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# INTERNATIONAL PROPERTY RIGHTS INDEX 2022

FULL REPORT

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# INTRODUCTION

We are arising from two complex and tense years, 2020 and 2021, which will be known as the years of the COVID-19 pandemic, with its quarantines, isolations, interpersonal distancing, masks and disinfectants. There will be no shortage of future texts and documentaries gathering the stress for finding treatments, the uneasiness about the disruption of global production chains, or the urgency in the face of political dilemmas and economic difficulties. Also notorious will be the records of the bulky compensatory programs or of the fast adaptation to the 'new normality' through virtual activities. And finally, we will remember the emergence of a group of vaccines, production reopening, and the re-socialization process in work and in daily life.

We took it for granted that advances in science and technology had left behind biological plagues for humanity. But it has become clear that this is not the case. Moreover, there are voices that warn us that many more will continue to appear. Interconnectivity and high human mobility between all corners of the globe have shown their most negative side, as they have become the highway that accelerated transmission and contagion.

It has definitely not been easy. The number of deaths caused by COVID-19 has been enormous, and the medical consequences on those who suffered from it are still being registered. Economic reactivation has not been automatic nor homogeneous, and the negative effects of created policies have just begun to show their impact. Medium and long-term effects and intergenerational externalities will be aspects that the world's societies need to address now that the emergency has receded.

However, while the health and economic dimensions are widely highlighted, the political and institutional dimension, which was seriously affected by the onslaught of this pandemic, is less newsworthy. Uncertainty laid the foundations for fear, and thus for control, over the population — in many cases disproportionate, arbitrary and unjust — breaking into citizens' rights and individual freedom, which must be now regained. Authoritarian governments strengthened the imposition of their power, but even those societies with more liberties and

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democratic governments were victims of states of emergency and exception, and of the violation of rights and infringements on freedoms of choice. It is clear that emergency situations require extraordinary decisions, but their overreach and temporary extension beyond what is required, results in an encroachment of citizens' liberties. Thus, in general terms, measurements of democracy, economic freedom, freedom of expression, governance, strength of the rule of law and institutions have weakened on average around the world; and this has short, medium and long-term costs.

It is therefore no coincidence that also the International Property Rights Index, IPRI, shows the same trend: we found a set back of the average score of the IPRI, something we foresaw since 2018, when global institutions began to show clear signs of weakening. This is a regrettable result that should alert us of the dangerous road we may be heading in our world.

It is imperative to focus on the global economic recovery and in particular of those societies most weakened in productive terms. Even more relevant, we must insist on the development of a virtuous institutional environment that favors a harmonious and comprehensive development, where incentives are promoted favoring investments, job creation, productivity and innovation, with justice and liberty.

Embedded within a free society it is a robust property rights system, which in itself is a condition for exercising other rights, creating a positive feedback loop for freedom. Academic literature reporting positive and strong relationships between property rights and a better quality of life is prolific, and this had been shown by our IPRI reports in its editions.

Whether it is physical or intellectual property rights, both are essential for development. Perhaps in the 21st century, there is a greater challenge in terms of the latter, given their relevance in the so-called knowledge society, promoting social and economic incentives to stimulate creation and innovation, and its dissemination.

Just as we have highlighted worrying elements of global trends concerning institutions, it is also worth mentioning that after overcoming the turmoil of the COVID pandemic, the level of patents applied for in 2021 was the highest in history, highlighting the growing consciousness of the relevance of intellectual property in our days (WIPO Pressroom Feb.10 2022).

The accelerated path of change of Industry 4.0 (Fourth Industrial Revolution) means that today's creations and innovations have an ephemeral life, regardless of the dedicated and laborious effort required to bring them to life. Hence the relevance of collective awareness of the importance of a full recognition and valuing of intellectual creations in favor of humanity.

Last but not least, we should insist that property rights are human rights, and that is the fundamental reason for the preference of a robust property rights system.

**Sary Levy-Carciente<sup>1</sup>**

May, 2022

1. The author thanks Karen Tizado (Statistician) for her valuable support with data manipulation for the Index calculation.

## IPRI STRUCTURE & METHODOLOGY

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

The Index follows an institutional approach, as property rights are a linchpin institution for a free society based on the creation of a citizenship that controls its own life and builds its own destiny. There is an extensive and rich literature on property rights, considered into the conceptualization and operationalization of the Index, setting its core categories (here-to referred as components or sub-indices) and the items included in each of them.

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 about the strength of a country's institutions: the 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 kinds of property rights unequivocal for countries' socio-economic development. Items included in these two categories speak to *de jure* rights and *de facto* opportunities in each country, as quantitative and qualitative information.

As a result, the IPRI encompasses 11 items, gathered under these three components: LP, PPR and IPR.

While there are numerous items associated with property rights, the final IPRI is specific to the core factors that are directly related to the strength and the defense of physical and intellectual property rights. Furthermore, items for which data were available more regularly and for a larger amount of countries were given preference, guaranteeing that scores were comparable across countries and years. The 2022-IPRI keeps previous years' basic methodology allowing for a full comparison of its results with previous editions.

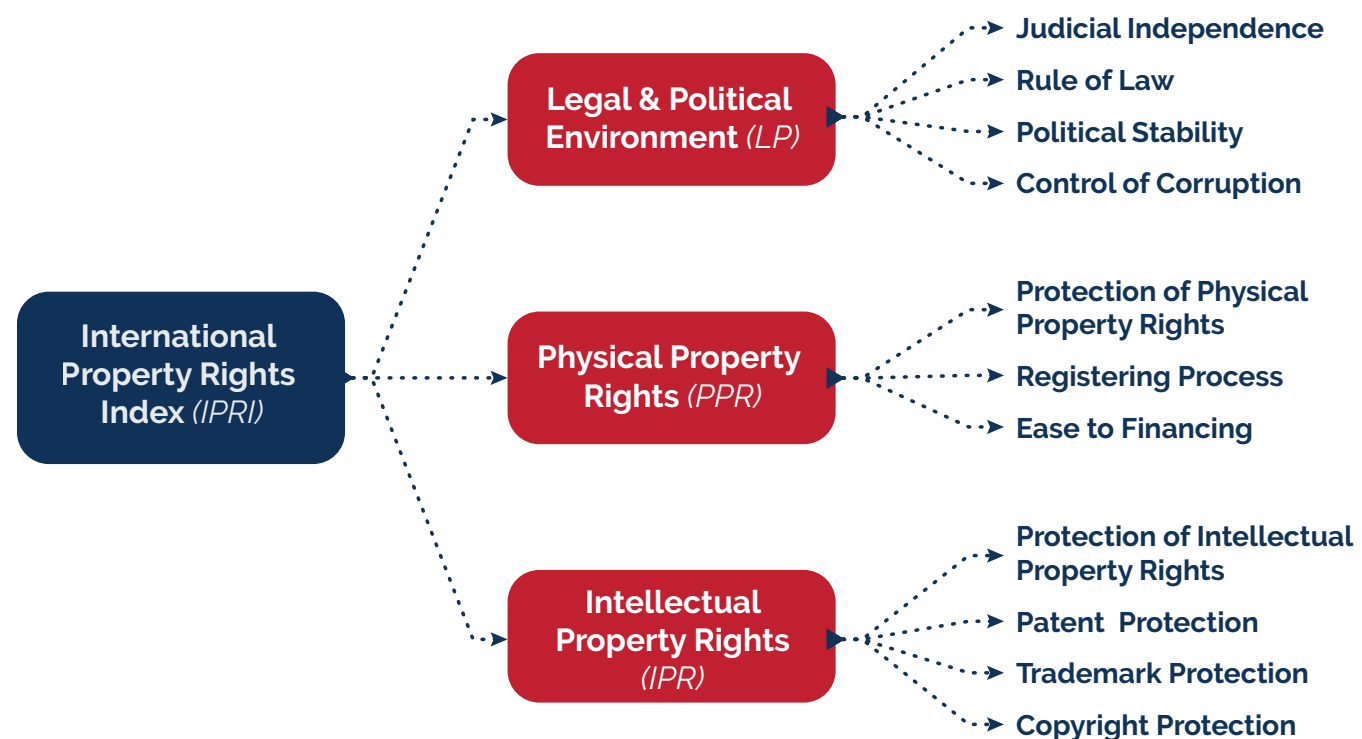


Figure 1. International Property Rights Index Structure.

## I. LEGAL AND POLITICAL ENVIRONMENT (LP)

The Legal and Political Environment component focuses on the ability of a nation to enforce a *de jure* system of property rights. The approach of this component is wide and open grasping the general ambiance of the country limiting the arbitrary exercise of power and the stability provided to the citizens. It comprises four (4) elements: the independence of its judicial system, the strength of the rule of law, the stability of its political system, and the control of corruption.

### JUDICIAL INDEPENDENCE

This item examines the judiciary's freedom from political, individual or business groups' influence. The independence of the judiciary is a central foundation for the sound protection and sovereign support of the law court system with respect to individuals' 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 was:

*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 Worldwide Governance Indicators 2020-2021 update (<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 2020-2021 update (<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.

*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 -2.672). 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 five 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 from petty to grand forms of corruption, as well as the 'capture' of the state by elites and interest groups. As with the other items in the LP component, corruption influences people's confidence in the existence of sound implementation and enforcement of property rights. Corruption also influences the degree of informality in the economy, which is a deterrent to the expansion of respect for legal private property.

The data source chosen for this item is from World Bank, The Worldwide Governance Indicators 2020-2021 update (<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 the property, and it allows access to the required credit to become an owner or 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

The Protection of Physical Property Rights relates directly to the strength of a country's property rights system based on experts' views of the quality of the judicial protection of private property, including financial assets. Additionally, it incorporates experts' 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's 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 was:

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

### REGISTERING PROCESS

This item measures the extent to which regulations are fairly and effectively implemented and enforced, being a proxy of the fairness and efficiency of the registering process of a property. The relevance of this information derives from the fact that the more difficult the property registration is, the more likely it is that assets will stay in the informal sector, discouraging assets' movement from lower to higher prized uses.

The Registering Process 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 guarantee greater value in the extended market*" (2000:48).

The data source chosen for this item is World Justice Project, Rule of Law Index (<https://www.worldjusticeproject.org/rule-of-law-index/>). The original data scale is [0-1], where 1 is the best score. Specifically we use the simple average of two items included in its Regulatory Enforcement factor:

- » Administrative proceedings are conducted without unreasonable delay; that measures whether administrative proceedings at the national and local levels are conducted without unreasonable delay; and
- » Due process is respected in administrative proceedings; that measures whether the due process of law is respected in administrative proceedings conducted by national and local authorities in issue areas such as the environment, taxes, and labor.

*NOTE: In previous editions we used the World Bank Group, Doing Business data, however, this information is said not to be available anymore, so it was substituted.*

### ACCESS TO FINANCING

Financial institutions play a crucial complementary role – along with a strong property rights system – to bring economic assets into the formal economy to allow the path from ideas and projects to real investments. Credit facilities are also demonstrated to be an important channel for policies to alleviate poverty.

The data source chosen for this item is *Financing of SMEs* (EOSQ425) of the World Economic Forum; The Global Competitiveness Index 4.0 2019 Dataset | Version 20191004 (<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 for this indicator is:

*"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?"*

### III. INTELLECTUAL PROPERTY RIGHTS (IPR)

The assignment of intellectual property (IP) 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, as well as stimulating the open exposure of ideas, encouraging indirect effects of creativity. IP rights are particularly relevant in times of the so called Knowledge Society.

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

#### PROTECTION OF INTELLECTUAL PROPERTY RIGHTS

Capturing citizens' perspective on protection of intellectual property is a crucial element of the IPR component.

The data source chosen for this item is 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 data used for this item is the International Patent Index created by Dr. Walter Park in its last edition for 2021<sup>2</sup> advanced with PRA. This source is updated five-yearly and the original data scale

is [0 - 1], where 1 is the highest score (<https://www.propertyrightsalliance.org/wp-content/uploads/Trademarks-and-Patent-Index.pdf>). The International Patent Index is built in six clusters: Duration of protection, Coverage, Restrictions, Membership in Treaties, Enforcement and Patent applications. The variables for the index are extracted from all relevant laws published in WIPO's journal, *Intellectual Property*, 1960-2021.

#### TRADEMARK PROTECTION

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 is the International Trademark Index, ITI, (<https://www.propertyrightsalliance.org/wp-content/uploads/Trademarks-and-Patent-Index.pdf>) created by Dr. Walter Park and updated in its more recent edition, 2021, with PRA.<sup>3</sup> 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 the intellectual property rights enforcement in a country.

The data source chosen for this item is the BSA Global Software Survey; The Compliance Gap (2018 edition, downloaded on March 29, 2022 at [https://www.bsa.org/~media/Files/StudiesDownload/2018\\_BSA\\_GSS\\_Report\\_en.pdf](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.

2. The updating of the International Patent Index for 2021 was a joint effort of PRA, in the persons of Chrysa K. Kazakou and Dr. Walter Park.

3. The updating of the International Trademark Index for 2021 was a joint effort of PRA, in the persons of Chrysa K. Kazakou and Dr. Walter Park.

## IV. IPRI METHODOLOGY

The 2022 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 are rescaled in order to accurately compare among countries and within IPRI components and the overall score.

IPRI scale ranges [0 – 10], where 10 is the highest value for a property rights system and 0 is the lowest value (or most negative) within a country. The same interpretative logic is applied to the three components and to the 11 items or variables.

The average mechanisms applied assume equal importance for each component on 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 2022 IPRI uses data from period 2018–2021. The 11 items are gathered from different sources, which imply that they have different updating frequency. 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 the overall 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:

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

2. For unbounded data series with same direction:

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

3. For bounded data series with inverse direction:

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

### IPRI CALCULATIONS:

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

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

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

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

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 were the ranking positions.

## V. COUNTRIES AND GROUPS

All countries were grouped following different criteria, according to last information available by April 9, 2022 (more information in Appendix II):

1. **Regions:** Africa (A), East Asia, South Asia and Pacific (AO), Central and Eastern Europe & Central Asia (CEECA), Latin America & the Caribbean (LAC), Middle East & North Africa (MENA), North America (NA), and Western Europe (WE).
2. **Geographical regions:** Western Europe, North America, Latin America & 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, July 2020): High income, Upper Middle income, Lower Middle income, and Low income.

The 2022 IPRI includes 129 countries, the same as 2021.

Availability of required data is the only factor that determines countries' inclusion in the IPRI. In order to keep the meaningfulness of the 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.

Comparing this year's groups with last year we find that:

- » Haiti goes from Low Income to Lower-Middle income.
  - » Moldova goes from Lower middle income to Upper Middle Income.
  - » Iran and Indonesia go from Upper Middle Income to Lower Middle Income.
  - » Panama, Mauritius and Romania go from High Income to Upper Middle Income.
  - » Venezuela has been temporarily unclassified in July 2021 pending release of revised national accounts statistics.
4. **Regional and Development classification** (International Monetary Fund, Oct. 2021): Advanced Economies; Emerging & Developing Asia; Emerging and Developing Europe; Latin America & the Caribbean; Middle East and Central Asia; and Sub-Saharan Africa.

In this grouping, some changes should be noted:

- » China goes from Advanced Economies to Emerging and Developing Asia.
  - » The regional group Commonwealth of Independent States (CIS) is discontinued.
  - » Armenia, Azerbaijan and Kazakhstan go from Commonwealth of Independent States (CIS) to Middle East and Central Asia.
  - » Moldova and Russia go from Commonwealth of Independent States (CIS) 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.

In this grouping, some elements should be remembered:

- » Venezuela remains suspended as a MERCOSUR State Party, in accordance to the provisions of the second paragraph of Article 5 of the Ushuaia Protocol. <https://www.mercosur.int/quienes-somos/paises-del-mercosur/>.
- » Colombia (2020) and Costa Rica (2021) join the OECD.
- » Ecuador decided to withdraw its membership from OPEC effective 1 January 2020.
- » The USA, Mexico, and Canada updated NAFTA to create the new USMCA, and the agreement, entered into force on July 1, 2020.



## 2022 IPRI RESULTS

This section presents the results of the 2022 IPRI. Starting with the scores of the overall IPRI and its three (3) components, we follow showing countries' score and rankings. Variations between 2021 and 2022 of both individual IPRI components and of the overall IPRI score were considered. This chapter also includes an analysis of the IPRI for different groups of countries.

As an average, the sample of the 129 countries showed a score of 5.19, where the Legal and Political Environment (LP) was the weakest component with a score of 5.06, followed by the Intellectual Property Rights (IPR) component with a score of 5.24; and quite close, the

Physical Property Rights (PPR) was the strongest component with a score of 5.27.

For a fourth consecutive year we found a set back of the average score of the IPRI, and the LP component. We have also found a setback of the other two components of the Index (PPR and IPR) since 2020 (see Table 1). Particularly these last two years have been of continuing deterioration into levels highly upsetting. This is a regrettable result that we have also seen in other measurements of liberty, democracy and world governance that should alert us of the dangerous road we may be heading in our world.

	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
<b>AVERAGE 2022</b>	<b>5.191</b>	<b>5.064</b>	<b>5.266</b>	<b>5.244</b>

Table 1. Average Score: IPRI and Components, 2016 - 2022.

For robustness purposes, we run 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	5.1914	5.0644	5.2656	5.2443
STD. ERROR OF MEAN	.12671	.15828	.12443	.11358
MEDIAN	4.9164	4.7239	4.9523	5.0403
STD. DEVIATION	1.43914	1.79772	1.41320	1.29001
VARIANCE	2.071	3.232	1.997	1.664
RANGE	6.40	7.60	7.07	6.17
MINIMUM	1.77	1.15	1.46	2.56
MAXIMUM	8.17	8.76	8.53	8.73
PERCENTILES				
25	4.1596	3.6674	4.2699	4.2752
50	4.9164	4.7239	4.9523	5.0403
75	6.1708	6.3838	6.2900	6.1250

Table 2. Statistics, 2022 IPRI and Components.

	IPRI	LP	PPR	IPR
N	129	129	129	129
NORMAL MEAN	5.191415667	5.064370372	5.26561386	5.244262783
PARAMETERS A,B STD. DEVIATION	1.439144619	1.79771691	1.41319703	1.290014842
MOST EXTREME ABSOLUTE	0.099510124	0.084551307	0.117025307	0.111016764
DIFFERENCES POSITIVE	0.099510124	0.084551307	0.117025307	0.111016764
NEGATIVE	-0.066129056	-0.05693824	-0.068698565	-0.069352754
KOLMOGOROV-SMIRNOV Z	1.130217747	0.960318243	1.329151986	1.260908054
ASYMP. SIG. (2-TAILED)	0.155345051	0.314983327	0.058415866	0.083183769

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

Table 3. Normality Test. One-Sample Kolmogorov-Smirnov Test.

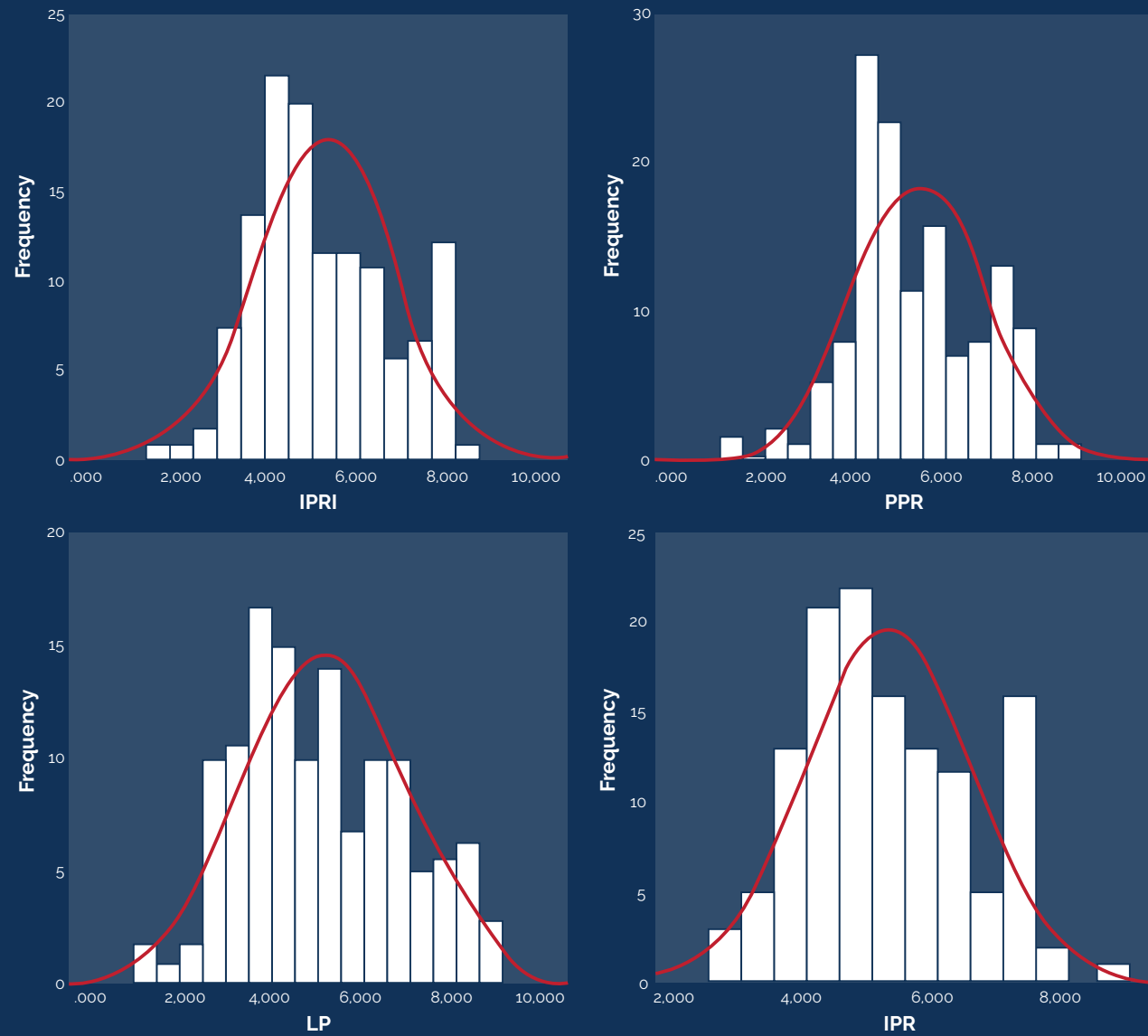


Figure 2. Histogram: 2022 IPRI and its Components.

Table 4 shows, in alphabetical order, the score value of the 129 countries included in the 2022 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 2022 IPRI 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% (1<sup>st</sup> quintile 17 countries, 2<sup>nd</sup> quintile 21 countries, 3<sup>rd</sup> quintile 24 countries, 4<sup>th</sup> quintile 29 countries and 5<sup>th</sup> quintile 38 countries). Hence, the fourth and the fifth quintiles include 67 countries which is 51.9% of our sample; while the first three quintiles include almost the same amount of countries, 64 countries, being 48.1% of the sample.

COUNTRY	IPRI	LP	PPR	IPR	COUNTRY	IPRI	LP	PPR	IPR
ALBANIA	4.12	3.84	4.28	4.23	EL SALVADOR	4.17	3.99	4.46	4.05
ALGERIA	4.21	3.8	4.75	4.07	ESTONIA	6.73	7.47	6.68	6.04
ANGOLA	3.14	3.13	3.31	2.96	ETHIOPIA	3.47	3.5	3.59	3.31
ARGENTINA	4.3	4.29	3.99	4.62	FINLAND	8.17	8.74	8.53	7.25
ARMENIA	4.98	4.72	5.77	4.45	FRANCE	6.78	6.8	6.6	6.95
AUSTRALIA	7.62	7.93	7.41	7.5	GABON	3.74	3.69	3.4	4.15
AUSTRIA	7.67	7.8	7.42	7.77	GEORGIA	4.67	5.09	5.05	3.88
AZERBAIJAN	5.04	4.09	6.45	4.59	GERMANY	7.47	7.5	7.54	7.37
BAHRAIN	5.96	5.4	6.8	5.68	GHANA	5	5.06	5.01	4.94
BANGLADESH	3.58	3.45	4.15	3.13	GREECE	4.81	5.08	4.07	5.3
BELGIUM	7.28	4.47	7	7.36	GUATEMALA	4.02	3.37	4.57	4.13
BENIN	4.33	4.17	4.16	4.65	HAITI	2.83	2.43	2.22	3.85
BOLIVIA	3.29	2.73	3.73	3.41	HONDURAS	3.99	3.43	4.2	4.34
BOSNIA & HERZEGOVINA	4.03	3.6	4.01	4.47	HONG KONG	7.45	7.56	7.98	6.82
BOTSWANA	5.29	6.32	5.34	4.2	HUNGARY	5.42	5.35	4.53	6.37
BRAZIL	4.62	4.22	4.18	5.47	ICELAND	7.08	8.1	7.05	6.08
BRUNEI DARUSSALAM	5.51	6.66	5.27	4.59	INDIA	5.14	4.61	5.53	5.29
BULGARIA	4.97	4.79	4.79	5.34	INDONESIA	4.8	4.49	5.59	4.32
BURKINA FASO	4.15	3.77	4.05	4.65	IRAN	3.64	2.88	4.03	4.02
BURUNDI	3.86	2.71	4.8	4.06	IRELAND	7.2	7.73	6.73	7.15
CAMEROON	3.52	2.73	3.91	3.91	ISRAEL	6.63	6.09	6.78	7.03
CANADA	7.47	7.89	7.15	7.38	ITALY	5.66	5.65	4.89	6.43
CHAD	3.07	2.43	3.05	3.74	JAMAICA	5.18	5.24	4.87	5.42
CHILE	6.14	6.6	5.86	5.95	JAPAN	7.68	7.97	7.61	7.46
CHINA	5.59	5.04	5.46	6.28	JORDAN	5.72	5.5	6.05	5.6
COLOMBIA	4.64	3.92	4.72	5.29	KAZAKHSTAN	4.63	4.49	4.86	4.54
CONGO, DEM. REP.	2.89	1.78	3.2	3.68	KENYA	4.41	3.77	4.68	4.77
COSTA RICA	5.71	6.29	5.53	5.29	KINGDOM OF ESWATINI	4.66	4.42	5.03	4.53
CÔTE D'IVOIRE	3.81	3.45	4.06	3.93	KOREA, REP.	6.38	6.24	6.46	6.45
CROATIA	4.92	4.91	5.45	5.39	KUWAIT	5.43	5.53	5.69	5.08
CYPRUS	5.84	5.91	5.82	5.78	LATVIA	5.94	6	5.83	6
CZECH REPUBLIC	6.4	6.51	6.01	6.68	LEBANON	3.73	2.84	4.74	3.62
DENMARK	7.81	8.47	7.71	7.24	LITHUANIA	6.05	6.45	5.92	5.78
DOMINICAN REP.	4.39	4.02	4.51	4.63	LUXEMBOURG	7.89	8.43	7.76	7.47
ECUADOR	4.11	3.63	4.31	4.39	MADAGASCAR	3.6	3.22	3.75	3.83
EGYPT	4.72	4.25	4.79	5.12	MALAWI	4.34	4.42	4.26	4.32
					MALAYSIA	6.3	6.02	6.72	6.16

COUNTRY	IPRI	LP	PPR	IPR	COUNTRY	IPRI	LP	PPR	IPR
MALI	3.61	2.71	2.43	3.9	SENEGAL	4.49	4.58	4.8	4.08
MALTA	5.78	6.13	5.57	5.64	SERBIA	4.57	4.29	4.55	4.88
MAURITANIA	3.22	3.2	2.37	4.1	SINGAPORE	7.97	8.45	8.26	7.18
MAURITIUS	5.8	6.65	5.81	4.95	SLOVAKIA	5.68	5.4	5.64	6
MEXICO	4.62	3.45	4.34	6.08	SLOVENIA	6	6.11	5.81	6.09
MOLDOVA	4.19	3.63	4.49	4.45	SOUTH AFRICA	5.53	5.3	5.03	6.28
MONTENEGRO	5.05	5.09	5.47	4.58	SPAIN	6.25	6.12	6.13	6.49
MOROCCO	5.34	4.72	5.68	5.63	SRI LANKA	4.7	4.82	4.71	4.57
MOZAMBIQUE	3.72	2.9	3.67	4.58	SWEDEN	7.6	8.17	7.28	7.34
NEPAL	4.24	4.13	4.95	3.64	SWITZERLAND	7.94	8.5	7.82	7.5
NETHERLANDS	7.78	8.28	7.72	7.33	TAIWAN	6.95	6.86	7.31	6.67
NEW ZEALAND	7.93	8.76	7.75	7.28	TANZANIA	4.58	4.24	4.48	5.04
NICARAGUA	3.46	2.51	3.7	4.19	THAILAND	4.74	4.58	4.98	4.64
NIGERIA	3.31	2.8	3.74	3.39	TRINIDAD & TOBAGO	4.99	5.04	4.48	5.44
NORTH MACEDONIA	4.31	4.17	4.19	4.57	TUNISIA	4.63	4.66	4.64	4.58
NORWAY	7.8	8.52	7.62	7.26	TURKEY	4.56	3.7	4.38	5.6
OMAN	6.2	6.3	6.86	5.46	UGANDA	4.19	3.65	4.59	4.32
PAKISTAN	3.81	3.38	4.22	3.84	UKRAINE	3.98	3.33	4.22	4.39
PANAMA	4.77	4.1	5.27	4.95	UNITED ARAB EMIRATES	6.79	6.99	7.11	6.28
PARAGUAY	4.03	3.47	4.8	3.84	UNITED KINGDOM	7.3	7.35	7.15	7.39
PERU	4.26	3.87	4.12	4.78	UNITED STATES	7.57	6.76	7.21	8.73
PHILIPPINES	4.49	3.7	4.9	4.89	URUGUAY	6.09	7.15	6.05	5.06
POLAND	5.41	5.36	4.95	5.93	VENEZUELA, BOLIVARIAN REP.	1.77	1.15	1.46	2.7
PORTUGAL	6.21	6.72	5.34	6.58	VIETNAM	4.5	4.54	4.49	4.47
QATAR	6.51	6.84	7.21	5.47	YEMEN, REP.	2.25	1.44	2.74	2.56
ROMANIA	5.48	5.5	5.06	5.87	ZAMBIA	3.93	3.76	4.32	3.7
RUSSIA	4.47	3.53	4.35	5.51	ZIMBABWE	3.11	2.77	3.1	3.48
RWANDA	5.41	5.7	5.67	4.88					
SAUDI ARABIA	6.06	5.65	7.04	5.49					

Table 4. IPRI 2022 and its Components: Scores by Country (alphabetic order).

