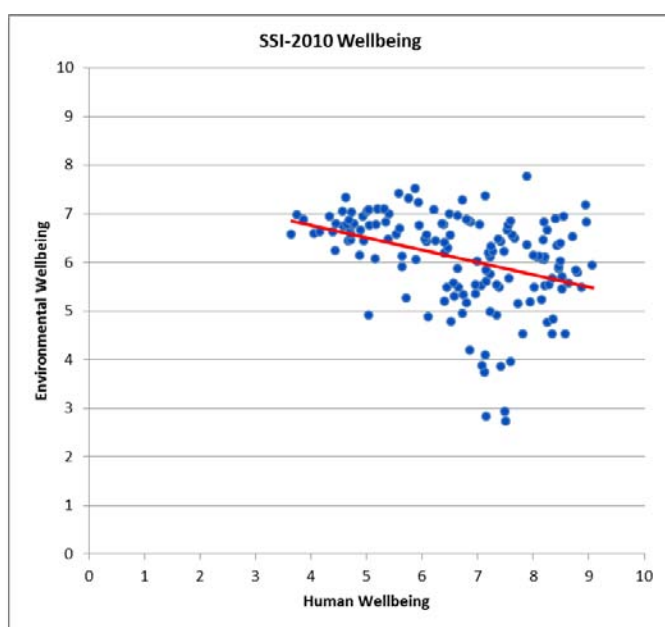


# Are Human Wellbeing and Environmental Wellbeing at collision course?

The role of Good Governance and other factors in preventing a collision.



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April 2012



## Summary

Will it be possible to avoid the unavoidable? Globally, Human Wellbeing (HW) and Environmental Wellbeing (EW) seem to be at collision course. Many studies have found that this is often so, although not in all cases. The current study examines the factors that may be essential in avoiding a dramatic collision.

The data of the Sustainable Society Index for 151 countries show that there is a positive correlation between Good Governance and Human Wellbeing, but no significant correlation with Environmental Wellbeing. Furthermore, two factors have been identified which play a discriminating role: income and natural resources. But they do not explain everything: many countries differ from the average pattern.

Zooming in on two groups of countries with 'extreme' values for HW and EW, the most discriminating factor between the two groups is the abundance of natural resources. But again, not all countries, e.g. Norway, follow the average pattern.

It could very well be that other factors play an important role too in a country's correlation between HW and EW, like policy, the stage of development and the presence of leadership towards sustainability.

## 1. Introduction

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The report *Limits to Growth* (Meadows, 1972), caused a shock for many people: it showed what could happen in a scenario of continued business-as-usual. In a recent evaluation of the models, using data for the period 1970-2000, Turner concluded: ‘The analysis shows that 30 years of historical data compares favourably with key features of the business-as-usual scenario called the standard run scenario, which results in collapse of the global systems midway through the 21<sup>st</sup> century.’ (Turner, 2008). Now, in 2012, many people are wondering what will happen when countries like China and India – with about one third of the world population – will achieve the same level of consumption as the highly developed countries have nowadays. Will that result in a catastrophic pollution and exhaustion of our planet and a further degeneration of life on earth, as foreseen in the model of *Limits to Growth*?

Improvement of Human Wellbeing usually results in increases in the level of goods and services consumed in a society. As such, it can be detrimental to Environmental Wellbeing. **So it could very well be that Human and Environmental Wellbeing are at a collision course.**

Over the last few decades many studies (Caviglia-Harris, 2009; Moran, 2008; Zidanšek, 2007; Stern, 2003, 1996; Max-Neef, 1995) have been carried out with respect to the relationship between economic growth and sustainability, i.e. between Human and Environmental Wellbeing. However, these studies do not unambiguously define the relation between the two, and thus do not answer the question under which conditions a conflict between Human and Environmental Wellbeing can be avoided. In an attempt to answer this question in a more satisfactory way, the current study has been undertaken. The goal of the study is:

*to better understand the relationship between Human Wellbeing and Environmental Wellbeing and the driving factors behind that relation, in order to be able to define policies to increase Human Wellbeing and Environmental Wellbeing simultaneously.*

