They show, with reference to a base economy, the relative price of a given basket of goods and services in each of the economies being compared. The common currency used for global ICP comparisons is the United States dollar and are presented within this compendium as *PPP$*. WDI publishes PPPs as *PPP conversion factors*.

Price level indexes (PLIs)

An economy's PLI for a given expenditure component is its PPP for that expenditure component divided by the economy's market exchange rate relative to the reference economy or region, which typically has an index level of 100. The ICP provides PLIs based on World = 100. If an economy's PLI for a given expenditure component is lower than that of another economy, then the goods and services within that expenditure component are less expensive than those in the other economy. Conversely, if an economy's PLI is higher than that of another economy, then these goods and services are more expensive than those in the other economy. When indexed to the same reference economy or region, PLIs can be used to directly compare price levels across economies, unlike PPPs. WDI publishes PLIs as *price level ratios*.[11]

PPP-based GDP and real expenditures

ICP comparisons of GDP are based on the sum of the final expenditures on goods and services plus exports less imports of goods and services as classified by the System of National Accounts. This approach allows comparison of the levels of the principal elements of final demand, that is, consumption and investment, and informs many different types of economic analysis, including forecasting and poverty analysis.

Economies estimate their nominal expenditures on GDP and its expenditure components at national price levels and in local currency units. To compare the volumes of goods and services produced by economies, differences in national price levels need to be controlled for and local currency units need to be converted to a common currency. This is achieved by dividing expenditures in local currency units by PPPs. Thus, comparisons of the resulting PPP-based expenditures, termed *real expenditures*, reflect only the differences in volumes between economies.

PPP-based per capita expenditures are real expenditures divided by the mid-year population.

Chapter 3 of *Purchasing Power Parities and the Size of World Economies*[12] provides further details of ICP concepts and definitions.

ICP classification of expenditures and indicators

The ICP publishes data for national accounts expenditure components below the GDP level. ICP 2017 and revised ICP 2011 data are available for 44 expenditure components (*Table 1*). For each expenditure component the ICP publishes 14 indicators (*Table 2*) as well as the market exchange rate and population for each economy. Further details on the ICP classification of national accounts expenditures[13] are available online and the ICP database[14] provides metadata for each expenditure component and indicator.

TABLE 1 ICP expenditure components

GROSS DOMESTIC PRODUCT

ACTUAL INDIVIDUAL CONSUMPTION [a, b]

HOUSEHOLDS AND NONPROFIT INSTITUTIONS SERVING HOUSEHOLDS (NPISHs) FINAL CONSUMPTION EXPENDITURE [a, c]

- FOOD AND NON-ALCOHOLIC BEVERAGES
  - FOOD
    - Bread and cereals
    - Meat
    - Fish and seafood
    - Milk, cheese and eggs
    - Oils and fats
    - Fruit
    - Vegetables
    - Sugar, jam, honey, chocolate and confectionery
    - Food products not elsewhere classified
  - NON-ALCOHOLIC BEVERAGES
- ALCOHOLIC BEVERAGES, TOBACCO AND NARCOTICS
  - ALCOHOLIC BEVERAGES
  - TOBACCO
- CLOTHING AND FOOTWEAR
- *ACTUAL HOUSING, WATER, ELECTRICITY, GAS AND OTHER FUELS* [a, b]
- FURNISHINGS, HOUSEHOLD EQUIPMENT AND ROUTINE HOUSEHOLD MAINTENANCE
- *ACTUAL HEALTH* [a, b]
- TRANSPORT
  - PURCHASE OF VEHICLES
  - TRANSPORT SERVICES
- COMMUNICATION
- *ACTUAL RECREATION AND CULTURE* [a, b]
- *ACTUAL EDUCATION* [a, b]
- RESTAURANTS AND HOTELS
- *ACTUAL MISCELLANEOUS GOODS AND SERVICES* [a, b]
- NET PURCHASES ABROAD