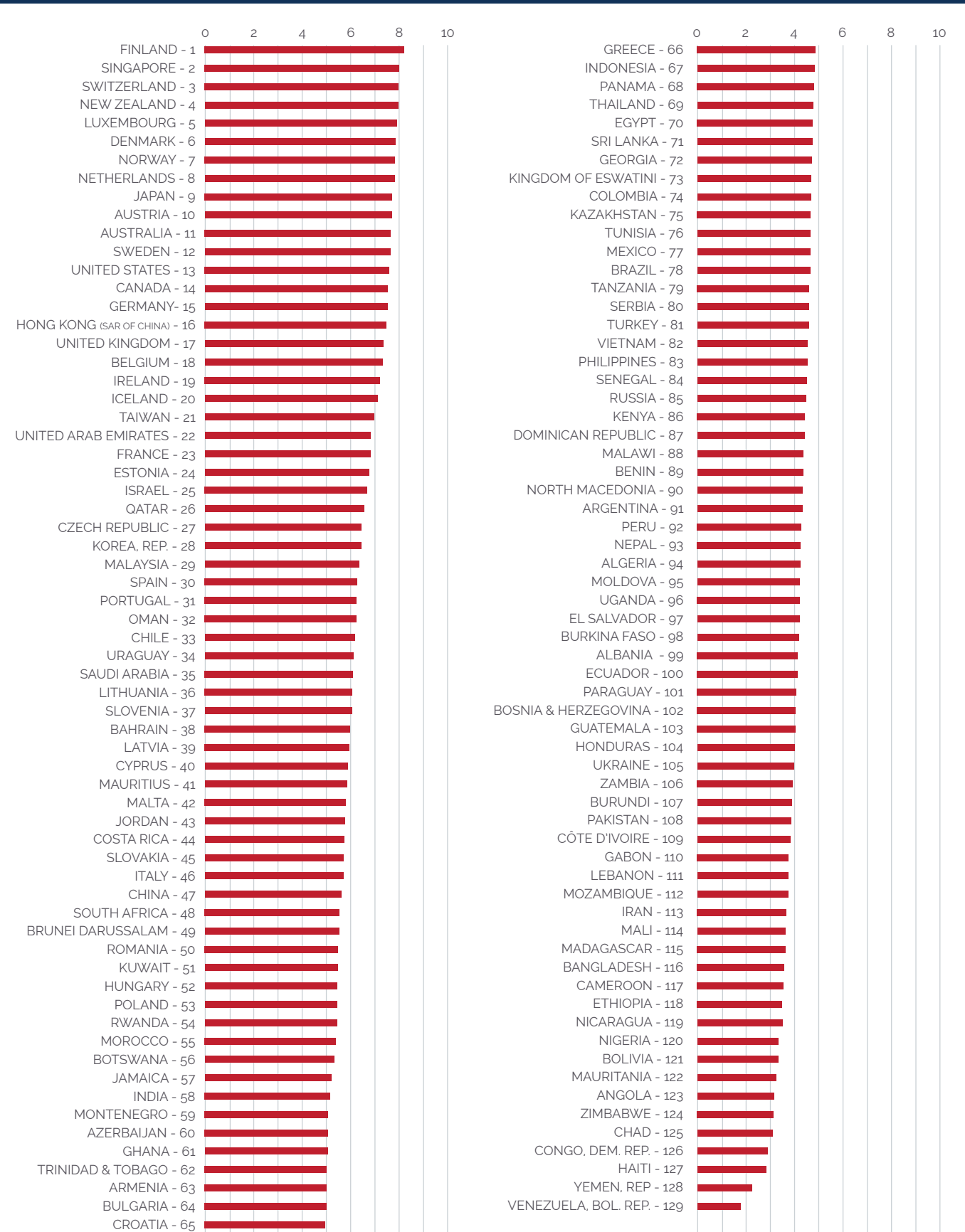


Figure 3a. IPRI 2022: Scores and Rankings.

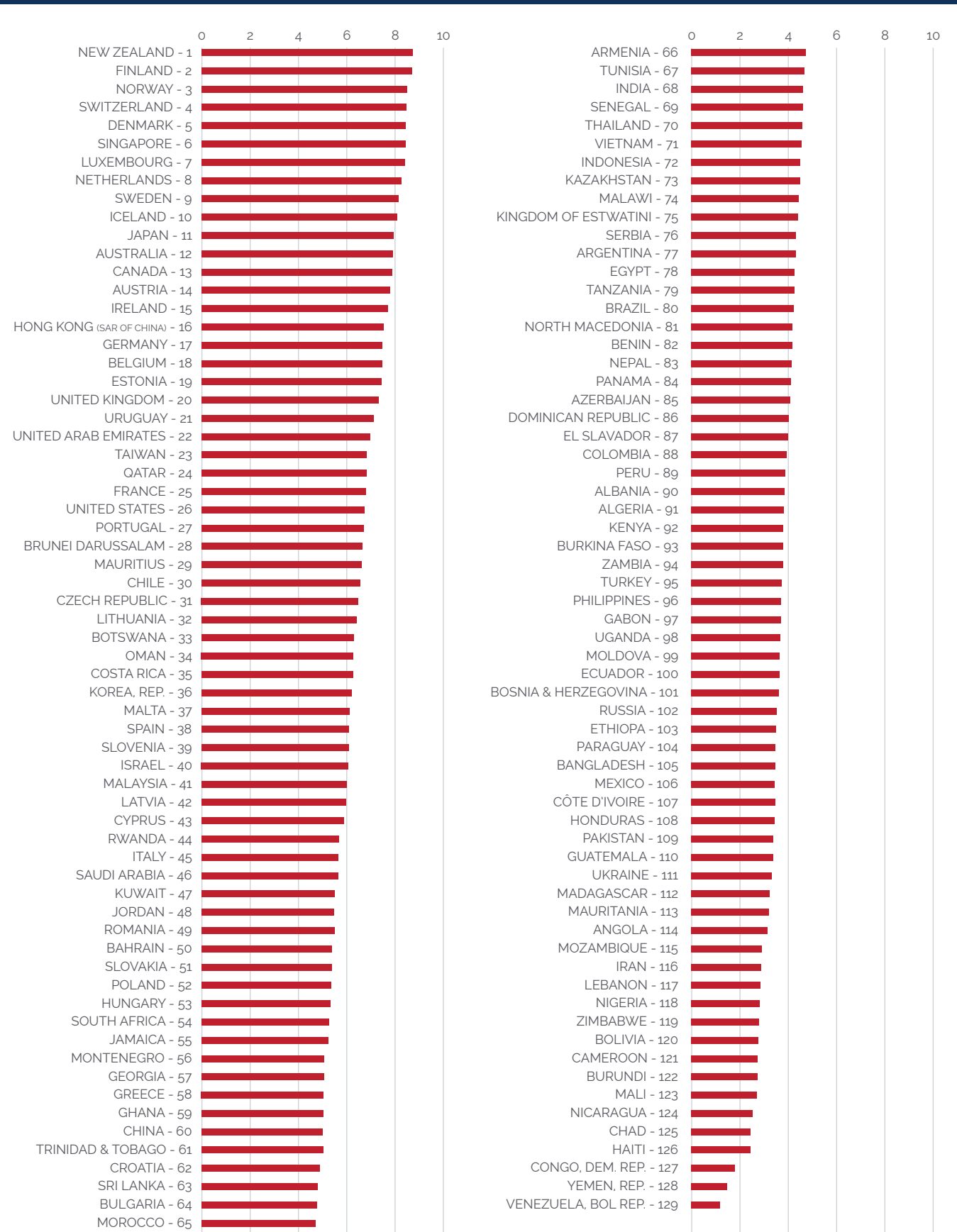


Figure 3b. LP 2022: Scores and Rankings.

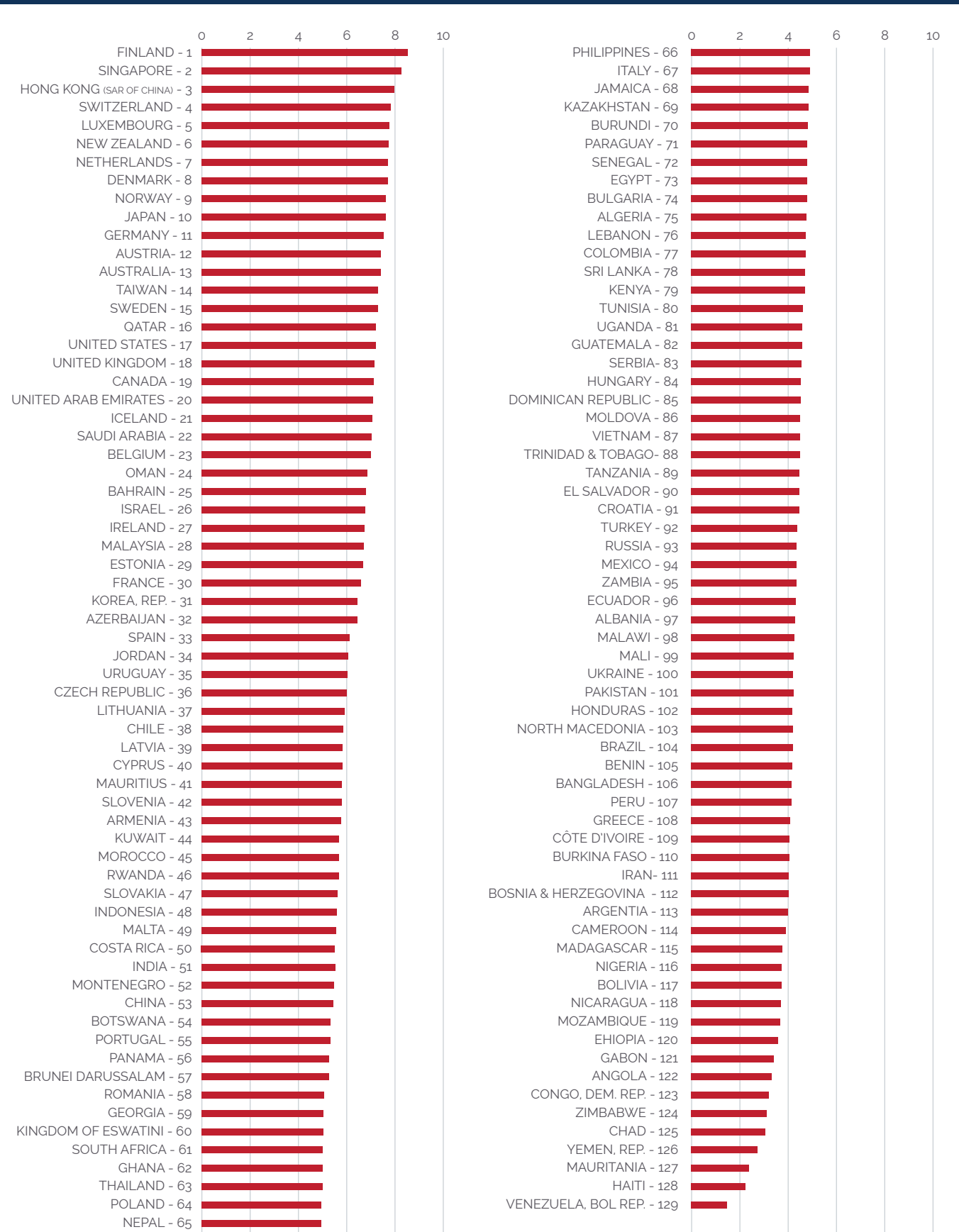


Figure 3c. PPR 2022: Scores and Rankings.

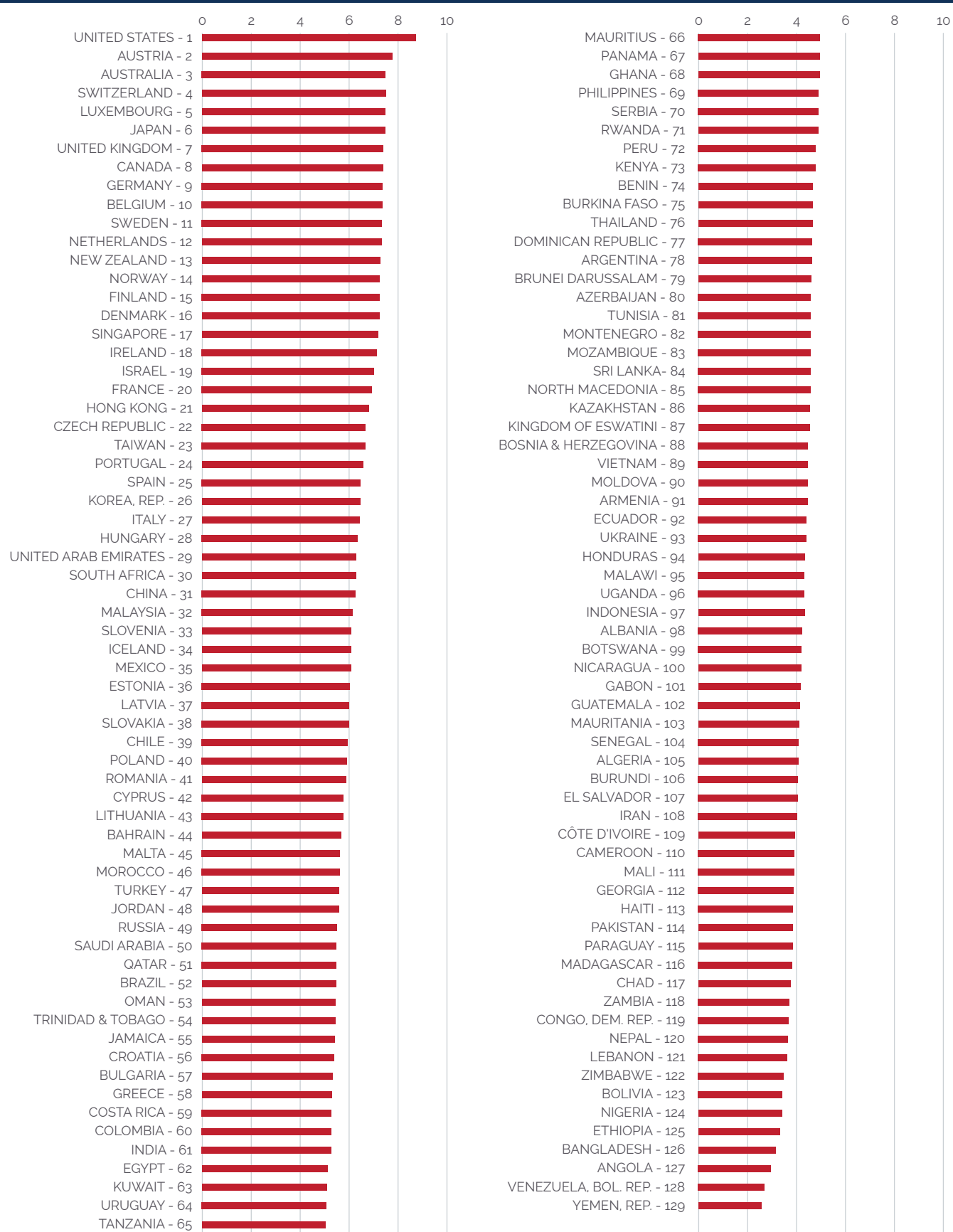


Figure 3d. IPR 2022: Scores and Rankings.

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

Table 5. 2022 IPRI: Rankings by Quintiles.

Figure 4 shows the top 15 countries for the 2022 IPRI edition. This year, Finland leads the IPRI (8.17) as well as its PPR component (8.53), while New Zealand leads the LP (8.76) and the USA the IPR component (8.73). Singapore ranks 2<sup>nd</sup> in its IPRI score (7.97) followed by Switzerland (7.94) and New Zealand (7.93).

The IPRI scores of these 15 top countries range from 8.17 to 7.47, while the components' score as follows:

- a. LP: 6.76-8.76
- b. PPR: 8.53-7.15
- c. IPR: 8.73-7.18.

All these countries, but the USA (14/15), show their LP component as the strongest to build up the IPRI. The second strongest component is mostly PPR (11/15) and just 4 countries show IPR in second place (Austria, Australia, Sweden and Canada).

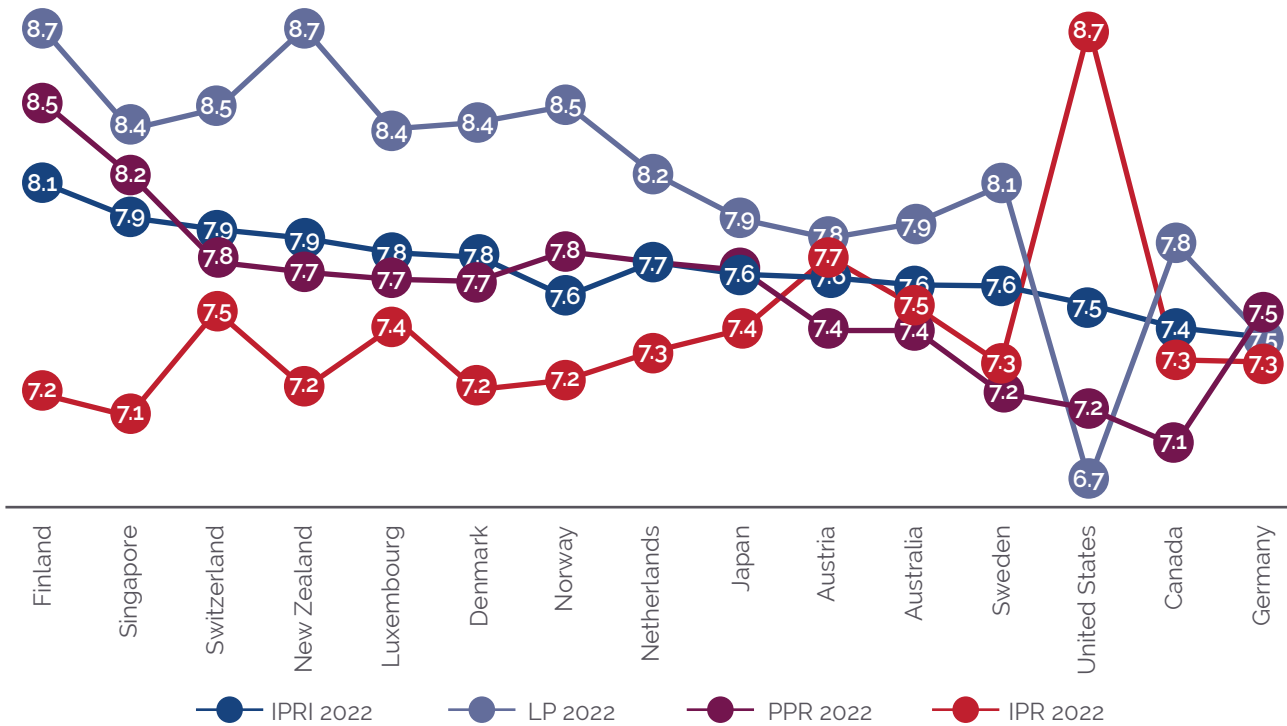


Figure 4. 2022 IPRI & Components: Top 15 Countries.

Figure 5 shows that the top 15 countries remain the same, with differences in their line-up. This situation has been repeated during the last 5 years.

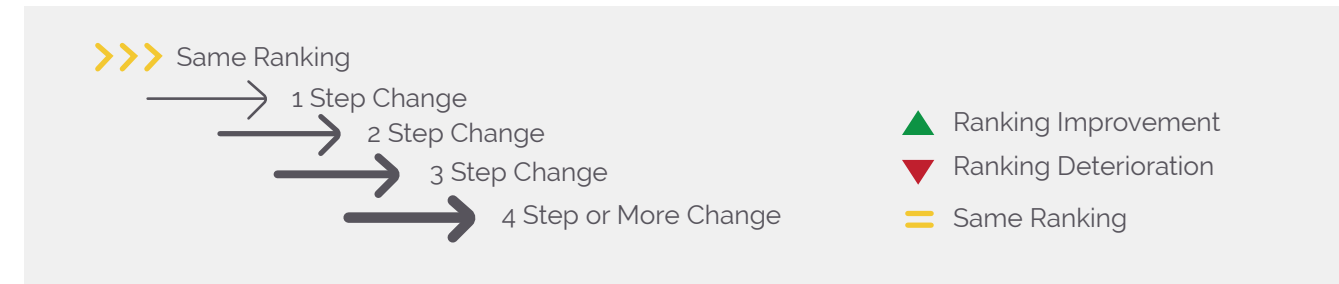
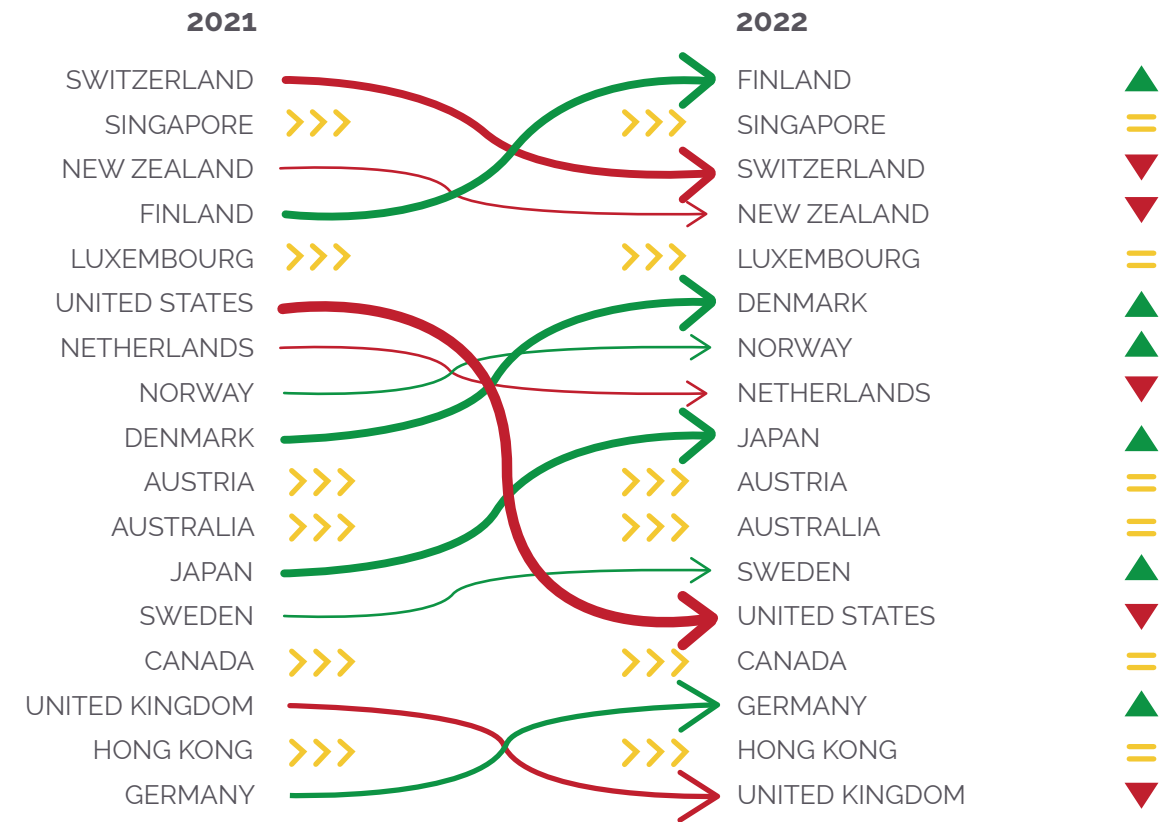


Figure 5. 2022 IPRI vs. 2021 IPR: Top Countries Ranking Change.

As shown in Figure 6, the bottom 15 countries of this 2022 IPRI edition are: Bolivarian Rep. of Venezuela (1.77), Rep. of Yemen (2.25), Haiti (2.83), Democratic Rep. of Congo (2.89), Chad (3.07), Zimbabwe (3.11), Angola (3.14), Mauritania (3.22), Bolivia (3.29), Nigeria (3.31), Nicaragua (3.46), Ethiopia (3.47), Cameroon (3.52), Bangladesh (3.58), and Madagascar (3.60).

IPRI scores for these countries range from 3.6 to 1.77. Bangladesh is the country that shows the

highest LP component (3.45), while Cameroon leads in the PPR component (3.91) and Nicaragua in the IPR component (4.19).

Contrary to what is shown for top countries, the weakest component for these bottom countries is the LP component and half of them show PPR as the second strongest component; the other half is the IPR component.

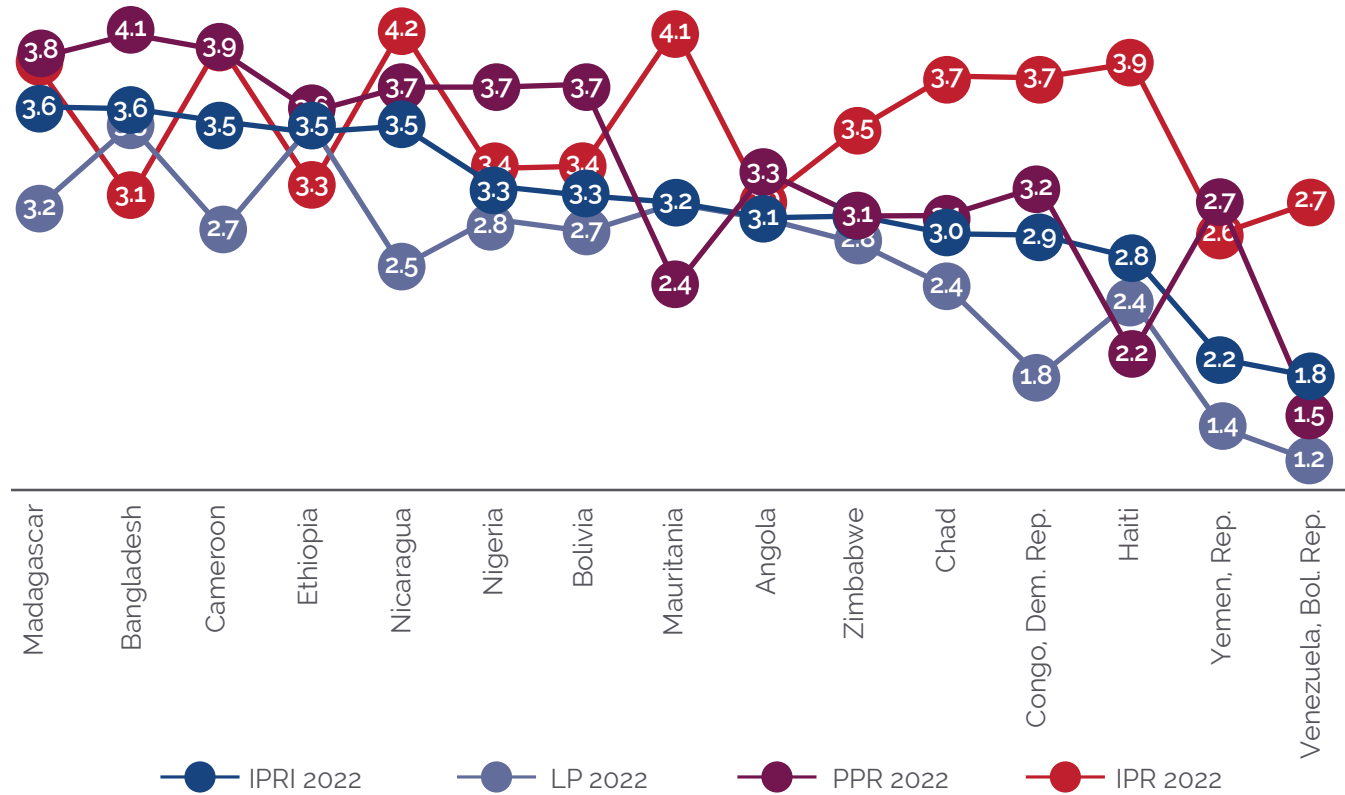


Figure 6. 2022 IPRI & Components: Bottom 15 Countries.

