



2018

Wang Dao  
Sustainability Index

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王道永續指標

中華文化永續發展基金會

Foundation of Chinese Culture for Sustainable Development





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# Preface

Since the 1990s the United Nations having confronted the challenges of the century; issued its most important strategic recommendation, the report of Sustainable Development proposed by the Brundtland Commission. Over the past three decades, considerable progress has been made with respect to two of the three pillars of Sustainable Development—Economic Development and Environmental Protection—and concrete results are evident, especially in some advanced countries. However, regarding the third pillar—Social Justice—to date, there has not been much to speak of; and in some aspects, not only has there been little progress, the situation has actually regressed. Ultimately, some scholars suggest adding a fourth pillar or circle to the conceptual foundation and framework—namely, Culture.

We regard culture as in fact the very foundation of Sustainable Development across the board. If so, we cannot help but ask: “What contribution might Chinese culture, with its roots extending back as far as 5,000 years, make? The historian Arnold J. Toynbee once opined that solutions to the predicament of post-20<sup>th</sup> century human civilization might well be sought from Confucianism and Mahayana Buddhism. This appears to provide an encouraging hint regarding the question of how Chinese culture might contribute to the sustainable development of mankind.

Global development over the past century manifested prodigious change. The more technology advanced, the more industries developed; the more supply and demand gained complexity, the more benefits ended up being concentrated in the hands of a few. The stronger feasted on the weaker, conflicts became more intense, and wars became more frequent. In international politics, the two world wars of the twentieth century both caused a post-war redistribution of international political power. A balance of terror formed between the two major hegemonic camps, and weaker, smaller countries either aligned themselves with one or the other hegemon for protection or sought survival through non-alignment. The biggest problems left to mankind in the twentieth century are a chaotic world order, a widening gap between rich and poor, energy resource depletion, ecological imbalance, and global warming.

Promotion of a new Renaissance is necessary if Chinese culture is to make a major contribution to the world today. This does not mean trying to restore an ancient order or go back to how things were the past; but rather, aligning the essence of traditional culture with 21<sup>st</sup>-century thought and culture to propose a new universal value for the world. To this end, we seek to proffer the Wang Dao precept advocated by Mencius to represent what traditional Chinese culture corresponds to Sustainable Development. From the Wang Dao precept we have extracted five elements: Benevolent Governance, Counterhegemony, People-orientedness, Sustainability and Empathy. We then take these five elements as starting points and the UN's Sustainable Development Goals as benchmarks in an attempt to develop the Wang Dao Sustainability Index. Injecting Chinese culture into the process of measuring sustainable development affords 21<sup>st</sup>-century nations and economies a new way of thinking as they proceed toward sustainable development.

This is indeed the time for Chinese culture to make a greater contribution to the culture of all humanity. As global problems become more and more serious, solutions based on Western thoughts have gradually hit limits. "Looking to the East for answers" has become a new world trend. In the words of Mencius: "At the present time, in a country of ten thousand chariots, let benevolent governance be practiced and the people will be delighted, as if being relieved from hanging by their heels. Even with only half the effort of the ancients, double the achievement is sure to result. Only at this time can such be the case" (modified Legge translation).

We look forward via academic, educational, cultural and promotional channels to the Wang Dao Sustainability Index becoming an alternative system of reference coordinates for the global community (especially developing countries) in the effort to achieve sustainable development; and to this serving as a contribution by Chinese culture of one small step forward for 21<sup>st</sup>-century human civilization.



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## Abstract

Utilizing the Wang Dao precept of traditional Chinese culture as its core premise, this work establishes a set of sustainable development indicators to rank the relative performance of countries around the world in the process of sustainable development. It seeks to inject into the chaotic tangle of international political, economic, social and environmental development the Confucian precept of *Wang Dao* to contribute to sustainable development of the entire world. Accordingly, this set of indicators is designated the Wang Dao Sustainability Index (WDSI).

The WDSI includes 64 component indices ascribed to 3 domains and 11 dimensions. Based on this system of indices, this work collects relevant data and initially undertakes a systematic measurement and evaluation of the sustainable development status of 74 representative countries/economies.

This work has six key findings: First, the sustainable development values of the Wang Dao precept are universal. The developmental models of the best performing Nordic countries fit well with the Wang Dao sustainability precept despite taking a different approach. Second, East Asian countries ranked that in the middle (but with enormous differences) can further pursue sustainable development based on the cornerstone of regaining traditional cultural confidence. Third, on the road of sustainable development, the United States and People's Republic of China are "fragile superpowers." Fourth, the small and medium-sized "post-communist countries" on the European continent that have extricated themselves from the Communist system of several decades have achieved palpable results with relatively stable pursuit of sustainable development by carefully choosing the advantages of both capitalism and socialism. Fifth, a number of countries ranked as relatively backward among the sustainable development indicators under the Wang Dao precept, perhaps due to a "geopolitical curse" or "resource curse." And sixth, the WDSI and the United Nations Sustainable Development Goals Index (SDGI) differ considerably in their rankings of least-developed and developing countries/economies; yet, the overall correlation of the two is as high as 0.9. This indicates that, although the WDSI and SDGI are based on different thinking and different methodologies, the index structure determined by the Wang Dao precept indeed highly reflects the meaning of the UN's 17 Sustainable Development Goals. Thus, the WDSI has the potential to become a new set of indices with universal value that offers an alternative set of coordinates by which the entire world (especially developing countries) can pursue sustainable development.





# 1. BACKGROUND CONTEXT

## ***1.1 What happened to modern civilization?***

From the industrial revolution in the mid-18th century to the 21st century of today, the global population has grown from 1 billion to 7.5 billion. Human activity has gradually become the most important factor affecting the earth and changing it. Consequently, the Earth is said by some to be gradually moving from the current Holocene geological epoch toward an "Anthropocene" epoch.

The nineteenth century marked the peak of imperialism in terms of the number of colonies established around the world. Taking the United Kingdom, for example, the global footprint of the British Empire covered one-fifth of the land area of the Earth, with

colonies in Asia, Africa, Europe, North, Central and South America, Oceania, the Pacific Ocean, the Atlantic Ocean, and even the Antarctic. Colonies held by 13 other powers such as France, Germany, Italy, the Netherlands, Portugal, Spain, Denmark, Belgium, the United States, Russia, and Japan were also distributed all over the world. These colonies provided enormous resources and markets for the colonizers, which greatly promoted their development and progress, while those who were colonized became enslaved and their resources plundered, with tens of millions of indigenous inhabitants slaughtered and tyrannized. This situation even continued into the 20th century. When these colonies demanded independence, this was often considered by the major powers in terms of their own interests. No attention was paid to local historical and cultural

origins, and national boundaries were roughly drawn, resulting in long-term incompatibilities and conflicts among local ethnic groups. Some newly independent countries descended into endless struggle and turmoil, causing endless troubles for generation after generation of innocent people who have never experienced a day of peace.

The 20th century was an era in which technological civilization achieved rapid prosperity and made prodigious progress. Due to virtually day-by-day advances in information and internet technology, humanity enjoyed an unprecedented array of new products, new services and hitherto unimaginable new life experiences; it was an era full of innovation and amazement. Unfortunately, it was also a century full of military clashes and conflict, many parts of the world were ravaged by endless wars, and during these wars, the lives and property of the people were plundered, and survivors were hard-pressed to escape the misfortune of displacement.

Starting with the invasion of China by the Eight-nation Allied Forces as a result of the Boxer Rebellion in 1900, the 20<sup>th</sup> century saw more than 100 major or minor wars (discounting civil wars), and of them, more than 20 were large-scale international conflicts. Naturally, this includes the two World Wars that resulted in the deaths of tens of millions of people.

In addition to military conflicts, in later years the world has experienced an endless stream of various sorts of international trade wars, financial wars, hacker wars, and terrorist attacks. The global population explosion and the consuming-oriented economy, as augmented by the technological

development, have brought negative impacts to global environment and human society. Global crises, such as environmental damage, a widening gap between rich and poor, and global climate change, became increasingly severe. By the end of the 20th century, human beings of the time generally felt anxious and troubled to an unprecedented degree.

In the 21st century, the global world order was heading toward multipolarity. Many contradictions arising from the process of economic globalization have become increasingly glaring and antagonistic. Democracy has begun to show signs of chaotic decline. Many scholars feel that the major cornerstones of modern Western governance, such as capitalism, free individualism and realism are step-by-step becoming mired in bottlenecks. Add to this the rise of the non-Western world, all this implies that the global order is about to enter a lengthy process of disintegration and restructuring. In another aspect, the rapid development of new technologies such as artificial intelligence and genetic engineering will have an overwhelming impact on the most basic human values. The challenges facing humanity in the second 21st century will bring unprecedented crisis (Harari, 2017). Is it not manifest that the philosophy of governance derived from traditional Western values is insufficient to cope with the increasingly severe global crises spinning out of control, let alone the sustainable development of mankind?

## ***1.2 Can human civilization continue to develop?***

The United Nations approved the Brundtland Report on sustainable development, titled

Our Common Future, in 1987. It broaches the idea that "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." (Our Common Future ep. 41) From this developed the three overlapping pillars of Economic, Environmental and Social development (Chart 1) with the aim of establishing socially equitable and environmentally sustainable economic growth. The Earth Charter, released by the United Nations in 1992, also expresses the expectation that mankind can build an equitable, sustainable and peaceful global society in the 21st century.



**Chart 1 : Concept of Sustainable Development**

Over the past 30 years since the United Nations proposed "sustainable development," the Agenda 21 action plan of 1992, the Rio Declaration on Environment and Development of 1992 and the UNFCCC Paris Agreement of 2015 have all emerged. In 2016, the United Nations officially established its 17 Sustainable Development Goals (SDGs), after which the promotion of sustainable development is gradually

becoming more specific. These 17 goals will be used over the next 15 years (through 2030) to assess the effectiveness of how each country has promoted sustainable development (Table 1).

These efforts have indeed spurred many countries to make some achievements in balancing economic development and environmental protection. However, regrettably, performance at the level of social justice has been stagnant or even showing signs of regression. Some scholars believe that the three-pillar (or circle) structure of sustainable development is imperfect. The UNESCO (United Nations Educational, Scientific and Cultural Organization) adopted the *Universal Declaration on Cultural Diversity* in 2001. Many scholars emphasized causal relationships between intangible cultural assets and sustainable development, whereupon it was proposed that cultural diversity be incorporated into the framework of sustainable development. Furthermore, with a view toward the effectiveness of actual operation, there has been talk from time to time of including governance systems in the sustainable development framework as well.

Amidst such arguments, the vision of the British historian Arnold Joseph Toynbee (1889-1975) during the previous century is particularly worth pondering. Toynbee felt that different cultures should not engage in hostile competition, but should share their experiences because they have a common humanity. He stated that answers to many of the difficulties of humanity in the 20th century might be sought from classical cultures such as Confucianism (Toynbee, 1972; Widgery, 2016).

**Table 1 : Sustainable Development Goals ( SDGs )**

Goal	Target	Goal	Target
	<b>NO POVERTY</b> Economic growth must be inclusive to provide sustainable jobs and promote equality.		<b>REDUCED INEQUALITIES</b> To reduce inequalities, policies should be universal in principle, paying attention to the needs of disadvantaged and marginalized populations.
	<b>ZERO HUNGER</b> The food and agriculture sector offers key solutions for development, and is central for hunger and poverty eradication.		<b>SUSTAINABLE CITIES AND COMMUNITIES</b> There needs to be a future in which cities provide opportunities for all, with access to basic services, energy, housing, transportation and more.
	<b>GOOD HEALTH AND WELL-BEING</b> Ensuring healthy lives and promoting the well-being for all at all ages is essential to sustainable development.		<b>RESPONSIBLE PRODUCTION AND CONSUMPTION</b> Responsible Production and Consumption.
	<b>QUALITY EDUCATION</b> Obtaining a quality education is the foundation to improving people's lives and sustainable development.		<b>CLIMATE ACTION</b> Climate change is a global challenge that affects everyone, everywhere.
	<b>GENDER EQUALITY</b> not only a fundamental human right, but a necessary foundation for a peaceful, prosperous and sustainable world.		<b>LIFE BELOW WATER</b> Careful management of this essential global resource is a key feature of a sustainable future.
	<b>CLEAN WATER AND SANITATION</b> Clean, accessible water for all is an essential part of the world we want to live in.		<b>LIFE ON LAND</b> Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss
	<b>AFFORDABLE AND CLEAN ENERGY</b> Energy is central to nearly every major challenge and opportunity.		<b>PEACE, JUSTICE AND STRONG INSTITUTIONS</b> Access to justice for all, and building effective, accountable institutions at all levels.
	<b>DECENT WORK AND ECONOMIC GROWTH</b> Sustainable economic growth will require societies to create the conditions that allow people to have quality jobs.		<b>PARTNERSHIPS FOR THE GOALS</b> Revitalize the global partnership for sustainable development
	<b>INDUSTRY, INNOVATION AND INFRASTRUCTURE</b> Investments in infrastructure are crucial to achieving sustainable development.		



### **1.3 Wang Dao as the core philosophy**

Confucianism is broad-reaching and profound. For this work, we borrow the precept of Wang Dao<sup>1</sup>, first stated in the text of Mencius<sup>2</sup>, to serve as the core philosophy to face the issues of sustainable development. Confucianism advocates practicing moral rectitude in a pattern radiating out from near to far, that is, from oneself outward, and provides clear practical guidelines for individual moral responsibility: The order is from cultivating one's moral character to putting one's family affairs in order before governing one's country and finally pacifying the "Tian Xia" (the world, under heaven). The ideology is of "Tian Xia" as the highest interest community, and the individual as holding the ultimate concern and responsibility for the world.

In a modern language, the Wang Dao precept advocates discarding hegemonic methods for dealing with contradictions between men, countries and between mankind and Nature in favor of dialogue to enhance understanding, and use of empathetic negotiation to resolve disputes. From a more positive aspect, the Wang Dao precept essentially involves "pursuing self survival while contributing to the survival of others," which is one sort of concept of the "common good. "Placed beside the basic concept of sustainable development that, "

sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs,"it is fascinating to see how the two echo each other and interact."

As the world faces the challenge of sustainable development in the 21st century, the Wang Dao precept may represent the crystallization of wisdom from philosophers of more than two millennia ago, yet it still requires re- interpretation in modern thought. Accordingly, we extract the following five elements from the Confucian discourse to form the essence of the Wang Dao precept, as they closely pertain to modern sustainable development:

- **Benevolent governance**
- **Counterhegemony**
- **People-orientedness**
- **Sustainability**
- **Empathy**

Mencius said, "...[Those] with a mind that could not bear to see the sufferings of others...likewise had governance that could not countenance such." (Mencius, Gongsun Chou I). He also said: "The way of Yao and Shun [legendary Chinese sage kings from well before the time of Mencius] showed lacking benevolent governance could not secure the tranquil order of the kingdom."

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<sup>1</sup>Literally in Classical Chinese, the "Kingly Way"; but when contextualized for the era of Mencius and his relationship with contemporary heads of state, might be more meaningfully rendered as "Governance befitting a genuine sovereign."

<sup>2</sup>An itinerant Chinese philosopher and sage of the 3<sup>rd</sup> century B.C. who served as an official and scholar in the State of Qi during the Warring States-period of Chinese history. He was considered the most famous and influential Confucianism scholar after Confucius himself.

(Mencius, Lilou I). What was termed "benevolent governance" meant counterhegemonic practices between nations. Thus, he spoke of difference of rulers ... "who, using force, make pretence of benevolence" and those "who, using virtue, practice benevolence..." (Mencius, Gong Sun Chou I). Thus, he even felt that "skillful warriors", "alliance makers" and "over-developers" should be condemned. He is quoted as saying: "...those who are skillful warriors should suffer the highest punishment, after them, those who unite some princes in league against others; and following them, those who take in grassy commons, imposing the cultivation of the ground on the people..." (Mencius, Li Lou I). He regards the behavior of such people as hegemonic.

Regarding the internal affairs of a nation, Mencius advocates regarding its people as the most fundamental. He said to King Liang Huiwang: "Let mulberry trees be planted about the homesteads with their five *mu*<sup>3</sup>, and persons of fifty years may be clothed with silk. In keeping fowls, pigs, dogs, and swine, let not their times of breeding be neglected, so persons of seventy years may eat meat. Let there not be taken away the time that is proper for the cultivation of the farm with its hundred *mu*, so that the family of several mouths that is supported by it shall not suffer from hunger. Let careful attention be paid to education in schools, inculcating in it especially the filial and fraternal duties, so that the grey-haired will not be seen upon the roads carrying burdens on their backs or on their heads. It never has been that the ruler of a State, where such results were

seen—persons of seventy wearing silk and eating meat, and the black-haired people suffering neither from hunger nor cold—did not meet the standard of being Wang Dao [i.e., a genuine sovereign]." (Mencius: Liang Hui wang I<sup>4</sup>) It can be seen from this passage that Mencius begins his talk of the Wang Dao precept from the people's life and livelihood, so that throughout their lifetimes the people may be neither hungry nor cold, and be adequately clothed and fed. This is the very embodiment of a "people-oriented" priority.

Regarding agricultural, forestry, and fishery resources, Mencius advocated: "As long as the time to sow and reap is not violated, the grain shall be more than can be eaten. If close nets are not allowed to enter the pools and ponds, the fishes and turtles will be more than can be consumed. If the axes are brought into the mountain forests only at the proper time, the wood will be more than can be used. When the grain and fish and turtles are more than can be eaten, and there is more wood than can be used, the people can nourish the living and mourn the dead, without any regret. That they can nourish the living and mourn their dead without regret is the first step of Wang Dao." (Mencius: LiangHui Wang I<sup>5</sup>). This is the finest interpretation by Mencius regarding the sustainable cycle of life.

Finally, we must speak of cultural empathy. The Confucian concept of empathy is embodied in the phrase "Do not do to others what you would not wish done to you" (Confucius, Analects: Wei Ling Gong). In this passage, Confucius is saying put oneself in the position of others, dealing with them

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<sup>3</sup>Equivalent to 614.4 sq m.

<sup>4</sup>Translation modified from the original passage in James Legge.

<sup>5</sup>Translation also modified from the original passage in James Legge.

heart to heart and regarding them in terms of one's own Golden Rule. In the high-handed culture of the West, one often sees behavior reflecting the attitude of "doing to others what you would like to have." Comparing these two, the former is clearly an expression of the Wang Dao precept, while the latter is a hegemonic one. As the two are reflected in different issues, the former is inclusive while the latter is exclusionary. The result of being exclusionary in its most mild form is manifested in cultural discrimination, while when it is severe it eventually leads to a clash of civilizations. As for incidents commonly seen in the international community of "doing to others what you would not want done to you," this represents an even more extreme version of hegemony, and those of such a mindset must be held condemnable.

Looking at sustainable development from these elements of the Wang Dao precept, we stress that every country in the international community has a responsibility to maintain peace and benefit the fellow nations. A nation in the process of becoming a great nation may be strong but not necessarily hegemonic. During domestic economic and social development, it should emphasize inclusive development, heeding reasonable distribution among all levels of society while pursuing economic growth, so that the disadvantaged can share in the common prosperity and share responsibility. In terms of social status, resources must be allocated in accord with the principle of justice. Regarding the environment, stress should be on harmony between heaven, earth and people, treating Nature and the Environment with humility, and tempering the exploitation of resources as necessary to ensure the development of future generations.

