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INTERNATIONAL PROPERTY RIGHTS INDEX 2021

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FULL REPORT

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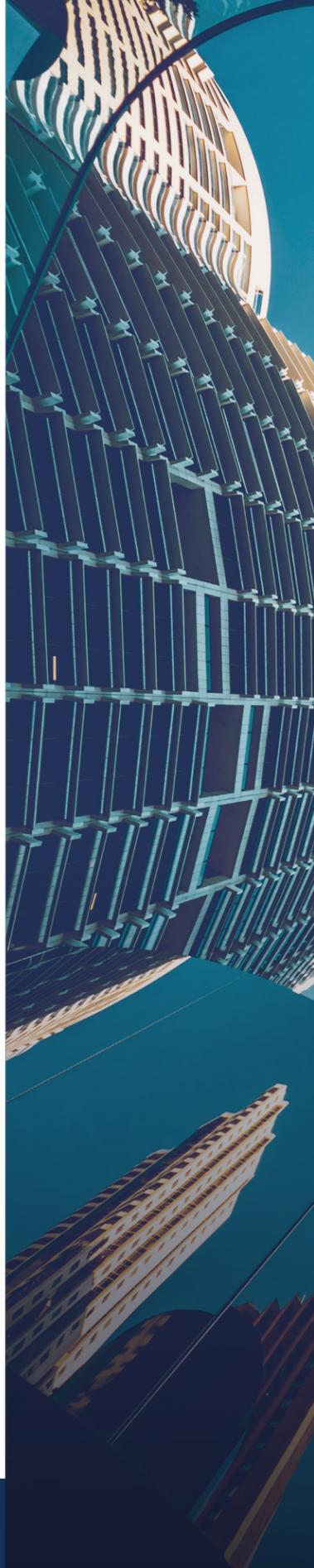
I. INTRODUCTION

The viral surge of SARS-Cov2 spread rapidly all over the world during 2020, resulting in pandemic policies that produced economic destruction and a socio-political impact that we must ponder carefully. Not only did we lose many lives, but the pandemic also jeopardized our way of life.

Eighteen months later, we see a relevant economic recovery – 5.6% GDP growth according to the World Bank for 2021, largely supported by the U.S. and China, with 6.8% and 8.5%, respectively. In spite of this, the level of global GDP remains below pre-pandemic projections. The World Economic Forum's recent Chief Economists Survey shows most expect a recovery of global GDP to pre-COVID levels by the first semester of 2022. However, new waves of the virus are attacking again, and this may derail the aggregate rebound.

Confinement of the population and paralysis of productive activity to minimize the advance of COVID was the zone of interaction between the biological-sanitary and the socio-economic spheres during 2020. It began with a negative effect of a demand shock, which turned into a negative supply shock, making it incomparably highly deleterious in socio-economic terms. The increase of unemployment, reduction of trade, economic contraction, and volatility of capital markets in all economies, were terrifying alerts of a global recession, prompting a set of macroeconomic policies with stimulus and relief programs to mitigate the impact, not absent from criticism.[1]

1. Levy-Carciente, S. 2020. "Contagio económico por COVID" in Brewer-Carias A., H. Romero-Muci (co-ord.) *Aspectos jurídicos de la pandemia del COVID-19 y el Decreto de Estado de Alarma en Venezuela*. Caracas: Academia de Ciencias Políticas y Sociales, Colección Estudios N° 123, Editorial Jurídica Venezolana International. Pp636-668.

Simultaneously, individuals reacted to the crisis with multiple strategies. Workers were forced by circumstances to adapt quickly, to work from home, and create a quiet and dedicated space to perform work duties, while living in small homes with children that had also to have schooling from home. With those difficulties advantages also arose, reducing commuting time, improved gender diversity, healthier workplaces, higher talent retention, and even higher productivity.[2] But this adaptation process was uneven all over the world, as the supply of basic services of electricity and internet, which are vital for these work changes, differ largely among developed to less developed countries. Simultaneously people who did not have a formal job or who work freelance, found themselves particularly vulnerable; setting back progress made in the last three decades in the fight against poverty.

Businesses also rushed to adopt many of the advised but always underutilized innovative tools and processes, and achieved long-over-due improvements. They adjusted to the new market situation and were required to sell basically in an all-virtual environment, advertise on social media, have a delivery service, understand the consumer, restrict their budget, and follow new health requirements. This meant that businesses needed to have a serious rethink about how they engage with their customers and clients. Brands needed to make sure they had a robust digital brand protection strategy.[3] New businesses emerged; others were unable

to adapt and disappeared. The rapid response of pharmaceuticals companies and the fast development of treatments and vaccines deserves particular mention. Other innovative companies and universities developed diagnostic tests and antibody tests. Still, others transformed themselves to produce ventilators, respirators, hospital beds, gloves, masks, and many other products needed. If it weren't for all these developments, the opening of the economy would have been delayed and posed a much higher risk.

Every crisis opens a window of opportunity, and the pandemic changed our environment, pushing us to new territory that may overcome the weak productivity growth after the 2017-2019 crises. Results from the McKinsey Global Institute research of eight economic sectors state that with well-coordinated private and public efforts, there are real potential paths ahead for productivity growth.[4] However, these possibilities come alongside a host of other concerns: high inflation, supply-chain bottlenecks, the inability of some economies and sectors to overcome the crisis, unequal global immunization, and increased inequity, and most importantly, the challenge to human rights.

Measures enacted to contain the spread of disease frequently affected the enjoyment of internationally defended human rights; they gave legitimacy to extraordinary populist policies that violated the checks and balances on public powers and the rights of citizens and

opened a back door for corruption and kleptocracy.[5] Restrictions on private property during the pandemic were not obvious to many, but no less significant. The massive closure of stores and crowded places resulted in important job losses, and significant losses for business owners. This opened the need to compensate for losses incurred while balancing public and private interests. Trust is one of the main pillars of an open society; it is necessary for cooperation and coordination, and reduces the need for coercive imposition. But the government mistrusted its citizens to act with responsibility, and citizens mistrusted the need for the policies and the validity of the government's chosen strategy.[6]

But if there has been an area under a constant and open attack, it has been intellectual property (IP) rights. This remains true even in the midst of the rapid development of treatments and vaccines as a perfect triumph of innovation, showing the pivotal role of IP developing and bringing innovations to market. Some have claimed that suspending IP rights will allow any company to manufacture vaccines meaning faster access for developing countries. Others have promoted a TRIPS waiver for COVID vaccines. These are short-sighted and misleading arguments.

For innovation to be as productive as possible, IP is essential, and the best way to harness creativity and enable the growth of innovative enterprises is through a reliable IP framework. This framework nowadays has developed in a more collaborative way: knowledge sharing, engaging

in technology, licensing arrangements, demand for better contracts, clearly defining IP rights, promoting a common ecosystem, and sharing efforts and rewards. This is essential for the development of new entrepreneurs who, based on their individual talent and knowledge, create new products and solutions, develop processes, and address multiple social problems. Their time and effort must be fairly compensated. IP rights protection is not only important in the science and technology realm, but likewise in the sphere of entertainment, highly dependent on live audiences. During COVID, these were pushed into the digital space meaning a new understanding of IP hurdles relating to the distribution of digital content and protecting the rights of their artistic creations.

No doubt, COVID-19 has become a game-changer and the so-called Great Reset will need a great effort and many new ideas, rethinking business models and social interactions, promoting innovation, and embracing digitalization. There is no better way for this than an institutional environment that establishes a basis for transparency and efficiency, defining rights and responsibilities. This is the core goal of a robust property rights system, remembering that *property rights are human rights*. That is the fundamental reason for the preference of a system with strong private property rights: *private property rights protect individual liberty*.

Sary Levy-Carciente
July, 2021

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IPRI STRUCTURE & METHODOLOGY

The International Property Rights Index (IPRI) offers a comprehensive insight into the status of property rights in the world's nations. Created in 2007 by the Property Rights Alliance (PRA), PRA instituted the *Hernando de Soto Fellowship* to produce its yearly edition.

The IPRI designers took an institutional approach, as property rights are a linchpin institution for human beings' liberty. Property rights act as a catalyst for economic growth and promote development, additionally acting as a defense against authoritarian temptations; thus, allowing a citizenry that controls its own life building its own destiny. An extensive and rich literature on property rights was considered to conceptualize and operationalize the IPRI, setting its core categories (here-to referred to as components or sub-indices) and the items included in each.

The following are the three core components of the IPRI:

» Legal and Political Environment (LP)

» Physical Property Rights (PPR)

» Intellectual Property Rights (IPR)

The Legal and Political Environment (LP) component provides information on the strength of a country's institutions and respect for the 'rules of the game' among citizens. Therefore, the items included in the LP are wide-ranging. This component has a significant influence on the development and protection of physical and intellectual property rights.

The other two components of the index, Physical Property Rights (PPR) and Intellectual Property Rights (IPR), reflect the two forms of property rights decisive for countries' socio-economic development. Items included in these two categories represent *de jure* rights and *de facto* opportunities in each country.

While there are numerous items associated to property rights, the final IPRI is specific to the core factors that are directly related to the strength and defense of physical and intellectual property rights.

Furthermore, items for which data were available more regularly for a larger number of countries were given preference, guaranteeing that scores were comparable across countries and years.
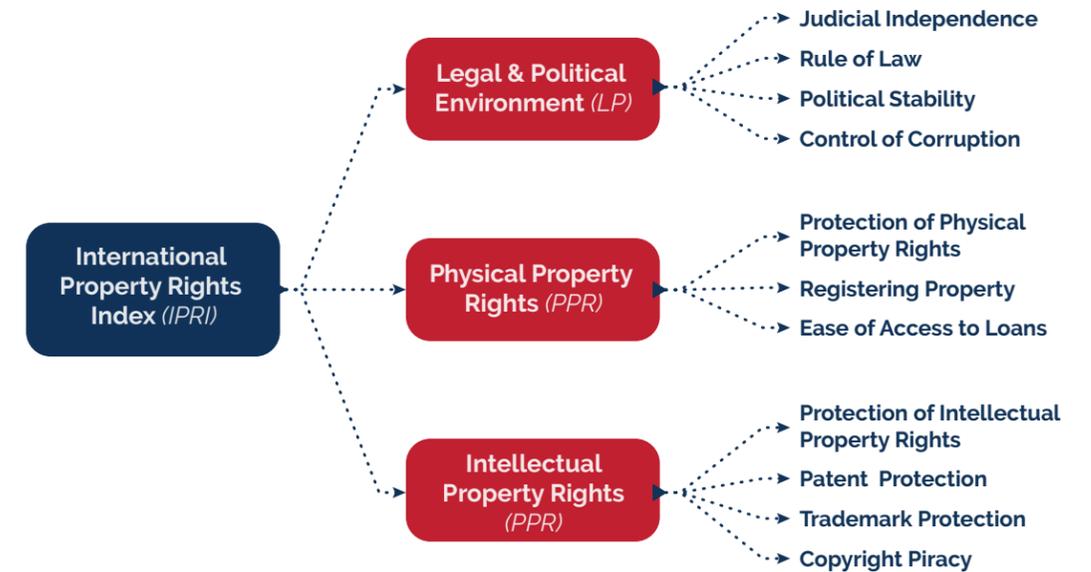
Figure 1. 2021 International Property Rights Index Structure

I. LEGAL AND POLITICAL ENVIRONMENT (LP)

The Legal and Political Environment component grasps the ability of a nation to enforce a *de jure* system of property rights. It is comprised of four (4) elements: judicial independence, the strength of the rule of law, political stability, and the control of corruption.

JUDICIAL INDEPENDENCE
This item examines the judiciary's freedom from political, individual, or business groups' influence. Judicial independence is a central foundation for the sound protection and sovereign support of the law court system with respect to private property.

For this item, the chosen source was The Global Competitiveness Index 4.0 2019 Dataset | Version 20191004, from the World Economic Forum (https://www.weforum.org/reports/global-competitiveness-report-2019). The original data scale is [1 to 7], where 7 is the best score. The full question and associated answers of the Executive Opinion Survey for this indicator were:

In your country, how independent is the judicial system from influences of the government, individuals, or companies? [1= not independent at all; 7 = entirely independent]

RULE OF LAW

This element measures agents' confidence and behavior by the rules of their society. Specifically, it measures the quality of contract enforcement, property rights, police, and courts, as well as the likelihood of crime and violence.

It combines several indicators, including fairness, honesty, enforcement, speed, affordability of the court system, protection of private property rights, and judicial and executive accountability. Rule of Law complements the Judicial Independence item.

The chosen data source is the World Bank's Worldwide Governance Indicators 2019 (http://info.worldbank.org/governance/wgi/index.aspx#home). The original data scale is [-2.5 to 2.5], where 2.5 is the best score.

POLITICAL STABILITY

Political stability endorses incentives to obtain or to extend ownership and/or management of properties. The higher the likelihood of government instability, the less likely people will be to obtain property and to develop trust in the soundness of the rights attached.

For this item, the chosen data source is the World Bank, The Worldwide Governance Indicators 2019 (http://info.worldbank.org/gover-

nance/wgi/index.aspx#home). The original data scale is [-2.5 to 2.5], where 2.5 is the best score.

NOTE: A special notice has to be made regarding the Political Stability indicator for this year, as it displays a value outside of its normal range for one country (Yemen — 2.768). Therefore, this country value was considered as the extreme of the range scale (minimum value) for the rescaling process. This situation happened also in the last four years, and we followed the same procedure.

CONTROL OF CORRUPTION

This item combines several indicators that measure the extent to which public power is exercised for private gain. This includes petty to grand forms of corruption, as well as the "capture" of the state by elites and group interests. As with other items in the LP component, corruption influences people's confidence in sound implementation and enforcement of property rights. Corruption also influences the degree of informality in the economy, which is a dissuasion to the expansion of respect for legal private property.

The data source chosen for this item is from World Bank, The Worldwide Governance Indicators 2019 (http://info.worldbank.org/governance/wgi/index.aspx#home). The original data scale is [-2.5 to 2.5], where 2.5 is the best score.

II. PHYSICAL PROPERTY RIGHTS (PPR)

A strong property rights regime promotes people's confidence in its effectiveness to protect private property rights. It also offers an integrated, effective, and efficient system for registering property, and it allows access to required credit to convert that property into capital. For these reasons, the following items are used to measure private physical property rights protection (PPR).

PROTECTION OF PHYSICAL PROPERTY RIGHTS

Protection of Physical Property Rights relates directly to the strength of a country's property rights system based on expert views of the quality of judicial protection of private property, including financial assets. Additionally, it incorporates expert opinions on the precision of the legal definition of property rights.

The data source chosen for this item is The Global Competitiveness Index 4.0 2019 Dataset | Version 20191004, from the World Economic Forum 2019 (https://www.weforum.org/reports/global-competitiveness-report-2019). The original data scale is [1 - 7], where 7 is the best score. The full question and associated answers of the Executive Opinion Survey for this indicator were:

In your country, to what extent are property rights, including financial assets, protected? [1 = not at all; 7 = to a great extent].

REGISTERING PROPERTY

This item reflects businesses' points of view on the complexity for registering property in terms of the number of days and required procedures. It records the full sequence of procedures needed to transfer a property from seller to buyer when a business purchases land or a building.

The relevance of this information derives from the fact that the more difficult the property registration is, the more likely it is that assets stay in the informal sector; this limits development of broader public understanding and support for a strong legal and sound property rights system. Moreover, registration barriers also discourage assets' movement from lower to higher prized uses.

The Registering Property indicator reflects one of the main economic arguments set forth by Hernando de Soto: "*what the poor lack is easy access to the property mechanisms that could legally fix the economic potential of their assets so they could be used to produce, secure or guar-*

antee greater value in the extended market" (2000:48). This item is calculated as:

Registering Property = (0.7 * number of days) + (0.3 * number of procedures)

The data source chosen for measuring this item was The World Bank Group 2019 Doing Business Report (http://www.doingbusiness.org/custom-query). The original data scale is [1- ∞], where 1 is the best score.

EASE OF ACCESS TO LOANS

Along with a strong property rights system, financial institutions play a crucial complementary role in bringing economic assets into the formal economy, allowing the path from projects to investments. Credit facilities are considered an important channel trying to alleviate poverty. This year we chose for this item the data for *Financing of SMEs* (EOSQ425) of World Economic Forum; The Global Competitiveness Index 4.0 2019 Dataset | Version

20191004 (https://www.weforum.org/reports/global-competitiveness-report-2019). The full question and associated answers for this indicator were:

"In your country, to what extent can small- and medium-sized enterprises (SMEs) access finance they need for their business operations through the financial sector?"

NOTE: In previous editions we used The Global Competitiveness Index Historical Dataset© 2007-2017 from the World Economic Forum (www3.weforum.org/docs/GCR2017-2018/GCI_Dataset_2007-2017.xlsx), with a data scale of [1 - 7], where 7 is the best score. The full question of the Executive Opinion Survey for *Ease of Access to Loans* (EOSQ088) was: "In your country, how easy is it for businesses to obtain a bank loan?" However this information had not been updated since their 2017-2018 report, so it was substituted.

III. INTELLECTUAL PROPERTY RIGHTS (IPR)

The assignment of intellectual property rights does not confer exclusive possession (such as physical property rights), but the benefits of its economic exploitation: promoting the generation of economic incentives towards research and innovation, stimulating open exposure of ideas, and encouraging indirect effects of creativity.

The Intellectual Property Rights component evaluates the protection of this kind of property. In addition to an opinion-based measure, it assesses the protection of two major forms of intellectual property rights – patents and copyrights – from a *de jure* and a *de facto* perspective.

PROTECTION OF INTELLECTUAL PROPERTY RIGHTS

Capturing a nation's protection of intellectual property is a crucial element of the IPR.

The data source chosen was The Global Competitiveness Index 4.0 2019 Dataset | Version 20191004 from the World Economic Forum (https://www.weforum.org/reports/global-competitiveness-report-2019). The original data scale is [1 - 7], where 7 is the best score. Its Executive Opinion Survey used the following question and associated answers to raise the information:

In your country, to what extent is intellectual property protected? [1 = not at all; 7 = to a great extent]

PATENT PROTECTION

This item reflects the strength of a country's patent laws based on six extensive criteria: duration, coverage, restrictions, membership in international treaties, enforcement mechanisms, and applications.

The International Patent Index (IPI) is built in six clusters: Duration of Protection, Coverage, Restrictions, Membership in Treaties, Enforcement, and Patent Applications. The overall grading scale of the IPI is [0-1], where 1 is the highest and 0 is the lowest value.

The data used for this item was the International Patent Index created by Dr. Walter Park in its last edition for 2021 advanced with PRA (https://www.propertyrightsalliance.org/wp-content/uploads/Trademarks-and-Patent-Index.pdf).[7] This source is updated every five years and the original data scale is [0 - 1], where 1 is the highest score. The variables for the index are extracted from all relevant laws published in WIPO's journal, Intellectual Property, 1960-2021.

TRADEMARK PROTECTION

This year we included trademark information in the calculation of the IPR component of the IPRI, allowing us to gather information on three relevant kinds of intellectual property: copyright, patents, and trademarks.

This item reflects the strength of a country's trademark laws based on four extensive criteria: coverage, membership in treaties, restrictions, and trademark applications.

The data used for this item was the International Trademark Index (ITI) created by Dr. Walter Park and updated in its more recent edition, 2021, with PRA (https://www.propertyrightsalliance.org/wp-content/uploads/Trademarks-and-Patent-Index.pdf).[8] The overall grading scale of the ITI is [0-1], where 1 is the highest and 0 is the lowest value. The same logic is applied to its four components. The variables for the index are extracted from all relevant laws published in WIPO's journal, *Intellectual Property*.

COPYRIGHT PROTECTION

The level of piracy in the IP sector is an important indicator of the effectiveness of intellectual property rights enforcement in a country.

The data source chosen for this item was the BSA Global Software Survey; The Compliance Gap (2018 edition, downloaded on February 16, 2021 at https://www.bsa.org/~/media/Files/StudiesDownload/2018_BSA_GSS_Report_en.pdf) which estimates the volume and value of unlicensed software installed on personal computers, and also reveals attitudes and behaviors related to software licensing, intellectual property, and emerging technologies. The original data scale is [0 – 100%], where 0 is the best score.

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7.   The updating of the International Patent Index for 2021 was a joint effort of PRA with international fellow, Chrysa K. Kazakou and Dr. Walter Park of American University.

8.   The updating of the International Trademark Index for 2021 was a joint effort of PRA with international fellow, Chrysa K. Kazakou and Dr. Walter Park of American University.

IV. IPRI METHODOLOGY

The 2021 IPRI's scores and rankings are based on data obtained from official sources made publicly available by established international organizations (see Appendix I). For this reason, data come in different styles and scales. Consequently, data is rescaled in order to accurately compare among countries and within IPRI's individual components and overall score.

The grading scale of the IPRI ranges from [0 – 10], where 10 is the highest value for a property rights system and 0 is the lowest value (or most negative) for a property rights system within a country. The same interpretative logic is applied to the three components and to the 10 items or variables.

The average mechanisms applied to assume equal importance for each component of the final IPRI score (and of each item of every component); however, if it were of any research interest, weights could be applied to evaluate the relative importance of the different aspects of a property rights system of a country.

The 2021 IPRI uses data from the period 2017 – 2021. The 11 items are gathered from different sources, which implies that they have different accessibility times for the most updated data available. The applied logic in the analysis has been to include the latest available data sets for the IPRI. Most of the items present a lag of one year (see Appendix I), so the time difference among data should not affect our analysis.

Almost all the items needed to be rescaled to the IPRI range. The rescaling process was done as follows:

1. For bounded data series with same direction:

$$\left[\left(\frac{\text{Country Value - MIN Original Scale}}{\text{MAX Original Scale - MIN Original Scale}} \right) \times (\text{MAX New Scale - MIN New Scale}) \right] + \text{MIN New Scale}$$

2. For unbounded data series with same direction:

$$\frac{(\text{MAX Value of Data Series - Country Value})}{(\text{MAX Value of Data Series - MIN Value of Data Series})} \times 10$$

3. For bounded data series with inverse direction:

$$10 - \left[\left(\frac{\text{Country Value - MIN Original Scale}}{\text{MAX Original Scale - MIN Original Scale}} \right) \times (\text{MAX New Scale - MIN New Scale}) \right] + \text{MIN New Scale}$$

IPRI CALCULATIONS:

$$LP = \frac{\text{Judicial Independence + Rule of Law + Political Stability + Control of Corruption}}{4}$$

$$PPR = \frac{\text{Physical Property Protection + Registering Property + Ease Access Loans}}{3}$$

$$IPR = \frac{\text{Intellectual Property Protection + Patent Protection + Trademark Protection + Copyright Protection}}{4}$$

$$IPRI = \frac{LP + PPR + IPR}{3}$$

In addition to calculating the IPRI scores and its components, countries were ranked according to their scores. With some frequency, a few countries can exhibit almost the same score, and they will be placed in the same rank. This way, i.e., Country A could be ranked #1, while Country B and Country C #2, and Country X, Country Y, and Country Z are #3.

To minimize this situation and a diffusion bias, ranking calculations were made using IPRI scores with all their decimals, this way the final scores were differentiated, and such was the ranking positions.

V. COUNTRIES AND GROUPS

The 2021 IPRI includes 129 countries, the same we had in the last edition.

Availability of required data is the only factor that determines countries' inclusion in the IPRI. In order to keep the meaningfulness of data and analysis, only country-year combinations respecting specific rules have been considered. Since 2013, such rule is to have at least 2/3 of the data required for each component; or, more specifically, if a country does not have data available for at least 3 items for LP, 2 items for PPR, and 3 items for IPR, it will not be included in the analysis.

All countries were grouped following different criteria (Appendix II):

1. **Regions:** Africa (A), East Asia, South Asia and Pacific (AO), Central-Eastern Europe & Central Asia (CEECA), Latin America & the Caribbean (LAC), Middle East and North Africa (MENA), North America (NA), and Western Europe (WE).

2. **Geographical regions:** Western Europe, North America, Central America and the Caribbean, South America, Middle East and North Africa, Africa, East Asia, South Asia and Pacific, Central and Eastern Europe, and Central Asia.

3. **Income classification** (World Bank, 2020): High income, Upper Middle income, Lower Middle income, and Low income.

   Compared to last year, BENIN, NEPAL, and TANZANIA move from Low Income to Lower-Middle Income. ALGERIA and SRI LANKA move from Upper-Middle Income to Lower-Middle Income. INDONESIA moves from Lower-Middle Income to Upper-Middle Income. ROMANIA and MAURITIUS are upgraded from Upper-Middle Income to High Income.

4. **Regional and Development classification** (International Monetary Fund, 2021): Advanced Economies; Commonwealth of Independent States; Emerging & Developing Asia; Emerging and Developing Europe; Latin America & the Caribbean; Middle East, North Africa & Central Asia; and Sub-Saharan Africa.

   This year CHINA is moved from Emerging and Developing Asia to Advanced Economies. GEORGIA moves to the Middle East and Central Asia and UKRAINE to Emerging and Developing Europe.

5. **Economic and Regional Integration Agreements** (acronyms): OECD, EU, SADC, ECOWAS, ASEAN, PARLACEN, GCC, AP, MERCOSUR, SAARC, CEMAC, MCCA, CIS, ARAB M UNION, CARICOM, CAN, EFTA, IGAD, USMCA, OPEC, CEEAC, TPP-11, PROSUR.

We must highlight that:

In August 2008, GEORGIA announced its full withdrawal from the CIS following the South Ossetia War and ceased to be a formal member of the body in August 2009. In March 2014, UKRAINE announced that it ceased to participate in the CIS following the Annexation of Crimea and Sevastopol to Russia, and its representatives were withdrawn in May 2018, due to the War in the Donbas.

VENEZUELA, BOLIVARIAN REP. remains suspended in all rights and obligations inherent to its condition of State Party to MERCOSUR, in accordance with the provisions of the second paragraph of Article 5 of the Ushuaia Protocol. https://www.mercosur.int/quienes-somos/paises-del-mercosur/.

2021 IPRI RESULTS

This section presents the results of the 2021 IPRI. Starting with the scores of the overall IPRI and its three (3) components, we follow showing countries' scores and rankings. Variations between 2020 and 2021 of both individual IPRI components and of the overall IPRI score were considered.

	IPRI	LP	PPR	IPR
AVERAGE 2016	5.446	5.130	5.875	5.333
AVERAGE 2017	5.634	5.172	6.227	5.503
AVERAGE 2018	5.741	5.216	6.464	5.542
AVERAGE 2019	5.729	5.160	6.474	5.553
AVERAGE 2020	5.728	5.140	6.500	5.545
AVERAGE 2021	**5.603**	**5.085**	**6.480**	**5.244**

Table 1. Average Score: IPRI and its Components. 2016 - 2021.

As an average, the sample of the 129 countries showed a score of 5.60, where the Legal and Political Environment (LP) was the weakest component with a score of 5.08, followed by the Intellectual Property Rights (IPR) component with a score of 5.24; Physical Property Rights (PPR) was the strongest component with a score of 6.48.

For a third consecutive year, the data show a setback of the average score of the IPRI, and this year also for all of its components (see Table 1). Compared to 2020, the IPRI score reduced by

2.2%, while the IPR by 5.4%, being the component with the highest decrease. The PPR shows a reduced score compared to 2020 by 0.3% but compared to 2016 it improved by 10.3%. Lastly, the LP component requires particular attention, as it shows an important regression during these years, placing it in values lower than those of 2016, with a decrease of 0.88%.

We ran a normality test for IPRI and its components, showing a Gaussian behavior. All of them showed unimodal distributions (see Table 2, Table 3, and Figure 2).

		IPRI	LP	PPR	IPR
N	VALID	129	129	129	129
	MISSING	0	0	0	0
MEAN		5.6030	5.0847	6.4799	5.2443
STD. ERROR OF MEAN		.11756	.15808	.10482	.11358
MEDIAN		5.3522	4.7424	6.5039	5.0403
STD. DEVIATION		1.33523	1.79539	1.19050	1.29001
VARIANCE		1.783	3.223	1.417	1.664
RANGE		5.50	7.53	7.10	6.17
MINIMUM		2.65	1.26	1.48	2.56
MAXIMUM		8.15	8.79	8.58	8.73
PERCENTILES	25	4.6987	3.7084	5.7561	4.2752
	50	5.3522	4.7424	6.5039	5.0403
	75	6.5588	6.3815	7.2208	6.1250

Table 2. Statistics. 2021 IPRI and Components.