The data set for 151 countries of the Sustainable Society Index, SSI (Kerk, 2010), covering over 99% of the world population, provides an excellent tool for this study. The SSI covers wellbeing in its broad sense: Human Wellbeing, Environmental Wellbeing and Economic Wellbeing. Human Wellbeing (HW) without Environmental Wellbeing (EW) is a dead end, it will not last long. Environmental Wellbeing without Human Wellbeing makes no sense, at least not from a human perspective. Thus HW and EW must be ensured simultaneously. The third dimension of wellbeing, Economic Wellbeing (EcW), is not a goal in itself, but is a condition to achieve and maintain high levels of HW and EW.

The SSI comprises 24 indicators, clustered in 8 categories and 3 dimensions of wellbeing. All scores are expressed on a scale of 0 to 10. A score of 0 represents no sustainability, a score of 10 full sustainability.

### Human Wellbeing

#### *Basic Needs*

Sufficient Food  
Sufficient to Drink  
Safe Sanitation

#### *Personal Development*

Healthy Life  
Education Opportunities  
Gender Equality

#### *Well-balanced Society*

Good Governance  
Income Distribution  
Population Growth

### Environmental Wellbeing

#### *Healthy Environment*

Air Quality (Humans)  
Air Quality (Nature)  
Surface Water Quality

#### *Climate & Energy*

Cons. of Renewable Energy  
Emission of Greenhouse Gases  
Energy Consumption

#### *Natural Resources*

Renewable Water Resources  
Forest Area  
Biodiversity

### Economic Wellbeing

#### *Preparation for the future*

Consumption  
Organic Farming  
Genuine Savings

#### *Economy*

Income (GDP per capita)  
Employment  
Public Debt

A detailed description of the SSI, its framework, the calculation methodology and the results can be found at [www.ssfindex.com](http://www.ssfindex.com).

## 2. Correlation between Human and Environmental Wellbeing

In figure 1 the correlation between Human Wellbeing (HW) and Environmental Wellbeing (EW) has been plotted for all 151 countries included in the SSI. The picture clearly shows a large spread between the HW- and EW-scores. This proves that higher levels of HW are not in all cases incompatible with higher levels of EW. The absence of countries with a relatively low score for HW with at the same time also a low score for EW is remarkable.

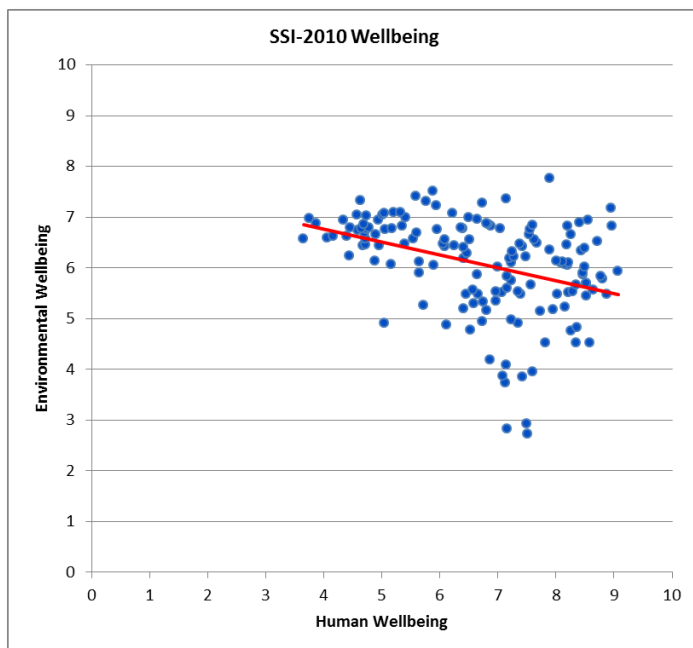


Figure 1

It should be noted that the results presented here are based on the actual situations at this moment in time and thus do not reveal the path along which countries have travelled over the years. It should also be noted that countries which are in many respects similar but different in the “timing” of their development, do progress under different circumstances. For example, our awareness about sustainability aspects is now much stronger than even a few decades ago. This may have particularly its effect on countries still in the early stages of development.

