The Human Security Index: An Update and a New Release

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ABSTRACT

Human Security Index Version 2.0 has been released. Version one was released in 2008. Since then an improved conceptual framework and development process have evolved. Version 2 encompasses over 230 countries. Human Security Indices have been prototyped for the USA and a developing country, to assess the feasibility of more community-level HSIs. http://www.HumanSecurityIndex.org has been established for presenting and discussing HSI-relevant issues. This document is sourced on that Website.

The HSI aims to characterize the security of an individual or group at home, in one's village, country, and the Earth. Is everyone treated well, not unduly deprived of education/knowledge and a healthy and peaceful life? The HSI aims to support existing and future developers of well-intentioned indicators which may be used by development analysts/strategists/implementers, by emphasizing outcomes rather than modalities.

The HSI is now conceptually framed in a trinity of economic, environmental, and social fabric. The Economic Fabric Index attempts to characterize financial resources, including protection from financial catastrophe, for everyone. The Environmental Fabric Index blends risk of environmental disasters, environmentally healthy living conditions, environmental sustainability and governance. The Social Fabric Index blends diversity, education and information empowerment, food security, governance, health, and peacefulness. All this is a work-in-progress, with additional input datasets being evolved.

The HSI is also framed with the goal of avoiding, so much as possible, a cultural (e.g. east-west) or philosophical (north-south or left-right) bias. Of course, there is only one guarantee regarding socio-economic or environmental data: they are imperfect. Similarly, there is likely to be intentional or unwitting bias. Thus the HSI does not perfectly meet its goal of non-bias – but this should also be a subject of discussion – aimed at improved pursuit of the target, framework, and goal of the HSI. People of diverse socio-economic and political viewpoints have engaged with the HSI – and agree that such a tool can be valuable for researchers and decision-makers.

Maps on each major component, and of the composite Human Security Index itself, indicate some situations which might initially be unexpected. They suggest that a HSI is a potentially valuable complement or replacement of traditional reportage like GDP or the HDI, for deeper understanding of the situations of people and communities.

This paper summarizes issues, process, and results. It also summarizes the production and release of a “classic” HDI, produced in the spirit of the original HDI (prior to its design changes in 2010) covering the same 232 countries, which accompanies the HSI database. Annex A maps sample input data, sub-components (such as health), the three component Fabric Indices (economic, environmental, and social), and HSI V2.

1.INTRODUCTION

Since 1990 the Human Development Index has facilitated the advancement of thinking beyond mere “economic growth” commonly reported as Gross Domestic Product, to something more comprehensive. The 1994 Human Development Report (UNDP, 1994) included an essay on the even more comprehensive concept of human security, fostering discussions on possible meanings and usefulness of such a concept (Bajpai, 2000; King and Murray, 2001; Jolly and Ray, 2006; Pitsuwan, 2007; HRH Prince el Hassan bin Talal, 2008; United Nations, 2010) and on a possible measurement (Bajpai, 2000; Tadjbakhsh, 2008). Much discussion has been top-down, wrestling with concepts, design, and institutionalization.
Over the past decade I used 35+ years’ experience (in the field & digital analysis lab, and on research & development teams) in indicator development to attempt a prototype. That effort appeared to be bottom-up in its approach: “What is available that could be helpful in crafting a Human Security Index?” However, I had been working on my own, unnamed, human development index since 1986 (four years prior to publication of the first UN HDI), and on concepts of characterizing development since 1972. This experience provided design guidance behind the scenes of the outwardly bottom-up process. That, plus many discussions with UN and other colleagues, resulted in the HSI release of 2008 (Hastings, 2008, 2009B).

1.1 Evolution of the Concept of Human Security

To simplify the concept of Human Security: “It is the basic quality-of-life of an individual or household at home, in one’s community, and in the world - if that person is wealthy, 'middle class', 'working class', or poor.” If one asks “What is the difference between human security and well-being?” the reply might be: “Very little, except that most descriptions and indicators on well-being seem focused on the middle class and above. Human security, on the other hand, focuses on all people – thus on about twice as many people in relatively egalitarian societies, and rather more than twice as many people in other economies/environments/societies.” Experimentation demonstrates that there are common issues, but also differences in concepts and enumeration of Human Security components for the middle or upper classes, or for the people as a whole.

Surin Pitsuwan (2007), current Secretary-General of the Association of Southeast Asian Nations (ASEAN), formerly Thailand’s Minister of Foreign Affairs and member of the United Nations Commission on Human Security, opines that the concept of Human Security has been evolving at least since times of Hobbes, Locke, Rousseau, and Hume (when slavery, among other now-recognized abuses of human security, was fostered in many societies – one may note). This view, plus the UNDP (1994) quotation without attribution of two (“Freedom from Fear, Freedom from Want”) of Franklin D. Roosevelt’s 1941 Four Freedoms as the essence of their concept on people-centric human security, strengthens the view that the concept has had a moderately long evolution, then a more recent rethinking at a time when internal strife within countries was seeming to become relatively more common and intense than trans-boundary strife. Pitsuwan (2007) is among those asserting that human security is the primary reason for organizing a state.

