Sustainability Discussion with an Example of Selected Countries in Asia and Oceania

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Abstract A systemic approach to innovative development, creation, and implementation of efficient mechanisms for innovation policy, sustainable financial sector reform, and ultimately, sustainable, balanced, and harmonious development of countries based on investment innovative models, calls for the creation and implementation of an innovative product to support strategic decision-making based on integrated indices and risks in a triune concept of sustainable ecological, social, and economic development in the global, regional, and national contexts. This chapter seeks to illustrate one approach to the indicated model, using the examples of South East Asia and Oceania, and taking into consideration the risks and opportunities for innovative development in these countries. This research incorporates the Environmental Performance Index (EPI).

1 Introduction

The new Millennium brings cardinal changes to defining the direction of economic progress, shifting the focus to solving problems of innovative development acceleration and the transfer to an economy of knowledge firmly rooted in intellectual resources. Intellectual capital, science, education, and transformation of knowledge to creation of material goods via innovation tools, play a special role in this process. The ultimate goal is to improve quality of life and increase people's opportunities, for a sustainable, balanced, and harmonious development of society.

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The modern vision of systematically advancing sustainable development joins three main components—economic, ecological, and social. All three aspects are interconnected, and the economic component is more and more often linked with the concept of human development. The human, or social, dimension becomes a defining factor for harmonious sustainable development under ecological and resource constraints while material well-being becomes a condition of development.

Transition to a regulated model of a market economy may be required, with a significant part of direct and indirect state influence, and the establishment of close synergies between the public and private sector, while maintaining a continuous dialogue with investors. This approach entails devising an investment innovative policy based on a sound, objectively justified methodology. It necessitates the development and implementation of a priorities system and the creation of concrete mechanisms to ensure the formation of national and international innovative systems. To achieve this, it is necessary to facilitate systematic information-analytic support, and to provide a foundation for strategic decision-making with respect to investment and technical assistance activities, structure recommendations based on priority risks, and the monitoring of progress in the context of sustainable development (global, regional, and national).

The concept of Sustainable Development was first introduced by Vernadsky (Vernadsky 1926) at the beginning of the twentieth century, and attracted a great deal of interest after the Brundtland Commission published its report in 1987 (Our Common Future 1987). Ecological, economic, and social components are closely interrelated, and call for the creation of integrated assessment studies which would analyze the three aspects of sustainable development jointly. Historically, starting in 1972, numerous studies were devoted to the simulation of sustainable development, looking jointly at such factors as economic growth and human and environmental systems (Meadows et al. 1972; Hughes 2006; Forrester 1971), modeling the three domains of sustainable development, and estimating the relations among the components and possible outcomes for various scenarios. Some efforts also focused on operationalizing the concept of Sustainable Development and utilizing the existing models to analyze the relationship between environmental change and human development (Boumans et al. 2002; Hilderink and Lucas 2008). The difficulties in implementing such approaches are the links and compatibility of all underlying models and their assumptions. Moreover, the synchronization of data dependencies among models with no circular reference is a clear challenge. This is why approaches utilizing integrated indices are becoming more and more popular.

Since the late nineties it has become customary to view sustainability in the perspective of Environmental, Social, and Corporate Governance (ESG) constituents. Currently more and more banks and corporations incorporate ESG metrics to their practices.

The year 2006 became a milestone in project financing, featuring the introduction of Equator Principles by the IFC (Equator principles 2006), which facilitated socially and environmentally responsible project financing.

Sustainability is complex to measure, and requires extensive statistical data and a broad range of indices. One of the best known and most broadly used indices is the

Human Development Index (HDI), first introduced in 1990. This index for the first time both enabled an innovative approach to the evaluation of Human Development from an alternative perspective, emphasizing that development encompasses a much broader area than economics and income, and emphasized human-centered development. It integrates such aspects as longevity, literacy, and income, and ranks the world's countries based on their integrated assessment. The HDI ranks countries based on their level of Human Development, but does not directly include an ecological component. Subsequently, a sustainable development index, incorporating an ecological component and the concept of developmental or sustainability risk, were introduced (Bakhtina and Zgurovsky 2008), allowing for the transfer of the research to the regional level and analysis of concrete examples, using data for Africa, Latin America and Asia to illustrate the model.

There is a clear gap between interpreting and using the output of the existing models for the decision-making process and policy development. The goal of this publication is to propose a structure for an integrated sustainability model which would utilize the results derived from the two types of indices: Sustainable Development Index and Developmental Risk Index (Bakhtina and Zgurovsky 2008), focusing on a subset of countries from different regions.