Whatever may have been the path, the inserted (linear) trend line unmistakably turns downwards. This seems to lend credibility to the fact that higher HW-scores on average go together with lower EW-scores, although apparently not necessarily so in all cases.

In figure 2 the relation between HW and EW has been plotted for five countries with the largest population (China, India, USA, Indonesia and Brazil) and the five BRICS countries (Brazil, Russia, India, China and South Africa), just to give a first idea as to where these countries stand with respect to Human and Environmental Wellbeing.

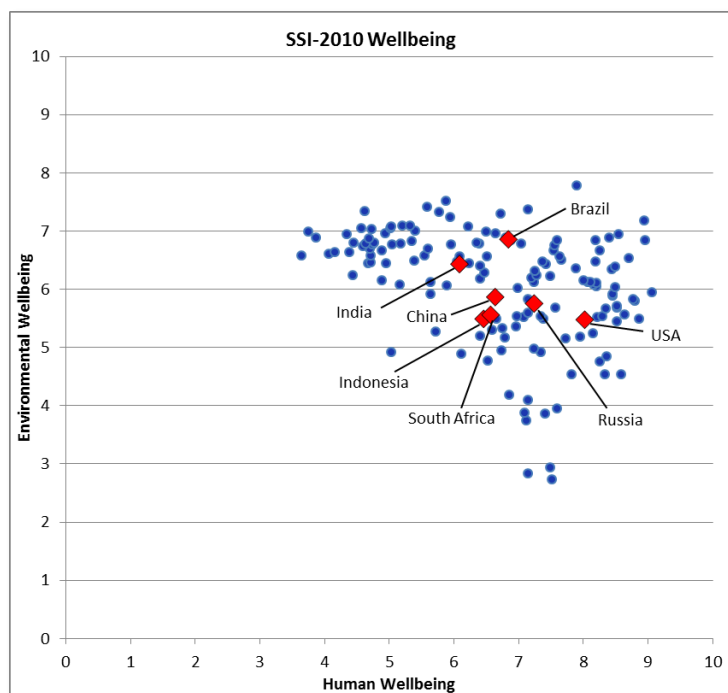


Figure 2

It seems a logical assumption that Good Governance is a necessary condition to steer a country in the longer run along a “safe course” in the graph, that is to say maintaining a relatively high level of EW as HW improves. This study will examine this assumption and will try to identify other factors that may affect the course of development of a country.

### 3. Correlation with Good Governance

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In order to avail of yearly world-wide data for Good Governance, we adopted the assessment of the World Bank which is based on six major issues:

- Voice and Accountability
- Political Stability
- Government Effectiveness
- Regulatory Quality
- Rule of Law
- Control of Corruption.

These issues roughly cover the same aspects as defined by ESCAP (ESCAP). In figure 3 the scores for HW and EW against the scores for Good Governance for the 151 countries are plotted.

