

# The Case for a Global Catastrophic Risks Index

Prepared by Augusto Lopez-Claros and Arthur L. Dahl

# The GCRI

We propose to construct a Global Catastrophic Risks Index (**GCRI**) as a tool to assess the magnitude of risks faced by countries across the world, their relative vulnerability and resilience to different types of risks, and to catalyze a debate about ways in which these risks could be mitigated through multi-stakeholder cooperation.

# The GCRI

This presentation will discuss:

- Why such a composite index is necessary and appropriate
- The methodology that will be used to construct the GCRI
- Selected indicators that will be included in the GCRI
- Future steps to maximize the impact of the GCRI

# Background

Composite indicators can influence policy making in a number of ways:

- Quantify and outline numerical goals and benchmarks
- Add value by synthesizing and indexing
- Legitimize public discourse on controversial ideas
- Focus attention of policymakers on best international practices

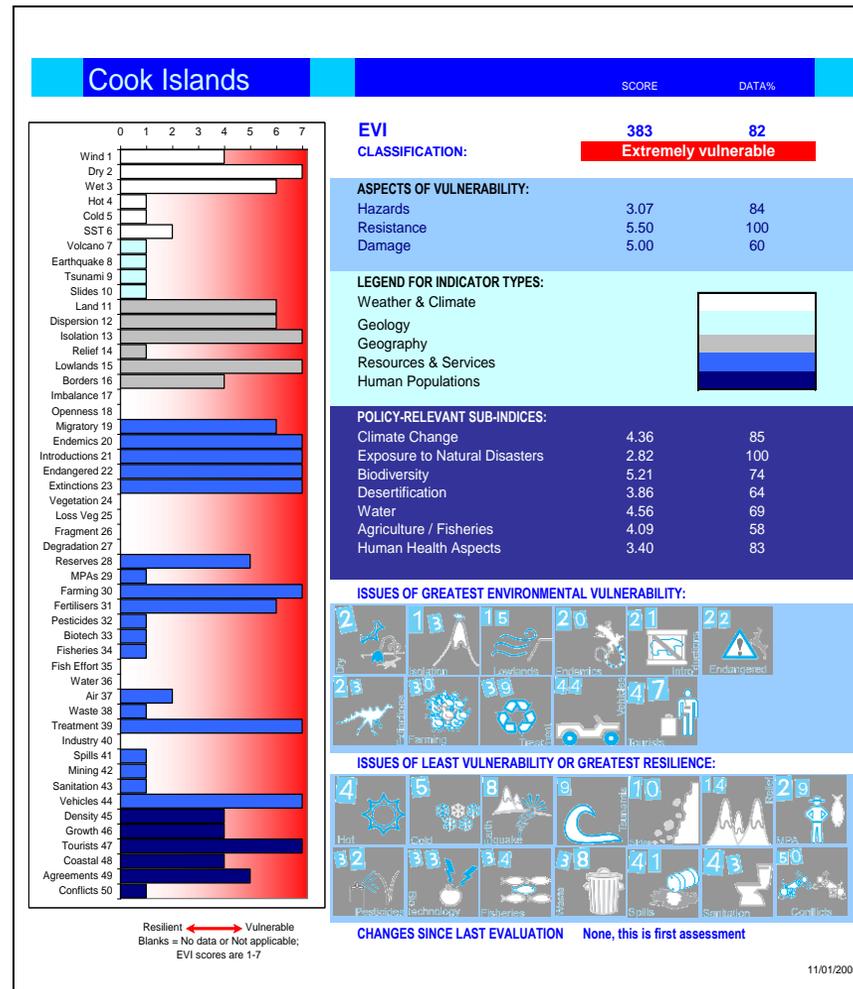
Key Examples:

- Human Development Index (HDI)
- Global Competitiveness Index
- Ease of Doing Business Index
- Environmental Vulnerability Index
- Corruption Perceptions Index

# The GCRI

## Example: Environmental Vulnerability Index

(50 indicators)



# The GCRI

Vulnerability to catastrophic risks needs to be addressed at two levels:

Risks that can be addressed largely within a country by measures within its own control or management

