

DESCRIBING THE HUMAN CONDITION - FROM HUMAN DEVELOPMENT TO HUMAN SECURITY: AN ENVIRONMENTAL REMOTE SENSING AND GIS APPROACH¹

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ABSTRACT

Since 1990, the Human Development Index has revolutionized discussions about human development. However, it suffers from two deficiencies, which can now be rectified: geographic incompleteness and insufficiently “on-target” representation of economy, knowledge, and “a long and healthy life” at the level of the individual. This report summarizes attempts to rectify those deficiencies.

In addition, steady advances in attempts to characterize different aspects of the human condition have resulted in indicators, covering varying numbers of countries, on a wide variety of subjects. If one were challenged to create an index on the condition of people-centric Human Security², such as the authors of the Human Development Index faced in 1990 and expanded qualitatively in 1994, one could now begin to do so – at least for the sake of discussion and resultant improvements. A prototype Human Security Index is presented and initially assessed here.

In 1964, Journalist Luigi Barzini characterized “Gli Italiani” (the Italians). In 1967, Desmond Morris characterized human beings from a zoologist's perspective in “The Naked Ape.” Now, in 2008, we can use Remote Sensing and GIS approaches to characterizing some aspects of the Earth that we cannot directly measure; our approaches can be used to enrich the characterization of the human condition.

1. INTRODUCTION

1.1 Background – The Human Development Index

Traditionally, for want of something better, socioeconomic development of economies³ was assessed by using some indicator of income per capita. When the United Nations Development Programme released its first Human Development Report (HDR)(UNDP, 1990), it captured the attention of many specialists and countries, for its now widely publicized effort at a more robust composite indicator. The Human Development Index (HDI) contained in the HDR focused on three presumed aspects of human development: health, represented by estimated life expectancy at birth; knowledge, represented by adult

¹ This paper presents the author's academic research and development, and does not necessarily represent official positions of any individual or organization. This paper has received no formal editing.

² Human Security is currently being used to describe a peoples' sense of inclusion, of being valued, of being safe from perniciousness (by other individuals, organized crime elements, or from corrupted governmental or corporate impositions), basic comfort (as opposed to “luxury”) and freedom.

³ Economies often mean nation states. However, they have also included subnational administrative units, cultures such as racial or ethnic groups in a nation, and also entities whose status might be subject to disagreement, such as the island of Taiwan, the separately administered northern portion of the island of Cyprus, the area formerly administered by Spain in the western Sahara, or “dependencies” (in their various administrative forms). They may also include supranational entities, such as the European Community.

literacy rate⁴; and economic standard of living, represented by gross domestic product per capita (GDP) at purchasing power parity (PPP). Such data were also compiled retrospectively over several decades, with recent HDRs estimating progress at five year intervals since 1975.

The annual release of the global HDR triggers various news reports⁵ and analyses in developing and developed countries alike. At a minimum, then, it continues to focus attention on socioeconomic development in a manner that covers more countries than The Economist magazine's Quality of Life Index (Economist Intelligence Unit, 2005), or many other formulations which mostly followed on the heels of the HDR. Naturally, the HDI has attracted some criticism. One school of thought argues that the HDI is too simplistic, not adequately representative of the profound concept of human, or socioeconomic, development. As a result, several indices have been formulated, such as the aforementioned Quality of Life index, the World Economic Forum's Global Competitiveness Index (World Economic Forum, 2003, 2007), the World Database of Happiness (Kalmijn and Veenhoven, 2005), and the Wellbeing Index (Prescott-Allen, 2001).

1.2 Human Security as a concept

The first published major discussion of this concept was contained in the 1994 HDR (UNDP, 1994), and extended by Commission on Human Security (2003) and others. Human security⁶ has been characterized as people-centric "safety from chronic threats such as hunger, disease and repression as well as protection from sudden and harmful disruptions in the patterns of daily life – whether in homes, in jobs, or in communities" (UNDP, 1994), and postulated to include economic, food, health, environmental, political, community/social, and individual personal security from hostile actions by foreign or domestic antagonists, or by circumstances which can be managed by good governance (such as good response to environmental or cultural hazards/disasters). Simply stated, human security encompasses both "freedom from fear" and "freedom from want" (UNDP, 1994).

Human and national security are considered to complement each other when they are in harmonic balance. Human security is considered as multidimensional. It addresses people's dignity and sense of self-worth as well as material and physical concerns. It concerns protection from self-centred attempts at hegemony (as opposed to people-centric services) by individual, institutional/corporate, or governmental elements. Some specialists consider that poverty and inequality are root impediments to human security.

The 1994 HDR contained a draft "social world charter" (that the authors of the HDR hoped would be adopted by world leaders) in which it advocated for the United Nations to "become the principal custodian of our global human security" (UNDP, 1994, p. 6). However, one might recommend instead that governments, civil society, individual advocates, and the United Nations might each watch, and hold accountable, everyone's actions or inactions toward enhanced human security – and the results of such action/inaction. One could argue that human security watchdog functions should not be delegated to a "single point of possible failure" but should be watched over by a diversity of stakeholders.

⁴ Literacy was later blended with average years of schooling, and later with total educational enrollment, to form a composite knowledge subindex.

⁵ Some news reports have claimed that country "A" had slipped in its efforts, where other countries may merely have been more successful and overtaken country "A", or that newly added countries with higher HDIs had pushed country "A" to a lower global ranking number (despite, possibly, a numerical increase in HDI for country "A").

⁶ [Http://en.wikipedia.org/wiki/Human_security](http://en.wikipedia.org/wiki/Human_security) , Tadjibakhsh (2008)

1.3 Extending the Human Development Index – an Earth Observation approach

This paper extends the Human Development Index with indicators that attempt to characterize inclusive income, knowledge, and healthcare as actually delivered to people. This paper also goes farther, and drafts a prototype Human Security Index (HSI).

A separate study by the author (Hastings, 2008) addresses two additional challenges faced by the HDI: extending coverage to many economies lacking a current UNDP HDI, and looking at the robustness of the UNDP's own indicators that are computed into the HDI.

The author has spent over three decades trying to describe aspects of the Earth that are not yet directly detectable, through *in situ* and satellite observations. This attempt to extend the HDI, and create a prototype SDI, is influenced by such background. Just as one uses multispectral imagery and other spatial and tabular data to monitor drought or assess landslide risk; this paper describes attempts to assemble proxy data to characterize inclusive human development, and human security.

For two decades, the author has also been concerned about “cultural bias” in the development of indicators (Hastings, 2002). How to ensure a minimum of cultural bias, and an opportunity for diverse cultural concerns to enrich concepts of human development, and human security? Such an effort should harmonize as many concerns as possible about such human conditions that describe comfort, or true social (as opposed to militaristic) security of ordinary people in a society. What concepts are involved? What direct or proxy indicators might be developed and used? What indicators are available now? What improvements might be made in such indicators so that they move toward better value in describing human inclusiveness/comfort/[social]security across as much of the cultural and political spectrum as possible? How can such indicators best describe current conditions, and help indicator developers as well as governments and supportive institutions strategize improvements in the human condition of a place?