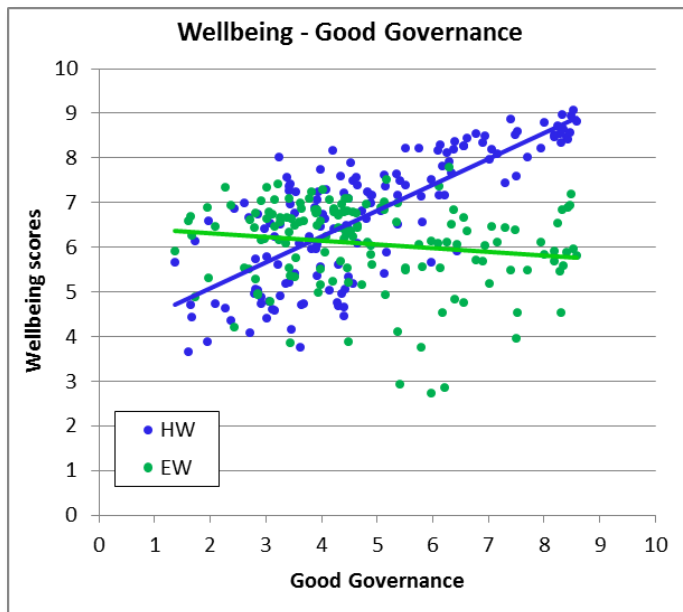


Figure 3

There appears to be a rather strong positive correlation between HW and Good Governance. However, there is – unexpectedly – a slightly negative correlation between EW and Good Governance. Using data from Freedom House (Freedom House, 2011) with respect to political rights as an aspect of good governance, the conclusion is quite similar. Nevertheless, it is conceivable that a specific aspect of Good Governance could be essential for maintaining higher levels of EW as HW increases. It certainly is a possibility that other factors may reveal better and more convincing results (Collins, 2009; Doig, 2007). One can think of a country’s policy with respect to development towards a sustainable society, of leadership (Rondinelli, 2009), of the presence of persons who have mobilized an effective driving force towards sustainability (like Gro Harlem Brundtland in the Nordic countries), of shifting political preferences etc. Unfortunately, at present sufficient data are not available to firmly assess this possibility. However, there appears to be some relation between Good Governance and resource-rich countries as we will show in paragraph 5.2.

It is also conceivable that other factors than Good Governance play a distinct role in the relation between Human and Environmental Wellbeing too. Therefore, we will study a number of characteristics of a country:

1. Income, GDP per capita
2. Population size
3. Population density
4. Country size
5. Natural resources

## 4. Correlation with specific characteristics

### 4.1 Wellbeing - Income (GDP per capita)

Figure 4 shows the scores for the 151 SSI-countries for HW and EW respectively, ranked by GDP per capita (on a logarithmic scale). The inserted trend lines are clear enough, even more pronounced for HW than for EW. The figure seems to support the generally held opinion that it are the rich countries – with a relatively high level of HW – that are spoiling our physical environment and are depleting the non-renewable resources. However, many countries do not perform in accordance with the overall pattern, as can be seen in figure 4. We'll have to examine why this is so.

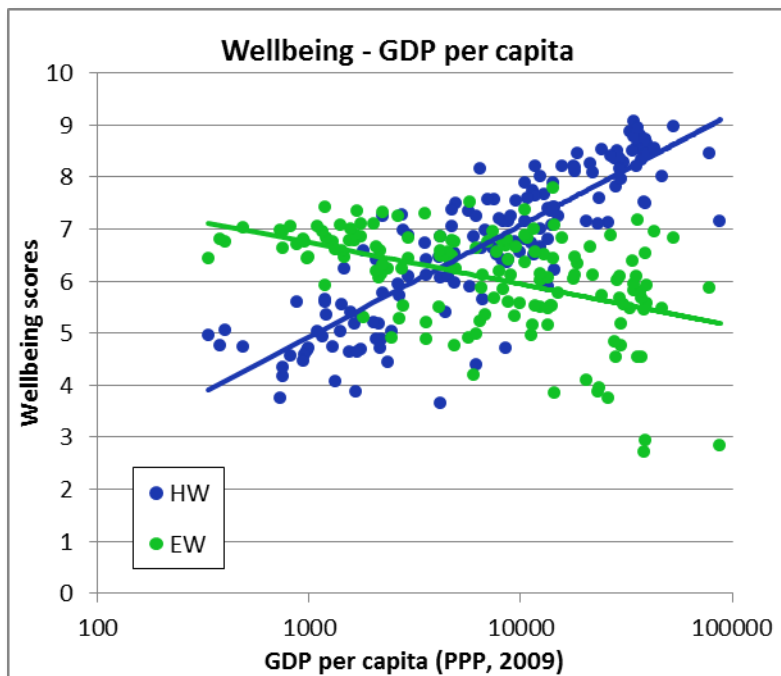


Figure 4

Another way to look at this question is by income classes. The World Bank distinguishes four income classes for countries: Low, lower middle, upper middle, and high income (World Bank, 2010).