INDIVIDUAL CONSUMPTION EXPENDITURE BY HOUSEHOLDS WITHOUT HOUSING [a, d]

GENERAL GOVERNMENT FINAL CONSUMPTION EXPENDITURE [a, e]

INDIVIDUAL CONSUMPTION EXPENDITURE BY GOVERNMENT

COLLECTIVE CONSUMPTION EXPENDITURE BY GOVERNMENT

GROSS CAPITAL FORMATION

- GROSS FIXED CAPITAL FORMATION
  - MACHINERY AND EQUIPMENT
  - CONSTRUCTION
  - OTHER PRODUCTS
- CHANGES IN INVENTORIES
- ACQUISITIONS LESS DISPOSALS OF VALUABLES

BALANCE OF EXPORTS AND IMPORTS

DOMESTIC ABSORPTION [a, f]

[a]: Non-hierarchical expenditure components in pink reflect a combination of hierarchical components, computed to facilitate wider analyses. See footnotes below.
[b]: "Actual" expenditure components in italics reflect the sum of household consumption expenditure and expenditures by nonprofit institutions serving households (NPISHs) and government on goods and services (within the given category) actually consumed by households.
[c]: Households and nonprofit institutions serving households (NPISHs) final consumption expenditure is the total value of actual and imputed final consumption expenditures incurred by households and NPISHs on individual goods and services. It also includes expenditures on individual goods and services sold at prices that are not economically significant.
[d]: Individual consumption expenditure by households without housing is the total value of actual and imputed final consumption expenditures incurred by households and NPISHs on individual goods and services, without housing related expenditures. It also includes expenditures on individual goods and services sold at prices that are not economically significant.
[e]: General government final consumption expenditure is the total value of actual and imputed final consumption expenditures incurred by government on individual goods and services and final consumption expenditure of government on collective services.
[f]: Domestic absorption is actual individual consumption at purchasers' prices plus collective consumption expenditure by government at purchasers' prices plus gross capital formation at purchasers' prices.

TABLE 2 ICP indicators

For each expenditure component and economy
Purchasing power parity (PPP) (US$ = 1)
Price level index (PLI) (World = 100)
Expenditure, PPP-based (US$) Expenditure, market exchange rate-based (US$) Expenditure (local currency units, billions)
Expenditure per capita, PPP-based (US$) Expenditure per capita, market exchange rate-based (US$)
Expenditure per capita index, PPP-based (World = 100) Expenditure per capita index, market exchange rate-based (World = 100) Expenditure per capita index, PPP-based (United States = 100) Expenditure per capita index, market exchange rate-based (United States = 100)
Share of global expenditure, PPP-based (World = 100%) Share of global expenditure, market exchange rate-based (World = 100%)
Expenditure component share of GDP (GDP = 100%)
For each economy
Market exchange rate (US$ = 1)
Population

Further resources

The International Comparison Program's website[15] provides a wealth of information including frequently asked questions[16] regarding the ICP, the use and applications of PPPs, the methodology underlying the ICP, and the program's governance, history, and research agenda. The website also provides access to data and metadata including through the World Bank's Databank[17] and online tables,[18] as well as information on researcher access to underlying detailed PPPs, expenditure data and average prices. A comprehensive eLearning course The Fundamentals of Purchasing Power Parities[19] is also available, covering key PPP concepts, uses and applications, as well as basic PPP calculation methods and processes. Furthermore, the ICP publishes reports on the results of each cycle and methodological manuals. These include: ***Purchasing Power Parities and the Size of World Economies: Results from the 2017 International Comparison Program***;[20] ***Measuring the Real Size of the World Economy: The Framework, Methodology, and Results of the International Comparison Program (ICP)***;[21] and ***Operational Guidelines and Procedures for Measuring the Real Size of the World Economy***.[22]

Users seeking more details can contact the ICP Global Office at icp@worldbank.org.