2. AN ENHANCED (INCLUSIVE) HUMAN DEVELOPMENT INDEX

2.1 Selection of input parameters

The HDI attempts to characterize money in the pocket of an individual by Gross Domestic Product per capita (adjusted for purchasing power parity to compensate for differing prices among world economies). But how much of GDP gets into the pockets of a typical person in a society? Perhaps the GINI coefficient⁷ of income inequality may be the best widely available indicator to combine with GDP per capita, to give us that indicator of “money in the average person's pocket.” The GINI coefficient is a decimal fraction between 0 and 1, with 0 indicating complete equality (e.g. everyone with the same income) and 1 indicating complete inequality (all income being received by one person). “Free market” proponents have often argued that income differences provide incentives for people to do better. Others recognize that extreme differences foster a lack of feeling of well-being, and even despair which has arguably lead to civil stress [including crime, terrorism, or insurrection]. Currently, the GINI coefficient ranges between about .20 and .70 worldwide. Values below about .30 or .35 are considered as relatively equitable; the highest values may denote great inequalities.

⁷ [Http://en.wikipedia.org/wiki/Gini_coefficient](http://en.wikipedia.org/wiki/Gini_coefficient)

The HDI attempts to characterize knowledge empowerment by basic literacy rate. This paper uses data from table 5.13 of the Executive Opinion Survey (EOS) of the Global Competitiveness Report (WEF, 2002) addressing the equality of education available to rich or poor children in a country. Similarly, this paper uses data from table 5.14 of that document, addressing equality of health care in a country for the poor vs wealthier people. Note that global executives, working with the World Economic Forum, are concerned whether their employee or customer base received sufficiently egalitarian education and health care for an economy to be competitive. Both of these tables rank results on a 1-7 scale, with 7 being best. When combined with basic literacy, and life expectancy at birth, these indicators may get us closer to characterizing inclusive delivery of opportunity for “knowledge” and “a long and healthy life” for the diversity of people in a society.

2.2 Computation of an Inclusiveness Index and an Enhanced HDI

Table 1 (placed at the end of this report) shows (from left to right) economy name, GDP per capita, scaled income (using the HDI formula adapted as described by UNDP, 2007, and Hastings, 2008), literacy, scaled literacy, life expectancy, scaled life expectancy, Basic HDI (Hastings, 2008), GINI coefficient blended from UNU-WIDER (2008), UNDP (2007) and CIA (2008), scaled GINI coefficient (scaled as in a remote sensing linear contrast enhancement to a 0-1.000 range), educational access equitability (WEF, 2002), scaled educational access equitability, health-care access equitability (WEF, 2002), and scaled health-care equitability. In Table 1, where C3, C5, . . . C15 are, respectively, values from column 3, column 5 . . . through column 15 in table 1.

$$\text{Basic HDI} = (C3 + C5 + C7)/3 \quad (1)$$

$$\text{Inclusiveness Index} = (C10 + C12 + C14)/3 \quad (2)$$

$$\text{Enhanced HDI} = (C8 + C15)/2 \quad (3)$$

2.3 Discussion of the Inclusiveness Index and the Enhanced HDI

In virtually all cases the Inclusiveness Index, and thus the Enhanced HDI, is lower than the Basic HDI. This suggests that delivery of economic, educational and health-care benefits may be at least somewhat less equitable than might be apparent from the HDI⁸ even for many high GDP economies (where many people may still be poor⁹). Many analysts suspect that certain parts of economic resources entering an economy are lost to inefficiencies (possibly overly high topmost executive compensation, possible inefficiency or corruption, etc.) before they may benefit the middle class – let alone the relatively poor in any given economy. If such economic resources went to equitable basic infrastructure such as educational and health-care benefits, transport, connectivity, etc., perhaps this could be justified (by someone). This finding suggests that societies could benefit significantly from improving equitability of basic infrastructure deliveries. Indeed, some traditional HDI leaders may not be leaders in Enhanced HDI, because of such lower performance in equitability.

Economies in Asia-Pacific tend to be about average performers in table 1. However, the mean HDI, Inclusiveness Index, and Enhanced HDI for Asia-Pacific all exceed comparable parameter values for Latin American or African economies, in initial assessment. The Asia-

⁸ More analysis of weighting within coefficients is also needed before blindly accepting this preliminary hypothesis..

⁹ Poor – in the sense of being at least somewhat deprived of egalitarian opportunity, or equal access to basic services.

Pacific's average Inclusiveness Index value is about mid-way between that for Europe and those for Africa and Latin America. Asia-Pacific's average GINI coefficient of .395, and its average egalitarianism of education access of 3.6 are both better than those figures for, say, the USA. The Asia-Pacific's average inclusiveness of health-care access, at about 3.5, is almost the same as for the USA. Of course, these are averages for the given samples of economies, which might change if more economies are added to the compendium. Moreover, table 1 would benefit from being more complete – if indicator data can be found for more economies.

Columns 9-15 of table 1 give an interesting perspective on the delivery of human development in specific economies – whether it is for everyone, or perhaps just for some. If one looks at figures for the USA, one sees a very high GDP per capita, but relatively low-performance GINI coefficients, as well as low-performance indicators for equality of education and health care for the poor. Where many developing countries have challenges in providing educational and healthcare services in rural areas, the USA has been described as having some problems in that regard with some rural areas depopulating with respect to medical professionals and other facilities, but also of some attractively situated rural communities gentrifying with high income telecommuters. On the other hand, some urban areas of the USA suffer from violence – even in schools – which is one factor behind some urban demographic groups being challenged for dedicated teachers, and for poor results of their students. On the other hand, economies like Japan, Singapore, and Taiwan Province of China, tend to have much more egalitarian income, educational and health-care access, despite (with the very recent exception of Singapore) having more modest GDP per capita at purchasing power parity.

Table 1 should be considered an experiment in trying to characterize egalitarian HDI. The only guarantee of such early experiments is that such first drafts are imperfect. Should the chosen indicators be scaled differently (e.g. non-linearly, or linearly with truncated tails)? Should we experiment with various remote sensing techniques – such as histogram equalization stretches to data, before combining them in a non-linear, weighted combination? Further assessment, and more widespread discussion, might lead to improvements in indicator development, and in understanding on how to positively use such indicators.

Similarly, table 1 is clearly non-global. World Economic Forum efforts are increasing in geographic coverage, but more recent Global Competitiveness Reports dropped the Executive Opinion Survey question on equitability of access to education. One recommendation from this study is that such a question should be reinstated into the EOS.

Figures 1 through 6 present maps of Income, Literacy, Life Expectancy at birth, the Basic HDI, Equitability-Inclusiveness Index and the Enhanced HDI for covered economies in Asia and the Pacific.