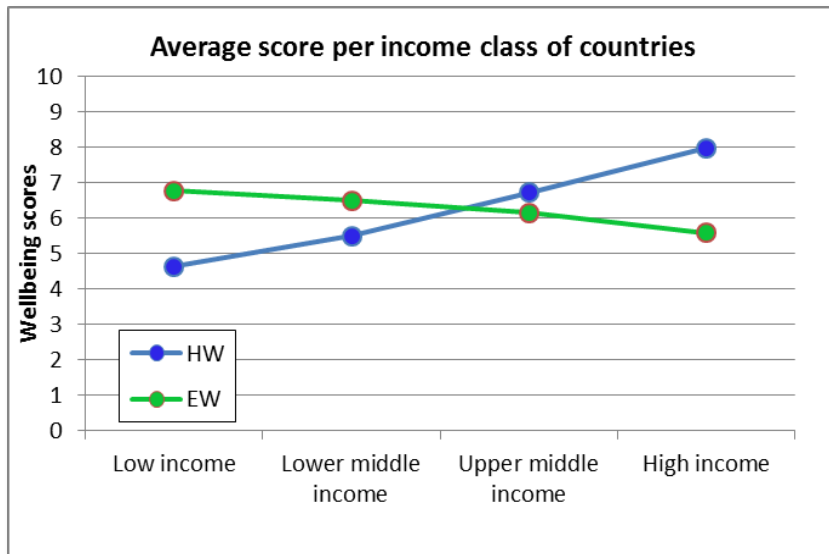


Figure 5

The average scores per income class are plotted in figure 5. The results show that – on average – low income countries have – relatively – low scores for HW and high scores for EW; for high income countries it is the other way round. This is in accordance with the conclusions which were drawn from figure 4.

#### 4.2 Wellbeing – Population size

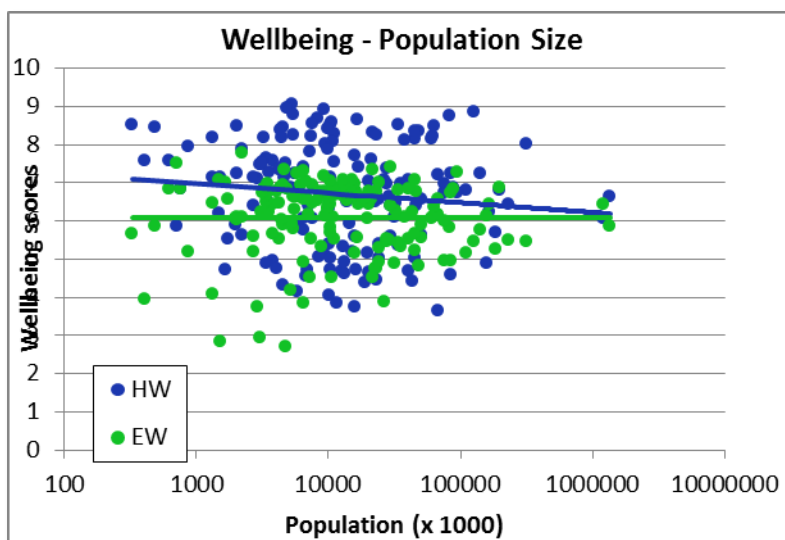


Figure 6

Population size doesn't seem to be a strong determinant for the level of wellbeing of a country, as can be concluded from figure 6. The trend line for EW is nearly horizontal. It is remarkable that the

trend for HW is slightly negative. Note that this conclusion applies to the population size per country; it doesn't reveal the impact of the size of the total world population on wellbeing.

### 4.3 Wellbeing – Population density

A high population density might hamper a country on its way towards Environmental Wellbeing: no room for nature, little biodiversity, high levels of pollution of land, water and air. On the other hand a high population density offers the opportunity for an efficient infrastructure and public transport in addition to stricter enforcement of rules and regulations.