Findings emanating from HSI development and background research suggest that governance, the process of governing and ensuring that the people are served appropriately and well, is the principal (and perhaps only) purpose of government – related to the well-being of all peoples. No matter what form a government may take, and no matter what roles it assumes itself (and what roles it may outsource to other entities) it is nevertheless ultimately accountable for the effectiveness, efficiency, and all-people-focus of resultant outcomes. Even if some people may not know the details and context of such governance, history (at a minimum) will uncover enough evidence to judge the performance of governments and their actors. How, then, to optimize delivery of good outcomes for all peoples? Can a Human Security Index help forge progress?

1.2 Draft definition of Human Security

Human Security: The attainment of physical, mental, and spiritual peace/security of individuals and communities at home and in the world – in balanced local/global context.

1 Including Angola, Fiji, Haiti, Myanmar, Nicaragua, Northern Ireland, Rwanda, Somalia, Zaire, Yugoslavia, etc. plus much other strife not resulting in traditional overt physical violence such as increasing income inequality (steadily since 1968) and degradation of situations for much of the “working” class in the USA. (This list is not from Pitsuwan, but from a summary of situations of the mid 1990s when UNDP (1994) was published.)

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Many challenges to human security are inherited by current decision-makers and leaders. Natural hazards; trans-boundary threats or impacts; internal challenges from imperfect neighborliness or governance; practices which in light of current realizations may be harmful to people or the community – may all be factors. How to affordably progress toward aspirations of peoples and communities? The Human Security Index aims to help perceive and understand situations, for strategizing/implementing effective improvements to those situations.

Additional context:

**Global-Local Context:** Characterizations of human security should pass a global economic, environmental, and social test for north-south, east-west, left-right or other avoidable bias. Local context recognizes that individuals and communities can maintain/improve situations according to their own informed sensitivities (other than (a) such possible situations as ethnic, gender, “disability” or other discrimination or intolerance; and (b) traditions which may be considered, in current context, to be harmful within the community or the world).

**Individual-Society Balance:** A balance incorporating individual and societal security is a goal – in which such balance supports and maintains a stable win-win situation for the individual and the community. When one attempts to convince another to sacrifice harmonized community or individual security for something else, others should look for, and avoid, attempts by narrow interests to subvert broader win-win balanced outcomes.

**Free of Regional-Political Bias:** Proscribed north-south, east-west or left-right bias may include stylized agendas on “political freedom”, “democracy” or other fixation on process. The Human Security Index aims to be people-focused outcome-viewing rather than process-fixated. One sees that diverse styles of process may be made to deliver good outcomes, or not, often resulting from focus on good results for all peoples, or not.

**Global Direct/Proxy Measurements:** The global Human Security Index prefers to use direct indicator-quality data which cover at least 230 national-level societies or similar. However, it recognizes that some data/indicators may not cover quite so many countries (where gaps can be handled until they are filled), or may be indirect proxies in the absence of more direct measures. Improvements are anticipated over time.

**Comparability Between Communities:** The Human Security Index notes that, at present, indicator-quality data comparing national-level societies are not in every case identical/comparable to data comparing communities within countries. This may be caused by (1) challenges in developing comparable data for all countries compared with different challenges in enumerating communities within a country, and (2) globally acceptable data for international comparison may cover different subjects than the government and people of a country may seek for characterizing sub-national situations. An example may be “GDP per capita at purchasing power parity” (often used globally between countries) and “cost-of-living-adjusted median household income” or other more direct indicator of money in a person’s or household’s pocket (a better indicator, and often available at subnational-to-community level within countries). Thus, direct comparisons of communities in country X to those in country Y may not yet be simple. However, comparisons among countries, and among communities within countries, should be relatively straightforward at least to an initial level – even with data currently available in/for most countries. Initial tests of this postulate have been successful. Provincial- or district-level HSI input data are available for many/most developing countries.

**1.3 Different Flavours. One Substance (?)**

Currently there appear to be two schools of thought on human security. One school continues to constrain emphasis to military, police and related aspects of crime and violence.
Canada is recognized as one of the proponents of this approach – which is believed by some analysts to be at least partly related to Canada’s promotion of the 1999 Ottawa Treaty to ban land mines. Another school (sometimes associated with Japan – perhaps also to promoters of Corporate Social Responsibility) has a more comprehensive view, as might be expected by those reading the 1994 Human Development Report and continuing to evolve their thoughts over time. The former (Canadian, etc.) approach might be considered as a subset of the latter vision.

1.4 History: The Global Human Security Index

The Human Security Index was prototyped at global scale, and released in 2008 (Hastings, 2008, 2009B). As summarized in those papers, the initial approach was (1) to ascertain whether (and what) data and compiled indicators were available to help formulate a Human Security Index, (2) to formulate a prototype index, and (3) to review the prototype for potential usefulness and improvements. Preparation of HSI V1 also helped its curator to better understand current thinking on human security, via the proxies of indicators and writings potentially relevant to the subject.