#### ***1.4 The Wang Dao Sustainability Index***

In order to make the above-mentioned arguments workable, we need to establish a new system of indices that, due to the participation of the Wang Dao precept, differs from the various indices currently used in the West. We hope that during the process in the 21st century by which each nation pursues sustainable development this can provide an alternative set of reference coordinates.

The significance of an index is that it systematically adopts relatively objective data and quantitatively evaluates certain specific social, economic, and political aspects, so that ordinary people, scholars, and especially decision makers, during the process of governance or management can utilize it as a reference for developmental objectives, strategy, or tactical choice-making.

Most existing indices are based on assessment systems designed in accord with Western thinking. More or less, they lack two important considerations: **1) countries with different levels of development have different priorities for sustainable development; and 2) they ignore variations in values between different cultures.**

We feel that when assessing the sustainable development performance of each state, if there were a new system, its index framework, in addition to the usual Western values, could have the wisdom of Confucianism added in the form of the Wang Dao precept, perhaps some of the aforementioned shortcomings could be compensated for.

Thus, we set out to establish the Wang Dao Sustainability Index (WDSI).



# Wang Dao Sustainability Index

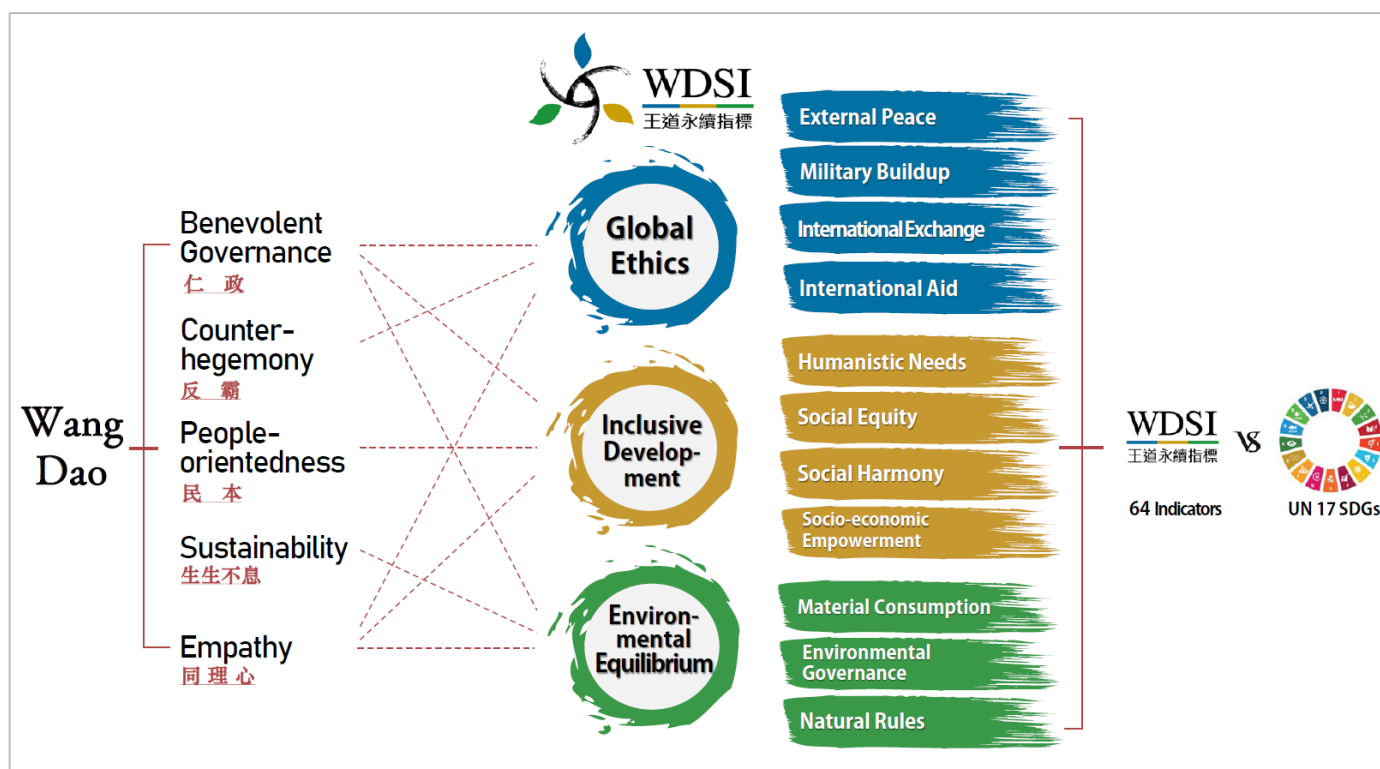
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The WDSI is a measure of sustainable development in countries/economies. It is a sustainable development index based on the Wang Dao precept from Chinese culture. Starting from the aforementioned five core elements of the Wang Dao precept, and with sustainable development as the objective, we construct three principal domains: Global Ethics (GE), Inclusive Development (ID) and Environmental Equilibrium (EE).

Among the five elements of the Wang Dao precept, Benevolent Governance (derived from Confucian ideas of benevolence) and Empathy (derived from the Confucian formulation of the Golden Rule, and its elucidations of forbearance and human-heartedness) constitute core ideas. When

these two are combined with the idea of Counter-hegemony, they form the Global Ethics domain. When they are combined with the element of People-orientedness, they form the Inclusive Development domain; and when they are combined with the idea of Sustainability, they form the Environmental Equilibrium domain.

These three domains contain 11 sustainable development-related dimensions that array in groups of 4, 4, and 3, respectively. Then, from these 11 dimensions are derived the 64 indices of the WDSI, which correspond with the UN's 17 SDGs (Chart 2).



**Chart 2: Relationship between the Wang Dao precept and WDSI**

This framework of indices has four features, which are described briefly as follows:

1) The WDSI is a sustainability index established from the perspective of cultural thought; and the core connotation of this cultural thought is the Confucian Wang Dao precept.

2) We stress Global Ethics and rank it foremost among the three major domains. We believe that in the new century, mankind should no longer use war as a means of resolving disputes. Therefore, in the first domain of the indicator system, world peace comes first. Those who incite or participate in wars, causing casualties, losses and refugees, are negatively scored. Those who possess arms beyond their requirements for national defense, sell arms and develop

nuclear weapons are not encouraged, and those who maintain peace and enhance international exchanges and aid are affirmed. Use of hegemonic means backed by force in the handling of international affairs should gradually be phased out in the new century before the global ethics of the Wang Dao precept can be sustainable.

3) Almost all countries from the 20th century onward have adopted a market economy, technological innovation and a priority on growth as the criteria for development, ignoring the fact that social equality should proceed in pace with the times. Leaving out this part leads to a burgeoning gap between rich and poor (both people and countries), making overall development difficult to sustain. Two of the three pillars (circles) in the United Nations' sustainable development

report (Economic and Social) address this issue. We have designed Inclusive Development as the second domain of the WDSI set of indices to include both economic growth and social equity for consideration together. This is the third feature of the WDSI system.

4) Another aspect of the UN sustainable development report is environmental protection. Customarily cited environmental indices such as the Environmental Performance Index (EPI) focus on the completeness of the regulations and the efficiency of policy implementation, yet pay scant heed to the consumption and waste of the Earth's limited resources. We believe that this lack of concern will make our environment and ecology difficult to sustain. Therefore, the fourth feature of the WDSI is Environmental Equilibrium. This domain not only stresses environmental governance, it also pays attention to the consumption of natural resources and the maintenance of natural laws.

The R&D team is based on cross-disciplinary expertise. Various major global databases were the original sources of information for establishing the WDSI. At this stage, 74 countries and economies with representative status (in terms of region, development level, etc.), relatively complete data, and a population of one million or more have been selected to establish indices for individual countries or economies. All raw data was in principle converted to a range of 1 to 11 points (with 10 equidistant intervals). A higher score indicates that the indexed performance comparatively conforms to sustainability. Where data values were missing, half of the median value (3 points) was substituted into the calculation, then the

scores of the individual indices were averaged across all 64 indices and then ranked. Since all missing values were given 3 points, if countries/economies from their own self-ranking consider 3 points to be too low, we hope they can provide credible data to compensate for the shortcomings of the international database; the WDSI will make adjustment as it needs. In the future, after procedures to expand data verification, reference critical feedback and correct and revise, we will continue to increase the number of participating evaluations, and hope eventually to expand it to all countries/economies around the world.

### ***1.5 Relationship between the Wang Dao precept and sustainability***

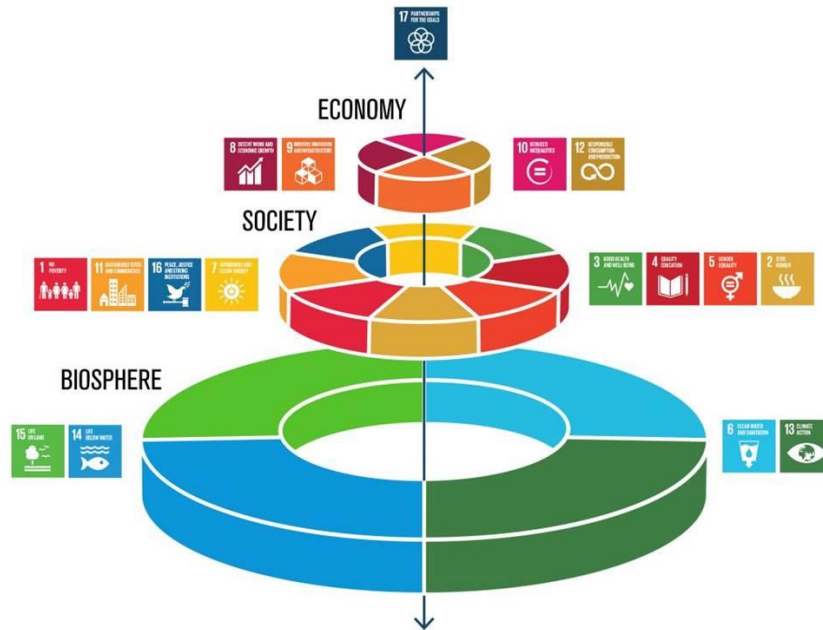
The United Nations Conference on Sustainable Development was held during June 2012 in Rio, Brazil. The two central themes for Rio+20, as it was also known, were a green economy in the context of sustainable development and the institutional framework for sustainable development. The event identified seven issues critical to ensuring sustainability in today's world: "jobs, energy, cities, food, water, oceans and disaster response," which include economic, social and environmental dimensions. Rio+20 adopted the Sustainable Development Goals (SDGs) as a common development agenda for each country up to the year 2030.

These SDGs comprise 17 goals and 169 targets, and serve as concrete yardsticks for checking the performance of sustainable development efforts by countries through 2030 (Table 1). The United Nations emphasizes that these goals are holistic and

indivisible. The 17 SDGs are classified according to their economic, social and environmental relevance (Chart 3).
























The 11 WDSI dimensions and 17 UN SDGs belong to two independently developed

systems; yet, we find that the two correlate closely. Each WDSI dimension is connected with 1 to 7 SDGs. Conversely, each SDG corresponds to 1 to 5 WDSI dimensions. The corresponding relationship is listed in Table 2.







**Chart 3: Classification of 17 SDGs according to economic social and environmental relevance**

**Table 2: Correlation between the WDSI and SDGs**

Domain	Dimension	Target	Relative SDGs
GE	External Peace	<ul style="list-style-type: none"> <li>Reduce the use of force and violence, reduce casualties caused by war, support international peace, and avoid human crises caused by military conflicts.</li> </ul>	
	Military Buildup	<ul style="list-style-type: none"> <li>Avoid military expansion, reduce weapons output, limit nuclear weapon reserves, promote social peace and equity, and implement a sustainable society.</li> </ul>	
	International Exchange	<ul style="list-style-type: none"> <li>Promote partnerships between countries and opportunities for sustainable development through international exchanges.</li> </ul>	
	International Aid	<ul style="list-style-type: none"> <li>Provide assistances to the poor beyond one's national borders and accept urgent refugees from abroad to help alleviate poverty everywhere.</li> <li>Invest in private charity and eliminate overseas hunger.</li> </ul>	  
ID	Humanistic Needs	<ul style="list-style-type: none"> <li>Ensure the health of babies and pregnant women and upgrade medical resources.</li> <li>Provide basic education for all.</li> <li>Ensure sustainable communities and cities that provide stable, reliable and affordable electric power services</li> <li>Promote a comprehensive and positive employment environment.</li> <li>Ensure that everyone has access to safe and affordable housing.</li> <li>Guarantee individual freedom of justice, residence, religion, assembly, speech, and sexual orientation.</li> </ul>	     
	Social Equity	<ul style="list-style-type: none"> <li>Eliminate poverty and reduce social inequity caused by the gap between rich and poor.</li> <li>Achieve sexual equality and ensure an equal access to education and employment for all sexes.</li> <li>Create high quality education and eliminate education inequality.</li> <li>Promote equal economic development opportunities.</li> </ul>	    
	Social Harmony	<ul style="list-style-type: none"> <li>Create a sustainable society of harmony, integrity and security.</li> <li>Promote a society of peace, tolerance and social safeguards.</li> </ul>	 
	Socio-Economic Empowerment	<ul style="list-style-type: none"> <li>Encourage countries to achieve stable growth and maintain economic growth, a reasonable debt ratio, and affordable prices.</li> <li>Encourage governments to redistribute resources, especially in the areas of education, health and social welfare.</li> </ul>	   



		<ul style="list-style-type: none"> <li>Promote quality education and provide learning opportunities for all.</li> <li>Through technological upgrading and innovation—such as finance and the Internet—foster transformation into highly collaborative economic productivity.</li> </ul>	
<b>EE</b>	<b>Material Consumption</b>	<ul style="list-style-type: none"> <li>Encourage sustainable consumption and production models, especially regarding food, energy and natural resources.</li> <li>Take climate actions to encourage reduction of carbon emissions and counter climate change.</li> <li>Protect forests and encourage planting of trees.</li> <li>Regulate and terminate excessive or illegal fishing in order to restore stocks of marine species as soon as possible.</li> </ul>	
	<b>Environmental Governance</b>	<ul style="list-style-type: none"> <li>Ensure access to water and sanitary facilities.</li> <li>Implement effective sewage treatment to avoid various kinds of marine pollution.</li> <li>Ensure terrestrial and inland freshwater ecosystems and habitats to sustain biodiversity.</li> <li>Ensure that all people have access to safe, clean and affordable energy; and boost energy efficiency.</li> <li>Make cities and homes inclusive, flexible and sustainable; and provide complete and efficient waste management systems.</li> </ul>	
	<b>Natural Rules</b>	<ul style="list-style-type: none"> <li>Effectively manage nitrogen fertilizer pollution generated by agriculture to facilitate conservation and sustainability of the seas and oceans, as well as marine resources, in order to ensure sustainable development.</li> <li>Control and regulate pollutant levels based on standards stipulated in international Conventions to maintain the sustainability of ecosystems and curb further loss of biodiversity.</li> <li>Encourage governments to establish a peaceful and inclusive society, as well as reduce production of nuclear waste and nuclear radiation to realize sustainable development.</li> </ul>	

## 2 WDSI 2018 RESULTS

### 2.1 Scores and rankings

The WDSI scores and rankings for each country are shown in Chart 4 and Table 3. The overall results are presented in Chart 5 in a world map, and the distribution of 74 countries in each continent can be seen in Chart 6.

Table 3 shows that the WDSI ranks highest the performance of Northern European countries such as Sweden, Norway and Denmark. Switzerland, Finland, the Netherlands, Germany, Austria and other European countries that favor socialist democracy, a welfare state and environmental protection are also among the best. The international exchange, economic growth, social distribution and environmental management models of these countries as specifically practiced relatively match the ideals of sustainable development based on the Wang Dao precept.

Looking at Table 3, if we compare countries that historically have been colonizers with those that have been colonized, we immediately discover that the colonizing countries mostly rank high in the WDSI, while the colonized (despite having gained independence and statehood) fall into the middle and lower ranks. Among the top 20 ranking countries, as many as 11 were colonizers. From the perspective of the Wang Dao precept, these nations that have become wealthy and strong due to colonization ought to receive some negative scores, but there are difficulties in practical operation that not easily overcome. For example, in historical terms, how far back in

time can the wrongdoings of these countries be traced? How should such negative scores of history be reflected year after year in future index reports? Scholars participating in the seminar expressed different opinions, but ultimately most felt that, after all, the WDSI is a sustainable index that encourages looking to the future, so they agreed to regard the year 2000 as a watershed and colonization as a historical event. We condemn it as historical fact that does not conform to the Wang Dao precept; nevertheless, there is no suitable way to incorporate this in the scoring.

The performance of East Asian countries long steeped in Confucian culture clustered in the middle; however, with large gaps between their respective rankings. The highest among them was Japan at 16th; the Republic of Korea, 28th; and Taiwan, 36th; while the People's Republic of China scored 40th, relatively low among East Asian countries. This may reflect the fact that as a superpower with a rapid increase in overall national strength, it has found difficulties on the road to sustainable development. A Southeast Asian nation long influenced by Confucian culture, Vietnam, ranked relatively low at 55. As far as the overall international evaluation is concerned, although these countries historically have been profoundly influenced by Confucian culture, their development in modern times to varying degrees has already shifted toward the development path of Western powers. The gaps in sustainable development performance generally reflect the enormous changes effected in response to the

industrial revolution, their constitutional reform and modernization modeled after Western priorities, and reflects efforts during the previous century to follow a course of Westernization. Among these, the Japan's constitutional reform and modernization was the earliest. It followed in the footsteps of Western colonialism, repeatedly started wars to seize colonial territory, and became an East Asian hegemony that most thoroughly exemplified Westernization. However, this century, when Western civilization finds itself in a difficult position, it is imperative for East Asian countries to change their tune and develop a new sustainable development path that suits their own cultural characteristics.

It is worth noting that the post-communist countries in Central and Eastern Europe scored high and the middle in terms of performance, with rather close spacing between rankings. These include 10th-ranked Slovenia, 20th-ranked Czech Republic, 21st-ranked Estonia, 22nd-ranked Croatia, 23rd-ranked Lithuania, 26th-ranked Slovakia, 27th-ranked Latvia, 31st-ranked Hungary, 37th-ranked Romania and 43rd-ranked Bulgaria. During the process of European integration, these small- and medium-sized countries that have transformed themselves from communism have shown great potential and ambition when facing what path to take toward national sustainable development.

Most of the countries at the bottom of the WDSI rankings are situated in the Middle East, Africa and South Asia. They include India and Pakistan, which have experienced long-standing military conflicts and political disputes; Cambodia, which has long been closed to the outside world and backward, as well as Lebanon, Saudi Arabia, Egypt, Jordan,

Iran, Nigeria, and Venezuela major crude oil producers subject to the "Resource Curse." In other words, those with low WDSI rankings are not exclusively resource-poor countries, they also include countries possessing resources that have incited unending conflict and disputes, making it difficult to practice sustainable development. Their low rankings belie misfortune and helplessness resulting from past hegemonic manipulation.