This year, only five countries improved their IPRI scores: Brunei Darussalam (13.07%), Haiti (7.12%), Bangladesh (5.36%), Finland (1.17%) and Germany (0.42%), while all the rest deteriorated in their score, the most upsetting being the Bolivarian Rep. of Venezuela (-33.67%) and the Rep. of Yemen (-24.68%). See Figure 7.

For the LP component, 52 countries improved their score compared with 2021; worth mentioning are the first four: Brunei Darussalam (5.76%), Malawi (5.11%), Nepal (4.40%) and Pakistan (4.30%). On the other hand, those countries that showed highest LP deterioration were: Bolivarian Rep. of Venezuela (-8.57%), Haiti (-6.9%), Mozambique (-6.16%), Ethiopia (-5.28%) and Cyprus (-5.27%). See figure 8.

For the PPR component, just six countries achieved an improvement on their score: Haiti (50.42%), Brunei Darussalam (41.58%), Bangladesh (14.87%), Finland (2.72%), Germany (1.59%) and Angola (0.44%), while 123 countries deteriorated their PPR scores. The three with highest decrease include Bolivarian Rep. of Venezuela (-63.92%), Yemen Rep. (-44.92%) and Mauritania (-43.85%).

Given the frequency of updating items for calculating the IPR score, there was no variation for 2021 (see Figure 10).

It should be highlighted that Brunei Darussalam, in spite of its mid-low IPRI score of 4.87, is the country with the highest increase relative to 2021, not only in the overall IPRI score, but also in the LP and PPR component.

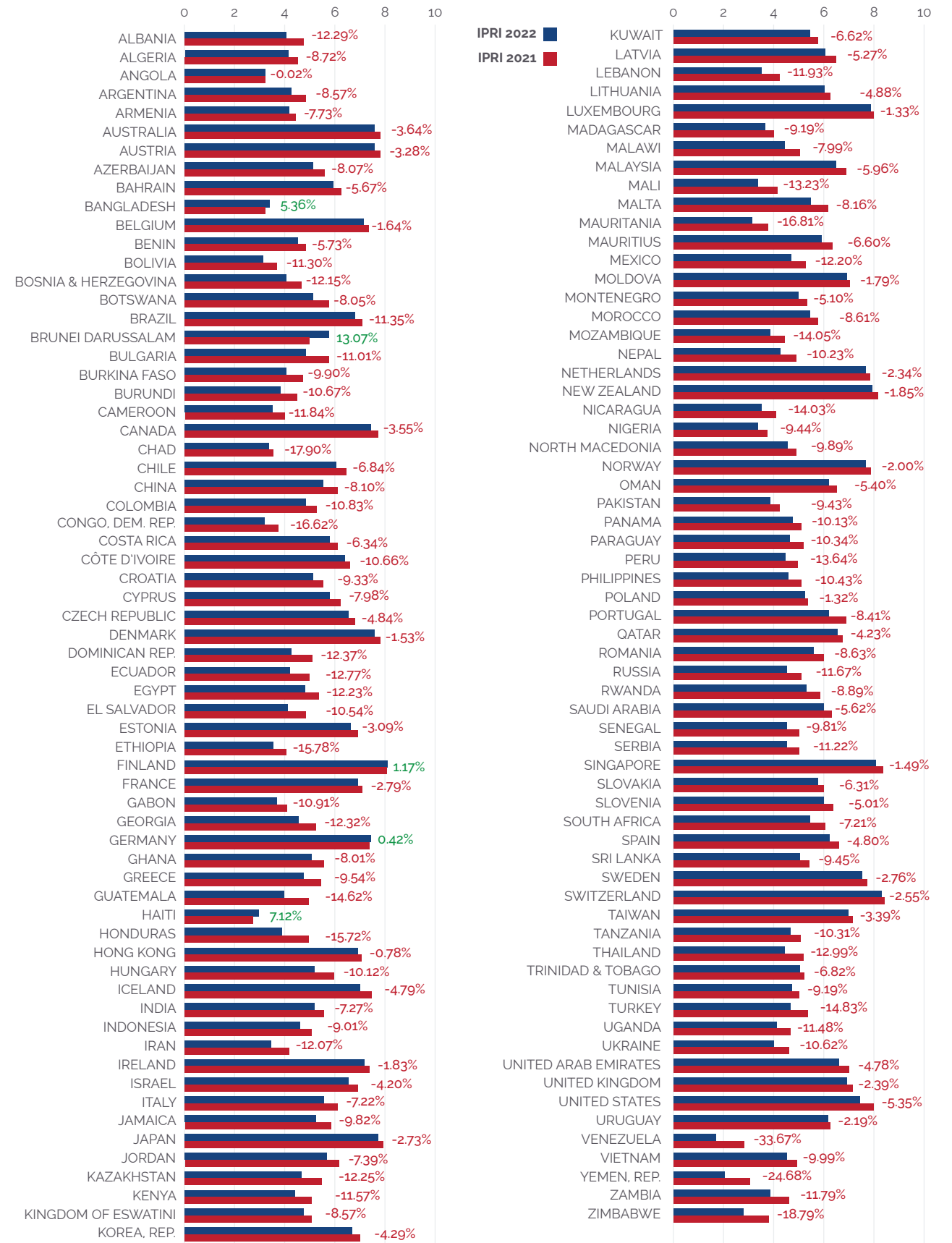


Figure 7. IPRI Score 2022-2021 and Variation (%).

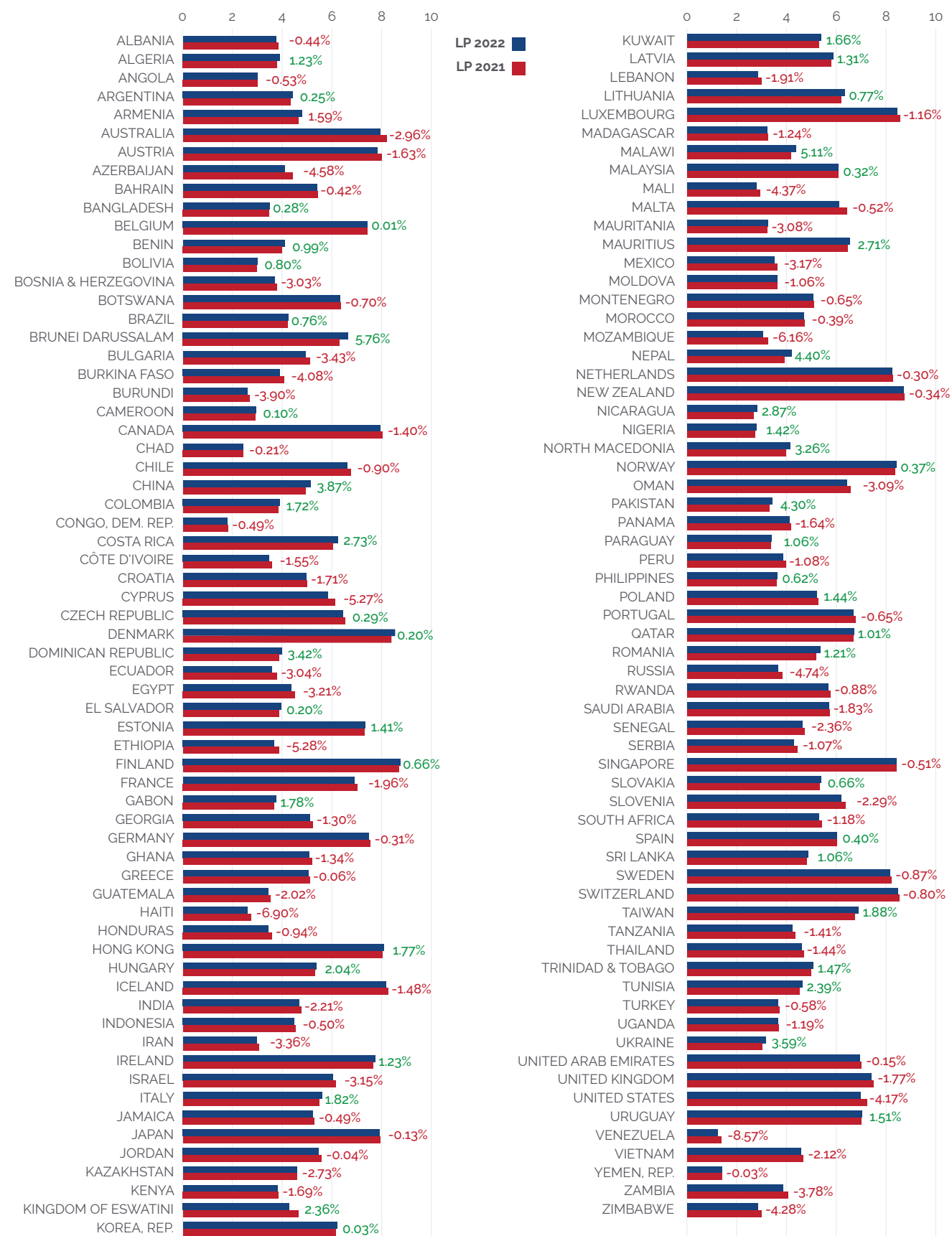


Figure 8. LP Score 2022-2021 and Variation (%).

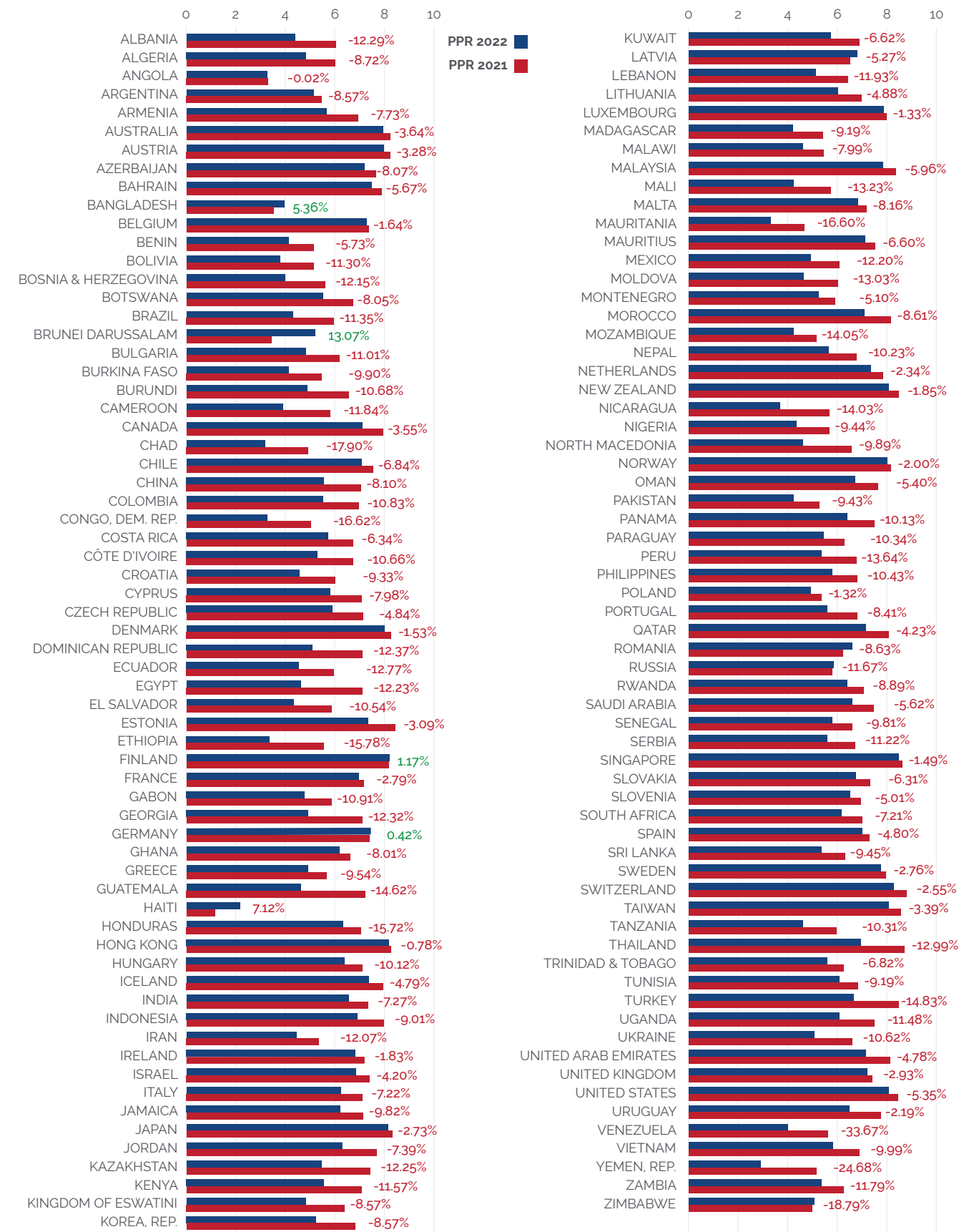


Figure 9. PPR Score 2022-2021 and Variation (%).



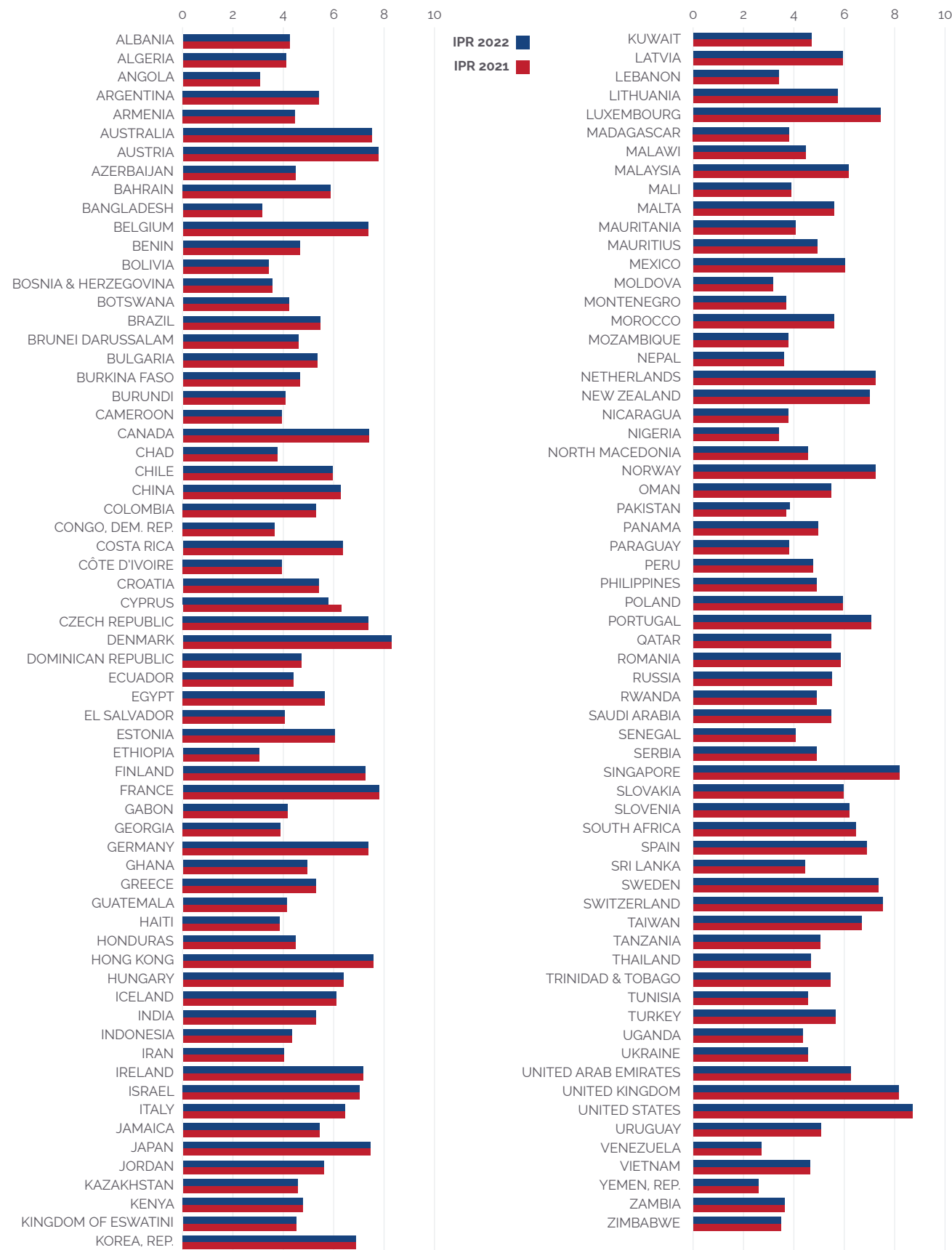


Figure 10. IPR Score 2022-2021 and Variation (%).

4

## 2022 IPRI BY GROUPS

The IPRI analysis was also performed for groups of countries which were gathered following different criteria: geographical regions, income level, degree of development, and participation in integration agreements. Group members

were updated by April 9, 2022 (see II.5. Countries and Groups and Appendix II). For each group, we calculated the IPRI score and its components. (See Table 6 and Figures 11-15).

CRITERIA	GROUP	IPRI	LP	PPR	IPR
REGIONAL GROUPS	A	4.0778	3.8145	4.1925	4.2263
	AO	5.7564	5.7462	5.9869	5.5362
	CEECA	5.0972	4.9323	5.1021	5.2574
	LAC	4.3513	4.0424	4.3512	4.6605
	MENA	5.1885	4.8594	5.6604	5.0456
	NA	7.5193	7.3243	7.1777	8.0560
	WE	7.0772	7.4517	6.8386	6.9414
GEOGRAPHICAL REGIONS	Africa	4.1586	3.8824	4.2890	4.3044
	Asia	5.4142	5.2175	5.8313	5.1939
	Central America and the Caribbean	4.3503	4.0418	4.3809	4.6282
	European Union	6.4144	6.6245	6.1400	6.4789
	North America	6.5538	6.0333	6.2315	7.3967
	Oceania	7.7728	8.3443	7.5844	7.3898
	Rest of Europe	5.2692	5.1637	5.3599	5.2839
	South America	4.3253	4.1020	4.3227	4.5510
INCOME GROUP	High income	6.6567	6.8920	6.5685	6.5095
	Low income	3.7125	3.1853	3.9665	3.9857
	Lower middle income	4.0949	3.7468	4.3102	4.2276
	Upper middle income	4.7474	4.4664	4.8692	4.9066
REGION & DEVELOPMENT CLASSIFICATION	Advanced economies	6.9654	7.2204	6.8213	6.8544
	Emerging and developing Asia	4.8716	4.7306	5.1593	4.7250
	Emerging and developing Europe	4.6760	4.3627	4.5506	5.1148
	Latin America and the Caribbean	4.3513	4.0424	4.3512	4.6605
	Middle East and Central Asia	4.8777	4.5879	5.3423	4.7031
	Sub-Saharan Africa	4.1094	3.8373	4.2600	4.2310

CRITERIA	GROUP	IPRI	LP	PPR	IPR
REGIONAL INTEGRATION AGREEMENTS	OECD	6.6650	6.8338	6.4459	6.7152
	EU	6.4144	6.6245	6.1400	6.4789
	SADC	4.2158	4.0752	4.2751	4.2969
	ECOWAS	4.1006	3.7906	4.2918	4.2193
	ASEAN	5.4715	5.4904	5.7450	5.1790
	PARLACEN	4.1334	3.5696	4.4509	4.3798
	GCC	6.1593	6.1187	6.7834	5.5758
	AP	4.9149	4.4600	4.7599	5.5248
	MERCOSUR	4.7601	4.7796	4.7545	4.7461
	SAARC	4.2947	4.0779	4.7113	4.0950
	CEMAC	3.4438	2.9477	3.4499	3.9339
	MCCA	4.2696	3.9190	4.4907	4.3990
	CIS	4.6621	4.0919	5.1842	4.7103
	ARAB M UNION	4.3500	4.0952	4.3596	4.5952
	OPEC	4.2334	3.9584	4.5035	4.2381
	CARICOM	4.3324	4.2358	3.8572	4.9041
	CAN	4.0757	3.5377	4.2210	4.4685
	EFTA	7.6051	8.3721	7.4983	6.9449
	IGAD	4.0196	3.6403	4.2832	4.1353
	USMCA	6.5538	6.0333	6.2315	7.3967
CEEAC	3.6606	3.1653	3.9062	3.9103	
TPP-11	6.3624	6.5579	6.2711	6.2581	
PROSUR	4.5863	4.2844	4.5694	4.9052	

Table 6. 2022 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 Latin America

and the Caribbean; some of the classifications include/exclude some countries.

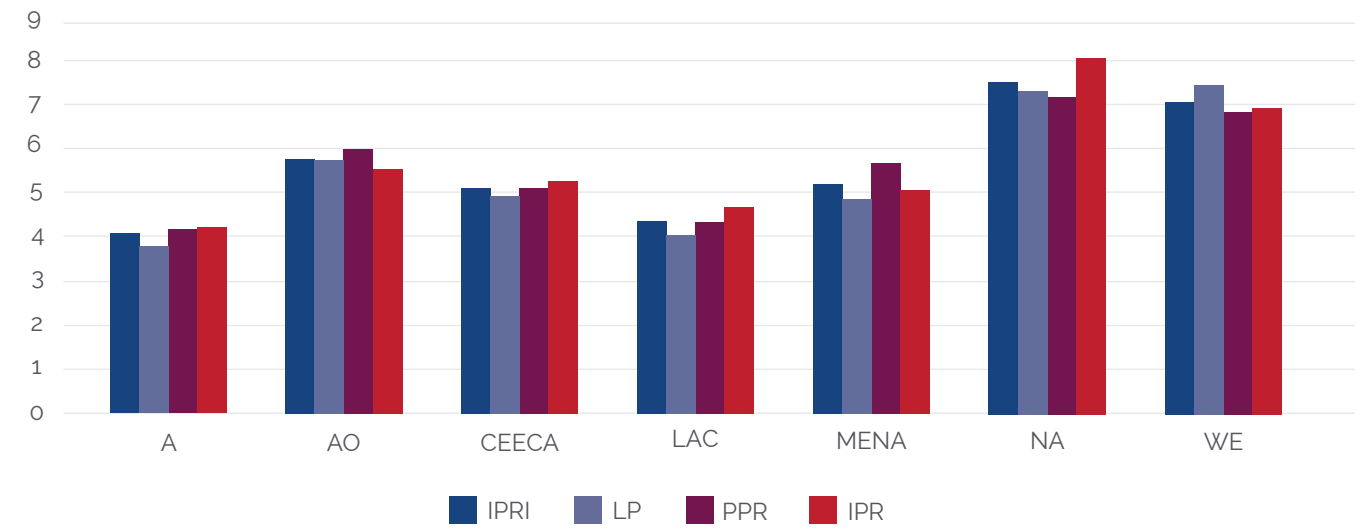


Figure 11. 2022 IPRI and Components. Regional Groups Score.

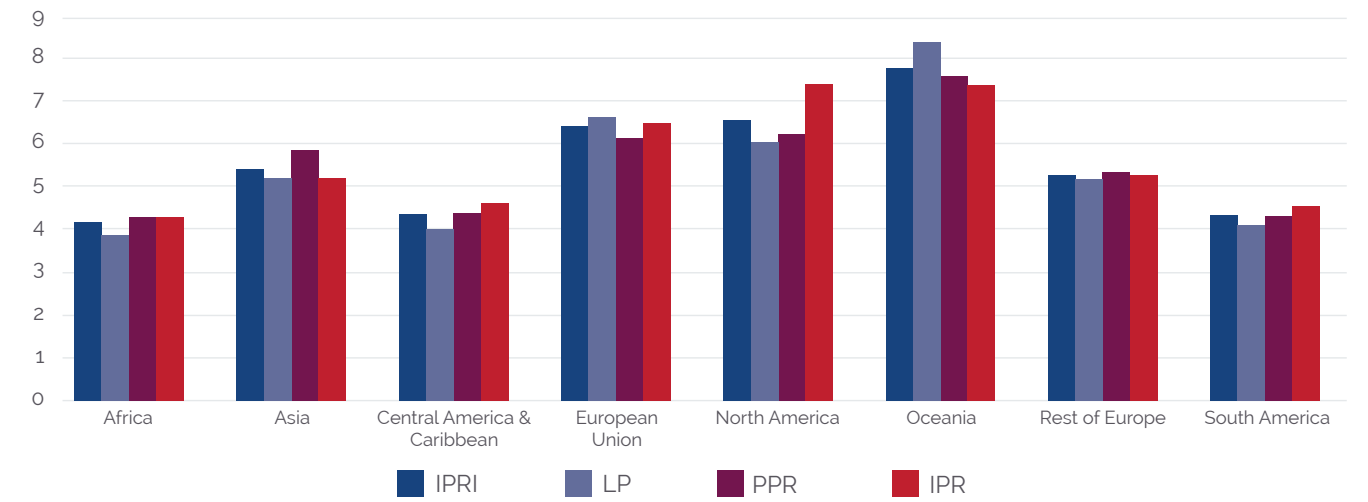


Figure 12. 2022 IPRI and Components. Geographical Groups Score.

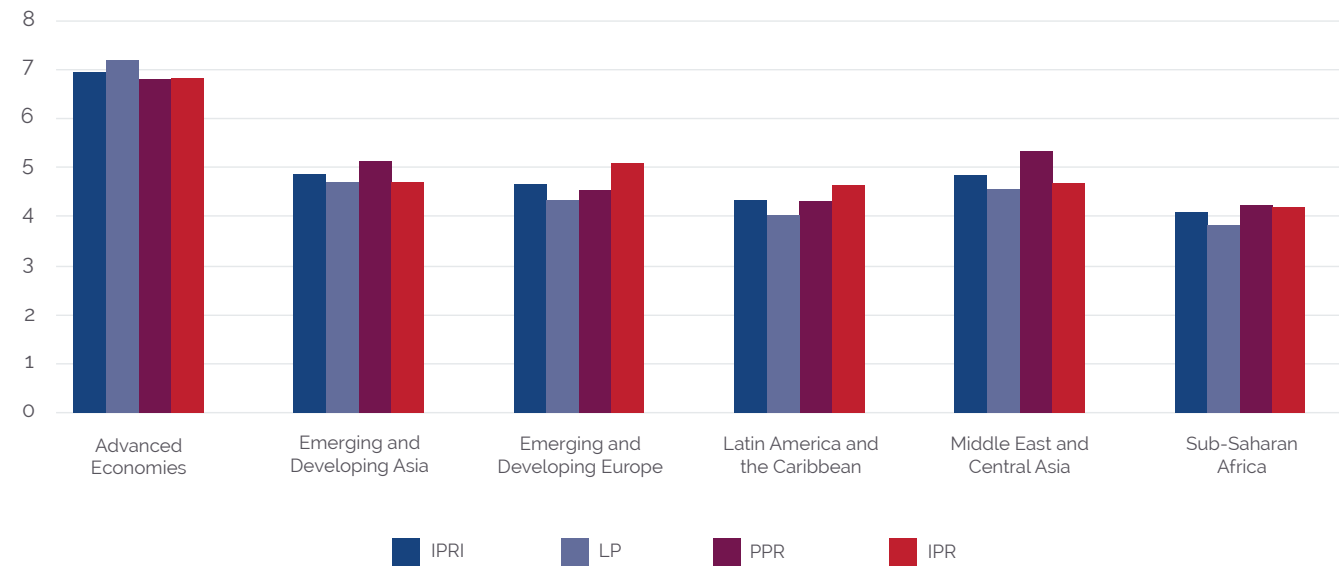


Figure 13. 2022 IPRI and Components. Region & Development Groups Score.