Notes

1. https://datatopics.worldbank.org/world-development-indicators/
2. https://ec.europa.eu/eurostat/web/purchasing-power-parities/international-ppps
3. http://www.oecd.org/sdd/prices-ppp/
4. https://datahelpdesk.worldbank.org/knowledgebase/articles/665452-how-do-you-extrapolate-the-ppp-conversion-factors
5. https://data.worldbank.org/indicator/PA.NUS.PPP
6. https://data.worldbank.org/indicator/PA.NUS.PRVT.PP
7. https://www.imf.org/en/Publications/WEO/weo-database/2021/April
8. https://datahelpdesk.worldbank.org/knowledgebase/articles/378832-what-is-the-world-bank-atlas-method
9. https://openknowledge.worldbank.org/bitstream/handle/10986/33623/9781464815300.pdf
10. https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups
11. https://data.worldbank.org/indicator/PA.NUS.PPPC.RF
12. https://openknowledge.worldbank.org/bitstream/handle/10986/33623/9781464815300.pdf
13. https://www.worldbank.org/en/programs/icp/brief/methodology-national-accounts
14. https://databank.worldbank.org/source/icp-2017
15. https://icp.worldbank.org
16. https://www.worldbank.org/en/programs/icp/brief/faq
17. https://databank.worldbank.org/source/icp-2017
18. https://databank.worldbank.org/embed/ICP-2017-Cycle/id/4add74e?inf=n
19. https://olc.worldbank.org/content/fundamentals-purchasing-power-parities-ppps-self-paced
20. https://openknowledge.worldbank.org/bitstream/handle/10986/33623/9781464815300.pdf
21. https://www.worldbank.org/en/programs/icp/brief/2011-icp-book
22. https://www.worldbank.org/en/programs/icp/brief/2011-operational-guidelines

Annex

TABLE A1 List of links to interactive visualizations (URLs)

FIGURE	URL
Figure 1.1 PPP-based GDP and share of global PPP-based GDP, 2017	https://public.flourish.studio/visualisation/5665072/
Figure 1.2 PPP-based GDP, by region	https://datawrapper.dwcdn.net/GNMfE/4/
Figure 1.3 PPP-based GDP projections, by country group	https://datawrapper.dwcdn.net/yVQ8b/1/
Figure 1.4 Price level indexes of major expenditure components, 2017	https://datawrapper.dwcdn.net/44QqO/4/
Figure 1.5 PPP-based GDP per capita and GDP price level index, 2017	https://datawrapper.dwcdn.net/2CtUr/2/
Figure 1.6 Spatial cost of living index for Vietnam regions	https://public.flourish.studio/visualisation/5534022/
Figure 1.7 Spatial cost of living index by commodity group for Vietnam regions, 2019	https://datawrapper.dwcdn.net/Yli9q/1/
Figure 1.8 Regional consumer price levels for selected expenditure components, United Kingdom, 2016	https://datawrapper.dwcdn.net/YUijD/1/
Figure 2.1 Poverty headcount ratio at international poverty lines	https://datawrapper.dwcdn.net/XfUoJ/1/
Figure 2.2 Poverty gap and poverty headcount ratio at $1.90 a day (2011 PPP$) for selected low-income countries, most recent year (2008 - 2018)	https://public.flourish.studio/visualisation/4744371/
Figure 2.3 Societal poverty vs national poverty lines, most recent year (2003 - 2018)	https://datawrapper.dwcdn.net/I2FxD/1/
Figure 2.4 Working poverty rate - share of employed living below $1.90 a day (2011 PPP$)	https://datawrapper.dwcdn.net/YBvI2/1/