Finally, we compare the performance of the three major powers of the world, the United States, the People's Republic of China and Russia. Their WDSI rankings are 35, 40 and 58, respectively. From a macroscopic point of view, this indicates that the United States is hegemonic in international affairs and relatively in accord with the Wang Dao precept in domestic affairs, while China is the reverse. The two are fairly closed in WDSI rankings. Russia both internationally and domestically fails to measure up to the Wang Dao precept, so ranks behind the other two. The WDSI rankings of these three powers are very interesting in how they reflect the relationship between the Wang Dao precept and sustainable development.

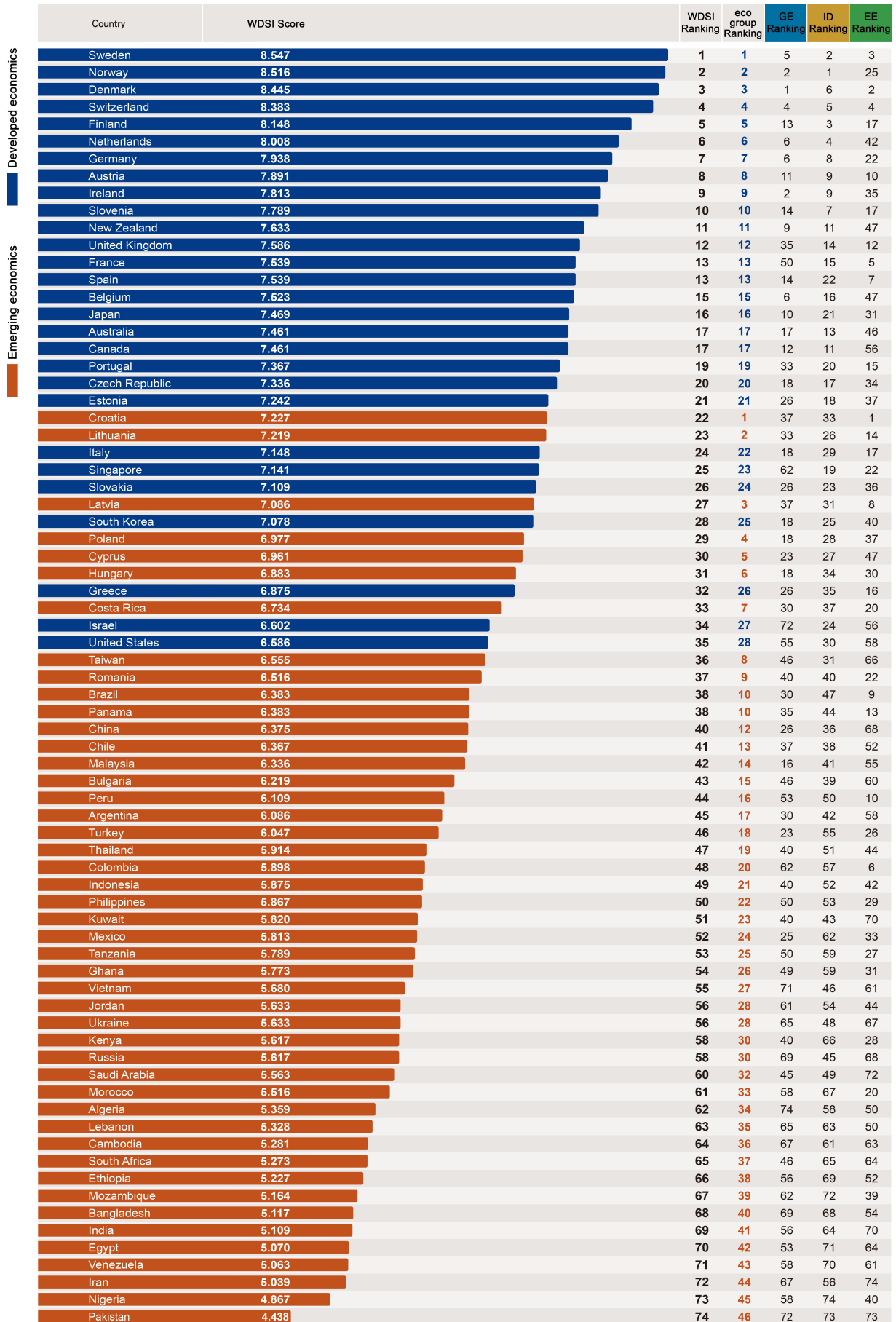
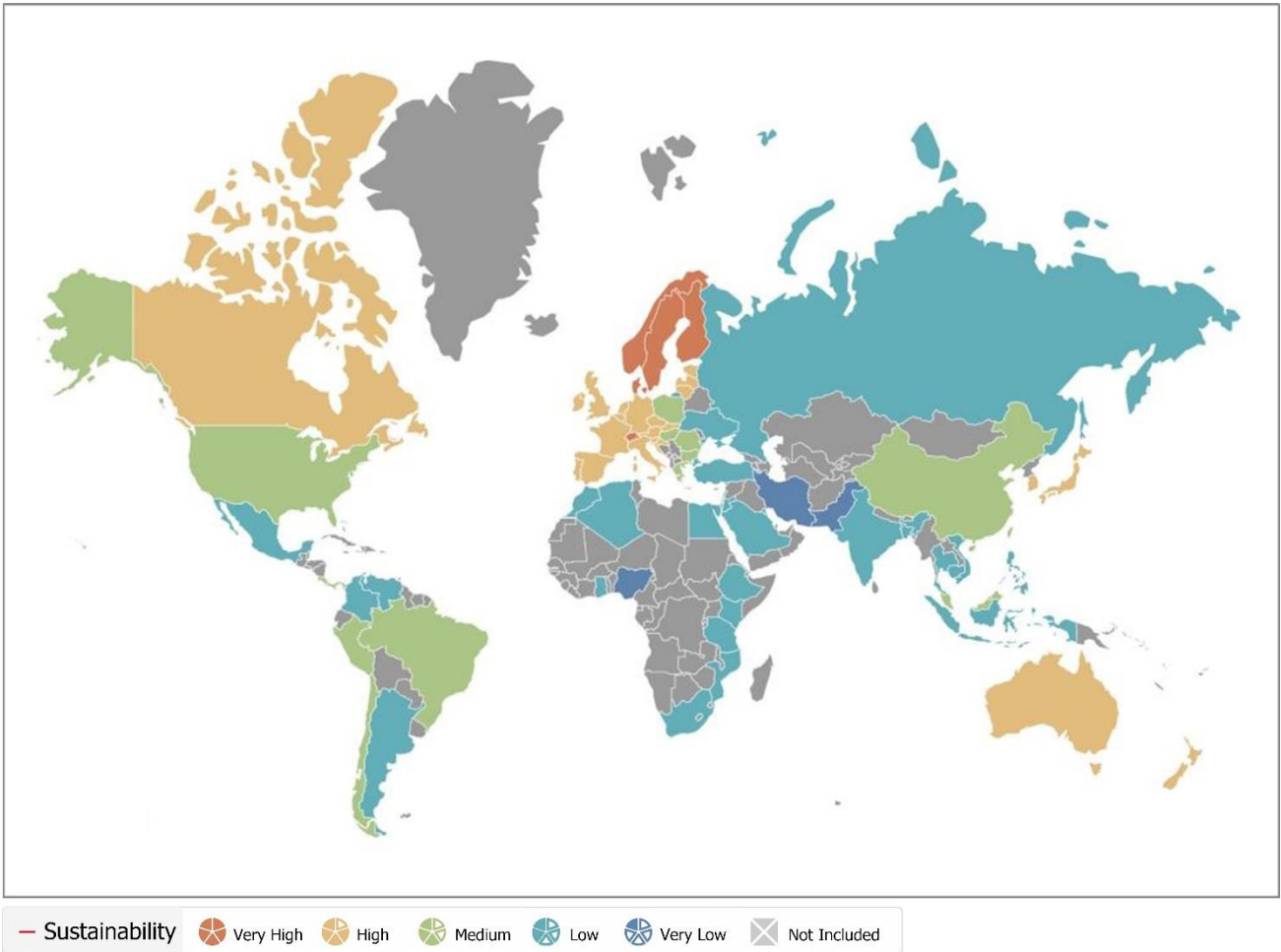


Chart 4: WDSI scores of 74 Countries/Economies

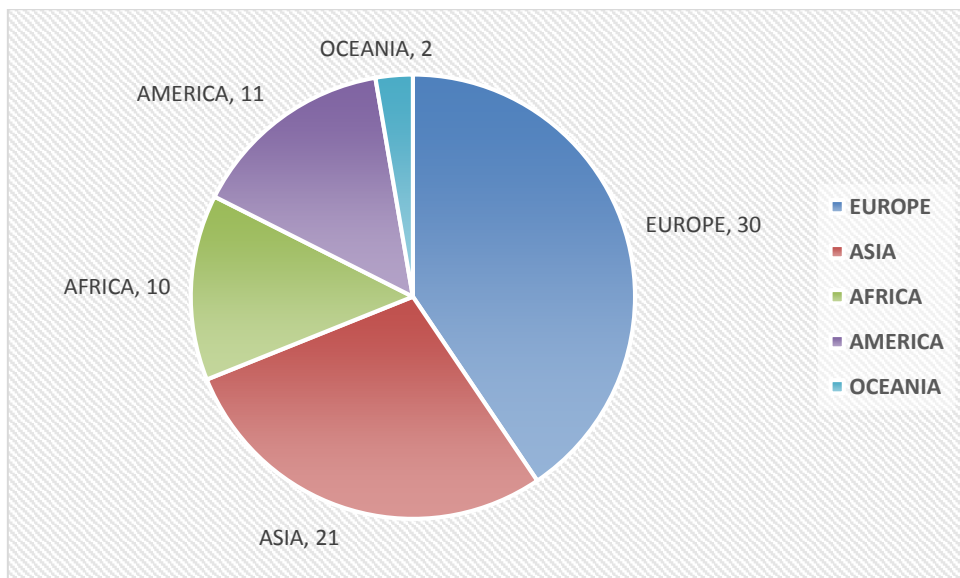
**Table 3: Total List of WDSI Rankings and Scores**

Ranking	Country	Scores	Ranking	Country	Scores	Ranking	Country	Scores
1	Sweden	8.547	26	Slovakia	7.109	51	Kuwait	5.820
2	Norway	8.516	27	Latvia	7.086	52	Mexico	5.813
3	Denmark	8.445	28	South Korea	7.078	53	Tanzania	5.789
4	Switzerland	8.383	29	Poland	6.977	54	Ghana	5.773
5	Finland	8.148	30	Cyprus	6.961	55	Vietnam	5.680
6	Netherlands	8.008	31	Hungary	6.883	56	Jordan	5.633
7	Germany	7.938	32	Greece	6.875	56	Ukraine	5.633
8	Austria	7.891	33	Costa Rica	6.734	58	Kenya	5.617
9	Slovenia	7.813	34	Israel	6.602	58	Russia	5.617
10	New Zealand	7.789	35	United States	6.586	60	Saudi Arabia	5.563
11	Ireland	7.633	36	Taiwan	6.555	61	Morocco	5.516
12	United Kingdom	7.586	37	Romania	6.516	62	Algeria	5.359
13	France	7.539	38	Brazil	6.383	63	Lebanon	5.328
13	Spain	7.539	38	Panama	6.383	64	Cambodia	5.281
15	Belgium	7.523	40	China	6.375	65	South Africa	5.273
16	Japan	7.469	41	Chile	6.367	66	Ethiopia	5.227
17	Australia	7.461	42	Malaysia	6.336	67	Mozambique	5.164
17	Canada	7.461	43	Bulgaria	6.219	68	Bangladesh	5.117
19	Portugal	7.367	44	Peru	6.109	69	India	5.109
20	Czech Republic	7.336	45	Argentina	6.086	70	Egypt	5.070
21	Estonia	7.242	46	Turkey	6.047	71	Venezuela	5.063
22	Croatia	7.227	47	Thailand	5.914	72	Iran	5.039
23	Lithuania	7.219	48	Colombia	5.898	73	Nigeria	4.867
24	Italy	7.148	49	Indonesia	5.875	74	Pakistan	4.438
25	Singapore	7.141	50	Philippines	5.867			

**Green:** European    **Yellow:** Oceania    **Orange:** Asian    **Blue:** American    **Grey:** African



**Chart 5: World map of WDSI Rankings**



**Chart 6: Continental Distribution of the 74 Countries/Economies**

## **2.2 *Developed/emerging economies***

We separately examine the sustainability performance of these 74 countries/economies according to their different levels of development—that is, developed and emerging economies<sup>6</sup>. From the entire set of rankings, those of developed countries and emerging economies are shown in Table 4. It is worth noting that when grouped according to economic development, the United States in fact ranked last among the 28 developed economies; while among the 46 emerging economies, Eastern Europe's Croatia performed best.

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<sup>6</sup> The economic development level classification used in this work is based on classifications in the World Economic Forum 2016 annual report

### **2.3 Comparison with the UN's SDGI**

Following publication by the United Nations of its 17 SDGs, the Sustainable Development Solutions Network (SDSN) in 2016 published the Sustainable Development Goals Index (SDG Index or SDGI) to measure effective practice of sustainable development by each country (see Table 5). To further test the validity of the WDSI, we analyzed correlation between the WDSI and SDGI 2016, 2017 and 2018 (SDG Index & Dashboards).

After the UN first released the SDG Index & Dashboard in 2016, coverage was expanded to 157 countries the following year for publication of the 2017 and 2018 SDGI reports. The rankings of the 74 countries covered by the WDSI are rearranged according and listed in Table 5.

We chose the three superpowers of the United States, China, and Russia to compare the SDGI and WDSI rankings (see Table 5-1). The UN's SDGI rankings for each country for the three-year period (2016 to 2018) were: United States (22, 35, 30), Russia (40, 44, 46), People's Republic of China (52, 49, 41), while the WDSI rankings of the three were the United States (35), Russia (58), and PRC (40).

The foregoing comparison shows that when the SDGI was released in early 2016, its rankings of the three countries differed greatly from the WDSI rankings (by 13 ranks for the US, 18 ranks for Russia, and 12 ranks change in SDGI rankings for these three countries over the period from 2016 to 2018 for the PRC). However, examining the

we find that they are gradually getting closer to the WDSI rankings (differing only by 5 ranks for the US, 12 for Russia, and 1 for the PRC in 2018).



**Table 4: WDSI Scores and Rankings of Developed and Emerging Economies**

Developed Economies				Emerging Economies					
	Scores	Rankings in group	Rankings, total		Scores	Rankings in group	Rankings, total		
<b>Sweden</b>	SWE	8.55	<b>1</b>	<b>1</b>	<b>Croatia</b>	HRV	7.23	<b>1</b>	<b>22</b>
<b>Norway</b>	NOR	8.52	<b>2</b>	<b>2</b>	<b>Lithuania</b>	LTU	7.22	<b>2</b>	<b>23</b>
<b>Denmark</b>	DNK	8.45	<b>3</b>	<b>3</b>	<b>Latvia</b>	LVA	7.09	<b>3</b>	<b>27</b>
<b>Switzerland</b>	CHE	8.38	<b>4</b>	<b>4</b>	<b>Poland</b>	POL	6.98	<b>4</b>	<b>29</b>
<b>Finland</b>	FIN	8.15	<b>5</b>	<b>5</b>	<b>Cyprus</b>	CYP	6.96	<b>5</b>	<b>30</b>
<b>Netherlands</b>	NLD	8.01	<b>6</b>	<b>6</b>	<b>Hungary</b>	HUN	6.88	<b>6</b>	<b>31</b>
<b>Germany</b>	DEU	7.94	<b>7</b>	<b>7</b>	<b>Costa Rica</b>	CRI	6.73	<b>7</b>	<b>33</b>
<b>Austria</b>	AUT	7.89	<b>8</b>	<b>8</b>	<b>Taiwan</b>	TWN	6.55	<b>8</b>	<b>36</b>
<b>Ireland</b>	IRL	7.81	<b>9</b>	<b>9</b>	<b>Romania</b>	ROU	6.52	<b>9</b>	<b>37</b>
<b>Slovenia</b>	SVN	7.79	<b>10</b>	<b>10</b>	<b>Panama</b>	PAN	6.38	<b>10</b>	<b>38</b>
<b>New Zealand</b>	NZL	7.63	<b>11</b>	<b>11</b>	<b>Brazil</b>	BRA	6.38	<b>10</b>	<b>38</b>
<b>United Kingdom</b>	GBR	7.59	<b>12</b>	<b>12</b>	<b>China</b>	CHN	6.38	<b>12</b>	<b>40</b>
<b>France</b>	FRA	7.54	<b>13</b>	<b>13</b>	<b>Chile</b>	CHL	6.37	<b>13</b>	<b>41</b>
<b>Spain</b>	ESP	7.54	<b>13</b>	<b>13</b>	<b>Malaysia</b>	MYS	6.34	<b>14</b>	<b>42</b>
<b>Belgium</b>	BEL	7.52	<b>15</b>	<b>15</b>	<b>Bulgaria</b>	BGR	6.22	<b>15</b>	<b>43</b>
<b>Japan</b>	JPN	7.47	<b>16</b>	<b>16</b>	<b>Peru</b>	PER	6.11	<b>16</b>	<b>44</b>
<b>Australia</b>	AUS	7.46	<b>17</b>	<b>17</b>	<b>Argentina</b>	ARG	6.09	<b>17</b>	<b>45</b>
<b>Canada</b>	CAN	7.46	<b>17</b>	<b>17</b>	<b>Turkey</b>	TUR	6.05	<b>18</b>	<b>46</b>
<b>Portugal</b>	PRT	7.37	<b>19</b>	<b>19</b>	<b>Thailand</b>	THA	5.91	<b>19</b>	<b>47</b>
<b>Czech Republic</b>	CZE	7.34	<b>20</b>	<b>20</b>	<b>Colombia</b>	COL	5.90	<b>20</b>	<b>48</b>
<b>Estonia</b>	EST	7.24	<b>21</b>	<b>21</b>	<b>Indonesia</b>	IDN	5.88	<b>21</b>	<b>49</b>
<b>Italy</b>	ITA	7.15	<b>22</b>	<b>24</b>	<b>Philippines</b>	PHL	5.87	<b>22</b>	<b>50</b>
<b>Singapore</b>	SGP	7.14	<b>23</b>	<b>25</b>	<b>Kuwait</b>	KWT	5.82	<b>23</b>	<b>51</b>
<b>Slovakia</b>	SVK	7.11	<b>24</b>	<b>26</b>	<b>Mexico</b>	MEX	5.81	<b>24</b>	<b>52</b>
<b>South Korea</b>	KOR	7.08	<b>25</b>	<b>28</b>	<b>Mexico</b>	MEX	5.81	<b>24</b>	<b>52</b>
<b>Greece</b>	GRC	6.88	<b>26</b>	<b>32</b>	<b>Tanzania</b>	TZA	5.79	<b>25</b>	<b>53</b>
<b>Israel</b>	ISR	6.60	<b>27</b>	<b>34</b>	<b>Ghana</b>	GHA	5.77	<b>26</b>	<b>54</b>
<b>United States</b>	USA	6.59	<b>28</b>	<b>35</b>	<b>Vietnam</b>	VNM	5.68	<b>27</b>	<b>55</b>
					<b>Ukraine</b>	UKR	5.63	<b>28</b>	<b>56</b>
					<b>Jordan</b>	JOR	5.63	<b>29</b>	<b>56</b>
					<b>Russia</b>	RUS	5.62	<b>30</b>	<b>58</b>
					<b>Kenya</b>	KEN	5.62	<b>30</b>	<b>58</b>
					<b>Saudi Arabia</b>	SAU	5.56	<b>32</b>	<b>60</b>
					<b>Morocco</b>	MAR	5.52	<b>33</b>	<b>61</b>
					<b>Algeria</b>	DZA	5.36	<b>34</b>	<b>62</b>
					<b>Lebanon</b>	LBN	5.33	<b>35</b>	<b>63</b>
					<b>Cambodia</b>	KHM	5.28	<b>36</b>	<b>64</b>
					<b>South Africa</b>	ZAF	5.27	<b>37</b>	<b>65</b>
					<b>Ethiopia</b>	ETH	5.23	<b>38</b>	<b>66</b>
					<b>Mozambique</b>	MOZ	5.16	<b>39</b>	<b>67</b>
					<b>Bangladesh</b>	BGD	5.12	<b>40</b>	<b>68</b>
					<b>India</b>	IND	5.11	<b>41</b>	<b>69</b>
					<b>Egypt</b>	EGY	5.07	<b>42</b>	<b>70</b>
					<b>Venezuela</b>	VEN	5.06	<b>43</b>	<b>71</b>
					<b>Iran</b>	IRN	5.04	<b>44</b>	<b>72</b>
					<b>Nigeria</b>	NGA	4.87	<b>45</b>	<b>73</b>
					<b>Pakistan</b>	PAK	4.44	<b>46</b>	<b>74</b>