Every year climate change and environmental deterioration effects become more and more severe and "will result in net costs into the future, aggregated across the globe and discounted to today; these costs will grow over time." (Parry et al. 2007). Climate change is a defining developmental issue, as affirmed in a United Nations development report. In comparison to Bakhtina (2011), the current research aims to incorporate environmental aspects into sustainability risk modeling more extensively. It is supplemented by the Environmental Performance Index (EPI)—the result of research by the Yale Center for Environmental Law & Policy and the Center for International Earth Science Information Network, Columbia University (Environmental Performance Index, http://epi.yale.edu/).

Using publicly available statistical data, the author has created tables and graphs to demonstrate the structure of the application, illustrating the model with the help of Principal Components Analysis. References to all the databases are given at the end of the publication.

2 Structuring an Integrated Sustainability Model

It is suggest structuring an information-analytic support for innovative development covering the following segments and steps:

(a) Create and utilize holistic sustainability risk models and respective systems;
(b) Devise methodology facilitating prioritization of sustainability risks in the regional and national context;
(c) Integrate existing resources and knowledge to perform forecasting, sensitivity, and scenario analysis for investment activities and technical assistance;

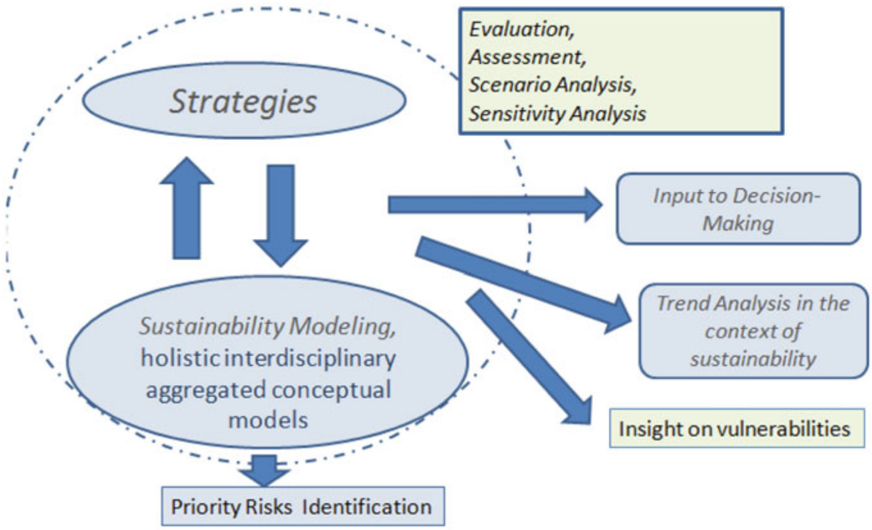

Fig. 1 Integrated sustainability model

(d) Adjoin trend analysis and evaluation of investments in a global sustainability context;
(e) Suggest approaches to further help in detecting integrity gaps and vulnerable spots;
(f) Provide active input to qualitative knowledge management.

Figure 1 explains how an integrated sustainability model operates, required inputs, and results.

In Fig. 2 is presented one of the ways of structuring the process of information-analytic support.

3 Sustainability and Global Risks Modeling

In the current research, sustainable development measurement is performed jointly using economic, social, and ecological components. Ideally, each of the components takes into account as many comprehensive indicators as possible. The research is based on a methodology of global sustainability processes modeling (Zgurovsky et al. 2008), and integral sustainability risk[1] models in a regional context (Bakhtina and Zgurovsky 2008). Sustainable development measures shall ideally incorporate as many comprehensive characteristics encoded in the

[1] "Sustainability risk" will be used interchangeably with "developmental risk". This definition is in line with the approach used in the finance, risk management, and insurance industries.