Risks external to any individual country's control that must be countered collectively

# The GCRI

The GCRI will capture countries' risk profiles as a function of both internal and external factors

Internal factors are those reflecting national characteristics (e.g., the strength of various domestic institutions, the quality of public policies)

External factors are those global factors which affect all countries, but in different ways (e.g., climate change)

# Selected Internal Risk Factors

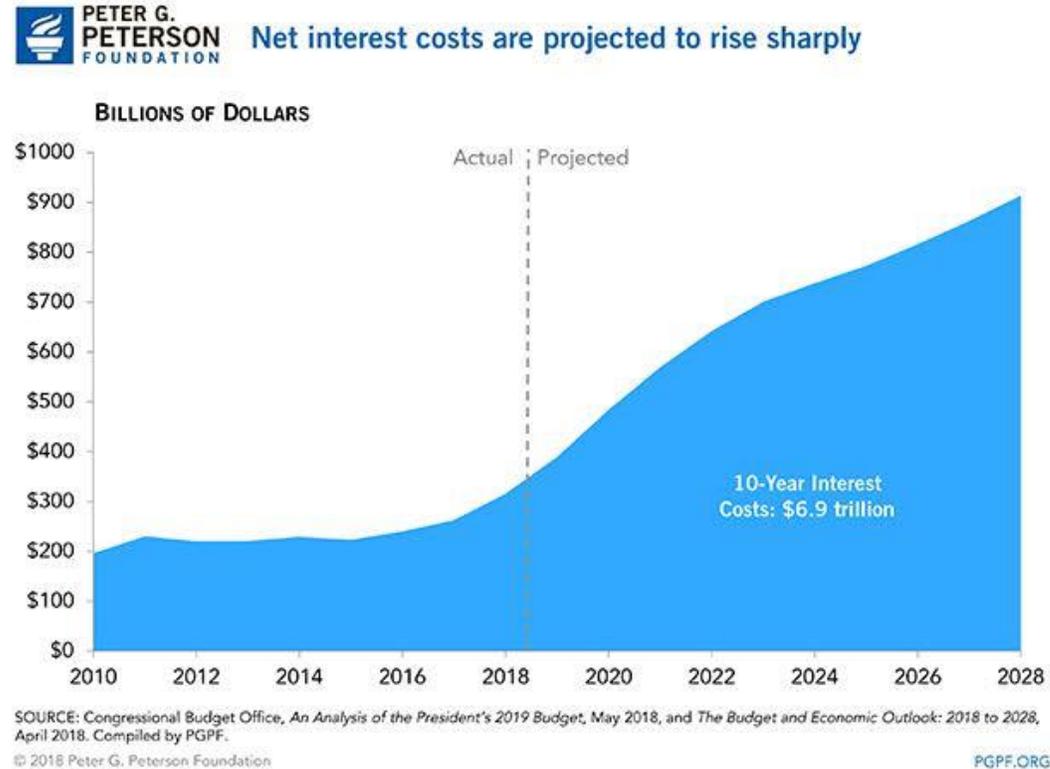
## Macroeconomic Stability

- Having a stable macroeconomic environment has come to be accepted as an essential ingredient for the successful implementation of broad-based reforms aimed at encouraging economic development
- There are no known instances of countries that have managed to grow in a sustainable way, while pursuing imprudent fiscal and monetary policies which have contributed to various macroeconomic imbalances
- Prudent fiscal and monetary policies that contribute to low inflation rates and a more stable domestic environment have been shown to contribute strongly to business confidence
- The 2008-09 global financial crisis highlighted the crucial importance of adequate supervision of the financial system and sound public finances
- High public indebtedness creates a terrible dilemma for governments. Scarce public resources which could be allocated to education, public health or to improve countries' infrastructure—all areas that help to improve competitiveness—have to be increasingly dedicated to debt service
- In an increasingly interdependent world economy, a more outward-looking orientation has become an essential element of successful economic reforms

