*Measuring What Matters*

GaIn™ V. 1.0

***Global Adaptation Index™***

*Global Adaptation Institute, Washington, DC*

White Paper

Created for GaIn™ Consultation process

Results shown only for Western Europe and Latin America



The Global Adaptation Index™ Rankings

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Rank | **Country** | **Score** | **Rank** | **Country** | **Score** | **Rank** | **Country** | **Score** |
| 1 | Denmark | 83.8 | 41 | -Coming this fall- |  | 81 | -Coming this fall- |  |
| 2 | -Coming this fall- |  | 42 | -Coming this fall- |  | 82 | -Coming this fall- |  |
| 3 | Switzerland | 81.4 | 43 | -Coming this fall- |  | 83 | -Coming this fall- |  |
| 4 | Ireland | 81.4 | 44 | -Coming this fall- |  | 84 | -Coming this fall- |  |
| 5 | -Coming this fall- |  | 45 | Argentina | 69.0 | 85 | -Coming this fall- |  |
| 6 | Finland | 79.9 | 46 | -Coming this fall- |  | 86 | -Coming this fall- |  |
| 7 | Norway | 79.6 | 47 | -Coming this fall- |  | 87 | -Coming this fall- |  |
| 8 | United Kingdom | 79.3 | 48 | -Coming this fall- |  | 88 | -Coming this fall- |  |
| 9 | -Coming this fall- |  | 49 | -Coming this fall- |  | 89 | -Coming this fall- |  |
| 10 | Sweden | 77.9 | 50 | -Coming this fall- |  | 90 | Paraguay | 61.4 |
| 11 | Austria | 77.5 | 51 | -Coming this fall- |  | 91 | -Coming this fall- |  |
| 12 | -Coming this fall- |  | 52 | -Coming this fall- |  | 92 | -Coming this fall- |  |
| 13 | Netherlands | 77.4 | 53 | -Coming this fall- |  | 93 | -Coming this fall- |  |
| 14 | -Coming this fall- |  | 54 | -Coming this fall- |  | 94 | -Coming this fall- |  |
| 15 | Germany | 76.9 | 55 | -Coming this fall- |  | 95 | -Coming this fall- |  |
| 16 | -Coming this fall- |  | 56 | -Coming this fall- |  | 96 | Venezuela | 60.3 |
| 17 | France | 76.8 | 57 | -Coming this fall- |  | 97 | -Coming this fall- |  |
| 18 | Luxembourg | 76.4 | 58 | -Coming this fall- |  | 98 | -Coming this fall- |  |
| 19 | -Coming this fall- |  | 59 | Panama | 65.8 | 99 | Nicaragua | 59.6 |
| 20 | -Coming this fall- |  | 60 | Costa Rica | 65.6 | 100 | Honduras | 59.6 |
| 21 | Chile | 76.1 | 61 | Mexico | 65.6 | 101 | -Coming this fall- |  |
| 22 | -Coming this fall- | 75.7 | 62 | -Coming this fall- |  | 102 | Guatemala | 59.3 |
| 23 | Uruguay | 75.5 | 63 | -Coming this fall- |  | 103 | -Coming this fall- |  |
| 24 | Spain | 75.2 | 64 | -Coming this fall- |  | 104 | -Coming this fall- |  |
| 25 | -Coming this fall- |  | 65 | -Coming this fall- |  | 105 | -Coming this fall- |  |
| 26 | -Coming this fall- |  | 66 | -Coming this fall- |  | 106 | -Coming this fall- |  |
| 27 | -Coming this fall- |  | 67 | El Salvador | 64.9 | 107 | -Coming this fall- |  |
| 28 | -Coming this fall- |  | 68 | -Coming this fall- |  | 108 | Bolivia | 57.5 |
| 29 | -Coming this fall- |  | 69 | -Coming this fall- |  | 109 | -Coming this fall- |  |
| 30 | Italy | 73.2 | 70 | Brazil | 64.4 | 110 | -Coming this fall- |  |
| 31 | Belgium | 73.2 | 71 | -Coming this fall- |  | 111 | -Coming this fall- |  |