		IPRI	LP	PPR	IPR
N		129	129	129	129
NORMAL MEAN		5.60298384	5.08474404	6.47994469	5.2442628
PARAMETERS A,B	STD. DEVIATION	1.33523036	1.79539196	1.1904976	1.29001483
MOST EXTREME	ABSOLUTE	0.09289993	0.08720085	0.0574652	0.11101669
DIFFERENCES	POSITIVE	0.09289993	0.08720085	0.04745252	0.11101669
	NEGATIVE	-0.05815765	-0.05321138	-0.0574652	-0.06935274
KOLMOGOROV-SMIRNOV Z		1.05514042	0.99041126	0.65267925	1.26090721
ASYMP. SIG. (2-TAILED)		0.21550912	0.28042052	0.78785161	0.08318412

a. Test distribution is Normal.   b. Calculated from data.

Table 3. Normality Test. One-Sample Kolmogorov-Smirnov Test.
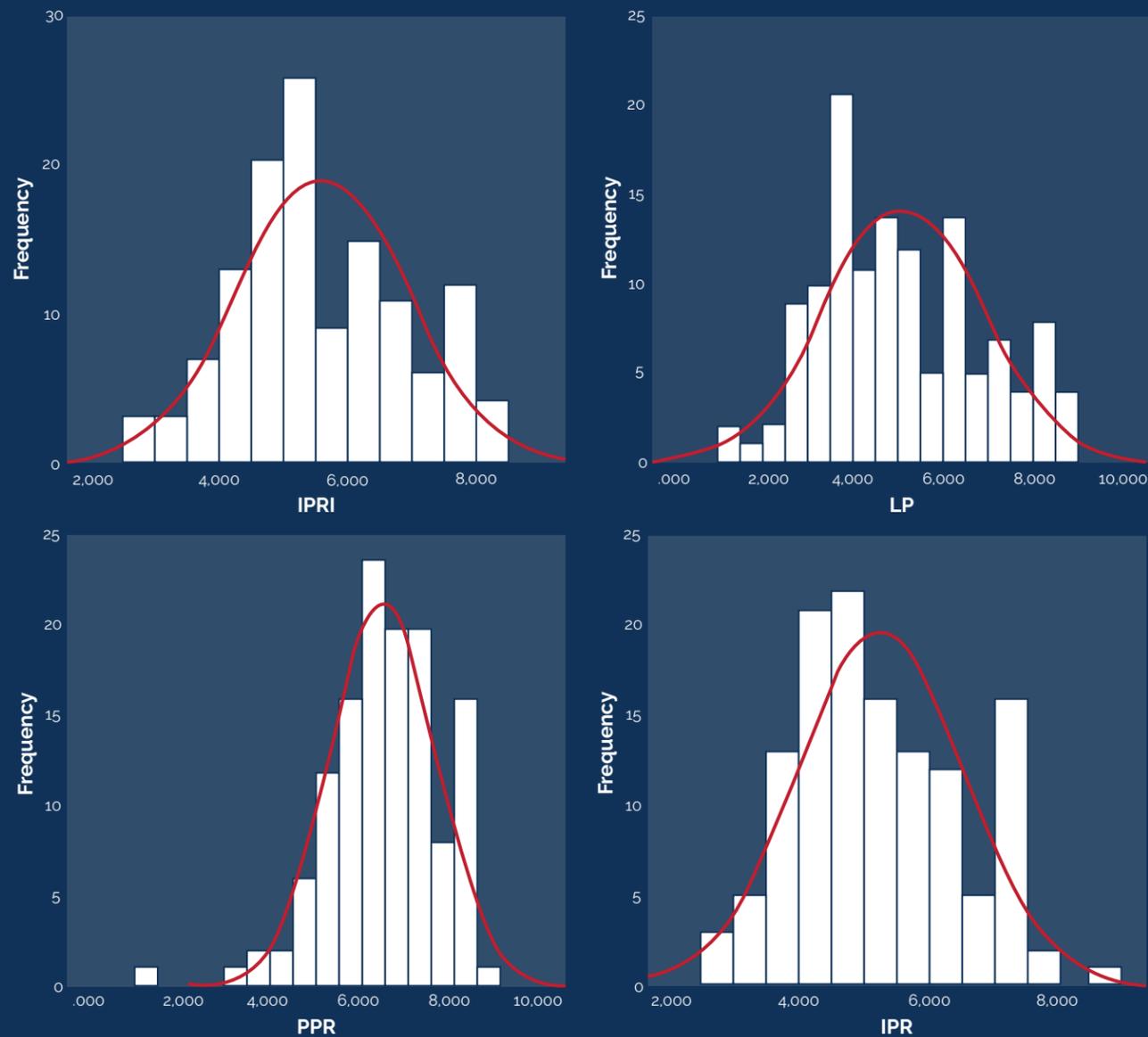
Figure 2. Histogram: 2021 IPRI and its Components.

Table 4 shows, in alphabetical order, the score value of the 129 countries included in the 2021 IPRI and its components. Figure 3a displays countries organized by their IPRI scores from top to bottom, showing their IPRI rankings. Figures 3b, 3c, and 3d display countries organized by IPRI components' scores (LP, PPR, IPR) from top to bottom, showing their rankings.

Table 5 shows the IPRI 2021 rankings by quintile for all the 129 countries in our sample. In general, the number of countries belonging to each quintile increases from the top 20% to the bottom 20% (1st quintile 18 countries, 2nd quintile 22 countries, 3rd quintile 25 countries, 4th quintile 28 countries, and 5th quintile 36 countries). Hence, the fourth and the fifth quintiles include 64 countries, which is 29.6% of our sample, while the first three quintiles include almost the same amount of countries, 65 countries, being 50.4% of the sample.

COUNTRY	IPRI	LP	PPR	IPR
ALBANIA	4.7	3.9	6.0	4.2
ALGERIA	4.6	3.8	6.0	4.1
ANGOLA	3.1	3.1	3.3	3.0
ARGENTINA	4.7	4.3	5.2	4.6
ARMENIA	5.4	4.6	7.1	4.5
AUSTRALIA	7.9	8.2	8.0	7.5
AUSTRIA	7.9	7.9	8.1	7.8
AZERBAIJAN	5.5	4.3	7.6	4.6
BAHRAIN	6.3	5.4	7.9	5.7
BANGLADESH	3.4	3.4	3.6	3.1
BELGIUM	7.4	7.5	7.4	7.4
BENIN	4.6	4.1	5.0	4.7
BOLIVIA	3.7	2.7	5.0	3.4
BOSNIA & HERZEGOVINA	4.6	3.7	5.6	4.5
BOTSWANA	5.8	6.4	6.7	4.2
BRAZIL	5.2	4.2	6.0	5.5
BRUNEI DARUSSALAM	4.9	6.3	3.7	4.6
BULGARIA	5.6	5.0	6.5	5.3
BURKINA FASO	4.6	3.9	5.3	4.6
BURUNDI	4.3	2.6	6.3	4.1
CAMEROON	4.0	2.7	5.3	3.9
CANADA	7.7	8.0	7.9	7.4
CHAD	3.7	2.4	5.1	3.7
CHILE	6.6	6.7	7.2	6.0
CHINA	6.1	4.9	7.1	6.3
COLOMBIA	5.2	3.9	6.5	5.3
CONGO, DEM. REP.	3.5	1.8	4.9	3.7
COSTA RICA	6.1	6.1	6.9	5.3
CÔTE D'IVOIRE	4.3	3.5	5.4	3.9
CROATIA	5.4	5.0	5.9	5.4
CYPRUS	6.3	6.2	7.0	5.8
CZECH REP.	6.7	6.5	7.0	6.7
DENMARK	7.9	8.5	8.1	7.2
DOMINICAN REP.	5.0	3.9	6.5	4.6
ECUADOR	4.7	3.7	6.0	4.4
EGYPT	5.4	4.4	6.6	5.1

COUNTRY	IPRI	LP	PPR	IPR
EL SALVADOR	4.7	4.0	5.9	4.0
ESTONIA	6.9	7.4	7.4	6.0
ETHIOPIA	4.1	3.7	5.3	3.3
FINLAND	8.1	8.7	8.3	7.3
FRANCE	7.0	6.9	7.0	6.9
GABON	4.2	3.6	4.8	4.2
GEORGIA	5.3	5.2	6.9	3.9
GERMANY	7.4	7.5	7.4	7.4
GHANA	5.4	5.1	6.2	4.9
GREECE	5.3	5.1	5.6	5.3
GUATEMALA	4.7	3.4	6.6	4.1
HAITI	2.6	2.6	1.5	3.9
HONDURAS	4.7	3.5	6.4	4.3
HONG KONG	7.5	7.4	8.3	6.8
HUNGARY	6.0	5.2	6.5	6.4
ICELAND	7.4	8.2	8.0	6.1
INDIA	5.5	4.7	6.6	5.3
INDONESIA	5.3	4.5	7.0	4.3
IRAN	4.1	3.0	5.4	4.0
IRELAND	7.3	7.6	7.2	7.1
ISRAEL	6.9	6.3	7.5	7.0
ITALY	6.1	5.6	6.3	6.4
JAMAICA	5.7	5.3	6.5	5.4
JAPAN	7.9	8.0	8.2	7.5
JORDAN	6.2	5.5	7.4	5.6
KAZAKHSTAN	5.3	4.6	6.7	4.5
KENYA	5.0	3.8	6.3	4.8
KINGDOM OF ESWATINI	5.1	4.3	6.4	4.5
KOREA, REP.	6.7	6.2	7.3	6.5
KUWAIT	5.8	5.4	6.9	5.1
LATVIA	6.3	5.9	6.9	6.0
LEBANON	4.2	2.9	6.2	3.6
LITHUANIA	6.4	6.4	6.9	5.8
LUXEMBOURG	8.0	8.5	8.0	7.5
MADAGASCAR	4.0	3.3	4.8	3.8
MALAWI	4.7	4.2	5.6	4.3
MALAYSIA	6.7	6.0	7.9	6.2

COUNTRY	IPRI	LP	PPR	IPR
MALI	4.2	2.8	5.8	3.9
MALTA	6.3	6.2	7.1	5.6
MAURITANIA	3.9	3.3	4.2	4.1
MAURITIUS	6.2	6.5	7.2	5.0
MEXICO	5.3	3.6	6.2	6.1
MOLDOVA	4.8	3.7	6.3	4.5
MONTENEGRO	5.3	5.1	6.2	4.6
MOROCCO	5.8	4.7	7.2	5.6
MOZAMBIQUE	4.3	3.1	5.3	4.6
NEPAL	4.7	4.0	6.6	3.6
NETHERLANDS	8.0	8.3	8.3	7.3
NEW ZEALAND	8.1	8.8	8.2	7.3
NICARAGUA	4.0	2.4	5.5	4.2
NIGERIA	3.7	2.8	4.8	3.4
NORTH MACEDONIA	4.8	4.0	5.7	4.6
NORWAY	8.0	8.5	8.1	7.3
OMAN	6.6	6.5	7.7	5.5
PAKISTAN	4.2	3.2	5.5	3.8
PANAMA	5.3	4.2	6.8	4.9
PARAGUAY	4.5	3.4	6.2	3.8
PERU	4.9	3.9	6.1	4.8
PHILIPPINES	5.0	3.7	6.5	4.9
POLAND	5.5	5.3	5.2	5.9
PORTUGAL	6.8	6.8	7.0	6.6
QATAR	6.8	6.8	8.1	5.5
ROMANIA	6.0	5.4	6.7	5.9
RUSSIA	5.1	3.7	5.9	5.5
RWANDA	5.9	5.7	7.2	4.9
SAUDI ARABIA	6.4	5.8	8.0	5.5

COUNTRY	IPRI	LP	PPR	IPR
SENEGAL	5.0	4.7	6.1	4.1
SERBIA	5.2	4.3	6.2	4.9
SINGAPORE	8.1	8.5	8.6	7.2
SLOVAKIA	6.1	5.4	6.8	6.0
SLOVENIA	6.3	6.3	6.6	6.1
SOUTH AFRICA	6.0	5.4	6.3	6.3
SPAIN	6.6	6.1	7.1	6.5
SRI LANKA	5.2	4.8	6.2	4.6
SWEDEN	7.8	8.2	7.9	7.3
SWITZERLAND	8.1	8.6	8.4	7.5
TAIWAN	7.2	6.7	8.2	6.7
TANZANIA	5.1	4.3	6.0	5.0
THAILAND	5.4	4.6	7.0	4.6
TRINIDAD AND TOBAGO	5.4	5.0	5.6	5.4
TUNISIA	5.1	4.5	6.2	4.6
TURKEY	5.4	3.7	6.7	5.6
UGANDA	4.7	3.7	6.2	4.3
UKRAINE	4.5	3.2	5.8	4.4
UNITED ARAB EMIRATES	7.1	7.0	8.1	6.3
UNITED KINGDOM	7.5	7.5	7.7	7.4
UNITED STATES	8.0	7.1	8.2	8.7
URUGUAY	6.2	7.0	6.6	5.1
VENEZUELA, BOLIVARIAN REP.	2.7	1.3	4.1	2.7
VIETNAM	5.0	4.6	5.9	4.5
YEMEN, REP.	3.0	1.4	5.0	2.6
ZAMBIA	4.5	3.9	5.7	3.7
ZIMBABWE	3.8	2.9	5.1	3.5

Table 4. IPRI 2021 and its Components: Scores by Country.

Figure 3a. IPRI 2021 Scores and Rankings.

SWITZERLAND – 1
SINGAPORE – 2
NEW ZEALAND – 3
FINLAND – 4
LUXEMBOURG – 5
UNITED STATES – 6
NETHERLANDS – 7
NORWAY – 8
DENMARK – 9
AUSTRIA – 10
AUSTRALIA – 11
JAPAN – 12
SWEDEN – 13
CANADA – 14
UNITED KINGDOM – 15
HONG KONG – 16
GERMANY – 17
ICELAND – 18
BELGIUM – 19
IRELAND – 20
TAIWAN (CHINA) – 21
UNITED ARAB EMIRATES – 22
FRANCE – 23
ESTONIA – 24
ISRAEL – 25
QATAR – 26
PORTUGAL – 27
CZECH REPUBLIC – 28
MALAYSIA – 29
KOREA, REP. – 30
CHILE – 31
SPAIN – 32
OMAN – 33
SAUDI ARABIA – 34
LITHUANIA – 35
CYPRUS – 36
SLOVENIA – 37
BAHRAIN – 38
MALTA – 39
LATVIA – 40
URUGUAY – 41
MAURITIUS – 42
JORDAN – 43
ITALY – 44
COSTA RICA – 45
CHINA – 46
SLOVAKIA – 47
HUNGARY – 48
ROMANIA – 49
SOUTH AFRICA – 50
RWANDA – 51
MOROCCO – 52
KUWAIT – 53
BOTSWANA – 54
JAMAICA – 55
BULGARIA – 56
INDIA – 57
POLAND – 58
AZERBAIJAN – 59
THAILAND – 60
GHANA – 61
CROATIA – 62
ARMENIA – 63
EGYPT – 64
TRINIDAD & TOBAGO – 65

TURKEY – 66
GEORGIA – 67
GREECE – 68
MONTENEGRO – 69
PANAMA – 70
KAZAKHSTAN – 71
INDONESIA – 72
MEXICO – 73
BRAZIL – 74
COLOMBIA – 75
SRI LANKA – 76
SERBIA – 77
TANZANIA – 78
KINGDOM OF ESWATINI – 79
TUNISIA – 80
RUSSIA – 81
PHILIPPINES – 82
DOMINICAN REPUBLIC – 83
VIETNAM – 84
KENYA – 85
SENEGAL – 86
PERU – 87
BRUNEI DARUSSALAM – 88
MOLDOVA – 89
NORTH MACEDONIA – 90
HONDURAS – 91
UGANDA – 92
NEPAL – 93
ECUADOR – 94
GUATEMALA – 95
MALAWI – 96
ARGENTINA – 97
ALBANIA – 98
EL SALVADOR – 99
ALGERIA – 100
BURKINA FASO – 101
BENIN – 102
BOSNIA & HERZEGOVINA – 103
PARAGUAY – 104
ZAMBIA – 105
UKRAINE – 106
MOZAMBIQUE – 107
BURUNDI – 108
CÔTE D'IVOIRE – 109
LEBANON – 110
PAKISTAN – 111
GABON – 112
MALI – 113
IRAN – 114
ETHIOPIA – 115
NICARAGUA – 116
CAMEROON – 117
MADAGASCAR – 118
MAURITANIA – 119
ZIMBABWE – 120
CHAD – 121
BOLIVIA – 122
NIGERIA – 123
CONGO, DEM. REP. – 124
BANGLADESH – 125
ANGOLA – 126
YEMEN, REP. – 127
VENEZUELA – 128
HAITI – 129

Figure 3b. LP 2021 Scores and Rankings.

Rank	Country		Rank	Country
1	NEW ZEALAND		66	INDIA
2	FINLAND		67	SENEGAL
3	SWITZERLAND		68	THAILAND
4	LUXEMBOURG		69	ARMENIA
5	SINGAPORE		70	VIETNAM
6	NORWAY		71	KAZAKHSTAN
7	DENMARK		72	TUNISIA
8	NETHERLANDS		73	INDONESIA
9	SWEDEN		74	EGYPT
10	ICELAND		75	SERBIA
11	AUSTRALIA		76	KINGDOM OF ESWATINI
12	CANADA		77	TANZANIA
13	JAPAN		78	AZERBAIJAN
14	AUSTRIA		79	ARGENTINA
15	IRELAND		80	MALAWI
16	GERMANY		81	BRAZIL
17	UNITED KINGDOM		82	PANAMA
18	BELGIUM		83	BENIN
19	HONG KONG		84	NORTH MACEDONIA
20	ESTONIA		85	EL SALVADOR
21	UNITED STATES		86	NEPAL
22	URUGUAY		87	BURKINA FASO
23	UAE		88	PERU
24	FRANCE		89	ZAMBIA
25	QATAR		90	DOMINICAN REPUBLIC
26	PORTUGAL		91	ALBANIA
27	TAIWAN (CHINA)		92	COLOMBIA
28	CHILE		93	KENYA
29	OMAN		94	ALGERIA
30	CZECH REPUBLIC		95	ECUADOR
31	MAURITIUS		96	TURKEY
32	LITHUANIA		97	BOSNIA & HERZEGOVINA
33	BOTSWANA		98	RUSSIA
34	BRUNEI DARUSSALAM		99	ETHIOPIA
35	ISRAEL		100	UGANDA
36	SLOVENIA		101	PHILIPPINES
37	CYPRUS		102	MOLDOVA
38	KOREA, REP.		103	GABON
39	MALTA		104	MEXICO
40	COSTA RICA		105	CÔTE D'IVOIRE
41	SPAIN		106	HONDURAS
42	MALAYSIA		107	BANGLADESH
43	LATVIA		108	GUATEMALA
44	SAUDI ARABIA		109	PARAGUAY
45	RWANDA		110	MAURITANIA
46	ITALY		111	MADAGASCAR
47	JORDAN		112	PAKISTAN
48	KUWAIT		113	UKRAINE
49	ROMANIA		114	ANGOLA
50	BAHRAIN		115	MOZAMBIQUE
51	SOUTH AFRICA		116	IRAN
52	SLOVAKIA		117	LEBANON
53	POLAND		118	ZIMBABWE
54	JAMAICA		119	MALI
55	HUNGARY		120	NIGERIA
56	GEORGIA		121	CAMEROON
57	GHANA		122	BOLIVIA
58	MONTENEGRO		123	BURUNDI
59	GREECE		124	HAITI
60	CROATIA		125	NICARAGUA
61	TRINIDAD & TOBAGO		126	CHAD
62	BULGARIA		127	CONGO, DEM. REP.
63	CHINA		128	YEMEN, REP.
64	SRI LANKA		129	VENEZUELA
65	MOROCCO			

Figure 3c. PPR 2021 Scores and Rankings.

Rank	Country		Rank	Country
1	SINGAPORE		66	PHILIPPINES
2	SWITZERLAND		67	COLOMBIA
3	FINLAND		68	HUNGARY
4	HONG KONG		69	BULGARIA
5	NETHERLANDS		70	KINGDOM OF ESWATINI
6	JAPAN		71	HONDURAS
7	UNITED STATES		72	KENYA
8	NEW ZEALAND		73	MOLDOVA
9	TAIWAN (CHINA)		74	ITALY
10	QATAR		75	BURUNDI
11	NORWAY		76	SOUTH AFRICA
12	UAE		77	GHANA
13	DENMARK		78	MONTENEGRO
14	AUSTRIA		79	SERBIA
15	AUSTRALIA		80	SRI LANKA
16	SAUDI ARABIA		81	PARAGUAY
17	ICELAND		82	LEBANON
18	LUXEMBOURG		83	UGANDA
19	MALAYSIA		84	MEXICO
20	CANADA		85	TUNISIA
21	SWEDEN		86	SENEGAL
22	BAHRAIN		87	PERU
23	OMAN		88	ECUADOR
24	UNITED KINGDOM		89	ALGERIA
25	AZERBAIJAN		90	ALBANIA
26	ISRAEL		91	TANZANIA
27	ESTONIA		92	BRAZIL
28	GERMANY		93	RUSSIA
29	JORDAN		94	EL SALVADOR
30	BELGIUM		95	VIETNAM
31	KOREA, REP.		96	CROATIA
32	IRELAND		97	MALI
33	MAURITIUS		98	UKRAINE
34	RWANDA		99	ZAMBIA
35	MOROCCO		100	NORTH MACEDONIA
36	CHILE		101	TRINIDAD & TOBAGO
37	CHINA		102	MALAWI
38	ARMENIA		103	GREECE
39	SPAIN		104	BOSNIA & HERZEGOVINA
40	MALTA		105	PAKISTAN
41	FRANCE		106	NICARAGUA
42	THAILAND		107	IRAN
43	CYPRUS		108	CÔTE D'IVOIRE
44	CZECH REPUBLIC		109	ETHIOPIA
45	PORTUGAL		110	CAMEROON
46	INDONESIA		111	MOZAMBIQUE
47	GEORGIA		112	BURKINA FASO
48	KUWAIT		113	POLAND
49	LATVIA		114	ARGENTINA
50	LITHUANIA		115	ZIMBABWE
51	COSTA RICA		116	CHAD
52	SLOVAKIA		117	BOLIVIA
53	PANAMA		118	BENIN
54	TURKEY		119	YEMEN, REP.
55	BOTSWANA		120	CONGO, DEM. REP.
56	ROMANIA		121	GABON
57	KAZAKHSTAN		122	NIGERIA
58	INDIA		123	MADAGASCAR
59	EGYPT		124	MAURITANIA
60	SLOVENIA		125	VENEZUELA
61	NEPAL		126	BRUNEI DARUSSALAM
62	GUATEMALA		127	BANGLADESH
63	URUGUAY		128	ANGOLA
64	JAMAICA		129	HAITI
65	DOMINICAN REPUBLIC			

Figure 3d. IPR 2021 Scores and Rankings.

Left column (scale 0–10):

UNITED STATES - 1
AUSTRIA - 2
AUSTRALIA - 3
SWITZERLAND - 4
LUXEMBOURG - 5
JAPAN - 6
UNITED KINGDOM - 7
CANADA - 8
GERMANY - 9
BELGIUM - 10
SWEDEN - 11
NETHERLANDS - 12
NEW ZEALAND - 13
NORWAY - 14
FINLAND - 15
DENMARK - 16
SINGAPORE - 17
IRELAND - 18
ISRAEL - 19
FRANCE - 20
HONG KONG - 21
CZECH REPUBLIC - 22
TAIWAN (CHINA) - 23
PORTUGAL - 24
SPAIN - 25
KOREA, REP. - 26
ITALY - 27
HUNGARY - 28
UAE - 29
SOUTH AFRICA - 30
CHINA - 31
MALAYSIA - 32
SLOVENIA - 33
ICELAND - 34
MEXICO - 35
ESTONIA - 36
LATVIA - 37
SLOVAKIA - 38
CHILE - 39
POLAND - 40
ROMANIA - 41
CYPRUS - 42
LITHUANIA - 43
BAHRAIN - 44
MALTA - 45
MOROCCO - 46
TURKEY - 47
JORDAN - 48
RUSSIA - 49
SAUDI ARABIA - 50
QATAR - 51
BRAZIL - 52
OMAN - 53
TRINIDAD & TOBAGO - 54
JAMAICA - 55
CROATIA - 56
BULGARIA - 57
GREECE - 58
COSTA RICA - 59
COLOMBIA - 60
INDIA - 61
EGYPT - 62
KUWAIT - 63
URUGUAY - 64
TANZANIA - 65

Right column (scale 0–10):

MAURITIUS - 66
PANAMA - 67
GHANA - 68
PHILIPPINES - 69
SERBIA - 70
RWANDA - 71
PERU - 72
KENYA - 73
BENIN - 74
BURKINA FASO - 75
THAILAND - 76
DOMINICAN REPUBLIC - 77
ARGENTINA - 78
BRUNEI DARUSSALAM - 79
AZERBAIJAN - 80
TUNISIA - 81
MONTENEGRO - 82
MOZAMBIQUE - 83
SRI LANKA - 84
NORTH MACEDONIA - 85
KAZAKHSTAN - 86
KINGDOM OF ESWATINI - 87
BOSNIA & HERZEGOVINA - 88
VIETNAM - 89
MOLDOVA - 90
ARMENIA - 91
ECUADOR - 92
UKRAINE - 93
HONDURAS - 94
MALAWI - 95
UGANDA - 96
INDONESIA - 97
ALBANIA - 98
BOTSWANA - 99
NICARAGUA - 100
GABON - 101
GUATEMALA - 102
MAURITANIA - 103
SENEGAL - 104
ALGERIA - 105
BURUNDI - 106
EL SALVADOR - 107
IRAN - 108
CÔTE D'IVOIRE - 109
CAMEROON - 110
MALI - 111
GEORGIA - 112
HAITI - 113
PAKISTAN - 114
PARAGUAY - 115
MADAGASCAR - 116
CHAD - 117
ZAMBIA - 118
CONGO, DEM. REP. - 119
NEPAL - 120
LEBANON - 121
ZIMBABWE - 122
BOLIVIA - 123
NIGERIA - 124
ETHIOPIA - 125
BANGLADESH - 126
ANGOLA - 127
VENEZUELA - 128
YEMEN, REP. - 129

STRONGEST	TOP 20 PERCENT	2ND QUINTILE	3RD QUINTILE	4TH QUINTILE	BOTTOM 20 PERCENT
	SWITZERLAND	BELGIUM	URUGUAY	TURKEY	ECUADOR
	SINGAPORE	IRELAND	MAURITIUS	GEORGIA	GUATEMALA
	NEW ZEALAND	TAIWAN	JORDAN	GREECE	MALAWI
	FINLAND	UNITED ARAB EMIRATES	ITALY	MONTENEGRO	ARGENTINA
	LUXEMBOURG	FRANCE	COSTA RICA	PANAMA	ALBANIA
	UNITED STATES	ESTONIA	CHINA	KAZAKHSTAN	EL SALVADOR
	NETHERLANDS	ISRAEL	SLOVAKIA	INDONESIA	ALGERIA
	NORWAY	QATAR	HUNGARY	MEXICO	BURKINA FASO
	DENMARK	PORTUGAL	ROMANIA	BRAZIL	BENIN
	AUSTRIA	CZECH REPUBLIC	SOUTH AFRICA	COLOMBIA	BOSNIA & HERZEGOVINA
	AUSTRALIA	MALAYSIA	RWANDA	SRI LANKA	PARAGUAY
	JAPAN	KOREA, REP.	MOROCCO	SERBIA	ZAMBIA
	SWEDEN	CHILE	KUWAIT	TANZANIA	UKRAINE
	CANADA	SPAIN	BOTSWANA	KINGDOM OF ESWATINI	MOZAMBIQUE
	UNITED KINGDOM	OMAN	JAMAICA	TUNISIA	BURUNDI
	HONG KONG	SAUDI ARABIA	BULGARIA	RUSSIA	CÔTE D'IVOIRE
	GERMANY	LITHUANIA	INDIA	PHILIPPINES	LEBANON
	ICELAND	CYPRUS	POLAND	DOMINICAN REPUBLIC	PAKISTAN
		SLOVENIA	AZERBAIJAN	VIETNAM	GABON
		BAHRAIN	THAILAND	KENYA	MALI
		MALTA	GHANA	SENEGAL	IRAN
		LATVIA	CROATIA	PERU	ETHIOPIA
			ARMENIA	BRUNEI DARUSSALAM	NICARAGUA
			EGYPT	MOLDOVA	CAMEROON
			TRINIDAD & TOBAGO	NORTH MACEDONIA	MADAGASCAR
				HONDURAS	MAURITANIA
				UGANDA	ZIMBABWE
				NEPAL	CHAD
					BOLIVIA
					NIGERIA
					CONGO, DEM. REP.
					BANGLADESH
					ANGOLA
					YEMEN, REP.
					VENEZUELA, BOLIVARIAN REP.
WEAKEST					HAITI

Table 5. 2021 IPRI: Rankings by Quintiles.