Work from 2008 through mid 2010 resulted in a more strategic framework for the HSI. That framework includes considerations summarized in this paper. Version 2.0 of the global HSI was released in late 2010 (Hastings, 2010). This paper is an expansion of that note.

1.5 HSI Framework: Three Component Indices

The HSI is formulated around three component indices, Economic, Environmental, and Social Fabric Indices. These are often the discussion points around sustainable development, corporate social responsibility, and other such issues. In Figure 1, the author might replace “Ecological” with Environmental, and “Environment” with Aspects of Human Security.

Figure 1. Confluence of Economic, Environmental, and Social aspects of Sustainable Development

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2 There are many variations on this figure at Wikimedia Commons.
2. EXAMPLES OF CONSIDERATIONS BLENDED INTO THE HSI SINCE v1

2.1 Global context external to the project

2.1.1 Corporate Social Responsibility: economic, environmental & social triple bottom line. Elkington (e.g. 1998) coined the term the “triple bottom line”, in reference to corporate social responsibility. But what about the superset of institutional social responsibility, including corporations but also governmental, religious, educational, and social service institutions? What about local to global scalability? Might economic, environmental, and social frameworks help guide discussion on institutional roles in society, and help monitor our current situation with respect to the useful (or damaging) roles of such institutions, and help to strategize the way forward?

The concept of sustainable development also often thinks around such terms. Might a failure in any of these three arenas indicate damaging unbalanced/unsustainable non-development?

2.1.2 The “Sarkozy Report.” In 2008, the President of France convened a Commission to “investigate the limits of GDP as an indicator of economic performance and social progress” and to assess possible alternative measurement tools. The resultant report (Stiglitz, et.al., 2009) seems like it may be aiming for something like a HSI. This may not be the first call for an internationally recognized replacement for GDP. Also, little has come out since the report, and the report seemed far from comprehensive or detailed on how to make progress. Is that effort still underway?

2.1.3 The United Nations History Project. Emmerij (2007) listed 5 priorities for the present-day United Nations, with one of them being characterization of Human Security in the broad sense, beyond national or military security. The HSI was created while its curator was a staff member of the United Nations. It remains deeply indebted to the thoughts and encouragement of several colleagues in the UN and elsewhere on various aspects of the effort. So that particular priority was actually in implementation (but not yet visible) as Professor Emmerij wrote those words.

2.2 Context internal to the project

One of the outcomes of the release of Global HSI Version 1 was a challenge to attempt a community-level Human Security Index for a country. This has now been done. A county level HSI for the USA is now in prototype. A provincial level HSI for a developing country is evolving. Results confirm that such efforts are feasible and timely – and can support research and policy-making. They show that HSI development is a two-step process – the evolution of a working database compendium on appropriate economic, environmental and social situations, and the use of such a database for analyses and models (including the HSI) and for strategizing progress.

3. HSI VERSION 2 FORMULATION AND RESULTS

Data used, and their organization into Global HSI Version 2 are shown in Table 1. The Economic, Environmental and Social Fabric Indices are mapped in Figures 1-3. The HSI itself is mapped in Figure 4. Summary data used in Global HSI Version 2 are posted with this report.

As can be seen from Table 1, HSI Version 2 is closer to UNDP's (1994) draft concept of human security than was Version 1 (Hastings, 2008, 2009B) by adding food security and regrouping some other data. However, the evolution of thought and data addressing the issue of human security and an index, and increased capabilities for characterizing situations on Earth, permit the HSI to evolve beyond the contents of UNDP (1994). Numerous discussion sessions over the past several years have resulted in a design framework that better balances top-down conceptualizing and bottom-up compilation of ideas, data, and formulation approaches to the HSI. Over 30 datasets/indicators are used. Several sources have improved completeness, accessibility, documentation, and usefulness of their data in the period between release of HSI V1 and V2.
Table 1. Data and components of Global Human Security Index Version 2.

