Global Adaptation Index™ ("GaIn™")

Measuring What Matters

Global Adaptation Institute

Washington, DC

Building resilience to climate change and other global forces

GLOBAL ADAPTATION INSTITUTE™

The Global Adaptation Index ("GaIn") Rankings

Rank	Country	Score	Rank	Country	Score	Rank	Country	Score
1	Denmark	85.4	55	Kazakhstan	67.2	109	Namibia	57.2
2	Switzerland	83.6	56	Turkey	66.9	110	Cuba	56.7
3	Ireland	82.2	57	Belarus	66.9	111	Bhutan	56.3
4	Australia	82.0	58	Georgia	66.9	112	Gabon	56.2
5	New Zealand	81.7	59	Bahamas	66.7	113	Ghana	55.8
6	Finland	81.7	60	Mexico	66.5	114	Tajikistan	55.1
7	Norway	81.4	61	Saint Lucia	66.4	115	Guyana	54.7
8	United States	80.0	62	Costa Rica	66.3	116	Gambia	53.7
9	Germany	80.0	63	Brazil	65.9	117	India	53.6
10	United Kingdom	80.0	64	Cape Verde	65.9	118	Swaziland	52.3
11	Sweden	79.7	65	Bahrain	65.9	119	Pakistan	52.0
12	Czech Republic	79.7	66	El Salvador	65.6	120	Sao Tome and Principe	51.5
13	Austria	79.5	67	Colombia	65.4	121	Benin	51.5
14	Netherlands	79.2	68	Ukraine	64.9	122	Senegal	50.8
15	Iceland	78.7	69	Kyrgyzstan	64.8	123	Djibouti	50.4
16	France	78.7	70	Egypt	64.8	124	Cambodia	50.1
17	Luxembourg	78.5	71	Albania	64.7	125	Laos	50.1
18	Poland	78.2	72	Trinidad and Tobago	64.7	126	Tanzania, United Rep.	50.0
19	Canada	78.2	73	Lebanon	64.4	127	Madagascar	49.6
20	Chile	77.7	74	Peru	64.3	128	Rwanda	49.4
21	Slovenia	77.3	75	Dominican Republic	64.3	129	Bangladesh	49.4
22	Uruguay	77.3	76	Saudi Arabia	64.1	130	Burkina Faso	49.4
23	Spain	77.2	77	Tunisia	63.8	131	Côte d'Ivoire	49.3
24	Slovakia	76.6	78	Azerbaijan	63.5	132	Uganda	49.1
25	Japan	75.5	79	Jamaica	63.5	133	Zambia	48.9
26	Hungary	75.4	80	Moldova, Rep. of	63.5	134	Cameroon	48.6
27	Lithuania	75.3	81	Ecuador	63.4	135	Malawi	48.5
28	Estonia	75.2	82	Russian Federation	63.0	136	Nepal	48.4
29	Belgium	75.0	83	Paraguay	63.0	137	Mali	48.2
30	Portugal	74.7	84	Belize	62.6	138	Kenya	48.1
31	Italy	74.6	85	Indonesia	62.6	139	Lesotho	47.9
32	Latvia	74.4	86	Philippines	61.9	140	Nigeria	47.7
33	Greece	74.0	87	Mongolia	61.8	141	Comoros	47.6
34	Cyprus	73.7	88	Suriname	61.6	142	Papua New Guinea	47.6
35	Croatia	73.7	89	Venezuela, Bolivarian Rep.	61.2	143	Equatorial Guinea	47.3
36	Bulgaria	73.3	90	South Africa	61.2	144	Mozambique	47.3
37	Malta	72.5	91	Algeria	60.9	145	Congo	47.3
38	Romania	72.3	92	Honduras	60.5	146	Mauritania	46.6
39	Israel	71.9	93	Dominica	60.5	147	Yemen	45.7
40	Korea, Rep. of	71.9	94	Iran, Islamic Rep. of	60.4	148	Guinea-Bissau	45.4
41	Macedonia	71.7	95	Botswana	60.4	149	Guinea	44.9
42	Mauritius	70.9	96	China	60.3	150	Togo	44.5
43	Argentina	70.3	97	Nicaragua	60.3	151	Niger	44.0
44	Armenia	69.7	98	Viet Nam	60.2	152	Liberia	43.6
45	Malaysia	69.2	99	Samoa	60.2	153	Sierra Leone	43.4
46	Oman	68.9	100	Guatemala	60.1	154	Myanmar	43.0
47	Qatar	68.8	101	Fiji	59.5	155	Angola	42.7
48	Bosnia and Herzegovina	68.8	102	Libyan Arab Jamahiriya	58.9	156	Eritrea	41.8
49	United Arab Emirates	68.6	103	Syria	58.7	157	Ethiopia	40.4
50	Thailand	68.3	104	Bolivia	58.3	158	Chad	38.4
51	Serbia	68.1	105	Tonga	58.0	159	Burundi	38.2
52	Jordan	67.5	106	Vanuatu	58.0	160	Zimbabwe	38.0
53	Kuwait	67.4	107	Morocco	57.5	161	Central African Rep.	37.6
54	Panama	67.2	108	Uzbekistan	57.4			

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Foreword

Our Leadership

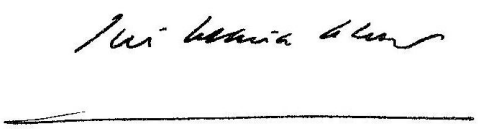
Message from the Chairman, Advisory Council

The Honorable
José María Aznar
Former President of Spain (1996 – 2004)

It is my honor to support and guide this timely and important endeavor. I decided to join this effort because I believe in the ability of humanity to innovate, create and implement practical solutions for the world's most complex problems. I have also joined because as former President of Spain, I have learned that governments need to be able to remove obstacles in order for people to take destiny into their own hands.

Our message is positive - not apocalyptic. We believe that by creating the right incentives while expanding our knowledge and understanding of the need for adaptation, we can save lives and improve the livelihoods of people around the world. In particular, those in vulnerable areas affected by climate change and other global forces need the most immediate assistance.

I believe that GaIn will become a natural navigation chart for both the private and public sectors to direct adaptation investments efficiently and effectively. In the end, our efforts are not truly compassionate unless they really work.



The Honorable José Maria Aznar
Chairman, Council of Advisers
Global Adaptation Institute
Former President of Spain (1996 – 2004)

Message from the Chairman, Board of Directors

Mr. Kenneth A. Hersh
Chief Executive Officer
NGP Energy Capital Management

As the global community struggles to reach agreement on an international climate mitigation policy, we don't have the luxury of postponing crucial investments in our food, water and energy systems as well as building protections for the billions living in vulnerable coastal communities. While there has been an increase in discussion on adaptation in many international arenas, there has been little concrete action.

GaIn is a groundbreaking tool that will guide capital to the sectors and countries where meaningful impact can be made in the area of adaptation. Too much time and money have been wasted on efforts that have small impacts or are undone by local institutional weaknesses. Starting now, we estimate that US$150-200 billion annually will be needed for the world to adapt to global changes. It is critical that those funds be directed where they will have the largest and most immediate impact.

GaIn, along with the Institute's important work in funding adaptation projects will help raise awareness of the need for global adaptation as well as mobilize private sector engagement in creating adaptation solutions.