Figure 4 shows the top 15 countries for the 2021 IPRI edition. Switzerland leads the 2021 IPRI (8.15), followed by Singapore (8.09) — who also leads the PPR component (8.58) — and New Zealand (8.08) — who leads the LP component (8.79). The USA (8.73) leads the IPR component, far ahead of Austria (7.77)and Australia (7.5).
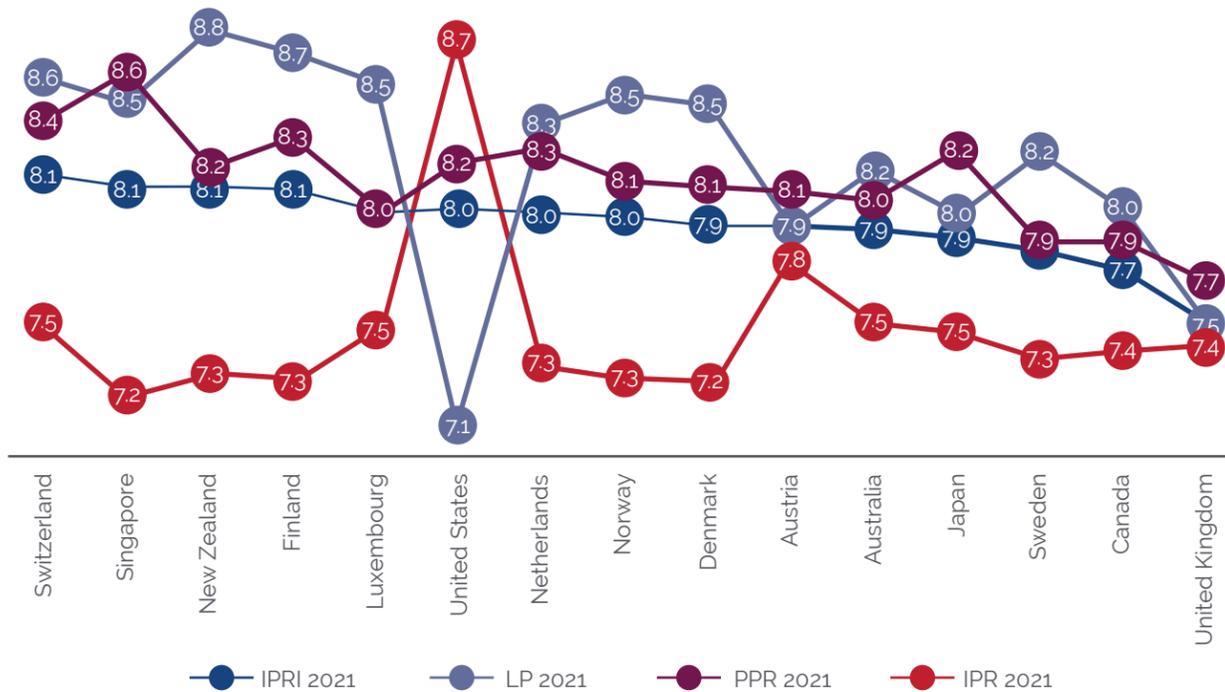

Figure 4. 2021 IPRI & Components: Top 15 Countries.

It is worth noting that since 2017, IPRI top countries are the same, but with a different lineup (see Figure 5).

Of these top 15 countries, ten (10) of them show the LP as their strongest component (Swit-zerland, New Zealand, Finland, Luxembourg, the Netherlands, Norway, Denmark, Australia, Sweden, Canada). Four (4) of them show the PPR (Singapore, Austria, Japan, UK). Just one, the USA, shows the IPR component as its strongest.
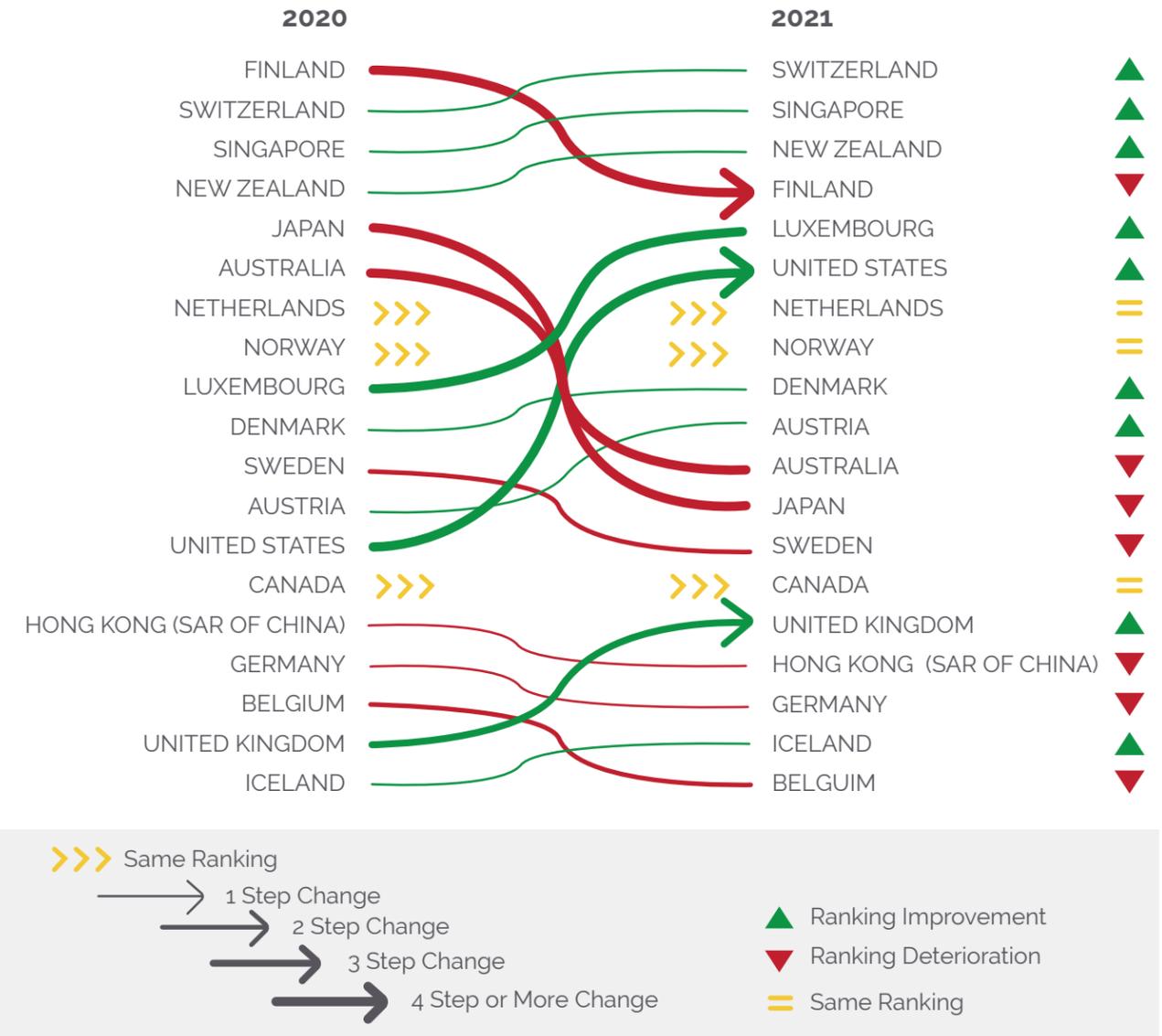
Figure 5. 2021 IPRI vs. 2020 IPR: Top Countries Ranking Change.

Figure 6 shows the bottom 15 countries of this 2021 IPRI edition. Considering the IPRI components, we find the following bottom countries:

» **LP:** Bolivarian Rep. of Venezuela (1.26), Yemen, Rep. (1.43), and Congo, Dem. Rep. (1.78).

» **PPR:** Haiti (1.48), Angola (3.30), and Bangla-desh (3.61).

» **IPR:** Yemen, Rep. (2.57), Bolivarian Rep. of Venezuela (2.7), and Angola (2.96).

Most of the bottom countries (14/15) show PPR as their strongest component; just Haiti shows the IPR as the more robust sub-index. On the other hand, most of these countries (11/15) display the LP as their weakest sub-index; all but Ethiopia, Angola, Bangladesh, and Haiti.
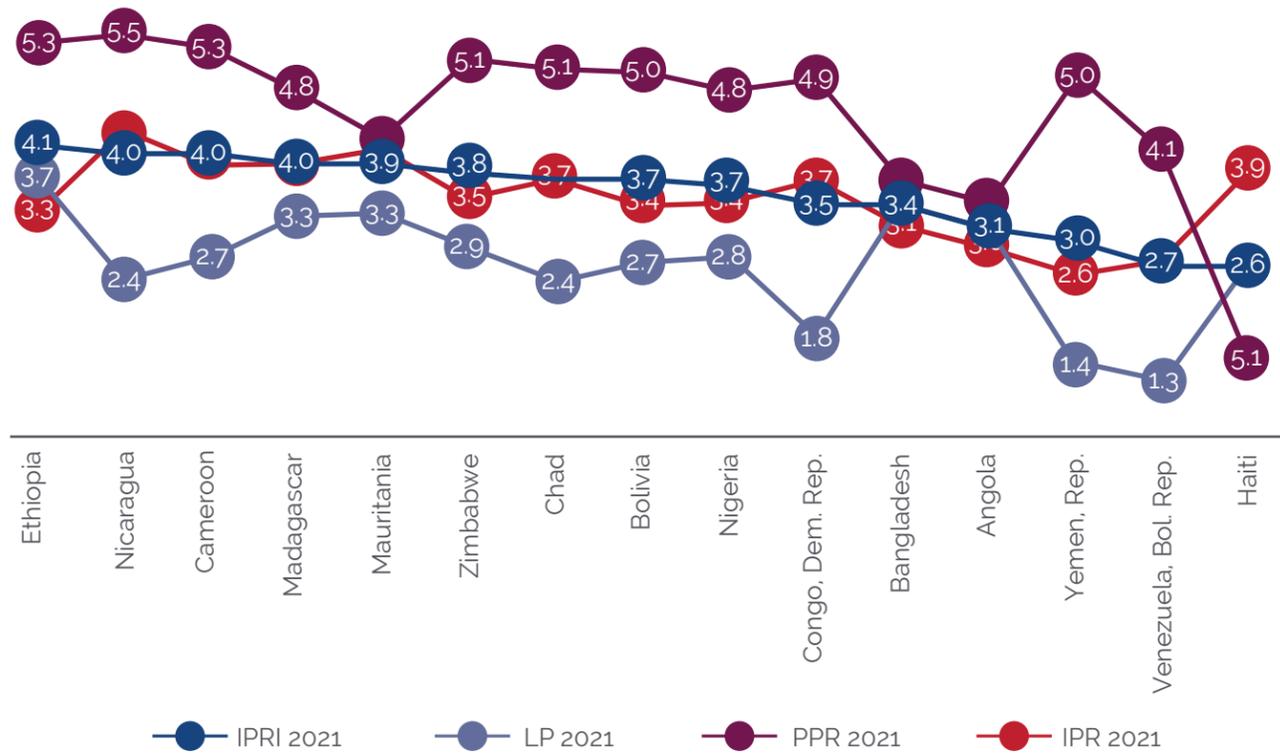
Figure 6. 2021 IPRI & Components: Bottom 15 Countries.

Legend: IPRI 2021 | LP 2021 | PPR 2021 | IPR 2021

Countries (x-axis): Ethiopia, Nicaragua, Cameroon, Madagascar, Mauritania, Zimbabwe, Chad, Bolivia, Nigeria, Congo. Dem. Rep., Bangladesh, Angola, Yemen, Rep., Venezuela, Bol. Rep., Haiti

As important as the score levels are, the change rate for the IPRI and its components is very relevant.

This year, five countries show higher relative improvement in their IPRI score: Moldova (11.32%), Rep. of Yemen (10.26%), Albania (9.37%), Montenegro (7.39%), and Armenia (7.32%). On the other hand, countries showing a higher relative decrease in their IPRI scores are: Côte D'Ivoire (-12.65%), Gabon (-12.52%), Burkina Faso (-12.07%), Bolivia (-8.32%), Mali (-8.14%), and Argentina (-8.01%). See Figure 7.

For the LP component, Ukraine heads relative improvement (4.83%), followed by Romania (3.59%), Bahrain (2.4%), El Salvador (2.36%), and Lithuania (2.06%). On the other extreme, we find this year the same three countries as in 2020: Nicaragua (-10.12%), Iran (-10.96%), and Venezuela, Bolivarian Rep. (-9.86%). See Figure 8.

The countries with the most significant improvement for the PPR component are: Haiti (26.62%), Benin (13.22%), Slovenia (8.71%), Cyprus (8.33%), and Greece (8.16%); while those with the highest retreat are: Côte D'Ivoire (-21.44%), Gabon (-18.6%), Burkina Faso (-17.96%), and Angola (15.10%). See Figure 9.

The most noteworthy relative increases in the IPR component were reported by the Rep. of Yemen (48.42%), Moldova (38.94%), Albania (38.67%), Armenia (29.48%), Serbia (24.46%), Montenegro (23.57%), and North Macedonia (22.48%). On the other extreme, we find Mauritania (-18.08%), Bolivia (-18.79%), Finland (-18.75%), Mali (-18.62%), Chad (-17.81%), Ecuador (-17.59%), and Costa Rica (-16.64%). These changes can be seen in Figure 10.
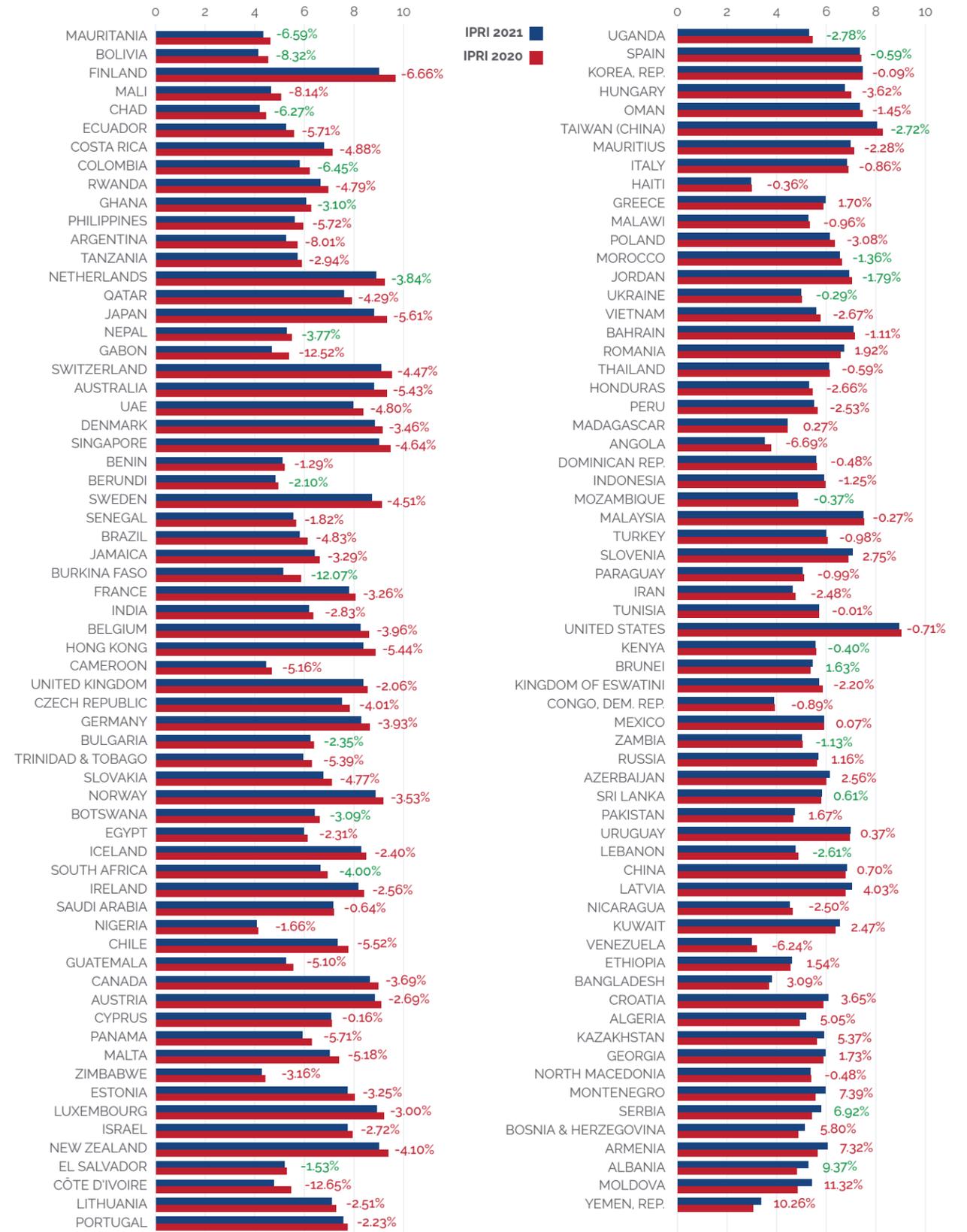

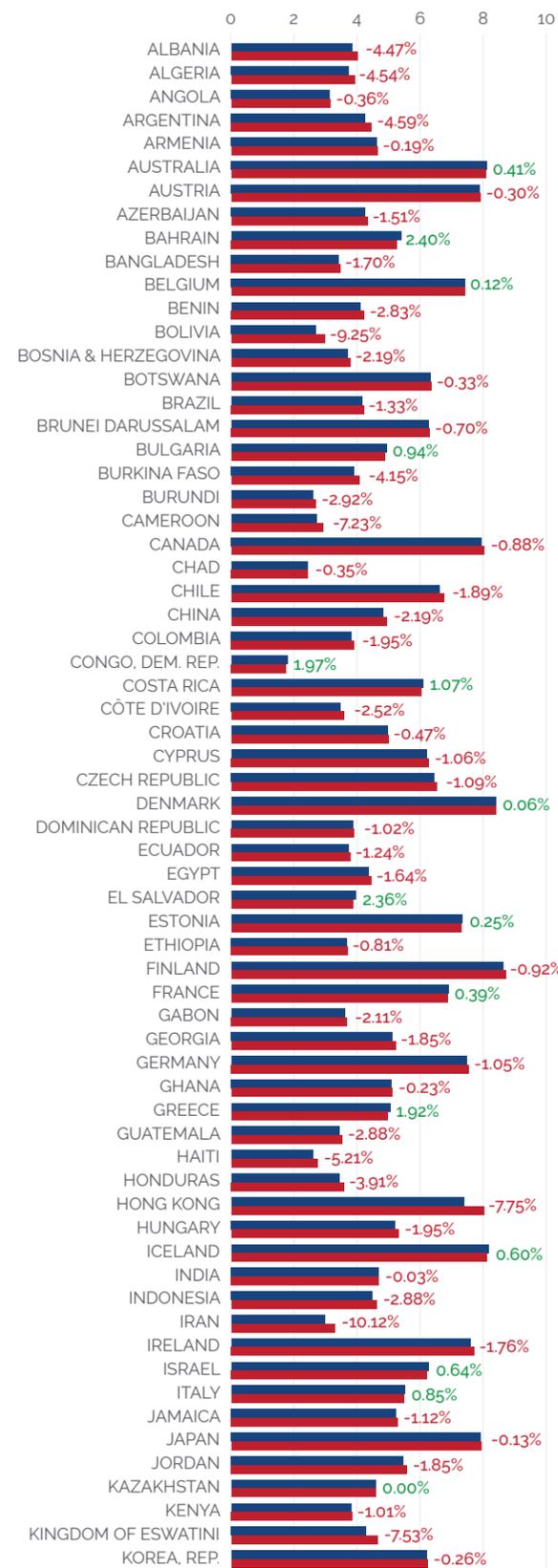Figure 7. IPRI Score 2021-2020 and Variation (%).

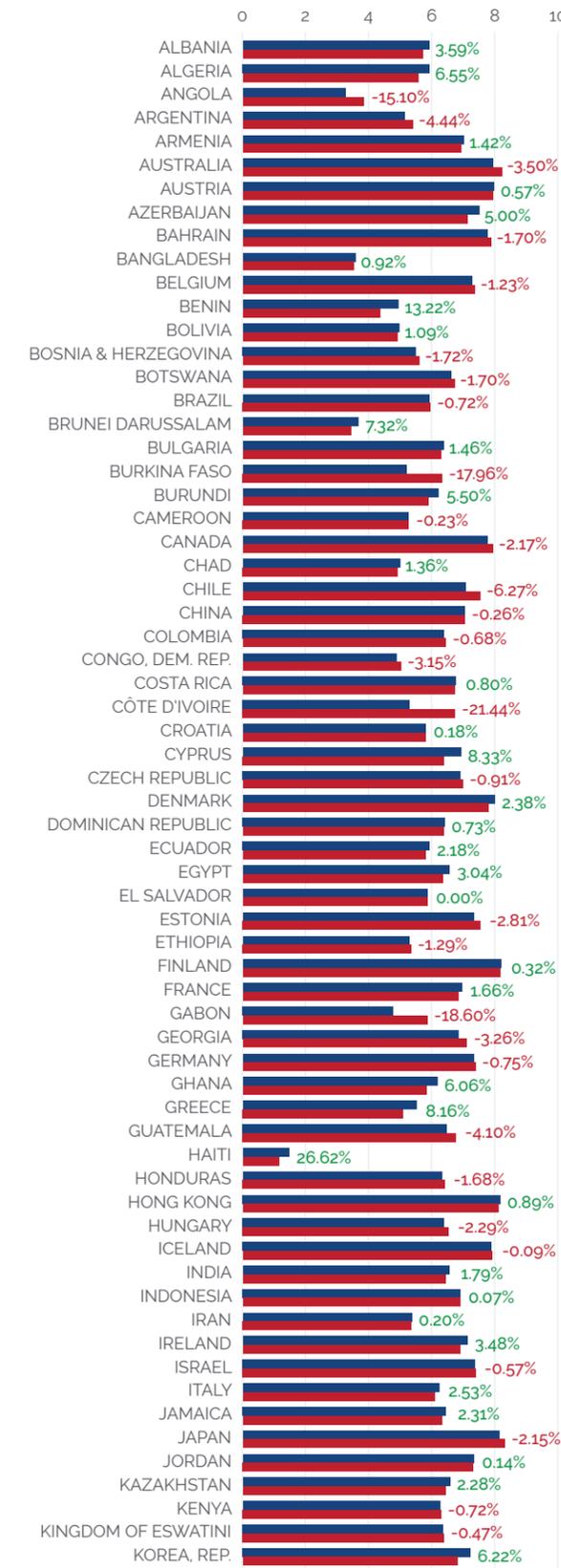**Figure 8. LP Score 2021-2020 and Variation (%).**