<table>
<thead>
<tr>
<th>Input data/indicator fields</th>
<th>{sources}</th>
<th>Components</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income resources in the pocket of typical people (derived from 2* below)</td>
<td>{IMF, WDI, CIA}</td>
<td>Economic Fabric Index</td>
<td></td>
</tr>
<tr>
<td>*GDP Per capita at purchasing power parity</td>
<td>{IMF, WDI, CIA}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Income equality (Gini Coefficient)</td>
<td>{Solt, UN Wider, WDI, CIA}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection from financial catastrophe (derived from 3@ below)</td>
<td>{WDI, IMF, CIA}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>@Foreign exchange reserves (% of imports)</td>
<td>{WDI, IMF, CIA}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>@External debt % of GDP</td>
<td>{WDI, CIA}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>@Current account balance % of GDP</td>
<td>{IMF, WDI, CIA}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>@Health-care delivery/financing</td>
<td>{digested from Carrin et al 2001 &amp; other sources}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>@National savings rate (% of GDP p.c.)</td>
<td>{WEF, WDI, IMF, etc.}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Vulnerability Index</td>
<td>{SOPAC}</td>
<td>Environmental Fabric Index</td>
<td></td>
</tr>
<tr>
<td>Environmental Performance Index</td>
<td>{Yale &amp; CIESIN}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greenhouse gas emissions per capita</td>
<td>{WRI, Wikipedia}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population growth rate 2010-2050</td>
<td>{Census.gov, UN Pop.Div., SPC}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;&lt;Wish list is broad here: particularly for more comprehensive vulnerabilities to environmental disasters, and delivery of environmental protections to peoples/communities&gt;&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Literacy rate</td>
<td>{UNESCO, WDI, CIA}</td>
<td>Education &amp; info empowerment</td>
<td></td>
</tr>
<tr>
<td>Connection Index (derived from 3# below)</td>
<td></td>
<td>Social Fabric Index</td>
<td></td>
</tr>
<tr>
<td>#Telephone fixed lines per capita</td>
<td>{ITU}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#Mobile telephone accounts per capita</td>
<td>{ITU}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#Internet users per capita</td>
<td>{ITU}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Press Freedom Index</td>
<td>{RSF}</td>
<td></td>
<td></td>
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<tr>
<td>&lt;&lt;Wish list: Press Effectiveness Index&gt;&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender Gap Index</td>
<td>{WEF}</td>
<td>Diversity</td>
<td></td>
</tr>
<tr>
<td>&lt;&lt;Wish list: indices on race, ethnicity, religion, age, “disability” issues&gt;&gt;</td>
<td></td>
<td>Social Fabric Index</td>
<td></td>
</tr>
<tr>
<td>Global Peace Index</td>
<td>{VisionOfHumanity.org}</td>
<td>Peacefulness</td>
<td></td>
</tr>
<tr>
<td>World Prison Population List/Brief</td>
<td>{ICPS}</td>
<td>Social Fabric Index</td>
<td></td>
</tr>
<tr>
<td>Political Terror Scale</td>
<td>{PoliticalTerrorScale.org}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of people undernourished</td>
<td>{FAO, IFPRI}</td>
<td>Food security</td>
<td></td>
</tr>
<tr>
<td>% of people below local poverty index</td>
<td>{WDI, CIA}</td>
<td>Social Fabric Index</td>
<td></td>
</tr>
<tr>
<td>Food imports compared to exports and GDP</td>
<td>{WDI}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of population food insecure</td>
<td>{USDA}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of productive land per capita 2000+</td>
<td>{WDI}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% change in productive land 2000+/1960+</td>
<td>{derived from WDI}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life expectancy at birth</td>
<td>{WHO, WDI, CIA}</td>
<td>Health</td>
<td></td>
</tr>
<tr>
<td>% of LE that is unhealthy</td>
<td>{WHO}</td>
<td>Social Fabric Index</td>
<td></td>
</tr>
<tr>
<td>% of population using improved water source</td>
<td>{UNESCO, WDI}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health outcome equality</td>
<td>{Petrie &amp; Tang}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Political stability, no violence</td>
<td>{WGI}</td>
<td>Governance</td>
<td></td>
</tr>
<tr>
<td>Control of illegal corruption</td>
<td>{WGI}</td>
<td>Social Fabric Index</td>
<td></td>
</tr>
<tr>
<td>Legal corruption</td>
<td>{derived from WEF data, Kaufmann &amp; Vicente}</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Each input dataset appears to be imperfect – as is expected with any such data. However, signal enhancement, in which several observations are combined so as to improve signal-to-noise, can lead to lessened impacts of individual dataset imperfections on the broad view of the HSI.

Hastings (2009A) produced and strategically assessed a HDI covering over 230 economies. The HSI has similar coverage. Extensive coverage is considered germane to usefulness of a global index. UNDP reduced HDI coverage to 169 economies for its 20th anniversary edition in 2010.

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3.2 Economic Fabric Index

Figure 1 shows that high HSI Economic Fabric does not necessarily require overwhelming focus on achieving the highest-possible GDP. The USA ranks ~140th of about 232 countries, rather worse than mid-point in the EconFI. Quite a few low-income countries rank higher, due to circumstances and/or policies which result in better national, community, household and individual economic security – at least with respect to the range of indicators used to make the EconFI more comprehensive than GDP or the HDI. Appendix A shows maps for GDP per capita at purchasing power parity (Figure A1), Gini Coefficient of Income (in)Equality (Figure A3a), and economic-financial governance (Figure A3b, blended from foreign debt, current account balance, foreign exchange reserves, national savings rate (Figure A3c), and health care finance risk sharing (Figure A3d)). These show why some countries have higher or lower EconFI rating than one might expect merely from GDP. Pursuit of economic security for all a country's peoples beyond, say, debt financing of consumerism may be one successful strategy to follow. Figures A3a-d may be useful tools to help forecast who may progress in Economic Fabric in the first half of the 21st century.