Mr. Kenneth A. Hersh
Chairman, Board of Directors, Global Adaptation Institute
Chief Executive Officer, NGP Energy Capital Management

Message from the Founding CEO

Dr. Juan José Daboub
Former Managing Director,
World Bank (2006-2010)

Humans, by nature, have learned to adapt to changes in the environment, economy and in the most adverse situations. Freedom coupled with responsibility has shown throughout history to be the best formula to resolve complex problems. When free, the intelligence, creativeness and innovation of people around the world have no limits.

The Institute is keeping these principles in mind as we develop GaIn, promote adaptation demonstration projects and bring the public's attention to the need to adapt. We are passionate about producing results, and therefore must move quickly.

The creation of GaIn is not an end, but a beginning for the Institute, our partners and others who wish to join us in enhancing and protecting the lives of those most vulnerable.

Dr. Juan Jose Daboub
Founding CEO, Global Adaptation Institute
Former Managing Director, World Bank

Message from the Chief Scientist

Dr. Ian Noble
Former Lead Climate Change Specialist
World Bank

The Institute is producing our Global Adaptation Index™ ("GaIn") that will promote action in the world. We want more than to describe a country's vulnerability – we want to guide the way to resiliency. Thus, we seek and use "metrics that matter."

GaIn must be understandable and viewed as relevant to business executives and government leaders, not just scientists with specialization in the field. Through our many stages of consultation, feedback from business, government and non-profit leaders has increased both the rigor and ultimate utility of GaIn.

There has been much talk about how to get the private sector engaged in adaptation and other development priorities, but it has been a struggle determining how to do this. GaIn will take us a step forward in mobilizing private sector resources toward investing in resilience and prosperity in the world's most vulnerable regions.

Dr. Ian Noble
Chief Scientist
Global Adaptation Institute

Advisory Council

The Honorable José María Aznar
Chairman of the Advisory Council,
Global Adaptation Institute
Mr. Aznar is the former President of Spain (1996 -2004)

Anthony Morris
Founder, The Morris Company

Ana Palacio
Foreign Minister of Spain (2002-2004)

Jorge Quiroga
President of Bolivia (2001-2002)
Vice President of Bolivia (1997-2001)

Andreas Widmer
Co-Founder, Seven Fund

Council of Scientific Advisors

Dr. Maria de Lourdes Dieck-Assad
Director General of Graduate Schools of Business and Government
ITESM – Tecnológico de Monterrey, Mexico

Dr. Hans-Martin Füssel
Project Manager for Climate Impacts, Vulnerability, and Adaptation
European Environment Agency, Denmark

Dr. Richard Moss
Senior Staff Scientist
Pacific Northwest National Laboratory
Joint Global Change Research Institute, United States

Dr. Mark Myers
Vice Chancellor of Research
University of Alaska, United States

Dr. Anand Patwardhan
Professor, Shailesh J Mehta School of Management
Indian Institute of Technology-Bombay, India

Dr. Caroline Sullivan
Associate Professor
School of Environmental Science and Management
Southern Cross University, Australia

Dr. Claudio Szlafsztein
Professor, Center of Environmental Sciences
Federal University of Pará, Brazil

Dr. Jintao Xu
Professor of Natural Resource Economics
Chair, Department of Environmental Management
National School of Development, Peking University, China

Members of the Council were not asked to endorse the conclusions or recommendations of GaIn

Executive Summary

Adaptation is an imperative. The world is changing fast. Countries are being challenged to prepare for and, if possible, minimize the effects of climate change. The challenge will only be greater as populations and economies grow.

The Global Adaptation Institute ("Institute") recognizes that mitigation continues to remain an essential global policy goal. However, the climate will continue changing throughout this century whether or not a binding international climate mitigation policy develops. As history has shown, increases in climate-related disasters and climate change will lead to increased risks and costs for businesses, complicate political decisions, and of most concern, threaten the quality of life for vulnerable populations around the world. In addition, unplanned population growth and economic development presents similar global changes. Therefore, it is incumbent upon leaders in government, industry, and all forms of civil society to prepare for both anticipated and unforeseen risks to human life and livelihood.

In other words, we must adapt, and adapt in a way that is pragmatic, realistic and based on the principle that individuals should be able to take destiny into their own hands.

Despite expanding resource commitments from international institutions, public funding alone cannot be the only solution. The private sector must play a key role in providing the necessary additional resources and innovation. With appropriate information all can contribute to increasing the resilience of local communities. The Global Adaptation Index™ ("GaIn™") was developed as a navigation tool to help policy makers prioritize action and guide opportunities for private sector investment in adaptation.

The Global Adaptation Institute is a non-profit organization guided by a vision of building resilience to climate change and other global forces as a key component of sustainable development. The Institute has developed GaIn, creating strategic awareness of the importance of adaptation and will provide financing to adaptation projects in the near future.

What Makes the Institute Unique?

We are not just a "think" tank, but also a "do" tank. Our goal is to accomplish more than describing the problems resulting from vulnerability to climate change and other global forces -- we want to help fix them. We do this by providing a new tool (GaIn) that reveals where invested resources will have the greatest impact.

There is a multi-billion dollar gap between current government and NGO investment in adaptation and what is ultimately needed. Resources from the private sector are needed to fill that gap. Thus, we focus on the private sector's role in adaptation, while recognizing the work of governments and NGOs in this area.

Scientific, Business and Government Input

We are bringing together science, business and government leaders to create accurate metrics on adaptation. The metrics must be pragmatic and useful to users. These metrics have been carefully selected to create GaIn. In addition, we are researching complimentary demonstration projects and organizing outreach activities designed to move beyond a description of climate vulnerability. GaIn shows how concrete actions can attract private investment in adaptation.

What Makes GaIn Unique?

GaIn is certainly not the first attempt at measuring the vulnerabilities of countries to climate change and other global forces. Scientists and institutions around the world have conducted significant work throughout the last decade, many listed in the Reference section of this report. GaIn seeks to build upon this previous work by creating an index that promotes pragmatic action among governments, the private sector and NGOs and uniquely combines the concepts of vulnerability with readiness to drive action. Further, the index:

- Is open and transparent – All indicators and sources are readily available and easily accessible to the public.
- Brings the private sector to the table – Most indices focus solely on the vulnerabilities of countries; Gain includes indicators that guide governments and communities in how to prioritize action and harness the power of the private sector.
- Focuses on sectors crucial to human wellbeing – GaIn does not cover all aspects of vulnerability, but targets those sectors most important to human health and prosperity that also can be greatly improved by innovation.
- Tracks changes in countries' vulnerability and readiness from 1995 to present.
- GaIn has a simple but effective structure that allows for expansion of its coverage and the substitution of better indicators as they become available.
- Is politically neutral – A tool for both pragmatic policy makers and businessmen.

Full Report

Introduction: A Call for Adaptation

The world is changing fast. Countries are being challenged to prepare for and, if possible, minimize the effects of climate change. The challenge is only greater as populations and economies grow. Despite expanding resource commitments from international institutions, public funding alone cannot be the only solution. The private sector must play a key role in providing the necessary additional resources and innovation. With appropriate information all can contribute to increasing the resilience of local communities. The Global Adaptation Index ("GaIn") was developed as a navigation tool to help prioritize and measure progress in adapting to climate change and other global forces. It is targeted at governments, NGOs, international institutions and the private sector. It is hoped that GaIn will be a tool used for illuminating the challenges, and identifying the most impactful areas for action to guide opportunities for private sector investment in adaptation. Concurrently, GaIn can assist governments, NGOs and international institutions in determining what actions and policies will promote and facilitate these investments.