**Table 5: WDSI Ranking vs. SDGI Rankings**

Countries/Economies					Countries/Economies					
	<i>WDSI</i>	<i>SDGI2016</i>	<i>SDGI2017</i>	<i>SDGI2018</i>		<i>WDSI</i>	<i>SDGI2016</i>	<i>SDGI2017</i>	<i>SDGI2018</i>	
	<i>2018</i>	<i>(adjusted)</i>	<i>(adjusted)</i>	<i>(adjusted)</i>		<i>2018</i>	<i>(adjusted)</i>	<i>(adjusted)</i>	<i>(adjusted)</i>	
Sweden	SWE	1	1	1	Brazil	BRA	38	42	41	43
Norway	NOR	2	3	4	Panama	PAN	38	51	59	55
Denmark	DNK	3	2	2	China	CHN	40	52	49	41
Switzerland	CHE	4	5	8	Chile	CHL	41	36	46	33
Finland	FIN	5	4	3	Malaysia	MYS	42	48	39	42
Netherlands	NLD	6	8	13	Bulgaria	BGR	43	29	33	29
Germany	DEU	7	6	6	Peru	PER	44	54	51	47
Austria	AUT	8	7	7	Argentina	ARG	45	37	34	40
Ireland	IRL	9	13	18	Turkey	TUR	46	41	47	51
Slovenia	SVN	10	15	9	Thailand	THA	47	46	40	45
New Zealand	NZL	11	20	19	Colombia	COL	48	59	56	49
United Kingdom	GBR	12	9	15	Indonesia	IDN	49	61	60	61
France	FRA	13	10	10	Philippines	PHL	50	60	58	54
Spain	ESP	13	27	22	Kuwait	KWT	51	63	63	63
Belgium	BEL	15	11	12	Mexico	MEX	52	44	42	53
Japan	JPN	16	16	11	Tanzania	TZA	53	71	62	69
Canada	CAN	17	18	23	Ghana	GHA	54	64	66	62
Australia	AUS	17	12	16	Vietnam	VNM	55	58	48	44
Portugal	PRT	19	30	25	Jordan	UKR	56	45	52	57
Czech Republic	CZE	20	14	5	Ukraine	JOR	56	39	32	34
Estonia	EST	21	19	14	Kenya	KEN	58	69	70	68
Croatia	HRV	22	32	21	Russia	RUS	58	40	44	46
Lithuania	LTU	23	28	30	Saudi Arabia	SAU	60	56	61	60
Italy	ITA	24	31	26	Morocco	MAR	61	49	50	50
Singapore	SGP	25	17	43	Algeria	DZA	62	55	45	48
Slovakia	SVK	26	23	20	Lebanon	LBN	63	57	54	56
Latvia	LVA	27	25	28	Cambodia	KHM	64	68	65	65
South Korea	KOR	28	24	27	South Africa	ZAF	65	62	64	64
Poland	POL	29	34	24	Ethiopia	ETH	66	70	71	71
Cyprus	CYP	30	38	36	Mozambique	MOZ	67	72	72	72
Hungary	HUN	31	21	17	Bangladesh	BGD	68	67	68	66
Greece	GRC	32	33	31	India	IND	69	65	67	67
Costa Rica	CRI	33	43	38	Egypt	EGY	70	50	55	59
Israel	ISR	34	26	37	Venezuela	VEN	71	47	53	58
United States	USA	35	22	35	Iran	IRN	72	53	57	52
Taiwan	TWN	36	N/A	N/A	Nigeria	NGA	73	73	73	73
Romania	ROU	37	35	29	Pakistan	PAK	74	66	69	70

Blue for developed economies; Red for emerging economies

**Table 5-1: US, Russia, and PRC WDSI and SDGI Rankings (2016, 2017, 2018)**

<i>Country Rankings</i>	<i>SDGI</i>	<i>SDGI</i>	<i>SDGI</i>	<i>WDSI</i>
	<i>2016</i>	<i>2017</i>	<i>2018</i>	
United States	22	35	30	35
China	52	49	41	40
Russia	40	44	46	58

Our R&D team further calculated the correlation coefficient between the scores and rankings of the WDSI and SDGI indices for the 74 countries/economies selected as the basis of the WDSI. The results are shown in Table 6. The correlation coefficient between the two scores is 0.88; if calculated by ranking, the correlation coefficient between the two is as high as 0.90.

The Wang Dao precept may predate sustainable development by more than two millennia; yet, when the two operating evaluation indices developed independently in accord with their core thinking are compared, they use different approach yet demonstrate close correlation. This affirms the modern global universality of the WDSI as an index system.

**Table 6: Correlation Coefficient between WDSI and SDGI 2018**

	<b>SDG Index Scores</b>	<b>SDG Index Rankings</b>
<b>WDSI Scores</b>	<b>0.90</b>	
<b>WDSI Rankings</b>		<b>0.93</b>

Chart 7 presents the distribution of the rankings of the two indices for each country. As shown in Chart 7, although the relative rankings of 73 countries<sup>7</sup> in WDSI and SDGI are highly correlated, individual economies still exhibit considerable scattering. This is comparatively obvious with such countries as Ukraine, Iran, Panama, Tanzania, Australia, Bulgaria, Venezuela, Russia, Algeria, Kuwait, and Indonesia, where the difference in WDSI and SDGI 2018 rankings for each is 12 or more. The difference in ranking for Ukraine is 22, that for Iran is 20.

Overall, this review reveals that among the 73 countries, the difference between WDSI and SDGI rankings for the highly ranked countries is relatively small; while it is much greater for those with lower rankings (the countries with WDSI/SDGI ranking differences greater than 12 are mostly in the lowest ranks except Australia). The reasons for this are complex and require further analysis and discussion.





between the six major players of the Nuclear Club (US, Great Britain, Germany, France, Russia and China) and Iran. Besides, since the second millennia, great powers have invaded or bombed some other countries without any authorization from the United Nations Security Council (UNSC), leading in tremendous losses of people's lives and assets in targeted countries and generating millions of refugees with no home to go back anymore. Some miserable countries were even bombed by great powers without any constraint on them; interests of their small and weak allies were often "sold out" with no effort in honoring international obligation and responsibility and maintaining international order. As a result, we are forced to live in a world of regions filled with disasters (Hurd, 2008).

The limit of Western approach to managing international relations well reveals in a series of revisionist backlashes against existing international organizations and rules. While this approach emphasizes power, cares about interests, and even creates institutions as rules of game to regulate the allocation of interests (Morgenthau, 1985; Mearsheimer 2001), it lacks a set of ethical values for the sustainable development in the globe as whole (Zhao, 2011)!

The idea of Tianxia, or all under Heaven as it literally means, and that of Wangdao on the basis of Benevolent Governance, provide a

referenced system of values rooted in the Chinese culture for the sustainable development of international relations. The idea of Wangdao, as the way we read ancient Confucian classics, consists of the following normative values for governing international relations: thinking people first, treating the world as a whole, opposing the increase and use of military forces, encouraging mutual exchanges of whatever in need, protecting the weak and assisting the poor, and finally searching for sustainability. These normative values of ethics do not appear old-fashioned after being repeatedly passed over from one generation to another in the past two thousand Chinese history. Instead, their relevance of to the twenty-first century international relations further adds transcendental meaning to these enduring values (Yan, 2011; Yan and Xu 2009).

More specifically, we derive four dimensions of Global Ethics from values organized around the idea of Wangdao, including External Peace, Military Buildup, International Exchange, and International Aid (as shown in Table 7). Within each dimension, we select three to four component indices and rate each country's practices on the basis of whether those practices are conducive or detrimental to the sustainable development of contemporary international relations.

**Table 7: Global Ethics Dimensions and Component Indices**

<b>External Peace</b>	<b>Military Buildup</b>	<b>International Exchange</b>	<b>International Aid</b>
<ul style="list-style-type: none"> <li>• Interstate War Participation</li> <li>• Interstate War Casualties</li> <li>• Contributions to International Peacekeeping Operations</li> </ul>	<ul style="list-style-type: none"> <li>• Military Expenditure</li> <li>• Armed Forces Personnel</li> <li>• Nuclear Warheads</li> <li>• Exports of Conventional Weapons</li> </ul>	<ul style="list-style-type: none"> <li>• Attractiveness of International Migration</li> <li>• Participation in International Trading Regime</li> <li>• Total Trade per capita</li> <li>• Freedom of International Migration</li> </ul>	<ul style="list-style-type: none"> <li>• International Developmental Aid</li> <li>• International Humanitarian Aid</li> <li>• International Refugee Admissions</li> <li>• International Charity Giving</li> </ul>

External Peace is a building block for the sustainable development of international relations. This idea is rooted in what Mencius said in Gong Sun Chou I, “no sovereign should take any unrighteous action or put any innocent person to death just in order to obtain the throne.” This suggests that, states should avoid waging war for territorial expansion or increasing their spheres of influence, because, morally speaking, any war fought through military means is not a righteous action as it risks the lives of innocent people. Building on this logic, our research team selected three concrete indexes to jointly evaluate how well our sampled countries promoted external peace as one value of global ethics for the sustainable development of international relations. More concretely, our three indices of External Peace include Interstate War Participation, Interstate War Casualties, and Contributions to International Peacekeeping Operations, with the higher standardized score to represent more fit with sustainable national practices for international relations

and vice versa. The internationally well-known quantitative datasets we take to construct the three indices include Militarized Interstate Disputes and Providing for Peacekeeping.

Overinvestment in Military Buildup is one crucial driver of the deterioration of international security environment. This insight first appeared two thousand years ago when Mencius commented on the distinction between Wang, or Moral Authority, and Ba or Coercive Hegemony, in Gong Sun Chou I. As a Chinese saying goes, “moral authority wins hearts of people by morality, and yet coercive authority coerce people into compliance by policing forces.” Spending on military buildup cannot win hearts of people; nor can it make a political system sustainable. Likewise, when Zi Gong asked about government in his conversation with Confucius, Confucius said, “The sufficiency of food, the sufficiency of military buildup, and the sufficient confidence of people are three requisites of a government.” Zi Gong further asked, “If it cannot be helped, and one of

these must be dispensed with, which of the three should be foregone first?" "The military buildup," said Confucius. The political wisdom of this particular story drawn from The Analects: Yan Yuan is that military buildup, though not completely important, is not a priority for national governance; hence, Confucius opposed the increase and use of military forces and supported demilitarization (to fulfill the other two main missions of his ideal government). Thus, our research team adopted four indices to evaluate each sampled country's level of sustainability for international relations in terms of Military Buildup, including Military Expenditure, Armed Forces Personnel, Nuclear Warheads, and Exports of Conventional Weapons. Raw data used to construct these indices were collected from the Military Expenditure Database of the Stockholm International Research Institute (SIPRI), World Development Indicators of World Bank, and Nuclear Weapons of Our World in Data.

International Exchange is also an important dimension when taking seriously the sustainability of the international political economy. A country in absence of international exchange would be too prone to adhere to its existing national regulations and policies rather than take innovative steps to allocate its factors of production efficiently by treating the globe market as a whole or to make the best use of its labor force, goods and services, as well as land across national borders. As a result, a lack of international exchange restricts opportunities for progress and prosperity in the current international economic environment and triggers economic conflicts of various kinds—such as trade or currency war—between countries. All these are detrimental to the sustainable development of international relations.

Accordingly, we construct four indices to objectively evaluate the level of international exchange in our country sample. These indices include Attractiveness of International Migration, Participation in the International Trading Regime, Total Trade per capita, and Freedom of International Migration. Raw data employed to construct these indices are drawn from the World Bank, World Trade Organization (WTO) and Henley and Partners Visa Restriction Index.

Finally, Global Ethics takes into account the importance of benevolent governance in the international community, such as protecting the weak and assisting the poor. As Mencius put in Gong Sun Chou I, "Those who rely on coercive rather than benevolent practices to govern exert coercive hegemony; this type of governance cannot prevail in a country other than of large size. In contrast, those who rely on moral and benevolent practices to govern exert moral authority; this type of governance can be sustained in a country regardless of size." In Liang Hui Wang II, Mencius also said, "When a great power can serve a smaller one, it must be that the sovereign of the great power governs with benevolence...Doing so the sovereign of the great power delights in Heaven...ultimately preserving All under Heaven." Therefore, Mencius believed that whether any country can govern with benevolence regardless of its size, and yet if the sovereign of a great power can govern with benevolence, hence serving small countries, the globe as a whole will be well preserved for functional sustainability. Building on the interpretations above, we selected four indices to quantify national practices of International Aid for the sustainable development of international relations. These indices are International Developmental Aid, International Humani-



tarian Aid, International Refugee Admissions, and International Charity Giving, respectively. Their raw data are drawn from the Organization for Economic Cooperation and Development (OECD), United Nations (UN), and Chinese Department of Commerce and World Giving Index.

Considering that some indices contain rare events in raw data by nature (see King and Zheng, 2001), such as Nuclear Warheads and so forth, and that other indices have relatively small range in raw data, the research team standardized each index with a range between one and eleven for cross-national comparison.

We report rankings and ratings of all sampled countries for Global Ethics in Appendix III. As shown therein, sixteen of the top twenty-two countries are located in Europe (ranked 1st to 18th, with some countries sharing the same ranks). This by chance correlates with the geographical boundary of what Western scholars of International Relations refer to as the “Security Community” (Adler and Barnett, 1998). Non-European countries that ranked among the top twenty-two include New Zealand, Japan, Canada, Malaysia, Australia, and the Republic of Korea. It is worthy of singling out two countries—Malaysia (ranked 16th) and the Republic of Korea (ranked 18th). Both are scored high in External Peace, International Exchange and International Aid, reflecting often overlooked contributions Malaysia made to international peacekeeping operations and those made by the Republic of Korea to international exchange. We also note that the People’s Republic of China (ranked 26th) made notable contributions to international peacekeeping and international aid.

Countries ranked bottom twenty in our Global Ethics rankings include such Middle East countries as Israel, Egypt, Iran, Jordan, South Asian countries as India, Pakistan, Bangladesh, as well as the US, Russia and Ukraine. These countries ranked low out of geopolitics, overinvestment in military buildup or damage to external peace. This is particularly the case of Pakistan, which, according to one IR scholar, suffers from the “geopolitical curse” (Paul, 2015). While the US ranked unexpectedly low, this particular ranking fairly reflected US military involvement in wars in Afghanistan and in Iraq that resulted in a large scale of refugees and casualties (in 2004, 650 IR scholars publicly petitioned to denounce the US foreign policy of waging the Iraq war) (Drezner, 2004).

Finally, Table 8 summarizes the correlation between the three dimensions of Global Ethics. Except for the correlation between International Exchange and International Aid (0.57), all other correlations were low. Hence, we can infer that the four dimensions of the Global Ethics domain measuring international relations amidst sustainable development in principle present different substantive implications. We report the overall rankings, ratings and average scores of each dimension in Appendix 2.

**Table 8: Correlation between Global Ethics Dimensions**

	External Peace	Military Buildup	International Exchange	International Aid
External Peace	1.00			
Military Buildup	-0.02	1.00		
International Exchange	-0.28	-0.18	1.00	
International Aid	-0.08	-0.22	<b>0.57</b>	1.00



### **3.2 Inclusive Development**

Capitalist societies usually manifest huge discrepancies in resource distribution among various groups. The pursuit of economic growth is often prioritized at the expense of income disparities, which are often even regarded as one of the critical sources of economic incentive. While capitalism may bring remarkable growth in wealth and prosperity, this growth is accompanied by social conflicts, which lead to uncertainties in the sustainability of economic growth.

The widening income gap in all countries has caught much attention in recent decades. Owing to a series of liberal economic policies, there has been a drastic increase in concentration of capital and wealth in

advanced industrialized countries. However, as developing countries have succeeded in narrowing the wealth gap between themselves and developed countries recently, they too have experienced a rise in domestic income inequality.

To address the issue of economic inequality in countries around the world, economists such as Thomas Piketty, Anthony Atkinson and Angus Deaton published "Capital in the Twenty-First Century" (2014) and "Inequality: What Can be Done?" and "The Great Escape: Health, Wealth, and the Origins of Inequality" (2013) respectively.

Among them, Piketty argues that the over-concentration of capital in the hands of the rich might create social unrest. Governments should therefore reform their tax systems to

curb the disproportionate growth in capital accumulation. A political scientist, Ronald Inglehart (2016), points out that the rise of economic inequality in modern times resulted from the asymmetry in power between the elite and the masses during modernization and consequent negligence regarding economic redistribution. Moreover, Rogoff (2014) contends that the uneven distribution of income can also be result of the global division of labor between developed and developing countries. In addition, the rise of the information and Internet industries has changed our way of life and transformed the way in which wealth is accumulated. The built-in exclusivity of the startup industry makes the existing legal framework for regulating capital inadequate. Apart from inadequacies in the legal framework, the new Internet technology industry requires a code

of "cyber ethics" that it currently lacks. This has allowed some new industries and business models to quickly accumulate wealth disproportionately. The speed can be so fast that their accumulation of wealth in a decade may well surpass the pace at which established multinational enterprises can accomplish this and further widen the gap between rich and the poor. This contrast justifies why we are launching the WDSI at this moment, and stressing the importance of inclusive development.

To deal with this problem, the Inclusive Development section derives from four critical dimensions of the Wang Dao precept: Human Needs, Social Equity, Social Harmony, and Socio-economic Empowerment, which can be further broken down into 32 indices as shown in Table 9.