| 32 | Portugal | 72.9 | 72 | -Coming this fall- |  | 112 | -Coming this fall- |  |
| 33 | Greece | 72.6 | 73 | Colombia | 63.8 | 113 | -Coming this fall- |  |
| 34 | -Coming this fall- |  | 74 | Dominican Rep. | 63.3 | 114 | -Coming this fall- |  |
| 35 | -Coming this fall- |  | 75 | -Coming this fall- |  | 115 | -Coming this fall- |  |
| 36 | -Coming this fall- |  | 76 | -Coming this fall- |  | 116 | -Coming this fall- |  |
| 37 | -Coming this fall- |  | 77 | Peru | 63.2 | 117 | -Coming this fall- |  |
| 38 | -Coming this fall- |  | 78 | Ecuador | 63.0 | 118 | -Coming this fall- |  |
| 39 | -Coming this fall- |  | 79 | -Coming this fall- |  | 119 | -Coming this fall- |  |
| 40 | -Coming this fall- |  | 80 | -Coming this fall- |  | 120 | -Coming this fall- |  |
| 121 | Cuba | 54.8 | 161 | -Coming this fall- |  |  |  |  |
| 122 | -Coming this fall- |  | 162 | -Coming this fall- |  |  |  |  |
| 123 | -Coming this fall- |  | 163 | -Coming this fall- |  |  |  |  |
| 124 | -Coming this fall- |  | 164 | -Coming this fall- |  |  |  |  |
| 125 | -Coming this fall- |  | 165 | -Coming this fall- |  |  |  |  |
| 126 | -Coming this fall- |  | 166 | -Coming this fall- |  |  |  |  |
| 127 | -Coming this fall- |  | 167 | -Coming this fall- |  |  |  |  |
| 128 | -Coming this fall- |  | 168 | -Coming this fall- |  |  |  |  |
| 129 | -Coming this fall- |  | 169 | -Coming this fall- |  |  |  |  |
| 130 | -Coming this fall- |  | 170 | -Coming this fall- |  |  |  |  |
| 131 | -Coming this fall- |  | 171 | -Coming this fall- |  |  |  |  |
| 132 | -Coming this fall- |  | 172 | -Coming this fall- |  |  |  |  |
| 133 | -Coming this fall- |  | 173 | -Coming this fall- |  |  |  |  |
| 134 | -Coming this fall- |  | 174 | -Coming this fall- |  |  |  |  |
| 135 | -Coming this fall- |  | 175 | -Coming this fall- |  |  |  |  |
| 136 | -Coming this fall- |  |  |  |  |  |  |  |
| 137 | -Coming this fall- |  |  |  |  |  |  |  |
| 138 | -Coming this fall- |  |  |  |  |  |  |  |
| 139 | -Coming this fall- |  |  |  |  |  |  |  |
| 140 | -Coming this fall- |  |  |  |  |  |  |  |
| 141 | -Coming this fall- |  |  |  |  |  |  |  |
| 142 | -Coming this fall- |  |  |  |  |  |  |  |
| 143 | -Coming this fall- |  |  |  |  |  |  |  |
| 144 | -Coming this fall- |  |  |  |  |  |  |  |
| 145 | -Coming this fall- |  |  |  |  |  |  |  |
| 146 | -Coming this fall- |  |  |  |  |  |  |  |
| 147 | -Coming this fall- |  |  |  |  |  |  |  |
| 148 | -Coming this fall- |  |  |  |  |  |  |  |
| 149 | -Coming this fall- |  |  |  |  |  |  |  |
| 150 | -Coming this fall- |  |  |  |  |  |  |  |
| 151 | -Coming this fall- |  |  |  |  |  |  |  |
| 152 | -Coming this fall- |  |  |  |  |  |  |  |
| 153 | -Coming this fall- |  |  |  |  |  |  |  |
| 154 | -Coming this fall- |  |  |  |  |  |  |  |
| 155 | -Coming this fall- |  |  |  |  |  |  |  |
| 156 | -Coming this fall- |  |  |  |  |  |  |  |
| 157 | -Coming this fall- |  |  |  |  |  |  |  |
| 158 | -Coming this fall- |  |  |  |  |  |  |  |
| 159 | -Coming this fall- |  |  |  |  |  |  |  |
| 160 | -Coming this fall- |  |  |  |  |  |  |  |