Figure 1 indicates that annual incomes of about \$12,000, \$5000, and \$900 per capita at purchasing power parity mark transitions between top quarter, top half, top three quarters, and bottom quarter in Asia and the Pacific. Figure 2 indicates that literacy rates of about 99%, 95% and 90% mark such quartile transitions in the region. Figure 3 indicates that Life Expectancies of 72.8, 70.2, and 65.3 years mark such quartile transitions in the region. It may be worth noting the tight clustering of literacy figures, as three quarters of regional economies exceed 90% literacy rates. However, the ranges in incomes and life expectancies are higher, with resultant opportunity for national policies to consider opportunities for

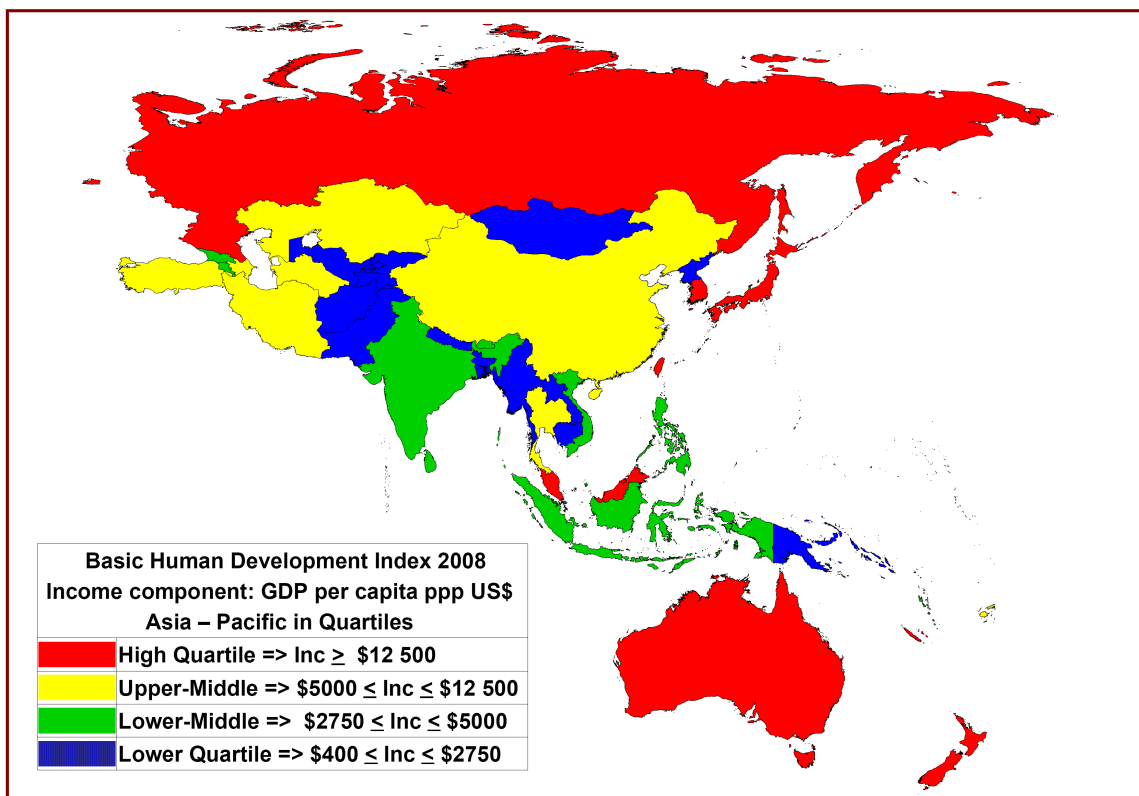


Figure 1. Prototype Income component of HDI.

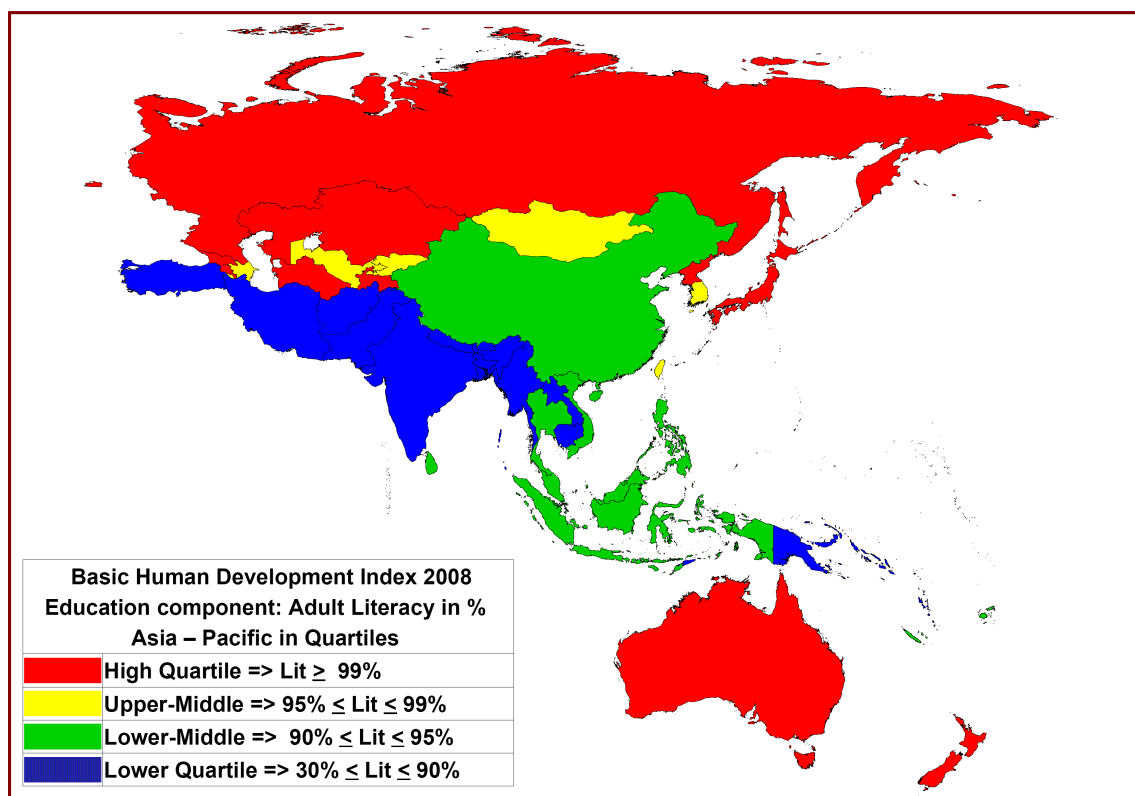


Figure 2. Prototype Literacy component of HDI for Asia and the Pacific.