**Table 9: Inclusive Development Dimensions and Component Indices**

Humanistic Needs	Social Equity	Social Harmony	Socio-economic Empowerment
<ul style="list-style-type: none"> <li>• Mortality rate</li> <li>• Life Expectancy</li> <li>• Density of health workforce</li> <li>• Literacy rate, adult total</li> <li>• Employment to population ratio</li> <li>• House Ownership Rate</li> <li>• Getting Electricity</li> <li>• Personal Freedom</li> </ul>	<ul style="list-style-type: none"> <li>• Inequality-adjusted life expectancy</li> <li>• Labor force, female</li> <li>• Inequality-adjusted education</li> <li>• Equal Opportunity</li> <li>• Poverty headcount ratio at national poverty lines</li> <li>• Gini Index</li> <li>• Reduced number of undernourished people for the last 10 years</li> </ul>	<ul style="list-style-type: none"> <li>• Suicide mortality rate</li> <li>• Violence impact and small arms threat</li> <li>• Safety &amp; Security</li> <li>• Social Security Contributions</li> <li>• Social Tolerance</li> <li>• Corruption Perception</li> </ul>	<ul style="list-style-type: none"> <li>• GDP per capita, PPP</li> <li>• GDP per capita growth</li> <li>• Government expenditure on education</li> <li>• Health expenditure</li> <li>• Social Expenditure</li> <li>• Account Ownership</li> <li>• General government gross debt</li> <li>• Price Stability</li> <li>• Individuals using the Internet</li> <li>• Growth in internet users</li> </ul>

Mencius's Wang Dao precept inherits the Confucian idea of "Making the policies with virtue and implementing them with benevolence." Specifically, it emphasizes the spirit of "regarding human beings as essential." Inclusive Development embodies this idea precisely. The philosophy of "regarding human beings as essential" requires a state to meet the people's "human needs," which include survival, life, livelihood, knowledge acquisition and personal freedom.

From a macroeconomic perspective, while the accumulation of wealth in a society will naturally satisfy people's human needs, what cannot be ignored in the process is the rise of distributional conflicts among different groups. We therefore also include the dimension of Social Equity. It examines a nation's performance via indices that measure income equality, sexual equality, educational and economic opportunity, the gap between rich and poor and poverty reduction.

Nonetheless, sustainable economic and social development cannot be simply based on passively redressing inequality. A government practicing the Wang Dao precept must proactively create conditions for the disadvantaged to climb up the social ladder. The Social Harmony dimension is meant to measure if people live in a safe and inclusive society. A capable government makes good use of resources to establish a social safety net that protects all. Such indices as Suicide Rate, Gun Violence and Personal Safety are all criteria for basic safety. The Social Security index measures how well a government provides basic protection for all social groups, and especially the disadvantaged. The Social Tolerance index measures how people feel about pluralism

and if all different social groups are able to live with dignity, express themselves freely, and be free from fear, discrimination or war-related risks. The Government Capacity index measures public confidence in their government to deliver all the services enumerated above.

The Socio-Economic Empowerment dimension is mainly about measuring people's abilities to manage their personal economic welfare. This includes basic socio-economic rights such as GDP growth, government spending with respect to Education, Health, and Social Welfare, Price Stability, and (fiscal) discipline with respect to Government Debt. All these indicators above represent the government's responsibilities for general socio-economic development. In contrast, the indices of Schooling, Financial Experience and Internet Use are used to measure individual-level socio-economic empowerment. The Socio-Economic Empowerment dimension specifically takes into account the index of Government Debt to assess if a government is able to use resources efficiently and sustainably, and allow future generations to also be empowered.

What is worth noting here regarding the Socio-Economic Empowerment dimension is that if we only take into account the static or stock aspect all the aforementioned indices, developed countries will tend to be ranked higher due to some double-counting. This phenomenon is actually quite common among existing international rankings. To strike a balance among countries with different levels of development, this dimension specifically includes the dynamic or flow indicators of Per-capita GDP, Poverty Reduction, and Internet Use. In other words,

for some developing countries, while they may lag in their stock indices, they will be rewarded for making progress in areas measured by the three flow indices mentioned above.

Most of the data were obtained from the World Development Indicators maintained by the World Bank, the Global Peace Index, the World Wealth and Income Database, the Human Freedom Index, and the Social Progress Index. Since some of United Nations databases do not include data from Taiwan, we reconstructed compatible indicators for Taiwan from Republic of China government publications.

All the results including scores and rankings of individual countries in the Inclusive Development domain are listed in Appendix 4. Northern and Western European countries did extremely well and account for one half of the top 20. Interestingly, the United States ranked 30th in the Inclusive Development domain. While it still leads in terms of comprehensive national power, in view of its recent political development, income distribution is obviously not in good shape. The fairness- and government finance-related indices included in the Inclusive Development domain might have contributed to this relatively low score and ranking for the US.

It should also be noted that some Post-communist countries such as Slovenia, Estonia, and the Czech Republic are also doing pretty well in this domain. Generally, the political elites in these countries were cautious about whether they should embrace capitalist democracy, and therefore retain some good social policies from the past, such

as tax reforms and minimal wages. The correlations between them deserve further scrutiny.

The bottom 20 countries/economies of the Inclusive Development domain are geographically concentrated in Africa, the Middle East, and Southeast Asia. In addition to benefit distribution and social equality, the Inclusive Development domain also measures how countries do in lifting people out of poverty and narrowing the digital gap in their societies. These indices help capture the efforts the newly emerging economies have made to pursue inclusive development.

The correlation coefficients of all four dimensions of the Inclusive Development domain are listed in Table 10. Although they are conceptually different, the statistical analysis shows that Human Needs, Social Equity, and Socio-economic Empowerment are highly correlated pair-wise (0.82–0.89). However, the Social Harmony dimension only moderately correlates with the others (0.59–0.69). Since the underlying principle of the Inclusive Development domain is to take both economic growth and social justice into account, there is likely to be high correlations among all dimensions and it is also unavoidable that we might have double-counted some of the indices. In pursuing the sustainability of inclusive development, efforts measured by the Human Needs, Social Equity, and Socio-economic Empowerment” dimensions need to work in tandem, but it is also important to value Social Harmony, a value championed by Confucianism, but often ignored in modern society.

**Table 10: Correlation between Inclusive Development Dimensions**

	Humanistic Needs	Social Equity	Social Harmony	Socio-Economic Empowerment
Humanistic Needs	1.00			
Social Equity	<b>0.82</b>	1.00		
Social Harmony	<b>0.62</b>	<b>0.59</b>	1.00	
Socio-Economic Empowerment	<b>0.89</b>	<b>0.84</b>	<b>0.69</b>	1.00



### **3.3 Environmental Equilibrium**

Over the 4.6 billion years that the Earth has existed, it has gone through various geological stages and experienced five biological extinctions, followed by appearance of human beings (*Homo sapiens*) in the Earth's ecosystem 2 to 3 million years ago. From the Paleolithic through the Neolithic era, human beings developed a variety of tools for improving the convenience and safety of life. The era of fishing and hunting followed, with the development of more tools. Around ten thousand years ago, farming became a human activity as people gathered around water and land. Since then, the pattern of human expansion of living territory has

changed (Van der Warf & Petit, 2002).

However, from another point of view, agriculture was the beginning of large-scale human devastation of the environment. This is because the essence of agriculture is to transform the natural ecosystem into a man-made one. In the eighteenth century, the Industrial Revolution began, requiring the burning of fossil fuels to provide the energy to drive machines, replacing human as well as animal power and thus changing the ways that human beings manufactured, moved, and conducting many activities. Later, in the twentieth century, industrial and commercial societies locked into a production-consumption cycle for economic growth became main stream. However, the resultant



concentration on GDP growth and technological innovation from such a developmental model has resulted in human-induced resource depletion and environmental degradation of the global ecosystems at an exponentially rising speed. Although Industry 4.0, IOT, AI, and other new technologies and innovative businesses are developing rapidly, the real driving force of economic growth today is burgeoning consumption. Although the global community has been working consistently on achieving sustainable development via various kinds of advocacies and power since the United Nations Conference on the Human Environment in 1972, global population growth, soil depletion, climate change, and biodiversity loss have all continued (Miller and Spoolman, 2012).

Although the Paris Agreement took effect in late 2016, regardless of the declaration of leaving the agreement by the US government, the global temperature rise will be still more than 2, possibly as high as 3.6 degrees Celsius or more, by the end of this century, even if all parties fully keep their promises and cut GHG emissions according to their Intended Nationally Determined Contributions (Raftery, Zimmer, Frierson, Startz, & Liu, 2017; Mauritsen & Pincus, 2017). The UN started promoting the concept and framework of sustainable development in 1972, published the Brundtland Report in 1987, and then held the First World Summit on Sustainable Development in Rio in 1992, establishing foundations for the following international initiatives and accords. Despite the long-term efforts of the UN to combat climate change, from launching the UNFCCC in 1994 to passing the landmark Paris Agreement in 2015, the entire international community

appears unable to halt worsening environmental quality and unbalanced global development. Facing an uncertain future, plundering resources for a safer situation has become a common syndrome among individuals, societies, and countries around the globe.

Despite sustainable development taking a lead in the international community for decades, environmental problems and unsustainable status still remain unsolved. Neoliberal economics was anticipated to be effective in the “wishful sustainable development scenario.” Nevertheless, existing unsustainability is what we need to face and deal with (Hursh, Henderson, & Greenwood, 2015). Green Economy was one of the two main themes of Rio+20; hence, that event theoretically will provide the guidelines for sustainable development in the decade from 2012 to 2022 (Barbier, 2012). However, it is apparent that unlimited development still comprises the main streams objective of most countries. Fairness or equity has been advocated as the spirit of sustainable development; yet, uneven/unequal situations among counties remain severe. Thus, based on the Wan Dao precept, we adopted Honest Sustainability, Self-restrained Development, and True Equity as the core values of our indices, promising real and comprehensive presentations of sustainable development concepts.

According to these guidelines, for the Environmental Equilibrium domain, we adopted three dimensions— Material Consumption, Environmental Governance, and Natural Laws— incorporating 17 component indices, as listed in Table 11.

**Table 11: Environmental Equilibrium Dimensions and Component Indices**

Material Consumption	Environmental Governance	Natural Rules
<ul style="list-style-type: none"> <li>• Energy Consumption per Capita</li> <li>• Per capita GHG emission</li> <li>• Water Consumption per Capita</li> <li>• Food Sustainability</li> <li>• Overfishing</li> <li>• Forest Management</li> </ul>	<ul style="list-style-type: none"> <li>• Biodiversity</li> <li>• Energy Intensity</li> <li>• Green Growth</li> <li>• Air Pollution</li> <li>• Waste Management</li> <li>• Waste Water Treatment</li> <li>• Improved Water Source</li> <li>• Improved Sanitation Facilities</li> </ul>	<ul style="list-style-type: none"> <li>• Nitrogen Control</li> <li>• Persistent Organic Pollutants</li> <li>• Radioactive Waste</li> </ul>

The Material Consumption dimension was designed to reflect the attitude of all countries toward and real management of resource consumption, as well as related resource waste behavior and value distortion. For example, 7.1 billion cellular phones were produced from 2007 to 2016. Richer people likely own several such telephones and keep buying new ones, resulting in the generation of 3 million tons of electronic waste every year, with a recycling rate of less than 20% (Green Peace, 2017). The Environmental Governance dimension examines the impact of national administrative systems and governance strategies to environmental quality. This may include direct environmental management or administration, as well as economic strategies that may influence the environment (UNFCCC, 2018). A representative criterion involves measuring how GHG reduction laws and regulations as well as the setting of ambitious reduction goals exert direct influence on carbon

reduction, which also relates to economic and financial mechanisms such as carbon trading. The Natural Laws dimension reflects the existing and ongoing environmental challenges brought about by human behavior violating the laws of Nature, and the application and/or treatment of non-natural products. In 2009, Rockström et. al. published research on Planetary Boundaries, warning that such issues as biodiversity loss and an unbalanced nitrogen cycle are already classified as high risk (Rockström, Steffen, Noone, Persson, Chapin III, Lambin, Lenton, & Scheffer, 2009). If we analyze the discourse of these three dimensions, it can be found that the Material Consumption dimension corresponds to ethics, i.e., checking how well a country abides by the rules of environmental ethics; Environmental Governance corresponds to democracy, in that it highlights the interaction between policy development and/or governance and public opinion; and the Natural Laws dimension corresponds to science, in that it

offers a rationale for human self-restraint via scientific applications.

Environmental loading, national policies, and environmental management are generally emphasized in many index systems. However, in this index system, the Environmental Equilibrium domain attempts to address environmental issues in terms of the Wan Dao precept of sustainability from generation to generation in an endless cycle. Greenhouse gas emissions, energy, water resources, and agricultural, fishery and forest resources were included in the component Material Consumption dimension. We recognized the conservation and limited use of natural resources, which was likely reflected in the higher performance of developing and less developed countries in these dimensions. With regard to the Environmental Governance dimension, we urge countries to establish comprehensive infrastructures, policies and practices; promote systemic management of air, water, and waste; protect habitats, reduce the impact on the environment; and accelerate green growth. Regarding the Natural Law dimension, the research team chose three indices to measure nitrogen fertilizer use, POPs, and radioactive waste in order to assess the potential impact of human behavior on natural ecocycles.

Raw data was collected from many databases including the International Energy Agency (IEA), the World Bank, and the Environmental Performance Index (EPI). It should be mentioned that we tried not to use intergrade data from some of those comprehensive indicators. We chose raw data appropriate for the WDSI.

The scores and rankings for this dimension are listed in Appendix 5. It can be observed

that most top-20 countries are in Europe. Croatia located in the Balkans Peninsula was ranked 1st place. As a post-communist country in Europe, Croatia was conservative in material consumption, ambitious in environmental governance, and at the same time gained full score (11) in all three Natural Laws component indices— Nitrogen Fertilizer Management, Persistent Organic Pollutants, and Radioactive Waste— showing its emphasis on long-term ecological cycles and environmental conservation. Moreover, in Central and South America on the other side of the Earth, Columbia, Brazil, Peru, Panama, and Costa Rica all made the top-20 list, demonstrating their achievements in environmental equilibrium. Columbia got excellent scores in Per Capita Energy Consumption, Per Capita GHG Emissions, Per Capita Water Consumption, and Green Growth, possibly related to its efforts to develop renewable energy in recent years.

It should be noted that some developed countries, such as Israel (56), Canada (56), and the US (58), ended up in the bottom-20 rankings, contrary to common perceptions of them. For example, Canada, the US, and Israel were ranked the 6th, 18th, and 29th, respectively in the Environmental Performance Index (EPI). Canada and the US share the common characteristics as countries with vast territory, abundant natural resources, and relatively low population density. They earned high scores in Environmental Governance as they have similar environmental policies. However, in terms of the Material Consumption dimension, their scores in Per Capita Energy Consumption, Per Capita GHG Emissions, Per Capita Water Consumption, Over-fishing, and Forest Management were quite low. They consumed a large amount of natural

resources, which is not sustainable at all although they owned plenty. Development patterns without constrained use of resources use will also lower the survival capacity of other countries in the world. Table 12 listed the correlation coefficients among the three dimensions of the Environmental Equilibrium domain,

indicating a medium correlation between Material Consumption and Environmental Governance and low correlation between others. Thus, it can be concluded that they represent three relatively isolated dimensions.

**Table 12: Correlation between Environmental Equilibrium Dimensions**

	Material Consumption	Environmental Governance	Natural Rules
Material Consumption	1.00		
Environmental Governance	-0.41	1.00	
Natural Rules	0.19	-0.09	1.00

### **3.4 Analysis of correlation coefficient between the three domains**

The research team tested the relevance of the rankings in the three WDSI domains. The results are shown in Table 13. The correlation coefficient between the two domains of Global Ethics" and Inclusive Development is high (0.76), and the correlation coefficient between Environmental Equilibrium and Global Ethics and that of Environmental Equilibrium with

Inclusive Development are 0.44 and 0.42, respectively, which are low correlations. This indicates, in a relative scale, scores of Environmental Equilibrium are decoupled from the extent of development for countries/economies. As a result, in the domain of Environmental Equilibrium, some rich and powerful countries/economies are found insufficiently protective of the environment due to resource wastage. Conversely, some emerging economies can rank high in terms of environmental equilibrium.

**Table 13: Correlation Coefficients of the three WDSI domain rankings**

	<b>Global Ethics</b>	<b>Inclusive Development</b>	<b>Environmental Equilibrium</b>
<b>Global Ethics</b>	1.00		
<b>Inclusive Development</b>	<b>0.76</b>	1.00	
<b>Environmental Equilibrium</b>	0.44	0.42	1.00

### *3.5 Relationship between the WDSI and population*

We further analyze the correlation between the logarithm of the total population for each country and its WDSI average score (semi-log plot). As shown in Chart 9, the logarithm of the total population of each country is plotted on the horizontal axis, while the WDSI average score is plotted on the vertical axis, yielding a regression line from top left to bottom right. This means that, when no other factors are changed, the larger the total population of a country is, the lower its WDSI performance score.

Chart 10 depicts the results of a semi-logarithmic analysis of 28 developed and 46 emerging economies, respectively. Similarly, one can observe that the WDSI average score correlates negatively with the logarithm of the total population.

Among the 74 countries, the WDSI rankings of those with a population of more than 100 million are arrayed in order of population size: People's Republic of China (40<sup>th</sup>), India (69<sup>th</sup>), the United States (35<sup>th</sup>), Indonesia (49<sup>th</sup>), Brazil (38<sup>th</sup>), Pakistan (74<sup>th</sup>), Nigeria (73<sup>th</sup>), Bangladesh (68<sup>th</sup>), Russia (58<sup>th</sup>), Mexico (52<sup>nd</sup>), Japan (16<sup>th</sup>), Ethiopia (66<sup>th</sup>), Philippines (50<sup>th</sup>). Those with better rankings among this group are Japan, the United States, and Brazil, of which only Japan (16<sup>th</sup>) is ranked in the top 20.

More than 2,000 years ago, Mencius said that "he who, using virtue, practices benevolence is a genuine sovereign. A genuine sovereign

need not wait becoming a great state."<sup>8</sup> Do countries small in size and population have the necessary conditions to put the Wang Dao precept into practice for the pursuit of sustainable development? Can large countries be big and achieve "Governance befitting a genuine sovereign"<sup>9</sup> at the same time? These await further in-depth research.