FIGURE	URL
Figure 2.5 Mean consumption or income per capita of poorest 40% of population vs total population, most recent year (2011 - 2018)	https://datawrapper.dwcdn.net/OHtVd/2/
Figure 2.6 Mean consumption or income per capita by population cohort, most recent year (2010 - 2019)	https://datawrapper.dwcdn.net/kAfed/1/
Figure 2.7 Daily median income and share of population living below 50 percent of the median, most recent year (2008 - 2018)	https://datawrapper.dwcdn.net/JYNg0/2/
Figure 3.1 Coefficient of variation of price level indexes of household final consumption expenditure for the European Union	https://datawrapper.dwcdn.net/jbBwX/1/
Figure 3.2 Value added per person employed by firm size for selected countries, 2016	https://datawrapper.dwcdn.net/gChK9/2/
Figure 4.1 Mean hourly labor costs per employee for selected countries, 2018	https://datawrapper.dwcdn.net/7p4Vi/1/
Figure 4.2 Mean monthly earnings for selected countries, 2018	https://datawrapper.dwcdn.net/mLnBa/1/
Figure 4.3 Mean monthly earnings of employees by sex, most recent year (2014 - 2018)	https://datawrapper.dwcdn.net/y9GD3/1/
Figure 4.4 Statutory gross monthly minimum wage for selected countries, 2018	https://datawrapper.dwcdn.net/El8M1/1/
Figure 4.5 Average annual income from agriculture of small-scale food producers for selected countries, 2014	https://datawrapper.dwcdn.net/G7TL4/1/
Figure 4.6 Pay compression ratios in the public sector, by occupation, 2017	https://public.flourish.studio/visualisation/5665568/
Figure 4.7 Annual social safety net (SSN) spending per capita by region, most recent year (2008 - 2016)	https://datawrapper.dwcdn.net/2XkrO/1/
Figure 5.1 Cost per person per day by food group by region	https://datawrapper.dwcdn.net/lgQai/1/
Figure 5.2 Cost of the EAT- Lancet reference diet relative to mean daily per capita household income by country within income group, 2011	https://public.flourish.studio/visualisation/4026251/
Figure 5.3 Costs per day of diets meeting caloric and nutrient adequacy	https://datawrapper.dwcdn.net/8miaw/1/
Figure 5.4 Food expenditure share of AIC by AIC per capita index, 2017	https://datawrapper.dwcdn.net/Ssru8/2/
Figure 5.5 Component share of food basket expenditure by region, 2017	https://datawrapper.dwcdn.net/ZxhQU/2/

FIGURE	URL
Figure 6.1 Health expenditures per capita, 2018	https://datawrapper.dwcdn.net/aipmj/1/
Figure 6.2 Price levels and PPP-based expenditures for health, 2017	https://datawrapper.dwcdn.net/boWL6/1/
Figure 6.3 Out-of-pocket health expenditures and impoverishment, 2015	https://datawrapper.dwcdn.net/i51NF/1/
Figure 6.4 Maternal mortality ratio	https://datawrapper.dwcdn.net/x5V1k/1/
Figure 7.1 Government and household funding per student by education level for selected low-income countries, most recent value (2010 to 2019).	https://datawrapper.dwcdn.net/O2Cr6/2/
Figure 7.2 Price levels and PPP-based expenditures for education, 2017	https://datawrapper.dwcdn.net/bKVR9/9/
Figure 7.3 Annual average salaries of school heads and teachers for selected OECD countries, 2019	https://datawrapper.dwcdn.net/DWIZI/2/
Figure 7.4 Private net financial returns for person attaining upper secondary or tertiary education by sex for selected OECD countries, 2017	https://datawrapper.dwcdn.net/Dbo6c/1/
Figure 8.1 GDP per unit of energy use by income group	https://datawrapper.dwcdn.net/iZMR1/1/
Figure 8.2 CO2 emissions per unit of PPP-based GDP by income group	https://datawrapper.dwcdn.net/7WbfC/1/
Figure 8.3 Estimated annual average losses avoided by reducing exposure of the poorest to natural hazards	https://datawrapper.dwcdn.net/AUtto/1/
Figure 9.1 Gross Capital Formation: Price level index and PPP-based expenditure per capita, 2017	https://datawrapper.dwcdn.net/OhBFj/2/
Figure 9.2 Price levels and PPP-based expenditures for construction, 2017	https://datawrapper.dwcdn.net/VrXdk/1/
Figure 9.3 PPP-based transport expenditure per capita by region, 2017	https://datawrapper.dwcdn.net/1rj5J/1/
Figure 9.4 Cost of ICT services, 2019	https://datawrapper.dwcdn.net/RXIsl/1/
Figure 9.5 Price levels and PPP-based expenditures for communications, 2017	https://datawrapper.dwcdn.net/PGx6G/1/
Figure 9.6 Gross domestic expenditure on research and development (GERD) by income group, 2017	https://datawrapper.dwcdn.net/3qZ5P/1/