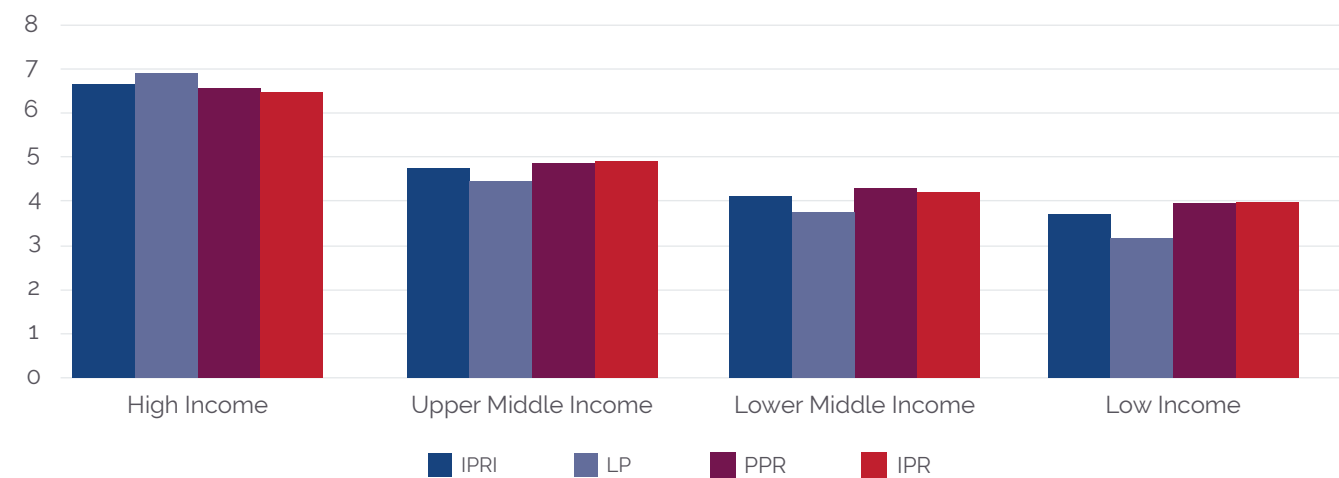


Figure 14. 2022 IPRI and Components. Income Groups Score.

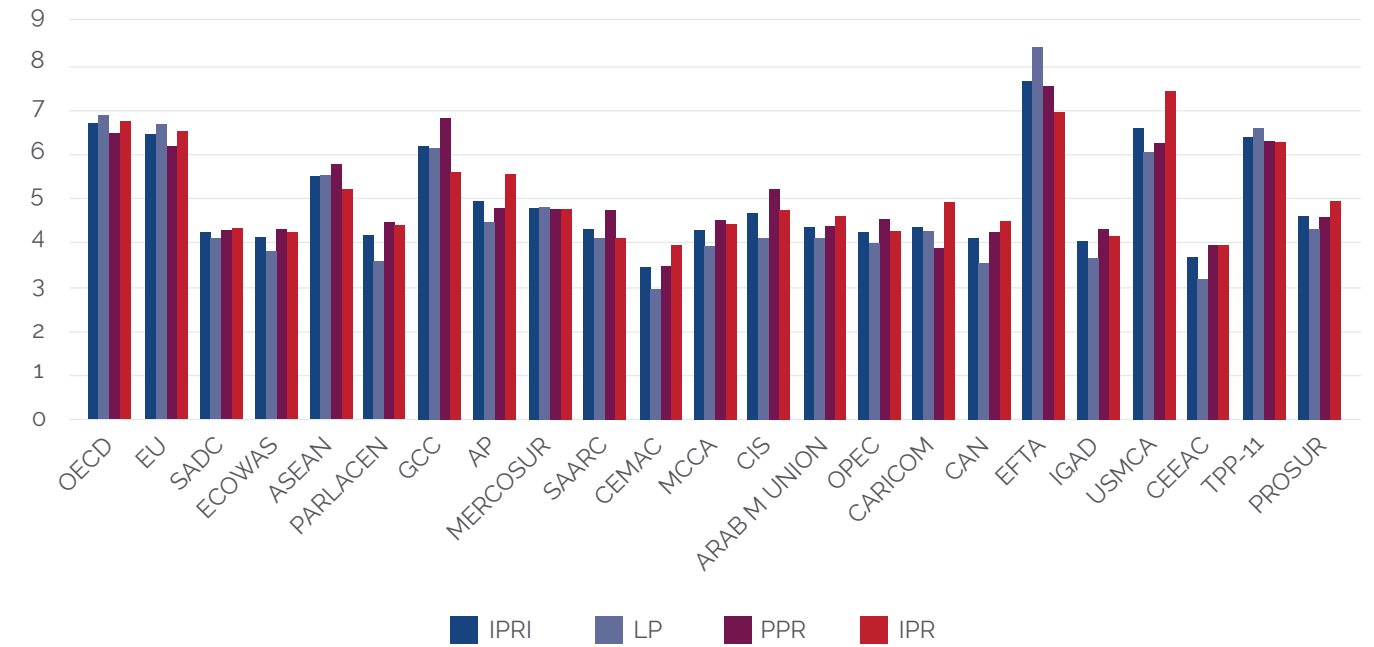


Figure 15. 2022 IPRI and Components. Integration Agreement Groups Score.

All groups reduced their IPRI score this year compared to 2021 from 2.7% to 10.5%. Below, a brief analysis of the groups' results:

- Regional Groups:** North America (7.52) leads the IPRI score, followed by Western Europe (7.08), and East Asia, South Asia & Pacific (5.76). On the other extreme we find Africa (4.08) and Latin America & the Caribbean (5.35). This year, Africa is the group that deteriorated the most in its IPRI score (-10.5%) followed by Latin America & the Caribbean (-10.4%), and Central and Eastern Europe and Central Asia (-8.5%). For the LP component, changes were slighter with an improvement for East Asia, South Asia & Pacific (+0.56%), and a decrease for North America (-2.69%). For PPR, negative changes were much more important: Latin America & the Caribbean (-25.7%), Africa (-25.1%), CEECA (-21.4%) and MENA (-18.5%) countries showed the most relevant deterioration.
- Geographical Groups:** At the top we find Oceania (7.77), North America (6.55) and the European Union (6.41), while at the bottom are Africa (4.16), South America (4.32) and Central America and the Caribbean (4.35). The IPRI scores' change compared to 2021 were negative, from -10.73% for South America, to -2.73% for Oceania. For the LP component changes were mild and mixed: Africa with -0.74% to Rest of Europe and North America with +2.6% and +2.78% respectively. Decline was shown for all groups in the PPR component, with South America (-26.5%), Africa (24.9%) and Central America & the Caribbean (-24.7%) more pronounced. For the IPR component, European Union showed a decline (-0.5%) while Rest of Europe showed an improvement (+2.9%).

## 2022 IPRI & POPULATION

A demographic perspective is highly relevant for our Index, as its goal is to assess the level of property rights that people enjoy. Given the relevancy, since 2015 we have included a population incidence to the Index.

Although the 2022 IPRI average score is 5.19, when population weighs in, it reduces to 5.12, which is a decrease of 8.53% from last year (IPRI-Pop 2021=5.596). This presents a discouraging scenario where it will be difficult for the vast majority of the population to access and enjoy

property rights protection. On the other hand, we can see it as an opportunity for improvement, as there is still much room for upgrading the property rights systems in highly populated countries. Thus, the IPRI becomes an even more powerful tool for policy makers.

This year's sample of 129 countries has a population of 7.32 thousand millions people<sup>4</sup>—representing 93.91% of world population and it shows that 73% of that population live in 84 countries with an IPRI between 4.5 and 7.4.

2020 IPRI (RANGES)	NUMBER OF COUNTRIES	POPULATION (000)	POPULATION (%)	IPRI INCIDENCE (%)	IPRI-POP. INCIDENCE (%)	% GDP
1.8 - 2.7	2	58,262	0.8	0.6	0.3	0.61
2.8 - 3.7	18	872,646	11.9	9.1	7.9	1.69
3.8 - 4.7	41	1,850,385	25.3	26.5	21.7	10.58
4.8 - 5.7	26	3,432,002	46.9	20.4	48.8	27.26
5.8 - 6.7	19	237,979	3.3	17.5	4.0	6.76
6.8 - 7.7	15	814,843	11.1	16.4	16.2	49.15
7.8 - 8.7	8	53,842	0.7	9.4	1.1	3.94
	<b>129</b>	<b>7,319,959</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Table 7. 2022 IPRI: Population.

More than half of the sample population (51.9%) live in 67 countries, representing 72% of the population, with middle to low scores in this Index. [3.8 - 5.7].

On the two extremes of the sample, we find that 11.9% of the population live in 23 countries, enjoying higher levels of property rights protection [6.8 - 8.7]; and 12.7% of the population live in 20 countries with lower levels of property rights [1.8 - 3.7].

3. **Regional & Development Groups** (IMF classification): Advanced Economies (6.97) leads the IPRI scores, followed by MENA & Pakistan (4.88), Emerging and Developing Asia (4.87), Emerging and Developing Europe (4.68), Latin America and the Caribbean (4.35), and ending with the Sub-Saharan Africa (4.11). All the groups deteriorated in their IPRI score, notably Emerging and Developing Europe, Latin America and the Caribbean, and Sub-Saharan Africa, more than 10%. Emerging and Developing Asia was the only group with a slight improvement in the LP component (+1.42%). The deterioration of the PPR component was widespread, led by Latin America & Caribbean (-25.8%), Emerging and Developing Europe (-25.2%) and Sub-Saharan Africa (-24.6%).

4. **Income Group** (World Bank classification): As in previous editions, the income classification groups show the same display of the IPRI score. High Income (6.66) remains at the top, followed by Upper Middle (4.74), Lower Middle (4.09) and Low Income (3.71) coun-

tries. The LP component shows improvement for Upper Middle (+4.13%), High (+1.01%) and Low Income (+0.18%) countries. The decline in PPR component was widespread and relevant: Lower Middle (-24.8%), Low Income (-24.3%), Upper Middle (-23.3%) and High Income (-10.13%) countries. The IPR component improved for the Upper Middle (+2.63%), High (+1.12%) and Low Income (+0.26%) countries, while decreased for Lower Middle (-0.57%) Income group.

5. **Integration Agreements:** Since 2017, the five top groups are EFTA (7.61), OECD (6.67), USMCA (6.55), EU (6.41) and TPP-11 (6.36). However, all Integration Agreements groups reduced their IPRI score: heading the set back is CEMAC (-13.4%) followed by PARLACEN (-12.82%), IGAD (-12.79%) and CAN (-12.16%). Slight changes were registered for the LP component; but a widespread decrease registered for the PPR component, with the exception of CARICOM which showed an improvement of 7.72%. For the IPR component just the CIS group showed and improvement of 1.14%.



4. Source: United Nations, Department of Economic and Social Affairs, Population Division. World Population Prospects 2019, Online Ed. <https://population.un.org/wpp/Download/Standard/Population/> downloaded: March 29, 2022.

We may also supplement this IPRI-Population analysis, with GDP results, as follows:

- » 2022-IPRI countries include 93.91% of world population, accounting for 98.12% of world GDP.
- » Almost 60% of the total GDP comes from 42 countries with 15% of the total population, and they show robust property rights systems in a range [5.8 – 8.7] of the IPRI.
- » Particularly 53% of the total GDP is from 23 countries with 11.8% of total population with an IPRI score in a range of [6.8 – 8.7].
- » 27.6% of the total GDP lies in 26 countries with 47% of the total population, and they show middle IPRI scores in a range [4.8 – 5.7].
- » 13% of the total GDP is manufactured in 61 countries with 38% of the total population, and they show weak property rights systems, with low IPRI scores in a range [1.8 – 4.7].

This information is an important indication of 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 for analyzing changes in the IPRI scores: country, population, and their belonging to a regional group. It's upsetting news to see that most of the countries have deteriorated their scores, particularly those densely populated.

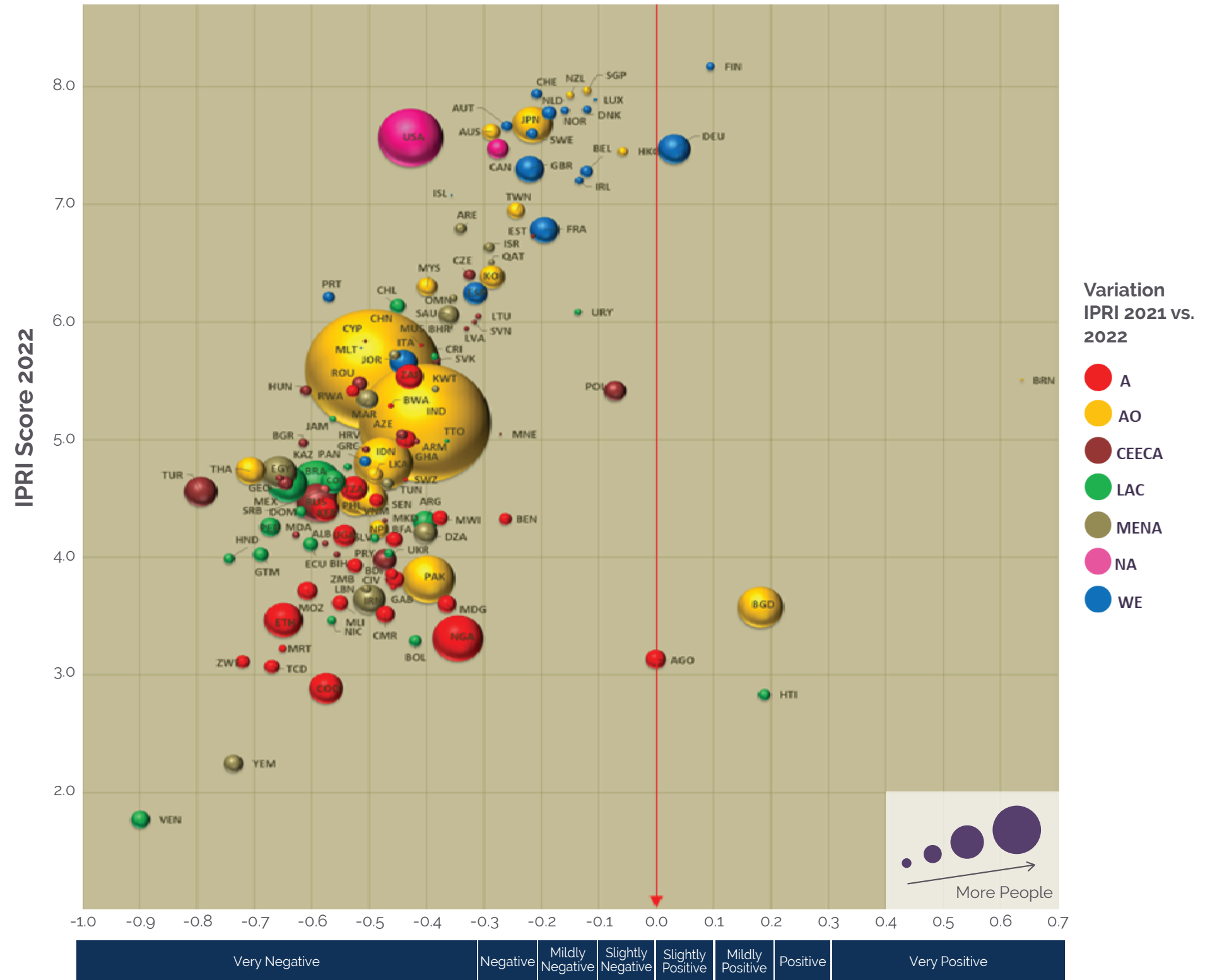


Figure 16. 2022 IPRI: Country Score Changes (Population and Regional Groups).

## 2022 IPRI & GENDER

Gender Equality is a goal in itself. It refers to the equal rights, responsibilities and opportunities for women and men, girls and boys; and its relevance has been demonstrated in fostering development for both less developed and developing countries, particularly in some areas like health, education, agriculture and unbiased access to credit for reducing poverty.

We use a Gender Equality component combined with the IPRI to grasp possible bias as proxy for discrimination in a country/territory, which would mean that the result of the Index would not be equally applicable to all members of a society. The possible forms of discrimination are multiple, but we have considered only that based on gender.

The data used to calculate the Gender Equality component for the IPRI are those items more closely related to property rights and its impact in economic development of the 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). <https://www.genderindex.org/data/>, downloaded March 29, 2022. 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 it 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 have three levels: 0 (Best), 0.5 (Average) and 1 (Worst). All data series were rescaled to (0-10). The final GE score is calculated as the average of the 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 incorporates Gender Equality as following:

$$\text{IPRI - GE} = \text{IPRI} * [(\text{GE} + 10)/20]$$

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 display 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 policy makers, we keep 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 4.48.

Looking into details of the GE components, we find that of the five components, Women's Social Rights is the weakest, showing an average score of 5.28, followed by Inheritance Practices (6.783), Women's Access to Land Ownership (7.597), Women's Access to Property other than Land (7.907); and the strongest is Women's Access to Bank Loans (8.624). Inside Women Social Rights, we find that the strongest component is Freedom of Movement (8.295), coming next Citizenship Rights (7.461), Divorce Rights (6.628), Household Responsibilities (4.283), Violence against Women (4.244), Workplace Rights (3.463); and the weakest is Female Genital Mutilation (2.558).

Fifteen countries, show a range of [9.5-9.786] for the GE score: Austria, Sweden, Malta, Belgium, Portugal, Norway, New Zealand, Australia, Switzerland, Denmark, Netherlands, USA, Ireland, Iceland and Estonia. 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 (See Figure 17a for GE scores and rankings).

The average of the 2022 IPRI-GE score is 4.48, which is a decline from last year (IPRI GE 2021: 4.89). See Figure 17b for IPRI-GE scores and rankings.

Finland leads the IPRI-GE (7.91), followed by New Zealand (7.76), Switzerland (7.74), Norway (7.66), Luxemburg (7.64) and Denmark (7.61). All of them are very close in their score values and are over 7.6.

On the other extreme of the IPRI-GE, with scores below 2.5, we find Venezuela, Bolivarian Rep. (1.69), Yemen Rep. (1.75), Mauritania (2.08), Chad (2.16), Democratic Rep. Congo (2.31) Cameroon (2.39), Angola (2.42), and Haiti (2.46).

Some of these countries report this low value due to their low IPRI scores and not their GE scores, which is the case for Bolivarian Rep. Venezuela, with GE=9.071 (IPRI-GE=1.689), Haiti with GE=7.357 (IPRI-GE=2.46), and Democratic Rep. Congo with GE=6.00 (IPRI-GE=2.31).

On the contrary we also find countries with a low GE score that boost their IPRI-GE, thanks to their IPRI results. Those are the cases of Kuwait with GE=1.357 and IPRI-GE=3.08 or Egypt with GE=2.929 and IPRI-GE=3.052.

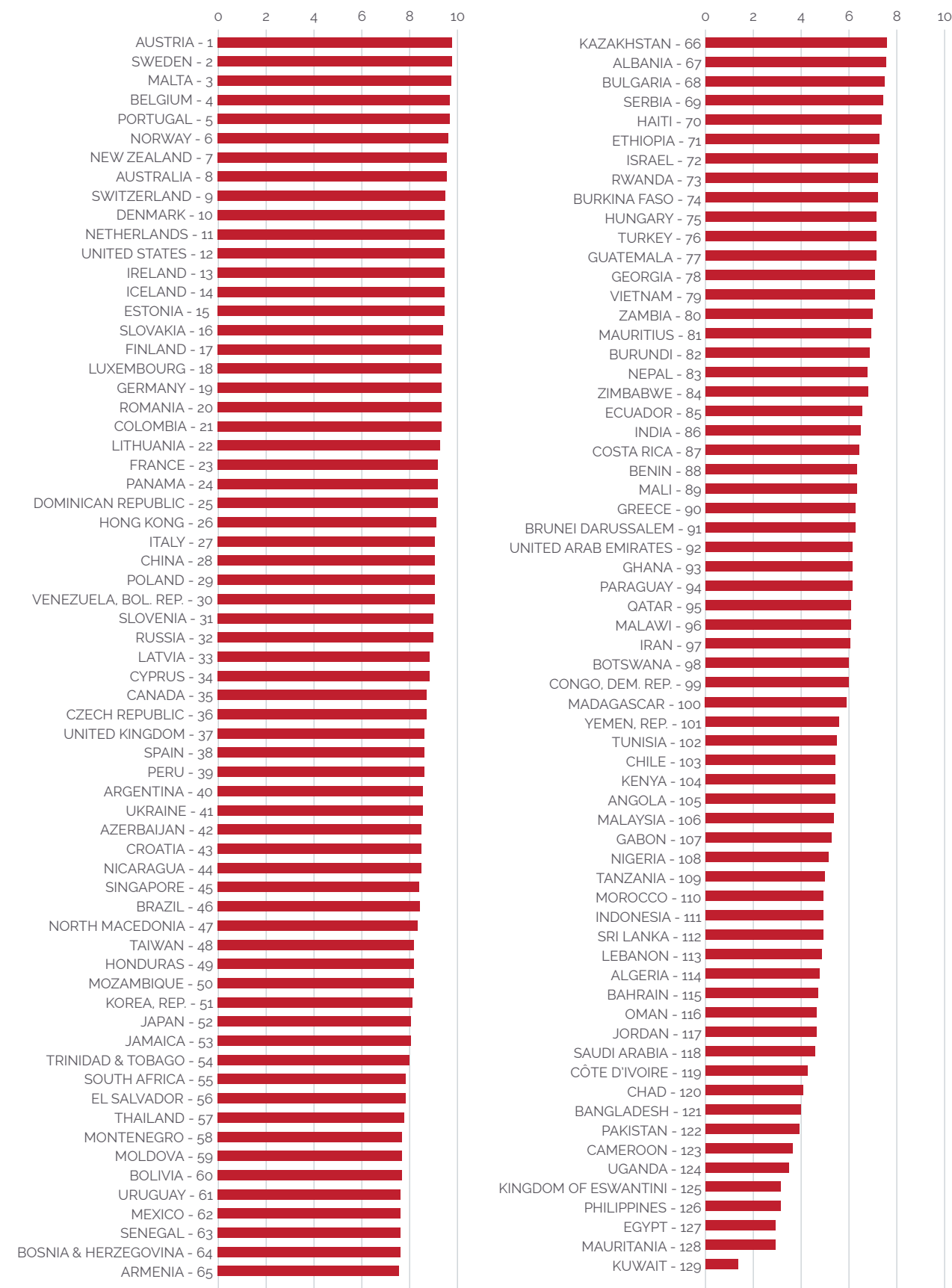


Figure 17a. 2022 GE Scores & Rankings..

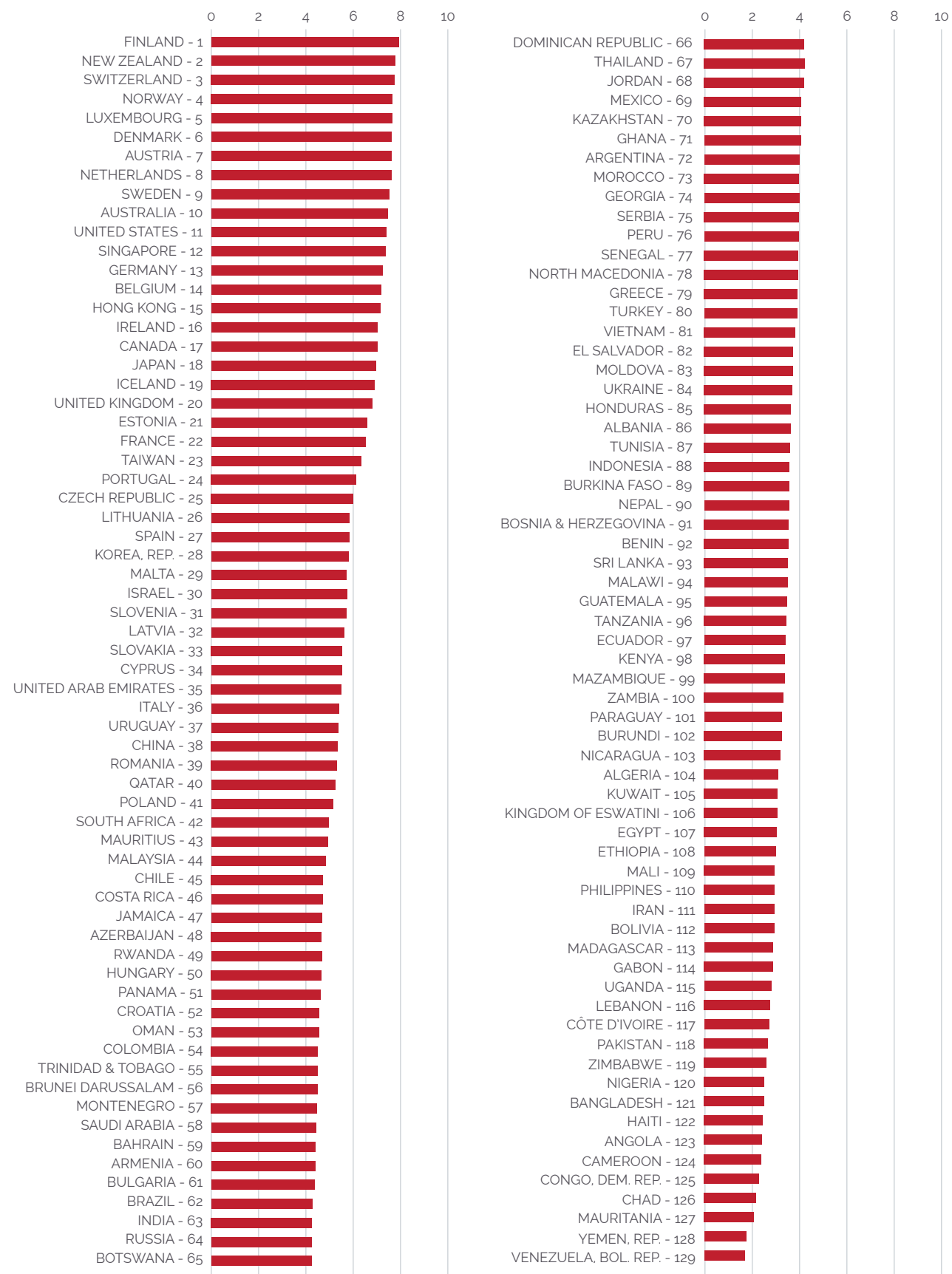


Figure 17b. 2022 IPRI-GE. Scores & Rankings.

Analyzing the IPRI-GE by groups, we found the following results (see Figure 18a - 18e):

- » **Geographical Regions:** at the top of the IPRI-GE scores we find Oceania (7.61) which also leads GE (9.57), followed by North America (IPRI-GE 6.149, GE 8.62) and the European Union (IPRI-GE 6.13, GE 9.03); while at the bottom we find Africa (IPRI-GE 3.27), Central America & Caribbean (IPRI-GE 3.91), South America (IPRI-GE 3.8), Asia (IPRI-GE 4.42) and Rest of Europe (IPRI-GE 4.84).
- » **Regional and Development Criteria** (IMF classification): Advanced Economies (IPRI-GE 6.61, GE 9.06) is leading the group followed by Emerging and Developing Europe (4.27), Latin America and the Caribbean (3.87), Emerging and Developing Asia (3.77), MENA & Central Asia (3.6), ending with Sub-Saharan Africa (3.29). Emerging and Developing Europe 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 Asia (5.68).

» **Income Classification** (World Bank classification): the IPRI-GE keeps displaying the same pattern as the IPRI, holding the relationship between the robustness of property rights system and economic strength, and also for non-discrimination by gender. On the other hand, the GE shows also the same pattern for High (8.29) and Upper Middle Income countries (7.36), while its scores are higher for Low Income (6.28) than Lower Middle Income countries (5.73).

» **Economic and Regional Integration Agreements:** The IPRI-GE scores show the following five top groups are EFTA (7.43), OECD (6.29), USMCA (6.15), EU (6.13) and TPP-11 (5.66). The bottom groups are CEMAC (2.47), CEEAC (2.86), IGAD (3.07), OPEC (3.16) and Arab Monetary Union (3.19). It should be noted that PARLACEN, CIS, CAN, CARICOM, AP, MERCOSUR, MCCA and PROSUR show high GE scores, but their IPRI scores reduce their IPRI-GE values.





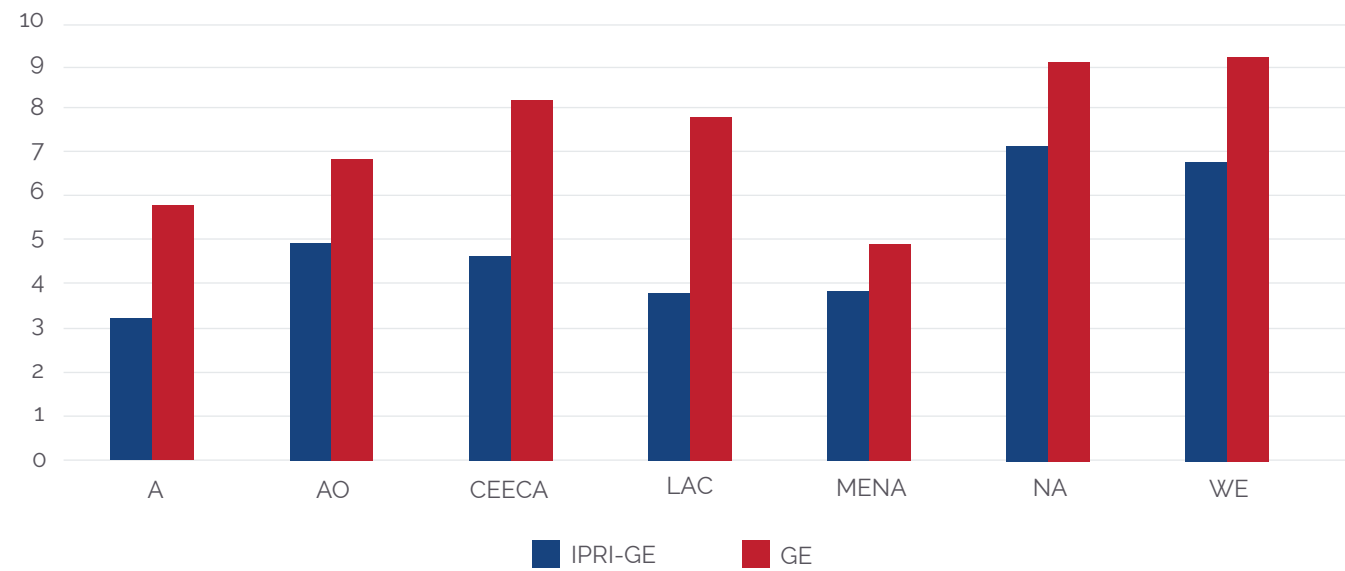


Figure 18a. 2022 IPRI-GE and GE: Regional Groups Scores.