Adaptation Opportunities

Role of the Private Sector

Many governments have already created benchmarks or national plans to increase their resilience to climate change. Many NGOs and local organizations have raised awareness of specific vulnerabilities in their respective communities. The private sector also plays a key role in implementing projects and offering services and products that can increase a nation's resilience.

New products & services – Some companies are finding opportunities to offer new products or services that will assess how communities and individuals cope with a changing climate.

Prioritization of scarce resources – Focusing investment where it matters most.

Corporate Social Responsibility (CSR) – CSR is a leading driver of private sector involvement in climate adaptation. Companies that previously had a strong commitment to sustainability and humanitarian pursuits are now also supporting adaptation activities.

Risk mitigation – Insurance companies have been at the forefront of recognizing and quantifying climate change risks. Their analysis of these risks may cause them to raise insurance rates or refuse coverage for certain companies and/or projects with substantial exposure to anticipated climate change impacts.

Companies exposed to climate change risks have taken unilateral steps to protect themselves, particularly those dependent on natural resources. As a result, some of these companies are working to improve the long-term quantity and quality of these resources.

Markets for ecosystem/adaptation services – Companies with operations and assets that impact ecosystems can manage their business and properties to enhance or preserve these ecosystems and improve resilience to climate change and other forces. For instance, timber and agricultural lands can be managed to preserve water flows and quality. These "ecosystem services" are increasingly being recognized as being valuable to preserve resources that in the past have typically been considered free.

Role of Government and NGOs

Both governments and NGOs can help people adapt. The coordination of multi-state or regional adaptation projects will likely require government support. Likewise, many small-scale, local projects may need NGO and civil society buy-in. Further, environmental data, population and economic statistics, and other information relevant to the success of private-led adaptation solutions are often gathered and maintained by government institutions.

Some urgently needed adaptation projects may not provide immediate profits or incentives for private sector involvement. However, they may still provide substantial benefits to the community as a whole. Such situations may require government and community-based leadership as well as private-public partnerships.

Governments, NGOs and other non-private sector institutions will find GaIn useful; it can point to where gaps in adaptation funding can be filled by the private sector and how governments and non-private sector actors can improve private sector participation in adaptation.

Prioritizing Action on What Matters

Estimates of the costs of achieving a more climate resilient society vary widely and have not received as much attention as the associated costs for mitigation. However, they are of the same order of magnitude, i.e. rising to some tens or even hundreds of billions of dollars per year over the next decade or so. Current expenditures are only a few hundreds of millions of dollars. But these expenditures are not optional. While we remain vulnerable and ill-prepared for the risks associated with climate change we will pay the costs through disaster losses and recovery efforts. Not just major floods, storms and droughts, but also the slow, chronic losses resulting from failing farming systems, inadequate water supplies and deteriorating infrastructure that sap economic development. The majority of these costs cannot be borne by governments. Most of the investments in achieving a more climate resilient future will come from the private sector, small and large, as they work to protect their assets and pursue commercial opportunities.

Audience & Use

While there exist tools that can assist decision makers in determining risks from climate change and other global forces, we want GaIn to encourage users to move beyond descriptions and act. Our tool is intended to be pragmatic, actionable and oriented toward delivering improvements in climate resilience by showing on which vulnerability

and readiness indicators (measures) countries can make improvements to increase their resiliency.

We believe that government institutions, international non-profits and major donor agencies have made progress in developing metrics that represent their priorities for adaptation; but guidance that will mobilize action from the private sector has been scarce. Thus, the metrics described in this document have been selected to encourage private sector participation and assist policy makers in setting priorities. Specifically, indicators selected to measure a country's readiness represent variables that both the private sector and governments will assess when allocating resources and investing capital.

Investments will be made where economic rules are clear and fair, governments are not corrupt and the population is educated. In such countries where vulnerabilities are high, adaptation investments will occur much more readily than in countries with high corruption, low human development and unresponsive governments.

For many in the private sector, GaIn will be the tool to help decide where to invest both to obtain an attractive rate of return and help people in need.

As previously stated, non-private sector users interested in promoting private investments in adaptation can use GaIn to support policies and other actions to promote this investment.

The Global Adaptation Index - GaIn

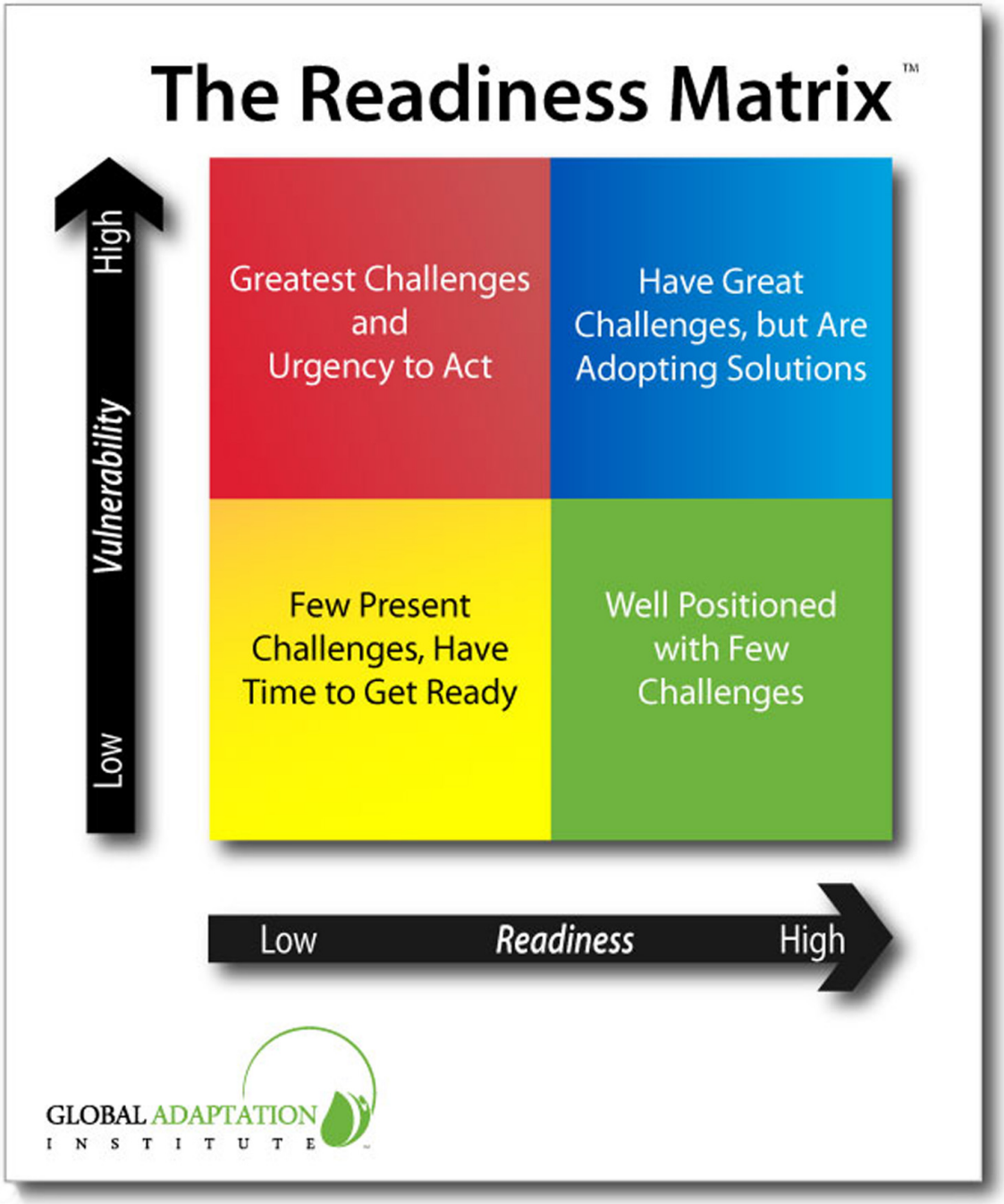
All countries are struggling with the challenges of adaptation but some, due to geographical location or socio-economic conditions, are more vulnerable to the impacts of climate change than others. Further, some nations are more ready to deal with these challenges through government action, community awareness and the ability to facilitate private sector responses. GaIn seeks to measure the major aspects of a country's vulnerability and its readiness to undertake adaptive actions to increase its resilience to climate change.