# Selected Internal Risk Factors

## Macroeconomic Stability

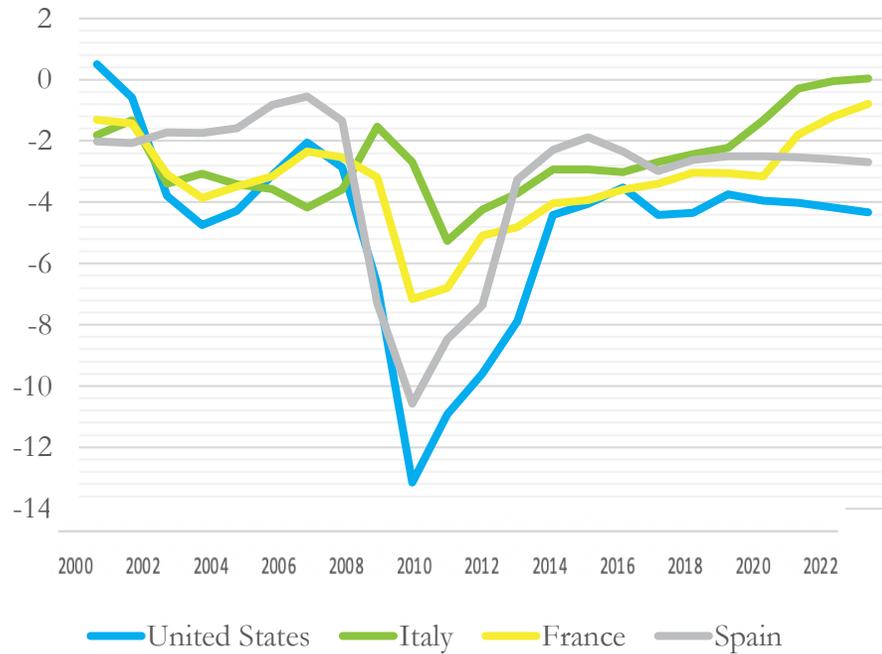
- By 2022, US interest payments on the public debt will exceed total defense expenditure.
- The US will no longer be able to play the role it has played in the postwar period of guarantor of international peace and security; it will simply not be able to afford it!



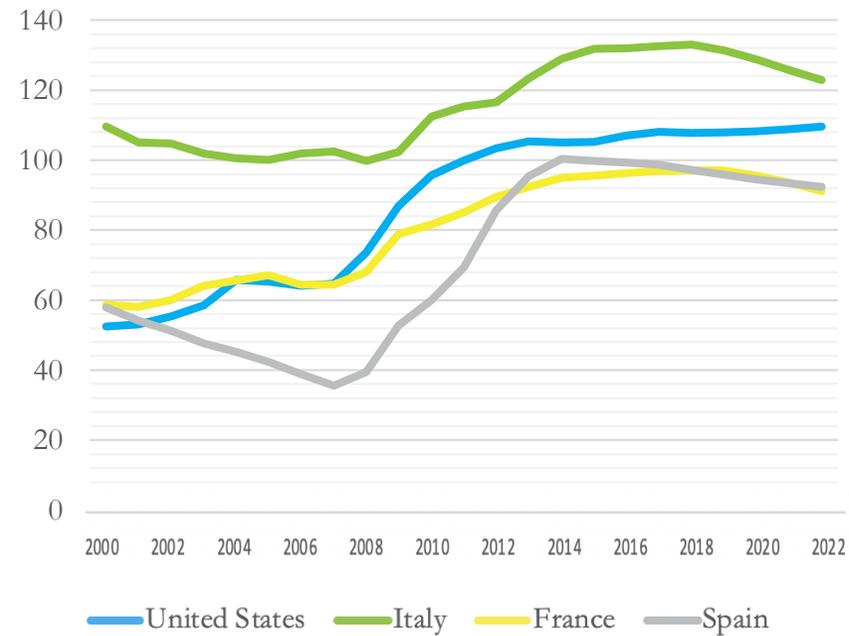
# Selected Internal Risk Factors

## Macroeconomic Stability

Fiscal Deficit (as % of GDP)



Government Debt (as % of GDP)