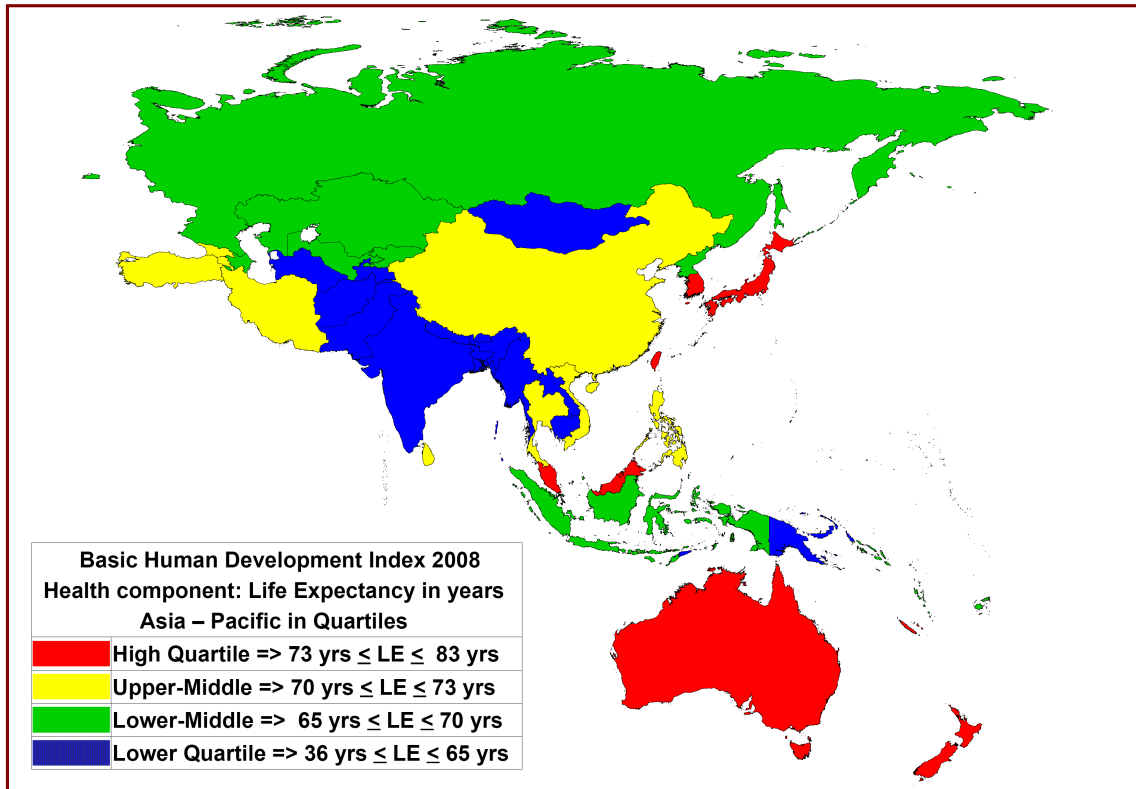


Figure 3. Prototype Life Expectancy component of HDI for Asia and the Pacific.

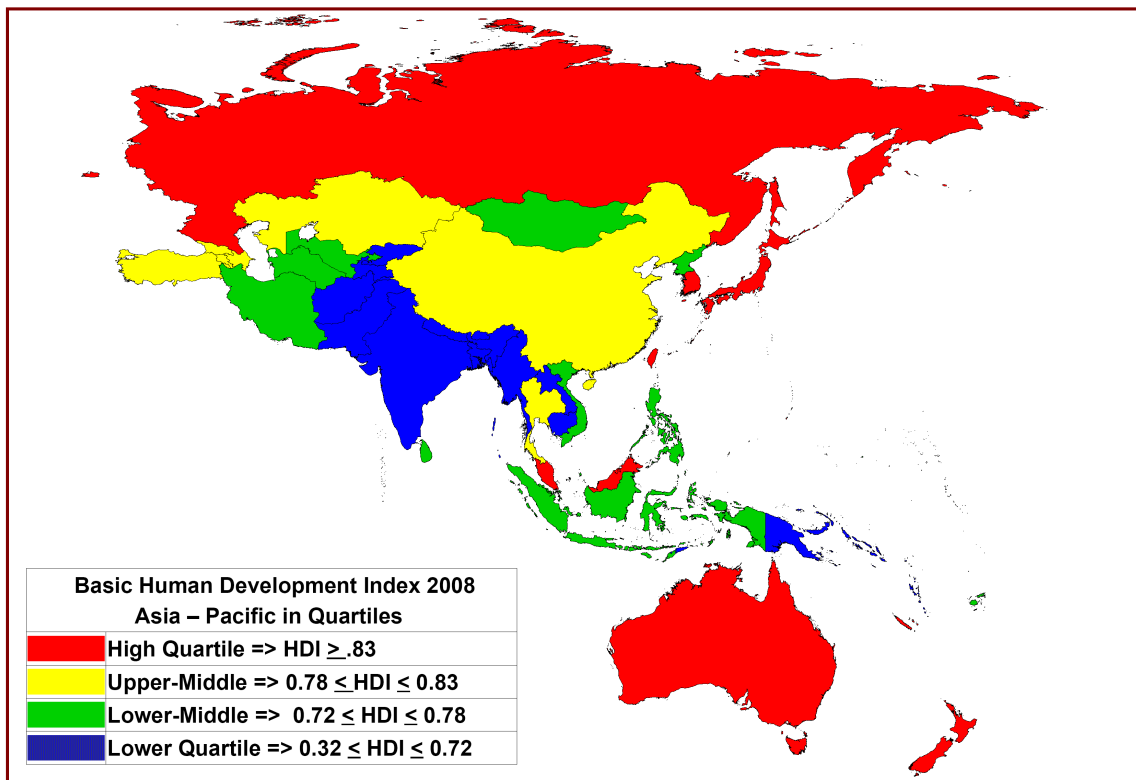


Figure 4. Prototype Basic Human Development Index for Asia and the Pacific.

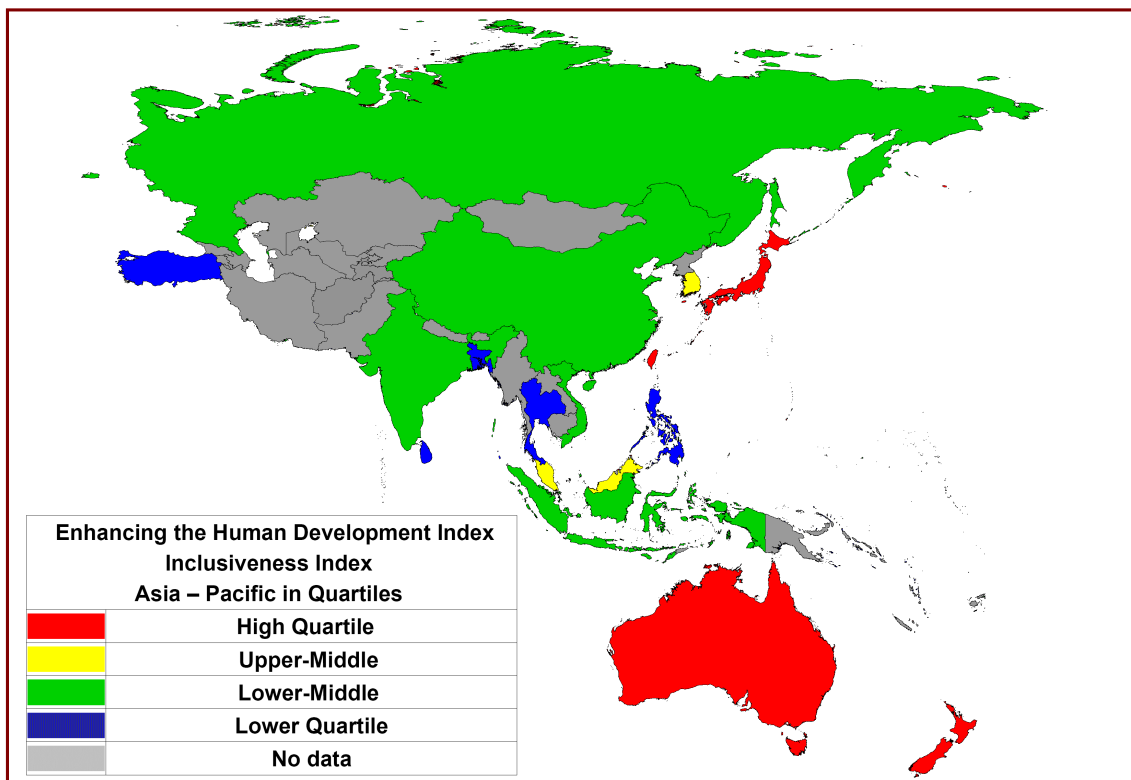


Figure 5. Prototype Inclusiveness Index for Asia and the Pacific.