Vulnerability and Readiness: The Readiness Matrix™

At its launch, the Global Adaptation Institute introduced the "Readiness Matrix™" as a simple visual summary of the comparative vulnerability and readiness of countries. Here we present the first sketch upon that canvas where we outline quantitative measures[1] that might contribute to the axes. Figure 1 presents the first version of the Readiness Matrix that has been extensively vetted by our technical advisors.

[1] In this document we use the word 'indicator' to describe the general concept of quantitative metrics used in building indices etc. and the term 'measure' to describe the specific metrics used in building GaIn™ and the Readiness matrix.

Figure 1. The Readiness Matrix™



Vulnerability Axis:
The Vulnerability Axis seeks to capture exposure to climate related hazards, sensitivity to their impacts and the ability to cope with those impacts (adaptive capacity). The vulnerability analysis uses twenty-four indicators (Table 1) to measure three sectors that underlie human well-being (water, food and health). These sectors are enhanced by measuring infrastructure indicators (coastal, energy and transport).

Readiness Axis:
The Readiness Axis seeks to measure the ability of a country to absorb additional private sector investment resources and apply them effectively towards increasing resiliency to climate change and other global forces. Fourteen indicators are used to measure three categories (Table 2) of readiness: economic, social and governance.

1. **Red or Upper Left Quadrant** – A country with a high exposure to climatic change, but a low level of readiness, has both a great need for investment and innovations to improve readiness and a great urgency for action. Unless the government, international organizations and the private sector move quickly to improve the ability to adapt, significant human suffering will result. Initially this country is more likely to receive investment from the government or NGOs than from the private sector looking for financial returns.
2. **Yellow or Lower Left Quadrant** – Countries that are not highly vulnerable, even if not ready for investment. These countries will have few challenges and will have time to prepare. While private investment towards adaptation will be low, few people should be at risk.
3. **Blue or Upper Right Quadrant** – Countries in this quadrant are highly vulnerable but are ready to accept adaptation investment. There is strong urgency to act and the private sector is more likely to invest in adaptation relative to the red or yellow quadrants.
4. **Green or Lower Right Quadrant** – These countries have both low vulnerability and are ready and open for investments. They require little help and have few adaptation challenges.

Construction of the GaIn Axes:
Based on consultations and feedback, it was agreed that the measures included in GaIn should not only fit within the above Readiness Matrix but also be:

1. Consistent with current knowledge and best practice;
2. Transparent and conceptually clear;
3. Based on data that is accessible, quality checked, and comprehensive in national coverage;
4. Potentially scalable from national to regional and local;
5. Focused on variables that are directly representative of the sector and the components of vulnerability; they should avoid directly incorporating broad socio-economic measures, such as GDP/capita;
6. Inclusive of as many (UN) countries as possible given the availability of data.

In addition, two further goals were agreed that we expect will become the defining feature of GaIn compared with existing indices. The measures selected for both axes should point to actionable and measurable improvements in adapting to climate risks. Also, wherever possible the measures selected should have time series of data available, so that national progress over the past decade can be tracked and future changes compared.

Table 1. Vulnerability Indicators

Sectors		Exposure	Sensitivity	Capacity
Water	**Quantity**	Projected change in precipitation	Internal and external freshwater extracted for all uses	Population with access to improved water supply
	Quality	Projected change in temperature	Mortality among under 5 yr.-olds due to water-born diseases	Population with access to improved sanitation
Food	**Quantity**	Projected change in agricultural (cereal) yield	Population living in rural areas	Agricultural capacity
	Quality	Coefficient of variation in cereal crop yields	Food import dependency	Children under 5 suffering from malnutrition
Health	**Quantity**	Estimated impact of future climate change on deaths from disease	Health workers per capita	Longevity
	Quality	Mortality due to communicable (infectious) diseases	Health expenditure derived from external resources	Maternal mortality
Infrastructure **Coast**	**Quantity**	Land less than 10 m above sea-level	Population living less than 10 m above sea-level	Measured on the Readiness Axis
Energy	**Quantity**	Population with access to reliable electricity	Energy at risk	
Transport	**Quantity**	Frequency of floods per unit area	Roads paved	

Table 2. Readiness Indicators

Components	Indicator
Economic	Business freedom
	Trade freedom
	Fiscal Freedom
	Government Spending
	Monetary Freedom
	Investment Freedom
	Financial Freedom
Governance	Voice & Accountability
	Political Stability & Non-Violence
	Control of Corruption
Social	Mobiles per 100 persons
	Labor Freedom
	Tertiary Education
	Rule of Law

We sought to include all 192 UN member[2] countries in the Index and have adequate data for 180 countries for the Vulnerability Axis and 170 for the Readiness Axis. As data become available or more comprehensive, additional countries may be included in subsequent versions of GaIn. Several useful and commonly used measures have been omitted because reporting is patchy or clearly inconsistent among countries. The Institute will encourage a continuing debate on suggestions for improved and additional indicators.

Determining Rankings

User feedback made it clear that a single numerical score of adaptation readiness would be useful as an iconic indicator of progress and comparative readiness among countries. There are many ways such an index can be derived, each with advantages and disadvantages. However, the primary purpose of Gain is to encourage actions to both enhance readiness and reduce vulnerability so Gain scores should increase as both these goals are achieved. Thus, GaIn is simply the score on the Readiness Axis minus the score on the Vulnerability Axis and rescaled to give values in the range of approximately 0 to 100 for ease of communication.

Gain is made up of 14 readiness measures grouped under the components of economic, governance and social readiness and 24 vulnerability measures grouped under the sectors water, food, health and infrastructure.

The most ready countries in GaIn are the set of high-income countries with high readiness scores and usually low vulnerability (Table 3). The first middle-income countries (Chile – see Box 1 – and Uruguay) appear at about position 20 and only one low-income country before position 100.

[2] As of 20 June 2011

Country Case Study
Chile - Ready for Investment
Rank: 20

Chile has increased its score on the readiness axis of GaIn 18 percent over the past 15 years. However, its score on the vulnerability axis has increased slightly during this period largely due to an increase in food imports.

Chile faces specific infrastructure challenges, notably flooding on its roads. Chile is also highly dependent on agricultural imports, increasing its vulnerability.

For GDP per capita, Chile significantly outperforms its peers for readiness indicators.

Moving the GaIn Needle
Since Chile ranks high on readiness, with no one indicator dominating its score of 0.76, Chile should continue steady improvements on economic, social and governance issues.