# Selected Internal Risk Factors

## Corruption

- Interferes with effective governance and reduces the capacity to anticipate and respond to risks
- Undermines the investment climate, discourages private sector development and innovation, and encourages various forms of inefficiency
- Is particularly devastating for small and medium-sized enterprises – often the engines of economic growth and job creation in the developing world
- Undermines government revenue and, therefore, limits the ability of the government to invest in productivity-enhancing areas, such as education, infrastructure and health

# Selected Internal Risk Factors

## Education and Human Capital

- Lack of basic skills severely limits the possibilities of citizens to participate in the development process, to be gainfully employed, to be well-informed judges of government policies and politicians, and to avoid falling prey to the manipulations of demagogues
- Education and training are indeed emerging as key drivers of productivity growth. As the global economy has become more complex, it is essential to boost human capital endowments of the labor force to compete and maintain a presence in global markets
- Weaknesses in the area of education will become an important risk factor, contributing to poverty, political and social instability and reduced administrative capacities on the part of the government and civil service

# Selected External Risk Factors

## Gender Equality

- The political empowerment of women leads to more government spending in education, public health, and infrastructures that contribute to improve the quality of life for the community
- Discriminating against women, curtailing their possibilities for gainful employment, undermining their property rights, restricting their mobility and imposing other legal barriers worsen income inequality, thereby adding to political instability
- There is a close connection between national economic performance and the degree to which societies have succeeded in integrating women into the economy and have allowed them to increasingly participate in decision-making
- More recent research has shown the vitally important role which women can play in peace negotiations and other consultations involving issues of security, and in contributing to reduce vulnerability to risks and improving resilience

# Selected External Risk Factors

## **Nuclear Proliferation and War**

- The ultimate modern catastrophic risk is arguably that of a nuclear war so contaminating the atmosphere with particulate matter that sunlight would be blocked and photosynthesis fail, precipitating a nuclear winter
- The risks of the use of nuclear weapons, whether intentional or accidental, are increasing and there are presently no effective control measures
- While there is a recent Convention on the prohibition of nuclear weapons, nuclear armed states have not joined the treaty. Other agreements to limit the further development or proliferation of nuclear arms are being abandoned
- According to the U.S. State Department, there are several dozen countries with the capacity to develop nuclear weapons