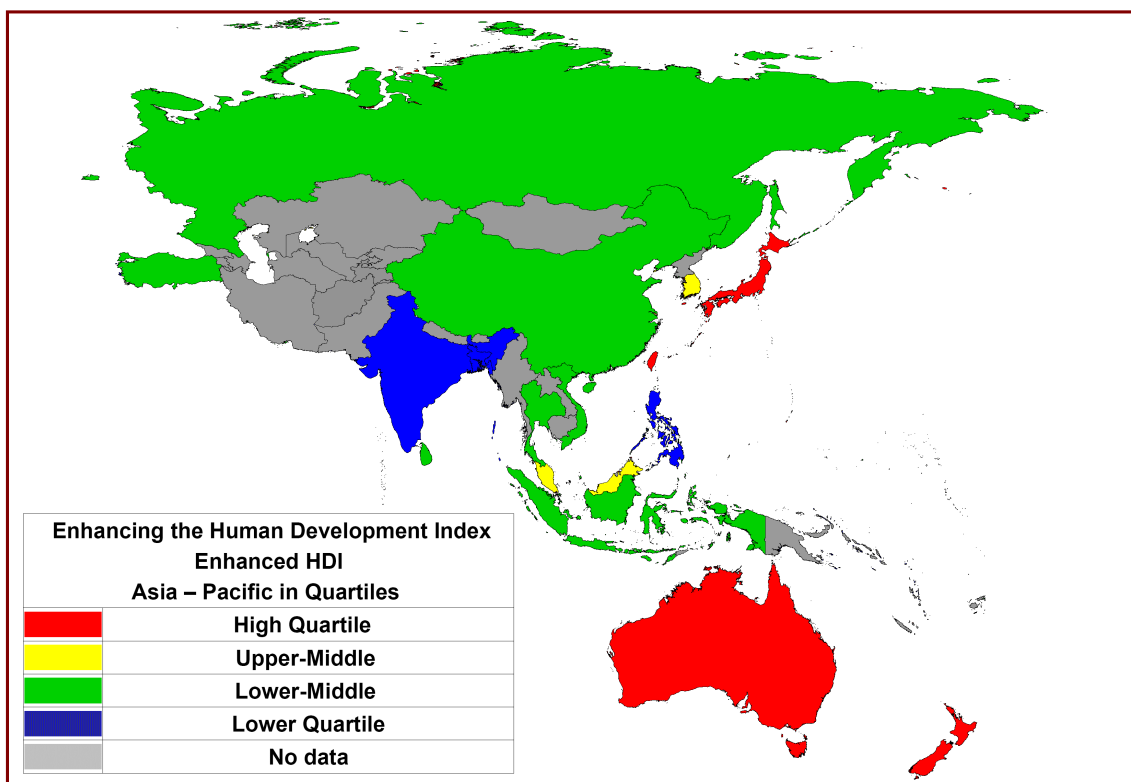


Figure 6. Prototype Enhanced (Inclusiveness-sensitive) HDI for Asia and the Pacific.

possible improvements. Hastings (2008) offers some initial discussions on how to use HDI and its components to help economies to set their own developmental policies.

3. A PROTOTYPE HUMAN SECURITY INDEX

The prototype Inclusiveness Index and Enhanced HDI attempt to enhance the Basic HDI in the direction of characterizing human security – specifically regarding inclusiveness (which presumably also imparts a feeling of harmonious social balance in a society). Can we go farther to craft an indicator on human security? What would we characterize in such a task? For this study, I looked at indicators that may serve as proxy descriptions of various aspects of human security – which also included fairly large numbers of countries/economies. The study considered that human security is a sense that society is fair and just (e.g. not corrupt); a sense of harmony with the physical, social and spiritual environment lacking in organic circumstances that contribute to global, civil or domestic violence (verbal, mental, physical or otherwise by either gender); and that people are empowered with knowledge, honest and supportive information, financial benefits and opportunity, and resources to support a long and healthy life. In addition, where many indices on quality of life, etc. are advocated by Western-oriented groups, we should ask ourselves – how might a relatively globally balanced index be constructed, and how might it compare with indices currently being advocated? Commentators have lamented the dearth of good data that could contribute to a Human Security Index. I think that initial ingredients of a Human Security Index now exist. Table 2 (at the end of this report) offers a prototype HSI for some 220 economies.

3.1 Constructing a Human Security Index

Fortunately for such efforts, groups of researchers have been pursuing the development of indices like the Gender Gap Index (World Economic Forum, 2007), the Global Peace Index (Vision of Humanity, 2008), World Prison Population List (Walmsley, 2006), the Environmental Sustainability Index (Yale-Columbia Universities, 2005), Environmental Performance Index (Yale-Columbia Universities, 2008) and compilations of greenhouse gas emissions¹⁰, World Bank's governance and freedom from corruption indicators (Kaufmann and Vicente, 2005; World Bank, 2008), World Telecommunication Indicators (ITU, 2008) and the Press Freedom Index (Reporteurs Sans Frontieres, 2007), as well as data that go into a geographically extended Basic Human Development Index (Hastings, 2008¹¹, and column 8 in table 2). Table 2 offers derived, scaled 0-1.000 as in the HDI, component indices based on the data just cited. Components of table 2 were computed as described below:

Column 2's Gender Equality Index was scaled from World Economic Forum (2007):

$$\text{Gender Equality Index} = \text{GEI} = (\text{WEF Gender Gap Index} - 0.45)/0.37 \quad (4)$$

Column 3's Peace Index was scaled from Global Peace Index (Vision of Humanity, 2008) and the World Prison Population List (Walmsley, 2007):

$$\text{Scaled Global Peace Index} = \text{SGPI} = (1 - (\text{Global Peace Index} - 1.3))/2.2 \quad (5)$$

$$\text{Scaled Incarceration Index} = \text{SII} = (600 - \text{World Prison Pop. Index})/600 \quad (6)$$

(World Prison Population Index per capita values for the USA and the Russian Federation)

¹⁰ This study generally uses the list of greenhouse gas emissions per capita in Wikipedia for this topic.