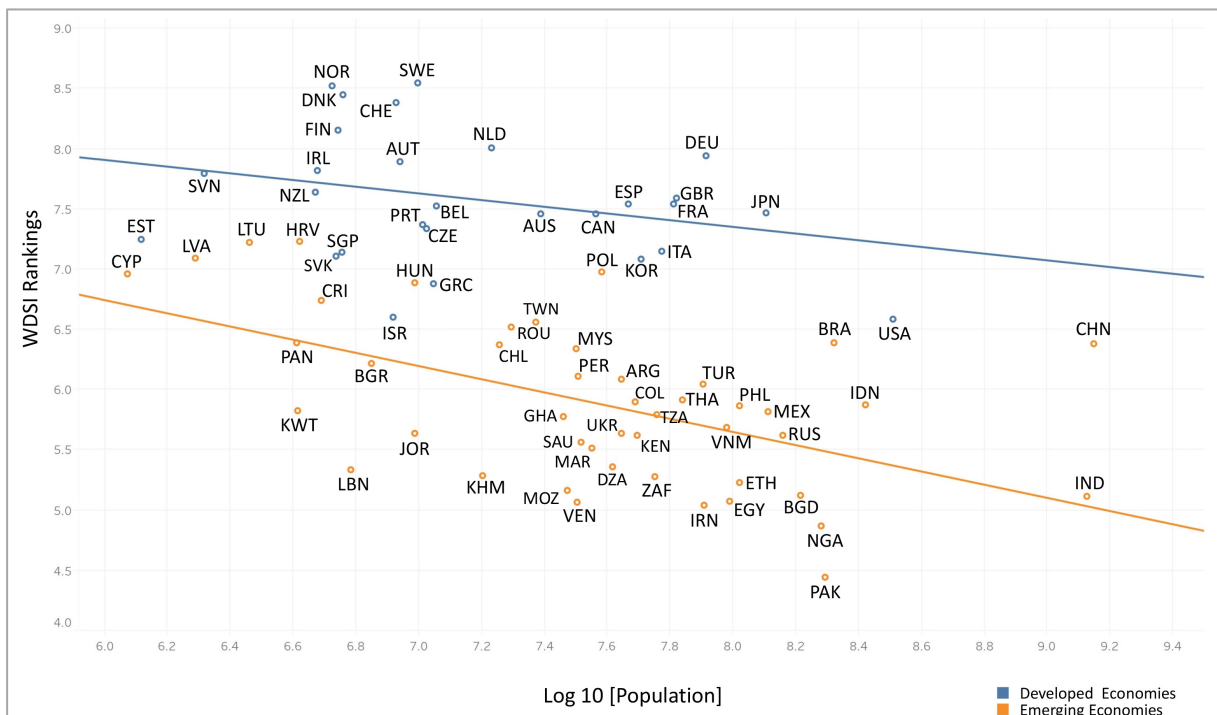
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<sup>8</sup>Translation also modified from the original passage in James Legge.

<sup>9</sup>See note 1.



**Chart 8: Semic-log Plot of WDSI Scores vs. Populations**



**Chart 9: Semic log Plot of WDSI Rankings vs. Populations (Developed and Emerging Economies)**

## 4 PRINCIPLE FINDINGS

### 1. ---

The sustainable development outlook of the Wang Dao precept has universality as a variation on the same tune with respect to the developmental models of northern European countries such as Sweden, Norway and Denmark. Use of the Wang Dao precept as an ideological resource for the search by humanity for a sustainable development model is not the exclusive property of China or countries steeped in Confucian culture. The development model of these Nordic countries, based on socialist democracy, the welfare state, and environmental protection (Preworski, 1986; Esping-Andersen, 1990) in current practice closely approximates the sustainable development model of the Wang Dao precept. This elucidates that developing countries/economies need not necessarily follow the model of capitalist democracy in their pursuit of sustainable development during the 21st century. From the WDSI they can view their own strengths and weaknesses; and, according to their degree of national development and cultural characteristics, properly plan the optimal path toward sustainable development.

### 2. ---

East Asian countries ranked in the middle segment of performance, but with enormous differences, can further pursue sustainable development on the cornerstone of regaining traditional

cultural confidence. Among the Wang Dao sustainability indices, the rankings of East Asian countries including Japan, Singapore, the Republic of Korea, Taiwan, the People's Republic of China, and Vietnam, generally reflect the order in which they modeled themselves after the "modernization" development models of financially and militarily powerful Western countries (Johnson, 1982; Haggard, 1990). Japan, ranked 16th, was the earliest pioneer to undertake constitutional reform and modernization, and the fastest East Asian country after the Second World War to rebuild its national and civilian economy. During the Cold War era, 25<sup>th</sup>-ranking Singapore, the 28<sup>th</sup>-ranking Republic of Korea, and 36<sup>th</sup>-ranking Taiwan all followed Japan's developmental example and surpassed the economies of other developing countries later ranked. The 40<sup>th</sup>-ranked People's Republic of China and 55<sup>th</sup>-ranked Vietnam were the last countries to finally abandon (or modify) their planned economies and adopt a market economy developmental model. However, the United States, the foremost of Western capitalist powers upon which all countries have modeled themselves, only ranks 35th in the WDSI rating. Any East Asian country that wants to pursue sustainable development should give it further thought.



### 3.

In terms of sustainable development, the United States, like the People's Republic of China, appears to be a "fragile superpower." China issue expert Susan Shirk has stated that despite global attention to the PRC's growing international influence due to its rapid economic rise, it is at best a "fragile superpower." The idea may be that the endless domestic governance issues constitute a serious weak point in the PRC's rise. The WDSI results indicate that on the road to sustainable development, the 35<sup>th</sup>-ranked US has only a limited lead over the 40<sup>th</sup>-ranked People's Republic of China. This likely reflects the various challenges facing the United States in maintaining its international hegemony and dealing with its domestic governance issues, which include not only economic and social inequality, but also increasingly extreme policy and political differences that have polarized American society in many dimensions. In other words, when viewed in terms of the WDSI, the United States and the People's Republic of China are two major powers that similarly face sustainable development difficulties.

### 4.

The small and medium-sized "post-communist countries" on the European continent, perhaps with the assistance

of internal policy harmonization within the European Union, are steadily advancing on the path of sustainable development. During the process over the past three decades of reforming their communist economies and political systems, these countries at the outset were influenced by US power, but they were able to prudently retain some good socialist policies. With the establishment of the European Union, they have made gradual adjustments in line with taking part in the process of European integration. This has made their sustainable development performance more stable and sound than that of East Asian countries where the United States is the head horse: Slovenia is ranked 10<sup>th</sup>; the Czech Republic, 20<sup>th</sup>; Estonia, 21<sup>st</sup>; Croatia, 22<sup>nd</sup>; Lithuania, 23<sup>rd</sup>; Slovakia, 26<sup>th</sup>; Latvia, 27<sup>th</sup>; Hungary, 31<sup>th</sup>; Romania, 37<sup>th</sup>; and Bulgaria, 43<sup>th</sup>. The relationship between the sustainable development performance of this group of countries and their small size and population, the extent to which they have been influenced by the EU's internal sustainable development agenda<sup>10</sup>, and how the UN's sustainable development goals are realized through policy harmonization within the EU await more detailed observation and analysis in the future.

<sup>10</sup><http://ec.europa.eu/eurostat/documents/3217494/7745644/KS-02-16-996-EN-N.pdf/ae6b7f9-d06c-4c83-b16f-c72b0779ad03>

## 5. ---

A number of countries are relatively far from attaining ideal sustainable development goals under the Wang Dao philosophy. Some countries get into trouble for geopolitical reasons or because they have precious resources (Paul, 2015; Ross, 1999), and have been embroiled in military conflict for many years. Even if they did not start the fighting, the damage and loss must be borne by the people of the country. Under the tyranny of powerful hegemony, the social, economic and environmental rankings of these countries are greatly negatively affected. Countries such as Iran (ranked 72), Nigeria (ranked 73), Pakistan (ranked 74), as well as countries that have historically been sealed off from the outside world for long periods of time and cannot effectively use development factors to revitalize their economy, such as Cambodia (ranked 64), should rethink their grand strategy for national development to breakthrough sustainable development bottlenecks.

## 6. ---

Overall, the WDSI correlates highly with the UN's SDGI, but displays a large difference in its rankings of emerging and developing economies. One reason for this is that the WDSI takes into consideration differences in the developmental priorities and cultural values of countries/economies with different levels of development. While

the WDSI and SDGI were established based on different thinking and different methods, the correlation of up to 0.9 between the two indicates that the index framework set according to the Wang Dao precept is indeed capable of highly reflecting the meaning of the UN's 17 Sustainable Development Goals (SDGs); and that the WDSI has the potential to become a set of new indices with universal values that provide an alternative type of coordinates for the entire world (especially developing countries/economies) to pursue sustainable development.

## 5 CONCLUSION

Benevolence and Righteousness are the core of Confucian ethics and the common ethical foundation of human civilization. Compared with Christianity's Golden Rule or Immanuel Kant's Categorical Imperative, they represent different ways of arriving at the same destination. This is the key to how human civilization differs from the animal world of the strong dominating the weak and hegemonic bullying.

In sum, behavior based on benevolence and righteousness is what the world terms the Wang Dao precept. Be it person to person, or nation to nation, it demands treating others with empathy, demonstrating mutual forbearance and understanding, respect for diversity, as well as utilizing dialogue to enhance understanding and negotiation to settle disputes. Governance in the world according to the Wang Dao precept is people-oriented, focuses on developing the economy, giving and sharing, enhancing economic and social capacity, and improving livelihoods and well-being. In international relations, we advocate peace, helping the weak and aiding the needy, oppose the use of hegemony to resolve conflicts and call for equal exchanges and foreign aid. Facing Nature, we should always harbor the feeling of Nature and Mankind being one, practice frugality and conservation, cultivate a mindset of reverence and awe, promote environmental ethics, thoroughly research environmental science, and realize environmental equilibrium to promote a sustainable life cycle between mankind and nature.

Individualism, consumerism, and hegemony have been prevalent in modern times, resulting in unremitting war and calamities throughout the world, a widening gap between the rich and poor, the depletion of natural resources, and the destruction of ecological balance. For the sustainable development of mankind, we must change course and resist the backward slide of civilization into jungle competition. Thus, we harken back to the Wang Dao precept of benevolence and righteousness, blending in the world trend of UN sustainable development, set the WDSI, in hopes that countries with different degrees of development and different cultural backgrounds can assess their current reality based on this set of value systems, promote reform, lead the way, and boost sustainability. From different heights, one sees different scenery.

The Wang Dao precept WDSI pay attention to three principal domains: Global Ethics, Inclusive Development, and Environmental Equilibrium. Indices in the Global Ethics domain focus on each country's performance regarding external peace, arms investment, international exchanges and foreign aid. The indices in the Inclusive Development domain assess its performance regarding human needs, social equality, social harmony and economic empowerment. The indices in the Environmental Equilibrium domain are concerned with each nation's performance regarding material consumption, environmental governance and adherence to

natural laws. The design philosophy of the WDSI system within the framework of the international community stresses the responsibility of big powers to strive for the benefit of fellow nations, for joint prosperity and for development leading toward becoming a great nation that can be strong, but not necessarily hegemonic. Internally at the societal level, we attach importance to inclusive development, advocating that economic development should pay attention to the interests of all sectors of society, so that both rights and responsibilities are shared. In terms of social status, resource allocation must conform to the principles of fairness and justice. Regarding the environment, we attach importance to maintaining balance and symbiosis, emulating the concept of harmony between heaven and earth, and controlling exploitation of the natural environment, as well as resource consumption and utilization, taking a new look at the role of human beings in the Earth system, and ensuring the opportunity for sustainable development on behalf of future generations. We expect that this set of indices will be conducive to broadening the horizons of sustainable development, pointing the way forward, and providing a vision for the future.

The results of this study indicate that the practices of Northern European socialist democracies such as Sweden, Norway, and Denmark are most closely in line with sustainable development under the Wang Dao precept. East Asian countries/economies long steeped in Confucian culture, such as Japan, the Republic of Korea, Taiwan, and

the People's Republic of China, mostly cluster in the middle. Western European countries are ranked high, and a number of Eastern European "post-communist" countries and small Baltic countries have performed well. The powerful US lags back in the middle, while Russia has dropped into the lower ranks. Countries with the least sustainable development model or current situation, such as Pakistan, Lebanon, Saudi Arabia, Egypt, Jordan, Iran, Nigeria, Venezuela, are those sealed off from outside world for many years, threatened by war, or subject to the "resource curse." We have used validity analysis to verify the high correlation between the WDSI and the UN's SDGs, indicating that the WDSI should be effective and reasonable for the operation and assessment of sustainable development. Therefore, we believe that the Wang Dao precept has universal value, and the WDSI has universal practicality.

We published the Wang Dao Sustainability Index for the first time in 2018, with rankings for 74 countries and economies. In the future, we will continue to collect the latest data, expand the number of countries rated, and make timely releases of the latest WDSI.

## Appendix

### Appendix 1 : Overview of Structure

Global Ethics	Inclusive Development	Environmental Equilibrium																																		
<p><b>External Peace</b></p> <ul style="list-style-type: none"> <li>Interstate War Participation</li> <li>Interstate War Casualties</li> <li>Contributions to International Peacekeeping Operations</li> </ul> <hr/> <p><b>Military Buildup</b></p> <ul style="list-style-type: none"> <li>Military Expenditure</li> <li>Armed Forces Personnel</li> <li>Nuclear Warheads</li> <li>Exports of Conventional Weapons</li> </ul> <hr/> <p><b>International Exchange</b></p> <ul style="list-style-type: none"> <li>Attractiveness of International Migration</li> <li>Participation in International Trading Regime</li> <li>Total Trade per capita</li> <li>Freedom of International Migration</li> </ul> <hr/> <p><b>International Aid</b></p> <ul style="list-style-type: none"> <li>International Developmental Aid</li> <li>International Humanitarian Aid</li> <li>International Refugee Admissions</li> <li>International Charity Giving</li> </ul>	<p><b>Humanistic Needs</b></p> <table border="0"> <tr> <td>Mortality rate</td> <td>Employment to population ratio</td> </tr> <tr> <td>Life Expectancy</td> <td>House Ownership Rate</td> </tr> <tr> <td>Density of health workforce</td> <td>Getting Electricity</td> </tr> <tr> <td>Literacy rate, adult total</td> <td>Personal Freedom</td> </tr> </table> <hr/> <p><b>Social Equity</b></p> <table border="0"> <tr> <td>Inequality-adjusted life expectancy</td> <td>Poverty headcount ratio at national poverty lines</td> </tr> <tr> <td>Labor force, female</td> <td>Gini Index</td> </tr> <tr> <td>Inequality-adjusted education</td> <td>Reduced number of undernourished people over the last 10 years</td> </tr> <tr> <td>Equal Opportunity</td> <td></td> </tr> </table> <hr/> <p><b>Social Harmony</b></p> <table border="0"> <tr> <td>Suicide mortality rate</td> <td>Social Security Contributions</td> </tr> <tr> <td>Violence impact and small arms threat</td> <td>Social Tolerance</td> </tr> <tr> <td>Safety &amp; Security</td> <td>Corruption Perception</td> </tr> </table> <hr/> <p><b>Socio-economic Empowerment</b></p> <table border="0"> <tr> <td>GDP per capita, PPP</td> <td>Account Ownership</td> </tr> <tr> <td>GDP per capita growth</td> <td>General government gross debt</td> </tr> <tr> <td>Government expenditure on education</td> <td>Price Stability</td> </tr> <tr> <td>Health expenditure</td> <td>Individuals using the Internet</td> </tr> <tr> <td>Social Expenditure</td> <td>Growth in internet users</td> </tr> <tr> <td>School enrollment, secondary</td> <td></td> </tr> </table>	Mortality rate	Employment to population ratio	Life Expectancy	House Ownership Rate	Density of health workforce	Getting Electricity	Literacy rate, adult total	Personal Freedom	Inequality-adjusted life expectancy	Poverty headcount ratio at national poverty lines	Labor force, female	Gini Index	Inequality-adjusted education	Reduced number of undernourished people over the last 10 years	Equal Opportunity		Suicide mortality rate	Social Security Contributions	Violence impact and small arms threat	Social Tolerance	Safety & Security	Corruption Perception	GDP per capita, PPP	Account Ownership	GDP per capita growth	General government gross debt	Government expenditure on education	Price Stability	Health expenditure	Individuals using the Internet	Social Expenditure	Growth in internet users	School enrollment, secondary		<p><b>Material Consumption</b></p> <ul style="list-style-type: none"> <li>Energy Consumption per Capita</li> <li>Per capita GHG emission</li> <li>Water Consumption per Capita</li> <li>Food Sustainability</li> <li>Overfishing</li> <li>Forest Management</li> </ul> <hr/> <p><b>Environmental Governance</b></p> <ul style="list-style-type: none"> <li>Biodiversity</li> <li>Energy Intensity</li> <li>Green Growth</li> <li>Air Pollution</li> <li>Waste Management</li> <li>Waste Water Treatment</li> <li>Improved Water Source</li> <li>Improved Sanitation Facilities</li> </ul> <hr/> <p><b>Natural Rules</b></p> <ul style="list-style-type: none"> <li>Nitrogen Control</li> <li>Persistent Organic Pollutants</li> <li>Radioactive Waste</li> </ul>
Mortality rate	Employment to population ratio																																			
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## Appendix 2 : Data Description and Source

Indicator	Description	Source
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### GLOBAL ETHICS

<b>External Peace</b>		
Interstate War Participation	Participation in interstate war (after 2000)	Militarized Interstate Disputes
Interstate War Casualties	Causalities of the participated interstate war (after 2000)	Militarized Interstate Disputes
Contributions to International Peacekeeping Operations	Share of financial and personnel contributions international peacekeeping operations	Providing for Peacekeeping
<b>Military Buildup</b>		
Military Expenditure	Military expenditure as share of Gross Domestic Product (GDP)	SIPRI Military Expenditure Database
Armed Forces Personnel	The total number of armed forces personnel	World Bank
Nuclear Warheads	The total number of nuclear warheads (as of 2014)	Nuclear Weapon of Our Word in Data
Exports of Conventional Weapons	The total number of destination countries for exports of conventional weapons (from 2013 to 2016)	SIPRI Military Expenditure Database

<b>International Exchange</b>		
Attractiveness of International Migration	The number of arrivals for international tourism	World Bank
Participation in International Trading Regime	The frequency of using WTO Dispute Settlement Mechanism to resolve international trade conflicts between members	World Trade Organization (WTO)
Total Trade per capita	Total amount of trade over population for a country	World Trade Organization (WTO)
Freedom of International Migration	The number of foreign countries granting domestic citizens visa exempt entry	Henley and Partners Visa Restriction Index 2016
<b>International Aid</b>		
International Developmental Aid	Official developmental aid as share of gross national income	Organization for Economic Cooperation and Development (OECD)
International Humanitarian Aid	The magnitude of international humanitarian aid	United Nations and the Chinese government
International Refugee Admissions	The number of international refugees admitted	United Nations
International Charity Giving	A composite index of how charitable a country based on data from the Gallup World Poll	World Giving Index

## Inclusive Development

Humanistic Needs		
Mortality rate, infant less than 1y	Infant mortality rate is the number of infants dying before reaching one year of age, per 1,000 live births in a given year.	World Bank
Life Expectancy	Life expectancy at birth indicates the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life.	Our World in Data
Density of health workforce	<ol style="list-style-type: none"> <li>Density of physicians (per 10000 population): Number of medical doctors (physicians), including generalist and specialist medical practitioners, per 1000 population.</li> <li>Density of nursing and midwifery personnel (per 1000 population): Number of nursing and midwifery personnel per 1000 population, including nursing personnel and midwifery personnel, whenever available. In many countries, nurses trained with midwifery skills are counted and reported as nurses. This makes the distinction between nursing personnel and midwifery personnel difficult to draw.</li> </ol>	World Health Organization
Literacy rate, adult total	Adult literacy rate is the percentage of people ages 15 and above who can both read and write with understanding a short simple statement about their everyday life. (2010-2016)	World Bank
Employment to population ratio, 15+, total (%)	Employment to population ratio is the proportion of a country's population that is employed. Employment is defined as persons of working age who, during a short reference period, were engaged in any activity to produce goods or provide services for pay or profit, whether at work during the reference period (i.e. who worked in a job for at least one hour) or not at work due to temporary absence from a job, or to working-time arrangements. Ages 15 and older are generally considered the working-age population.	World Bank
House Ownership Rate	Home Ownership Rate refers to the percentage of homes that are occupied by the owner. ( <a href="https://tradingeconomics.com/country-list/home-ownership-rate">https://tradingeconomics.com/country-list/home-ownership-rate</a> )	Trading economics