# Selected External Risk Factors

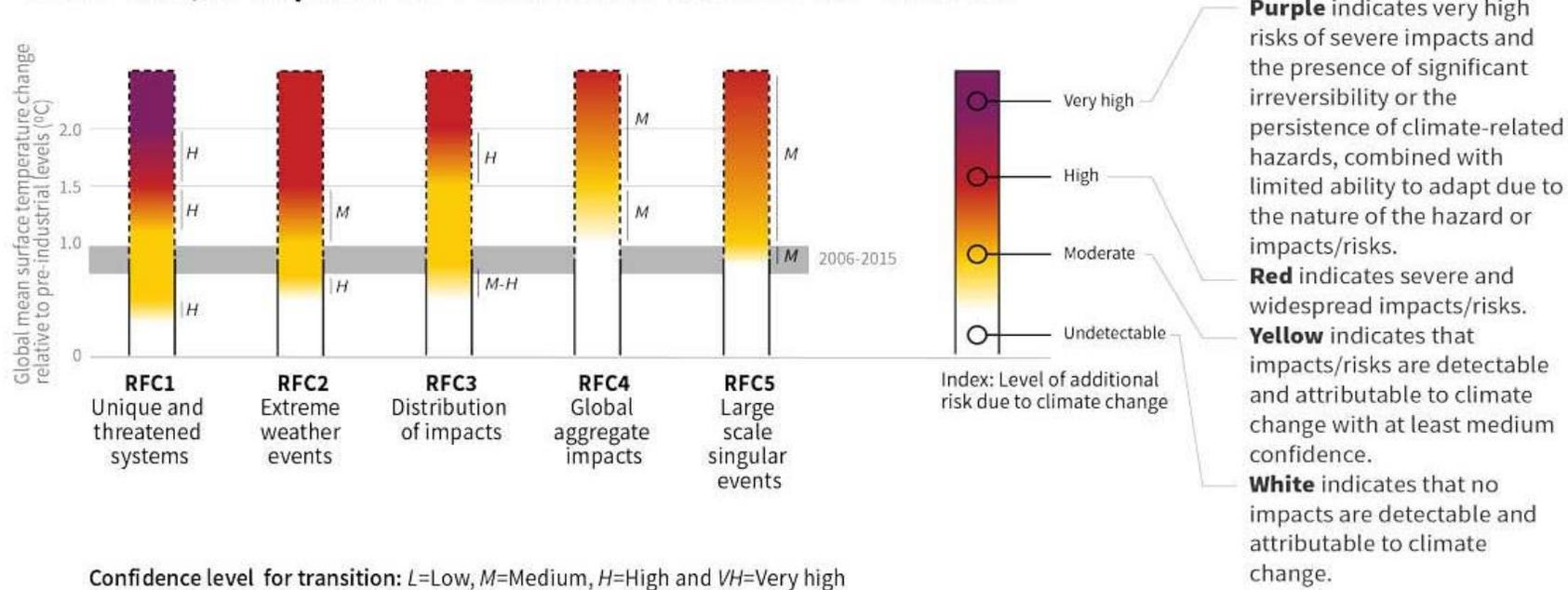
## Climate Change

- Climate change is the other existential global risk of our time, although it represents an ever-increasing frequency and severity of environmental and human disasters with variable impacts, making it harder for people to conceptualise and evaluate the risks
- The increase in extreme storms, floods, droughts, and heatwaves resulting from global heating are impacting human settlements, infrastructure, and food production
- Climate change is impacting biodiversity and could wipe out half of the world's species
- More than half the world population will be living in water-stressed areas, with some cities already threatened with water systems shutdown
- The sea level will rise a half meter even with extreme reductions in greenhouse gas emissions, and at least a meter in this century and several meters after that if we do not respond in time
- The resulting population displacements will dwarf the present migration crisis, as hundreds of millions will need to be resettled

# Selected External Risk Factors

## Climate Change

### Risks and/or impacts associated with Reasons for Concern



Source: IPCC (2018) Special Report: Global Warming of 1.5°C, figure 3.21

# Selected External Risk Factors

## Pandemics

- The Spanish Flu of 1918 killed at least 50 million, mostly young healthy people.
- Experts say it is not "if", but "when" mutations produce the next pandemic influenza virus or another disease vector that could kill up to a third of the world population
- In today's world of rapid and extensive travel, a contagious disease can spread quickly around the world
- Trade and commerce would come to a halt after an initial panic and run on essential supplies
- Health systems would be overwhelmed and essential services could be interrupted, leading to chaos and social breakdown

# Other Factors

The list of other factors which contribute to shape a country's risk profile is long. Among them:

- What is the legal basis for secure property (including intellectual property) and contract rights?
- What are the patterns of income distribution in the country? Are levels of inequality so high that they feed political instability?
- Is the trade regime unduly restrictive, or it is reasonably open, encouraging competition and gains in efficiency? Does the legal framework encourage foreign direct investment?
- Is there an adequate safety net to provide workers with a degree of financial security in times of economic stress?
- Is regulation of the labor market appropriate, or does it provide perverse incentives for both employers and workers?
- What is the level of expenditure in information and communication technologies? Does the government take a leadership role in the adoption of the latest technologies?
- How effective is the government in providing information and public services for the people through electronic platforms?
- Are public procurement policies and systems open and transparent, encouraging the adoption of new technologies and reward innovation? Or are they a vehicle for rent-seeking and corruption?

# Methodology

**Scope:** The GCRI will cover the 120 largest economies in the world, as measured by GDP at PPP exchange rates for 2018. As data become available, more countries can be added later.

**Weighing:** While we propose to consider both internal and external risk factors, we will weigh these differently in the GCRI, giving greater weight to global catastrophic risks such as nuclear war, climate change and pandemics, representing existential threats to humanity.

**Process:** Building the GCRI will entail an extensive data collection effort.

Two types of data will be collected:

- Hard data mostly on economic factors, social parameters and environmental resources
- Soft data from a purpose-built survey, provided funding can be secured

The hard data (and possibly the soft data, once collected) will be aggregated to construct the GCRI, using well established methodologies with which we have full familiarity, having built indexes and worked with them extensively over the past 15 years.