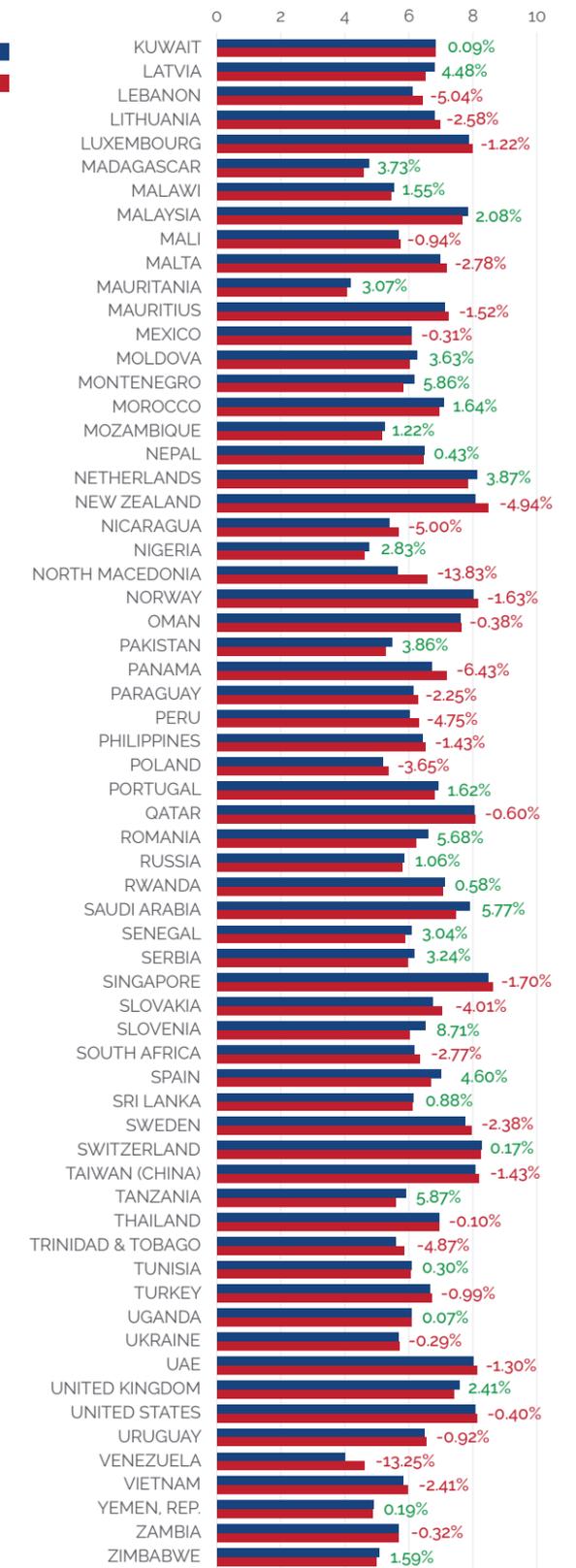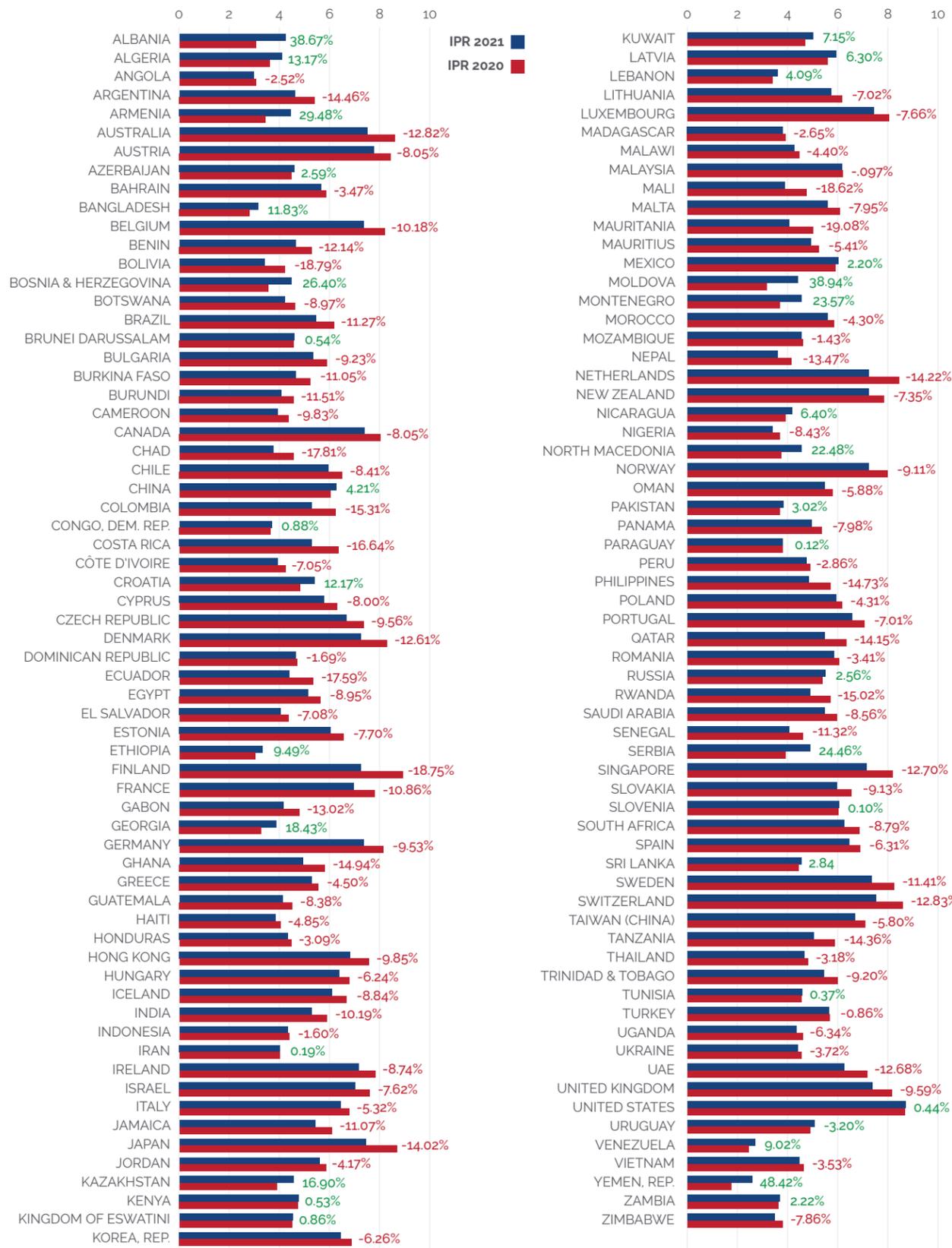| Country	Variation	Country	Variation
ALBANIA	-4.47%	KUWAIT	1.40%
ALGERIA	-4.54%	LATVIA	1.33%
ANGOLA	-0.36%	LEBANON	-5.03%
ARGENTINA	-4.59%	LITHUANIA	2.06%
ARMENIA	-0.19%	LUXEMBOURG	-0.29%
AUSTRALIA	0.41%	MADAGASCAR	-1.10%
AUSTRIA	-0.30%	MALAWI	-0.56%
AZERBAIJAN	-1.51%	MALAYSIA	-2.52%
BAHRAIN	2.40%	MALI	-5.32%
BANGLADESH	-1.70%	MALTA	-5.26%
BELGIUM	0.12%	MAURITANIA	0.61%
BENIN	-2.83%	MAURITIUS	-0.63%
BOLIVIA	-9.25%	MEXICO	-2.75%
BOSNIA & HERZEGOVINA	-2.19%	MOLDOVA	0.02%
BOTSWANA	-0.33%	MONTENEGRO	-2.33%
BRAZIL	-1.33%	MOROCCO	-2.14%
BRUNEI DARUSSALAM	-0.70%	MOZAMBIQUE	-1.47%
BULGARIA	0.94%	NEPAL	-0.41%
BURKINA FASO	-4.15%	NETHERLANDS	-0.56%
BURUNDI	-2.92%	NEW ZEALAND	-0.38%
CAMEROON	-7.23%	NICARAGUA	-10.12%
CANADA	-0.88%	NIGERIA	-0.21%
CHAD	-0.35%	NORTH MACEDONIA	0.33%
CHILE	-1.89%	NORWAY	-0.12%
CHINA	-2.19%	OMAN	1.27%
COLOMBIA	-1.95%	PAKISTAN	-3.33%
CONGO, DEM. REP.	1.97%	PANAMA	-1.59%
COSTA RICA	1.07%	PARAGUAY	0.12%
CÔTE D'IVOIRE	-2.52%	PERU	1.59%
CROATIA	-0.47%	PHILIPPINES	0.69%
CYPRUS	-1.06%	POLAND	-1.08%
CZECH REPUBLIC	-1.09%	PORTUGAL	-1.15%
DENMARK	0.06%	QATAR	-0.56%
DOMINICAN REPUBLIC	-1.02%	ROMANIA	3.59%
ECUADOR	-1.24%	RUSSIA	-0.71%
EGYPT	-1.64%	RWANDA	-1.31%
EL SALVADOR	2.36%	SAUDI ARABIA	-0.81%
ESTONIA	0.25%	SENEGAL	1.34%
ETHIOPIA	-0.81%	SERBIA	-3.46%
FINLAND	-0.92%	SINGAPORE	-0.01%
FRANCE	0.39%	SLOVAKIA	-0.45%
GABON	-2.11%	SLOVENIA	-0.46%
GEORGIA	-1.85%	SOUTH AFRICA	0.72%
GERMANY	-1.05%	SPAIN	0.14%
GHANA	-0.23%	SRI LANKA	-1.79%
GREECE	1.92%	SWEDEN	0.34%
GUATEMALA	-2.88%	SWITZERLAND	-0.64%
HAITI	-5.21%	TAIWAN (CHINA)	-1.08%
HONDURAS	-3.91%	TANZANIA	1.15%
HONG KONG	-7.75%	THAILAND	1.37%
HUNGARY	-1.95%	TRINIDAD & TOBAGO	-1.47%
ICELAND	0.60%	TUNISIA	-0.79%
INDIA	-0.03%	TURKEY	-1.16%
INDONESIA	-2.88%	UGANDA	-3.07%
IRAN	-10.12%	UKRAINE	4.83%
IRELAND	-1.76%	UAE	-0.85%
ISRAEL	0.64%	UNITED KINGDOM	1.75%
ITALY	0.85%	UNITED STATES	-2.43%
JAMAICA	-1.12%	URUGUAY	-0.40%
JAPAN	-0.13%	VENEZUELA	-9.86%
JORDAN	-1.85%	VIETNAM	-2.14%
KAZAKHSTAN	0.00%	YEMEN, REP.	-0.90%
KENYA	-1.01%	ZAMBIA	-5.19%
KINGDOM OF ESWATINI	-7.53%	ZIMBABWE	-5.22%
KOREA, REP.	-0.26%		

Figure 9. PPR Score 2021-2020 and Variation (%).

Country	Variation	Country	Variation
ALBANIA	3.59%	KUWAIT	0.09%
ALGERIA	6.55%	LATVIA	4.48%
ANGOLA	-15.10%	LEBANON	-5.04%
ARGENTINA	-4.44%	LITHUANIA	-2.58%
ARMENIA	1.42%	LUXEMBOURG	-1.22%
AUSTRALIA	-3.50%	MADAGASCAR	3.73%
AUSTRIA	0.57%	MALAWI	1.55%
AZERBAIJAN	5.00%	MALAYSIA	2.08%
BAHRAIN	-1.70%	MALI	-0.94%
BANGLADESH	0.92%	MALTA	-2.78%
BELGIUM	-1.23%	MAURITANIA	3.07%
BENIN	13.22%	MAURITIUS	-1.52%
BOLIVIA	1.09%	MEXICO	-0.31%
BOSNIA & HERZEGOVINA	-1.72%	MOLDOVA	3.63%
BOTSWANA	-1.70%	MONTENEGRO	5.86%
BRAZIL	-0.72%	MOROCCO	1.64%
BRUNEI DARUSSALAM	7.32%	MOZAMBIQUE	1.22%
BULGARIA	1.46%	NEPAL	0.43%
BURKINA FASO	-17.96%	NETHERLANDS	3.87%
BURUNDI	5.50%	NEW ZEALAND	-4.94%
CAMEROON	-0.23%	NICARAGUA	-5.00%
CANADA	-2.17%	NIGERIA	2.83%
CHAD	1.36%	NORTH MACEDONIA	-13.83%
CHILE	-6.27%	NORWAY	-1.63%
CHINA	-0.26%	OMAN	-0.38%
COLOMBIA	-0.68%	PAKISTAN	3.86%
CONGO, DEM. REP.	-3.15%	PANAMA	-6.43%
COSTA RICA	0.80%	PARAGUAY	-2.25%
CÔTE D'IVOIRE	-21.44%	PERU	-4.75%
CROATIA	0.18%	PHILIPPINES	-1.43%
CYPRUS	8.33%	POLAND	-3.65%
CZECH REPUBLIC	-0.91%	PORTUGAL	1.62%
DENMARK	2.38%	QATAR	-0.60%
DOMINICAN REPUBLIC	0.73%	ROMANIA	5.68%
ECUADOR	2.18%	RUSSIA	1.06%
EGYPT	3.04%	RWANDA	0.58%
EL SALVADOR	0.00%	SAUDI ARABIA	5.77%
ESTONIA	-2.81%	SENEGAL	3.04%
ETHIOPIA	-1.29%	SERBIA	3.24%
FINLAND	0.32%	SINGAPORE	-1.70%
FRANCE	1.66%	SLOVAKIA	-4.01%
GABON	-18.60%	SLOVENIA	8.71%
GEORGIA	-3.26%	SOUTH AFRICA	-2.77%
GERMANY	-0.75%	SPAIN	4.60%
GHANA	6.06%	SRI LANKA	0.88%
GREECE	8.16%	SWEDEN	-2.38%
GUATEMALA	-4.10%	SWITZERLAND	0.17%
HAITI	26.62%	TAIWAN (CHINA)	-1.43%
HONDURAS	-1.68%	TANZANIA	5.87%
HONG KONG	0.89%	THAILAND	-0.10%
HUNGARY	-2.29%	TRINIDAD & TOBAGO	-4.87%
ICELAND	-0.09%	TUNISIA	0.30%
INDIA	1.79%	TURKEY	-0.99%
INDONESIA	0.07%	UGANDA	0.07%
IRAN	0.20%	UKRAINE	-0.29%
IRELAND	3.48%	UAE	-1.30%
ISRAEL	-0.57%	UNITED KINGDOM	2.41%
ITALY	2.53%	UNITED STATES	-0.40%
JAMAICA	2.31%	URUGUAY	-0.92%
JAPAN	-2.15%	VENEZUELA	-13.25%
JORDAN	0.14%	VIETNAM	-2.41%
KAZAKHSTAN	2.28%	YEMEN, REP.	0.19%
KENYA	-0.72%	ZAMBIA	-0.32%
KINGDOM OF ESWATINI	-0.47%	ZIMBABWE	1.59%
KOREA, REP.	6.22%		

2021 IPRI & GROUPS

IPRI analysis was also performed for groups of countries, which were gathered following these different criteria: geographical regions, income level, and degree of development and participation in integration agreements. For each group, we calculated the IPRI score and its components. Former years' classification (Regional) was also kept for comparison purposes (see Table 6 and Figures 11-15).

Figure 10. IPR Score 2021-2020 and Variation (%).

Country	Variation
ALBANIA	38.67%
ALGERIA	13.17%
ANGOLA	-2.52%
ARGENTINA	-14.46%
ARMENIA	29.48%
AUSTRALIA	-12.82%
AUSTRIA	-8.05%
AZERBAIJAN	2.59%
BAHRAIN	-3.47%
BANGLADESH	11.83%
BELGIUM	-10.18%
BENIN	-12.14%
BOLIVIA	-18.79%
BOSNIA & HERZEGOVINA	26.40%
BOTSWANA	-8.97%
BRAZIL	-11.27%
BRUNEI DARUSSALAM	0.54%
BULGARIA	-9.23%
BURKINA FASO	-11.05%
BURUNDI	-11.51%
CAMEROON	-9.83%
CANADA	-8.05%
CHAD	-17.81%
CHILE	-8.41%
CHINA	4.21%
COLOMBIA	-15.31%
CONGO, DEM. REP.	0.88%
COSTA RICA	-16.64%
CÔTE D'IVOIRE	-7.05%
CROATIA	12.17%
CYPRUS	-8.00%
CZECH REPUBLIC	-9.56%
DENMARK	-12.61%
DOMINICAN REPUBLIC	-1.69%
ECUADOR	-17.59%
EGYPT	-8.95%
EL SALVADOR	-7.08%
ESTONIA	-7.70%
ETHIOPIA	9.49%
FINLAND	-18.75%
FRANCE	-10.86%
GABON	-13.02%
GEORGIA	18.43%
GERMANY	-9.53%
GHANA	-14.94%
GREECE	-4.50%
GUATEMALA	-8.38%
HAITI	-4.85%
HONDURAS	-3.09%
HONG KONG	-9.85%
HUNGARY	-6.24%
ICELAND	-8.84%
INDIA	-10.19%
INDONESIA	-1.60%
IRAN	0.19%
IRELAND	-8.74%
ISRAEL	-7.62%
ITALY	-5.32%
JAMAICA	-11.07%
JAPAN	-14.02%
JORDAN	-4.17%
KAZAKHSTAN	16.90%
KENYA	0.53%
KINGDOM OF ESWATINI	0.86%
KOREA, REP.	-6.26%
KUWAIT	7.15%
LATVIA	6.30%
LEBANON	4.09%
LITHUANIA	-7.02%
LUXEMBOURG	-7.66%
MADAGASCAR	-2.65%
MALAWI	-4.40%
MALAYSIA	-.097%
MALI	-18.62%
MALTA	-7.95%
MAURITANIA	-19.08%
MAURITIUS	-5.41%
MEXICO	2.20%
MOLDOVA	38.94%
MONTENEGRO	23.57%
MOROCCO	-4.30%
MOZAMBIQUE	-1.43%
NEPAL	-13.47%
NETHERLANDS	-14.22%
NEW ZEALAND	-7.35%
NICARAGUA	6.40%
NIGERIA	-8.43%
NORTH MACEDONIA	22.48%
NORWAY	-9.11%
OMAN	-5.88%
PAKISTAN	3.02%
PANAMA	-7.98%
PARAGUAY	0.12%
PERU	-2.86%
PHILIPPINES	-14.73%
POLAND	-4.31%
PORTUGAL	-7.01%
QATAR	-14.15%
ROMANIA	-3.41%
RUSSIA	2.56%
RWANDA	-15.02%
SAUDI ARABIA	-8.56%
SENEGAL	-11.32%
SERBIA	24.46%
SINGAPORE	-12.70%
SLOVAKIA	-9.13%
SLOVENIA	0.10%
SOUTH AFRICA	-8.79%
SPAIN	-6.31%
SRI LANKA	2.84%
SWEDEN	-11.41%
SWITZERLAND	-12.83%
TAIWAN (CHINA)	-5.80%
TANZANIA	-14.36%
THAILAND	-3.18%
TRINIDAD & TOBAGO	-9.20%
TUNISIA	0.37%
TURKEY	-0.86%
UGANDA	-6.34%
UKRAINE	-3.72%
UAE	-12.68%
UNITED KINGDOM	-9.59%
UNITED STATES	0.44%
URUGUAY	-3.20%
VENEZUELA	9.02%
VIETNAM	-3.53%
YEMEN, REP.	48.42%
ZAMBIA	2.22%
ZIMBABWE	-7.86%

Legend: IPR 2021, IPR 2020

CRITERIA	GROUP	IPRI	LP	PPR	IPR
GROUPS REGIONAL	A	4.558	3.848	5.599	4.226
	AO	6.041	5.714	6.874	5.536
	CEECA	5.570	4.961	6.491	5.257
	LAC	4.857	4.047	5.864	4.660
	MENA	5.629	4.895	6.946	5.046
	NA	7.871	7.527	8.029	8.056
	WE	7.314	7.481	7.520	6.941
GEOGRAPHICAL REGIONS	European Union	6.749	6.672	7.064	6.512
	Rest of Europe	5.605	5.032	6.651	5.133
	Africa	4.642	3.912	5.710	4.304
	North America	7.002	6.206	7.404	7.397
	Central America and the Caribbean	4.827	4.034	5.820	4.628
	South America	4.846	4.107	5.879	4.551
	Asia	5.769	5.217	6.896	5.194
	Oceania	7.991	8.480	8.104	7.390
INCOME (WORLD BANK)	High income	6.856	6.823	7.309	6.437
	Upper middle income	5.139	4.289	6.348	4.781
	Lower middle income	4.594	3.799	5.731	4.252
	Low income	4.132	3.180	5.241	3.975
REGION & DEVELOPMENT (IMF)	Advanced economies	7.191	7.195	7.541	6.839
	Commonwealth of Independent States	5.207	4.184	6.726	4.710
	Emerging and Developing Asia	5.116	4.665	6.112	4.570
	Emerging and Developing Europe	5.238	4.492	6.084	5.137
	Latin America and the Caribbean	4.857	4.047	5.864	4.660
	Middle East and Central Asia	5.348	4.637	6.674	4.734
	Sub-Saharan Africa	4.583	3.868	5.650	4.231

CRITERIA	GROUP	IPRI	LP	PPR	IPR
	OECD	7.036	6.965	7.348	6.794
	EU	6.749	6.672	7.064	6.512
	SADC	4.669	4.092	5.617	4.297
	ECOWAS	4.528	3.853	5.512	4.219
	ASEAN	5.770	5.466	6.664	5.179
	PARLACEN	4.741	3.563	6.281	4.380
	GCC	6.507	6.149	7.796	5.576
	AP	5.497	4.497	6.469	5.525
	MERCOSUR	5.159	4.733	5.998	4.746
	SAARC	4.613	4.024	5.721	4.095
	CEMAC	3.977	2.927	5.071	3.934
REGIONAL INTEGRATION AGREEMENTS	MCCA	4.845	3.890	6.244	4.399
	CIS	5.081	4.022	6.564	4.657
	ARAB M UNION	4.856	4.087	5.887	4.595
	OPEC	4.651	3.947	5.751	4.254
	CARICOM	4.579	4.280	4.553	4.904
	CAN	4.640	3.555	5.897	4.469
	EFTA	7.846	8.425	8.168	6.945
	IGAD	4.609	3.742	5.950	4.135
	NAFTA	7.002	6.206	7.404	7.397
	CEEAC	4.113	3.153	5.275	3.910
	TPP-11	6.642	6.591	7.076	6.258
	PROSUR	5.122	4.295	6.166	4.905

Table 6. 2021 IPRI and Components: Groups Score.

It is worth mentioning that some groups are in different classifications and they report different score values. That is the case of the Commonwealth of the Independent States or Latin America and the Caribbean. This is because in some of the classifications, they include/exclude some countries.
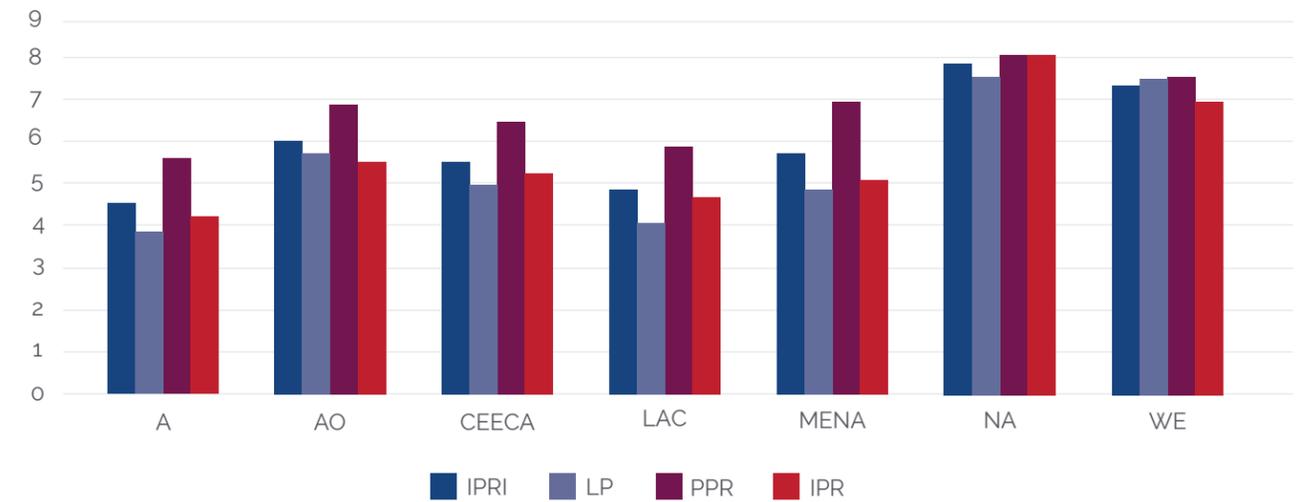
Figure 11. 2021 IPRI and Components. Regional Groups Score.
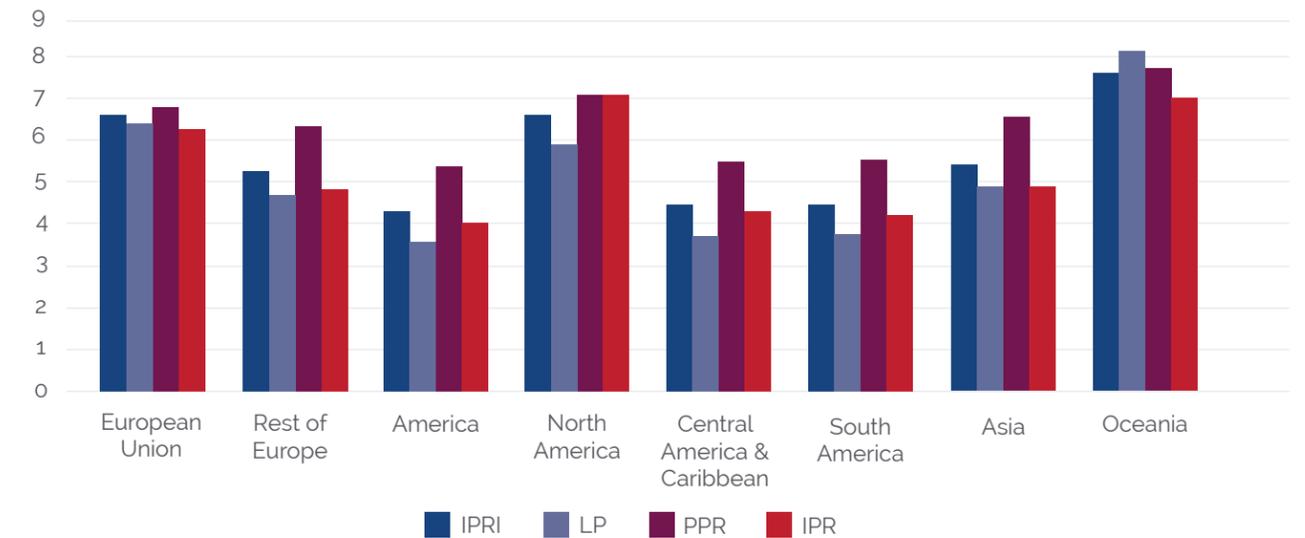
Figure 12. 2021 IPRI and Components. Geographical Groups Score.
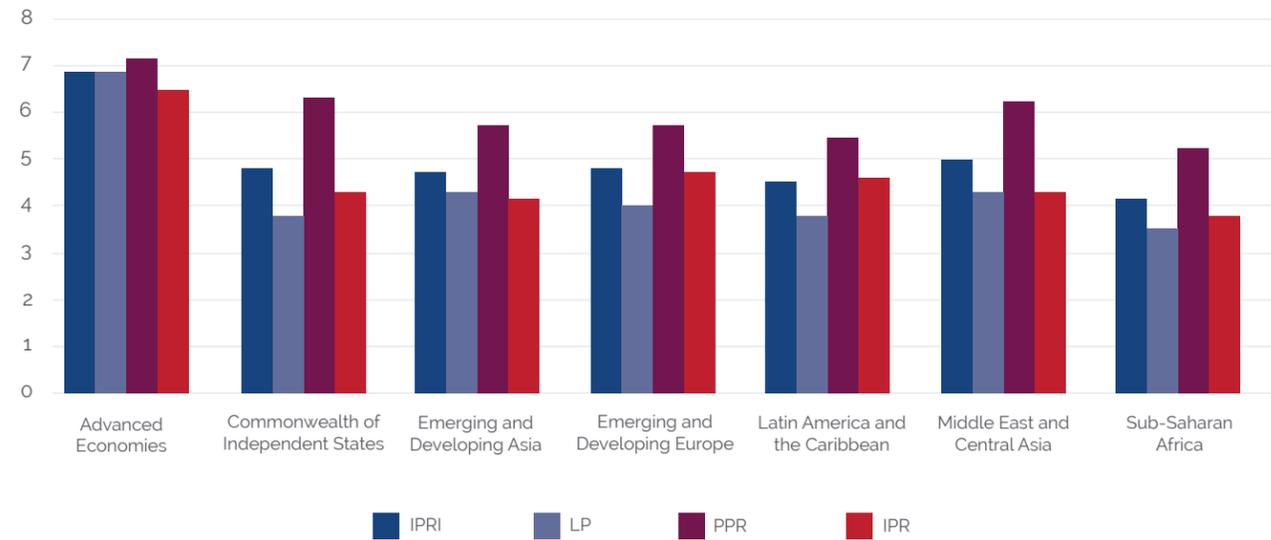
Figure 13. 2021 IPRI and Components. Region & Development Groups Score.
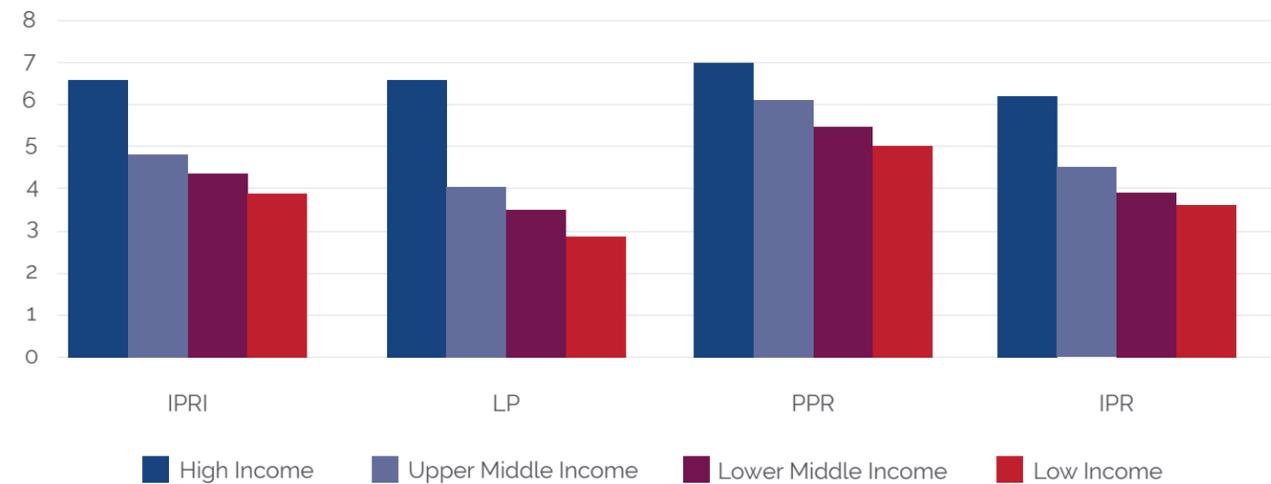
Figure 14. 2021 IPRI and Components. Income Groups Score.
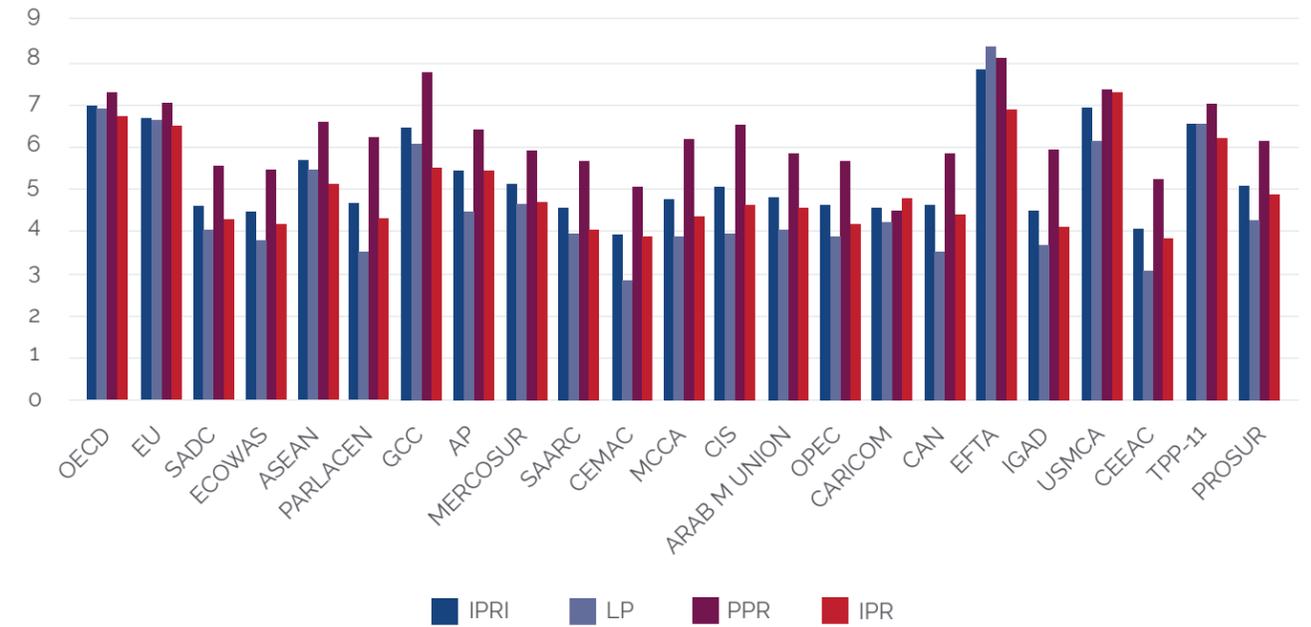
Figure 15. 2021 IPRI and Components. Integration Agreement Groups Score.