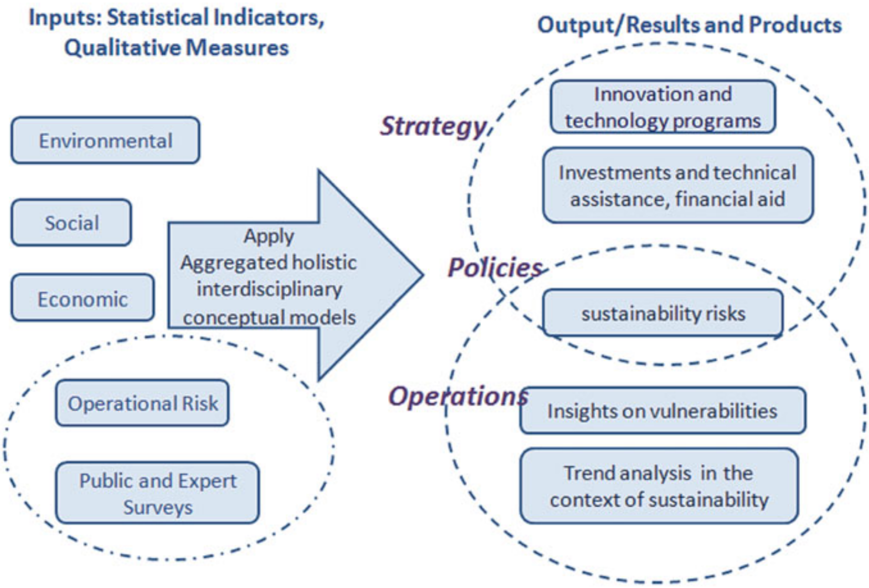

Fig. 2 Schema of information-analytic support for decision-making in the context of global sustainability

sustainability dimensions as possible. The most widely used indicators for the three domains are GDP, economic freedom, human development, business environment, ecosystems, and ecological footprint. Review of countries in South East Asia and Oceania allowed us to conclude that it would be sufficient to use a socio-economic index supplemented with the ecological component.

The sustainability index is structured as follows. Two indicators are considered: HDI (UN Human Development Report 2009) and carbon intensity. HDI belongs to the socio-economic category. It comprises three indices: an education index, which shows relative achievement in adult literacy and involvement in tertiary education, a life expectancy index, which shows life expectancy at birth, and a GDP index, which reflects the relative level of well-being in the country. It is presumed that the GDP index represents a complete measure of the economic component, and that the combined education and life expectancy indices are measures of the social component.

In 2010, the Human Development report changed the methodology of computing the HDI index and provided two new indices: Inequality adjusted HDI, which reflects inequality in the three major areas of development, and the Multi-Dimensional Poverty Index and Gender Inequality Index. As a result, the index computation methodology was fine-tuned and additional dimensions were added to a global comparison of information, making the reports more insightful. Conversely, this novelty requires more data points to measure inequality, so there is no adjusted HDI measure for many countries. This makes it impossible to analyze trends in adjusted HDI for many countries under consideration. For this reason, this analysis is limited to only the HDI index.

Carbon intensity is one of the most broadly used measures of the countries' CO_2 (Carbon intensity, http://www.eia.doe.gov/emeu/international/carbondioxide.html) pollution relative to the economy activity[2]; it can be reduced by using cleaner fuels and reduced fuels consumption via innovation. An ecological component is represented by carbon intensity and the Ecological Performance Index (EPI).

In addition, specifics of the indicated region allow for separating the following risks to cover all three domains of sustainable development: (1) disbalance between economic and human development, (2) lack of education, (3) low life expectancy, (4) lack of access to potable water and sanitation facilities, (5) HIV epidemics, (6) greenhouse gas (GHG) emissions, (7) political instability and corruption, (8) natural disasters, (9) unsustainable business environment and (10) poor environmental performance.[3] The next step is to select proper measures for each risk, and subsequently analyze the risk for each country.

For each country, it is possible to get insight into the question of how balanced and sustainable the country's development looks relative to its peers, as well as the remoteness of the country from crisis, based on the series of risks considered.

Correlations between the components suggest a strong relationship between GDP, Education, and Longevity. A strong correlation between GDP, Education, and corruption perception shows that countries where the economy is performing well and the education system is well designed are generally perceived as less corrupt. A strong correlation also exists between an enabling business environment and education.

4 Sustainability and Risks for South East Asia and Oceania: Empirical Evidence

The current research reviews 27 countries from South East Asia and Oceania,[4] excluding Japan, North Korea and Kiribati. The set of countries is chosen with the focus on emerging economies. Only 27 countries are covered due to data limitation. Japan is ranked 10 in Human Development, which is significantly over-

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[2] CO_2 intensity reflects the emission intensity, or the average emission rate of CO_2 from a given source relative to the intensity of a specific activity. Carbon intensity of the economy can be observed in two main relationships: energy intensity and carbon intensity of energy use.

[3] Completeness and integrity of environmental information is essential for the efficiency of the decision-making process related to global climate change adaptation and the application of innovative approaches to optimize use of the bio-capacity at a national level. In a modeling process unavailability of EPI information is considered as a penalty.