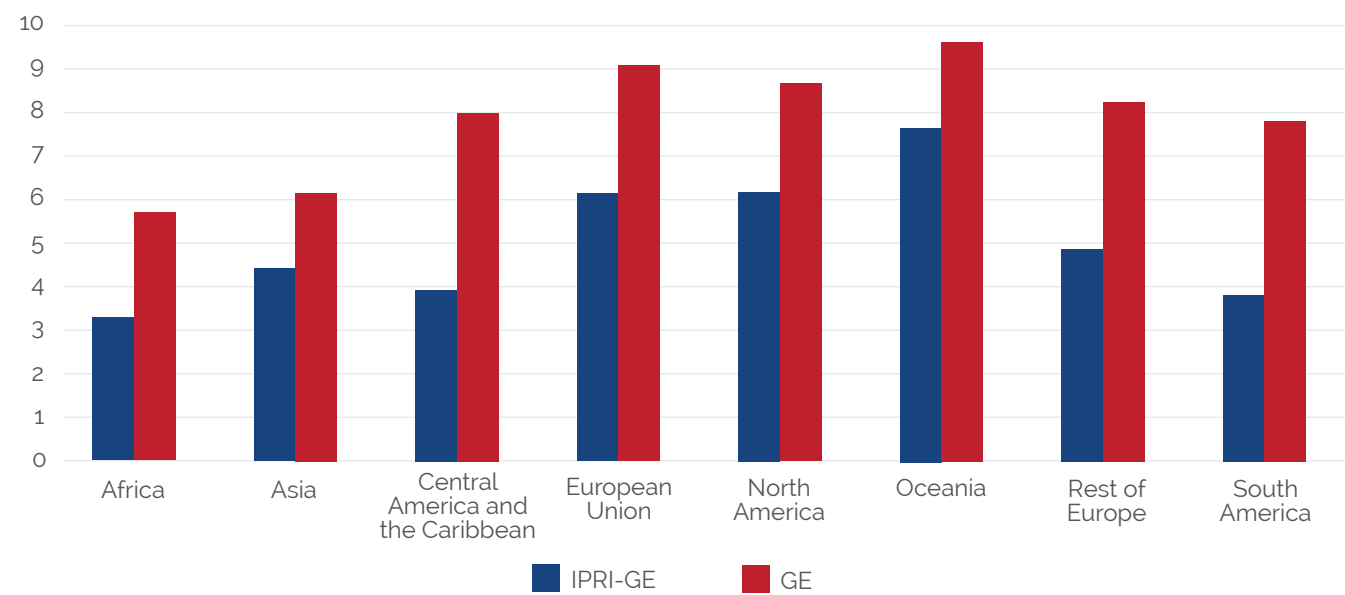


Figure 18b. 2022 IPRI-GE and GE: Geographical Groups Scores.

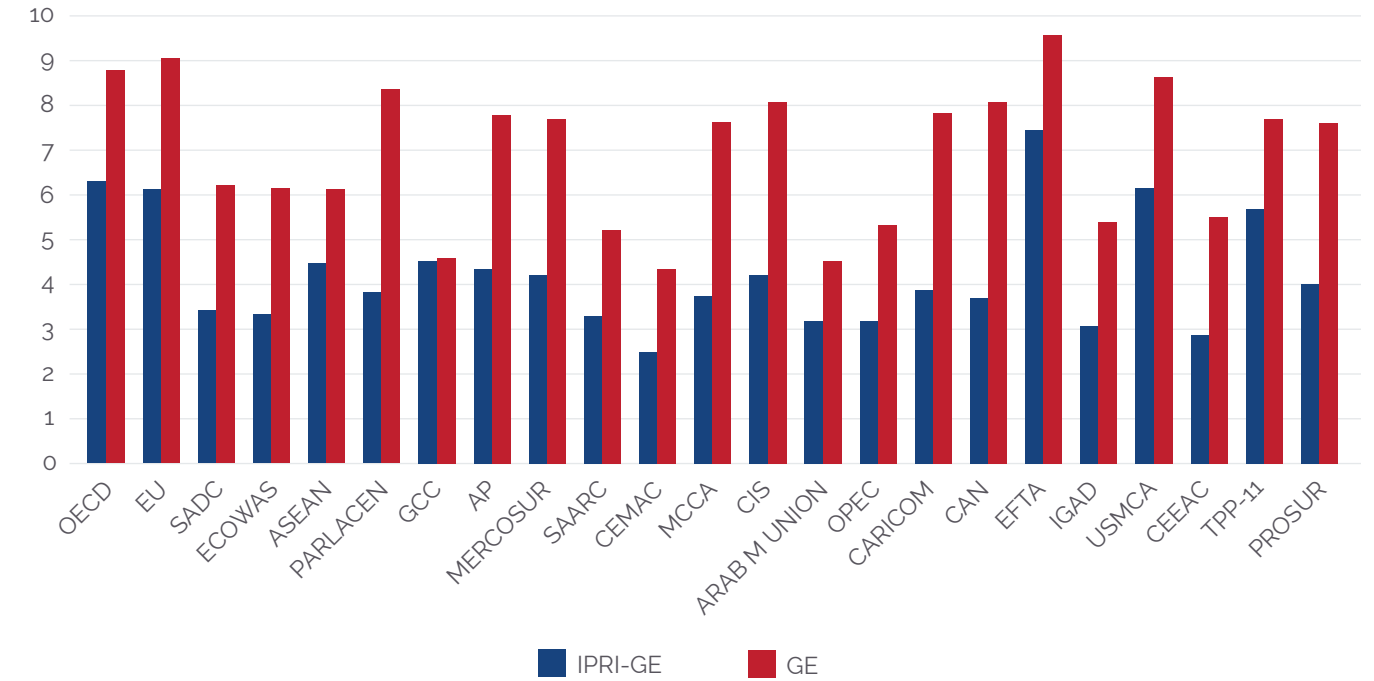


Figure 18c. 2022 IPRI-GE and GE: Regional and Development Groups Scores.



Figure 18d. 2022 IPRI-GE and GE: Income Groups Scores.

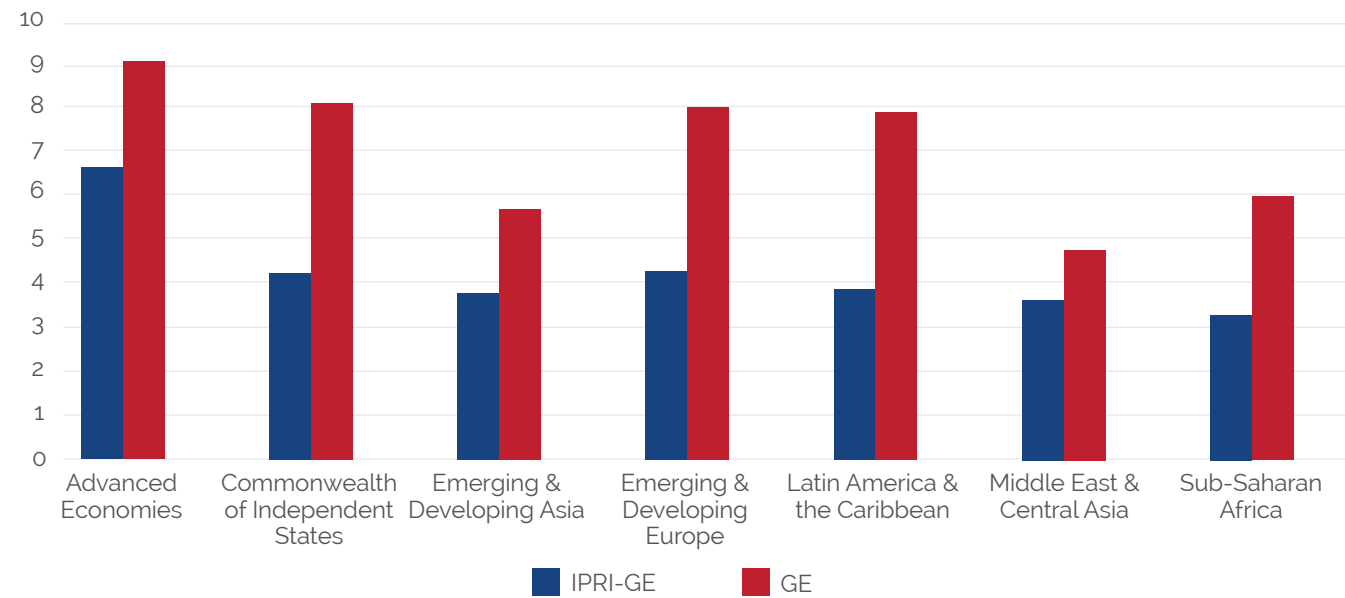


Figure 18e. 2022 IPRI-GE and GE: Integration Agreements Groups Scores.

Table 8 shows the 2022 IPRI-GE rankings by quintile for the 129 countries in the sample. As in the IPRI, the number of countries belonging to each quintile increases from the top 20% to the bottom 20% (1<sup>st</sup> quintile 15 countries, 2<sup>nd</sup> quintile 19 countries, 3<sup>rd</sup> quintile 25 countries, 4<sup>th</sup> quintile 29 countries, and 5<sup>th</sup> quintile 41 countries). Hence, the fourth and the fifth quintiles include 54% of the countries (70 countries) in the sample.

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

Table 8. 2022 IPRI-GE Ranking by Quintiles.



7

## 2022 IPRI & TAXES

Property rights and the principle of necessity of taxes both have legitimate worth; and under these circumstances, the over the top idea of an authoritative expense strategy by tax policy requires accommodating the two rights. Any other way would be an instance of inconsistent dispossession or exorbitant hardship of the property right; or in the contrary case, a break of the obligation to contribute to the functioning of public administration.

This prompts a legitimate consideration and assessment of the connection between the right of the State to force the charge of taxes and the private property rights of citizens, particularly given the financial insatiability – tax vorac-

ity – seen in numerous legislatures forestalling the fleeting furthest reaches of their goals and management, producing distortions past their terms to be endured by people in the future.

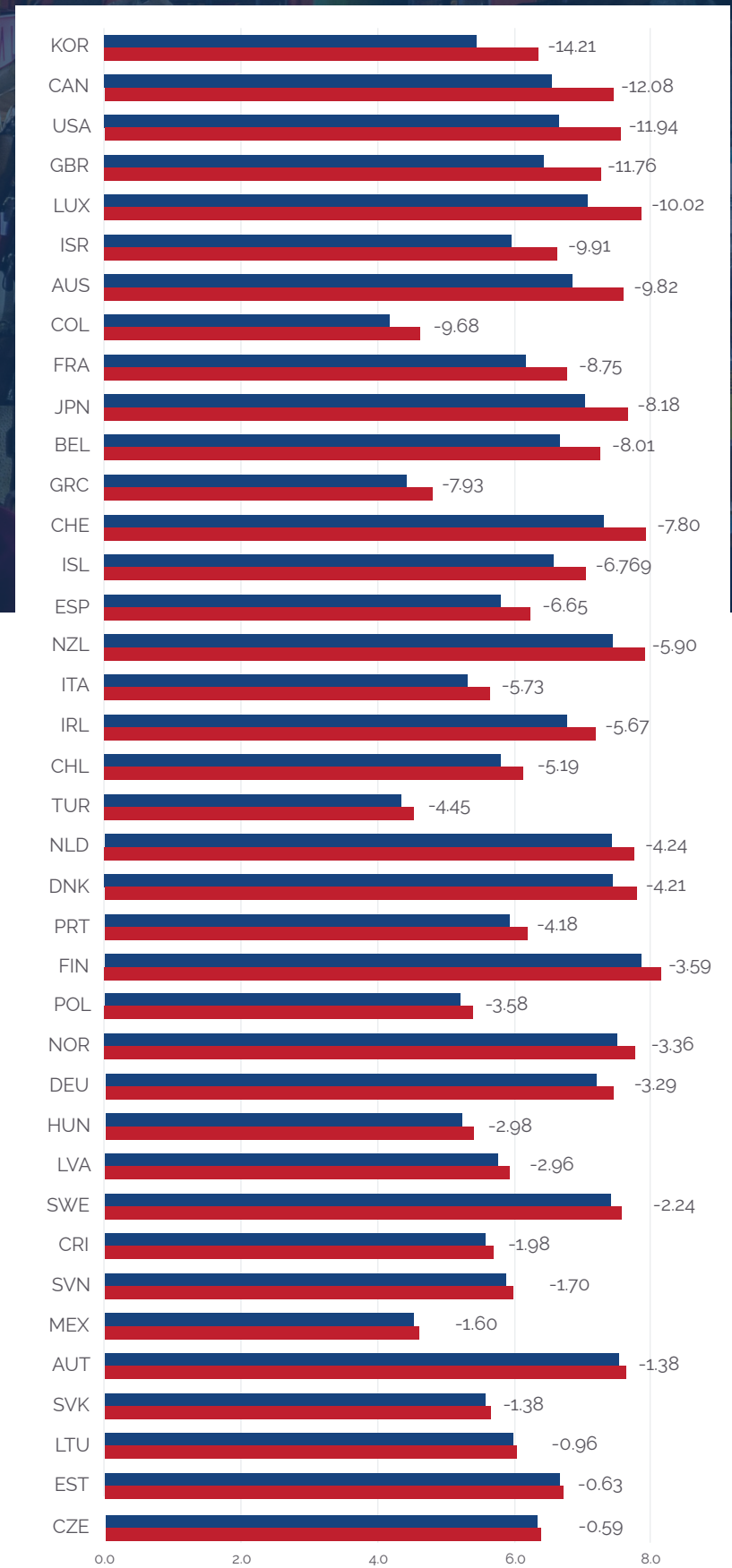
According to the OECD, property taxes are defined as those recurrent and non-recurrent taxes on the use, ownership or transfer of property. These include taxes on real estate or net worth, taxes on change of ownership by inheritance or gift, and taxes on financial and capital transactions. This indicator 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 undeniable that property tax implies a constraint, a restriction to that property right. By virtue of the above, an adjustment to the IPRI for this concept is made to account these impacts. We extend the IPRI using data on property tax revenues as a % of total tax revenues, from the OECD, as follow:

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

Results show that on average the IPRI-PT score for these countries is 5.79% lower than its IPRI value, with some of them with a reduction over 12%. South Korea (-14.21%), Canada (-12.08%), USA (-11.94%), UK (-11.76%), and Luxembourg (-10.02%) show the highest negative impact – over 10% – while Czech Rep., Estonia and Lithuania the lower ones, with less than 1%.

Figure 19. 2022 IPRI vs 2022 IPRI-PT: OECD Countries.



## 2022 IPRI & A VIRTUOUS ECOSYSTEM

There's broad academic literature highlighting relevant impacts between the respect for property rights and making strides in the quality of life of citizens, turning property rights into a fundamental piece of a virtuous ecosystem for human development. In light of the above, we examined different elements to assess conceivable relationships – using statistical correlations – with the IPRI, drawing empirically based conclusions.

Those measurements were gathered in five (5) dimensions:

1. Economic Environment
2. Social Environment
3. Institutional Environment
4. Ecological Environment
5. Emerging Environment



## I. ECONOMIC ENVIRONMENT

Seeking a broad and comprehensive approach, we start with the economic dimension, grasping those conditions citizens enjoy in daily life. We included four categories to be evaluated (source details in Appendix IV):

- » **Production:** Using the Gross Domestic Product (GDP)<sup>5</sup> in constant USD (2015=100) *per capita* terms and also adjusted by the Gini Coefficient.<sup>6</sup> Adjusting the GDP by the Gini coefficient was considered to capture income inequality (Data Source: World Bank and UN DESA).
- » **Domestic Investment:** Using the Gross Capital Formation in current *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).
- » **Competitiveness:** Using the Competitive Industrial Performance Index (CIP), by the United Nations Industrial Development Organization (UNIDO) which benchmarks the ability of countries to produce and export manu-

factured goods competitively. (2020 Edition, <https://www.unido.org/news/unidos-competitive-industrial-performance-index-2020-country-profiles-published>).

- » **Sustainability:** Using the Global Sustainable Competitiveness Index (GSCI), by Solability Sustainable Intelligence, that measures the ability to generate and sustain inclusive wealth without diminishing the future capability of sustaining or increasing current wealth levels (<https://solability.com/the-global-sustainable-competitiveness-index/the-index>).

Then we used Pearson's Correlation Coefficient, which is a measure of the linear dependence between two variables, to evaluate their associations with the IPRI and its components. We found that these correlations were significant and relevant<sup>7</sup> (see Table 9).

The tranches or correlation's ranges we use are as follows: 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]. The direction of the correlations were as expected.

	PRODUCTION		INVESTMENT	SUSTAINABILITY	COMPETITIVITY
	GDP (constant, <i>per capita</i> )	GDP (constant, <i>per capita</i> ) * GINI	GROSS CAPITAL FORMATION (current, <i>per capita</i> )	MULTIDIMENSIONAL POVERTY INDEX	GLOBAL COMPETITIVENESS INDEX
IPRI	0.849	0.830	0.780	0.709	0.647
LP	0.829	0.796	0.770	0.718	0.568
PPR	0.794	0.780	0.735	0.604	0.572
IPR	0.805	0.815	0.726	0.706	0.741

Table 9. Pearson's Correlation Coefficients.

5. 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.
6. The Gini coefficient is a statistical measure of the degree of variation represented in a set of values.
7. Correlation theory is aimed to show the possible relationship, association or dependence between two or more observed variables. Besides, it allows for the analysis of the type of association (direct or indirect) and the level or degree of intensity between them.



GDP *per capita* and the GDP adjusted by Gini coefficient show strong correlations with the IPRI, the IPRI component, while good correlation for PPR. The LP component correlation is strong for GDP pc, while good when adjusted by the Gini coefficient.

Domestic investments showed good correlations with the IPRI and all of its components, being the highest with IPRI, followed by LP, then PPR, and IPR.

The competitiveness of domestic production showed good correlations with the IPR component, followed by the IPRI, while moderate with other two components.

The sustainability and inclusiveness of wealth creation showed good correlations with IPRI and all of its components, LP being the highest.

All the items included showed significant results, pointing to property rights as a building blocks of a healthy, dynamic, inclusive and sustainable economy.

Figures 20a and 20b show the best-fit curve for the IPRI and its components with each element considered for productive drive analysis and the coefficients of determination<sup>8</sup> (R<sup>2</sup>). Figure 20a displays the relationship with a demographic perspective. The relevant proportion of population (represented by the radius of each circle) live in countries of middle level IPRI and low to mid economic results.

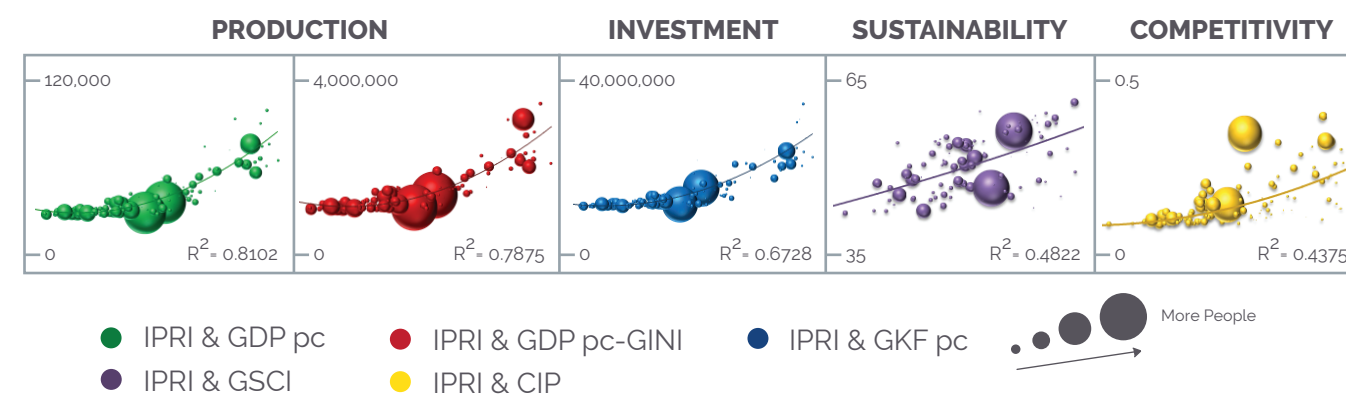


Figure 20a. Economic Environment and IPRI Correlations (Including Demographic Impact).

8. The coefficient of determination (R<sup>2</sup>) represents the proportion of the variance in the dependent variable that is predictable from the independent variable. It ranges from 0 to 1.

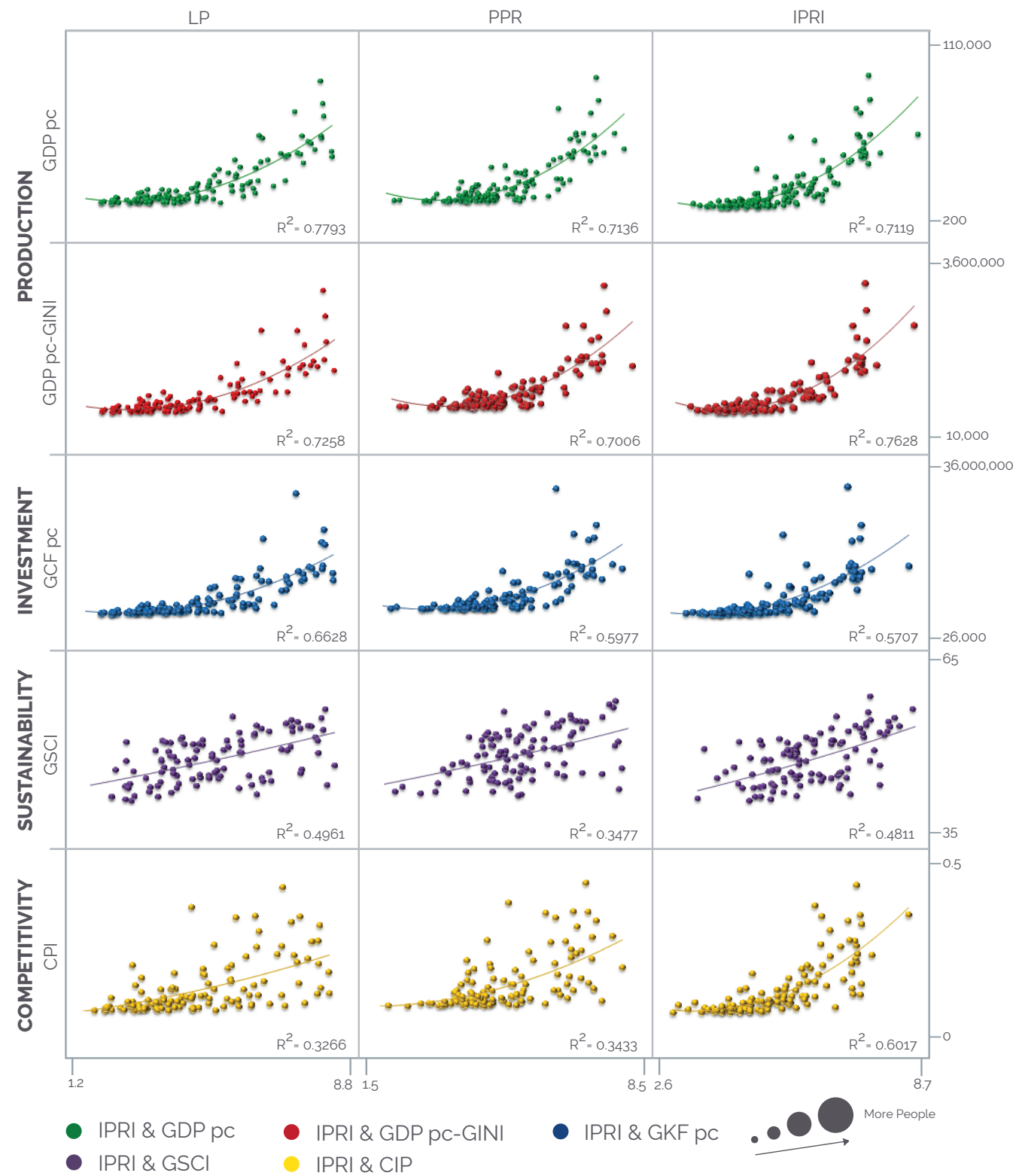


Figure 20b. Economic Environment and IPRI Components' Correlations.

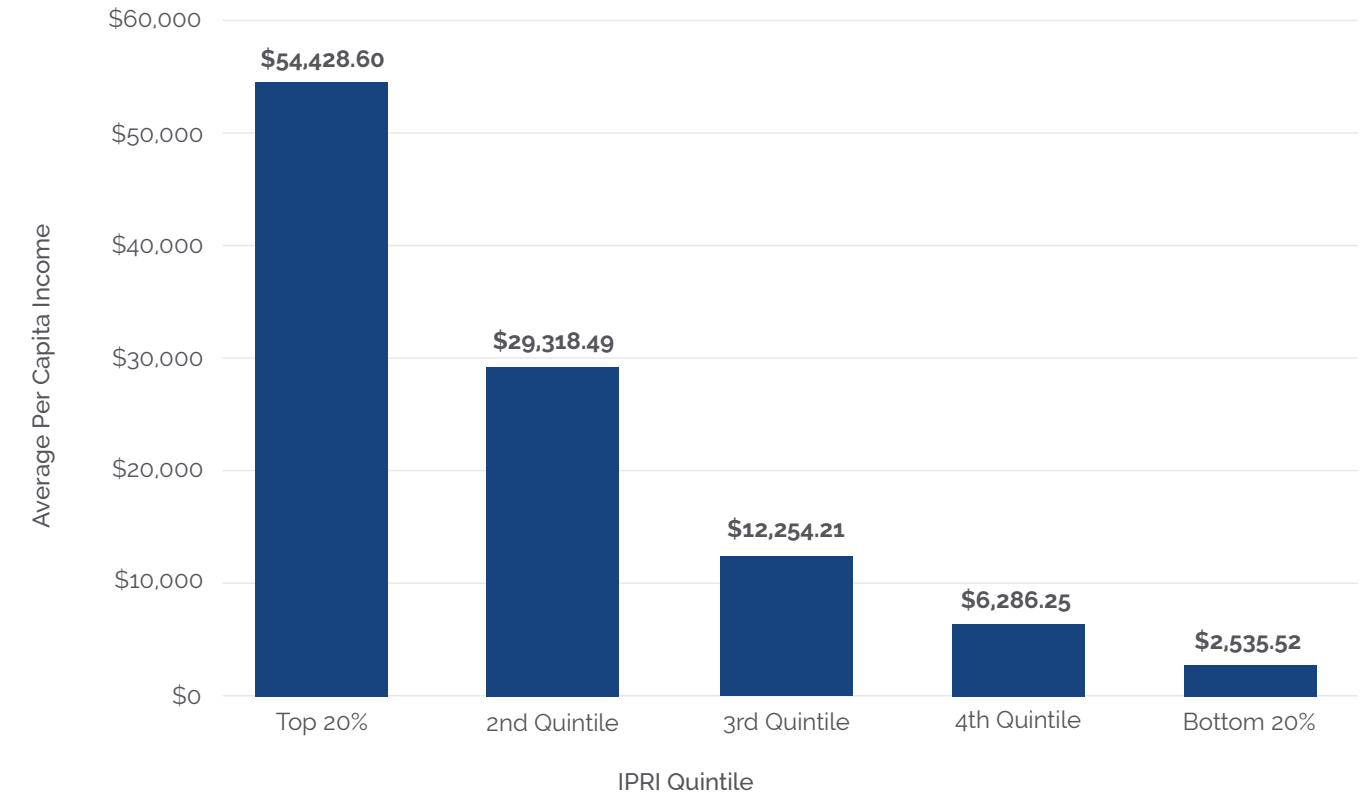


Figure 20c. Average Income per capita by 2022-IPRI Quintiles..

Figure 20c shows that, on average, countries in the top quintile of IPRI scores (i.e. top 20%) show a *per capita* income over 21 times that of countries in the bottom quintile. That disparity increased significantly from last year when it was 19 times, however it is better if compared with 2015 when it was almost 24 times. Statistics are

based on the averages of 2022-IPRI scores and corresponding data on average *GDP per capita* in USD constant terms (2015=100, source: World Bank data) for the last available year. These results reinforce the significant and positive relationship between prosperity and a property rights system.