If compared with 2020, we find that most of the groups reduced their score, even if we find some positive ones. Below, a brief analysis of these results:

1. **Regional Groups:** NA (8.05) leads the IPRI score, followed by WE (7.87) and AO (6.04). On the other extreme, we find Africa (4.56) and LAC (4.86) countries. Only the CEECA countries improved their IPRI score (by 1.36%), thanks to the IPR component, that improved by 4.04%. Africa, LAC, and WE decreased their IPRI score most (by 3.89%; 3.86%, and 3.18% respectively). In the three cases, the IPR component behavior drained their results.

2. **Geographical Groups:** At the top, we find Oceania (7.99), North America (7.00) and the European Union (6.75); while at the bottom are Africa (4.64), Central America and the Caribbean (4.83), and South America (4.85). The scores changed compared to 2020 which were negative for all groups but the Rest of Europe by 1.84%, due to positive performance in the IPR component (improved by 7.72%). The most relevant decreases were shown in the IPR component of Oceania (-10.21%), South America (8.93%), the EU (-7.78%), and Africa (-7.72%).

3. **Regional & Development Groups** (IMF classification): Advanced Economies (7.19) leads the group followed by MENA & Central Asia (5.35), Emerging and Developing Europe (5.24), Emerging and Developing Asia (5.12), CIS (5.21), Latin America and the Caribbean (4.86), and ending with the Sub-Saharan Africa (4.58). Two of the seven groups improved in their IPRI score. For a second consecutive year, CIS leads the improvement by a 5.91% and also shows the best results in the components, with and exceptional performance in IPR (16.9% improvement), followed by the PPR (3.04% improvement), and while negative for LP, is the lowest of the group (-0.15%).

4. **Income Group** (WB, 2019 classification): As in previous editions, this year's income classification groups show the same display of IPRI score. High Income (6.86) remains at the top, followed by Upper Middle (5.14), Lower Middle (4.59), and Low Income (4.13) countries. However, all these groups showed a decrease in their IPRI scores and its components, being most relevant in Low income countries (-5.65%), given the set back of IPR (-9.7%) and LP (-6.94%). It's worth noting the decrease in IPR components in High Income countries in their LP (-3.21%).

5. **Integration Agreements:** Since 2017, the five top groups are EFTA (7.85), OECD (7.04), USMC (7.0), EU (6.75) and TPP-11 (6.64). However, all these groups reduced their IPRI score and its components. This year, only the CIS showed improvement in IPRI score (4.49%) based on performance in the IPR component (+12%). The rest of the countries showed decreasing results, lead by CEMAC (-8.22%), ECOWAS (-5.96%), and CAN (-5.64%). These figures were driven mainly by IPR's set back: CAN: -13.64%; CEMAC: 13.6%; ECOWAS: -12.2%; CEEAC: -10.74%; PROSUR: -10.56%; EFTA: -10.41%; OECD: -8.12%; EU: -7.78% and GCC -7.04%.

5

2021 IPRI & POPULATION

With the unit of analysis of the IPRI being "country", its goal is to assess the strength of property rights that people enjoy, and so, a demographic perspective is very important. For that reason, since 2015, a population incidence is included in the Index.

Although the 2021 IPRI average score is 5.603, when population weighs in, it reduces to 5.596, which is a decrease of 0.77%. Compared to 2020's data, IPRI-POP$_{2021}$ shows a 2.18% decrease from last year (5.728). In spite of this, there is an improvement if compared to IPRI-POP$_{2017}$ (5.522). We have witnessed a negative trend since then. The former insists on the necessity of making efforts to strengthen property rights in highly populated countries. With this approach, the IPRI becomes an even more powerful tool for policy makers.

It's worth noting that this year we find a change in the range's structure, with a higher minimum level (2.6 vs. 2.5 in 2020) and a lower maximum level (8.8 vs. 9.4 in 2020). This generates a small reduction in the span of data distribution.

This year's sample of 129 countries has a population of 7.32 billion people[9]—representing 93.91% of world population—and it shows that 85% of that population live in 86 countries with an IPRI score in a range of [2.6 - 6.1].

RANGES	NUMBER OF COUNTRIES	POPULATION (000)	POPULATION %	IPRI INCIDENCE (%)	IPRI-POP INCIDENCE (%)	% GDP
2.6 a 3.4	5	267,220	3.7	2.1	2.1	1.06
3.5 a 4.3	18	922,850	12.6	10.0	9.0	1.91
4.4 a 5.2	33	1,183,489	16.2	22.1	14.4	7.49
5.3 a 6.1	30	3,829,533	52.3	23.3	53.9	30.02
6.2 a 7.0	21	313,456	4.3	19.0	5.1	10.15
7.1 a 7.9	14	424,359	5.8	14.7	8.0	20.95
8.0 a 8.8	8	379,053	5.2	8.9	7.5	28.42
	129	7,319,959	100	100	100	100

More than half of the sample population (52.3%) live in 30 countries with a middle score of the IPRI [5.3 - 6.1]. On the two extremes of the sample, we find that 11% of the population enjoys higher levels of property rights protection in 22 countries [7.1 – 8.8]; and 16.3% sample population live in 23 countries with lower levels of property rights [2.6 - 4.3].

9.   Source: United Nations, Department of Economic and Social Affairs, Population Division 2019, World Population Prospects 2019, Online Ed. https://population.un.org/wpp/Download/Standard/Population/ (downloaded 02.16.2021).

Simultaneously, we can complement the IPRI-POP analysis with GDP results, as follows:

» 2021-IPRI countries account for 93.91% of the world population and 97.73% of the world GDP.

» Almost 59.6% of the total GDP comes from 43 countries with 15.3% of the total population, and they show robust property rights systems, with an IPRI score in a range of [6.2 – 8.8].

» Particularly, 49.37% of the total GDP is from 22 countries with 11% of the total population with IPRI scores in a range of [7.1 – 8.8].

» 30% of the total GDP lies in 30 countries with 52.3% of the total population, and they show middle IPRI scores in a range of [5.3 – 6.1].

» 2.97% of the total GDP is produced by 23 countries with 33.4% of the total population, and they show weak property rights systems, with low IPRI scores, in a range of [2.6 – 4.3].

» 72.8% of the world population lives in 84 countries that account for 47.7% of world GDP and they show mid-levels of property rights [4.4 – 7.0].

This information evidences the positive relationship between a robust property rights system and economic strength: an element to be considered carefully by densely populated countries.

Figure 16 shows a combination of elements while analyzing changes in the IPRI scores: country, population, and their belonging to a regional group.
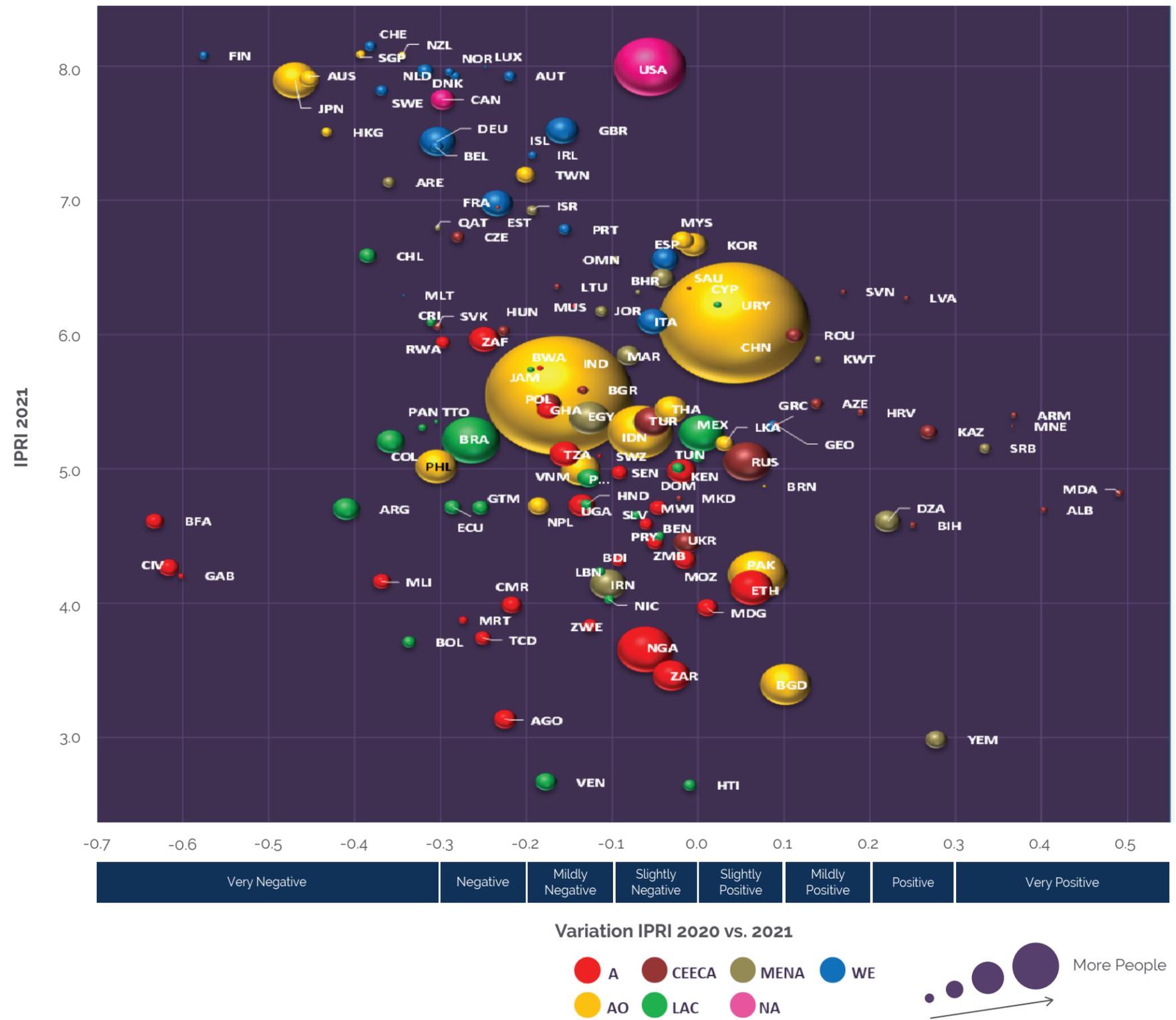
Figure 16. 2021 IPRI: Country Score Changes (Population and Groups).

2021 IPRI & GENDER

Although the unit of analysis of the IPRI are countries, it aims to show property rights protection of people, so its gender component grasps possible bias due to this condition. On the other hand, being a subject of human rights and social justice, Gender Equality is a goal in itself. It refers to the equal rights, responsibilities, and opportunities for women and men, girls and boys. Gender Equality has been demonstrated to foster development for less developed and developing countries, particularly in areas like health, education, agriculture, and unbiased access to credit for reducing poverty.

Data used to calculate the Gender Equality component for the IPRI are those items more closely related to property rights and its impact on economic development of Social Institutions and Gender Index, SIGI (by OECD). The SIGI is composed of five sub-indices, each representing a separate dimension of discrimination: Discriminatory Family Code, Restricted Physical Integrity, Son Bias, Restricted Resources and Assets, and Restricted Civil Liberties.

The GE component is calculated using the following indicators (Source: OECD Gender, Institutions, and Development Database 2019 (GID-DB). Details in Appendix III):

1. **Women's Access to Land Ownership:** Estimates whether women and men have equal and secure access to land assets, use, control, and ownership.

2. **Women's Access to Bank Loans:** Measures whether women and men have equal and secure access to formal financial services.

3. **Women's Access to Property Other than Land:** Determines whether women and men have equal and secure access to non-land assets use, control, and ownership.

4. **Inheritance Practices:** Measures whether women and men have the same legal rights to inheritance of land and non-land assets.

5. **Women's Social Rights:** Covers broader aspects of women's equality, and is a composite of seven other items crucial to equal standing in society. Items:

    »   *Divorce*: Measures whether women and men have the same legal rights to initiate divorce and have the same requirements for divorce or annulment.

    »   *Household responsibilities:* Measures whether women and men have the same legal rights, decision-making abilities, and responsibilities within the household.

    »   *Female genital mutilation:* Measures the occurrence of female genital mutilation.

    »   *Violence against women:* Measures whether the legal framework protects women from violence – including intimate partner violence, rape, and sexual harassment – without legal exceptions and in a comprehensive approach.

    »   *Freedom of movement:* Measures whether women and men have the same rights to apply for national identity cards (if applicable) and passports, and to travel outside the country.

    »   *Citizenship rights:* Measures whether women and men have the same citizenship rights and ability to exercise their rights.

    »   *Workplace rights:* Measures whether women and men have the same legal rights and opportunities in the workplace.

The original data has three levels: 0 (Best), 0.5 (Average), and 1 (Worst). All data series were rescaled to (0-10). The final GE score is an index based on the average of five equally weighted variables. Those variables with more than one item where calculated also as equally weighted. A minimum score (0) means complete discrimination against women, while maximum score (10) is given to countries with gender equality. As the GE data source is discrete, equal outcomes are likely to be found. That will be minimized in the IPRI-GE thanks to the variability of the IPRI scores.

To account for Gender Equality (GE), this chapter extends the standard IPRI measure to include a measure of GE concerning property rights. The IPRI formula was modified to incorporate Gender Equality as follows:

$$IPRI - GE = IPRI * [(GE + 10)/20]$$

This way, if a country shows a GE=10 (gender equality), its IPRI-GE score will be equal to its IPRI score; while if a country displays a GE=0 (total discrimination), its IPRI-GE score will be half of its IPRI score, as only half of the population will enjoy some level of property rights protection (we are assuming 50% female, 50% male population).

Simultaneously, to make easier the comparison of the IPRI and the IPRI-GE and make it more informing for policymakers, we kept the scale for the IPRI-GE from 0-10.

I. IPRI-GE AND GE: COUNTRY RESULTS

As an average, the 129 countries show a GE score of 7.248, while the IPRI-GE score is 4.894. Looking into details of the GE components, we find that of the five components, Women's Social Rights is weakest, followed by Inheritance Practices and Women's Access to Land Ownership; and the strongest is Women's Access to Bank Loans. Inside Women Social Rights we find that the strongest component is Freedom of Movement and the weakest is Female Genital Mutilation.

Fifteen countries show a range of [9.5-9.786] for the GE score: Austria, Malta, Sweden, Belgium, Portugal, Norway, Australia, New Zealand, Denmark, Estonia, Iceland, Ireland, the Netherlands, Switzerland, and USA. Seventeen other countries score from [9-9.5] for a total of 32 [9-top]. On the other extreme, we find 21 countries with GE scores lower than 5 (Fig. 17a).

Switzerland leads the IPRI-GE (7.945), followed by New Zealand (7.906), Austria (7.84), Finland (7.819), Norway (7.815), and the USA (7.793); all of them are very close in their score values. On the other extreme of the IPRI-GE, we find Haiti (2.3), the Rep. of Yemen (2.32), Bangladesh (2.38), Angola (2.42), Mauritania (2.5), and the Bolivarian Rep. of Venezuela (2.55). Some of these countries report this low value due to their low IPRI scores and not their GE scores, which is the case for the Bolivarian Rep. Venezuela, with GE=9.071 (IPRI-GE=2.546) and Haiti with GE=7.357 (IPRI-GE=2.296). On the contrary, we find countries with a low GE score that boost their IPRI-GE thanks to their IPRI results.

As in the IPRI, the number of countries belonging to each quintile increases from the top 20% to the bottom 20% (1st quintile 16 countries, 2nd quintile 20 countries, 3rd quintile 25 countries, 4th quintile 29 countries, and 5th quintile 39 countries). Hence, the fourth and the fifth quintiles include 52.7% of countries (68 countries) in the sample. See Figure 18, showing the 2021 IPRI-GE rankings by quintile for the 129 countries in the sample.

Analyzing the IPRI-GE by groups, we found the following results (see Table 8):

» **Geographical Regions:** At the top, we find Oceania (7.82) and the European Union (6.44); and on the other extreme are Africa (3.68), South America (4.27), Central America & the Caribbean (4.35), and Asia (4.7).

» **Regional and Development** (IMF, 2021): Advanced Economies (6.86) is leading the group followed by Emerging and Developing Europe (4.72), CIS (4.71), Latin America and the Caribbean (4.33), Emerging and Developing Asia (4.02), MENA and Central Asia (3.95), and ending with Sub-Saharan Africa (3.67). CIS countries show a high GE score (8.0) but the IPRI pulls down their IPRI-GE, similarly with Latin America and the Caribbean (GE=7.87), and Emerging and Developing Europe (GE=8); while the opposite happens with MENA and Central Asia (GE=4.75).

» **Income classification** (WB, 2020): This year the IPRI-GE and the GE display the same pattern as the IPRI, holding the relationship between the robustness of property rights systems and economic strength.
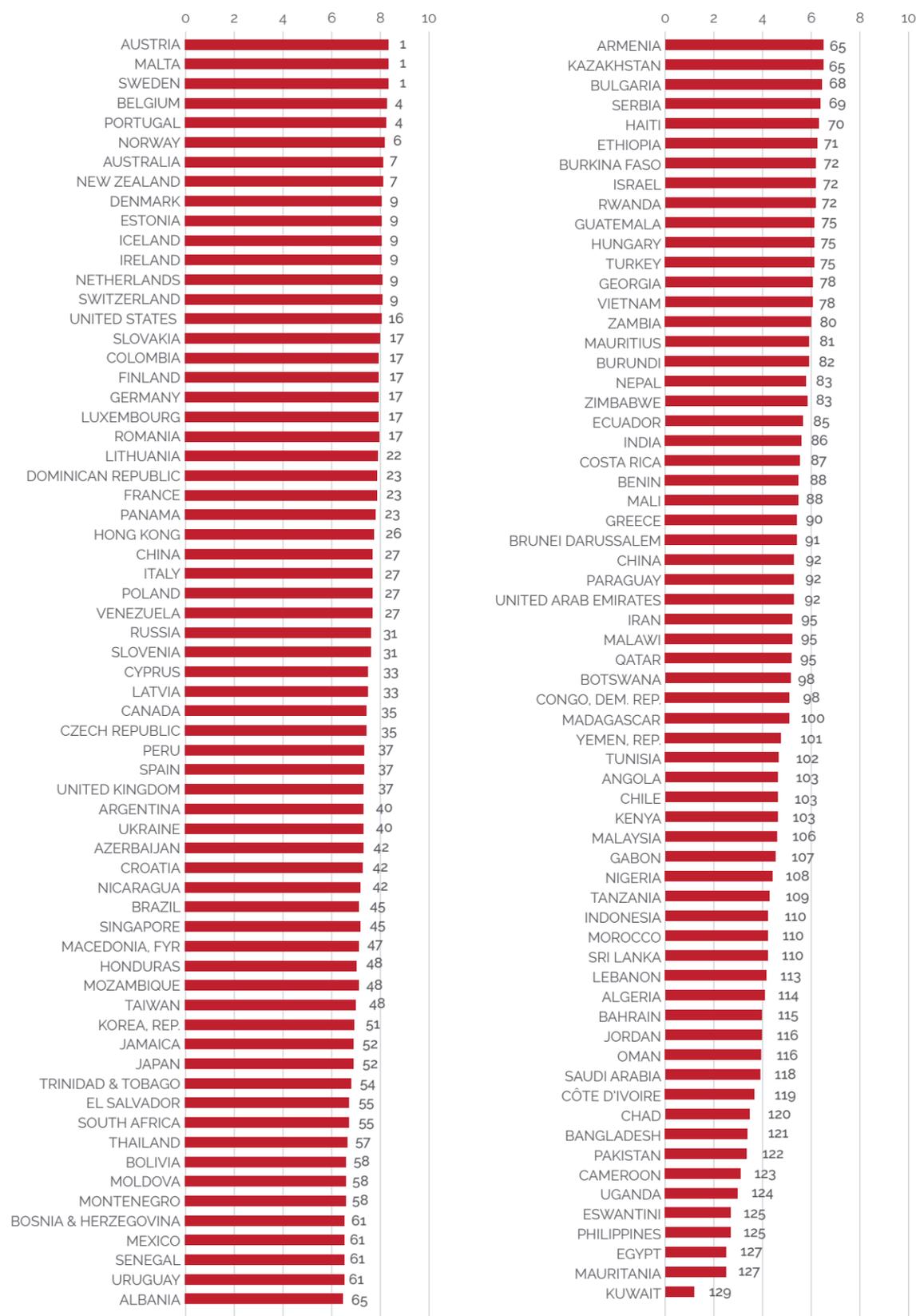
Figure 17a. 2021 GE. Scores & Rankings..

Left column (Rankings 1–65):

Country	Rank
SWITZERLAND	1
NEW ZEALAND	2
AUSTRIA	3
FINLAND	4
NORWAY	5
UNITED STATES	6
NETHERLANDS	7
LUXEMBOURG	8
AUSTRALIA	9
SWEDEN	10
DENMARK	11
SINGAPORE	12
BELGIUM	13
CANADA	14
ICELAND	15
GERMANY	16
HONG KONG	17
IRELAND	18
JAPAN	19
UNITED KINGDOM	20
ESTONIA	21
FRANCE	22
PORTUGAL	23
TAIWAN (CHINA)	24
CZECH REPUBLIC	25
MALTA	26
LITHUANIA	27
SPAIN	28
KOREA, REP.	29
SLOVENIA	30
CYPRUS	31
ISRAEL	32
LATVIA	33
SLOVAKIA	34
ITALY	35
CHINA	36
ROMANIA	37
UNITED ARAB EMIRATES	38
URUGUAY	39
QATAR	40
SOUTH AFRICA	41
MAURITIUS	42
POLAND	43
JAMAICA	44
HUNGARY	45
MALAYSIA	46
RWANDA	47
PANAMA	48
CHILE	49
AZERBAIJAN	50
COLOMBIA	51
CROATIA	52
COSTA RICA	53
BULGARIA	54
THAILAND	55
TRINIDAD & TOBAGO	56
DOMINICAN REPUBLIC	57
BRAZIL	58
RUSSIA	59
OMAN	60
ARMENIA	61
MONTENEGRO	62
SAUDIA ARABIA	63
BAHRAIN	64
MEXICO	65

Middle column (Rankings 66–129):

Country	Rank
KAZAKHSTAN	66
BOTSWANA	67
PERU	68
TURKEY	69
INDIA	70
GEORGIA	71
JORDAN	72
SERBIA	73
NORTH MACEDONIA	74
GHANA	75
SENEGAL	76
ARGENTINA	77
MOROCCO	78
GREECE	79
HONDURAS	80
MOLDOVA	81
VIETNAM	82
EL SALVADOR	83
UKRAINE	84
ALBANIA	85
BOSNIA & HERZEGOVINA	86
GUATEMALA	87
BURKINA FASO	88
BRUNEI DARUSSALAM	89
NEPAL	90
TUNISIA	91
MOZAMBIQUE	92
INDONESIA	93
ECUADOR	94
SRI LANKA	95
KENYA	96
TANZANIA	97
MALAWI	98
ZAMBIA	99
BENIN	100
NICARAGUA	101
BURUNDI	102
PARAGUAY	103
ETHIOPIA	104
EGYPT	105
ALGERIA	106
MALI	107
KINGDOM OF ESWATINI	108
IRAN	109
KUWAIT	110
PHILIPPINES	111
BOLIVIA	112
ZIMBABWE	113
GABON	114
UGANDA	115
MADAGASCAR	116
LEBANON	117
CÔTE D'IVOIRE	118
PAKISTAN	119
CONGO, DEM. REP.	120
NIGERIA	121
CAMEROON	122
CHAD	123
VENEZUELA	124
MAURITANIA	125
ANGOLA	126
BANGLADESH	127
YEMEN, REP.	128
HAITI	129

Figure 17b. 2021 IPRI-GE. Scores (0-10) & Rankings.

TOP 20 PERCENT	2ND QUINTILE	3RD QUINTILE	4TH QUINTILE	BOTTOM 20 PERCENT
SWITZERLAND	HONG KONG	ROMANIA	MONTENEGRO	TUNISIA
NEW ZEALAND	IRELAND	UNITED ARAB EMIRATES	SAUDI ARABIA	MOZAMBIQUE
AUSTRIA	JAPAN	URUGUAY	BAHRAIN	INDONESIA
FINLAND	UNITED KINGDOM	QATAR	MEXICO	ECUADOR
NORWAY	ESTONIA	SOUTH AFRICA	KAZAKHSTAN	SRI LANKA
UNITED STATES	FRANCE	MAURITIUS	BOTSWANA	KENYA
NETHERLANDS	PORTUGAL	POLAND	PERU	TANZANIA
LUXEMBOURG	TAIWAN	JAMAICA	TURKEY	MALAWI
AUSTRALIA	CZECH REPUBLIC	HUNGARY	INDIA	ZAMBIA
SWEDEN	MALTA	MALAYSIA	GEORGIA	BENIN
DENMARK	LITHUANIA	RWANDA	JORDAN	NICARAGUA
SINGAPORE	SPAIN	PANAMA	SERBIA	BURUNDI
BELGIUM	KOREA, REP.	CHILE	NORTH MACEDONIA	PARAGUAY
CANADA	SLOVENIA	AZERBAIJAN	GHANA	ETHIOPIA
ICELAND	CYPRUS	COLOMBIA	SENEGAL	EGYPT
GERMANY	ISRAEL	CROATIA	ARGENTINA	ALGERIA
	LATVIA	COSTA RICA	MOROCCO	MALI
	SLOVAKIA	BULGARIA	GREECE	KINGDOM OF ESWATINI
	ITALY	THAILAND	HONDURAS	IRAN
	CHINA	TRINIDAD & TOBAGO	MOLDOVA	KUWAIT
		DOMINICAN REP.	VIETNAM	PHILIPPINES
		BRAZIL	EL SALVADOR	BOLIVIA
		RUSSIA	UKRAINE	ZIMBABWE
		OMAN	ALBANIA	GABON
		ARMENIA	BOSNIA & HERZEGOVINA	UGANDA
			GUATEMALA	MADAGASCAR
			BURKINA FASO	LEBANON
			BRUNEI DARUSSALAM	CÔTE D'IVOIRE
			NEPAL	PAKISTAN
				CONGO, DEM. REP.
				NIGERIA
				CAMEROON
				CHAD

TOP 20 PERCENT	2ND QUINTILE	3RD QUINTILE	4TH QUINTILE	BOTTOM 20 PERCENT
				VENEZUELA, BOL. REP.
				MAURITANIA
				ANGOLA
				BANGLADESH
				YEMEN, REP.
				HAITI

Figure 18. 2021 IPRI-GE Ranking by Quintiles.