[4] The countries include Bangladesh, Bhutan, Cambodia, India, Laos, Maldives, Mongolia, Myanmar, Nepal, Papua New Guinea, Samoa, Solomon Islands, Sri Lanka, Timor-Leste, Tonga, Vanuatu, Vietnam, Brunei Darussalam, China, Fiji, Hong Kong SAR, Indonesia, Malaysia, Philippines, Singapore, South Korea, Thailand.

performing the rest of the region. In spite of one of the highest risks of natural disasters in the region, implied by the Disaster Risk Index (DRI), Japan has the most advanced social and economic components, making the country significantly different from the set of 27 countries under consideration. After the devastating earthquake and tsunami in March 2011, unprecedented efforts were made to move the country towards recovery. Such measures comprised the April 2011 creation of the Reconstruction Design Council, which produced a report with recommendations to facilitate full scale national disaster response. Historically, Japan has faced many earthquakes, and the nation has always lived both with and against natural disasters. "The reality of the disaster is catastrophic. However, the history of Japan shows time and again that the country has been devastated by disasters only to bounce back with formidable power of reconstruction, displaying a very strong degree of resilience. Such clout of rebirth ought to happen again. That is what people in stricken areas would want. The spirit underlying the report is that the entire people of Japan, rallying around the Government, are going to support just such resilient power," stated Dr. Makoto Iokibe, Chairman of the Reconstruction Design Council (Ministry of Foreign Affairs, Japan 2011). In October 2011, we observed signs of Japan's economic recovery. The disaster response and commitment of the nation once again demonstrated that the Human dimension defines the sustainable future of any nation and the planet.

For each risk factor discussed in part 2, a representative measure is assigned, based on publicly available statistical information. The following measures were selected for each of the risks indicated: (1) GDP Rank—HDI Rank (DEHD)[5]; (2) education index (EI) (see footnote 5); (3) life expectancy index (LI) (see footnote 5); (4) access to improved water supply (AWS)[6]; (5) HIV infected population % (see footnote 6); (6) carbon intensity (CI); (7) corruption perception (CPI),[7] political stability and absence of violence (PSAV) indices[8]; (8) disaster risk index (DRI), covering number of deaths from natural disasters; (9) doing business indicators (EDB)[9] and (10) Environmental Performance Index (EPI). For each country, a global risk resilience index[10] is built using a formula:

$$RR = \sqrt[p]{\sum_{i=1}^{k} Xi^{p}} \qquad (1)$$

Here k is a number of risks, Xi is a respective quantitative index, normalized to the scale [0; 1], and p represents the sensitivity of the global risk resilience to

[5] UN Human Development Report (2009).

[6] World Bank (2008).

[7] Transparency International (2009).

[8] Kaufmann et al. (2007).

[9] Doing Business Report (2009).

[10] All underlying risk indicators are normalized to the scale [0; 1], where 0 indicates the weakest performance, and 1 the strongest performance.

relative impact of each of the separate risk components. Generally, $p = 3$ gives enough sensitivity and provides good practical results [3]. For convenience, RR is normalized to the scale [0; 1].

$$RR^0 = \frac{RR - RR_{min}}{RR_{max} - RR_{min}} \quad (2)$$

Here RR^0 represents a "distance" of each country to the totality of selected threats, which determines the risk resilience of the country. The shorter the distance, the lower the risk resilience for an indicated country. The countries are ranked from the shortest distance to the longest and clustered into groups with similar properties.[11]

The example of South East Asia and Oceania shows that resilience to global risks is higher for countries with a higher level of social component of sustainable development. High human development provides for a higher quality of education—a necessary condition for innovation—and opens new opportunities to combat risks.

The existing information is supplemented with an innovation index for the following countries: Singapore, South Korea, Hong Kong SAR, Malaysia, China, Thailand, India, Philippines, Sri Lanka, Indonesia, Vietnam, Mongolia, and Nepal (BCG 2009). The example showed that Human Development Index is also higher for countries with higher innovation potential. At the same time, the better the level of education, the higher the innovation potential. In cases where the level of education is low, the necessary conditions and a base for innovation are lacking. Earlier detailed research at a country (province) level shows that workers' tertiary education is significantly and positively related to provincial innovative activities in China (Chi and Qian 2009).

Innovative and well-balanced countries such as Singapore, South Korea, Hong Kong SAR, and Malaysia provided the highest level of human development in the region; all established specifically targeted programs for stimulating innovation. Figure 3 illustrates this approach.

5 Practical Applications

Using the derived indices of sustainable development and harmonization, all countries are clustered[12] into groups based on the level of sustainable development, its balance, and distance from the set of threats. The grouping is provided in Appendix 1. The countries with the highest level of sustainable development are Singapore, South Korea and Brunei Darussalam. These countries have the highest levels of human development, economy, and innovation. Singapore and Brunei have the most advanced social dimension.