![Figure 1. Global Human Security Index Version 2: Economic Fabric Index (EconFI).](image)

3.2 Environmental Fabric Index

Perhaps no country combines efficient energy use, low greenhouse gas emissions, sustainable population distributions/densities, low vulnerability to natural hazards, thorough delivery of healthy water-air-sanitation, policies and programmes making good progress toward environmental safety and sustainability (Figure 2). The Environmental Vulnerability Index (Figure A4) attempts to illustrate net national vulnerability to environmental situations. Delivery of healthy and environmentally sustainable situations (Figure A5) varies among countries, with all still exhibiting some opportunity for improvement. Many of the worst per capita greenhouse gas emitters (Figure A6) are energy exporters – which might be able to financially (if perhaps not environmentally) sustain such waste. However, high-emitting net energy importers put their people at unnecessary financial risk, while also putting them and the world at environmental risk. United Nations Population Division and USA Bureau of the Census population forecasts for 2050 (Figure A7) forecast more than tripling of 2010 populations for Uganda, Niger and Ethiopia, and decreases of

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over 20% in the Russian Federation, Ukraine, Japan, the Baltics, Bulgaria, St. Pierre and Miquelon, and Niue. Significant population decreases are forecast elsewhere in the Caribbean, Europe, and some of the Pacific. The increases have major national and global environmental (and food security) consequences; the decreases may have significant social and economic impacts.

3.3 Social Fabric Index

Figure 3 shows a Social Fabric Index that has been substantially refined from HSI Version 1. As with the other two fabric indices, arguably no single country excels in all covered arenas. Figures A8 through A13 map the sub-components of the Social Fabric Index. Most countries have strengths worth sharing, and weaknesses worth strengthening (perhaps using ideas and expertise from appropriate peer situations/societies).
3.4 Composite Human Security Index

Figure 4 maps the composite HSI. The USA's HSI is .594, mid way between Somalia's & Afghanistan's trailing .296 & .336 and the Falkland Islands' & Andorra's leading .865 & .859 – but ranking 147 of 232 societies in the current database. Its high GDP is countered by low income equality, poor outcomes in fiscal-economic governance (including health-care finance risk sharing) and some sustainability issues, high “legal corruption” and range-topping incarceration rates.

![Figure 4. Global Human Security Index Version 2: Composite HSI.](image)

3.5 A “Classic” Human Development Index Covering the Same 232 Countries

In the mid to late 1980s, before the UNDP published its first Human Development Report (UNDP, 1990) covering 130 countries, I was working with the same input indicators (without the HDI name) plus population change and average annual economic growth rate, in a database covering 163 countries, using data sourced from the World Bank and the CIA World Factbook. I scaled the data on a 0-255 scale (8-bit data) and, among other explorations, ran cluster analyses of the data. Early findings included the appearance of a unique cluster. Countries with moderate-to-high incomes for the day, moderate to high life expectancies, but moderate to low literacy rates fell into a cluster – in most cases because higher than typical gender disparities in literacy rates in those countries dragged down the overall mean literacy scores for those countries.

Hastings (2009A) reported on the value, approach, and initial results from an effort to pursue greater coverage by a global HDI. After all, just because a country may have only 1-2000 people (e.g. Tokelau or Niue), or as many as 12 million (Cuba) or 29 million people (Afghanistan) and not be covered in some recent years (or ever) by UNDP's HDI – yet offer economic, environmental, social, and/or cultural ideas and richness to the global community. And, indeed, complete global coverage (so much as possible) is germane to a global indicator such as the HDI and HSI. Indeed, a dataset or composite indicator that cannot be compiled, or reasonably estimated for most or all countries either (1) deserves more effort to make it more complete, or (2) may be considered as not (yet) ready for use.

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The initial UNDP HDI included GDP per capita at purchasing power parity, life expectancy at birth, and literacy as the three indicators for financial, health, and educational development. The adaptation of the raw values to scaled values changed over time, but (after a few initial variations) evolved into a scaled logarithm for GDP, and linear scalings for literacy and life expectancy. Later, concern about literacy as the only indicator for education (and its approach of 100% for many countries) resulted in experimentation with the addition of school life expectancy, and later school enrollment, to blend with literacy (rather than attempting to advance to a richer concept of literacy or educational outcome). Most recently, for 2010, the HDI replaced GDP with Gross National Income, eliminated literacy altogether, and uses two versions of school life expectancy. However, these are indicators of process, rather than of outcome – blurring the approach of the HDI. In addition, where the three scaled indices on income, education and health were traditionally arithmetically averaged with equal weighting to form the HDI between 1990 and 2009, the 2010 HDI uses the geometric mean instead of the arithmetic mean. Several researchers have expressed concern, or criticism, of this change. Some are unhappy with the reduction in simplicity of the HDI. Others are concerned that conceptual stability has been upset for little apparent benefit (or degradation, for some people) in usefulness. Others are concerned that the indicator has taken on a political agenda. Where previously one could argue that balance between the three components of the HDI was a good idea, or conversely argue that certain imbalances could be tolerated (such as a reduced emphasis on money if quality of life could be delivered for less cost in a given governance approach and society), the HDI now biases its results in favour of a balanced approach, and against a national emphasis on, say, health care or education. There are additional concerns.

Thus, to accompany the HSI, a “classic” HDI has been computed here for the same 232 countries as for the HSI, and are included in the HSI spreadsheet on the summary HSI-HDI tabs. Literacy remains the sole indicator for education in the HDI, and the three scaled values for income, health and education are arithmetically averaged.