CRITERIA	GROUP	IPRI-GE	GE
GROUPS REGIONAL	A	3.628	5.848
	AO	5.210	6.891
	CEECA	5.105	8.263
	LAC	4.326	7.867
	MENA	4.208	4.933
	NA	7.522	9.107
	WE	7.061	9.256
GEOGRAPHICAL REGIONS	European Union	6.437	9.015
	Rest of Europe	5.132	8.173
	Africa	3.860	5.689
	North America	6.563	8.619
	Central America and the Caribbean	4.345	8.000
	South America	4.274	7.757
	Asia	4.699	6.124
	Oceania	7.820	9.571
INCOME (WORLD BANK, JULY2020)	High income	6.303	8.291
	Upper middle income	4.455	7.359
	Lower middle income	3.613	5.733
	Low income	3.368	6.282

CRITERIA	GROUP	IPRI-GE	GE
REGION & DEVELOPMENT (IMF, APRIL 2021)	Advanced economies	6.864	9.058
	Commonwealth of Independent States	4.705	8.071
	Emerging and Developing Asia	4.024	5.679
	Emerging and Developing Europe	4.715	8.000
	Latin America and the Caribbean	4.326	7.867
	Middle East and Central Asia	3.950	4.748
	Sub-Saharan Africa	3.368	5.956
REGIONAL INTEGRATION AGREEMENTS	OECD	6.652	8.835
	EU	6.437	9.015
	SADC	3.787	6.196
	ECOWAS	3.674	6.163
	ASEAN	4.700	6.143
	PARLACEN	4.357	8.357
	GCC	4.775	4.583
	AP	4.840	7.768
	MERCOSUR	4.572	7.696
	SAARC	3.545	5.229
	CEMAC	2.855	4.333
	MCCA	4.248	7.629
	CIS	4.610	8.155
	ARAB M UNION	3.556	4.536
	OPEC	3.533	5.443
	CARICOM	4.100	7.810
	CAN	4.207	8.071
	EFTA	7.669	9.548
	IGAD	3.531	5.405
	USMC	6.563	8.619
	CEEAC	3.216	5.503
	TPP-11	5.925	7.708
	PROSUR	4.489	7.592

Table 8. 2021 IPRI-GE and GE Groups.

IPRI & TAXES

Economic theories, and in particular the well-known Laffer's theory, affirm that a certain threshold of taxation should not be crossed: when taxes are excessively high, individuals find less utility in their investments and jobs, deciding to reduce their interest in these activities by prioritizing leisure or trying to avoid paying such a high level of taxes. In these cases, an increase in the tax rate would at some point mean a reduction in revenue. In the opposite case, a reduction in income tax rates encourages people to increase their dedication to work and to climb up the wage ladder. Explained with another angle: a static analysis of the excessive increase of taxes would show an increase in revenues, but a dynamic analysis shows how it produces a reduction in revenues.

On the other hand, property rights—as well as the rest of the rights and guarantees—could not be sustained without a rule of law to support it and without a judicial system to watch over it, which entails costs that are managed by public administration and assumed through tax collection.

Both property rights and the principle of the necessity of taxes have legal value, and under these conditions, the confiscatory nature of a legislative tax policy requires reconciling both rights. Otherwise, it would be a case of arbitrary dispossession or excessive deprivation of the property right; or in the opposite case, a breach of duty to contribute to the functioning of the public administration.

This leads to a proper reflection and evaluation of the relationship between the right of

States to impose taxes on the private property rights of citizens, especially given the fiscal voracity observed in many governments obviating the temporal limits of their objectives and management, generating impacts and distortions beyond their terms to be endured by future generations.

According to the OECD, property taxes are defined as those recurrent and non-recurrent taxes on the use, ownership, or transfer of property. These include taxes on real estate or net worth, taxes on change of ownership by inheritance or gift, and taxes on financial and capital transactions. This indicator relates to the government as a whole (all levels of government) and is measured as a percentage of both GDP and total taxation.

It is undisputable that any level of taxation as a property tax (PT) implies a constraint and restriction. By virtue of the above, an adjustment to the IPRI for this concept is made below. To account for these impacts, we extend the IPRI using data on property tax revenues as a % of total taxes revenues, from the OECD, as follows:

$$IPRI - PT = IPRI - [(IPRI/100 * PT)]$$

Results show that on average the IPRI-PT score for these countries is 5.62% lower than its IPRI value, some of them with a reduction over 12%. The UK, the USA, Canada, the Rep. of Korea, and Israel at over 10% show the highest negative impact, while Estonia and Lithuania the lower ones (less than 1%).
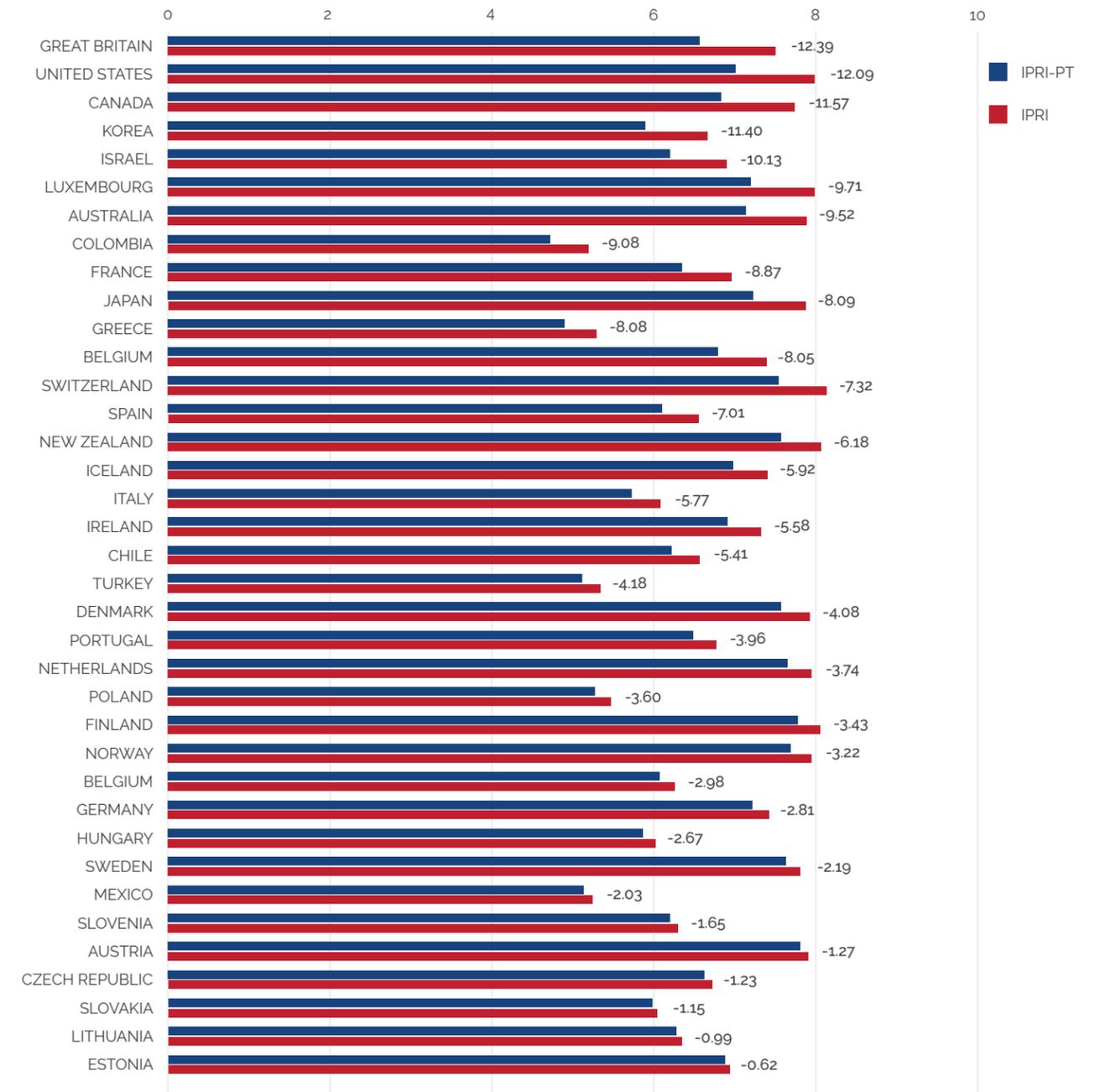
Figure 19. IPRI 2021 vs IPRI-PT 2021. OECD Countries.

2021 IPRI & LIVING ENVIRONMENT

Extensive literature informs of the virtuous ecosystem to which the respect for property rights belongs, favoring the enhancement of the quality of life of citizens in the present and future. Therefore, we examined different items to evaluate possible correlations with the IPRI, drawing empirically based conclusions. Those indices were gathered in three (3) groupings:

» Socio-economic Environment

» Institutional Environment

» Emerging Environment

For correlations, we used Pearson's Correlation Coefficient, which is a measure of linear dependence between two variables, to evaluate their associations with the IPRI and its components.

The tranches or correlation ranges are as follow: None [0], Weak (0 - 0.3), Soft [0.3 - 0.5), Moderate [0.5 - 0.6], Good [0.6 - 0.8], Strong [0.8 – 1), Perfect [1].

I. SOCIO-ECONOMIC ENVIRONMENT

The Socio-economic Environment captures the material conditions people have in their daily life. To grasp this situation, five items were included in four categories:

» **Production**: Using Gross Domestic Product (GDP)[10] in constant USD (2010=100) in *per capita* terms and also adjusted by the Gini Coefficient.[11] Adjusting the GDP by the Gini coefficient was considered to capture income inequality (Data Source: World Bank and UN DESA).

» **Investment**: Using Gross Capital Formation in current USD and *per capita* terms, which consists of outlays in addition to the fixed assets of the economy plus net changes in the level of inventories (Data Source: World Bank and UN DESA).

» **Social Gap**: Using the global Multidimensional Poverty Index, that measures the complexities of poor people's lives, individually and collectively, each year; and provides a comprehensive picture of global trends in multidimensional poverty. This index was launched in 2010 by the Oxford Poverty and Human Development Initiative at the University of Oxford and the Human Development Report Office of the U.N. Development Program for the flagship Human Development Reports, the global Multidimensional Poverty Index (MPI) measures the complexities of poor people's lives, individually and collectively, each year Data Source: http://hdr.undp.org/).

» **Productive Drive**: Using the Global Competitiveness Index, WEF and Columbia University measures those institutions and policies that promote economic sustainability and prosperity in the short and medium term. This encompasses elements that promote productivity. The GCI is a compound index calculated with 103 items in 12 pillars and gathered in 4 sub-indices. (Data Source: http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf).

	GDP (constant, *per capita*)	GDP (constant, *per capita*) * GINI	GROSS CAPITAL FORMATION (current, *per capita*)	MULTIDIMENSIONAL POVERTY INDEX	GLOBAL COMPETITIVENESS INDEX
IPRI	0.815	0.808	0.781	-0.502	0.924
LP	0.825	0.802	0.797	-0.436	0.876
PPR	0.627	0.637	0.619	-0.434	0.817
IPR	0.801	0.815	0.742	-0.416	0.897

Table 9. Pearson's Correlation Coefficients.

Correlation results showed expected signs and relevant levels with the IPRI and its components, pointing to property rights as building blocks of a healthy and dynamic Socio-economic Environment.

GDP *per capita* and the GDP adjusted by the Gini Coefficient show strong correlations with the IPRI, the LP, and the IPR component, and a good correlation for the PPR component. For PPR and IPR, correlations increased slightly when adjusted by the Gini coefficient, which is a measure of dispersion or inequality.

Domestic investments (Gross Capital Formation) showed good correlations with the IPRI and its components, the highest being the LP (0.786) component, followed by the IPRI (0.772), IPR (0.718), and PPR (0.602). On the other hand, Foreign Investment showed a soft correlation being more relevant for the LP (0.460) followed by the IPRI (0.428).

Correlation with MPI showed moderate levels for the IPRI and its components.

The Global Competitiveness Index showed strong correlation levels, particularly with the IPRI: 0.924.

Figures 20a and 20b show the best-fit curve for the IPRI and its components with each element considered for the Socio-economic Environment analysis and the coefficients of determination (R²).[12] Figure 19a displays the relationship with a demographic perspective. The relevant proportion of the population (represented by the radius of each circle) live in countries of middle level IPRI and low to mid economic results.

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10. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It was calculated without making deductions for depreciation or for depletion and degradation of natural resources.

11. The Gini Coefficient is a statistical measure of the degree of variation represented in a set of values.

12. The coefficient of determination (R²) represent the proportion of the variance in the dependent variable that is predictable from the independent variable. It ranges from 0 to 1.
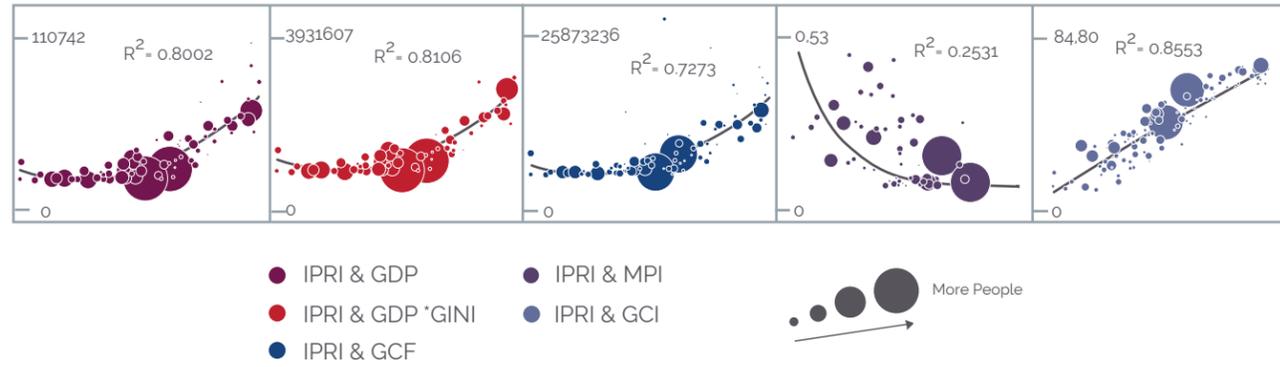
Figure 20a. Socio-economic Environment Items and IPRI Correlations (w/ demographic impact).

On average, countries in the top quintile of IPRI scores (i.e. top 20%) show a *per capita* income almost 19 times that of the countries in the bottom quintile. That disparity is higher than the last two years, while lower if compared with 2015 when it was almost 24 times (see Fig 21). Statistics are based on the averages of IPRI-2021 scores and corresponding data on average GDP *per capita* in USD constant terms (2010=100, source: World Bank data) for the last available year. These results reinforce the significant, positive relationship between prosperity and a property rights system.

Figure 21. Average Income per capita by 2021-IPRI Quintiles.
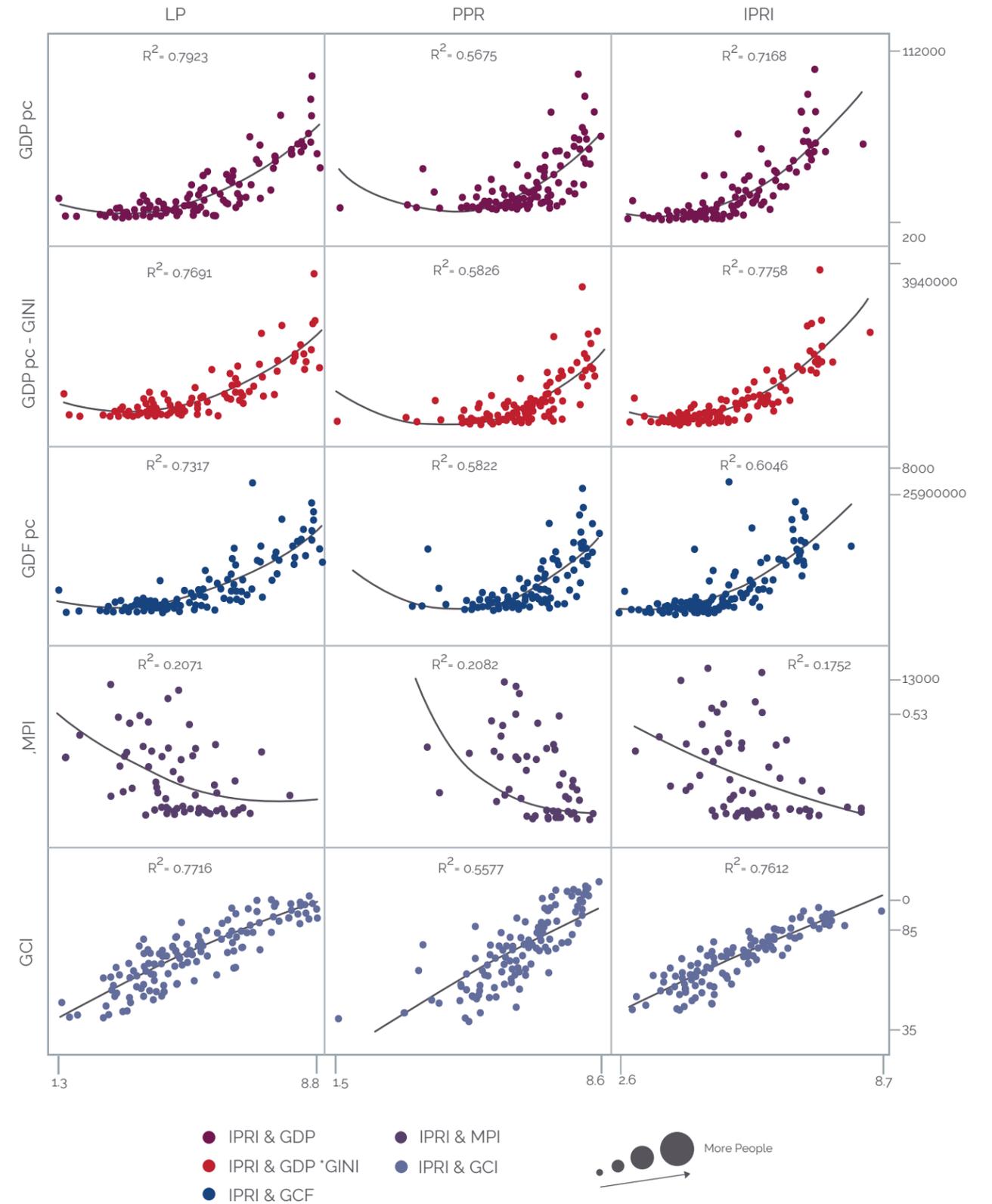
Figure 20b. Socio-economic Environment and IPRI Components' Correlations.

	ECONOMIC FREEDOM OF THE WORLD (FRASER)	THE GLOBAL ILLICIT TRADE ENVIRONMENT INDEX	CORRUPTION PERCEPTION INDEX
IPRI	0.748	0.897	0.935
LP	0.723	0.879	0.975
PPR	0.679	0.737	0.745
IPR	0.690	0.889	0.858

Table 10. Pearson's Correlation Coefficients.

II. INSTITUTIONAL ENVIRONMENT

Achieving performance is the result of creative actions in favorable environments that allow the emergence of positive and fertile synergies. Institutions or "rules of the game", infrastructure, facilities, easiness of orchestration, and professional know-how, are some of these essential elements for production and its positive benefit for the whole society. On the other hand, the absence of the *Rule of Law* allows the emergence of perverse circles, where corruption, an underground economy, and illicit trade takes place.

In this section, we include three elements for their evaluation with the IPRI and its components:

» *Economic Freedom*: Using the Fraser Institute's Economic Freedom of the World Index which measures the degree to which policies and institutions of countries are supportive of economic freedom.

» *Illicit Environment*: For this, we used two measurements:

- The *Global Illicit Trade Environment Index*, calculated by the Transnational Alliance to Combat Illicit Trade (TRACIT. ORG) with the EIU-The Economist (Data source: https://www.tracit.org/global-illicit-trade-). The index evaluates countries by their structural capacity to protect themselves from illegal trade, highlighting specific strengths and weaknesses. Their recommendations are addressed in four categories: Government Policy, Demand/Supply, Transparency and Trade; and Tariffs Environment.

- The *Corruption Perception Index* aims to capture the informed opinions of analysts, businessmen, and experts all over the world about public sector corruption. Its scale goes from 0 (highly corrupted) to 100 (transparent). This index is calculated by Transparency International (Data source: http://www.transparency.org/research/cpi/overview).

As shown in Table 10, the higher correlation coefficients resulted with those measurements considering illicit trade, first with the Corruption Perception Index, followed by the Global Illicit Trade Environment Index, in both cases with strong correlations; meaning that the stronger the property rights system, the lower the illicit environment in the country. Simultaneously, the correlation with economic freedom was strong.

Figures 22a and 22b show the best-fit curve for the IPRI and its components with each element considered for Institutional Environment analysis with their coefficients of determination (R^2).[13] Figure 22a displays the relationship with a demographic perspective. The relevant proportion of the population, represented by the radius of each circle, live in countries of middle-level IPRI and low to mid economic results.

IPRI & EFU
IPRI & GITEI, TRACIT
IPRI & CPI

More People
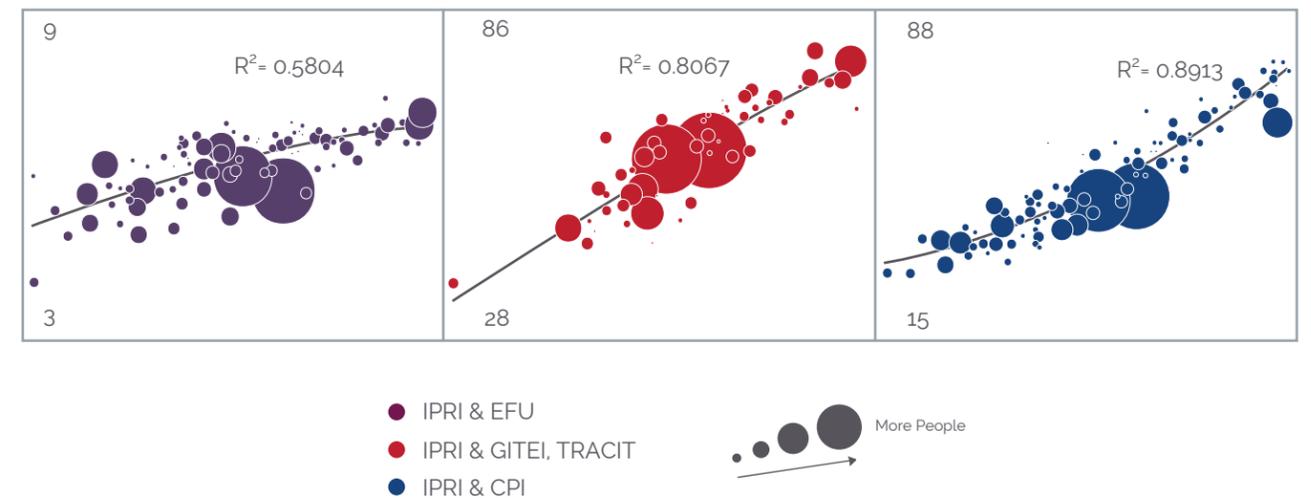
Figure 22a. Institutional Environment and IPRI Correlations (w/demographic incidence).

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13. The coefficient of determination (R^2) represents the proportion of the variance in the dependent variable that is predictable from the independent variable. It ranges from 0 to 1.
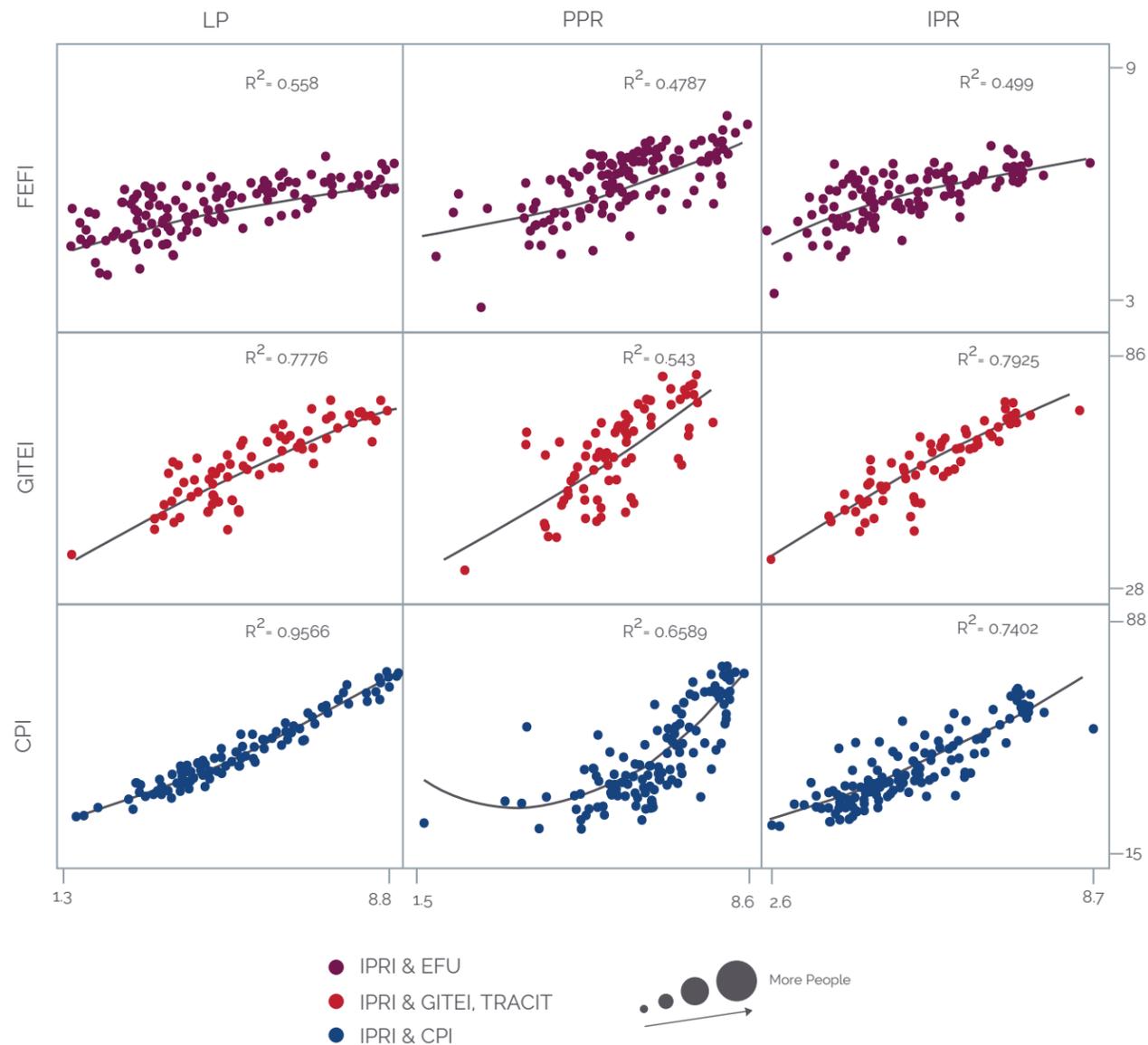
Figure 22b. Institutional Environment and IPRI Correlations (w/demographic incidence).