## II. SOCIAL ENVIRONMENT

The goal of development is multidimensional and omni-comprehensive, and has evolved from focusing on macro-quantitative to micro-qualitative elements. This way our society nowadays emphasizes, particularly, on individual well-being, people's quality of life; in other words, the degree to which each member of the society is healthy, the possibility of a healthy social relationship, with respect and tolerance to the difference, and the possibility of participation in social decisions.

With this in mind, we assessed the relationship of the IPRI and its components with three elements (source details in Appendix IV):

» **Tolerance:** We used the indicator for Social Tolerance of The Legatum Prosperity Index, 2021 ([www.prosperity.com](http://www.prosperity.com)) which is part of its Personal Freedom pillar, which is a component of its Inclusive Society Domain. It includes the perceived tolerance of ethnic minorities, of LGBT individuals and of immigrants.

» **Participation:** Measured through the E-Participation Index, that measures e-participation according to a three-level model of participation that includes: (a) E-information – provision of information on the Internet, (b) E-consultation – organizing public consultations online, and (c) E-decision-making – involving citizens directly in decision processes. The goal of E-participation initiatives is to improve citizens' access to information and public services; and promote participation in public decision-making which

impacts the well-being of society in general, and the individual in particular. The E-participation Index is derived as a supplementary index to the UN E-Government Survey. It extends the dimension of the Survey by focusing on the use of online services to facilitate provision of information by governments to citizens ("E-information sharing"), interaction with stakeholders ("E-consultation"), and engagement in decision-making processes ("E-decision making").

» **Health Security:** Measured using the Global Health Security Index (by Johns Hopkins Center for Health Security, Nuclear Threat Initiative (NTI), and Economist Intelligence Unit (EIU)), which is a comprehensive assessment and benchmarking of health security and related capabilities across the world. First published in 2019, it concluded that "no country is fully prepared for epidemics or pandemics, and every country has important gaps to address", something that the Covid-19 pandemic sadly demonstrated. The Index includes 85 items gathered in six (6) categories: Prevention, Detection and Reporting, Rapid Response, Health System, Compliance with International Norms, and Risk Environment.

As shown in Table 10, correlations with IPRI and its components were moderate for Tolerance, while good for Governance and Health Security; and for these last two, were higher for IPR.

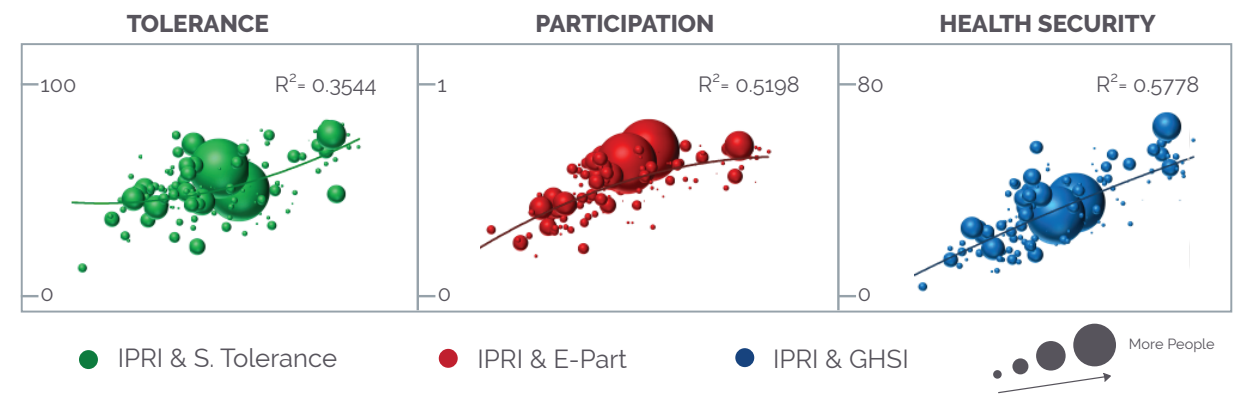


Figure 21a. Social Environment and IPRI Correlations (w/ demographic incidence).

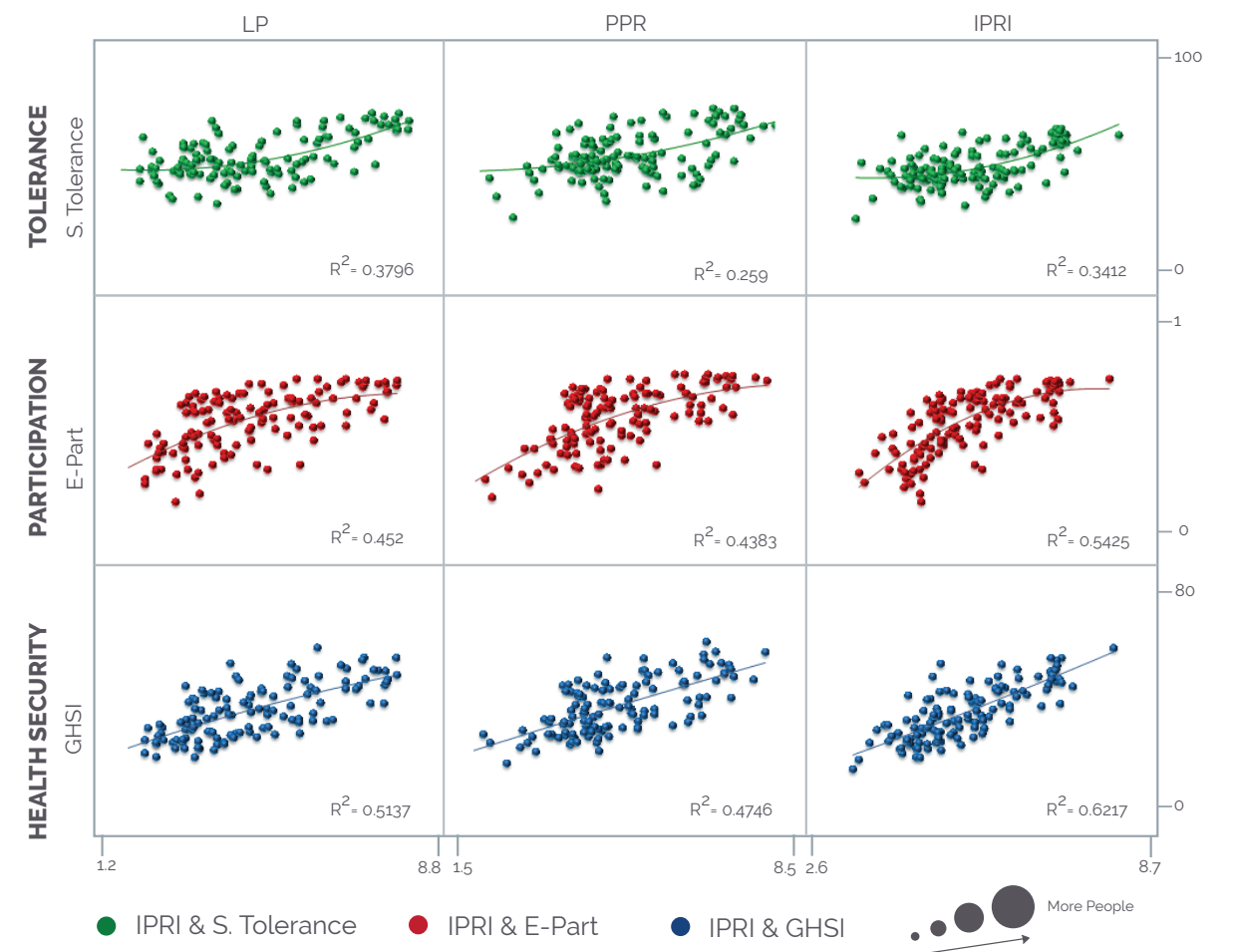


Figure 21b. Social Environment and IPRI Components' Correlations.

### III. 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', the respect for the rule of law, structures and practices that condition a government's actions to protect citizens' rights and liberties, are fundamental for a full and prosperous life. In this section we include three elements for their evaluation with the IPRI and its components (source details in Appendix IV):

» **Absence of Coercion:** Using The Human Freedom Index (HFI) (by Cato, Fraser and Visio Institute. <https://www.cato.org/human-freedom-index>), HFI presents a broad measure of human freedom, understood as the absence of coercive constraint (based on the "negative" definition of freedom that prevent individuals from acting as they might wish), which includes economic freedom. HFI suggests that freedom plays an important role in human well-being, and offers opportunities for further research into the complex ways in which freedom influences, and can be influenced by, political regimes, economic development, and a whole range of indicators of human well-being. The Index uses 76 distinct indicators gathered in two dimensions: personal (34) and economic (42) freedom, distributed in the following areas: [1] Rule of Law; [2] Security and Safety; [3] Movement; [4] Religion; [5] Association, Assembly, and Civil Society; [6] Expression; [7] Relationships; [8] Size of Government; [9] Legal System and Property Rights; [10] Access to Sound Money; [11] Freedom to Trade Internationally and [12] Regulation of Credit, Labor, and Business.

» **Corruption:** Using the Corruption Perception Index of Transparency International (<https://www.transparency.org/research/cpi/overview>): This index ranks countries/territories based on how corrupt a country's public sector is perceived to be. It is a composite index, drawing on corruption-related data from expert and business surveys carried out by a variety of independent and reputable institutions. It ranges between 0 (highly corrupt) and 10 (very clean) for the years 1995 - 2011 and between 0-100 afterwards, where 0 means that a country is perceived as highly corrupt and 100 means it is perceived as very clean.

» **Delinquency:** Measured through the The Global Organized Crime Index is a multi-dimensional tool that assesses the level of criminality and resilience to organized crime for 193 countries along three key pillars – criminal markets, criminal actors, and resilience. Developed over a two-year period, the Index draws from both quantitative and qualitative sources and is underpinned by over 350 expert assessments and evaluations by the GI-TOC's regional observatories. The objective of the Index is to provide metrics-based information that would allow policymakers and continental and regional bodies to prioritize their interventions on the basis of a holistic assessment of where vulnerabilities lie and equip them with the means to measure the efficacy of their responses to mitigate the impact of organized crime. (<https://ocindex.net/>).

	DELINQUENCY	CORRUPTION	ABSENCE OF COERCION
IPRI	-0.550	0.954	0.697
LP	-0.643	0.974	0.722
PPR	-0.513	0.891	0.592
IPR	-0.381	0.865	0.679

Table 11. Pearson's Correlation Coefficients.

The strongest Pearson correlation was shown with the Perception Corruption Index, giving us relevant information about the relationship of a robust property rights system and a society free of this scourge. The Human Freedom Index showed good correlation while delinquency,

measured with the GOC Index as an average showed moderate correlations, naturally in the opposite direction (negative signs). For all of them the highest level of the correlation was with the LP component.

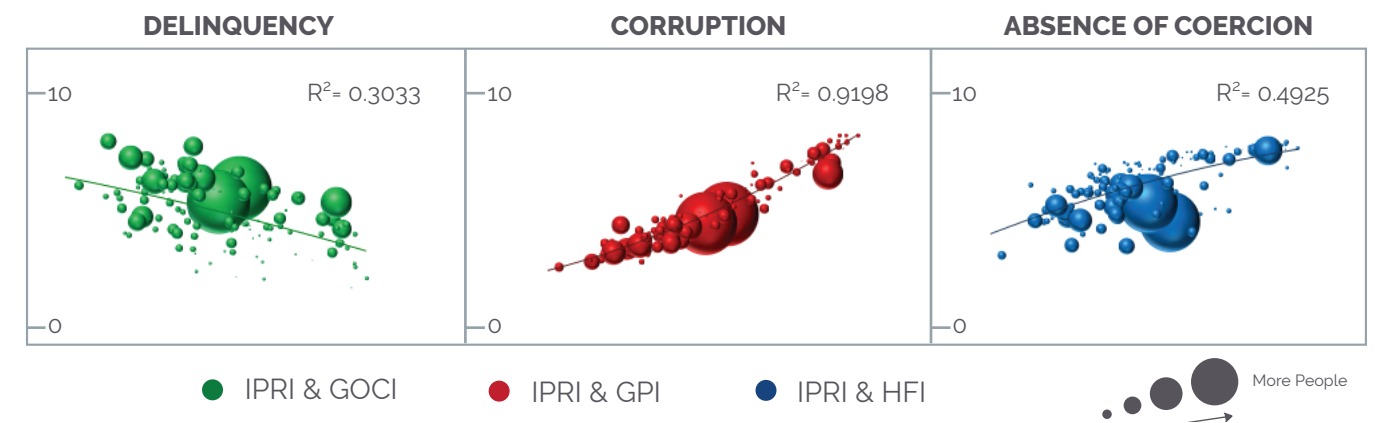


Figure 22a. Institutional Environment and IPRI Correlations (w/demographic incidence).



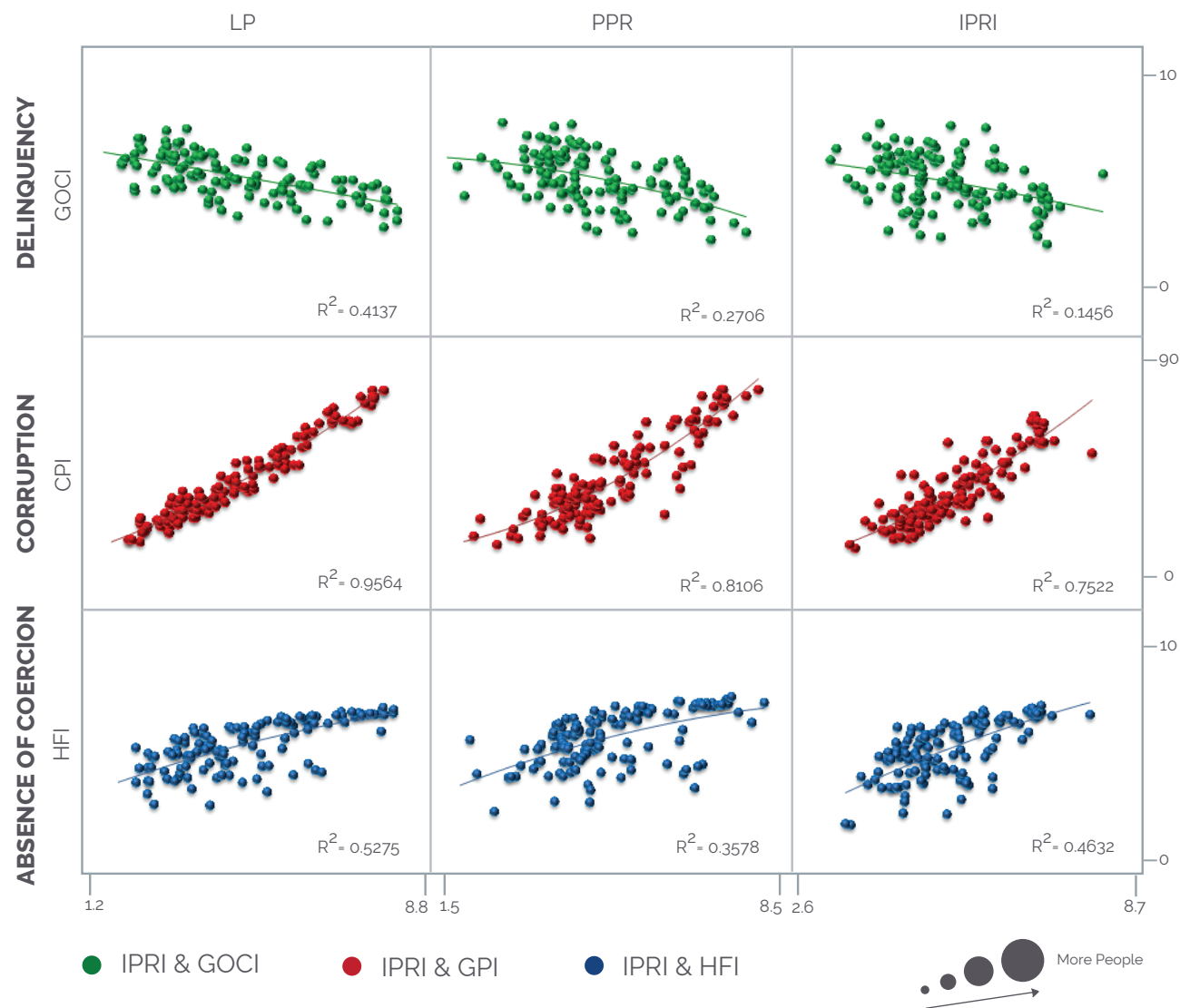


Figure 22b. Institutional Environment and IPRI Components' Correlations.

## IV. ECOLOGICAL ENVIRONMENT

The ecological environment is decisive for sustainable development, and there is growing conscience about the relevance of making human-environment interaction more resilient to climate impacts. For this we run correlations of the IPRI and its components with:

» **Performance:** Measured with the Environmental Performance Index (EPI-Yale) that provides a global view of environmental performance and country by country metrics

to inform decision-making. It ranks countries' performance on high-priority environmental issues in two areas: protection of human health and protection of ecosystems (<http://epi.yale.edu/country-rankings>).

» **Adaptability:** The Notre-Dame Global Adaptation Index (ND-GAIN) aims to help private and public sectors prioritize climate adaptation, ultimately lowering risk and enhancing readiness (<https://gain.nd.edu/about/>).

	PERFORMANCE (EPI)	ADAPTABILITY (ND-GAIN)
IPRI	0.799	0.898
LP	0.778	0.881
PPR	0.691	0.829
IPR	0.829	0.865

Table 12. Pearson's Correlation Coefficients.

It is remarkable the high correlation found between the IPRI and its components and the Notre Dame Global Adaptation Index, informing the relevance of the robustness of a property rights system fostering social flexibility, and in this case, to enhance readiness and lowering risks for a global challenge as the climate. On the other hand the correlations with an index focused on environmental performance is on average moderate.

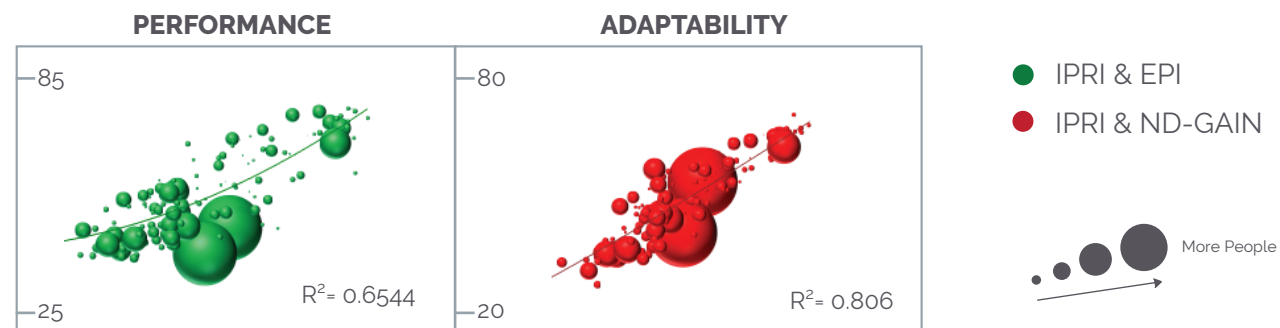


Figure 23a. Ecological Environment and IPRI Correlations (w/ demographic incidence).

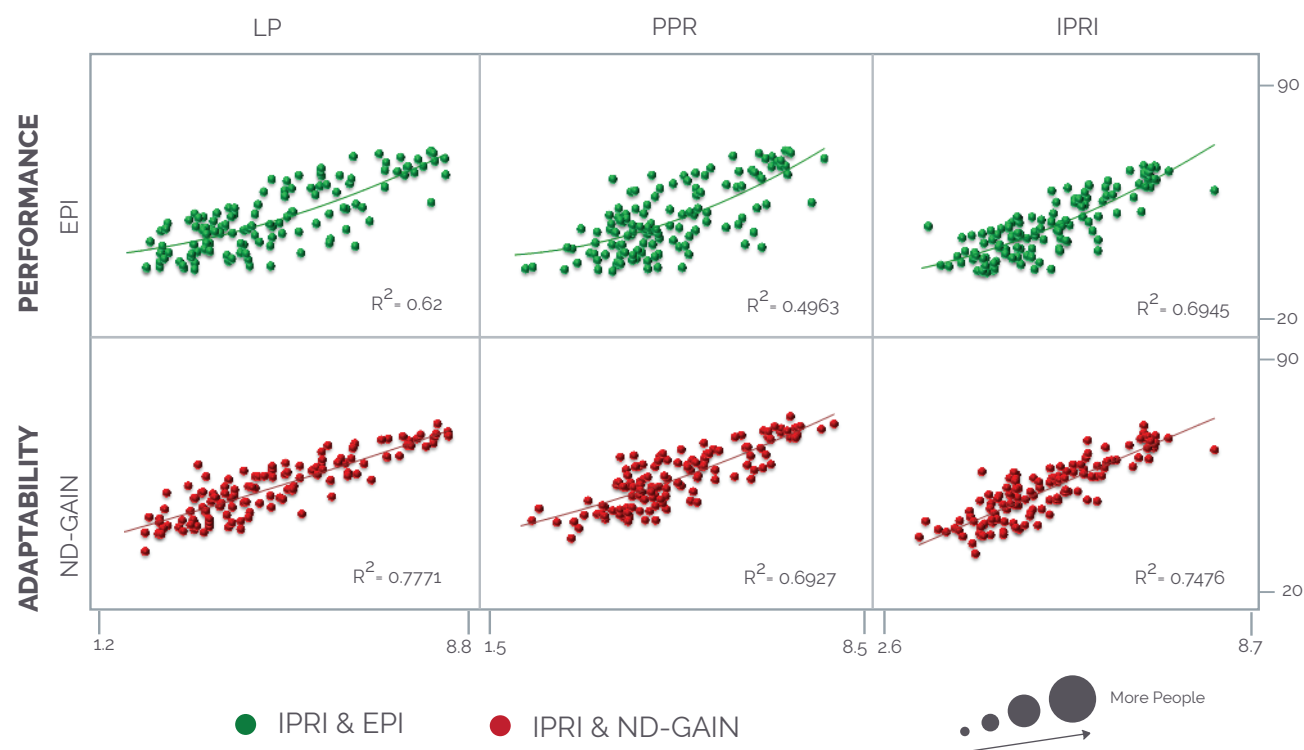


Figure 23b. Ecological Environment and IPRI Components' Correlations.

## V. EMERGING ENVIRONMENT

We live in times of accelerated and vertiginous changes that hurry the emergence of a new environment in which innovations in telecommunications, artificial intelligence, and biotechnology promote a new state-citizen relationship. This leads us to evaluate the appropriateness, the competence and relevance of property rights system for this emerging society. With this in mind, we examined the relationship of the IPRI and its components with five items gathered in three elements (for source details see Appendix IV):

### » Innovation Drive:

- **Innovative Substrate:** Measured through the Global Innovation Index (Cornell University, INSEAD, and the World Intellectual Property Organization), it aims to capture the multidimensional facets of innovation, assessing the capacity of countries for success in it. It relies on two sub-indices—the Innovation Input Sub-Index and the Innovation Output Sub-Index—each built around different key pillars.
- **Innovation in AI:** Using the Global Artificial Intelligence Index (by Tortoise), it aims to make sense of artificial intelligence in countries around the world, examining the forces accelerating development in AI through 143 indicators split across seven sub-pillars: Talent, Infrastructure, Operating Environment, Research, Development, Government Strategy and Commercial, and finally gathered in three pillars of analysis: investment, innova-

tion and implementation (<https://www.tortoisemedia.com/intelligence/global-ai/>).

- **Innovation in Biotechnology:** Measured with the Global Biotech Innovation (by ThinkBiotech). Given the relevance of biotechnology and its broad impact in economies and policies, it can impact 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:** We chose the *Telecommunication Infrastructure Index*, TII, (UN Dpt. of Economic and Social Affairs): a composite-weighted average index of six primary indices based on basic infrastructural indicators which define a country's ICT infrastructure capacity.
- » **E-Government:** We chose the E-Government Development Index, EGDI, of the UN Dpt. of Economic and Social Affairs incorporating access characteristics, such as infrastructure and educational levels, to reflect how a country is using information technologies to promote access and inclusion of its people. The EGDI is a composite measure of three important dimensions of E-government, namely: provision of online services, telecommunication connectivity and human capacity.

	GLOBAL AI INDEX (AII)	GLOBAL INNOVATION INDEX (GII)	GLOBAL BIOTECH INNOVATION INDEX (BIOTECH)	TELECOMM. INFRASTRUCTURE INDEX (TII)	E-GOVERNMENT INDEX
IPRI	0.599	0.871	0.699	0.814	0.805
LP	0.486	0.815	0.688	0.803	0.779
PPR	0.520	0.791	0.658	0.753	0.746
IPR	0.737	0.899	0.608	0.776	0.788

Table 13. Pearson's Correlation Coefficients.

The robustness of a property rights system shows a relevant and positive relationship with those features of the emerging society in the so-called 'knowledge society', and it was to be expected, since it is a guarantee that is offered to innovative efforts to improve the living conditions of the population.

The GII shows the strongest correlation with the IPRI, and it is even higher for IPR. It is also strong for the Telecomm. Infrastructure Index and with the E-Government Index. Biotechnology innovation show good correlation for IPRI and its components while innovation in AI is positive but moderate.

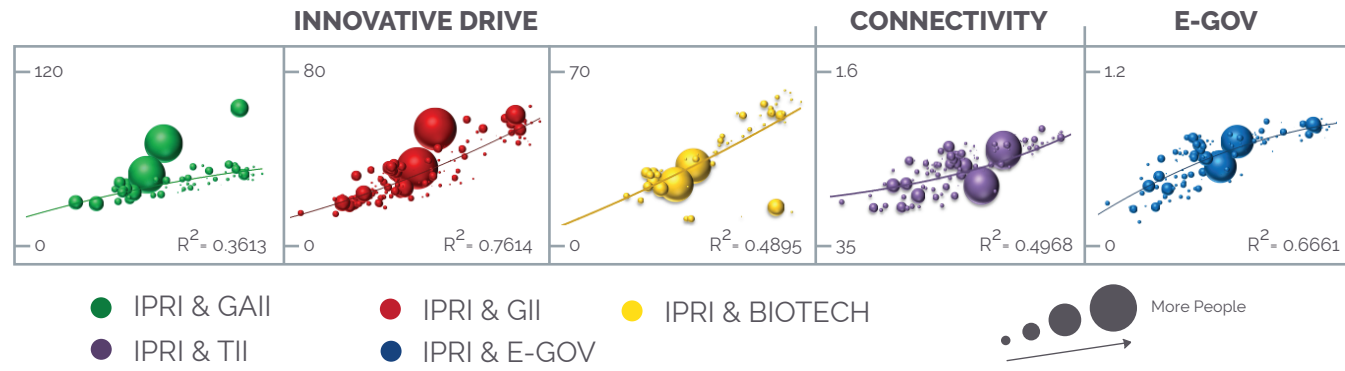


Figure 24a. Emerging Environment and IPRI Correlations (w/demographic incidence).

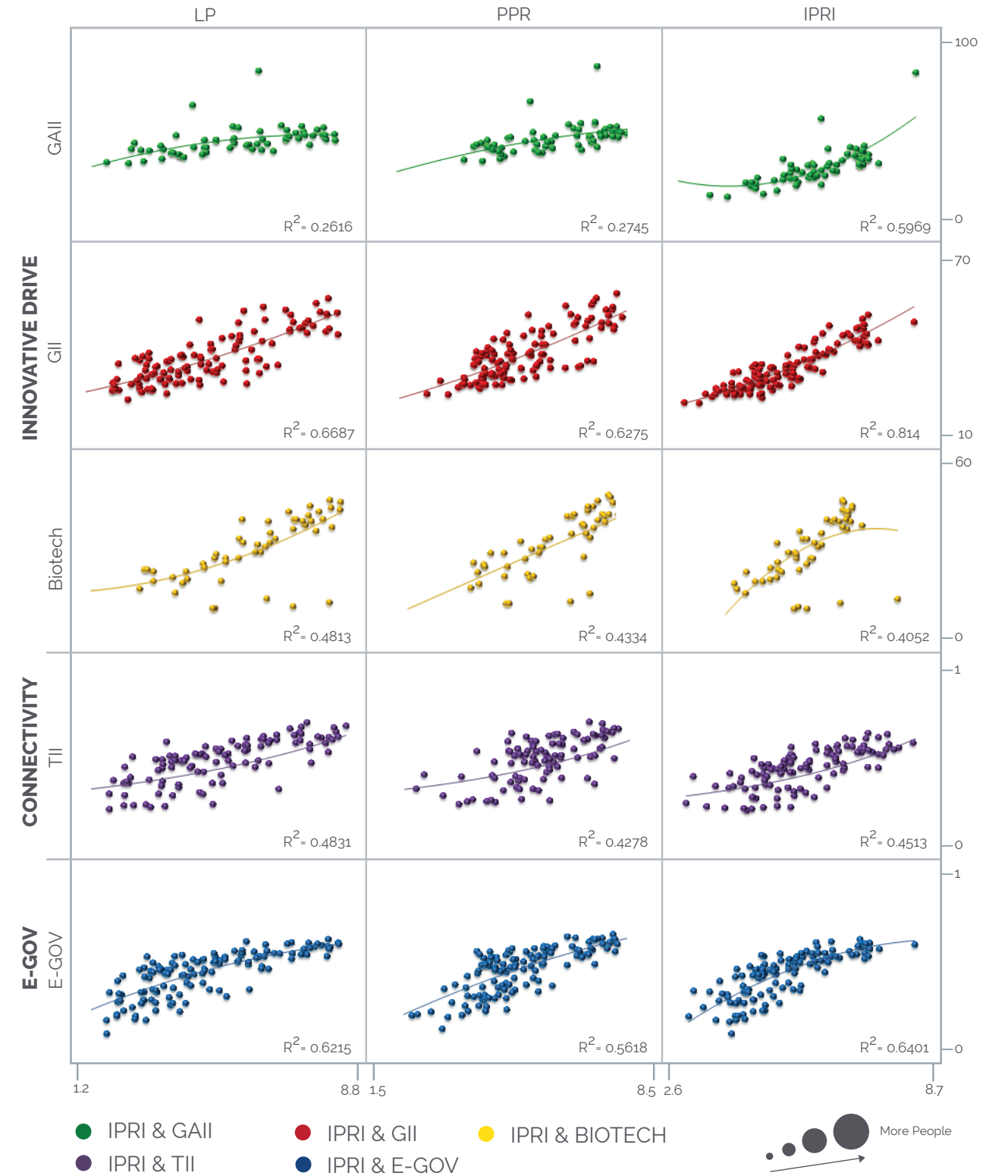


Figure 24b. Emerging Environment and IPRI Components Correlations.