**Timeframe:** We estimate that a fully-built GCRI could be ready within 12 months

# Methodology: Soft Data

For those variables for which no hard data is likely to be available, it would be desirable to undertake an Expert Opinion Survey in the 120 countries covered

This soft data would be complementary to the hard data described above and supplement key insights about countries' risk profiles on the basis of expert opinions in the countries covered

# Methodology: Soft Data

## Survey Sample Questions:

- On a scale of 1 (low) <-> 5 (high), how much do you trust: local government, national government, politicians, police, doctors, scientists, religious leaders, economists, academics, educators, multinational corporations, local businesses, etc.
- Indicate your participation in democratic processes (yes/no): voting in local elections, voting in national elections, no participation
- Do you participate (yes/no) in any of the following community or service activities: service club, local association, local sports, environment/nature conservation, educational activity, children and youth, assistance to elderly or handicapped, religious or church group, cultural association, music/art/dance, etc.
- How do you rate the quality and capacity of the political leaders of your country, on a scale: 1 self-interest <-> 5 public service?
- How would you rank your perspective of the future over the next few decades: scale 1 pessimistic <-> 5 optimistic
- If there were a major crisis or system breakdown affecting you and your community, how long do you think you could survive without outside help? Scale: 1 one week <-> 5 indefinitely

## Composition of the Global Catastrophic Risks Index (GCRI)

**1<sup>st</sup> Pillar: Economic Stability**

**2<sup>nd</sup> Pillar: Quality of Governance**

**3<sup>rd</sup> Pillar: Education and Skills**

**4<sup>th</sup> Pillar: Gender Inequality**

**5<sup>th</sup> Pillar: Quality of Business Environment**

**6<sup>th</sup> Pillar: Environmental Vulnerabilities**

**7<sup>th</sup> Pillar: Exogenous Vulnerabilities**

## 1<sup>st</sup> Pillar: Economic Stability

### A. Macroeconomic Indicators

- 1.01 Budget Deficit
- 1.02 Debt Level
- 1.03 Inflation Rate
- 1.04 Size of the Underground Economy

### B. Other Economic Indicators

- 1.05 Income Inequality
- 1.06 Natural Resource Endowment
- 1.07 Quality of Infrastructure

### C. International Economy

- 1.08 Vulnerability to global financial events
- 1.09 Integration with Global Markets
- 1.10 Trade Restrictiveness
- 1.11 Openness to Foreign Investment

## 2<sup>nd</sup> Pillar: Quality of Governance

2.01 Prevalence of Corruption

2.02 Control of Corruption

2.03 Extent of state capture by narrow interests

2.04 Freedom of information

2.05 Corruption Perceptions Index

2.06 Survey Question: Trust in Leaders

2.07 Survey Question: Quality and Capacity of Political Leaders

2.08 Survey Question: Participation in Democratic Processes

## **3<sup>rd</sup> Pillar: Education and Skills**

### **A. Quantity of Education**

3.01 Primary Enrolment

3.02 Secondary Enrolment

3.03 Tertiary Enrolment

### **A. Quality of Education**

3.04 Measure of Attainment

### **B. Job Training**

3.05 Adult Education and Job Training

## 4<sup>th</sup> Pillar: Gender Inequality

- 4.01 Legal Restrictions
- 4.02 Mobility Restrictions
- 4.03 Doing Business
- 4.04 Property Rights
- 4.05 Power Relationships at Home
- 4.06 Incentives to Work
- 4.07 Working Restrictions
- 4.08 Violence Against Women