Table of Contents

Foreword 4

Executive Summary 9

What makes the Institute unique? 9

Scientific, Business and Government Input 10

What makes GaIn™ unique? 10

Full Report 11

Introduction: A Call for Adaptation 11

Adaptation Opportunities 11

Role of the Private Sector 11

Role of Government and NGOs 12

Filling the Finance Gap 12

Audience & Use 13

The Global Adaptation Index™ - GaIn™ 14

Vulnerability and Readiness: The Readiness Matrix™ 14

Determining Rankings 18

Results from GaIn™ Version 1.0 20

Future Work 26

Adaptometer™ 26

Scaling to the local 27

Additional Indicators 27

Conclusion 28

References 29

Appendix 1: Glossary of Terms 33

# 

# Foreword

Our Leadership

Message from the Chairman, Council of Advisers



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 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, particularly those in areas most vulnerable to the effects of climate change and other global forces.

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

The Honorable Jose 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 discussions 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 of NGP Energy Capital Management

Message from the Founding CEO



Dr. Juan Jose 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 the most complex problems. When free, the intelligence, creativeness, and innovation of people around the world have no limits.

We are 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 we 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 an Index 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 utilize “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, the 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

Council of Advisers

**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 Advisers

**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

# Executive Summary

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 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. 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 can not 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 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.

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 is developing GaIn™, creating strategic awareness on 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 GaInTM. 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 harness the power of the private sector.
* Focuses on sectors crucial to human well being – 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.

# 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 can not 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 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.

*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.

## Filling the Finance Gap

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. Specifically, indicators selected to measure a country’s readiness represent variables that the private sector will assess when making business and investment decisions.

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 actors interested in promoting private investments in adaptation, can use the Index to support policies and other actions to promote this investment.

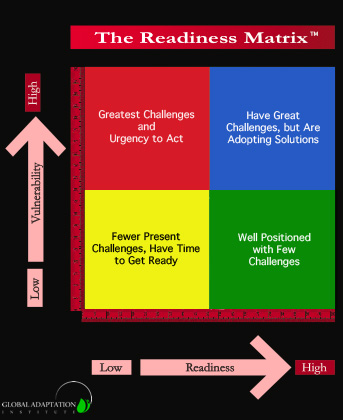
## The Global Adaptation Index™ - GaIn™

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 their 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]](#footnote-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.

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. 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. There are three categories (Table 2) of readiness indicators: economic, social and governance.

1. **Red or Upper Left Quadran**t – 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, the country is unlikely to deal successfully with change. 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 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 GaInTM 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 the GaInTM 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

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

Table 2. Readiness Indicators

|  |  |  |  |
| --- | --- | --- | --- |
| **Economic** | 40 % | 5.71 % | IEF Business freedom |
| 5.71 % | IEF Trade freedom |
| 5.71 % | IEF Fiscal Freedom |
| 5.71 % | IEF Government Spending |
| 5.71 % | IEF Monetary Freedom |
| 5.71 % | IEF Investment Freedom |
| 5.71 % | IEF Financial Freedom |
| **Governance** | 30 % | 10.00 % | WGI Voice & Accountability |
| 10.00 % | WGI Political Stability & Non-Violence |
| 10.00 % | WGI Control of Corruption |
| **Social** | 30 % | 5.00 % | Mobiles per 100 persons |
| 5.00 % | IEF Labor Freedom |
| 10.00 % | Tertiary Education |
| 10.00 % | WGI Rule of Law |

We sought to include all 192 UN member[[2]](#footnote-2) countries in the Index and have adequate data for at least 180 countries for the Vulnerability Axis and at least 170 for the Readiness Axis. As data become available or more comprehensive, additional countries may be included in subsequent versions of GaInTM. 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 the Index is to encourage actions to both enhance readiness and reduce vulnerability so the Index should increase as both these goals are achieved. Thus the Index 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.

GaInTM 1.0 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 on the Index 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 --, Uruguay) appear at about position 20 and only one low-income country before position 100.