[11] Due to underlying data limitation, Environmental Performance Index was not available for Hong Kong SAR, Samoa, Tonga, Vanuatu, Timor-Leste.

[12] Clustering is performed using the Ward agglomerative method.

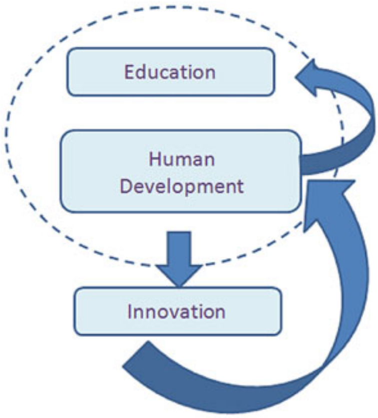


Fig. 3 Development chain: innovation stimulates human development

The next cluster includes Malaysia, Sri Lanka, Philippines and Maldives. Philippines, Maldives and Malaysia are balanced in social, economic, and ecological aspects. Timor-Leste and Mongolia are ranked lowest on the level of sustainable development index; Myanmar and India are among the lowest performers, with the lowest values in all three dimensions compared to other countries in the group.

Principal Components Analysis (PCA) applied to the risk results illustrates how the model input can be used to make investment decisions (Appendix 2). The first three components describe approximately 69 % of variance. The components can be interpreted the following way, based on their structure. The first principal component (F1) "Socio-Economic State with Accent on Education". The second principal component (F2) implies that imbalance between economic and social development may lead to a decrease in life expectancy. The suggested name: "Disbalance between Economic and Human Development and its Impact on Life Quality". The third principal component (F3) has the highest loadings on HIV, environmental performance, and natural disaster risk. The suggested interpretation: "HIV Epidemics, Environment Deterioration, and Natural Disasters".

The indicated interpretation suggests that the main direction for investments may be in social domain, specifically education, and in balancing economic activity with human development. The second suggested direction will cover healthcare, ecology, and natural disasters. Each country can be located on the axis of principal components, and compared to the other countries. Figure 4 also shows the class each country belongs to, from the highest risk, to the lowest risk.

Timor-Leste, Myanmar, Bangladesh, Nepal, Cambodia, and Papua New Guinea are among the countries which may require significant investment in the social sector. Nepal, Sri Lanka, Indonesia, and Philippines are the least politically stable and are perceived as the most corrupt in the region. The illustration suggests that India, Solomon Islands and Laos may benefit from infrastructure investments. Tonga, Mongolia, and China are among the countries with the highest disbalance between economic and social components, and at the same time, the highest carbon intensities. Timor-Leste and Myanmar are excluded from the display as

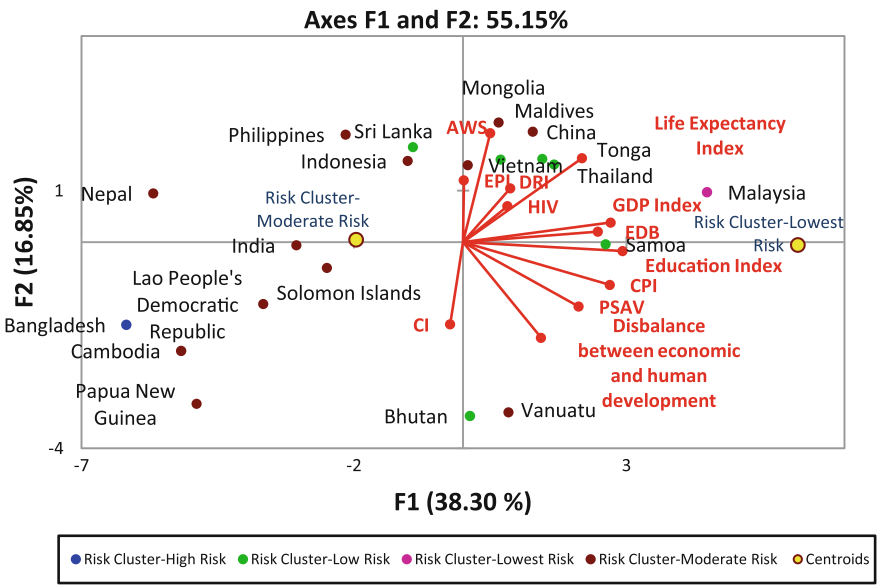


Fig. 4 South-East Asia and Oceania countries and the main risks factors

they show the lowest resilience to global risks, and may be very close to the state of crisis. Hong Kong, South Korea, and Singapore are excluded as they significantly over-perform the rest of the countries.