## 5<sup>th</sup> Pillar: Business and Community

### A. Quality of Business Environment

5.01 Property Rights Regime

5.02 Quality of Judicial Processes

5.03 Ease of doing business

### B. Community

5.04 Survey Question: Community Engagement

5.05 Survey Question: Attitude Towards the Future

5.06 Survey Question: Capacity for Local Self-Sufficiency and Survival

## 6<sup>th</sup> Pillar: Environmental Vulnerabilities

### A. Environment

6.01 Climate Change (High winds; dry, cold, wet, hot periods)

6.02 Environmental Degradation (soil degradation, deforestation, ecological footprint, biocapacity)

6.03 Water Scarcity

### B. Geography

6.04 Land Area

6.05 Dispersion (Ratio of length of borders to total land area)

6.06 Lowlands (% of land area less than 50m above sea level)

### B. Geology

6.07 Natural Disasters (Volcanoes, Earthquakes, Tsunamis, Slides)

## 7<sup>th</sup> Pillar: Exogenous Vulnerabilities

### A. Humans

- 7.01 Uncontrolled Migration
- 7.02 Population Density
- 7.03 Population Growth Rate
- 7.04 Percent of Population Living in Coastal Areas
- 7.05 Average number of Conflict Years per Decade

### B. Health

- 7.06 Doctors per Capita
- 7.07 Under-5 mortality rate

### C. WMD

- 7.08 Nuclear Capacity
- 7.09 Protection against pre-emptive strikes
- 7.10 Relations with nuclear-armed states

# GCRI Impact

Several deliverables will ensure the reach and success of the GCRI:

A report presenting the results of the index and its main insights

A roll-out event and subsequent presentations

A robust, globally-accessible GCRI website with data and analysis files

# Questions?

Contact Details:

Augusto Lopez-Claros

[alopezclaros@gmail.com](mailto:alopezclaros@gmail.com)

+1 (202)-677-1998

2315 S St., NW

Washington DC, 20008

Contact Details:

Arthur Dahl

[dahla@bluewin.ch](mailto:dahla@bluewin.ch)

+41 (0)22-797-0211

Chemin de Maisonneuve 12B

CH-1219 Chatelaine

Geneva, Switzerland

# Appendix 1: Countries Included

\*Ordered by GDP in 2018 at PPP exchange rates (in billions of US dollars)

1. China	26. Malaysia	51. Ireland	76. Bulgaria	101. Cambodia
2. United States	27. Netherlands	52. Qatar	77. Guatemala	102. Luxembourg
3. India	28. Argentina	53. Myanmar	78. Tunisia	103. Senegal
4. Japan	29. Philippines	54. Israel	79. Ghana	104. Latvia
5. Germany	30. South Africa	55. Portugal	80. Serbia	105. El Salvador
6. Russia	31. Colombia	56. Greece	81. Panama	106. Lao PDR
7. Indonesia	32. United Arab Emirates	57. Morocco	82. Turkmenistan	107. Honduras
8. Brazil	33. Bangladesh	58. Kuwait	83. Croatia	108. Bosnia and Herzegovina
9. United Kingdom	34. Iraq	59. Hungary	84. Côte d'Ivoire	109. Trinidad and Tobago
10. France	35. Vietnam	60. Denmark	85. Lithuania	110. Estonia
11. Mexico	36. Algeria	61. Sri Lanka	86. Cameroon	111. Mali
12. Italy	37. Belgium	62. Finland	87. Uganda	112. Georgia
13. Turkey	38. Singapore	63. Uzbekistan	88. Jordan	113. Madagascar
14. Korea	39. Switzerland	64. Ethiopia	89. Paraguay	114. Mongolia
15. Spain	40. Sweden	65. Angola	90. Lebanon	115. Botswana
16. Saudi Arabia	41. Romania	66. Ecuador	91. Costa Rica	116. Mozambique
17. Canada	42. Kazakhstan	67. Oman	92. Bolivia	117. Gabon
18. Iran	43. Hong Kong SAR	68. New Zealand	93. Nepal	118. Nicaragua
19. Australia	44. Chile	69. Slovak Republic	94. Uruguay	119. Albania
20. Thailand	45. Austria	70. Belarus	95. Yemen	120. Burkina Faso
21. Egypt	46. Peru	71. Sudan	96. Slovenia	
22. Taiwan	47. Venezuela	72. Dominican Republic	97. Bahrain	
23. Poland	48. Norway	73. Azerbaijan	98. Afghanistan	
24. Nigeria	49. Czech Republic	74. Kenya	99. Zambia	
25. Pakistan	50. Ukraine	75. Tanzania	100. DR of Congo	