Bolstering its transport infrastructure along with promoting more food self-sufficiency are two key areas in which improvement could significantly lower Chile's vulnerability score, which has remained at about 0.21 since 1995

Results from GaIn

Table 3. GaIn scores for 2010

Rank	Country	Rank	Country	Rank	Country
1	Denmark	55	Kazakhstan	109	Namibia
2	Switzerland	56	Turkey	110	Cuba
3	Ireland	57	Belarus	111	Bhutan
4	Australia	58	Georgia	112	Gabon
5	New Zealand	59	Bahamas	113	Ghana
6	Finland	60	Mexico	114	Tajikistan
7	Norway	61	Saint Lucia	115	Guyana
8	United States	62	Costa Rica	116	Gambia
9	Germany	63	Brazil	117	India
10	United Kingdom	64	Cape Verde	118	Swaziland
11	Sweden	65	Bahrain	119	Pakistan
12	Czech Republic	66	El Salvador	120	Sao Tome and Principe
13	Austria	67	Colombia	121	Benin
14	Netherlands	68	Ukraine	122	Senegal
15	Iceland	69	Kyrgyzstan	123	Djibouti
16	France	70	Egypt	124	Cambodia
17	Luxembourg	71	Albania	125	Laos
18	Poland	72	Trinidad and Tobago	126	Tanzania, United Rep. of
19	Canada	73	Lebanon	127	Madagascar
20	Chile	74	Peru	128	Rwanda
21	Slovenia	75	Dominican Republic	129	Bangladesh
22	Uruguay	76	Saudi Arabia	130	Burkina Faso
23	Spain	77	Tunisia	131	Côte d'Ivoire
24	Slovakia	78	Azerbaijan	132	Uganda
25	Japan	79	Jamaica	133	Zambia
26	Hungary	80	Moldova, Rep. of	134	Cameroon
27	Lithuania	81	Ecuador	135	Malawi
28	Estonia	82	Russia	136	Nepal
29	Belgium	83	Paraguay	137	Mali
30	Portugal	84	Belize	138	Kenya
31	Italy	85	Indonesia	139	Lesotho
32	Latvia	86	Philippines	140	Nigeria
33	Greece	87	Mongolia	141	Comoros
34	Cyprus	88	Suriname	142	Papua New Guinea
35	Croatia	89	Venezuela, Bolivarian	143	Equatorial Guinea
36	Bulgaria	90	South Africa	144	Mozambique
37	Malta	91	Algeria	145	Congo
38	Romania	92	Honduras	146	Mauritania
39	Israel	93	Dominica	147	Yemen
40	Korea, Rep. of	94	Iran, Islamic Rep. of	148	Guinea-Bissau
41	Macedonia	95	Botswana	149	Guinea
42	Mauritius	96	China	150	Togo
43	Argentina	97	Nicaragua	151	Niger
44	Armenia	98	Viet Nam	152	Liberia
45	Malaysia	99	Samoa	153	Sierra Leone
46	Oman	100	Guatemala	154	Myanmar
47	Qatar	101	Fiji	155	Angola
48	Bosnia and Herzegovina	102	Libyan Arab Jamahiriya	156	Eritrea
49	United Arab Emirates	103	Syria	157	Ethiopia
50	Thailand	104	Bolivia	158	Chad
51	Serbia	105	Tonga	159	Burundi
52	Jordan	106	Vanuatu	160	Zimbabwe
53	Kuwait	107	Morocco	161	Central African Rep.
54	Panama	108	Uzbekistan		

Highest Income

High Income

Upper Middle Income

Lower Middle Income

Least Developed

There is a negative (opposite) relationship between the readiness and vulnerability scores (Fig. 2); i.e. countries with high readiness tend to have low vulnerability and *vice versa*. This is an outcome that has emerged from GaIn and is not a built-in result. It reflects a well-known situation in development studies.

In developing the indicators for GaIn we were careful to seek measures with time series data from 1995 to present wherever possible. The global average of GaIn has increased by 4 points from 1995 to 2010 with some countries increasing by more than 10 points, driven by large increases in readiness, and a few falling by as much as 10 points. The richness of the time series information is illustrated in Fig. 3, which shows how four Latin American countries have changed in both readiness and vulnerability over 15 years. Chile, Uruguay and Mexico have steadily increased their readiness scores since 1995 while Nicaragua's readiness score has declined in recent years.