Figure 5. “Classic” Human Development Index

The HumanSecurityIndex.org Website contains a tab on the front page to present the HDI data, and maps of the three components plus the composite HDI.
4. ADDITIONAL POINTS AND AND TECHNICAL NOTES

Global HSI Version 2 is the result of considerable collaboration and peer review of philosophy, conceptual design, and fabrication. Indeed, the HSI is now viewed as one of several possible outputs of a (yet unnamed) database project. For example, should implementation of recommendations in Stiglitz et al (2009) lead to an enhanced version of such a database? Should it be called the “Humanospheric Ecosystems Database” for academics - or the “Multiple Bottom Line Decision Support System” for others? Suggestions for a better name are welcome.

Some have enquired about making the HSI simpler, more like GDP or the HDI. Actually, the HSI source data are publicly available on the Web; formulation is conceptually simple and consistent with the best-received HDI traditions prior to HDRO's modifications (considered “tinkering” by some observers) in 2010. The number of input datasets and indicators in the HSI is a form of “signal enhancement” helping to reduce impacts of imperfections of individual datasets. Such signal enhancement noise reduction would not be achievable in a less comprehensive compilation. Evolutionary enhancements to documentation and referencing should continue to make the HSI more transparent and easy to use as a strategy tool. A workshop is being developed to demonstrate how to craft a HSI for “any” country – to help enable decision-makers to determine how the HSI may fit their national developmental strategic planning (and evaluation of same).

Although further improvements are planned, the Global HSI may be at least as ready to use as some software versions may have been when commercially released. The process supports the hypothesis that one can best conceptualize and produce a Human Security Index from the playing field doing the work – while continuing to redesign and rebuild the effort.

Technically, the HSI is managed completely in open-source software. Tabular data are managed in OpenOffice.org, nicely interfacing with .dbf attribute handling in GRASS-GIS Version 6.4 (OsGeo, 2011). Please note that .dbf attribute file handling in MS Excel consists of (a) reading a .dbf which may be saved to .xls or .xlsx with corrupted field names, and (b) not being able to save from recent versions of Excel back to .dbf.

The author began using GRASS under UNIX in 1987, under Linux since 1994, and has tested the very useful Windows port since early 2010. (I have been using WinGRASS on a netbook running XP, and on a desktop running Windows 7 – both satisfactorily so far as the Windows operating system handles file management, etc [e.g. not so well as Linux in some regards].) GRASS has certainly progressed in its vector capabilities, needed here. I continue to appreciate the openness of GRASS, which lets me work directly on many files, using external tools or GRASS itself. I do many of the data transformations and contrast adjustments for final displays of vector data directly in OpenOffice on .dbf attribute tables in the GRASS-GIS database, then tweak the colour tables in GRASS for enhanced display.

Migration back to the Linux version of GRASS is planned, as is migration to a more robust database management system.

Users are welcome to use any GIS or other analytic tools, knowing that they are not required to spend more than they wish for analytical capabilities. Hopefully some readers will invest, instead, in joining the http://www.osgeo.org development efforts. Rather than paying for existing software, we may all invest similar or lesser expenditores in improving the software, its documentation, or base data for a win-win benefit to all.

HumanSecurityIndex.org
5. REFERENCES


Human Security Index: Update and New Release (Document Version 1.0; March 2011)
Annex A. Additional maps depicting thematic aspects of HSI Version 2

All maps (and datasets underlying them) are evolving. Suggestions toward improvements are welcomed.

![Map of GDP per Capita, at Purchasing Power Parity](image)

**Figure A1. Gross Domestic Product per Capita, at Purchasing Power Parity**

GDP was sourced from the International Monetary Fund's World Economic Outlook (the October 2010 update was used for the December 2010 release of HSI v2), World Development Indicators, CIA World Factbook, the UNDP HDRO, the Secretariat of the Pacific Community (SPC), and other sources including national sources. These values have considerable overlap (one may suspect much common sourcing), but several differences and some unusual approaches (e.g. the HDRO's former use of the mean GDP per capita for other Caribbean states to characterize the GDP per capita for Cuba). Inspection was used to remove outlier values, with the mean GDP p.c. (at PPP) of the accepted input values used here. GDP in Figure A1 is scaled logarithmically as \((\log(CntryVal) - \log(100))/(\log(100,000) - \log(100))\). Liechtenstein's average value was over $100,000, so was trimmed back to $100,000.

Income inequality exists to some degree in all countries, and is rationalized by some people as a motivating factor. However, monetary motivation (e.g. greed) and economic disparity are also considered by many to foster dispair, disharmony including crime, and other degradations to human security. Income inequality has reached a level in the USA by 2005 that Federal Reserve Bank Chairman Alan Greenspan (2005, 2007) testified "As I’ve often said, this is not the type of thing which a democratic society - a capitalist democratic society - can really accept without addressing."