III. EMERGING ENVIRONMENT

The 21st century is full of transformations where information and telecommunications are fundamental parts of our daily life, shaping our economic behavior, allowing us to share our assets in a tailor-made structure thanks to online platforms. It also transforms the process of creation and innovation where working teams can be located all over the world, including the best and more specialized academics to address problems.

This leads us to evaluate the appropriateness, competence, and relevance of property rights systems for the new emergent society. With this in mind, we examined the relationship of the IPRI and its components with:

» **Innovation Capabilities**: We used two indices for this category:

• The *Global Innovation Index* (Cornell University, INSEAD, and the World Intellectual Property Organization) aims to capture multidimensional facets of innovation, assessing the capacity of countries for success. It relies on two sub-indices – the Innovation Input Sub-Index and the Innovation Output Sub-Index – each built around different key pillars.

• *Global Biotech Innovation Index* (by ThinkBiotech): Given the relevance of biotechnology and its broad impact on economies and policies, innovation can impact the quality of life. We included this measure of innovation in biotech for 54 countries (53 are included in this IPRI edition). Its methodology includes seven (7) categories (productivity, intellectual property protection, intensity, enterprise

support, education/workforce, foundations, and policy & stability).

» **Connectivity Practice**: We used the *Networked Readiness Index*, NRI, (The World Economic Forum, INSEAD) which measures the propensity for countries to exploit opportunities offered by ICT. It is a composite index made up of four main categories, 10 subcategories, and 53 individual indicators as follows: [1] Environment (political and regulatory environment, and business and innovation environment); [2] Readiness (infrastructure, affordability, and skills); [3] Usage (individual usage, business usage, and government usage); [4] Impact (economic impact and social impact).

» **New Economic Practices**: We included the *Timbro Sharing Economy Index*. The index has been compiled using traffic volume data and scraped data and provides a unique insight into the driving factors behind the peer-to-peer economy, while teasing out some of the most important drivers of capitalism itself. The global index tests several hypotheses on the correlation between the development of the sharing economy and regulatory context. (Data source: https://timbro.se/in-english/).

As shown in Table 11, the highest correlation coefficient of the IPRI is with Global Biotech Innovation, followed by the Networked Readiness Index and the Global Innovation Index. For these three indices, IPRI, LP, and the IPR component showed strong correlations, and PPR showed good correlations. Results for the Timbro Sharing Economy Index even positive were soft.

	GLOBAL BIOTECH INNOVATION	GLOBAL INNOVATION INDEX	NETWORK READINESS INDEX	TIMBRO SHARING ECONOMY INDEX
IPRI	0.929	0.876	0.915	0.431
LP	0.869	0.827	0.884	0.478
PPR	0.773	0.717	0.795	0.318
IPR	0.918	0.898	0.901	0.378

Table 11. Pearson's Correlation Coefficients.

Figures 23a and 23b show the best-fit curve for the IPRI and its components with each element considered for emergent environment indicators' analysis and their coefficients of determination (R²).[14] Figure 23a displays the relationship with a demographic perspective. The relevant proportion of the population (represented by the radius of each circle) live in countries of middle-level IPRI and low to mid economic results.
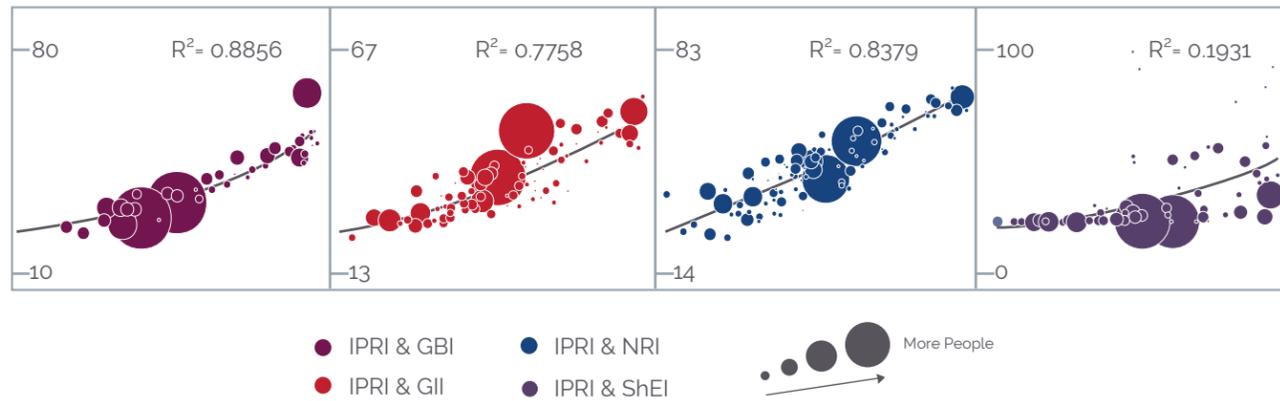
Figure 23a. IPRI Correlations with Emerging Environment Items (w/ demographic incidence).

14. The coefficient of determination (R²) represents the proportion of the variance in the dependent variable that is predictable from the independent variable. It ranges from 0 to 1.
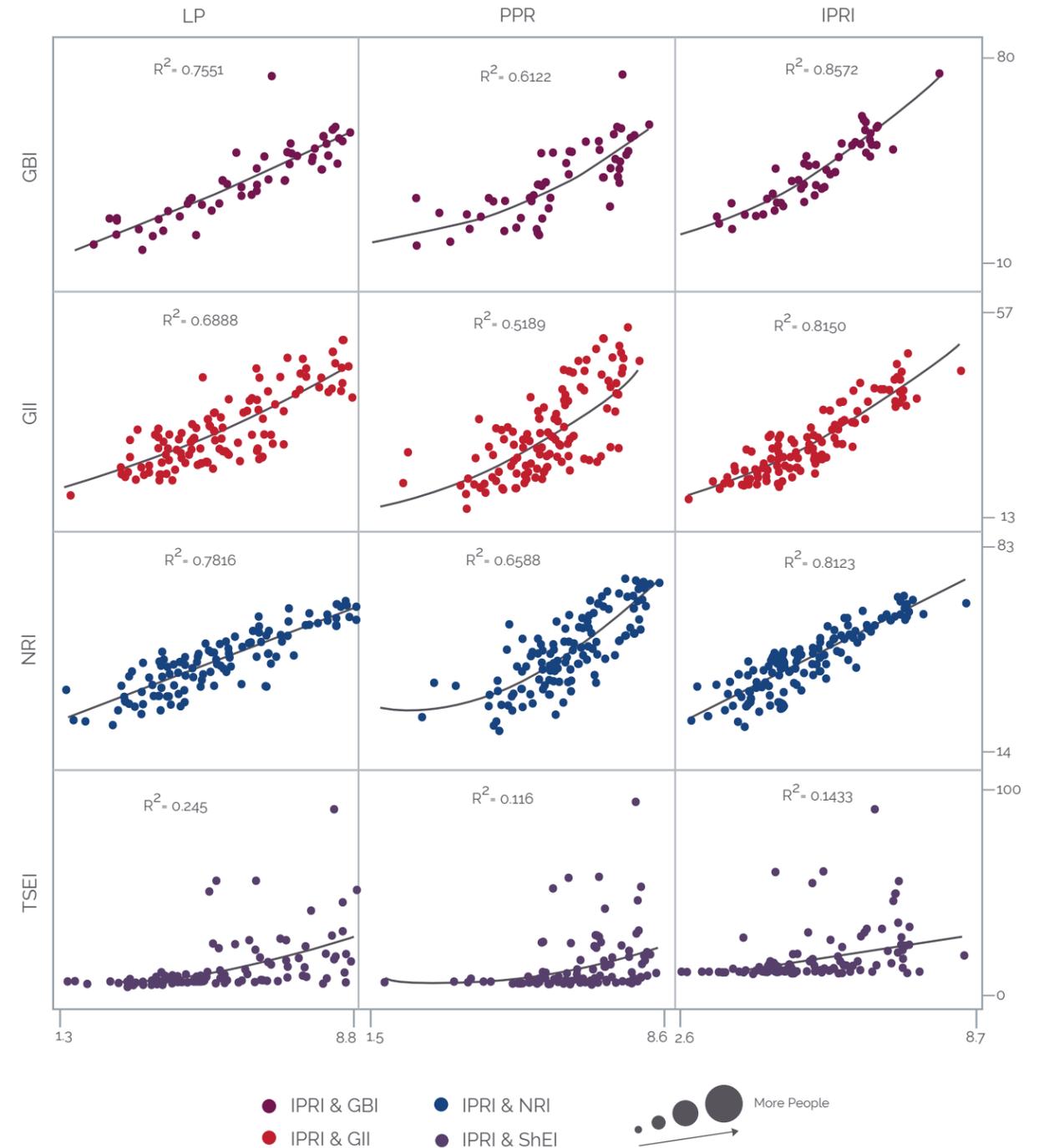
Figure 23b. IPRI Components Correlations with Emerging Environment Indicators.

CLUSTER'S ANALYSIS

The cluster analysis is useful for gathering similar entities into groups based on pre-defined indicators. We performed a cluster analysis for all the 129 countries according to their values in the IPRI components (LP, PPR, and IPR). Then a group of illustrative variables – GE, IPRI-GE, and those used to evaluate correlations – were included contributing to describe each cluster, but not influencing cluster conformation.

In order to seize variability in the analysis – given the great differences among countries in the IPRI – we used Ward's Method with squared Euclidean distance that group countries with minimal loss inertia.

We applied a Principal Component Analysis (PCA) for handling variables by factors, given the high correlation among them. The results of the PCA express that the three components of the IPRI (LP, PPR, and IPR) define a dimension called IPRI, which collects 87.2% of inertia. The second and third factors – with inertias of 8.77% and 4.03% respectively – are the residue of inertia. These entities do not contribute to the first-factor inertia and are generally very close to the origin of the first factor. They could be subdivided into groups more associated with the PPR dimension, defining the second factor, and those more associated with LP and IPR defining the third factor. Next, we used the mobile center's algorithm to show inertia within groups and the criteria to decide the optimal number of classes or clusters.

CLUSTER	INERTIA	COUNTRIES	DISTANCE OF CENTROIDS TO (0,0)	COORDINATES OF CENTROIDS		
				FACTOR 1	FACTOR 2	FACTOR 3
Between-clusters	2.17774					
Within cluster						
Cluster 1/3	0.20285	24	4.76574	-7.23517	-3.01415	-0.92110
Cluster 2/3	0.28603	60	0.28152	-3.26861	3.44272	1.49121
Cluster 3/3	0.33338	45	3.32576	9.32820	-1.14185	-0.80857

Table 12. Cluster's Analysis.

The analysis showed that three clusters were appropriate to explain the grouping of countries; more specifically, observed inertia within each group does not exceed inertia among groups. Clusters are as shown in Table 13 and illustrated in Figure 24.

For a second consecutive year, all clusters' centroids moved to the left:

CLUSTER	2019	2020	2021
Cluster 1	(-1.32, 0.04)	(-1.89, -0.15)	(-2.16, -0.29)
Cluster 2	(0.45, 0.03)	(-0.21, 0.14)	(-0.5, 0.17)
Cluster 3	(2.54, -0.15)	(2.16, -0.11)	(1.82, 0)

This is an important alert that should be considered carefully.

COUNTRIES					
CLUSTER 1		CLUSTER 2		CLUSTER 3	
ALBANIA	KUWAIT	ANGOLA	AUSTRALIA		LITHUANIA
ALGERIA	LEBANON	BANGLADESH	AUSTRIA		LUXEMBOURG
ARGENTINA	MALAWI	BENIN	BAHRAIN		MALAYSIA
ARMENIA	MEXICO	BOLIVIA	BELGIUM		MALTA
AZERBAIJAN	MOLDOVA	BRUNEI DARUSSALEM	CANADA		MAURITIUS
BOSNIA & HERZEGOVINA	MONTENEGRO	CAMEROON	CHILE		NETHERLANDS
BOTSWANA	MOROCCO	CHAD	CHINA		NEW ZEALAND
BRAZIL	NEPAL	CONGO, DEM. REP.	CYPRUS		NORWAY
BULGARIA	NORTH MACEDONIA	CÔTE D'IVOIRE	CZECH REPUBLIC		OMAN
BURKINA FASO	PANAMA	ETHIOPIA	DENMARK		PORTUGAL
BURUNDI	PARAGUAY	GABON	ESTONIA		QATAR
COLOMBIA	PERU	HAITI	FINLAND		SAUDI ARABIA
COSTA RICA	PHILIPPINES	IRAN	FRANCE		SINGAPORE
CROATIA	POLAND	MADAGASCAR	GERMANY		SLOVENIA
DOMINICAN REPUBLIC	ROMANIA	MALI	HONG KONG		SPAIN
ECUADOR	RUSSIA	MAURITANIA	ICELAND		SWEDEN
EGYPT	RWANDA	MOZAMBIQUE	IRELAND		SWITZERLAND
EL SALVADOR	SENEGAL	NICARAGUA	ISRAEL		TAIWAN
GEORGIA	SERBIA	NIGERIA	ITALY		UNITED ARAB EMIRATES
GHANA	SLOVAKIA	PAKISTAN	JAPAN		UNITED KINGDOM
GREECE	SOUTH AFRICA	VENEZUELA, BOLIVIAN REP.	JORDAN		UNITED STATES
GUATEMALA	SRI LANKA	YEMEN, REP.	KOREA, REP.		URUGUAY
HONDURAS	TANZANIA	ZAMBIA	LATVIA		
HUNGARY	THAILAND	ZIMBABWE			
INDIA	TRINIDAD & TOBAGO				
INDONESIA	TUNISIA				
JAMAICA	TURKEY				
KAZAKHSTAN	UGANDA				
KENYA	UKRAINE				
KINGDOM OF ESWATINI	VIETNAM				

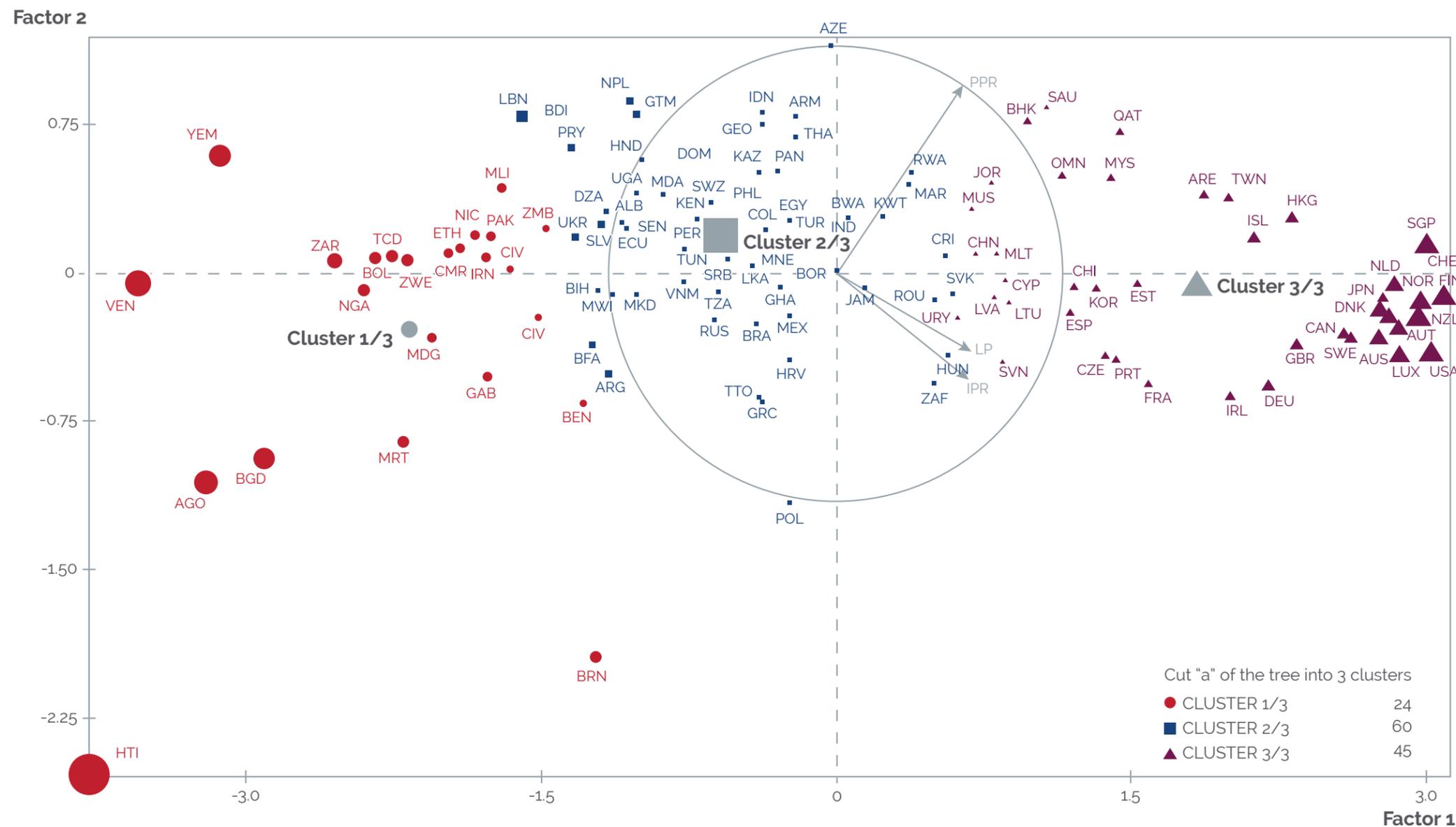*Table 13. Cluster's Members (ordered alphabetically).*

Figure 24. Clusters' Members and Centroids.

Although the first factor contains 87.2% of inertia, which is enough to illustrate the formation of clusters, Figure 24 illustrates Factors 1 and 2 as well as the three clusters' centroids (yellow). The size of the centroid reveals the number of countries in the cluster. Cluster 1(red) displays countries located in the more negative coordinates of the first factor; this includes countries with low values of the LP, PPR, and IPR. Cluster 2 (green) includes countries placed neighboring the origin, showing average values of the LP, PPR, and IPR. Cluster 3 (blue) contains countries located on the most positive coordinates of the first factor, and its members are linked to high values of the LP, PPR, and IPR.

The second factor consists mostly of countries in Cluster 2, including those whose scores are very close to the average, neighboring between Cluster 2 and Cluster 1, and those neighboring Cluster 2 and Cluster 3. Cluster 1 and Cluster 3 are outright opposites.

Besides the clusters, Figure 24 also shows the contribution of each country explaining inertia gathered by the factors: the bigger the dot size for the country, the higher its contribution. Very close countries express their similarities and differences as the distance increases.

In the central circle we find those countries that have no-statistically significant contribution to the definition of the factors, and, as it has already been mentioned, they are close to the average and are mostly members of Cluster 2.

In addition, arrows represent each of the three dimensions of the IPRI. Their direction specifies the relationship with individuals, i.e., countries in the same direction of a vector show a higher relationship with this dimension; and vice versa.

Subsequently, clusters' composition using income, population, participation in economic and regional integration agreements, and regional and development criteria are shown in Figure 25 (a, b, c, d), where font size represents the frequency of groups in the cluster. Each cluster analysis helps to depict features of its country's members. Additional statistics are shown in Appendix IV, V, VI, and VII.
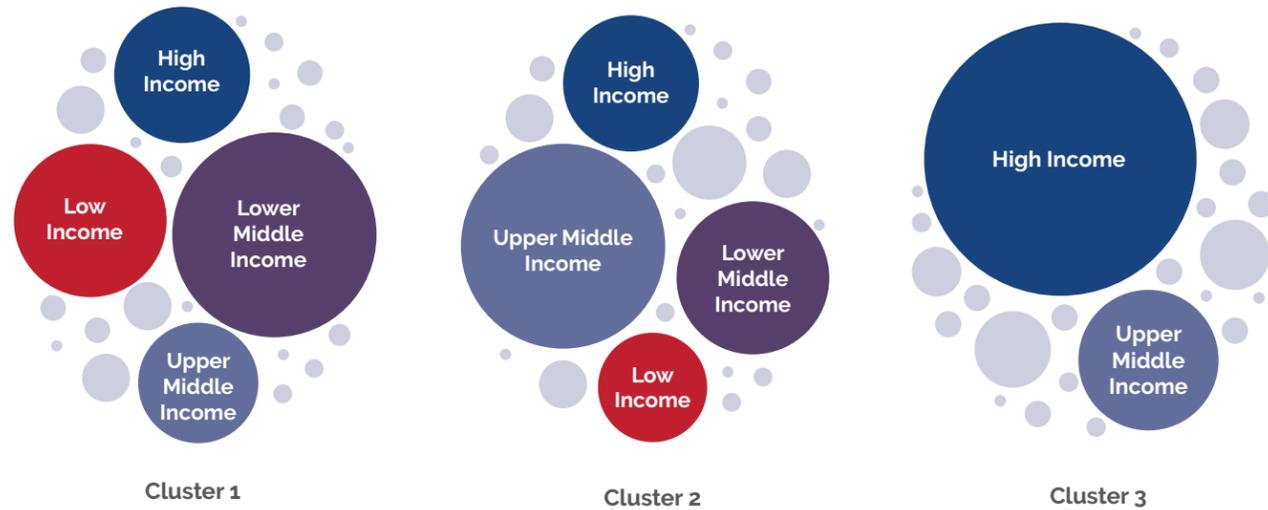
Figure 25a. Clusters' Composition by Income Classification.

Figure 25c. Clusters' Composition by Economic and Regional Integration Agreements..

Figure 25b. Clusters' Composition by Regional and Development Criteria.
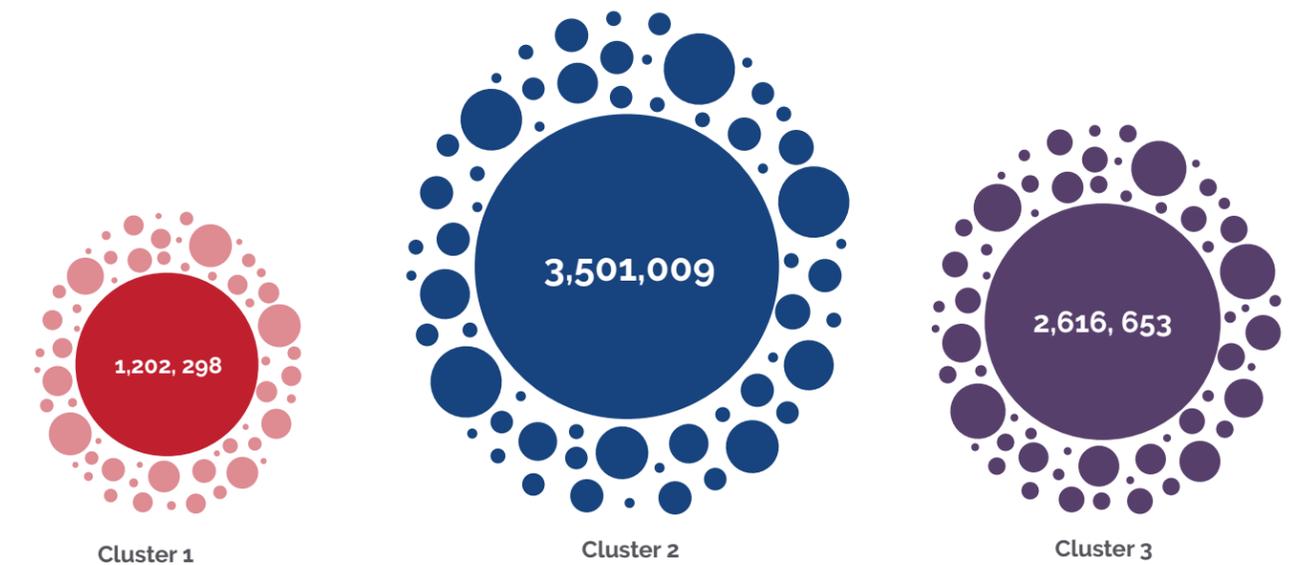
Figure 25d. Clusters' Composition and Population Weight (thousands).

I.   CLUSTER DESCRIPTION

CLUSTER 1

Cluster 1 is composed of 24 countries with a combined population of more than 1.2 billion people. The closest country to its centroid is Madagascar, followed by Nigeria, Zimbabwe, Bolivia and Chad. Haiti is by far the most remote country of the cluster's centroid, followed by Brunei Darussalam, the Bolivarian Rep. of Venezuela, Angola, and the Rep. of Yemen.

A close look at the coordinates of the countries of Cluster 1 reveals that Zambia is the closest to the Cluster 2 centroid. Looking simultaneously at Cluster 1 and Cluster 2, the closest countries from Cluster 1 to Cluster 2 are Zambia to Ukraine and Benin to Argentina, meaning similarity in conditions (see Fig. 24).

Countries in Cluster 1 are statistically significant for low scores in LP, PPR and IPR components. The same is true for the IPRI-GE. Cluster 1 countries also show low levels in all the dimensions we analyzed; that is, they show poor performances in the indices for Socio-economic, Institutional and Emerging Environments. This is the result of a lack of or inappropriate policies to improve key elements for progress and development.

Using the regional and development criteria of the IMF and the income criteria of the World Bank, the Sub-Saharan Africa group and the Low income, Lower-Middle Income countries are highly represented in this cluster. The Southern African Development Community (6/12 members) is the most common economic and regional integration agreement in this cluster, followed by the Organization of the Petroleum Exporting Countries (5/10 members), the Economic Community of West African States (5/7 members), and the Economic Community Of West African States (4/7 members).

CLUSTER 2

Cluster 2 is composed of 60 countries with a combined population of more than 3.5 billion people. The closest country to its centroid is Serbia, followed by Tunisia, the Kingdom of Eswatini, Sri Lanka, and Tanzania. Poland is the farthest country from the centroid, followed by Hungary, South Africa, Lebanon, and Botswana. Figure 24 illustrates that Burkina Faso, Ukraine, and Bosnia Herzegovina are the closest countries to the Cluster 1 centroid. Slovakia is the closest country to Cluster 3. The closest countries between Clusters 2 and 3 are South Africa (Cluster 2) to Italy (Cluster 3), and Slovakia and Romania (Cluster 2) to Uruguay (Cluster 3).

Using the regional and development criteria of the IMF, Latin America and the Caribbean, Sub-Saharan Africa, and Emerging and Developing Europe are highly represented in this cluster; whereas, by the income criteria of the World Bank, the Upper Middle-Income and Lower Middle-Income countries represent over 75% of the cluster. Following the perspective that focuses on economic and regional integration agreements, we can see that the European Union (with 7/28 members), The Forum for the Progress and Development of South America (6/7 members), and Commonwealth of Independent States (6/6 members) have the highest frequency in Cluster 2.

CLUSTER 3

Cluster 3 is composed of 45 countries showing a combined population of more than 2.6 billion people. The closest countries to its centroid are the United Arab Emirates, Israel, Taiwan, Portugal, and Estonia. The farthest country of the group is the United States of America, followed by Uruguay, Italy, Mauritius, and China. Uruguay, Italy, China, and Mauritius are the closest countries to Cluster 2.

Compared to Cluster 1, countries belonging to Cluster 3 exhibit opposite results: all the variables are significant, with positive and high values, showing good performances in the indices used to evaluate Socio-economic, Institutional, and Emerging Environments.

Using the regional and development criteria of the IMF, Advanced Economies are highly represented in this cluster. By the income criteria of the World Bank, the High-Income group represents 91% of this cluster. Looking at economic and regional integration agreements, the OECD (30/36 members) and the European Union are highly represented in Cluster 3 (21/28 members). They are followed by the Trans-Pacific Partnership (7/11 members), Gulf Cooperation Council (5/6 members), and all the EFTA members (3/3). Data suggest that most of the chosen integration agreements show heterogeneity in terms of the strength of property rights systems among their members. In the presence of homogeneity, it would be easier for an integration agreement to promote common policies to enhance the strength of property rights. Simultaneously, heterogeneity could be also seen as an opportunity, as policies could be targeted to specific members of the agreement. On the other hand, integration agreements showing members in just one cluster reveal homogeneity amongst their countries' property rights systems. Even those agreements participating in two clusters show members in cluster boundaries and could be seen as a possible transition from one cluster to the other.