**Box 1**

**Country Case Study**

**Chile - Ready for Investment**

**Rank: 21**

Chile has increased its score on the readiness axis of the GaInTM Index 15 percent throughout the last decade and-a-half to become the 15th most ready nation. 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.

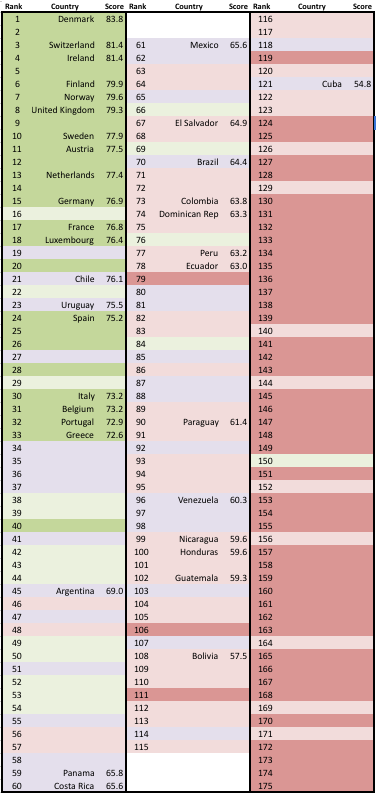
For GDP per capita, Chile significantly outperforms its peers for readiness indicators.

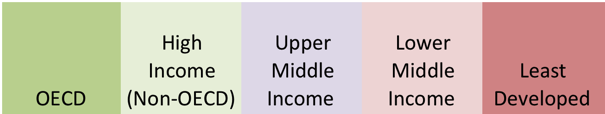
*Moving the Index Needle*

Since Chile ranks high on readiness with no one indicator dominating its score, 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.

## Results from GaIn™ Version 1.0

Table 3. GaIn™ 1.0 Scores for 2010



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 the Index we were careful to seek measures with time series data from 1995 to present wherever possible. The global average of the GaInTM Index 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 some falling by as much as 10 points. The richness of the time series information is illustrated in Fig. 3, which shows how four South Asia countries have changed in both readiness and vulnerability over 15 years. India and Bhutan have both increased readiness and reduced vulnerability, although Bhutan has done so faster by increasing its GaInTM Index by 9 points since 1995.

Figure 2. The GaIn™ 1.0 Readiness Matrix for 2010

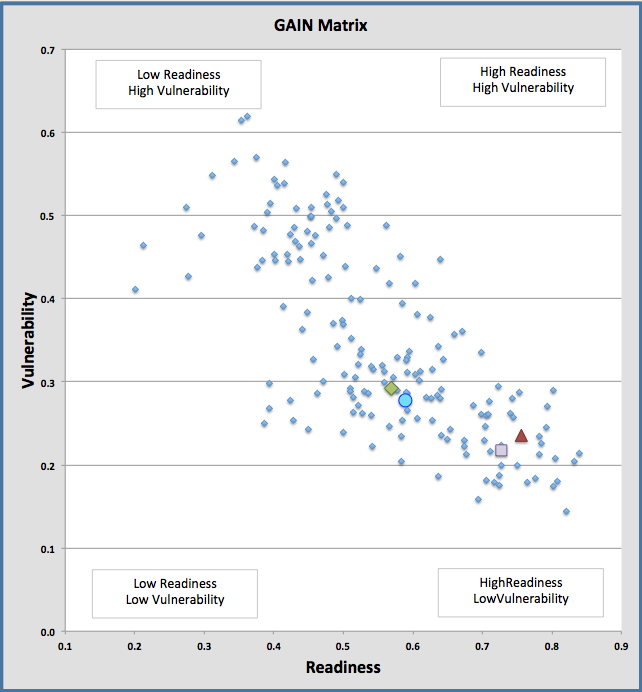
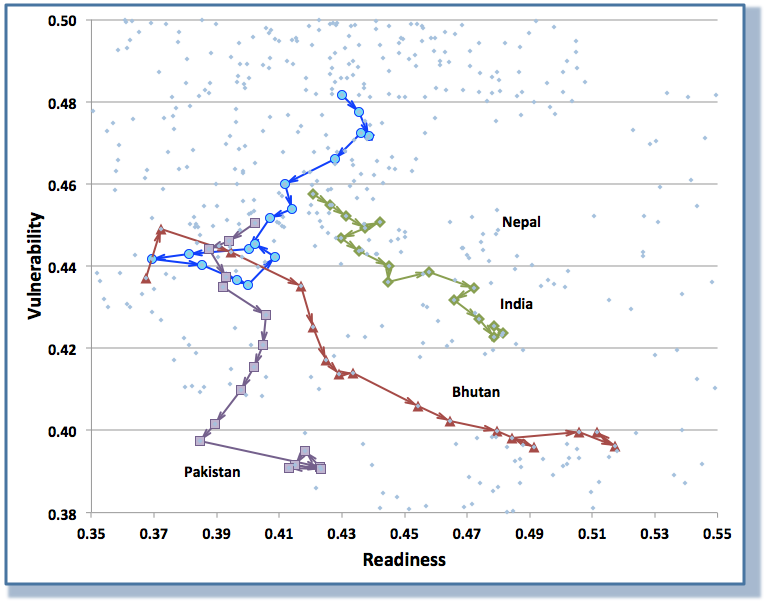