Figure 2. The Readiness Matrix for 2010

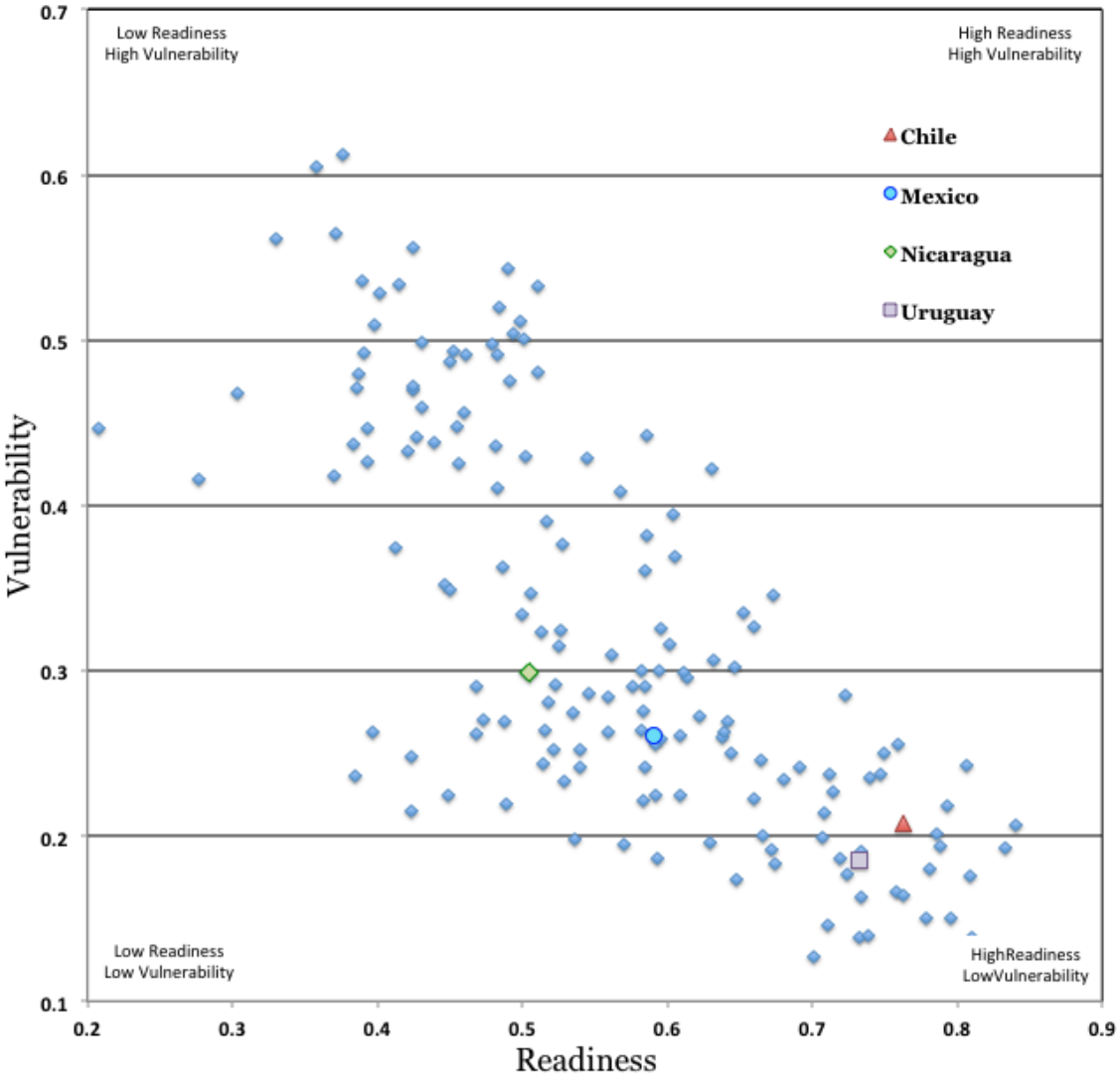
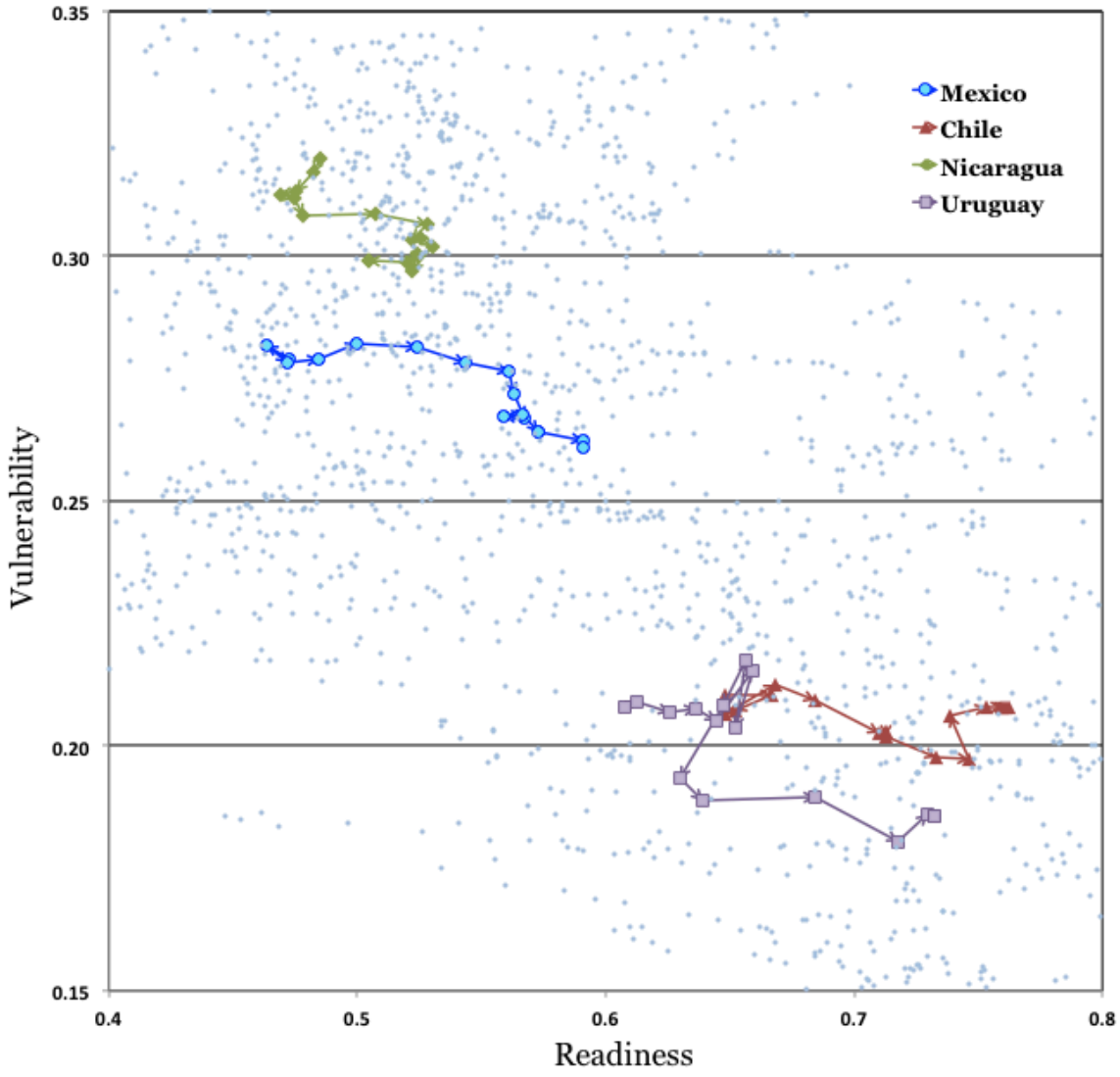


Figure 3. Changes in relative positions for South American countries on the Readiness Matrix from 1995 to 2010



GaIn is also strongly correlated with national income measured as GDP per capita[3] even though direct and indirect measures of national wealth/income were avoided in the selection of the measures. However, this correlation points to another conclusion that may be inferred from information about the relative performance of countries in GaIn; those with readiness or vulnerability scores better than the global best-fit trend line may provide a better investment environment than those that fall below it.

Table 4 shows the GaIn rankings but based on income adjusted scores. It is immediately obvious that there is a greater scatter of country incomes among the highest and lowest scores and that it also introduces some ratings that may not be immediately obvious. For example, Kyrgyzstan, a Least Developed Country, may be a surprising "most ready" candidate, since it is doing better than expected on both readiness and vulnerability.

[3] Expressed in Purchasing Power Parity (PPP) in constant USD2005 and usual log transformed.

Uruguay and Chile are middle-income countries also performing above their income level.

Table 4. GaIn rankings and scores adjusted for GDP per capita, 2010

Rank	Country	Rank	Country
1	Kyrgyzstan	142	Iran, Islamic Rep. of
2	Uruguay	143	Myanmar
3	Denmark	144	Central African Rep.
4	Chile	145	Bahamas
5	Armenia	146	Swaziland
6	Cape Verde	147	Botswana
7	Moldova	148	Saudi Arabia
8	New Zealand	149	Yemen
9	Poland	150	Trinidad and Tobago
10	Georgia	151	Cuba
11	Czech Republic	152	Bahrain
12	Switzerland	153	Chad
13	Jordan	154	Libyan Arab Jamahiriya
14	Macedonia	155	United Arab Emirates
15	Finland	156	Congo
16	Australia	157	Kuwait
17	Latvia	158	Gabon
18	Bulgaria	159	Qatar
19	Nicaragua	160	Angola
20	Ghana	161	Equatorial Guinea

Highest Income

High Income

Upper Middle Income

Lower Middle Income

Least Developed

An outcome of building the Index has been the gathering of a huge amount of information. This includes sectoral components with time-series information and ultimately allows both current assessment as well as evaluation of trends over time (see Box 2).

Box 2

Country Case Study
Mexico - Agricultural Production at Risk
Rank: 60

Since 1995, Mexico's score on the vulnerability axis of GaIn in the agriculture sector has increased 9 percent, even though its overall vulnerability has slightly declined. Contributing to almost half of Mexico's vulnerability score, agricultural production in the country faces challenges from shifting weather and rainfall patterns and a lack of modernization, including fertilizer use and irrigation, to meet demand from a growing population. For many in Mexico, rising food prices and shortages may get worse if predicted changes in agricultural yields occur.