## CLUSTER'S ANALYSIS

Cluster analysis is useful for gathering similar entities into groups, based on pre-defined indicators. This year we performed two kinds of cluster analysis for all 129 countries: the first one according to the IPRI components' values (LP, PPR, IPR) and the second, considering the IPRI and the different measures we used to evaluate correlations.

### I. CLUSTER ANALYSIS WITH IPRI COMPONENTS

The results of the PCA express that the three components of the IPRI (LP, PPR, IPR) define a dimension called IPRI, which collects 91.69% of the inertia. The second and third factors – each with inertia of 5.68% and 2.63% respectively – are the residue of the 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

In order to seize the variability in the analysis – given the great differences among countries in the IPRI – we used Ward's Method with squared Euclidean distance that groups countries with minimal loss inertia. We applied a Principal Component Analysis (PCA) for handling variables by factors, given the high correlation among them.

more associated to the PPR dimension, defining the second factor, and those more associated to LP and IPR, defining the third factor.

Next, we used the mobile centers algorithm to show inertia within groups and the criteria to decide the optimal number of classes or clusters (Table 14).

CLUSTER	INERTIA	COUNTRIES	DISTANCE OF CENTROIDS TO (0,0)	COORDINATES OF CENTROIDS		
				FACTOR 1	FACTOR 2	FACTOR 3
Between-clusters	2.34949					
Within cluster						
Cluster 1/3	0.37224	64	1.85195	-1.36055	-1.36055	0.02823
Cluster 2/3	0.19491	40	0.28717	0.53250	0.53250	-0.05541
Cluster 3/3	0.08336	25	6.92289	2.63102	2.63102	0.01639

Table 14. Cluster's Analysis.

The analysis showed that the three clusters were sufficient to explain the grouping of countries; more specifically, the observed inertia within each group does not exceed the iner-

tia among groups. Clusters' members are as shown in Table 15 and illustrated in Figure 25.

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

Table 15. Cluster's Members (ordered by distance from clusters' centroids).

Factor 2 - 5.68%

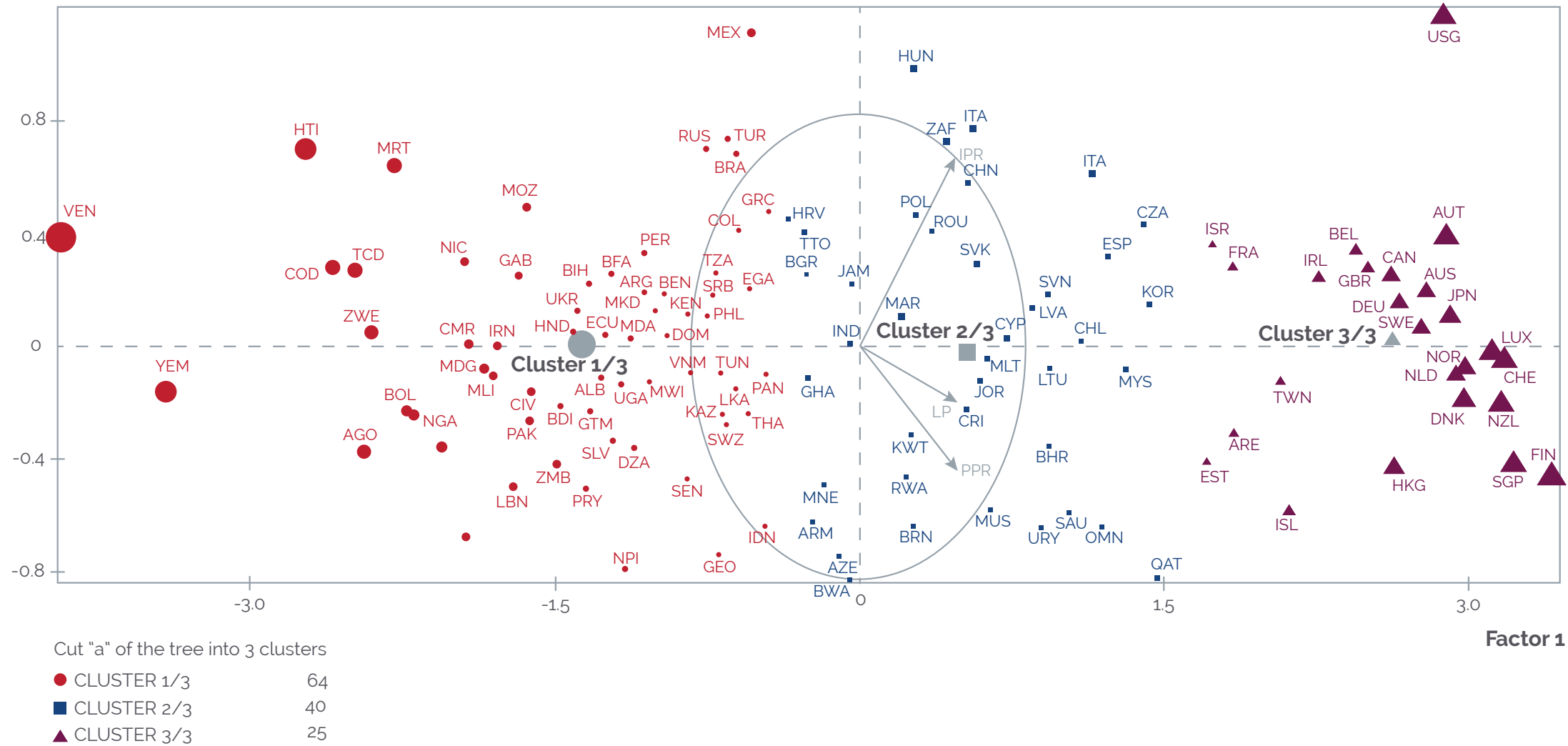


Figure 25. Clusters' Members and Centroids (w/ IPRI components).

Although the first factor contains 91.69% of inertia, which is enough to illustrate the formation of the clusters, Figure 25 includes factor 2, as well as the three clusters' centroids (yellow). The size of the centroid depends on the number of countries in the cluster.

Cluster 1 (green) displays countries located in the negative coordinates of the first factor; this includes countries with low values for LP, PPR and IPR. Cluster 2 (red) includes countries placed close to the origin, showing average values of LP, PPR and IPR. Cluster 3 (blue) contains countries located in the positive coordinates of the first factor, and its members are linked to high values of 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, and their country-members are not directly associated with each other.

In Figure 25 we can also appreciate the contribution of each country explaining the inertia gathered by the factors: the bigger the dot size of the country, the higher its contribution. Very close countries express similarity between them. In the central circle are 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.

Additionally, arrows represent each of the three dimensions of the IPRI: countries in the same direction of the vector, have a higher relationship with this dimension and vice versa.

Clusters' composition using income, population, participation in integration agreements, and regional and development criteria are shown

in Figures 26a-d, where font size represents the frequency of the group in the cluster. The analysis of each cluster can describe the inner features of countries that belong to it. Table 16 exhibits these features that are statistically significant in each group. Additional statistics are shown in Appendix V, VI and VII.

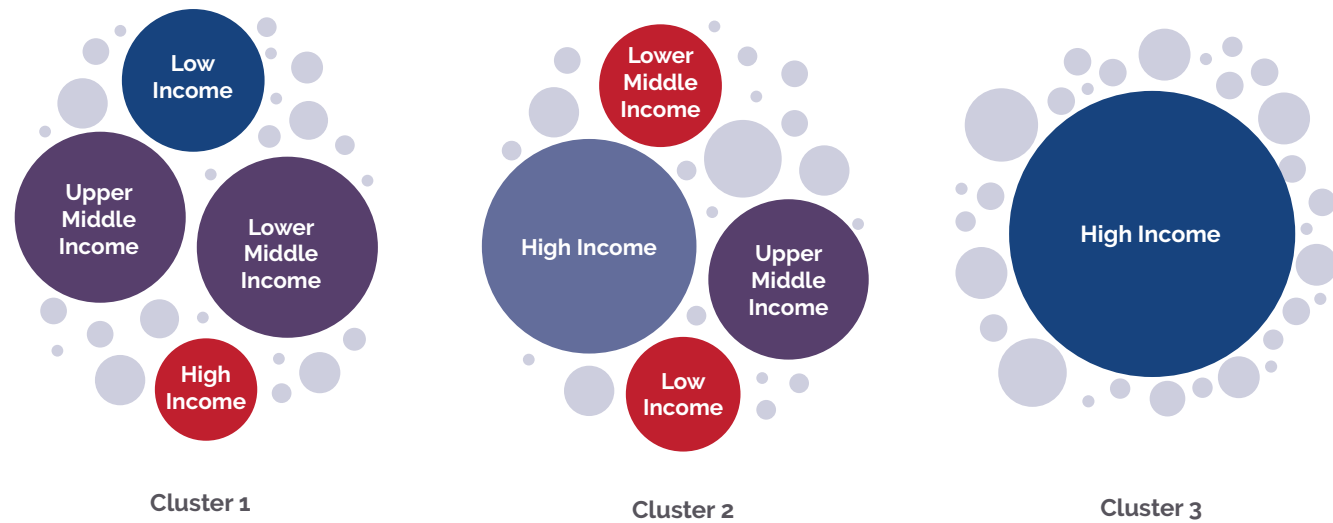


Figure 26a. Clusters' Composition by Income Classification.

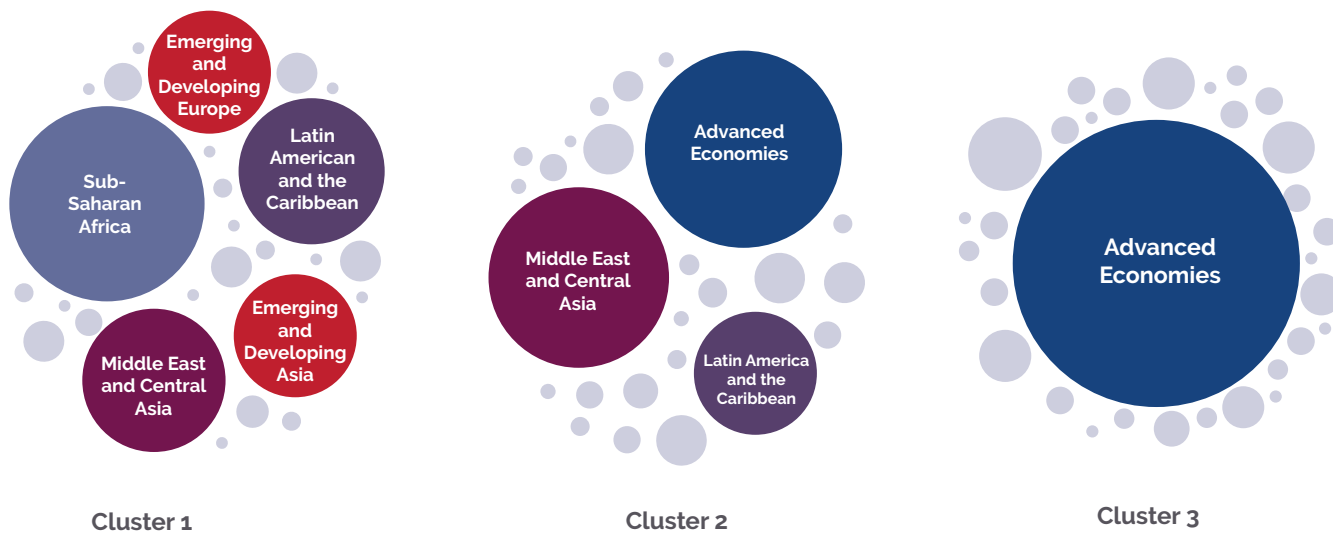


Figure 26b. Clusters' Composition by Regional and Development Criteria.

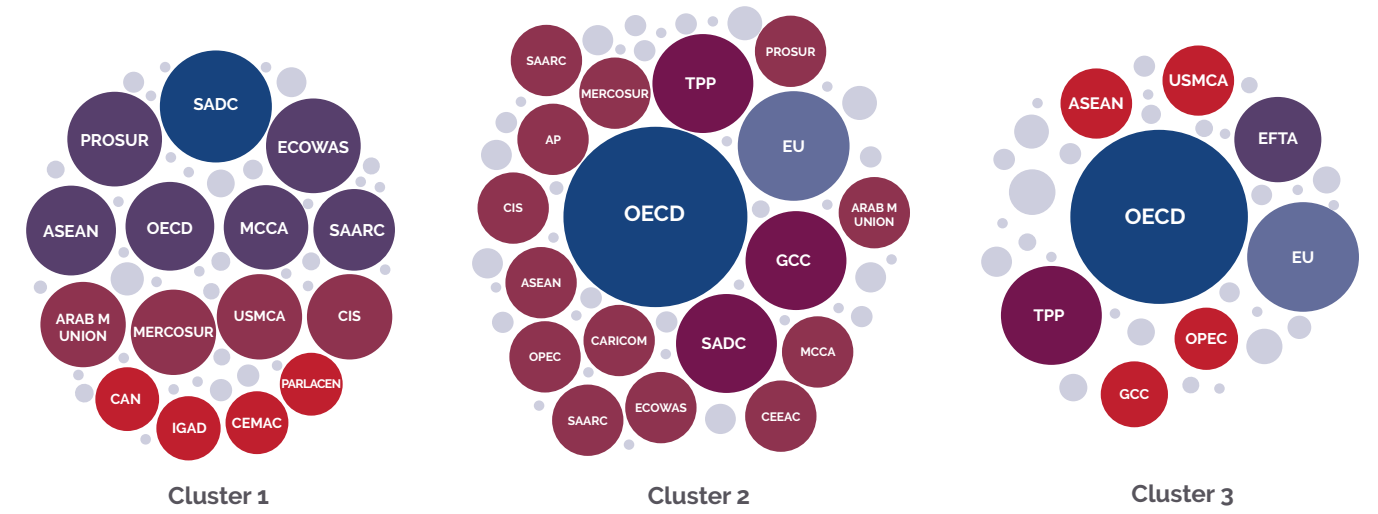


Figure 26c. Clusters' Composition by Economic and Regional Integration Agreements..

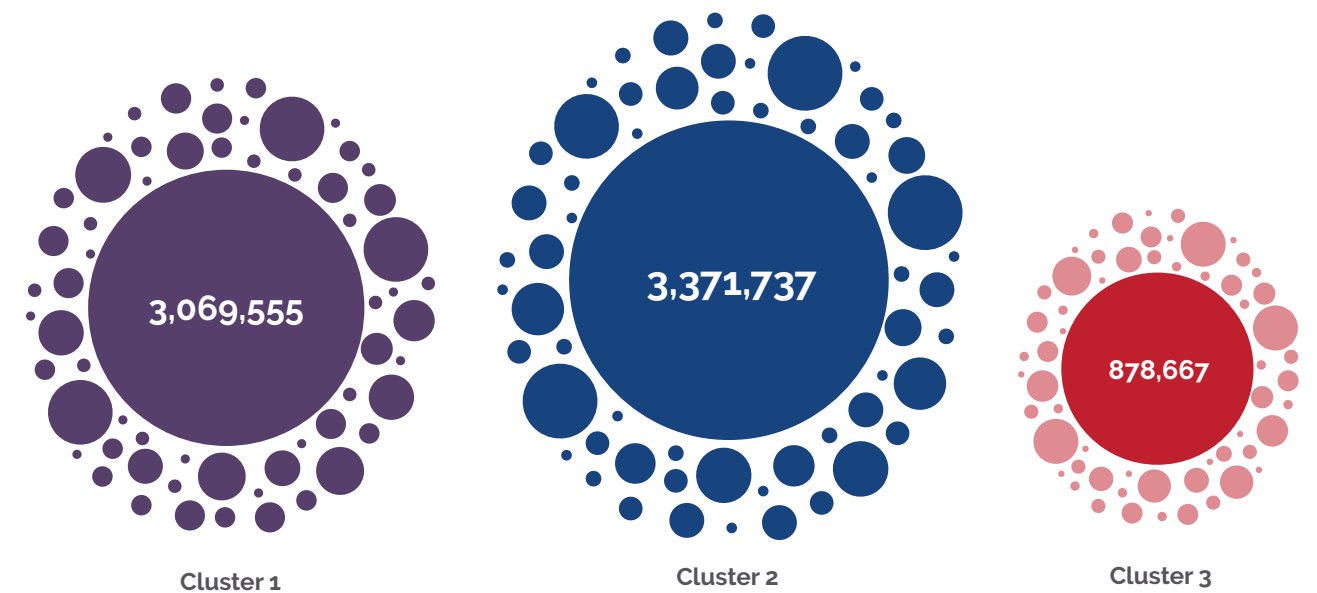


Figure 26d. Clusters' Composition and Population Weight (thousands).

CLUSTER 1			CLUSTER 2			CLUSTER 3		
Characteristic Variables	Test-Value	Probability	Characteristic Variables	Test-Value	Probability	Characteristic Variables	Test-Value	Probability
GOCI	5.74	0.000	TII	3.64	0.000	GDPPC	9.25	0.000
POPUL	-0.55	0.290	EGOV	3.30	0.000	IPRIGE	9.06	0.000
BIOTECH	-3.15	0.001	LP	2.73	0.003	CPI	8.91	0.000
GAIL	-3.80	0.000	NDGAIN	2.41	0.008	GDPGINI	8.82	0.000
STOLERANCE	-4.14	0.000	PPR	2.18	0.015	LP	8.45	0.000
GEN	-4.43	0.000	IPR	2.08	0.019	PPR	8.44	0.000
CIP	-5.33	0.000	EPARTI	1.87	0.031	IPR	8.39	0.000
EPARTI	-5.71	0.000	CPI	1.80	0.036	GKFPC	8.37	0.000
GSCI	-6.02	0.000	IPRIGE	1.69	0.046	GII	8.19	0.000
HFI	-6.30	0.000	HFI	1.64	0.050	NDGAIN	7.75	0.000
GHSI	-6.32	0.000	GHSI	1.56	0.060	EPI	7.70	0.000
GKFPC	-6.33	0.000	EPI	1.33	0.092	GSCI	6.82	0.000
GDPGINI	-6.35	0.000	POPUL	1.17	0.121	CIP	6.44	0.000
GDPPC	-6.77	0.000	GSCI	0.83	0.204	GHSI	6.33	0.000
GII	-7.18	0.000	GII	0.62	0.268	STOLERANCE	6.14	0.000
EPI	-7.27	0.000	GEN	0.28	0.390	HFI	6.05	0.000
EGOV	-7.43	0.000	CIP	0.10	0.458	TII	6.01	0.000
TII	-8.01	0.000	GKFPC	-0.33	0.372	EGOV	5.66	0.000
NDGAIN	-8.21	0.000	GDPPC	-0.54	0.295	GEN	5.27	0.000
IPR	-8.56	0.000	GDPGINI	-0.57	0.283	EPARTI	5.16	0.000
PPR	-8.69	0.000	STOLERANCE	-0.79	0.215	BIOTECH	4.39	0.000
IPRIGE	-8.72	0.000	GAIL	-0.90	0.185	GAIL	4.19	0.000
CPI	-8.73	0.000	BIOTECH	-2.00	0.023	POPUL	-0.67	0.251
LP	-9.21	0.000	GOCI	-2.53	0.006	GOCI	-4.40	0.000

Statistically significant only if Value-Test  $\geq 1.96$

Table 16. Cluster's illustrative variables Stats.

## I. CLUSTER DESCRIPTION

### CLUSTER 1

Cluster 1 is composed of 64 countries with a combined population of more than 3 billion people. The closest country to its centroid is Honduras, followed by Ecuador, Albania, Ukraine and Bosnia & Herzegovina. The Bolivarian Rep. of Venezuela is by far the most remote country of the cluster's centroid, followed by Rep. of Yemen, Haiti, Mexico and Congo Dem. Rep.

A closer look at Cluster 1 countries' coordinates reveals that Panama is the closest to Cluster's 2 centroid. The closest countries from Cluster 1 to Cluster 2 are Panama to Ghana, Greece to Croatia and Indonesia to Armenia, meaning similarity in conditions (see Fig. 25).

Countries in Cluster 1 are statistically significant for low scores (below overall average) in LP, PPR and IPR components. The same is true for the

IPRI-GE. Cluster 1 countries also show below overall average levels in all the dimensions we analyzed; that is, they show poor performances in Economic, Social, Institutional, Ecological and Emerging Environment. This is the result of weak 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 (22/27), Latin America and the Caribbean (16/21) and the Low income (11/12), Lower-Middle Income (29/32) countries are highly represented in this cluster. The Southern African Development Community (9/12 members) is the most representative integration agreement in this cluster, followed by the Economic Community of West African States (6/7 members), The Central American Parliament (6/6 members), The Organization of the Petroleum Exporting Countries (6/9 members), La Communauté Economique des Etats de l'Afrique Centrale (6/7 members), and The Forum for the Progress and Development of South America (6/7 members).

### CLUSTER 2

Cluster 2 is composed of 40 countries with a combined population of more than 3.3 billion people. The closest country to its centroid is Cyprus, followed by Malta, Jordan, Slovakia and Latvia. Azerbaijan is the farthest country from the centroid, followed by Qatar, Botswana, Hungary and Armenia. Figure 25 illustrates that Bulgaria and Ghana are the closest countries to the Cluster 1 centroid, and Korea and Malaysia are the closest countries to Cluster 3. The closest countries between Cluster 2 and 3 are Czech Republic, Spain and Korea (Cluster 2) to Israel and France (Cluster 3).

Using the regional and development criteria of the IMF, countries within the groups Emerging

and Developing Asia, Emerging and Developing Europe, Latin America and the Caribbean, Middle East and Central Asia, and Sub-Saharan Africa represents 73% in this cluster, whereas by the income criteria of the World Bank, the Upper Middle Income and High Income countries represent over 90% of the cluster. Following the perspective on participation on integration agreements, the European Union (15/27 members), the Organization for Economic Co-operation and Development (13/38 members) and the Gulf Cooperation Council (5/6 members) have the highest frequency in Cluster 2.

### CLUSTER 3

Cluster 3 is composed by 25 countries showing a combined population over 800 million people. The closest country to its centroid is Germany, followed by Australia, Sweden, Canada and Japan. The farthest country of the group is the USA, followed by Estonia, Israel, Finland and Iceland. United Arab Emirates, Estonia, Israel and France 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 Economic, Social, Ecological, Institutional and Emerging Environment.

Using the regional and income classification of the IMF, Advanced Economies represent the 96% of countries in this cluster and all of them are within the High Income group. Looking at economic and regional integration agreements, the OECD (21/38 members) and the European Union (11/27 members) are highly represented in cluster.

The data suggest that most of the chosen integration agreements demonstrate some level of heterogeneity in terms of strength of the prop-

erty rights systems among their members. In 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 support specific members of the agreement. On the other hand, the integration agreements showing members in just one cluster reveal homogeneity amongst their countries property rights systems. Even those agreements participating in two clusters, they 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 most populated countries in the world, India and China, are part of Cluster 2, but both of them are located close to the origin of the factors' axes, this produces results that are not significant for most of the variables. In this sense, they are countries whose results are very close to the average in the indicators.

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

## II. CLUSTER ANALYSIS FOR IPRI AND MEASUREMENTS OF A VIRTUOUS SYSTEM

19 measurements, organized in five dimensions that we used to evaluate correlations (see Section VIII). Considering these 19 measurements as active variables for PCA results in 19 factors.

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 particular 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 in a higher level.
- » Specific analyses of countries and of groups of them related to their cluster are a rich open vein for future investigations.

The inertia is distributed through this factors as follows: The first one collecting 62.71% of the inertia, the second with 8.12% and the third one with 6.70%. The fourth to nineteenth factors each have a percentage of inertia of less than 5%.

Three clusters were sufficient to explain the grouping of countries; more specifically, the observed inertia within each group does not exceed the inertia among groups. Clusters' members are illustrated in Fig. 27.

All the variables show a medium to strong correlation with the 1st factor, so we can call this dimension IPRI Environment.

The 2nd factor includes the following variables from the socio-economic and emerging environment:

- » ECO: Production (GDPpc & GDPpc\*GINI) and Investment (GKFpc)

- » SOC: Participation (E-Part) and Health Security (GHSI)

- » EME: E- Gov and Innovation Drive (Biotech)

While the 3rd factor is mainly associated with:

- » ECO: Competitiveness (CIP)

- » SOC: Delinquency (GOC)

- » EME: Innovation Drive (GAI)

Cluster 1 is composed of 44 countries, Cluster 2 of 62 and Cluster 3 of 23. These clusters' members are very similar from those arising of cluster analysis using only IPRI components, matching in a range of 59% for cluster 1 to 84% for the third cluster (see Table 17).

CLUSTER	IPRI • 19 FACTORS. CLUSTERS MEMBERS (#)	IPRI COMPONENTS. CLUSTERS MEMBERS (#)	MATCHING COUNTRIES (#)	MATCHING COUNTRIES (%)
1	44	64	38	59%
2	62	40	32	80%
3	23	25	21	84%

Table 17. Clusters analysis' comparison. Members.

Countries that do not match between the clusters are mainly because of their positioning in clusters 1 and 2, as follows:

Cluster 1: Botswana, Ghana, Jamaica, Jordan, Morocco, Rwanda.

Cluster 2: Albania, United Arab Emirates, Argentina, Bosnia And Herzegovina, Brazil, Colombia, Dominican Republic, Ecuador, Estonia, Georgia, Greece, Hong Kong, Indonesia, Kazakhstan, Sri Lanka, Moldova, Mexico, North Macedonia,

Panama, Peru, Philippines, Paraguay, Russia, Serbia, Thailand, Tunisia, Turkey, Taiwan, Ukraine, Vietnam.

Cluster 3: Spain and Korea, Rep.

This comparative analysis of the two kinds of cluster analysis insists in the relevance of the IPRI as a robust tool in the examination of societies, and naturally of the key role of property rights promoting virtuous incentives, fostering a full development, within liberty.