¹¹ Hastings (2008) covers over 230 economies – compared to the longstanding plateau in UNDP's HDRs of ~177 economies.

were “off-scale” so were capped to 0.000 and 0.001, respectively)

$$Peace\ Index = (SGPI + SII)/2 \quad (7)$$

Column 4's Environment Index was scaled from the Environmental Performance Index EPI, 2007), the Environmental Sustainability Index (ESI, 2007), and greenhouse gas emissions (GGE) (Wikipedia, 2008):

$$Environmental\ Index = EI = Average(Average(scaledEPI, scaledESI), GGE) \quad (6)$$

Column 5's Corruption Control Index was scaled from World Bank Institute governance data for illegal corruption (IC) and legal corruption (LC) percentiles as:

$$Corruption\ Control\ Index = CCI = MINIMUM(IC, LC) \quad (7)$$

Column 6's Information Empowerment Index is a blend of the Connection Index (Hastings, 2006, 2008) which uses World Telecommunication Indicators (ITU, 2008) for Telephone Fixed Lines (TFL), Telephone Mobile Lines (TML), and Internet users (IU) (all as a % of the population) with the Press Freedom Index (RSF, 2008):

$$Connection\ Index^{12} = CI = (TFL + TML)/2 + IU \quad (8)$$

$$Information\ Empowerment\ Index = IEI = Average(CI/200, scaled\ Press\ Freedom\ Index) \quad (9)$$

Column 7's Social Fabric Index, which attempts to describe the “social fabric” of a society, is the unweighted mean of the five indices in columns 2-6 of table 2. When then given an unweighted average with the Basic Human Development Index of column 8 in table 2 (Hastings, 2009), we arrive at the prototype Human Security Index:

$$Social\ Fabric\ Index = SFI = Average(GEI, PI, EI, CCI, IEI) \quad (10)$$

$$Human\ Security\ Index = HSI = Average(SFI, Basic\ HDI) \quad (11)$$

3.2 Discussion of the Social Fabric Index and the Human Security Index

Table 2 includes 40+ countries more than UNDP covers in its Human Development Index. Hastings (2009), upon which column 8 in Table 2 is drawn, provides a Basic HDI for 232 economies (plus European Union and World averages), where the latest UNDP Human Development Report UNDP (2007) only offers 177 economies plus regional and global averages – a longstanding plateau for the UNDP HDR. Table 2 only shows scaled component scores for gender equality component (based on World Economic Forum, 2007, and equation 4), peace component (based on Vision of Humanity, 2008, Walmsley, 2007, and eq. 5), environmental component (based on Yale-Columbia Universities, 2005, 2008, and Wikipedia, 2008, and eq. 6), corruption control component (based on Kaufmann and Vicente, 2005., World Bank, 2008, and eq. 7), information empowerment (based on an updated version of the Connection Index of Hastings, 2006, and Reporteurs Sans Frontieres, 2007, and eq. 8). The mean of those five scaled components create the Social Fabric Index (column

¹² The Connection Index typically has values of 0-200, but can exceed 200 if Internet usage is high (e.g. over 70% in some economies) and mobile phone usage exceeds 1 SIM card per user. Mobile phone usage exceeds 140% of population in some economies, as fixed and Internet usage could theoretically exceed 100% if many people had office and home phones and Internet accounts.

7, table 2). The mean of the SFI and the Basic HDI (column 8, table 2 and Hastings, 2008) equate to the Human Security Index (column 9, table 2).

Of the five components in the prototype Social Fabric Index:

- 114 economies have indicators in all categories,
- 35 economies lack one indicator,
- 33 economies lack two indicators,
- 18 economies lack three indicators, and
- 21 economies lack four indicators.

Thirteen economies (named at the bottom of table 2) lack all five indicators, so are omitted from the table. Considering that this is an ad-hoc initial effort, this situation is rather better than a pessimist might have thought. Though one may argue against the computation of a HSI for any economies which lack one or more constituent indicators, such a computation is offered here (with a grain of salt), in order to encourage the institutions that produce input indicators to strive for more geographic inclusiveness, where possible.

Combining the World Peace Index with Walmsley's (2006) World Prison Population List is an experiment – but one using two potentially valuable proxy datasets relating to peacefulness and harmony in a society. A low prison population per 100,000 people could mean (a) a peaceful society with few serious crimes meriting imprisonment being committed (e.g. a good harmonious society in this regard); (b) a governing process that does not manipulate the policing and court systems to threaten or intimidate parts of populations (e.g. good lack of demographic bias in this regard); or [c] weak enforcement even if serious crimes are committed (e.g. a problem that seems rare¹³, as reputations of corrupt police/court processes tend to depict poorer people not being able to escape incarceration in such manners as richer people might be able to afford to do). High prison populations may indicate (a) high incidences of serious crime (e.g. unfortunate disharmony in such a society); (b) unfortunate manipulation of police/court processes to threaten or intimidate segments of a population; or [c] inappropriate/inequitable use of incarceration where other solutions may be more appropriate to solve a socio-economic challenge in a society (e.g. if a particular demographic cross-section is more vulnerable to incarceration). Further study of this indicator is warranted for this purpose – it is placed in this paper to stimulate possible discussion (and possible engagement toward improving it for use in a Human Security Index).

The Social Fabric Index ranges in value from .099 (in Somalia) to over .850 (in four Scandinavian economies). The Human Security Index ranges in value from .231 (in Somalia) to over .900 (in Bermuda and three Scandinavian economies).

Relative areas of weakness of several (but hardly all) Asian-Pacific economies include perceptions of corruption, and the press freedom subcomponent of information empowerment. As a perception of low corruption control may harm investment and partnerships even if such perception is biased and inaccurate – it may benefit economies with perceived low levels of corruption control to work to improve such perceptions. Similarly, a reputation for less than optimal freedom of the press may hamper international partnerships.

¹³ However, a perusal of Walmsley's (2007) data (prisoners per 100,000 population) suggests that, where many states with reputations for good governance have relatively low prison population densities, several of the lowest prison population densities are noted for economies for which one might wonder “what causes the rate for that country to be so low?” This aspect needs to be addressed. The author has a draft adjustment in mind, for possible improved use of that indicator in a human security index, but leaves this for future development.

On the other hand, relative areas of strength vary between Asian-Pacific economies. Several have relatively good overall environmental scores (though there hardly exists any community with NO environmental problems/challenges to overcome). Several more have relatively good overall marks on the Global Peace Index.

Figures 7 and 8 map these two indicators for Asia and the Pacific.

To emphasize, the SFI and HSI are experimental indices. As a result, table 2 shows no rankings (as one could imply data imperfections, or weighting imperfections as much as one could imply support for social fabric or human security – at this early stage of indicator development). Many economies are listed for which one or more source indicators do not exist – due to lack of current coverage of those economies by the organizations creating those specific indicators. The partial rankings are nevertheless provided, as an implied encouragement for developers to extend the geographic coverage of their works.