Figure 3. Changes in relative positions for South Asian countries on the GaIn™ 1.0 Readiness Matrix from 1995 to 2010



GaInTM is also strongly correlated with national income measured as GDP per capita[[3]](#footnote-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 on the GaInTM Index, may be a surprising “most ready” candidate, since it is doing better than expected on both readiness and vulnerability. Uruguay and Chile are middle-income countries also performing above their income level.

Table 4. GaIn™ 1.0 rankings and scores adjusted for GDP per capita, 2010

## Macintosh HD:Users:dcherry:Desktop:Screen shot 2011-08-09 at 4.48.07 PM.png

An outcome of building the Index has been the gathering of a huge amount of information. This includes sectoral components with time-series information. This 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: 61**

Since 1995, Mexico’s score on the vulnerability axis of the GaInTM Index 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 the GaInTM Index 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 Index 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™ Index score. In addition, Mexico can increase its Index score by improving readiness through strengthening the provision of health services as well implementing policies to authorize and incentivize the private sector to increase energy access.

The web site supporting GaInTM 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 GaInTM 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.

## 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 GaInTM 1.0. 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

GaInTM 1.0 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 the Index, v 1.0, 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

GaInTM v 1.0 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 GaInTM may add additional sectors such as ecosystem services to the Vulnerability Axis or, again for example, the 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 GaInTM.

## Conclusion

This first version of the GaInTM Index 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 the Index 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 GaInTM 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 GaInTM amongst both technical advisers and potential users. GaInTM 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 the Index and being able to track performance of countries against the Index 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. GaInTM 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.

# References

Bandura, Romina. 2008. A Survey of Composite Indices Measuring Country Performance: 2008 Update. UNDP. Available at: <http://www.undp.org/developmentstudies/docs/indices_2008_bandura.pdf>

Barr, R.; Fankhauser, S. and Hamilton, K.). 2010. Adaptation Investments: a resource allocation framework. Mitigation and Adaptation Strategies Global Change. [Volume 15, Number 8](http://www.springerlink.com/content/1381-2386/15/8/), 843-858. Available at: <http://www.springerlink.com/content/f07067w33863x781/>

Brooks, Nick; Adger, Neil; Kelly, Mick. 2005. The determinants of vulnerability and adaptive capacity at the national level and the implications for adaptation. Global Environmental Change. 15. 151-163. Available at: [www.uea.ac.uk/env/people/adgerwn/Brooksetal2005GEC.pdf](http://www.uea.ac.uk/env/people/adgerwn/Brooksetal2005GEC.pdf)

Capacity Strengthening in climate change vulnerability and adaptation strategy assessment: exercise 2 Vulnerability Indicators (ENDA). Available at: [c3d-unitar.org/c3d/userfiles/Guide\_for\_trainers.pdf](http://www.c3d-unitar.org/c3d/userfiles/Guide_for_trainers.pdf)

Clark, W. C., Ed. (2002). The state of the nation's ecosystems: Measuring the lands, waters, and living resources of the United States. Cambridge, UK, Cambridge Univ. Press.