Factor 1 - 8.12%

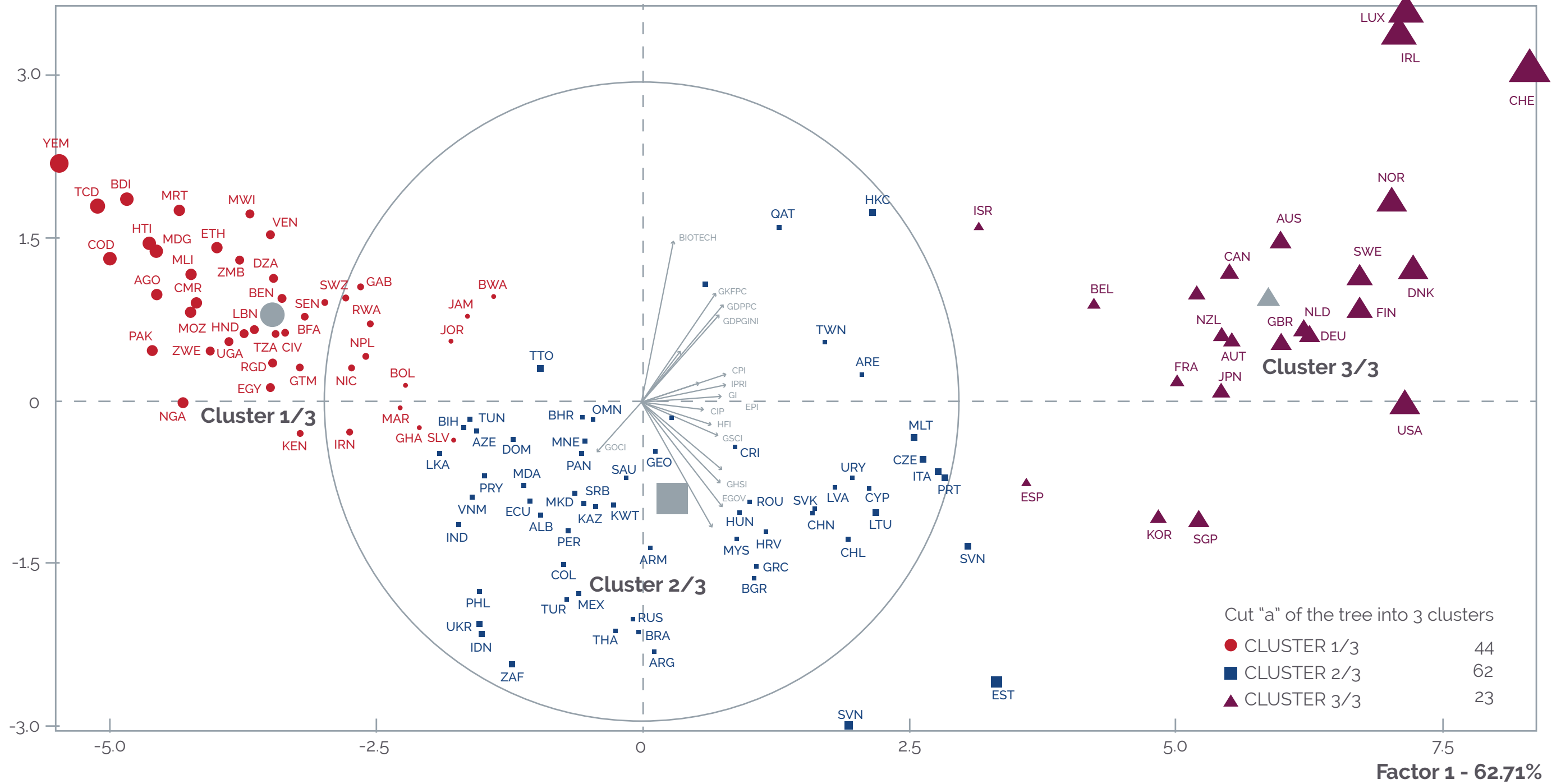


Figure 27. Clusters' Members and Centroids (w/ IPRI + 19 variables).

## FINAL REMARKS

The International Property Rights Index in this edition keeps showing 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 with societies' virtuous environments, globally, regionally and within countries.

2022-IPRI edition includes 129 countries representing the 93.91% of world population and 98.12% of world GDP, with an average score of 5.19 (Max. 8.17; Min. 1.77) showing a setback for a fifth consecutive year. When population weighs in, IPRI scores reduces to 5.12, showing the difficulties for the vast majority of the population to access and enjoy property rights protection. Simultaneously, the average of the 2022 IPRI-GE score is 4.48, showing also a decline from last year. This is a regrettable result that we have also seen in other measurements of liberty, democracy and world governance that should alert us of the dangerous road we may be heading all over the world.

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 robust property rights system and people quality of life. This is clearly supported by the correlations 19 variables organized in 5 groups that were contrasted with the IPRI and its components. Results show the relevance of property rights systems and its association with the best performances and practices in societies.

We included two kinds of cluster analysis in order to gather countries in groups by their homogeneity. The first one according to the IPRI components and the second, considering the IPRI and the different measurements we used to evaluate correlations. Both confirmed the consistency of the IPRI, since the assembled countries exhibited a high degree of similarity, showing the relevance of property rights systems in shaping societies.

## APPENDICES

### I. DATA SOURCE: IPRI 2022

IPRI-2022	DATA	DOWNLOAD DATE	ORIGINAL SCALE	YEAR (DATA)	SOURCE	LINK
<b>LEGAL AND POLITICAL ENFORCEMENT (LP)</b>	Judicial Independence	Mar. 29, 2022	[1-7](best)	2019	World Economic Forum. The Global Competitiveness Index 4.0 2019 Dataset   Version 20191004	<a href="https://www.weforum.org/reports/global-competitiveness-report-2019">https://www.weforum.org/reports/global-competitiveness-report-2019</a>
	Rule of Law	Mar. 29, 2022	[(-2,5) - (2,5)] best	2020	The Worldwide Governance Indicators 2020 (2021 update)	<a href="http://info.worldbank.org/governance/wgi/index.asp#home">http://info.worldbank.org/governance/wgi/index.asp#home</a>
	Political Stability	Mar. 29, 2022	[(-2,5) - (2,5)] best	2020	The Worldwide Governance Indicators 2020 (2021 update)	<a href="http://info.worldbank.org/governance/wgi/index.asp#home">http://info.worldbank.org/governance/wgi/index.asp#home</a>
	Control of Corruption	Mar. 29, 2022	[(-2,5) - (2,5)] best	2020	The Worldwide Governance Indicators 2020 (2021 update)	<a href="http://info.worldbank.org/governance/wgi/index.asp#home">http://info.worldbank.org/governance/wgi/index.asp#home</a>
<b>PHYSICAL PROPERTY RIGHTS (PPR)</b>	Physical Property Protection	Mar. 29, 2022	[1-7](best)	2019	World Economic Forum. The Global Competitiveness Index 4.0 2019 Dataset   Version 20191004	<a href="https://www.weforum.org/reports/global-competitiveness-report-2019">https://www.weforum.org/reports/global-competitiveness-report-2019</a>
	Registering Process	Mar. 18, 2022	[0-1](best)	2021	World Justice Project, Rule of Law Index, 6.3 & 6.4 (avg)	<a href="http://www.worldjusticeproject.org/our-work/research-and-data/wjp-rule-law-index-2021">http://www.worldjusticeproject.org/our-work/research-and-data/wjp-rule-law-index-2021</a>
	Access to Financing	Mar. 29, 2022	[1-7](best)	2019	World Economic Forum. The Global Competitiveness Index 4.0 2019 Dataset   Version 20191004	<a href="https://www.weforum.org/reports/global-competitiveness-report-2019">https://www.weforum.org/reports/global-competitiveness-report-2019</a>
<b>INTELLECTUAL PROPERTY RIGHTS (IPR)</b>	Intellectual Property Protection	Mar. 29, 2022	[1-7](best)	2019	World Economic Forum. The Global Competitiveness Index 4.0 2019 Dataset   Version 20191004	<a href="https://www.weforum.org/reports/global-competitiveness-report-2019">https://www.weforum.org/reports/global-competitiveness-report-2019</a>
	Patent Protection	Mar. 29, 2022	[0-6](best)	2021	Patent Index 2021. Chrysa K. Kazakou (Atty), Walter G. Park (PhD)	
	Copyright Protection	Mar. 29, 2022	[0-100%] (worst)	2017	BSA Global Software Survey 2018	<a href="https://www.bsa.org/-/media/Files/StudiesDownload/2018_BSA_GSS_Report_en.pdf">https://www.bsa.org/-/media/Files/StudiesDownload/2018_BSA_GSS_Report_en.pdf</a>
	Trademark Protection	Mar. 29, 2022	[0-1](best)	2021	International Trademark Index 2021. Chrysa K. Kazakou (Atty), Walter G. Park (PhD)	

### II. GROUPS CONFORMATION: IPRI 2022

	GROUP	#	COUNTRIES
<b>GRUPO REGIONAL</b>	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 Darussalam, 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, Dominican 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)
<b>GEOGRAPHICAL REGIONS</b>	EUROPEAN UNION	27	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
	REST OF EUROPE	15	Albania, Armenia, Bosnia & Herzegovina, Georgia, Iceland, Macedonia, FYR, Moldova, Montenegro, Norway, Russia, Serbia, Switzerland, Turkey, Ukraine, United Kingdom (UK)
	AFRICA	32	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	49	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, Netherlands, New Zealand, Norway, Oman, Poland, Portugal, Qatar, Saudi Arabia, Singapore, Slovakia, Slovenia, Spain, Sweden, Switzerland, Taiwan, Trinidad & Tobago, United Arab Emirates, United Kingdom (UK), United States (USA), Uruguay
	LOW INCOME	12	Burkina Faso, Burundi, Chad, Democratic Republic of Congo, Ethiopia, Madagascar, Malawi, Mali, Mozambique, Rwanda, Uganda, Republic of Yemen
	LOWER MIDDLE INCOME	32	Algeria, Angola, Bangladesh, Benin, Bolivia, Cameroon, Côte D'Ivoire, Egypt, El Salvador, Eswatini, Ghana, Haiti, Honduras, India, Indonesia, Iran, Kenya, Mauritania, Morocco, Nepal, Nicaragua, Nigeria, Pakistan, Philippines, Senegal, Sri Lanka, Tanzania, Tunisia, Ukraine, Vietnam, Zambia, Zimbabwe
	UPPER MIDDLE INCOME	35	Albania, Argentina, Armenia, Azerbaijan, Bosnia & Herzegovina, Botswana, Brazil, Bulgaria, China, Colombia, Costa Rica, Dominican Republic, Ecuador, Gabon, Georgia, Guatemala, Jamaica, Jordan, Kazakhstan, Lebanon, North Macedonia, Malaysia, Mauritius, Mexico, Montenegro, Moldova, Panama, Paraguay, Peru, Romania, Russia, Serbia, South Africa, Thailand, Turkey
REGION CLASSIFICATION	ADVANCED ECONOMIES	36	Australia, Austria, Belgium, Canada, 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, United Kingdom (UK), United States (USA)
	EMERGING AND DEVELOPING ASIA	11	Bangladesh, Brunei Darussalam, China, India, Indonesia, Malaysia, Nepal, Philippines, Sri Lanka, Thailand, Vietnam
	EMERGING AND DEVELOPING EUROPE	14	Albania, Bosnia & Herzegovina, Bulgaria, Croatia, Hungary, Moldova, Montenegro, North Macedonia, Poland, Romania, Russia, 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	20	Algeria, Armenia, Azerbaijan, Bahrain, Egypt, Georgia, Iran, Jordan, Kazakhstan, 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
REGIONAL INTEGRATION AGREEMENTS	OECD	38	Australia, Austria, Belgium, Canada, Chile, Colombia, Costa Rica, 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	27	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
	SADC	16	Angola, Botswana, Comoros, Democratic Republic of Congo, Eswatini, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Tanzania, Zambia, Zimbabwe
	ECOWAS	15	Benin, Burkina Faso, Cape Verde, Côte D'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, Togo
	ASEAN	10	Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam
	PARLACEN	6	Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, Panama
	GCC	6	Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates
	AP	4	Chile, Colombia, Mexico, Peru
	MERCOSUR	4	Argentina, Brazil, Paraguay, Uruguay
	SAARC	8	Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka
	CEMAC	6	Cameroon, Central African Republic*, Chad, Republic of Congo, Gabon, Equatorial Guinea
	MCCA	5	Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua
	CIS	11	Armenia, Azerbaijan, Bielorrussia, Kazakhstan, Kyrgyz Republic, Moldova, Russia, Tajikistan, Uzbekistan, Turkmenistan*
	ARAB M UNION	5	Algeria, Libya, Mauritania, Morocco, Tunisia
	CARICOM	15	Antigua & Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, St. Kitts & Nevis, St. Lucia, St. Vincent & the Grenadines, Suriname, Trinidad & Tobago
	CAN	4	Bolivia, Colombia, Ecuador, Peru
	EFTA	4	Iceland, Lichtenstein, Norway, Switzerland
	IGAD	7	Djibouti, Eritrea, Ethiopia, Kenya, Somalia, Sudan, Uganda
USMC	3	Canada, Mexico, United States (USA)	
OPEC	13	Algeria, Angola, Republic of Congo, Equatorial Guinea, Gabon, Iran, Iraq, Kuwait, Libya, Nigeria, Saudi Arabia, United Arab Emirates, Bolivarian Republic of Venezuela	
CEEAC	11	Angola, Burundi, Cameroon, Central African Republic, Chad, Republic of Congo, Gabon, Equatorial Guinea, Democratic Republic of Congo, Rwanda, São Tomé and Príncipe	
TPP-11	11	Australia, Brunei Darussalam, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, Vietnam	
PROSUR	8	Argentina, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru	

### III. GE DATA SOURCE: IPRI 2022

IPRI-GE	OCDE GID-D8	DOWNLOAD DATE	ORIGINAL SCALE	YEAR	SOURCE
<b>WOMEN'S ACCESS TO BANK LOANS</b>	Secure access to formal financial services	Mar. 29, 2022	0; 0.5; 1 (best; average; worst)	2019	OCDE GID-DB <a href="https://www.genderindex.org/data/">https://www.genderindex.org/data/</a>
<b>WOMEN'S ACCESS TO LAND OWNERSHIP</b>	Secure access to land assets	Mar. 29, 2022	0; 0.5; 1 (best; average; worst)	2019	OCDE GID-DB <a href="https://www.genderindex.org/data/">https://www.genderindex.org/data/</a>
<b>WOMEN'S ACCESS TO PROPERTY OTHER THAN LAND</b>	Access to non-land assets	Mar. 29, 2022	0; 0.5; 1 (best; average; worst)	2019	OCDE GID-DB <a href="https://www.genderindex.org/data/">https://www.genderindex.org/data/</a>
<b>INHERITANCE PRACTICES</b>	Inheritance	Mar. 29, 2022	0; 0.5; 1 (best; average; worst)	2019	OCDE GID-DB <a href="https://www.genderindex.org/data/">https://www.genderindex.org/data/</a>
	Divorce	Mar. 29, 2022	0; 0.5; 1 (best; average; worst)	2019	OCDE GID-DB <a href="https://www.genderindex.org/data/">https://www.genderindex.org/data/</a>
	Household responsibilities	Mar. 29, 2022	0; 0.5; 1 (best; average; worst)	2019	OCDE GID-DB <a href="https://www.genderindex.org/data/">https://www.genderindex.org/data/</a>
<b>WOMEN SOCIAL RIGHTS</b>	Female genital mutilation	Mar. 29, 2022	0; 0.5; 1 (best; average; worst)	2019	OCDE GID-DB <a href="https://www.genderindex.org/data/">https://www.genderindex.org/data/</a>
	Violence against women	Mar. 29, 2022	0; 0.5; 1 (best; average; worst)	2019	OCDE GID-DB <a href="https://www.genderindex.org/data/">https://www.genderindex.org/data/</a>
	Freedom of movement	Mar. 29, 2022	0; 0.5; 1 (best; average; worst)	2019	OCDE GID-DB <a href="https://www.genderindex.org/data/">https://www.genderindex.org/data/</a>
	Citizenship rights	Mar. 29, 2022	0; 0.5; 1 (best; average; worst)	2019	OCDE GID-DB <a href="https://www.genderindex.org/data/">https://www.genderindex.org/data/</a>

### IV. CORRELATIONS DATA SOURCES

IPRI-2021	DATA	DOWNLOAD DATE	ORIGINAL SCALE	YEAR (DATA)	SOURCE	LINK
	GDP per capita (constant 2015 US\$)	May 5, 2022	[0-∞](best)	2020	The World Bank Database	<a href="https://data.worldbank.org/indicator/ny.gdp.pc.ap.kd">https://data.worldbank.org/indicator/ny.gdp.pc.ap.kd</a>
	GINI coefficient	May 5, 2022	[0-∞](best)	Most Recent Available	The World Bank Database	<a href="https://data.worldbank.org/indicator/SI.POVE.GINI">https://data.worldbank.org/indicator/SI.POVE.GINI</a>
<b>SOCIO-ECONOMIC ENVIRONMENT</b>	Gross capital formation (current US\$) Per Capita	May 5, 2022	[0-∞](best)	2019 & 2020	The World Bank Database	<a href="https://data.worldbank.org/indicator/NE.GDI.TOTL.CD">https://data.worldbank.org/indicator/NE.GDI.TOTL.CD</a>
	Global Sustainable Competitiveness Index (GSCI)	May 5, 2022	[0-100](best)	2021	SolAbility	<a href="https://solability.com/the-global-sustainable-competitiveness-index/the-index">https://solability.com/the-global-sustainable-competitiveness-index/the-index</a>
	Competitive Industrial Performance (CIP)	May 5, 2022	[0-1](best)	2020	United Nations Industrial Development Organization (UNIDO)	<a href="https://solability.com/the-global-sustainable-competitiveness-index/the-index">https://solability.com/the-global-sustainable-competitiveness-index/the-index</a>
<b>ECOLOGICAL ENVIRONMENT</b>	Environmental Performance Index (EPI)	May 5, 2022	[0-100](best)	2020	Yale University	<a href="https://epi.yale.edu/epi-results/2020/component/epi">https://epi.yale.edu/epi-results/2020/component/epi</a>
	Notre Dame-Global Adaptation Index (ND-GAIN)	May 5, 2022	[0-100](best)	2019 (released in 2021)	University of Notre Dame	<a href="https://gain.nd.edu/our-work/country-index/">https://gain.nd.edu/our-work/country-index/</a>
<b>INSTITUTIONAL ENVIRONMENT</b>	Global Organized Crime Index (GOC)	May 5, 2022	[1-10](worst)	2021	Global Initiative Against Transnational Organized Crime	<a href="https://ocindex.net/downloads">https://ocindex.net/downloads</a>
	Corruption Perception Index (CPI)	May 5, 2022	[0-100](best)	2020	Transparency International	<a href="https://www.transparency.org/en/cpi/2021">https://www.transparency.org/en/cpi/2021</a>
	Human Freedom Index (HFI)	May 5, 2022	[0-10](best)	2019 (released in 2021)	Cato Institute	<a href="https://www.cato.org/human-freedom-index/2021">https://www.cato.org/human-freedom-index/2021</a>
<b>EMERGING ENVIRONMENT</b>	Global Artificial Intelligence Index (AII)	May 5, 2022	[0-100](best)	2021	Tortoise	<a href="https://www.tortoisemedia.com/intelligence/global-ai/">https://www.tortoisemedia.com/intelligence/global-ai/</a>
	Global Innovation Index (GII)	May 5, 2022	[0-100](best)	2021	World Intellectual Property Organization (WIPO)	<a href="https://www.globalinnovationindex.org/analysis-indicator">https://www.globalinnovationindex.org/analysis-indicator</a>
	E-Government Development Index (EGDI)	May 5, 2022	[0-1](best)	2020	United Nations Department of Economic and Social Affairs	<a href="https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2020">https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2020</a>
	Telecommunication Infrastructure Index (TII)	May 5, 2022	[0-1](best)	2020	United Nations Department of Economic and Social Affairs	<a href="https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2020">https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2020</a>
	Global Biotech Innovation Index (Biotech)	May 5, 2022	[0-100](best)	2019	ThinkBiotech LLC	<a href="https://www.thinkbiotech.com/globalbiotech">https://www.thinkbiotech.com/globalbiotech</a>
<b>SOCIAL ENVIRONMENT</b>	Social Tolerance	May 5, 2022	[0-100](best)	2021	Legatum Institute Foundation	<a href="https://www.prosperity.com/about/resources">https://www.prosperity.com/about/resources</a>
	E-Participation Index (E-Part)	May 5, 2022	[0-1](best)	2020	United Nations Department of Economic and Social Affairs	<a href="https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2020">https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2020</a>
	Global Health Security Index (GHSI)	May 5, 2022	[0-100](best)	2021	NTI, Johns Hopkins Center for Health Security, The Economic	<a href="https://www.ghsindex.org">https://www.ghsindex.org</a>
<b>POPULATION</b>	Population	May 29, 2022	Thousands	2020	United Nations Department of Economic and Social Affairs, Population Division (2019), World Population Prospects 2019, Online Edition	<a href="https://population.un.org/wpp/Download/Standard/Population">https://population.un.org/wpp/Download/Standard/Population</a>

## VI. CLUSTERS MEMBER'S POSITION (W/ IPRI COMPONENTS)

COUNTRY - CLUSTER 1	ACCR.	DISTANCE TO CENTROID	COUNTRY - CLUSTER 2	ACCR.	DISTANCE TO CENTROID	COUNTRY - CLUSTER 3	ACCR.	DISTANCE TO CENTROID
HONDURAS	HND	0.01246	CYPRUS	CYP	0.04385	GERMANY	DEU	0.05657
ECUADOR	ECU	0.01859	MALTA	MLT	0.04972	AUSTRALIA	AUS	0.05908
ALBANIA	ALB	0.02370	JORDAN	JOR	0.06864	SWEDEN	SWE	0.06311
UKRAINE	UKR	0.03768	SLOVAKIA	SVK	0.12875	CANADA	CAN	0.07630
BOSNIA & HERZEGOVINA	BIH	0.04885	LATVIA	LVA	0.13107	JAPAN	JPN	0.08722
MOLDOVA	MDA	0.08590	KUWAIT	KWT	0.16481	UNITED KINGDOM	GBR	0.09562
UGANDA	UGA	0.09119	COSTA RICA	CRI	0.17695	NETHERLANDS	NLD	0.12845
CÔTE D'IVOIRE	CIV	0.09499	LITHUANIA	LTU	0.19870	BELGIUM	BEL	0.13628
BURKINA FASO	BFA	0.09652	SLOVENIA	SVN	0.20643	NORWAY	NOR	0.17908
GUATEMALA	GTM	0.11847	ROMANIA	ROU	0.23185	DENMARK	DNK	0.19699
PAKISTAN	PAK	0.14241	RWANDA	RWA	0.29577	AUSTRIA	AUT	0.21989
EL SALVADOR	SLV	0.14696	POLAND	POL	0.31057	LUXEMBOURG	LUX	0.24655
DOMINICAN REPUBLIC	DOM	0.17182	MOROCCO	MAR	0.31735	IRELAND	IRL	0.26131
NORTH MACEDONIA	MKD	0.18242	CHILE	CHL	0.36918	HONG KONG (SAR OF CHINA)	HKG	0.28325
PERU	PER	0.20448	JAMAICA	JAM	0.40403	SWITZERLAND	CHE	0.28718
IRAN	IRN	0.20709	INDIA	IND	0.45157	NEW ZEALAND	NZL	0.39718
MALAWI	MWI	0.21112	CHINA	CHN	0.46647	TAIWAN	TWN	0.40354
ZAMBIA	ZMB	0.21390	MAURITIUS	MUS	0.52994	SINGAPORE	SGP	0.55540
ALGERIA	DZA	0.22604	SOUTH AFRICA	ZAF	0.57399	GRANCE	GRA	0.69035
BENIN	BEN	0.22875	SPAIN	ESP	0.62867	UNITED ARAB EMIRATES	ARE	0.72849
ARGENTINA	ARG	0.23874	GHANA	GHA	0.63736	ICELAND	ISL	0.80046
MADAGASCAR	MDG	0.24998	BAHRAIN	BHR	0.68010	FINLAND	FIN	0.86201
GABON	GAB	0.31046	ITALY	ITA	0.68484	ISRAEL	ISR	1.10321
KENYA	KEN	0.32373	BULGARIA	BGR	0.68335	ESTONIA	EST	1.14213
MALI	MLI	0.32811	MONTENEGRO	MNE	0.73280	UNITED STATES	USA	1.69316
PARAGUAY	PGY	0.32939	MALAYSIA	MYS	0.77832			
MOZAMBIQUE	MOZ	0.33080	URUGUAY	URY	0.80581			
VIETNAM	VNM	0.34190	TRINIDAD & TOBAGO	TTO	0.87134			
CAMEROON	CMR	0.36643	OMAN	OMN	0.87745			
SERBIA	SRB	0.45093	SAUDI ARABIA	SAU	0.89850			
BURUNDI	BDI	0.45990	KOREA, REP.	KOR	0.91028			
NICARAGUA	NIC	0.48774	PORTUGAL	PRT	0.97617			

COUNTRY - CLUSTER 1	ACCR.	DISTANCE TO CENTROID	COUNTRY - CLUSTER 2	ACCR.	DISTANCE TO CENTROID	COUNTRY - CLUSTER 3	ACCR.	DISTANCE TO CENTROID
TANZANIA	TZA	0.49255	BRUNEI DARUSSALAM	BRN	0.97617			
PHILIPPINES	PHL	0.51017	CZECH REPUBLIC	CZE	0.97800			
SENEGAL	SEN	0.52815	CROATIA	HRV	1.04166			
TUNISIA	TUN	0.53908	ARMENIA	ARM	1.05460			
KAZAKHSTAN	KAZ	0.55316	HUNGARY	HUN	1.14854			
KINGDOM OF ESWATINI	SWZ	0.57791	BOTSWANA	BWA	1.35836			
LEBANON	LBN	0.60018	QATAR	QAT	1.55613			
SRI LANKA	LKA	0.65879	AZERBAIJAN	AZE	1.75543			
NEPAL	NPL	0.68920						
THAILAND	THA	0.72499						
EGYPT	EGY	0.73040						
ETHIOPIA	ETH	0.73227						
NIGERIA	NGA	0.76109						
COLOMBIA	COL	0.81244						
BOLIVIA	BOL	0.81341						
BANGLADESH	BGD	0.82438						
RUSSIA	RUS	0.94605						
PANAMA	PAN	0.95938						
BRAZIL	BRA	1.03326						
TURKEY	TUR	1.10182						
GEORGIA	GEO	1.12891						
ZIMBABWE	ZWE	1.13293						
INDONESIA	IDN	1.27897						
CHAD	TCD	1.33273						
GREECE	GRC	1.35399						
ANGOLA	AGO	1.42820						
MAURITANIA	MRT	1.65666						
CONGO, DEM. REP.	COD	1.67173						
MEXICO	MEX	2.03814						
HAITI	HTI	2.49314						
YEMEN, REP.	YEM	4.26473						
VENEZUELA, BOL. REP.	VEN	6.86922						

## VII. ILLUSTRATIVE VARIABLES. AVERAGES BY CLUSTERS (W/ IPRI COMPONENTS)

	CLUSTER 1	CLUSTER 2	CLUSTER 3
Total Countries	64	40	25
Total Population (000)	3,069,555	3,371,737	878,667
Average IPRI	4.01	5.66	7.46
Average LP	3.59	5.72	7.78
Average PPR	4.18	5.67	7.41
Average IPR	4.27	5.59	7.19
Average GEN	6.50	7.32	9.06
Average IPRIGE	3.31	4.90	7.12
Average GDPPC	4,031.06	15,084.13	51,177.19
Average GDPGINI	158,579.81	453,900.85	1,635,068.15
Average GCFPC	856,288.93	4,032,141.23	13,274,798.09
Average GSCI	43.37	47.44	54.98
Average CIP	0.03	0.08	0.20
Average EPI	40.22	53.37	73.21
Average NDGAIN	43.99	55.81	68.87
Average GOCI	5.73	4.77	4.19
Average CPI	31.97	51.15	76.92
Average HFI	6.61	7.54	8.59
Average GAll	11.02	21.59	33.70
Average GII	26.58	36.45	54.14
Average EGOV	0.55	0.75	0.90
Average TII	0.45	0.73	0.90
Average BIOTECH	19.00	27.06	44.00
Average STOLERANCE	52.89	57.32	77.82
Average EPARTI	0.56	0.74	0.90
Average GHSI	36.86	47.03	60.28

## VIII. REGIONAL INTEGRATION AGREEMENTS AND CLUSTERS (W/ IPRI COMPONENTS)

	REGIONAL INTEGRATION AGREEMENTS	# COUNTRIES	CLUSTER 1	%	CLUSTER 2	%	CLUSTER 3	%
OECD	Organisation for Economic Co-operation and Development	38	4	10.53%	13	34.21%	21	55.26%
EU	European Union	27	1	3.70%	15	55.56%	11	40.74%
SADC	Southern African Development Community	12	9	75.00%	3	25.00%		
ECOWAS	Economic Community of West African States	7	6	85.71%	1	14.29%		
ASEAN	Association of Southeast Asian Nations	7	4	57.14%	2	28.57%	1	14.29%
PARLACEN	Central American Parliament	6	6	100.00%				
GCC	Gulf Cooperation Council	6			5	83.33%	1	16.67%
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	4	80.00%	1	20.00%		
CEMAC	Central African Economic and Monetary Community	3	3	100.00%				
MCCA	Central American Common Market	5	4	80.00%	1	20.00%		
CIS	Commonwealth of Independent States	5	3	60.00%	2	40.00%		
ARAB M UNION	Arab Mahgreb Union	4	3	75.00%	1	25.00%		
CARICOM	Caribbean Community	3	1	33.33%	2	66.67%		
CAN	Andean Community	4	4	100.00%				
EFTA	European Free Trade Association	3					3	100.00%
IGAD	Intergovernmental Authority on Development	3	3	100.00%				
USMCA	United States-Mexico-Canada Agreement	3	1	33.33%			2	66.67%
OPEC	Organization of the Petroleum Exporting Countries	9	6	66.67%	2	22.22%	1	11.11%
CEEAC	La Communauté Economique des Etats de l'Afrique Centrale	7	6	85.71%	1	14.29%		
TPP-11	Trans-Pacific Partnership	11	3	27.27%	3	27.27%	5	45.45%
PROSUR	The Forum for the Progress and Development of South America	7	6	85.71%	1	14.29%		



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