The Gini Coefficient of Income (in)Equality has now been computed for about 190 economies sourced from Solt (2010), UNU-Wider (2006), CIA (2010), WDI (2010), and other sources. Figure A2 shows the relationship between Gini Coefficient and GDP per capita at purchasing power parity. The computed trend line follows the Gini Coefficient values marked in blue, omitting “outlying” egalitarian low income economies\(^3\) (shown in green) and “outlying” in-egalitarian economies\(^4\).

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\(^3\) These are (from lower to higher incomes) Palau, Azerbaijan, Dominica and Anguilla.

\(^4\) These are (from lower to higher incomes) Afghanistan, the Comoros, Namibia, Angola, South Africa, Antigua and Barbuda, Equatorial Guinea, Reunion, Macau SAR (China), Hong Kong SAR (China), the USA, Singapore, and Qatar.

Human Security Index: Update and New Release (Document Version 1.0; March 2011)
The trend is then used to forecast what a typical Gini Coefficient would be. The difference between actual and forecast Gini Coefficient is scaled, and used to adjust income security upward (for economies with lower than forecast Gini Coefficients) or downward (for economies with higher than forecast Ginis). Downward adjustments to (.000 to 1.000)-scaled income exceed -0.2 for the three countries with the greatest in-egalitarian departures of observed from the typical Gini trend (Equatorial Guinea, South Africa, Namibia and Angola). Maximum upward adjustments to scaled income for economies with relatively egalitarian Gini Coefficients compared to GDP are +1.41 for Azerbaijan, +1.04 for Ethiopia, and +1.01 for Palau.

**Figure A2.** Gini Coefficient related to GDP per capita at purchasing power parity

**Figure A3a.** Gini Coefficient of Income (in)Equality. Sources include Solt (2010), UNU Wider (2006), CIA World Factbook, World Bank Development Indicators, and others

Income equality (Figure A3a) has decreased significantly in the USA since ~1968 (Wikipedia, 2011; Census, 2007), China since ~1983 (indicated in Stolt, 2010 as are all subsequent
dates in this paragraph), the United Kingdom since ~1984, and in the Russian Federation since ~1988. But improvements are found in countries like Barbados (mainly during 1960-1981), Brazil (in the late 1970s and again in the 2000s), Guinea-Bissau (in the 1990s), and Thailand (since ~1998). “U-shaped” patterns have occurred in Azerbaijan, with a marked decrease in income equality from ~.24 in 1980 to .46 in 1997, but a marked turnaround to ~.19 in 2005. The reverse happened in Jamaica, with progress from a Gini Coefficient of about .72 in 1980 to about .38 in 1993-1995, but then slipping to about .49 in the past decade.

Economic-financial governance (Figure A3b) is a composite of several indicators, including national savings rate as a percentage of GDP, national debt, current account, foreign exchange reserves, and health care financial risk sharing policies. Figure A3c maps one of the parameters.

Figure A3b. Economic-Financial Governance: (Various data sources; see Table 1)

Figure A3c. National Savings Rate as % of GDP. (Source data WEF 2010)

Figure A3d attempts to characterize financial risks to individuals from a country's health-care financing regime. Many countries have people-focused regimes, aiming at affordable
health care to everyone. Many such systems now have two tiers, with a base-level care system available to everyone, plus additional options available to those who wish to pay a premium. A beneficiary-centric system appears to deliver greater human security than (1) no system, or (2) a supplier-centric system ridden with unclear fine print leading to impressions of profiteering, and/or lack of confidence that a benefit will actually be delivered as implied during initial marketing of programmes. Several countries with low rankings may actually deliver, via charitable organizations, care beyond that characterized from source materials. Also, several countries with high rankings are in transitional stages between health care financing paradigms – such transitions may not be fully smooth (with resulting problems for some people officially entitled to receive benefits).

Figure A3d. Health Care Financing – Risk Sharing (Updated from Carrin and others [2001] by surveying WHO and other documentation on health care systems in countries.)

Figure A4. Environmental Vulnerability Index. (SOPAC, 2005)
The EVI (Figure A4) admirably attempts to characterize environmental risk faced by countries, and covers many states not normally included in such efforts – perhaps because main developer SOPAC is located in a Small Island Developing State (SIDS). However, inspection of Figure A4 suggests that impacts to peoples and a whole nation from a disaster within that country may merit refinement/adaptation to align the EVI more with Human Security. For example, vulnerability in Peru, Bolivia, Paraguay, Nicaragua, Honduras, Afghanistan, and Iran would seem higher than depicted. Vulnerability to drought, land degradation, and desertification in Sahelian and other drylands is enough to increase their overall vulnerability. Moreover, environmental vulnerability of many European countries, South Africa, and perhaps Thailand (in the latter two's sub-regional contexts) would seem to be less than depicted. This may be an excellent opportunity to support SOPAC (and perhaps additional partners) to edit an improved revision of the EVI.