Figure 4, derived by the author with the help of Principal Components Analysis, shows the countries under consideration and their resilience to the main risk factors.

Similarly, the Principal Components Analysis applied to sustainable development dimensions shows that the main principal component is significantly correlated with social and economic factors. The second component is closely related to the ecological component.

Each quadrant shows countries with different properties. The upper part of the right quadrant and the right part of F1 axis is the most prominent in relation to sustainable development nations: Hong Kong, South Korea, Singapore, and Brunei. The lower left quadrant shows the countries with the lowest values of social, economic, and ecological indices. The analysis, similar to the risk results, implies that India, Myanmar, Papua, and Timor-Leste may require more investments in infrastructure, social sectors, and environmental technologies.

Correlations among main key risks and Principal Component Analysis details are provided in Appendices 2–4 (Fig. 4). Figure 5 illustrates clusters of countries of South East Asia and Oceania in relation to Economic, Ecological and Social components.

Interpretation of sustainable development indices shall always be considered in conjunction with the risks. In cases where both the level of development and risks are high, as in Brunei, Philippines, and Fiji, efforts may be directed to address natural disasters and social sectors.

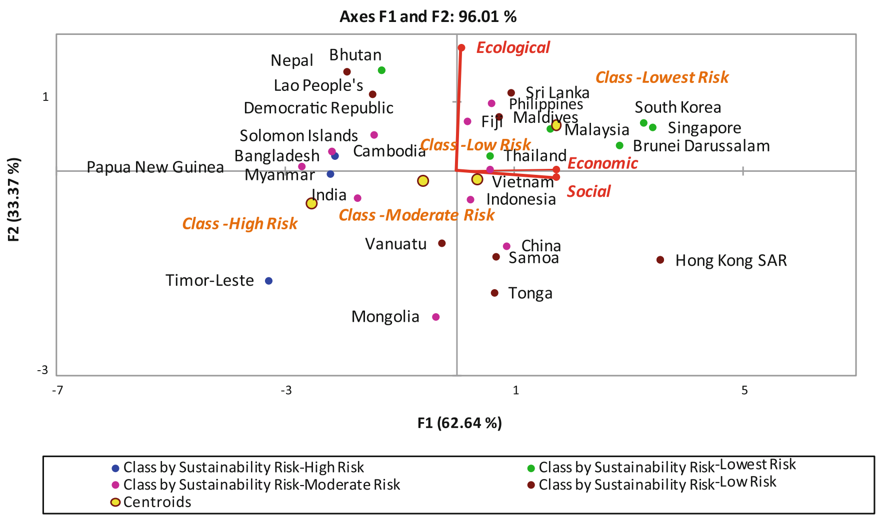


Fig. 5 Clusters of South East Asia and Oceania countries

6 Conclusion

This chapter illustrates a potential implementation of sustainability models for information-analytic support and input to the investment decision-making process, and presents research based on the results of such a model for 27 countries in South East Asia and Oceania. It shows that sustainable development, its harmonization, and resilience to global risks are higher for the countries with a better developed social sector, which articulates the social factor as a defining component of sustainable development. An interpretation of derived results is provided from the perspective of sustainability and from the perspective of sustainability risk using principal component analysis. The conclusions of the two models should be reviewed jointly. Based on this analysis, among the countries which may benefit from aid in social sectors are Timor-Leste, Bangladesh, Nepal, Papua New Guinea. Furthermore, we separated sets of countries with high human development that are prone to the risks of natural disasters, such as Brunei Darussalam.

Mongolia and China stand out in average human development, but are strong underperformers in the ecological dimension. A balanced combination of the two directions of investments: social and environmental, possibly focusing on the innovative technologies of clean fuels utilization and efficient fuel consumption, is implied by the model.

There is much to be done in the direction of sustainability modeling. The set of indicators can be expanded and extended to more countries, and particular sets of innovative financial instruments or special types of technical assistance can be analyzed for the set of indicated countries with the main focus on a social dimension.

To achieve visible progress towards a sustainable, informed, and futuristic decision-making process, the issue of developing common data and reporting standards needs to be addressed: the extension and refining of models for sustainable investment decision making, their evolution to a new level, and their meaningful utilization, are only possible if there are accurate and high-quality data available for their fine-tuning, testing and calibration.

Acknowledgments The views expressed herein are those of the individual contributor and do not necessarily reflect the views of IFC or its management.