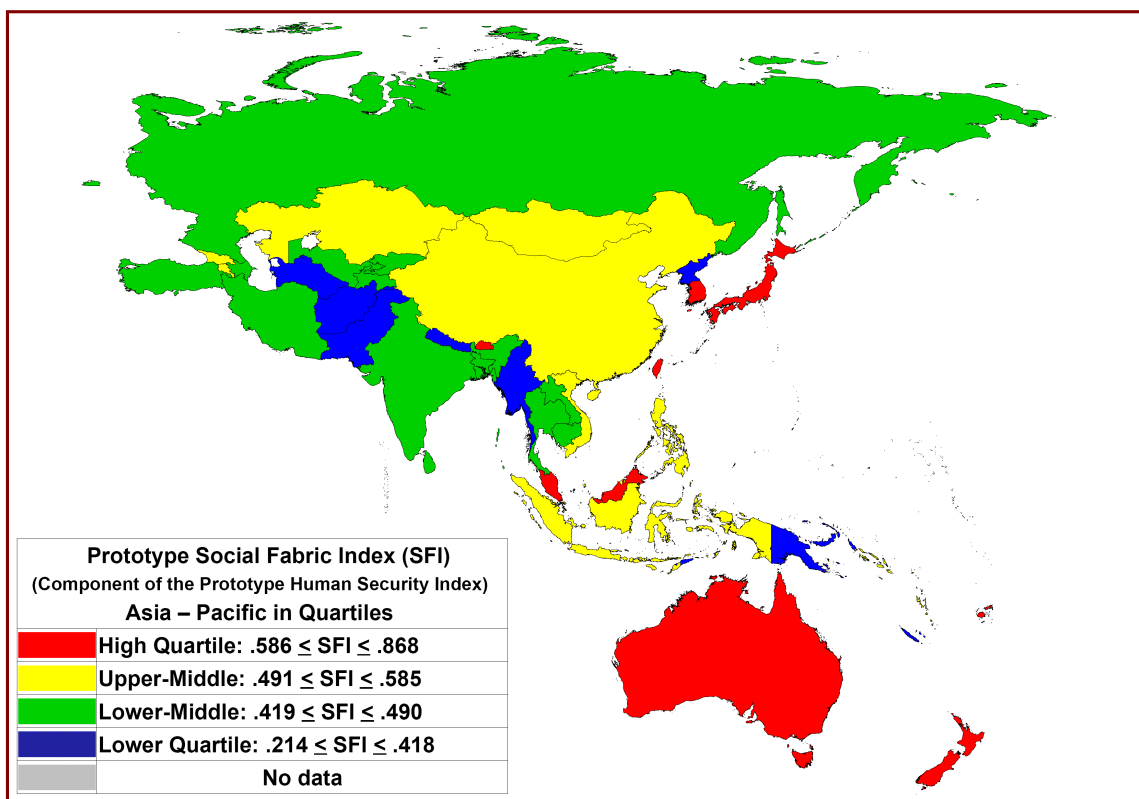


Figure 7. Prototype Social Fabric Index for Asia and the Pacific.

4. ADDITIONAL DISCUSSION

This idea of an inequality-adjusted HDI is not new. Hicks (1997) proposed a method of computing a “GINI coefficient” for income, education and health. He computed such indices, and a resultant Inequality-Adjusted HDI, for twenty developing countries, including seven in Asia and the Pacific. He found strong positive correlations between HDI, income, literacy, and life expectancy; strong negative correlations between HDI, literacy inequality and life expectancy inequality; and essentially negligible positive correlation between HDI and income inequality. In short, as expected, inequality of literacy and/or life expectancy has a negative impact on HDI – but surprisingly little influence was found in income inequality. My main question over Hicks' methodology is the use of the GINI computation, which

arbitrarily chooses certain percentiles within a population (e.g. dividing the distribution curve into quintiles as is common with income figures – but where I believe considerable experimentation should be done on the sizes of the two tails [e.g. 10% or 5%, at the top end of the parameter distribution, and perhaps 40% or 60% at the bottom end of the curve]).

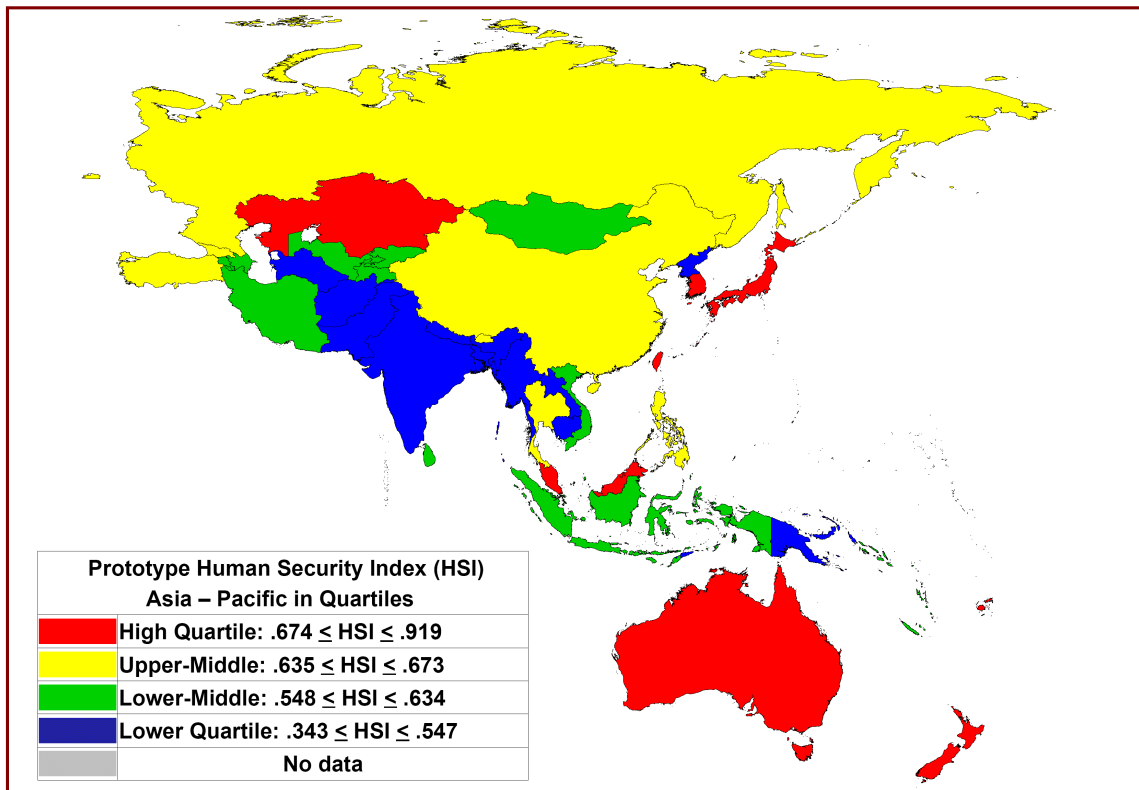


Figure 8. Prototype Human Security Index for Asia and the Pacific.

Somewhat similarly, Grimm and others (2008?) propose directly computing HDI values tagged to different income levels within an economy. Rather than computing GINI coefficients according to arbitrary cutoffs in parameter distribution curves, they propose compiling data, based on household surveys, specifically for literacy and life expectancy according to different levels of income, such as for the richest and poorest quintiles, within an economy. They present sample values for two developed countries and thirteen developing countries (including only Indonesia and Viet Nam in Asia and the Pacific).