Getting Electricity	The procedures, time and cost for a small to medium-size business to get a new electricity connection for a standardized warehouse with standardized electricity needs	World Bank, doing business yearbook 2017
Personal Freedom	Specific personal freedoms: Movement; Religion; Association, Assembly, and Civil Society; Expression and Information; and Identity and Relationships.	Human Freedom Index
<b>Social Equity</b>		
Inequality-adjusted life expectancy	Inequality in distribution of expected length of life based on data from life tables estimated using the Atkinson inequality index.	United Nations, Human Development Reports
Labor force, female ( % of total labor force )	Female labor force as a percentage of the total show the extent to which women are active in the labor force. Labor force comprises people ages 15 and older who supply labor for the production of goods and services during a specified period.	World Bank
Inequality-adjusted education	The HDI education index adjusted for inequality in distribution of years of schooling based on data from household surveys listed in in "Surveys used for estimation of 2013 IHDI."	United Nations, Human Development Reports
Equal Opportunity	Equal opportunity legislation in your economy encourages economic development	IMD World 2017 Competitiveness Center
Poverty headcount ratio at national poverty lines ( % of population )	Poverty headcount ratio at \$1.90 a day is the percentage of the population living on less than \$1.90 a day at 2011 international prices. As a result of revisions in PPP exchange rates, poverty rates for individual countries cannot be compared with poverty rates reported in earlier editions.	World Bank, CIA factbook,

Gini Index	Gini index measures the extent to which the distribution of income (or, in some cases, consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution. A Lorenz curve plots the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest individual or household. The Gini index measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. Thus a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality.	World Bank & OECD Income Distribution Database
Reduced number of undernourished people for the last 10 years	Measures the poverty alleviation rate of the global population via the moving average of the rate of undernourished population reduction over the past decade (2006–2015).	World Bank
<b>Social Harmony</b>		
Suicide mortality rate	Suicide mortality rate is the number of suicide deaths in a year per 100,000 population.	World Bank
Violence impact and small arms threat	<p>Economic cost of violence:</p> <ol style="list-style-type: none"> <li>1. Direct cost of violence : Costs which are directly attributed to a specific form of violence. Direct costs include the cost of violence to the victim, the perpetrator and the government. These include direct expenditures, such as the cost of policing.</li> <li>2. Indirect cost of violence: Accounts for costs that accrue after the violent event and include indirect economic losses, physical and physiological trauma to the victim and lost productivity.</li> </ol>	Global Peace Index 2017
	Illicit small arms threat: Price of the arm in current US dollars. The arm includes revolvers and self-loading pistols, rifles and carbines, assault rifles, sub-machine guns and light machine guns.	Small Arms Survey 2017
Safety & Security	The Safety & Security pillar measures countries' performance in three areas: national security, personal precariousness, and personal safety. A stable social and political environment (as measured by a political terror scale) is necessary for attracting investment and sustaining	Global Peace Index 2017

	<p>economic growth. When citizens worry about their personal safety (measured through questions such as “Do you feel safe walking alone at night?”), their overall wellbeing suffers. The Safety &amp; Security pillar combines objective measures of security and subjective measures of personal safety. Factors such as instability resulting from group grievances (like ethnic wars) limit GDP growth. When people’s food and shelter situation is precarious, and when institutions can- not support them, they flee. Academic research shows that organized political violence such as coups or civil war, as well as crime, hinders economic growth. In addition, an environment of fear and uncertainty negatively affects life satisfaction.</p>	
<p>Social Security Contributions ( % of revenue )</p>	<p>Social contributions include social security contributions by employees, employers, and self-employed individuals, and other contributions whose source cannot be determined. They also include actual or imputed contributions to social insurance schemes operated by governments.</p>	<p>World Bank</p>
<p>Social Tolerance</p>	<ul style="list-style-type: none"> <li>- Ethnic minorities tolerance</li> <li>- Immigrants tolerance</li> <li>- LGBT groups tolerance</li> <li>- Social Religious restrictions</li> </ul>	<p>Social Progress Index 2017</p>
<p>Corruption Perception</p>	<p>People’s subjective assessments about corruption in their countries</p>	<p>Corruption Perception Index 2017 Transparency International</p>
<p><b>Socio-economic Empowerment</b></p>		
<p>GDP per capita, PPP</p>	<p>GDP per capita based on purchasing power parity (PPP). PPP GDP is gross domestic product converted to international dollars using purchasing power parity rates. An international dollar has the same purchasing power over GDP as the U.S. dollar has in the United States. GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It</p>	<p>World Bank</p>

## Appendix

	is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current international dollars based on the 2011 ICP round.	
GDP per capita growth (annual %)	Annual percentage growth rate of GDP per capita based on constant local currency. Aggregates are based on constant 2010 U.S. dollars. GDP per capita is gross domestic product divided by midyear population. GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.	World Bank
Government expenditure on education, total (% of GDP)	General government expenditure on education (current, capital, and transfers) is expressed as a percentage of GDP. It includes expenditure funded by transfers from international sources to government. General government usually refers to local, regional and central governments.	World Bank, OECD
Health expenditure, total (% of GDP)	Public health expenditure consists of recurrent and capital spending from government (central and local) budgets, external borrowings and grants (including donations from international agencies and nongovernmental organizations), and social (or compulsory) health insurance funds.	World Bank
Social Expenditure - Aggregated data, total (% of GDP)	The main social policy areas are as follows: old age, survivors, incapacity-related benefits, health, family, active labor market programmes, unemployment, housing, and other social policy areas.	stats.oecd.org
School enrollment, secondary (% net)	Net enrollment rate is the ratio of children of official school age who are enrolled in school to the population of the corresponding official school age. Secondary education completes the provision of basic education that began at the primary level, and aims at laying the foundations for lifelong learning and human development, by offering more subject- or skill-oriented instruction using more specialized teachers.	World Bank

Account Ownership (% of population 15+)	Account denotes the percentage of respondents who report having an account (by themselves or together with someone else) at a bank or another type of financial institution or report personally using a mobile money service in the past 12 months (% age 15+).	World Bank
General government gross debt (% of GDP)	Gross debt consists of all liabilities that require payment or payments of interest and/or principal by the debtor to the creditor at a date or dates in the future. This includes debt liabilities in the form of SDRs, currency and deposits, debt securities, loans, insurance, pensions and standardized guarantee schemes, and other accounts payable. Thus, all liabilities in the GFSM 2001 system are debt, except for equity and investment fund shares and financial derivatives and employee stock options.	International Monetary Fund
Price Stability	Inflation, GDP deflator (annual %): Inflation as measured by the annual growth rate of the GDP implicit deflator shows the rate of price change in the economy as a whole. The GDP implicit deflator is the ratio of GDP in current local currency to GDP in constant local currency.	World Bank
	Consumer price index (2010 = 100): Consumer price index reflects changes in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used. Data are period averages.	World Bank
Individuals using the Internet (% of population)	Internet users are individuals who have used the Internet (from any location) in the last 3 months. The Internet can be used via a computer, mobile phone, personal digital assistant, games machine, digital TV etc.	World Bank
Growth in internet users	Growth rate of Internet users over the last decade (2007–2016).	World Bank

**Environmental Equilibrium**

**Material Consumption**

## Appendix

Energy Consumption per Capita	Per capita energy consumption is used to evaluate the average energy consumption of a country. The unit is KWh/capita.	International Energy Agency 2017
Per capita GHG emission	The total GHG emissions of a country divided by the number of the population. The GHGs (Greenhouse gases) mean the six gases defined by the Kyoto Protocol, including carbon dioxide (CO <sub>2</sub> ), methane (CH <sub>4</sub> ), Nitrous Oxide (N <sub>2</sub> O), perfluorocarbons (PFCs), Hydrofluorocarbons (HFCs), sulfur hexafluoride (SF <sub>6</sub> ).	International Energy Agency 2017
Water Consumption per Capita	The total freshwater consumption divided by the number of the population of a country. The total freshwater consumption includes water uses for agricultural, industrial, domestic, and desalination in cubic meters. Evaporation losses of reservoirs are not included.	Our World in Data 2014
Food Sustainability	The Food Sustainability Index (FSI) was calculated based on raw data in three categories, wasted food, agricultural sustainability, and nutrition challenges, covering 34 countries. Taking appropriateness of the issue into consideration, we took "wasted food" as the aspect used in this indicator.	Barilla Center for food & Nutrition 2017
Overfishing	Data were from "Sea Around Us", an international research team of the Fishery Center at University of British Columbia in Canada.  The team developed "district of fish amount", monitoring the inventories of fish species in different times. Overfishing is defined as the status that the catch amount during the peak period in a year reached 10-50% and the survival amount in next year was lower than 10% of the peak amount of the previous year.	Environmental Performance Index 2016 report
Forest Management	<u>Tree Cover Loss</u> Data for forest cover loss were from the total area of forest loss from 2000 to 2014. As EPI evaluated those forests with at least 30% of loss, which was treated as the bottom line of forest conservation, thus this was used as the baseline.	Environmental Performance Index 2016 report
	<u>Forest Cover Area</u>	World Bank

	Forest area is land under natural or planted stands of trees of at least 5 meters in situ, whether productive or not, and excludes tree stands in agricultural production systems (for example, in fruit plantations and agroforestry systems) and trees in urban parks and gardens.	
<b>Environmental Governance</b>		
Biodiversity	This indicator covers four aspects, including important protected area in habitats, land protected area (biological species amounts in a country and globe), and marine protected area	Environmental Performance Index 2016
Energy Intensity	Energy intensity is the amount of energy needed to produce a unit of GDP. Lower energy intensities mean less energy was needed for unit production, meaning higher efficiencies.	World Bank
Green Growth	80 countries were included in GGEI. Aspects were invited to evaluate the countries' performances in green economy, using 32 indicators covering "leadership and climate change", "sector efficiency", "market and investment", and "environment".	The Global Green Economy Index 2016
Air Pollution	The number is derived from weighted summation of the annual average PM 2.5 exposure of each person in a country. The unit is $\mu\text{g}/\text{m}^3$ .	Our World in Data 2015
Waste Management	<u>Municipal Solid Waste</u> The indicator of the World Bank covers generation, collection, composition, and disposal of MSWs. We picked up "per capita MSW" , with the unit as kg/capita/day.	World Bank
	<u>Recycling rate</u> This is defined as the ratio of recycled materials in the total amount of collected garbage. Note: Most of developing countries do not have public recycling systems. Recycling has been carried out through private collection systems. No confirmed data are available.	European Environmental Bureau & Eumonia
Waste Water Treatment	This is derived based on weighted summation of connection ratios of domestic and industrial wastewater, used for measuring the governance of wastewater of a country. For each country, multiple cities were selected according to their population scales.	Environmental Performance Index 2016

Improved Water Source	<p>This is to indicate the percentage of population that can reach the drinking water treated and purified.</p> <p>Improved water sources include piped water, boreholes or tubewells, protected dug wells, protected springs, and packaged or delivered water.</p>	World Bank
Improved Sanitation Facilities	<p>The percentage of people using improved sanitation facilities that are not shared with other households and where excreta are safely disposed of in situ or transported and treated offsite.</p> <p>Improved sanitation facilities include flush/pour flush to piped sewer systems, septic tanks or pit latrines: ventilated improved pit latrines, composting toilets or pit latrines with slabs.</p>	World Bank
<b>Natural Rules</b>		
Nitrogen Control	<p>Data for nitrogen balance were used to indicate the performance of nitrogen control</p> <p>Note: Fertilizer uses will result in extra nitrogen releases to the soils, which will be further degraded to ammonia and contaminate water sources, leading to death of fish. When evaporating to the air and combined with industrial emissions, they may cause human inspiration diseases or even heart diseases.</p>	Environmental Performance Index 2016
Persistent Organic Pollutants	<p>Countries are awarded points depending on whether they have signed and/or ratified the Stockholm Convention, as well as whether or not they allow, restrict, or ban the 'dirty dozen' POPs regulated.</p> <p>Note: If contacting POPs, people tend to feel uncomfortable, suffer from endocrine disorders or cancers.</p>	Environmental Performance Index 2014
Radioactive Waste	<p>IAEA classified the Consolidated Radioactive Waste Inventory ( m<sup>3</sup> ) of countries into four categories, i.e., HLW = High Level Waste, ILW = Intermediate Level Waste, LLW = Low Level Waste, VLLW = Very Low Level Waste, corresponding to weightings as 1, 0.5, 0.25, and 0.1, respectively. This indicator refers to the weighted summation of these four categories of radioactive wastes.</p>	International Atomic Energy Agency



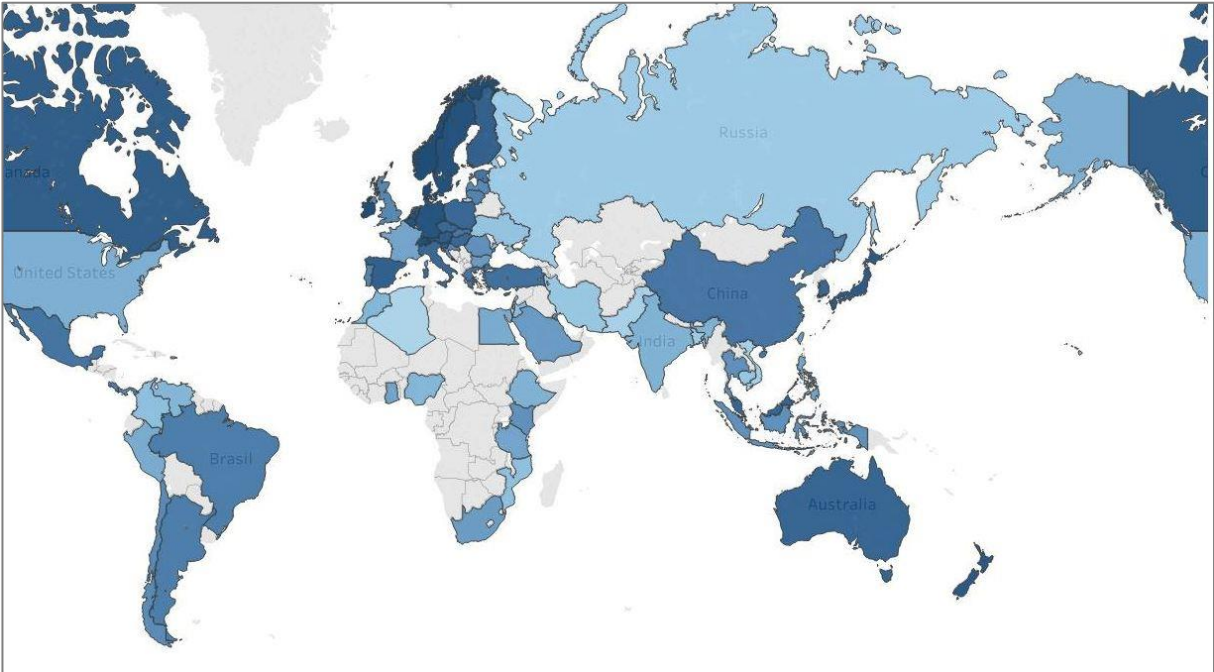
## Appendix

### Appendix 3 : Global Ethics rankings, scores, and distribution

Ranking	Country/ Economie	Domain Score	External Peace	Military Buildup	Internation- al Exchange	Internation- al Aid
1	<b>Denmark</b>	9.200	8.667	9.250	9.250	9.500
2	<b>Norway</b>	9.133	8.667	8.750	9.000	10.000
2	<b>Ireland</b>	9.133	8.667	10.000	9.000	8.750
4	<b>Switzerland</b>	9.000	9.000	8.750	9.000	9.250
5	<b>Sweden</b>	8.933	9.000	8.250	8.750	9.750
6	<b>Netherlands</b>	8.867	9.000	7.750	9.000	9.750
6	<b>Germany</b>	8.867	10.000	6.500	9.250	10.000
6	<b>Belgium</b>	8.867	8.667	9.250	8.750	8.750
9	<b>New Zealand</b>	8.733	8.000	9.750	8.500	8.500
10	<b>Japan</b>	8.600	10.333	8.250	9.000	7.250
11	<b>Austria</b>	8.533	8.667	9.250	9.250	7.000
12	<b>Canada</b>	8.267	6.667	7.500	9.500	9.000
13	<b>Finland</b>	8.200	8.667	9.000	8.000	7.250
14	<b>Slovenia</b>	8.133	7.667	10.250	7.750	6.750
14	<b>Spain</b>	8.133	9.333	7.000	9.000	7.500
16	<b>Malaysia</b>	8.067	9.000	8.500	8.500	6.500
17	<b>Australia</b>	8.000	5.333	8.250	8.750	9.000
18	<b>Czech Republic</b>	7.933	8.000	9.000	8.500	6.250
18	<b>Italy</b>	7.933	9.667	6.000	9.000	7.500
18	<b>South Korea</b>	7.933	9.333	6.750	9.250	6.750
18	<b>Poland</b>	7.933	8.667	8.000	8.500	6.750
18	<b>Hungary</b>	7.933	8.000	9.250	8.250	6.250
23	<b>Cyprus</b>	7.867	7.667	10.000	7.500	6.250
23	<b>Turkey</b>	7.867	9.000	7.250	7.750	7.750
25	<b>Mexico</b>	7.800	9.000	8.250	8.250	6.000
26	<b>Estonia</b>	7.733	7.667	9.750	7.500	6.000
26	<b>Slovakia</b>	7.733	8.000	9.500	7.500	6.000
26	<b>Greece</b>	7.733	8.333	8.000	8.500	6.250
26	<b>China</b>	7.733	10.667	4.750	7.750	8.500
30	<b>Costa Rica</b>	7.667	7.667	10.750	6.750	5.500
30	<b>Brazil</b>	7.667	9.667	7.250	8.000	6.250
30	<b>Argentina</b>	7.667	9.000	8.750	7.500	5.750
33	<b>Portugal</b>	7.600	8.000	8.500	8.250	5.750
33	<b>Lithuania</b>	7.600	7.667	9.750	7.250	5.750
35	<b>United Kingdom</b>	7.533	4.333	5.500	9.250	10.250
35	<b>Panama</b>	7.533	7.667	10.250	6.750	5.500