Appendix 1: Grouping of Countries by Sustainable Development Index, Harmonization and Resilience to Global Risks

Country	Harmonization (G)	Sustainable development index (SD)	Resilience to global risks	Class by G and SD	Class by sustainability
Bangladesh	0.83	1.09	0.23	Low	High Risk
Bhutan	0.78	1.29	0.82	Upper moderate	Low risk
Brunei Darussalam	0.93	1.50	0.84	Very high	Lowest risk
Cambodia	0.88	1.12	0.36	Low	Moderate risk
China	0.81	1.19	0.36	Upper moderate	Moderate risk
Fiji	0.94	1.34	0.47	High	Moderate risk
Hong Kong SAR	0.72	1.36	0.51	Upper moderate	Low risk
India	0.97	1.07	0.41	Low moderate	Moderate risk
Indonesia	0.92	1.22	0.34	Low moderate	Moderate risk
Lao People's Democratic Republic	0.82	1.25	0.54	Upper moderate	Moderate risk
Malaysia	0.99	1.43	0.78	High	Lowest risk
Maldives	0.95	1.38	0.59	High	Low risk
Mongolia	0.68	1.01	0.36	Very low	Moderate risk
Myanmar	0.92	1.08	0.13	Low moderate	High risk

(continued)

(continued)

Country	Harmonization (G)	Sustainable development index (SD)	Resilience to global risks	Class by G and SD	Class by sustainability
Nepal	0.73	1.23	0.56	Upper moderate	Moderate risk
Papua New Guinea	0.87	1.05	0.38	Low	Moderate risk
Philippines	0.92	1.39	0.45	High	Moderate risk
Samoa	0.79	1.16	0.63	Upper moderate	Low risk
Singapore	0.94	1.57	1.00	Very high	Lowest risk
Solomon Islands	0.87	1.18	0.39	Low	Moderate risk
South Korea	0.95	1.56	0.69	Very high	Lowest risk
Sri Lanka	0.91	1.42	0.56	High	Low risk
Thailand	0.95	1.32	0.71	High	Low risk
Timor-Leste	0.81	0.82	0.00	Lowest	High risk
Tonga	0.71	1.10	0.53	Very low	Low risk
Vanuatu	0.84	1.10	0.52	Low	Moderate risk
Vietnam	0.91	1.27	0.46	Low moderate	Moderate risk

Appendix 2: Principal Component Analysis. Application to Risks

	F1	F2	F3	F4	F5
Eigenvalue	5	2	2	1	1
Variability (%)	38	17	13	10	6
Cumulative (%)	38	55	69	78	85

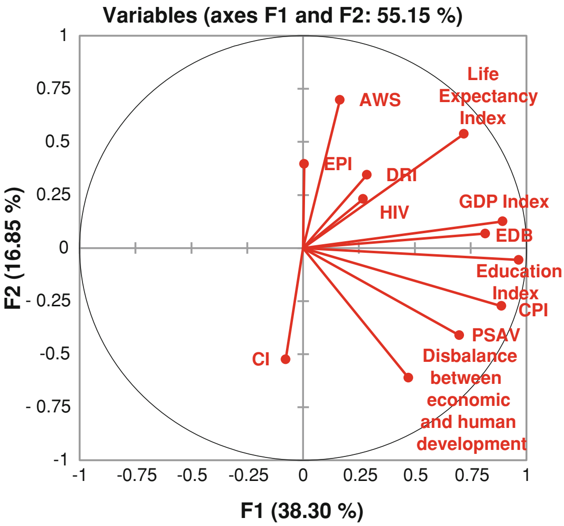
Factor loadings

	F1	F2	F3
GDP index	0.89	0.13	0.24
Life expectancy index	0.72	0.54	0.10
Education index	0.96	−0.06	−0.17
EPI	0.00	0.40	−0.55
Disbalance between economic and human development	0.47	−0.61	−0.46
AWS	0.16	0.70	0.06

(continued)

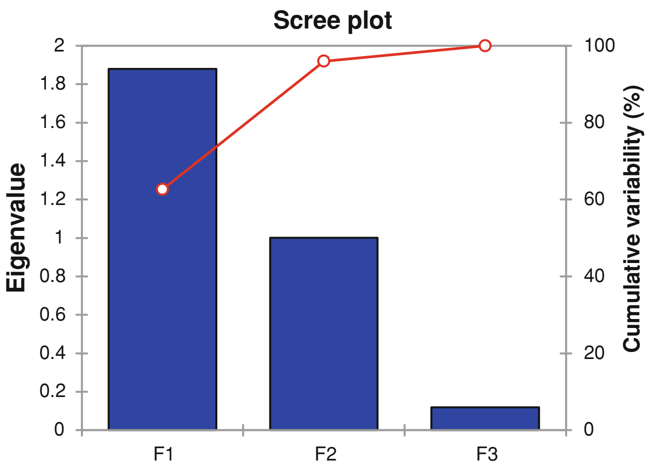
(continued)