It is important to highlight that the two most populated countries in the world, India and China, are members of Clusters 2 and 3 respectively, but both of them are located very close to the origin of the factors' axes, this produces results that are not significant for most of the variables. In this sense, their results are very close to the averages.

As conclusions of the cluster analysis, we found that:

» Each cluster represents more than a grouping by variables directly associated with property rights. They are groups with common characteristics within them and with different features among clusters. This confirms the consistency of the IPRI and the relevance of property rights systems influencing societies.

» Cluster 1 and Cluster 3 are two extreme poles in terms of the performance of their economies, their institutions, and their innovation, as well as their IPRI scores.

» Cluster 2 statistical values reflected its intermediate positions and depending on the decisions taken in the present and near-future of each country, will be inclined to one of the two polar classes. Those countries that keep their position very close to Cluster 1 should revise their policies regarding property rights; but as had been shown, also in other dimensions to improve their performance and the well-being of their citizens.

» Countries in Cluster 1 should make efforts to strengthen their legal and political environment to protect physical and intellectual properties, which are still weak, in order to improve the quality of life in their societies.

» Countries in the boundaries between two clusters have to make special efforts to mind the gap, which will place them at a higher level.

» Specific analyses of countries and of groups of them related to their cluster are a rich, open vein for future investigations.

FINAL THOUGHTS

The International Property Rights Index in its 15th edition shows regularity with previous ones, allowing us to say that it has a proper structure for monitoring the performance of property rights systems and its relationship to societies' prosperity globally, regionally, and within countries.

IPRI 2021 edition includes 129 countries representing 93.91% of the world population and 97.73% of the world GDP, with an average score of 5.603 (Max. 8.148; Min. 2.647) showing, for a consecutive third year, a decrease from the previous edition. Results keep suggesting that countries with high IPRI scores and its components also show high income and high development levels, indicating the positive relationship between a property rights regime and the quality of life.

IPRI 2021 report includes the calculation and analysis of IPRI-GE, now scaled (0-10) and redefined allowing to show the reach of property rights systems for all citizens regardless of their gender. The IPRI-POP reveals the impact of countries' demographic weight, and this year includes the IPRI-PT, illustrating the impact of property taxes constraining property rights.

This edition includes 11 indicators gathered in three groups: Socio-economic, Institutional, and Emerging Environments, which were contrasted with the IPRI and its components. Results show the relevance of property rights systems and their association with the best performances and practices in societies.

We included a cluster analysis in order to gather countries in groups by their homogeneity. Therefore, the 129 countries were classified according to their values in the IPRI components in three clusters. For a second consecutive year, all clusters' centroids moved to the left, being an upsetting and alarming sign. The analysis of clusters' centroids and countries by boundaries between groups provides important information about their characteristics and challenges. Cluster analysis also confirmed the consistency of the IPRI, since the assembled countries exhibited a high degree of homogeneity, showing the relevance of property rights systems in shaping societies.

APPENDICES

I. DATA SOURCE: IPRI 2021.

IPRI-2021	DATA	DOWNLOAD DATE	ORIGINAL SCALE	YEAR (DATA)	SOURCE	LINK
LEGAL AND POLITICAL ENFIRONMENT (LP)	Judicial Independence	Feb. 16, 2021	[1-7](best)	2019	World Economic Forum. The Global Competitiveness Index 4.0 2019 Dataset | Version 20191004	https://www.weforum.org/reports/global-competitiveness-report-2019
	Rule of Law	Feb. 16, 2021	[(-2,5) - (2,5)] best	2019	The Worldwide Governance Indicators 2019 (2020 update)	http://info.worldbank.org/governance/wgi/index.asp#home
	Political Stability	Feb. 16, 2021	[(-2,5) - (2,5)] best	2019	The Worldwide Governance Indicators 2019 (2020 update)	http://info.worldbank.org/governance/wgi/index.asp#home
	Control of Corruption	Feb. 16, 2021	[(-2,5) - (2,5)] best	2019	The Worldwide Governance Indicators 2019 (2020 update)	http://info.worldbank.org/governance/wgi/index.asp#home
PHYSICAL PROPERTY RIGHTS (PPR)	Physical Property Protection	Feb. 16, 2021	[1-7](best)	2019	World Economic Forum. The Global Competitiveness Index 4.0 2019 Dataset | Version 20191004	https://www.weforum.org/reports/global-competitiveness-report-2019
	Registering Property	Feb. 16, 2021	1-infinite (worst)	2019	World Bank Group. Doing Business	http://www.doingbusiness.org/custom-query
	Ease of Access to Loans	Feb. 16, 2021	[1-7](best)	2019	World Economic Forum. The Global Competitiveness Index 4.0 2019 Dataset | Version 20191004	https://www.weforum.org/reports/global-competitiveness-report-2019

IPRI-2021	DATA	DOWNLOAD DATE	ORIGINAL SCALE	YEAR (DATA)	SOURCE	LINK
INTELLECTUAL PROPERTY RIGHTS (IPR)	Intellectual Property Protection	Feb. 16, 2021	[1-7](best)	2019	World Economic Forum. The Global Competitiveness Index 4.0 2019 Dataset | Version 20191004	https://www.weforum.org/reports/global-competitiveness-report-2019
	Patent Protection	Feb. 12, 2021	[0-1](best)	2021	Patent Index 2021. Walter G. Park & Chrysa K. Kazakou	https://www.propertyrightsalliance.org/wp-content/uploads/Trademarks-and-Patent-Index.pdf
	Copyright Protection	Feb. 16, 2021	[0-100%] (worst)	2017	BSA Global Software Survey 2018	https://www.bsa.org/~/media/Files/StudiesDownload/2018_BSA_GSS_Report_en.pdf
	Trademark Protection	Feb. 16, 2021	[0-1](best)	2021	International Trademark Index 2021. Walter G. Park & Chrysa K. Kazakou	https://www.propertyrightsalliance.org/wp-content/uploads/Trademarks-and-Patent-Index.pdf
REGIONAL INTEGRATION AGREEMENTS	OECD	7.036	6.965	7.348	6.794	6.794
	EU	6.749	6.672	7.064	6.512	6.512
	SADC	4.669	4.092	5.617	4.297	4.297
	ECOWAS	4.528	3.853	5.512	4.219	4.219
	ASEAN	5.770	5.466	6.664	5.179	5.179
	PARLACEN	4.741	3.563	6.281	4.380	4.380
	GCC	6.507	6.149	7.796	5.576	5.576
	AP	5.497	4.497	6.469	5.525	5.525
	MERCOSUR	5.159	4.733	5.998	4.746	4.746
	SAARC	4.613	4.024	5.721	4.095	4.095
	CEMAC	3.977	2.927	5.071	3.934	3.934
	MCCA	4.845	3.890	6.244	4.399	4.399
	CIS	5.081	4.022	6.564	4.657	4.657
	ARAB M UNION	4.856	4.087	5.887	4.595	4.595
	OPEC	4.651	3.947	5.751	4.254	4.254
	CARICOM	4.579	4.280	4.553	4.904	4.904
	CAN	4.640	3.555	5.897	4.469	4.469
	EFTA	7.846	8.425	8.168	6.945	6.945
	IGAD	4.609	3.742	5.950	4.135	4.135
	USMC	7.002	6.206	7.404	7.397	7.397
	CEEAC	4.113	3.153	5.275	3.910	3.910
	TPP-11	6.642	6.591	7.076	6.258	6.258
	PROSUR	5.122	4.295	6.166	4.905	4.905

II. GROUPS CONFORMATION: IPRI 2021.

	GROUP	#	COUNTRIES
REGIONAL GROUP	A	28	Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Chad, Democratic Republic of Congo, Côte D'Ivoire, Eswatini, Ethiopia, Gabon, Ghana, Kenya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Nigeria, Rwanda, Senegal, South Africa, Tanzania, Uganda, Zambia Zimbabwe
	AO	19	Australia, Bangladesh, Brunei Darussalem, China, Hong Kong (SAR of China), India, Indonesia, Japan, Republic of Korea, Malaysia, Nepal, New Zealand, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan (China), Thailand, Vietnam
	CEECA	25	Albania, Armenia, Azerbaijan, Bosnia & Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Latvia, Lithuania, Macedonia, FYR, Moldova, Montenegro, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Turkey, Ukraine
	LAC	21	Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Domincan Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad & Tobago, Uruguay, Bolivarian Republic of Venezuela
	MENA	15	Algeria, Bahrain, Egypt, Iran, Israel, Jordan, Kuwait, Lebanon, Morocco, Oman, Qatar, Saudi Arabia, Tunisia, United Arab Emirates, Republic of Yemen
	NA	2	Canada, United States (USA)
	WE	19	Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom (UK)
GEOGRAPHICAL REGIONS	EUROPEAN UNION	28	Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom (UK)
	REST OF EUROPE	14	Albania, Armenia, Bosnia & Herzegovina, Georgia, Iceland, Macedonia, FYR, Moldova, Montenegro, Norway, Russia, Serbia, Switzerland, Turkey, Ukraine
	AFRICA	30	Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Chad, Democratic Republic of Congo, Côte D'Ivoire, Egypt, Eswatini, Ethiopia, Gabon, Ghana, Kenya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Nigeria, Rwanda, Senegal, South Africa, Tanzania, Tunisia, Uganda, Zambia, Zimbabwe
	NORTH AMERICA	3	Canada, Mexico, United States (USA)
	CENTRAL AMERICA AND THE CARIBBEAN	10	Costa Rica, Dominican Republic, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Nicaragua, Panama, Trinidad & Tobago
	SOUTH AMERICA	10	Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay, Bolivarian Republic of Venezuela
	ASIA	30	Azerbaijan, Bahrain, Bangladesh, Brunei Darussalam, China, Hong Kong (SAR of China), India, Indonesia, Iran, Israel, Japan, Jordan, Kazakhstan, Republic of Korea, Kuwait, Lebanon, Malaysia, Nepal, Oman, Pakistan, Philippines, Qatar, Saudi Arabia, Singapore, Sri Lanka, Taiwan (China), Thailand, United Arab Emirates, Vietnam, Republic of Yemen
	OCEANIA	2	Australia, New Zealand

	GROUP	#	COUNTRIES
INCOME CLASSIFICATION	HIGH INCOME	52	Australia, Austria, Bahrain, Belgium, Brunei Darussalam, Canada, Chile, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong (SAR of China), Hungary, Iceland, Ireland, Israel, Italy, Japan, Republic of Korea, Kuwait, Latvia, Lithuania, Luxembourg, Malta, Mauritius, Netherlands, New Zealand, Norway, Oman, panama, poland, Portugal, Qatar, Romania, Saudi Arabia, Singapore, Slovakia, Slovenia, spain, sweden, Switzerland, Taiwan (China), Trinidad & Tobago, United Arab Emirates, united kingdom (UK), United States (USA), Uruguay
	UPPER MIDDLE INCOME	34	Albania, Argentina, Armenia, Azerbaijan, Bosnia & Herzegovina, Botswana, Brazil, Bulgaria, China, Colombia, Costa Rica, Dominican Republic, Ecuador, Gabon, Georgia, Guatemala, Indonesia, Iran, Jamaica, Jordan, Kazakhstan, Lebanon, North Macedonia, Malaysia, Mexico, Montenegro, Paraguay, Peru, Russia, Serbia, South Africa, Thailand, Turkey, Bolivarian Republic of Venezuela
	LOWER MIDDLE INCOME	30	Algeria, Angola, Bangladesh, Benin, Bolivia, Cameroon, Côte D'Ivoire, Egypt, El Salvador, Eswatini, Ghana, Honduras, India, Kenya, Mauritania, Moldova, Morocco, Nepal, Nicaragua, Nigeria, Pakistan, Philippines, Senegal, Sri Lanka, Tanzania, Tunisia, Ukraine, Vietnam, Zambia, Zimbabwe
	LOW INCOME	13	Burkina Faso, Burundi, Chad, Democratic Republic of Congo, Ethiopia, Haiti, Madagascar, Malawi, Mali, Mozambique, Rwanda, Uganda, Republic of Yemen
REGION CLASSIFICATION	ADVANCED ECONOMIES	37	Australia, Austria, Belgium, Canada, China, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong (SAR of China), Iceland, Ireland, Israel, Italy, Japan, Republic of Korea, Latvia, Lithuania, Luxembourg, Malta, Netherlands, New Zealand, Norway, Portugal, Singapore, Slovakia, Slovenia, Spain, Sweden, Switzerland, taiwan (China), United Kingdom (UK), United States (USA)
	COMMONWEALTH OF INDEPENDENT STATES	5	Armenia, Azerbaijan, Kazakhstan, Moldova, Russia
	EMERGING AND DEVELOPING ASIA	10	Bangladesh, Brunei Darussalam, India, Indonesia, Malaysia, Nepal, Philippines, Sri Lanka, Thailand, Vietnam
	EMERGING AND DEVELOPING EUROPE	12	Albania, Bosnia & Herzegovina, Bulgaria, Croatia, Hungary, Macedonia, FYR, Montenegro, Poland, Romania, Serbia, Turkey, Ukraine
	LATIN AMERICA AND THE CARIBBEAN	21	Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad & Tobago, Uruguay, Bolivarian Republic of Venezuela
	MIDDLE EAST AND CENTRAL ASIA	17	Algeria, Bahrain, Egypt, Georgia, Iran, Jordan, Kuwait, Lebanon, Mauritania, Morocco, Oman, Pakistan, Qatar, Saudi Arabia, Tunisia, United Arab Emirates, Republic of Yemen
	SUB-SAHARAN AFRICA	27	Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Chad, Democratic Republic of Congo, Côte D'Ivoire, Eswatini, Ethiopia, Gabon, Ghana, Kenya, madagascar, Malawi, Mali, Mauritius, Mozambique, Nigeria, Rwanda, Senegal, South Africa, Tanzania, Uganda, Zambia, Zimbabwe

GROUP	#	COUNTRIES
OECD	36	Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Republic of Korea, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, United kingdom (UK), United States (USA)
EU	28	Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Bulgaria, Croatia, Cyprus, Malta, Romania, United Kingdom (UK)
SADC	12	Angola, Botswana, Democratic Republic of Congo, Eswatini, Madagascar, Malawi, Mauritius, Mozambique, South Africa, Tanzania, Zambia, Zimbabwe
ECOWAS	7	Benin, Burkina Faso, Côte D'Ivoire, Ghana, Mali, Nigeria, Senegal
ASEAN	7	Brunei Darussalam, Indonesia, Malaysia, Philippines, Singapore, Thailand, Vietnam
PARLACEN	6	Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, Panama
GCC	6	Bahrein, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates
AP	6	Chile, Colombia, Costa Rica, Mexico, Panama, Peru
MERCOSUR	4	Argentina, Brazil, Paraguay, Uruguay
SAARC	5	Bangladesh, India, Nepal, Pakistan, Sri Lanka
CEMAC	3	Cameroon, Chad, Gabon
MCCA	5	Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua
CIS	6	Armenia, Azerbaijan, Kazakhstan, Moldova, Russia, Ukraine
ARAB M UNION	4	Algeria, Mauritania, Morocco, Tunisia
CARICOM	2	Jamaica, Trinidad & Tobago
CAN	4	Bolivia, Colombia, Ecuador, Peru
EFTA	3	iceland, Norway, Switzerland
IGAD	3	Ethiopia, Kenya, Uganda
USMC	3	Canada, Mexico, United States (USA)
OPEC	10	Algeria, Ecuador, Gabon, Iran, Kuwait, Nigeria, Qatar, Saudi Arabia, United Arab Emirates, Bolivarian Republic of Venezuela
CEEAC	6	Burundi, Cameroon, Chad, Democratic Republic of Congo, Gabon, Rwanda
TPP-11	12	Australia, Brunei Darussalam, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, Vietnam

(left margin label: REGIONAL INTEGRATION AGREEMENTS)

III. GE DATA SOURCE: IPRI 2021.

IPRI-GE	OCDE GID-D8	DOWNLOAD DATE	ORIGINAL SCALE	YEAR	SOURCE
WOMEN'S ACCESS TO BANK LOANS	Secure access to formal financial services	Feb. 16, 2021	0; 0.5; 1 (best; average; worst)	2019	OCDE GID-DB https://www.genderindex.org/data/
WOMEN'S ACCESS TO LAND OWNERSHIP	Secure access to land assets	Feb. 16, 2021	0; 0.5; 1 (best; average; worst)	2019	OCDE GID-DB https://www.genderindex.org/data/
WOMEN'S ACCESS TO PROPERTY OTHER THAN LAND	Access to non-land assets	Feb. 16, 2021	0; 0.5; 1 (best; average; worst)	2019	OCDE GID-DB https://www.genderindex.org/data/
INHERITANCE PRACTICES	Inheritance	Feb. 16, 2021	0; 0.5; 1 (best; average; worst)	2019	OCDE GID-DB https://www.genderindex.org/data/
WOMEN SOCIAL RIGHTS	Divorce	Feb. 16, 2021	0; 0.5; 1 (best; average; worst)	2019	OCDE GID-DB https://www.genderindex.org/data/
	Household responsibilities	Feb. 16, 2021	0; 0.5; 1 (best; average; worst)	2019	OCDE GID-DB https://www.genderindex.org/data/
	Female genital mutilation	Feb. 16, 2021	0; 0.5; 1 (best; average; worst)	2019	OCDE GID-DB https://www.genderindex.org/data/
	Violence against women	Feb. 16, 2021	0; 0.5; 1 (best; average; worst)	2019	OCDE GID-DB https://www.genderindex.org/data/
	Freedom of movement	Feb. 16, 2021	0; 0.5; 1 (best; average; worst)	2019	OCDE GID-DB https://www.genderindex.org/data/
	Citizenship rights	Feb. 16, 2021	0; 0.5; 1 (best; average; worst)	2019	OCDE GID-DB https://www.genderindex.org/data/

IV. CLUSTERS MEMBER'S POSITION.

COUNTRY - CLUSTER 1	DISTANCE TO CENTROID	COUNTRY - CLUSTER 2	DISTANCE TO CENTROID	COUNTRY - CLUSTER 3	DISTANCE TO CENTROID
MADAGASCAR	0.02268	SERBIA	0.01608	UNITED ARAB EMIRATES	0.23261
NIGERIA	0.09027	TUNISIA	0.04062	ISRAEL	0.28791
ZIMBABWE	0.12618	KINGDOM OF ESWATINI	0.06774	TAIWAN	0.29102
BOLIVIA	0.15058	SRI LANKA	0.08893	PORTUGAL	0.29746
CHAD	0.21901	TANZANIA	0.09284	ESTONIA	0.30170
GABON	0.22326	EGYPT	0.10722	FRANCE	0.32622
CAMEROON	0.26621	PERU	0.10775	KOREA, REP.	0.32910
MAURITANIA	0.31572	KENYA	0.10938	IRELAND	0.33820
IRAN	0.33811	DOMINICAN REPUBLIC	0.12790	HONG KONG	0.37731
CÔTE D'IVOIRE	0.37354	GHANA	0.16985	CZECH REPUBLIC	0.38250
PAKISTAN	0.40331	PHILIPPINES	0.17817	CHILE	0.40975
ETHIOPIA	0.45655	KAZAKHSTAN	0.17931	UNITED KINGDOM	0.41524
CONGO, DEM. REP.	0.50620	PANAMA	0.18370	BELGIUM	0.44406
NICARAGUA	0.65661	MONTENEGRO	0.19335	GERMANY	0.44406
MOZAMBIQUE	0.66015	VIETNAM	0.19443	SPAIN	0.50623
MALI	0.81139	MOLDOVA	0.20904	MALAYSIA	0.53839
ZAMBIA	0.85800	INDIA	0.22964	ICELAND	0.65540
BENIN	0.94204	COLOMBIA	0.24180	CANADA	0.67228
BANGLADESH	1.22648	BULGARIA	0.28180	SWEDEN	0.71115
YEMEN, REP.	1.67546	UGANDA	0.31805	OMAN	0.88169
ANGOLA	1.82741	ECUADOR	0.32250	LITHUANIA	0.92813
VENEZUELA, BOL. REP	1.91114	NORTH MACEDONIA	0.34233	CYPRUS	0.93209
BRUNEI DARUSSALAM	4.51987	BRAZIL	0.36382	AUSTRALIA	0.94413
HAITI	7.58687	SENEGAL	0.36997	JAPAN	0.95508
		ALBANIA	0.37287	QATAR	0.95924
		THAILAND	0.37563	DENMARK	0.98010
		HONDURAS	0.41298	LATVIA	1.04577
		CROATIA	0.44269	NORWAY	1.05496

COUNTRY - CLUSTER 1	DISTANCE TO CENTROID	COUNTRY - CLUSTER 2	DISTANCE TO CENTROID	COUNTRY - CLUSTER 3	DISTANCE TO CENTROID
		ALGERIA	0.48679	NETHERLANDS	1.05686
		JAMAICA	0.48810	MALTA	1.07550
		INDONESIA	0.49773	SLOVENIA	1.09794
		ARMENIA	0.51201	LUXEMBOURG	1.17956
		MALAWI	0.53199	AUSTRIA	1.19529
		RUSSIA	0.55299	SAUDI ARABIA	1.39113
		EL SALVADOR	0.56920	FINLAND	1.40817
		BOSNIA & HERZEGOVINA	0.56962	NEW ZEALAND	1.42195
		KUWAIT	0.60984	JORDAN	1.46066
		TURKEY	0.62646	BAHRAIN	1.46783
		GREECE	0.65885	SINGAPORE	1.49915
		GUATEMALA	0.67285	SWITZERLAND	1.60068
		TRINIDAD & TOBAGO	0.68229	CHINA	1.75166
		UKRAINE	0.73321	MAURITIUS	1.83158
		BURKINA FASO	0.83111	ITALY	1.95558
		ARGENTINA	0.90913	URUGUAY	2.14554
		PARAGUAY	0.93647	UNITED STATES	2.82530
		GEORGIA	0.95218		
		MOROCCO	0.95829		
		NEPAL	0.99569		
		RWANDA	1.09519		
		ROMANIA	1.13233		
		MEXICO	1.19953		
		AZERBAIJAN	1.20402		
		COSTA RICA	1.29538		
		BURUNDI	1.30876		
		SLOVAKIA	1.33103		
		BOTSWANA	1.59110		
		LEBANON	1.59226		
		SOUTH AFRICA	1.64597		
		HUNGARY	1.74230		
		POLAND	1.84525		

V. ILLUSTRATIVE VARIABLES. AVERAGES BY CLUSTERS.

	CLUSTER 1	CLUSTER 2	CLUSTER 3
Total Countries	24	60	45
Total Population (Thousand)	1,202,298	3,501,009	2,616,653
Average IPRI	3.85	5.18	7.11
Average LP	3.05	4.39	7.09
Average PPR	4.75	6.31	7.62
Average IPR	3.74	4.82	6.63
Average IPRIGE	3.07	4.38	6.54
Average GEN	5.97	6.94	8.34
Average GDPPC	3,685.42	7,226.67	40,418.30
Average GDPGINI	103,405.42	254,815.70	1,315,308.07
Average GCFPC	1,128,850.59	1,630,255.16	9,728,107.92
Average GCI	45.08	58.02	74.81
Average MPI	0.26	0.08	0.00
Average FEFI	5.88	6.93	7.74
Average CPI	27.92	38.58	67.84
Average GITEI	35.00	53.90	73.72
Average GBI	N/A	21.56	45.06
Average GII	20.91	29.72	47.33
Average NRI	28.18	44.62	68.63
Average TSEI	0.29	4.20	15.38

VI. CLUSTER'S STATISTICS. ILLUSTRATIVE VARIABLES.

CLUSTER 1			CLUSTER 2			CLUSTER 3		
Characteristic Variables	Test-Value	Probability	Characteristic Variables	Test-Value	Probability	Characteristic Variables	Test-Value	Probability
MPI	4.69	0.000	POPUL	0.10	0.462	LP	9.28	0.000
POPUL	-0.20	0.420	FEFI	-0.98	0.163	CPI	9.21	0.000
TSEI	-2.61	0.005	PPR	-1.47	0.071	IPRIGE	9.03	0.000
GITEI	-3.00	0.001	GEN	-1.73	0.042	IPR	8.88	0.000
GCFPC	-3.23	0.001	TSEI	-2.26	0.012	GCI	8.81	0.000
GDPGINI	-3.55	0.000	GCI	-2.90	0.002	NRI	8.74	0.000
GDPPC	-3.55	0.000	IPR	-3.54	0.000	GDPPC	8.41	0.000
GEN	-3.63	0.000	IPRIGE	-3.56	0.000	GII	8.28	0.000
GII	-4.92	0.000	NRI	-3.85	0.000	GCFPC	8.24	0.000
CPI	-5.40	0.000	LP	-4.08	0.000	GDPGINI	7.99	0.000
LP	-6.13	0.000	MPI	-4.14	0.000	PPR	7.94	0.000
NRI	-6.27	0.000	CPI	-4.59	0.000	GITEI	6.77	0.000
IPR	-6.34	0.000	GDPGINI	-4.62	0.000	FEFI	6.47	0.000
IPRIGE	-6.50	0.000	GII	-4.63	0.000	GBI	5.26	0.000
FEFI	-6.67	0.000	GDPPC	-5.22	0.000	GEN	4.77	0.000
GCI	-7.07	0.000	GBI	-5.26	0.000	TSEI	4.52	0.000
PPR	-7.85	0.000	GCFPC	-5.32	0.000	POPUL	0.07	0.474
GBI*	-	-	GITEI	-5.80	0.000	MPI	-1.22	0.110

Statistically significant only if Value-Test ≥ 1.96

* No available data

VII. REGIONAL INTEGRATION AGREEMENTS AND CLUSTER.

	REGIONAL INTEGRATION AGREEMENTS	# COUNTRIES	CLUSTER 1	%	CLUSTER 2	%	CLUSTER 3	%
OECD	Organisation for Economic Co-operation and Development	36			6	16.67%	30	83.33%
EU	European Union	28			7	25.00%	21	75.00%
SADC	Southern African Development Community	12	6	50.00%	5	41.67%	1	8.33%
ECOWAS	Economic Community of West African States	7	4	57.14%	3	42.86%		
ASEAN	Association of Southeast Asian Nations	7	1	14.29%	4	57.14%	2	28.57%
PARLACEN	Central American Parliament	6	1	16.67%	5	83.33%		
GCC	Gulf Cooperation Council	6			1	16.67%	5	83.33%
AP	Pacific Alliance	4			3	75.00%	1	25.00%
MERCOSUR	Southern Common Market	4			3	75.00%	1	25.00%
SAARC	South Asian Association for Regional Cooperation	5	2	40.00%	3	60.00%		
CEMAC	Central African Economic and Monetary Community	3	3	100.00%				
MCCA	Central American Common Market	5	1	20.00%	4	80.00%		

	REGIONAL INTEGRATION AGREEMENTS	# COUNTRIES	CLUSTER 1	%	CLUSTER 2	%	CLUSTER 3	%
CIS	Commonwealth of Independent States	6			6	100.00%		
ARAB M UNION	Arab Mahgreb Union	4	1	25.00%	3	75.00%		
CARICOM	Caribbean Community	3	1	33.33%	2	66.67%		
CAN	Andean Community	4	1	25.00%	3	75.00%		
EFTA	European Free Trade Association	3					3	100.00%
IGAD	Intergovernmental Authority on Development	3	1	33.33%	2	66.67%		
NAFTA	North American Free Trade Agreement	3			1	33.33%	2	66.67%
OPEC	Organization of the Petroleum Exporting Countries	10	5	50.00%	3	30.00%	2	20.00%
CEEAC	La Communauté Economique des Etats de l'Afrique Centrale	7	5	71.43%	2	28.57%		
TPP-11	Trans-Pacific Partnership	11	1	9.09%	3	27.27%	7	63.64%
PROSUR	The Forum for the Progress and Development of South America	7			6	85.71%	1	14.29%