## Appendix

37	<b>Croatia</b>	7.467	7.667	10.000	7.750	4.500
37	<b>Latvia</b>	7.467	7.667	10.250	7.000	5.000
37	<b>Chile</b>	7.467	8.667	8.250	7.750	5.500
40	<b>Romania</b>	7.400	8.000	8.250	7.500	6.000
40	<b>Thailand</b>	7.400	8.000	7.750	7.250	6.750
40	<b>Indonesia</b>	7.400	9.333	7.750	6.250	6.750
40	<b>Kuwait</b>	7.400	8.000	8.750	5.750	7.250
40	<b>Kenya</b>	7.400	9.000	9.750	4.500	6.750
45	<b>Saudi Arabia</b>	7.333	9.000	7.000	6.750	7.000
46	<b>Taiwan</b>	7.267	7.667	8.250	8.250	5.000
46	<b>Bulgaria</b>	7.267	7.667	8.500	7.250	5.750
46	<b>South Africa</b>	7.267	9.333	7.750	6.250	6.250
49	<b>Ghana</b>	7.200	9.333	10.250	4.500	5.250
50	<b>France</b>	7.133	7.000	3.750	9.500	8.250
50	<b>Philippines</b>	7.133	8.000	8.500	6.250	6.000
50	<b>Tanzania</b>	7.133	9.333	9.750	4.250	5.750
53	<b>Peru</b>	7.067	8.333	8.500	6.250	5.500
53	<b>Egypt</b>	7.067	9.333	7.750	5.500	6.250
55	<b>United States</b>	7.000	5.667	2.500	10.250	9.250
56	<b>Ethiopia</b>	6.933	10.000	8.750	3.000	6.750
56	<b>India</b>	6.933	10.333	5.500	6.250	6.500
58	<b>Morocco</b>	6.800	9.333	7.750	6.250	4.500
58	<b>Venezuela</b>	6.800	8.333	8.500	6.250	4.500
58	<b>Nigeria</b>	6.800	9.333	8.500	4.250	5.750
61	<b>Jordan</b>	6.733	9.000	7.250	5.500	5.750
62	<b>Singapore</b>	6.667	7.667	5.750	8.500	5.000
62	<b>Colombia</b>	6.667	8.000	7.250	6.500	5.250
62	<b>Mozambique</b>	6.667	7.667	10.000	4.000	5.250
65	<b>Ukraine</b>	6.533	8.333	6.750	6.750	4.750
65	<b>Lebanon</b>	6.533	7.667	8.000	5.000	5.750
67	<b>Cambodia</b>	6.467	8.667	8.000	5.250	4.500
67	<b>Iran</b>	6.467	8.333	7.000	4.750	6.250
69	<b>Russia</b>	6.400	9.333	3.000	7.750	6.250
69	<b>Bangladesh</b>	6.400	10.000	8.250	3.000	5.250
71	<b>Vietnam</b>	6.333	7.667	7.750	5.500	4.750
72	<b>Israel</b>	6.267	8.333	4.750	7.000	5.500
72	<b>Pakistan</b>	6.267	10.000	5.750	3.250	7.000
74	<b>Algeria</b>	6.067	7.667	6.750	4.750	5.500



Global Ethics Rankings

## Appendix

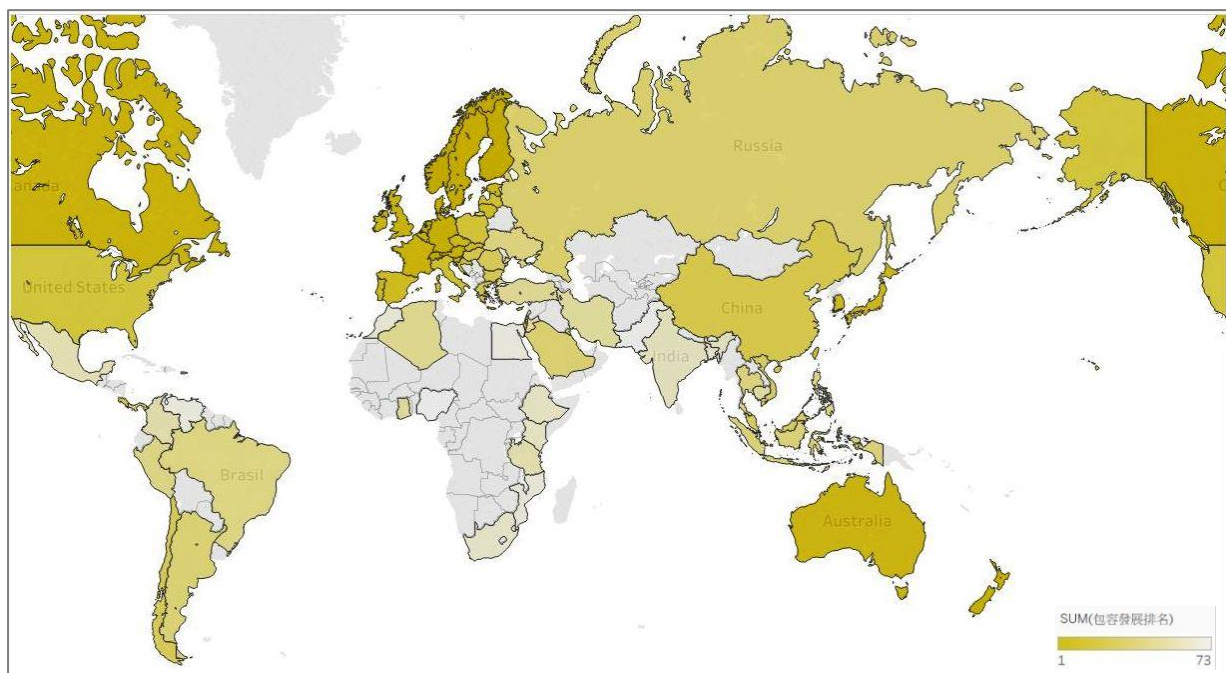
### Appendix 4 : Inclusive Development rankings, scores, and distribution

Ranking	Country/ Economie	Domain Score	Humanistic Needs	Social Equity	Social Harmony	Socio-Economic Empowerment
1	<b>Norway</b>	8.891	9.750	9.571	8.000	8.318
2	<b>Sweden</b>	8.578	8.875	9.286	7.167	8.682
3	<b>Finland</b>	8.516	8.375	9.429	8.250	8.182
4	<b>Netherlands</b>	8.344	8.250	8.857	8.750	7.864
5	<b>Switzerland</b>	8.266	8.750	8.714	9.000	7.227
6	<b>Denmark</b>	8.234	7.875	8.857	7.500	8.500
7	<b>Slovenia</b>	7.828	8.500	8.143	7.583	7.273
8	<b>Germany</b>	7.813	7.750	8.000	8.250	7.500
9	<b>Ireland</b>	7.750	7.875	8.286	7.417	7.500
9	<b>Austria</b>	7.750	7.750	8.429	7.917	7.227
11	<b>New Zealand</b>	7.734	8.375	7.143	7.417	7.818
11	<b>Canada</b>	7.734	7.625	8.714	7.917	7.091
13	<b>Australia</b>	7.719	8.625	8.143	6.833	7.273
14	<b>United Kingdom</b>	7.625	7.500	8.143	7.667	7.364
15	<b>France</b>	7.547	7.375	8.000	7.167	7.591
16	<b>Belgium</b>	7.453	7.250	7.286	7.333	7.773
17	<b>Czech Republic</b>	7.344	8.000	7.571	7.667	6.545
18	<b>Estonia</b>	7.297	8.375	7.429	6.250	7.000
19	<b>Singapore</b>	7.250	8.875	6.429	9.583	5.318
20	<b>Portugal</b>	7.203	8.000	7.143	7.500	6.500
21	<b>Japan</b>	7.172	8.250	6.571	6.167	7.318
22	<b>Spain</b>	7.141	7.375	6.714	7.083	7.273
23	<b>Slovakia</b>	7.016	7.625	7.000	6.917	6.636
24	<b>Israel</b>	6.953	7.250	7.286	5.917	7.091
25	<b>South Korea</b>	6.906	7.625	6.714	6.167	6.909
26	<b>Lithuania</b>	6.891	8.250	6.429	6.417	6.455
27	<b>Cyprus</b>	6.797	7.125	6.714	6.583	6.727
28	<b>Poland</b>	6.672	7.125	6.286	6.667	6.591
29	<b>Italy</b>	6.641	7.500	5.286	7.167	6.591
30	<b>United States</b>	6.609	7.125	6.571	7.000	6.045
31	<b>Latvia</b>	6.578	7.250	6.429	5.833	6.591
31	<b>Taiwan</b>	6.578	8.625	6.571	5.417	5.727
33	<b>Croatia</b>	6.500	7.250	6.000	6.500	6.273
34	<b>Hungary</b>	6.297	6.500	6.714	6.167	5.955
35	<b>Greece</b>	6.172	6.875	4.857	7.250	5.909
36	<b>China</b>	6.063	6.000	6.286	5.500	6.273
37	<b>Costa Rica</b>	5.953	5.750	4.143	7.917	6.182

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38	<b>Chile</b>	5.844	5.500	6.143	6.417	5.591
39	<b>Bulgaria</b>	5.766	6.000	5.143	5.417	6.182
40	<b>Romania</b>	5.656	6.250	5.286	6.583	4.955
41	<b>Malaysia</b>	5.563	5.625	5.429	6.333	5.182
42	<b>Argentina</b>	5.297	5.625	4.571	6.250	5.000
43	<b>Kuwait</b>	5.266	5.250	3.571	6.167	5.864
44	<b>Panama</b>	5.234	6.000	4.714	5.750	4.727
45	<b>Russia</b>	5.172	7.000	5.857	2.667	4.773
46	<b>Vietnam</b>	5.156	4.500	6.286	5.500	4.727
47	<b>Brazil</b>	5.109	5.500	4.286	5.750	5.000
48	<b>Ukraine</b>	5.094	5.000	6.857	3.667	4.818
49	<b>Saudi Arabia</b>	4.938	4.375	3.857	5.167	5.909
50	<b>Peru</b>	4.875	5.500	4.857	5.417	4.136
51	<b>Thailand</b>	4.859	5.375	5.571	3.583	4.727
52	<b>Indonesia</b>	4.766	4.500	5.000	5.500	4.409
53	<b>Philippines</b>	4.625	5.000	3.714	5.250	4.591
54	<b>Jordan</b>	4.609	4.250	4.571	6.750	3.727
55	<b>Turkey</b>	4.578	4.375	4.714	4.417	4.727
56	<b>Iran</b>	4.531	3.375	3.714	5.000	5.636
57	<b>Colombia</b>	4.516	5.375	3.000	5.167	4.500
58	<b>Algeria</b>	4.453	2.750	5.429	4.833	4.864
59	<b>Ghana</b>	4.438	3.875	4.286	5.833	4.182
59	<b>Tanzania</b>	4.438	3.875	4.571	5.167	4.364
61	<b>Cambodia</b>	4.328	3.750	5.286	3.583	4.545
62	<b>Mexico</b>	4.250	5.250	3.143	4.083	4.318
63	<b>Lebanon</b>	4.172	4.125	4.429	4.250	4.000
64	<b>India</b>	4.063	3.750	4.429	3.833	4.182
65	<b>South Africa</b>	4.000	3.750	3.000	4.083	4.773
66	<b>Kenya</b>	3.984	3.375	4.000	3.583	4.636
67	<b>Morocco</b>	3.922	3.500	3.286	6.083	3.455
68	<b>Bangladesh</b>	3.875	2.625	3.714	5.167	4.182
69	<b>Ethiopia</b>	3.813	2.875	4.286	4.667	3.727
70	<b>Venezuela</b>	3.703	4.250	2.714	3.750	3.909
71	<b>Egypt</b>	3.688	3.000	3.714	5.250	3.318
72	<b>Mozambique</b>	3.656	2.750	4.000	4.500	3.636
73	<b>Pakistan</b>	3.234	2.125	3.429	4.500	3.227
74	<b>Nigeria</b>	3.016	2.250	3.143	3.250	3.364

# Appendix



**Inclusive Development Rankings**

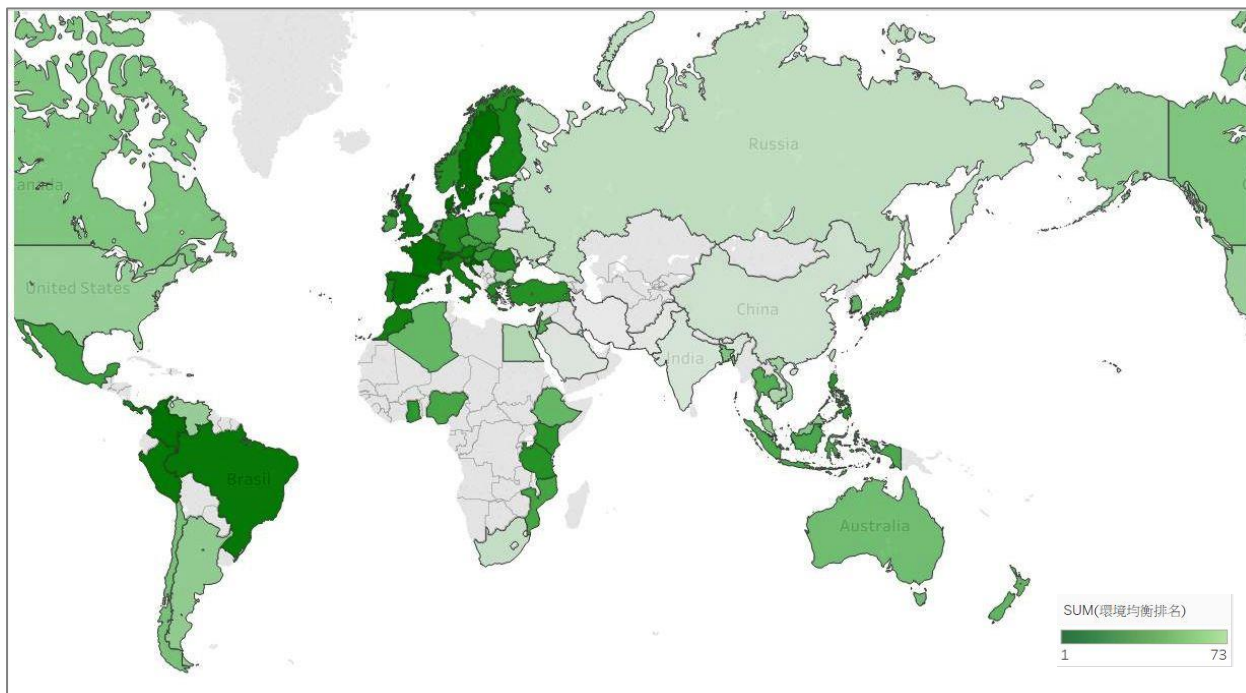
### Appendix 5 : Environmental Equilibrium rankings, scores, and distribution

Ranking	Country/ Economie	Domain Score	Material consumption	Environmental governance	Natural rules
1	<b>Croatia</b>	8.382	7.500	8.063	11.000
2	<b>Denmark</b>	8.176	4.667	9.875	10.667
3	<b>Sweden</b>	8.147	6.333	9.313	8.667
4	<b>Switzerland</b>	8.059	5.417	9.563	9.333
5	<b>France</b>	7.882	6.417	8.938	8.000
6	<b>Colombia</b>	7.824	7.583	8.063	7.667
7	<b>Spain</b>	7.765	5.500	9.125	8.667
8	<b>Latvia</b>	7.706	6.500	7.750	10.000
9	<b>Brazil</b>	7.647	7.833	8.125	6.000
10	<b>Austria</b>	7.588	4.500	9.000	10.000
10	<b>Peru</b>	7.588	7.583	6.813	9.667
12	<b>United Kingdom</b>	7.559	5.667	9.813	5.333
13	<b>Panama</b>	7.529	7.083	7.563	8.333
14	<b>Lithuania</b>	7.500	6.500	7.688	9.000
15	<b>Portugal</b>	7.471	5.500	8.750	8.000
16	<b>Greece</b>	7.441	5.000	8.438	9.667
17	<b>Finland</b>	7.412	4.750	8.563	9.667
17	<b>Slovenia</b>	7.412	5.250	8.313	9.333
17	<b>Italy</b>	7.412	5.000	9.000	8.000
20	<b>Costa Rica</b>	7.382	7.250	7.875	6.333
20	<b>Morocco</b>	7.382	7.667	6.563	9.000
22	<b>Germany</b>	7.353	5.000	9.625	6.000
22	<b>Singapore</b>	7.353	5.667	8.250	8.333
22	<b>Romania</b>	7.353	6.167	7.250	10.000
25	<b>Norway</b>	7.265	5.250	8.750	7.333
26	<b>Turkey</b>	7.206	6.917	6.250	10.333
27	<b>Tanzania</b>	7.147	9.000	4.688	10.000
28	<b>Kenya</b>	7.118	7.750	5.688	9.667
29	<b>Philippines</b>	7.088	6.750	6.875	8.333
30	<b>Hungary</b>	7.059	5.583	7.313	9.333
31	<b>Japan</b>	7.029	5.000	9.063	5.667
31	<b>Ghana</b>	7.029	8.000	5.313	9.667
33	<b>Mexico</b>	7.000	6.583	6.938	8.000
34	<b>Czech Republic</b>	6.794	4.667	7.313	9.667
35	<b>Ireland</b>	6.765	4.250	8.313	7.667
36	<b>Slovakia</b>	6.735	5.000	7.313	8.667
37	<b>Estonia</b>	6.706	4.083	7.313	10.333

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37	<b>Poland</b>	6.706	4.500	7.250	9.667
39	<b>Mozambique</b>	6.676	8.167	4.438	9.667
40	<b>South Korea</b>	6.647	6.333	7.000	6.333
40	<b>Nigeria</b>	6.647	8.750	3.938	9.667
42	<b>Netherlands</b>	6.618	3.583	8.875	6.667
42	<b>Indonesia</b>	6.618	6.250	6.000	9.000
44	<b>Thailand</b>	6.588	5.667	6.000	10.000
44	<b>Jordan</b>	6.588	6.333	5.625	9.667
46	<b>Australia</b>	6.500	3.667	8.688	6.333
47	<b>New Zealand</b>	6.471	3.167	8.375	8.000
47	<b>Belgium</b>	6.471	4.000	8.625	5.667
47	<b>Cyprus</b>	6.471	5.083	7.313	7.000
50	<b>Algeria</b>	6.441	7.333	5.438	7.333
50	<b>Lebanon</b>	6.441	6.000	5.688	9.333
52	<b>Chile</b>	6.382	4.250	7.750	7.000
52	<b>Ethiopia</b>	6.382	8.333	4.188	8.333
54	<b>Bangladesh</b>	6.324	7.917	4.875	7.000
55	<b>Malaysia</b>	6.265	5.583	7.000	5.667
56	<b>Canada</b>	6.235	3.333	7.875	7.667
56	<b>Israel</b>	6.235	5.167	7.625	4.667
58	<b>United States</b>	6.176	3.417	8.313	6.000
58	<b>Argentina</b>	6.176	4.167	6.500	9.333
60	<b>Bulgaria</b>	6.147	4.583	6.125	9.333
61	<b>Vietnam</b>	6.088	5.667	4.938	10.000
61	<b>Venezuela</b>	6.088	5.333	6.313	7.000
63	<b>Cambodia</b>	6.029	6.833	4.563	8.333
64	<b>South Africa</b>	5.912	6.000	5.313	7.333
64	<b>Egypt</b>	5.912	5.167	6.063	7.000
66	<b>Taiwan</b>	5.882	4.750	7.063	5.000
67	<b>Ukraine</b>	5.853	6.000	5.688	6.000
68	<b>China</b>	5.765	6.167	6.000	4.333
68	<b>Russia</b>	5.765	5.750	5.813	5.667
70	<b>Kuwait</b>	5.471	3.833	5.750	8.000
70	<b>India</b>	5.471	6.333	4.875	5.333
72	<b>Saudi Arabia</b>	5.176	3.167	5.750	7.667
73	<b>Pakistan</b>	5.088	5.667	4.688	5.000
74	<b>Iran</b>	4.735	3.833	3.813	9.000





**Environmental Equilibrium Rankings**

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