FIGURE	URL
Figure 9.7 Total OECD expenditure on R&D by performing sector	https://datawrapper.dwcdn.net/4jw1t/1/
Figure 9.8 Global Innovation Index score by PPP-based GDP per capita, 2020	https://datawrapper.dwcdn.net/kuY0i/2/
Figure 10.1 Income indexes by human development level, 2019	https://datawrapper.dwcdn.net/HlGw4/1/
Figure 10.2 Estimated GNI per capita by sex, 2019	https://datawrapper.dwcdn.net/nq4pE/1/
Figure 10.3 PPP-based indicators in the Better Life Index for selected OECD countries	https://datawrapper.dwcdn.net/qvHDm/1/
Figure 11.1 IMF quotas, top ten member countries	https://datawrapper.dwcdn.net/xcKOz/1/
MAP	**URL**
Map 1.1 PPP-based GDP per capita, 2019	https://datawrapper.dwcdn.net/AHIgc/2/
Map 1.2 PPP-based AIC per capita, 2017	https://datawrapper.dwcdn.net/Whg2p/2/
Map 1.3 PPP-based GNI and GNI per capita, 2019	https://datawrapper.dwcdn.net/1KIgq/3/
Map 1.4 Real per capita personal income, United States, 2019	https://datawrapper.dwcdn.net/GHAkC/1/
Map 3.1 Market size, 2017–2018	https://datawrapper.dwcdn.net/c2XOi/1/
Map 3.2 Price competitiveness index, 2017	https://datawrapper.dwcdn.net/z7MVq/1/
Map 3.3 Price level index for restaurants and hotels, 2017	https://datawrapper.dwcdn.net/mVikX/1/
Map 3.4 PPP-based GDP per person employed, 2019	https://datawrapper.dwcdn.net/dMtSh/1/
Map 5.1 Relative caloric price (CPR): eggs to staple food, 2011	https://datawrapper.dwcdn.net/k02Lt/1/
Map 6.1 Mean household per capita out-of-pocket health spending, most recent year (2009–2018)	https://datawrapper.dwcdn.net/txXq8/1/
Map 7.1 PPP-based government expenditure on education, most recent value (2010–2019)	https://datawrapper.dwcdn.net/3dvJ1/1/
Map 8.1 Energy intensity of primary energy, 2017	https://datawrapper.dwcdn.net/c0XXJ/1/
Map 9.1 Price level indexes for transportation services, 2017	https://datawrapper.dwcdn.net/d85Yk/2/
Map 9.2 Monthly cost of fixed broadband 5GB, 2019	https://datawrapper.dwcdn.net/YP9pn/1/

MAP	URL
Map 9.3 Gross domestic expenditure on research and development per capita, most recent year (2013–2018)	https://datawrapper.dwcdn.net/JY7nT/1/
Map 9.4 National agricultural research expenditure per 100,000 farmers, Sub-Saharan African countries, most recent year (2011–2016)	https://datawrapper.dwcdn.net/SjY7G/1/
Map 10.1 Human Development Index, 2019	https://datawrapper.dwcdn.net/yj40B/1/
Map 11.1 PPP-based GNI per capita, EU member states, 2019	https://datawrapper.dwcdn.net/F9vME/1/

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