Mexico's score on the readiness axis of GaIn has steadily improved throughout the last 15 years, however, it could improve this further by taking actions that positively impact several economic indicators, particularly those that measure factors affecting ease of doing business, such as reducing costs and time involved in starting a business.

Moving the GaIn Needle
Implementing policies that facilitate further investment in Mexico's agricultural modernization would be the most efficient way for Mexico to decrease its vulnerability, which will improve its overall GaIn score. In addition, Mexico can increase its GaIn score by strengthening the provision of health services as well as implementing policies to authorize and incentivize the private sector to increase energy access.

The web site supporting GaIn will allow users to explore the richness of the data and provide tools to assist them in their assessment. An example currently under development is a 'sweet spot analysis' that will allow a user to specify his/her preferred range of operations (e.g. mid-range vulnerability of 0.2 to 0.5, better than expected income adjusted readiness, middle income country, etc.). A sweet spot analysis like this, for example, returns a list of 15 possible countries ranging from Uruguay (23rd on GaIn Index), through Mauritius, Romania, to Jordan, El Salvador and South Africa. The analysis could be further refined by regional preference and performance in particular sectors such as water, transport, etc.

For further methodological details and information on indicators, please visit:
---- gain.globalai.org ----

Future Work

Adaptometer

Recognizing that many of the impacts of climate change and solutions to building resilience exist at the local level, The Global Adaptation Institute intends to develop an additional input, the "Adaptometer", to complement the measures used in GaIn. This component would be subjective. The goal is to provide information on the awareness of national and local governments and the private sector to the sensitivity to climate change of their jurisdictions and operations. If they are aware, how do they plan to adapt? Questions addressed could include:

1. Does the society of the country understand its climate risks?
2. How strong is the political will to address adaptation needs?
3. Are the decision makers and communities prepared to increase adaptive capacity?
4. Is there an open, inclusive, results oriented national and sub-national dialogue on Adaptation?
5. Do budgets reflect a commitment to adaptation?

Other questions will be developed dependent on the reality, level of progress and capacity of institutions on the ground to conduct such polls.

The Adaptometer would use information from the field that describes the level of knowledge, the policies in place, the allocation of budgets, and the overall commitment of society to adapt to climate change and other global trends. Concretely, polling/questionnaires would be conducted on public officials at national and local levels, plus representatives of the private sector, civil society, unions, universities, and think tanks.

This additional component could provide valuable information consistent with the framework and purpose of our model. The component could be included as an additional category in Readiness, or as an independent axis (possibly combined with adaptive capacity from the current Vulnerability Axis).

This concept can strengthen current metrics as well as contribute to the advocacy part of the Institute's goals. Hopefully it would encourage and facilitate implementation of public policies that produce long term, fiscally sound solutions for vulnerable groups in society.

Scaling to the local

Gain is based on national measures, but one part of a country may be highly vulnerable while the remaining portion experiences few impacts from climate change and other global trends. More likely, a country will face several discreet challenges in different regions (e.g. flooding along the coast and agricultural losses in the interior).

Considering a country's readiness, there may be significant disparities between regional governments in their ability to channel resources effectively and utilize private investment.

Gathering existing or developing new indicators at a sub national level is both very challenging and very important. The time and costs of dividing indicators into three, ten or even twenty regions within a nation clearly requires significant commitment from national and regional governments as well as any international institutions that may carry out such surveys.

After receiving initial responses to the release of GaIn, the Institute will work with partners to determine the feasibility of gathering more detailed and sub-national indicators. Such a project may initially begin with a distinct geographic region or continent.

Additional Indicators

Gain has been designed with a strongly modular approach. The measures for both axes fit within a structured conceptual approach based on current best practice. This modular structure is expandable and substitutable. For example, future versions of GaIn may add additional sectors such as ecosystem services to the Vulnerability Axis, or measures of human capital in the Readiness Axis might be revised and a new set substituted. If such changes are made we will provide analyses to maintain cross comparability with earlier versions of GaIn.

Conclusion

This first version of GaIn provides an organized framework in which countries, businesses and other actors can make informed decisions based on the most relevant and transparent indicators related to vulnerability and a country's readiness to act. We acknowledge, that there will always be room to improve GaIn and that there will always be differences in view as to what information should and should not be included in it. However, this first version of GaIn demonstrates the value of some of the decisions made in its initial design. The creation of a consistent structure for bringing measures together and simple approaches to calculating the indices and weighting of components has facilitated discussion and debate on GaIn amongst both technical advisers and potential users. GaIn and its axes of Readiness and Vulnerability are strongly correlated with income, but we have found useful insights from exploring departures from that relationship. Most importantly, we have only begun to explore the benefits of having time series data for most of the measures included in GaIn and being able to track performance of countries against GaIn over the past 15 years.

The Institute welcomes recommendations for additional indicators, data sources and methods that can improve both the accuracy and usefulness of the Index according to the criteria stated previously. GaIn will evolve over the next few years, but we will seek to stabilize its structure and measures so that it can become a reference point to assessing progress and priorities. Although never perfect, its imperfections might be better understood.

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Appendix 1: Glossary of Terms

Adaptometer	An indicator that captures information from the field in terms of the level of awareness, the policies in place, the allocation of budgets, and the overall commitment of society to adapting to climate change and other global trends. The Adaptometer™ will not only capture the "awareness" of the public and government about adaptation but what actions are being formulated and implemented.
Awareness	The reality at the local level. The population's understanding of climate risks and belief that changes will increase adaptation capacity.
Exposure	The nature and degree to which a system is exposed to significant climatic variations.
Global Adaptation Insitute	The Global Adaptation Institute is a non-profit, non-political organization guided by a vision of building resilience to climate change and other global forces as a key component of sustainable development. Our mission is to enhance the world's understanding of the urgency for adaptation to climate change and other global forces and for the support needed through private and public investments for developing countries.
Readiness	A measurement of the ability of a country's private and public sectors to absorb resources effectively toward increasing resiliency to climate change and other global forces.
Readiness Matrix™	The Global Adaptation Institute's "Readiness Matrix™" illustrates the comparative ability of countries to undertake adaptive actions to increase its resilience to climate change of countries. The vertical axis measures the relative vulnerability of countries. The horizontal axis measures to what degree a country is prepared to deal with climatic and environmental changes.
Sensitivity	Sensitivity is the degree to which a system is affected, either adversely or beneficially, by climate variability or change.
Adaptive Capacity	Adaptive capacity is the ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences.
Vulnerability	Vulnerability is the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate

	change and variation to which a system is exposed, its sensitivity and its adaptive capacity.
Weight	The relative value or importance an indicator is assigned in determining a country's overall readiness and vulnerability score.