Climate Adaptation Knowledge Exchange. EcoAdapt. Available at: <http://www.cakex.org/virtual-library/about>

Climate Change adaptation indicators for the natural environment (Natural England Commissioned Report NECRO38. 2010). Available at: <http://naturalengland.etraderstores.com/NaturalEnglandShop/NECR038>

Climate change vulnerability and adaptation indicators. 2008. Harley, Mike; Horrocks, Lisa; and Hodgson, Nikki. Available at: <http://air-climate.eionet.europa.eu/reports/ETCACC_TP_2008_9_CCvuln_adapt_indicators>

Climate Vulnerability Monitor 2010. 2010. DARA – Climate Vulnerability Forum. Available at: <http://daraint.org/climate-vulnerability-monitor/climate-vulnerability-monitor-2010/download-the-report/>

Climate Research Unit. [http://www.cru.uea.ac.uk/](http://www.google.com/url?q=http%3A%2F%2Fwww.cru.uea.ac.uk%2F&sa=D&sntz=1&usg=AFQjCNF18WR1p2sI_tH8xAtfiy6c3ic20w)

Country Policy and Institutional Assessments (CPIA), 2009 Assessment Questionnaire. 2009. World Bank.

Cutter, Susan; Emrich, Christopher; Webb, Jennifer; and Daniel Morath. 2009. Social Vulnerability to Climate Variability Hazards: A Review of the Literature. Oxfam America. Available at: <http://adapt.oxfamamerica.org/resources/Literature_Review.pdf>

Davis, K.; Kingsbury, B; and Merry, S. 2010. Indicators as technology of global governance. IILI Working Paper. Global Administration Law Series. Available at: <http://www.iilj.org/publications/2010-2.Davis-Kingsbury-Merry.asp>

Debels, P.; C. Szlafsztein; P. Aldunce; C. Neri; Y. Carvajal; M. Quintero-Angel; A. Celis: A. Bezanilla; D. Martinez. 2009. IUPA: a tool for the evaluation of the general usefulness of practices for adaptation to climate change and variability. Natural Hazards 0:211-233.

Doing Business Index. 2010. World Bank. Available at: <http://www.doingbusiness.org/rankings>

EM - DAT. The International Disaster Database. Center for Research on the Epidemiology of Disasters - CRED. [http://www.emdat.be/](http://www.google.com/url?q=http%3A%2F%2Fwww.emdat.be%2F&sa=D&sntz=1&usg=AFQjCNEqqXenUJin7H3IAhVw_EAER9kKpg)

Economic Conditions Snapshot, December 2010: McKinsey Global Survey results. 2010. McKinsey and Company. Available at: <http://www.mckinseyquarterly.com/Economic_Conditions_Snapshot_December_2010_McKinsey_Global_Survey_results_2720>

Economic Freedom of the World (EFW) Index. 2010. Fraser Institute. Available at: <http://www.freetheworld.com/release.html>

EIU Business Environment Rankings. 2010. Economist Intelligence Unit. Available at: <http://www.eiu.com/public/>

Environmental Sustainability Index. Benchmarking National Environmental Stewardship. 2005. Socioeconomic Data and Applications Center. Earth Institute, Columbia University and Yale Center for Environmental Law and Policy. Available at: <http://sedac.ciesin.columbia.edu/es/esi/downloads.html>

Environmental Performance Index. 2010. Center for International Earth Science Information Network, Columbia Univeristy and Yale Center for Environmental Law & Policy, Yale University. Available at: <http://epi.yale.edu/>

Environmental Vulnerability Index. 2005. South Pacific Applied Geoscience Commission (SOPAC) and United Nations Environment Programme. Available at: <http://www.vulnerabilityindex.net/EVI_Background.htm>

Failed States Index. 2010. Foreign Policy and Fund for Peace. Available at: <http://www.fundforpeace.org/web/index.php?option=com_content&task=view&id=452&Itemid=900>

Füssel, Hans-Martin (2010). How Inequitable Is the Global Distribution of Responsibility, Capability, and Vulnerability to Climate Change: A comprehensive Indicator-based Assessment. *Global Environmental Change* 20(4):597-611, 2010