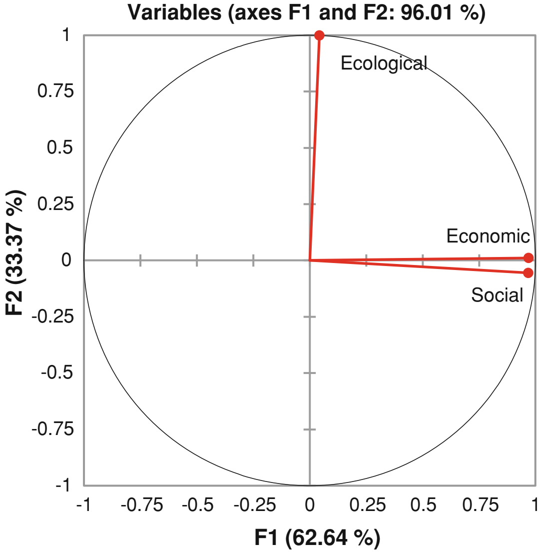
Factor loadings			
	F1	F2	F3
HIV	0.27	0.23	0.77
EDB	0.82	0.07	0.01
CI	−0.08	−0.52	0.28
CPI	0.89	−0.27	−0.02
PSAV	0.70	−0.41	0.11
DRI	0.29	0.34	−0.56



Appendix 3: Principal Component Analysis. Application to Sustainable Development and Harmonization Indices

Eigenvectors			Factor loadings		
	F1	F2	F3	F1	F2	F3
Economic	0.71	0.01	0.71	0.97	0.01	0.24
Social	0.71	−0.06	−0.71	0.97	−0.06	−0.24
Ecological	0.03	1.00	−0.05	0.04	1.00	−0.02


Scree plot
Eigenvalue
Cumulative variability (%)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
100
80
60
40
20
0
F1
F2
F3


Variables (axes F1 and F2: 96.01 %)
Ecological
Economic
Social
F2 (33.37 %)
F1 (62.64 %)
1
0.75
0.5
0.25
0
-0.25
-0.5
-0.75
-1
-1
-0.75
-0.5
-0.25
0
0.25
0.5
0.75
1

Appendix 4: Correlations Among Key Risk Variables

Variables	GDP index	Life expectancy index	Education index	EPI	Disbalance between economic and human development	AWS	HIV	EDB	CI	CPI	PSAV	DRI
GDP index	1.00	0.72	0.86	0.04	0.24	0.22	0.44	0.69	0.03	0.77	0.47	0.10
Life expectancy I\index	0.72	1.00	0.65	0.03	−0.13	0.33	0.29	0.65	−0.30	0.41	0.31	0.42
Education index	0.86	0.65	1.00	0.11	0.60	0.13	0.14	0.73	−0.01	0.87	0.61	0.34
EPI	0.04	0.03	0.11	1.00	0.14	0.35	−0.14	−0.10	−0.14	−0.03	−0.28	0.20
Disbalance between economic and human development	0.24	−0.13	0.60	0.14	1.00	−0.19	−0.26	0.23	0.09	0.60	0.54	0.02
AWS	0.22	0.33	0.13	0.35	−0.19	1.00	0.24	0.14	−0.20	0.00	−0.14	0.08
HIV	0.44	0.29	0.14	−0.14	−0.26	0.24	1.00	0.03	0.03	0.20	0.24	−0.22
EDB	0.69	0.65	0.73	−0.10	0.23	0.14	0.03	1.00	−0.15	0.68	0.49	0.15
CI	0.03	−0.30	−0.01	−0.14	0.09	−0.20	0.03	−0.15	1.00	0.09	0.04	−0.26
CPI	0.77	0.41	0.87	−0.03	0.60	0.00	0.20	0.68	0.09	1.00	0.63	0.15
PSAV	0.47	0.31	0.61	−0.28	0.54	−0.14	0.24	0.49	0.04	0.63	1.00	0.10
DRI	0.10	0.42	0.34	0.20	0.02	0.08	−0.22	0.15	−0.26	0.15	0.10	1.00

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