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Robert Crawford, Partner, Deloitte
Jonathan Crowe, Consultant, Meister Consultants Group
Brian Lee Crowley, Managing Director, Macdonald-Laurier Institute - Ottawa, Ontario, Canada

Daniel De Deo, Associate, Baker & McKenzie
Mauro De Lorenzo, Vice President, John Templeton Foundation
Andrew Deutz, Director, International Government Relations, The Nature Conservancy
Leopoldo Dimas, FUSADES, El Salvador
Andy Downing, Chief Operating Officer, Global Climate Adaptation Partnership
Thomas Downing, CEO and Chief Climate Adaptation Officer, Global Climate Adaptation Partnership
Milen Dyoulgerov, Disaster Risk Reduction and Adaptation Coordinator, World Bank
Robert Edwards, Chief Executive Vice President, NGP Energy Capital Management, LLC
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Bennet Freeman, Senior Vice President, Sustainability Research and Policy, Calvert Investments
Clifford Gaddy, Brookings Institution
Guido Geissler, World Bank
A.K. Gosain, Professor & Head Department of Civil Engineering, Indian Institute of Technology Delhi
Carlos Guimarães, Chairman, LAIG- Latin America Investment Group
Brad Gutierrez, Director, International Policy and Relations, American Red Cross
Luis T. Gutiérrez, Editor, The Pelican Web
Jeffrey Gutman, Vice President Operations, Policy & Country Services, World Bank
Brian Greenberg, Director of Sustainability Development, InterAction
Douglas Griffes, Senior Program Manager and Vice President, CH2M HILL
Christina Hanley, Consultant, Meister Consultants Group
David Harrison, Parnter, Deloitte
Rebecca Henson, Sustainability Analyst, Calvert Investments
Shannon Herzfeld, Vice President, Government Relations, ADM
John Hewko, General Secretary, Rotary International
Jud Hill, Managing Director, NGP Global Adaptation Partners, LP.
Frank Hiroshi Ling, Climate Policy researcher, Ibaraki University, Japan
Daniel Hoornweg, Lead Urban Advisor, Sustainable Development Network, World Bank
Lisa Horrocks, Principal Consultant, Climate Change Adaptation, AEA
Sabine Johnson-Reiser, Energy & Climate, Carnegie Endowment for International Peace
Walter Jokisch, Former Minister of Environment and Natural Resources of El Salvador
Arne Jungjohann, Program Director, Environment and Global Dialogue Program, Heinrich Boll Stiftung, North America
Bruce Kahn, Senior Investment Analyst for Climate Change, Deutsche Bank
Michael Kappaz, Chairman and CEO, K&M Engineering and Consulting LLC
Daniel Kaufmann, Senior Fellow, Brookings Institution
Cathleen Kelly, Deputy Associate Director for Climate Change Adaptation, White House Council on Environmental Quality
Julia Kennedy, U.S. Department of State
Eric Kessler, Founding Director, Arabella Advisors
Thomas Kleine-Brockhoff, Senior Director, Policy Programs, The German Marshall Fund of the United States
Mark Klugmann, Partner, Consulting Firm Logistics, LLC
Kamola Kobildjanova, Energy & Climate, Carnegie Endowment for International Peace

Stephan Kriesel, Head of the Government Advisory Practice, Office of Tony Blair
Jill Lampert, Chief Financial & Administrative Officer, NGP Energy Capital Management, LLC
Gary Lawrence, Vice President, Chief Sustainability Officer, AECOM
Thomas Legge, Senior Program Officer, Climate & Energy, The German Marshall Fund of the United States
Marcia Levaggi, Manager, Adaptation Fund Board Secretariat, GEF
Alex MacGillivray, Executive Director, Climate Business
Franziska Mannke, Research and Transfer Centre Applications of Life Sciences
Genevieve Maricle, U.S. Agency for International Development
Robert Marten, Associate, The Rockefeller Foundation
Marisa Martin, Associate, Baker & McKenzie
Heather McGray, Senior Associate, Climate and Energy Program, World Resources Institute
Tom McKone, Civic Consulting Alliance
David McArthur, CEO, the Americas, ERM
Claudia McMurray, Senior Councelor, Prince of Wales International Sustainability Unit in US
Armin Munévar, Senior Water Resources Engineer, CH2M HILL
Tessa Paganini, Program Assistant, Climate & Energy, The German Marshall Fund of the United States
Hans Peter Meister, Founder and President, Meister Consultants Group
Marc Miles, Global Strategy Consultant, Global Economic Solutions
Brooks Miller, Managing Director, Dumbarton Group
Terry Miller, Director, Center for International Trade and Economics, The Heritage Foundation
Rajan Bharti Mittal, Vice Chairman and Managing Partner, Bharti Enterprises
Marwan Muasher, Vice President for Studies, Carnegie Endowment for International Peace
Roberto Murray Meza, President, Agrisal
Richard Murray, Special Advisor, International Association for the Study of Insurance Economics
Becky Norton Dunlop, Vice President for External Relations, The Heritage Foundation
John Nthiga Nyaga
Lindene Patton, Climate Product Officer, Zurich
Chris Perzan, Navistar
Jeffrey Plank, Associate Vice President for Research, University of Virginia
Mark Proegler, Director, Climate and Energy, BP plc
Thomas Raffa, Founding Director, RAFFA Consulting Accounting Technology
P.K. Rao
Ebrahim Rasool, Ambassador, Embassy of South Africa
Anthony Reed, Senior Director of Government Relations, ADM
Paul Reig, Associate, Aqueduct Project, Markets and Enterprise Program, World Resources Institute
Cristina Rumbaitis del Rio, Associate Director, The Rockefeller Foundation
Morgan Roach, Research Assistant, The Heritage Foundation
Jim Roberts, Research Fellow for Economic Freedom and Growth, The Heritage Foundation
Richard Saines, Partner, Baker & McKenzie
Arturo Samper, International Consultant, Urban and Regional Planning
Puja Sawhney, Asia Pacific Adaptation Network (APAN), Institute for Global Environmental Strategies
Earl Saxon, FHI360

Brett Schaefer, Jay Kingham Fellow in International Regulatory Affairs, The Heritage Foundation
Bruce Schlein, Vice President, Corporate Sustainable Development, Citi Group
Steve Seidel, Vice President for Policy Analysis and General Counsel, Pew Center on Global Climate Change
Keiko Alvarez Serrano, Embassy of Mexico
Tien Shiao, Associate, Aqueduct Project, Markets and Enterprise Program
Katherine Sierra, Senior Fellow, Global Economy and Development, Brookings Institution
Cosette Simon, Vice President, Government Relations, Swiss Re
Nigel Sizer, Director, Global Forest Initiative Markets and Enterprise Program, World Resources Institute
Rod Snider, Senior Advisor, Disaster Preparedness, American Red Cross
Andrew Snowhite, Co-Founder, Azure Worldwide, LLC
Martin Stadelmann, University of Zurich
Andrew Steer, Special Envoy for Climate Change, Sustainable Development Network, World Bank
Richard Stewart, Professor, New York University
Julie Stine, Corporate Attorney, Caterpillar, Inc.
Clay Thompson, Global Director, Government Affairs, Caterpillar
Michael Toman, Lead Economist on Climate Change, World Bank
S. Samuel Tumiwa, Deputy Regional Director, Asian Development Bank
Lauren Van Der Tak, Vice-President, Sr. Principal Technologist, CH2M HILL
Adnan Vatanserver, Energy & Climate Program Scholar, Carnegie Endowment for International Peace
Meine van Noordwijk, ICRAF/CGIAR
Yesenia Villasenor, Corporate Attorney, Caterpillar, Inc.
Annabel Waititu, Institute of Environment and Water
John Waatson, Partner, Baker & McKenzie
Joe Walsh, Regional Director, Lime Energy Co.
Mark Way, Director, Risk Management, Swiss Re
Max West, Senior Vice President, Willis
David Wheeler, Senior Fellow, Center for Global Development
Martijn Wilder, Partner, Baker & McKenzie
Paul Wolfowitz, Ambassador, Former President of the World Bank