In both cases the authors state or imply the difficulty in compiling data of comparable dates for many countries. This paper, by attempting to utilize data already compiled for relatively large groups of economies, has been able to present an in/equality-adjusted HDI for 75 economies. The ultimate goal is to include the maximum number of countries, by finding indicators which support such geographic robustness, and encourage more thematic (and indicator development) analysis and activity.

Christopher Kounqui¹⁴ (2008, verbal communication) has suggested that this paper consider renaming the Social Fabric Index to my proposed candidate for Human Security Index, and to keep the HDI out of the computed Human Security Index. This is an intriguing thought. Actually, I would prefer to incorporate the Extended HDI with the SFI to compute a HSI – but currently use the Basic HDI for want of greater geographic coverage of Extended

¹⁴ Formerly of the Human Development Report Office, UNDP, currently with United Nations ESCAP.

HDI. Nevertheless, various options along these lines are hopefully worth a broader discussion, leading to a HSI with broader input (and presumed resultant usefulness).

5. CONCLUSIONS

As with the Normalized Difference Vegetation Index (NDVI) as an attempt to characterize vegetative health or drought, the HDI is an attempted proxy for societal development. Just as improved sensor design (including sensor calibration and bandwidth optimization), data screening and temporal compositing to reduce cloud contamination, and statistical normative analysis, are leading to improved abilities of such proxy data to characterize drought or other phenomena for non-specialist decision-makers, improved stewardship (including editing and documentation), and new indicator development efforts should lead to improved characterization of societal development, including human security.

This paper is an appreciation of the efforts undertaken to create the HDI, and also the separate efforts by many people and organizations to create additional indicators on the human condition, which this effort can adapt, at least to stimulate discussion toward a better harmonized, globally applicable (or at least positively stimulating among problem-solvers), indicator on egalitarian human development, and on human security. Of course, there are other efforts, by individuals with admitted or apparent political, social, or cultural agendas or bias, which are not intentionally cited or used here, developed for whatever purposes. However, the number of thoughtful efforts, including increasing numbers of economies (thus useful to this effort's desire for geographic inclusiveness), is impressive.

Characterizing inclusiveness of opportunity and basic services is considered here to be one aspect of characterizing human security. Thus, if the Enhanced HDI could be computed for more countries (e.g. if future Global Competitiveness Reports could again include questions on equitability of access to education and health-care), the author would propose supplementing the Basic HDI with the Enhanced HDI in column 8 of table 2 – and including the Enhanced HDI in the Human Security Index.

It is hoped that the prototypes offered here may facilitate discussion, and improvements, toward more robust proxy data toward these ends. Companion paper (Hastings, 2008) offers an approach to greater geographic inclusivity of such data, and feeds this paper with the data posted in column 8 of tables 1 and 2. In a recent seminar on that effort, it became apparent that the United Nations system may be a challenging home for such efforts. Where it presents advantages, it also has challenges which might be obstacles for some aspects of discussing human development, egalitarian human development, and human security as proposed in the 1994 Human Development Report (and given a prototype implementation in this paper). Thus, it might be beneficial if an academic organization, with similar goal of balanced views on these issues, but perhaps free of some of the liabilities of working in the United Nations system, could convene and facilitate discussions and developmental efforts toward greater geographic and thematic richness of such indices. This might enhance the support for the existing effort(s), and also help provide a sharper eye on such data and index compilation efforts.

8. REFERENCES

Cahill, M. B., 2005. Is the Human Development Index redundant? *Eastern Economic Journal*; v.31, pp. 1-6.

- Central Intelligence Agency, 2008. *World Factbook*. Washington, DC., USA, Central Intelligence Agency. <http://www.cia.gov/cia/publications/factbook>
- Commission on Human Security, 2003. *Human Security Now: Final Report*. New York, United Nations. <Http://www.humansecurity-chs.org/finalreport/index.html>
- Economist Intelligence Unit, 2005. The Economist Intelligence Unit's quality-of-life index. *Economist The World in 2005*, pp. 1-4.
- Grimm, Michael, Kenneth Harttgen, Stephen Klasen, and Mark Misselhorn, 2008?. A Human Development Index by income groups. *World Development*, in review.
- Hastings, David A., 2008. Filling gaps in the Human Development Index: Findings for Asia and the Pacific. *Bangkok, Thailand, United Nations Economic and Social Commission for Asia and the Pacific Working Paper ?? (in press)*.
- Hicks, Douglas A., 1997. The Inequality-Adjusted Human Development Index: a constructive proposal. *World Development*, v. 25, no. 8, pp. 1283-1298.
- ITU, 2008. *World Telecommunications Indicators*. Geneva, Switzerland, International Telecommunication Union. <Http://www.itu.int/ITU-D/icteye/Default.aspx>
- Kaufmann, Daniel and Pedro C. Vicente, 2005. *Legal corruption*. Washington, DC., USA, World Bank Institute. <Http://www.worldbank.org/wbi/governance/pdf/Legal-Corruption.pdf>
- Kalmijn, Wim and Ruut Veenhoven, 2005. Measuring inequality of happiness in nations: In search for proper statistics. *Journal of Happiness Studies*, v. 6, pp. 357-396.
- Prescott-Allen, Robert, 2001. *The Wellbeing of Nations*. Ottawa, Ontario, International Development Research Corporation. 350pp.
- Reporteurs Sans Frontieres, 2007. *Press Freedom Index, 2007*. http://www.rsf.org/article.php?id_article=24025
- Tadjbakhsh, Shahrbanou, 2008. Human Security. *Human Development Insights, Issue 17*. New York, United Nations Development Programme HDR Networks. <http://hdr.undp.org/en/nhdr>
- UNDP, 1990 *et. seq.* *Human Development Report*. New York, United Nations Development Programme
- UNU-WIDER, 2008. *World Income Inequality Database, May, 2008*. http://www.wider.unu.edu/research/Database/en_GB/database
- Vision of Humanity, 2008. *Global Peace Index*. <Http://www.visionofhumanity.org/gpi/results/rankings/2008>
- Walmsley, Roy, 2006. *World Prison Population List*. London, Kings College London. <Http://www.prisonstudies.org>
- World Bank, 2008. *Global Governance and Corruption*. Washington, DC., USA, World Bank Institute. <Http://www.worldbank.org/wbi/governance/pubs/gcr2004.html>
- World Economic Forum, 2002. *Global Competitiveness Report 2001-2002*. New York, Oxford University Press (esp. page 344, tables 5.13 and 5.14).
- World Economic Forum, 2007. Gender Gap Index, 2007. <http://weforum.org/en/Communities/Women%20Leaders%20and%20Gender%20Parity/GenderGapNetwork/index.htm>
- Yale-Columbia Universities, 2008. *Environmental Performance Index*. Http://epi.yale.edu/epi/files/2008EPI_Rankings_1page.pdf
- Yale-Columbia Universities, 2005. *Environmental Sustainability Index*. Http://www.yale.edu/esi/ESI2005_Main_Report.pdf