Figure A5. Environmental Performance Index. (Yale and CIESEN, 2010)

Figure A6a. Greenhouse Gas Emissions per Capita. (WRI, 2005)
Figure A6a-c map greenhouse gas emissions per capita (Figure A6a, the traditional view), CO₂ emissions per land area (Figure A6b) and CO₂ emissions times population density (Figure A6c). Figures A6b and A6c use CDIAC (2010) emissions data. Countries' various approaches to CO₂ budget may be worth viewing from such a diversity of viewpoints. Should an urbanized economy be able to harness efficiencies in transport and other energy use, which might be visible in this diversity of displays (and the data computations behind them)? The HSI currently only uses greenhouse gas emissions per capita (Figure A6a), but presents the alternative views to suggest that energy budget innovations can arise from diverse situations and approaches. In Figure A6c, all other things being equal: higher emissions, higher population, and/or smaller land area would (each, respectively) decrease the index value (make the map redder). The author initially thinks that some blend of Figures A6a and A6b may be more thoughtful than either approach alone.
Figure A7. **% Population Change Projections 2010-2050.** (sources: Census.gov and UN.org)

Figure A7 indicates that some countries (shown in warmest colours) may double or more in population by 2050, an environmental (and perhaps an economic and/or social) sustainability challenge for most such countries. Others are forecast to experience ~20% population drops. The latter may be an economic challenge, but perhaps a blessing for the global environment.

Figure A8 depicts a prototype food security index. FAO's food security index effort has documents and a public database for selected parameters and countries, but not an accessible index covering many countries (at least, not one seen by this researcher). However, data characterizing relevant issues are available from sources cited in Table 1 and blended into the prototype index. The issue merits further (and long-term) attention, focusing on all countries (not just LDCs).
The WEF Gender Gap Index (Figure A9) is more understandable to me than UNDP's Gender-Related Development Index. The WEF index also appears to lend itself particularly well to estimating values for omitted countries. Such estimates were made by the author for earlier editions of the index, then compared to published values when such countries were added to subsequent releases of the index. Most estimates were satisfyingly close to the later-published number. However, there is great need for additional indicators on age, race-ethnicity, religion, “disability”, and other diversity aspects of human security. Who will attempt such indicators?

Governance (Figure A10) is a blend of political stability and freedom from violence in the political process (World Bank Governance Indicators), World Bank composite indicator of freedom from illegal corruption (World Bank Governance Indicators) and freedom from legal corruption (adapted from Kaufmann and Vicente, 2005, 2008) are blended into this indicator. Kaufmann and
Vicente (2008) advance the conceptual framework on legal corruption by observing that anything which diverts focus from good outcomes for all the people may be termed corruption – whether legal or not. In short, campaign finance, lobbying, cronyism which favours insiders or special interests, may be considered as corrupt. The author averaged four WEF Executive Opinion Survey (EOS) questions related to legal corruption (on favoritism of decisions resulting from insider efforts or campaign donations, public trust of politicians, and wastefulness of governmental spending – remembering that these are informed executive decision-makers participating in the EOS) to draft the current prototype legal corruption sub-indicator.

Health (Figure A11) is a blend of the four input parameters noted in Table 1. Would adding other health indicators (such as child or maternal mortality rates; inoculation rates; substance abuse; dietary issues such as caloric, protein, fat intake scaled for perceived shortage or surplus) strengthen this component of the Social Fabric Index? Currently the health component appears scaled so as to show more low-end and high-end rankings, with relatively few countries in the mid-ranges. Plans are to explore these issues prior to the release of HSI Version 3.

**Figure A11. Health:** (Various data sources, see Table 1)

Information Empowerment (Figure A12) combines literacy, fixed-line and mobile phone subscriptions, internet users, and the Press Freedom Index. The mobile phone subscription and (generally to a lesser degree) Internet user figures may be, in the case of some rapidly growing markets (like Bangladesh and Pakistan) considerably higher than ITU’s reported figures. For such markets, additional sources (including national sources and other compilations) are often available on the Web, and are used. The author wishes that there were a more comprehensive indicator on press effectiveness, to balance some incompleteness (and possible perceived imbalance) in the Press Freedom Index. This might lend some visibility to the issue – what makes an effective press? Such an index should offer a balanced perspective between different goals of journalism – such as (a) the desire for greater sustained coverage of governance issues (e.g. results for people), the (b) desire for more advice for people on how to improve individual benefits from policies and programmes already in place, (c) better coverage of innovations in other countries that might be adaptable to enrich the home country’s or community’s situation, and (d) assessment of the challenges (such as those resulting from mergers and acquisitions, new vs. old forms of media, pressures from advertisers or other influential parties on press effectiveness) faced by the press in delivering good information to people. Will RSF enrich its index? Will another index appear?
Peacefulness (Figure A13) blends the Global Peace Index (VisionOfHumanity, 2010), the World Prison Brief (ICPS, 2010) incarceration (prison and jail) rates (Figure A14), and the “Political Terror Scale” (Gibney and others, 2010). The first blends data on peace issues at home and abroad. The second tallies prison and jail populations (and computes per capita rates). The third compiles information from Amnesty International and the USA State Department, passing reports of those organizations through an assessment process to produce a composite rating.
Figure A14. Incarceration Rates: (Red=high incarceration; Source Data ICPS, 2010)