Füssel, H. (2009) Review and Quantitative Analysis of Indices of Climate Change Exposure, Adaptive Capacity, Sensitivity, and Impacts. Background Note to World Bank Development Report 2010. Available at: <http://wdronline.worldbank.org/worldbank/a/nonwdrdetail/145>

Global Climate Risk Index. 2011. Germanwatch and Climate Action Europe. Available at: <http://www.germanwatch.org/klima/cri.htm>

Global Competitiveness Index. 2010. World Economic Forum. Available at: <http://www.weforum.org/issues/global-competitiveness>

Hedger, M.M., Horrocks, L., Mitchell, T., Leavy, J., and  Greeley, M. (2010) ‘Evaluation of adaptation to climate change from a development perspective’, IN: Van Den Berg, R. and Feinstein, O.N. (Eds), ‘Evaluating Climate Change and Development’, Transaction Publishers for World Bank Series on Development.

Hinkel, J. (2011) “Indicators of vulnerability and adaptive capacity: Towards a clarification of the science–policy interface”, Global Environmental Change, Volume 21, Issue 1, Pages 198-208. Available at: [www.loceanipsl.upmc.fr/~ESCAPE/Hinkel\_2011.pdf](http://www.locean-ipsl.upmc.fr/~ESCAPE/Hinkel_2011.pdf)

Horrocks, Lisa (AEA Group); McKenzie et al. (IDS). 2008. Institute of Development Studies. Available at: <http://www.ids.ac.uk/go/idsproject/evaluating-adaptation-to-climate-change-from-a-development-perspective>

How we can bend the curve: Global Footprint Network Annual Report. 209. Global Footprint Network. Available at: <http://www.footprintnetwork.org/en/index.php/GFN/>

Human Development Index. 2010. UNDP. [http://hdr.undp.org/en/statistics/hdi/](http://www.google.com/url?q=http%3A%2F%2Fhdr.undp.org%2Fen%2Fstatistics%2Fhdi%2F&sa=D&sntz=1&usg=AFQjCNFDVsqZXA9A_y1V8r2M8ElDfLmAHg)

Human Poverty Index. 2010. UNDP. Available at: <http://hdr.undp.org/en/statistics/indices/hpi/>

Index of Economic Freedom. 2010. The Heritage Foundation. Available at: <http://www.heritage.org/index/>

Kaufmann, Daniel; Kraay, Aart; Mastruzzi, Massimo. World Governance Indicators. 2009. Brookings Institution; World Bank Development Economics Research Group; and World Bank Institute. Available at: <http://info.worldbank.org/governance/wgi/index.asp>

Klein, R. 2009. Identifying Countries that are particularly vulnerable to the adverse effects of climate change: an academic of a political challenge (CCLR 3/2009 284-291.

Measuring adaptation to climate change: a proposed approach. DEFRA. 2010. Available at: <http://archive.defra.gov.uk/environment/climate/.../100219-measuring-adapt.pdf>

Mitchell, Tom; van Aalst, Maarten; and Villanueva, Paula Silva. 2010. Assessing Progress on Integrating Disaster Risk Reduction and Climate Change Adaptation in Development Processes. Institute of Development Studies. Available at: community.eldis.org/.59e0d267/Convergence.pdf

Moss, Richard; Malone, Elizabeth; and Brenkert, Antoinette. 2001. Vulnerability to Climate Change: A Quantitative Approach. Pacific Northwest Laboratory for the United States Department of Energy. Available at: <http://www.globalchange.umd.edu/publications/118/>

Myers, Mark et al. 2007. "USGS Goals for the Coming Decade.” Science, 12 October: Vol. 318. no. 5848, pp. 200-201. 2007

Vulnerability Indices for Planning Climate Change Adaptation. 2010. National Adaptation Program of Action (NAPA). Global Environment Facility. Available at: <http://www.napa-pana.org/>

National Aggregates of Geospatial Data Collection. Population, Landscape and Climate Estimates (PLACE). 2007. SEDAC. [http://sedac.ciesin.columbia.edu/place/](http://www.google.com/url?q=http%3A%2F%2Fsedac.ciesin.columbia.edu%2Fplace%2F&sa=D&sntz=1&usg=AFQjCNHN-rKBJMBe8exEDT8dKNKynyaI2A)

Stewart, Richard; Kingsbury, Benedict; and Rudyk, Bryce. 2009. Climate Finance: Regulatory and Funding Strategies for Climate Change and Global Development. New York University Abu Dhabi Institute. New York University Press. New York and London. Available at: <http://www.iilj.org/climatefinance/documents/Stewartetal-ClimateFinance.pdf>

Sullivan, Caroline et al. 2003. The Water Poverty Index: Development and application at the community scale. Natural Resources Forum. 27. 189-199. Available at: ftp://ftp.fao.org/agl/emailconf/wfe2005/narf\_054.pdf

Szlafsztein, Claudio; Aldunce, Paulina; and Neri, Carolina. 2008. Available at: captura.uchile.cl/jspui/bitstream/.../Evaluacion%20practicas%20utiles.pdf

Water Scarcity Index. 2008. UNEP. Available at: <http://www.unep.org/dewa/vitalwater/article77.html>

weADAPT 3.0. Collaborating on Climate Adaptation. Available at: <http://weadapt.org/>

Wheeler, David. 2011. Quantifying Vulnerability to Climate Change: Implications for Adaptation Assistance – Working Paper 240. Center for Global Development. Available at: <http://www.cgdev.org/content/publications/detail/1424759>

World Bank Indicators. 2010. Available at: <http://data.worldbank.org/indicator>

World Press Freedom Rating. 2010. Reporters Without Borders. Available at: <http://en.rsf.org/press-freedom-index-2010,1034.html>

World Resources Report 2010 Framing Paper: Decision Making in a Changing Climate. World Resources Institute. Available at: [www.worldresourcesreport.org/files/wrr/framing\_paper.pdf](http://www.worldresourcesreport.org/files/wrr/framing_paper.pdf)

World Telecommunication/ICT Indicators Database. 2010. International Telecommunications Union. Available at: <http://itu.int/en>

Vörösmarty, C.J. et al. 2010. Global threats to human water security and river biodiversity. Nature 467, 555–561, 19 Aug.

# 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. |
| Biophysical exposure | The level of adverse biophysical impacts due to climate change and other global forces. |
| Fast indicator | An indicator that can change quickly, primarily due to human actions. Most readiness and adaptive capacity indicators are fast indicators. |
| GaIn™ | The Global Adaptation Index™ is produced by the Global Adaptation Institute. The Institute is a non-profit environmental organization guided by a vision that building resilience against climate change and other global forces is a key component to sustainable development. The Institute’s mission is to enhance the world’s understanding of the urgency for adaptation and the support needed through private and public investments for developing countries. |
| Medium indicators | An indicator that changes over time due to human actions. Change may take place slowly, over decades rather than years. |
| Readiness | Ability of a country’s private and public sectors to absorb additional investment resources and apply them effectively to increasing the resilience of communities to the effects of climate change. |
| Readiness Matrix | A measurement of the comparative resilience of countries, plotting a country’s vulnerability to climate change versus its readiness to confront climate challenges. |
| Slow indicator | An indicator, usually physical, that changes very slowly. It may not change in a lifetime. Human action has little impact on the rate of change. |
| Socioeconomic sensitivity | The importance of a climate-sensitive sector of a country. In other words, how exposed or sensitive a country is to impacts on water, food, coastal zones, and human health. |
| Socioeconomic adaptive capacity | the availability of economic, social, and institutional resources to cope with and adapt to the impacts of climate change in specific sectors. Though related, this differs from readiness indicators in that it measures specific actions taken to increase resilience in specific sectors, whereas Readiness measures a country’s ability to easily facilitate these increases in resilience. |
| Vulnerability | A country’s socioeconomic exposure to biophysical impacts minus adaptive capacity. |
| Weight | The relative value or importance an indicator is assigned in determining a country’s overall readiness and vulnerability score. |

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. [↑](#footnote-ref-1)
2. As of 20 June 2011 [↑](#footnote-ref-2)
3. Expressed in Purchasing Power Parity (PPP) in constant USD2005 and usual log transformed. [↑](#footnote-ref-3)