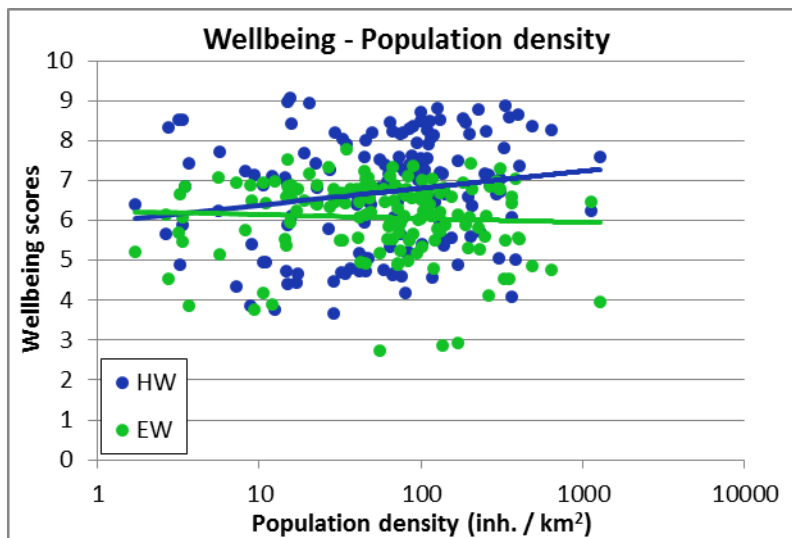


Figure 7

The trend line in figure 7 does not show a significant correlation between higher population density and Environmental Wellbeing. On the other hand, on average, a higher population density correlates with higher scores for HW, if only weakly. Again, there is a wide spread across the countries.

### 4.4 Wellbeing – Country size

A common opinion is that the bigger a country in terms of land area, the easier it is to achieve sustainability. In figure 8 we have examined this by correlating country size with HW and EW respectively.

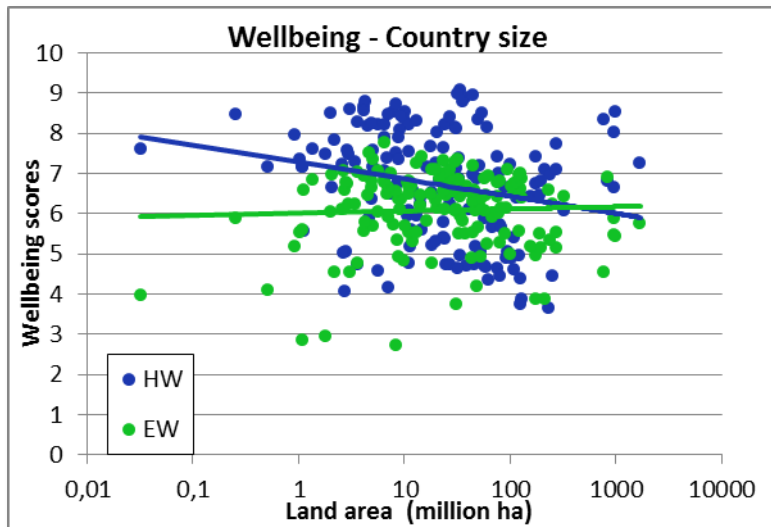


Figure 8

It appears that the trend for HW is negative, while the trend for EW is about horizontal. Thus, the common opinion with respect to this issue certainly cannot be confirmed.

#### 4.5 Wellbeing – Natural Resources

Triggered by the well-known idea of ‘resource curse’<sup>1</sup> (Auty, 1993), we have examined the importance of the availability of Natural Resources in a country. This can be expressed by Natural Resources Rents (NRR)<sup>2</sup>.

Figure 9 presents the correlation of HW and EW with the level of natural resources rents as a % of Gross Domestic Product (GDP). Four countries with zero Natural Resources Rents (Iceland, Luxembourg, Malta, Montenegro) had to be left out, in order to be able to present the results on a logarithmic scale.

<sup>1</sup> The resource curse refers to the paradox that countries and regions with an abundance of natural resources, specifically non-renewable resources like hydrocarbons and other minerals, tend to have less economic growth and worse development outcomes than countries with fewer natural resources.

<sup>2</sup> With some simplification, NRR may be defined as the net income a country derives from its natural resources (oil, natural gas, coal, minerals and forests), after the deduction of all costs (including a reasonable profit margin) made for their exploitation.

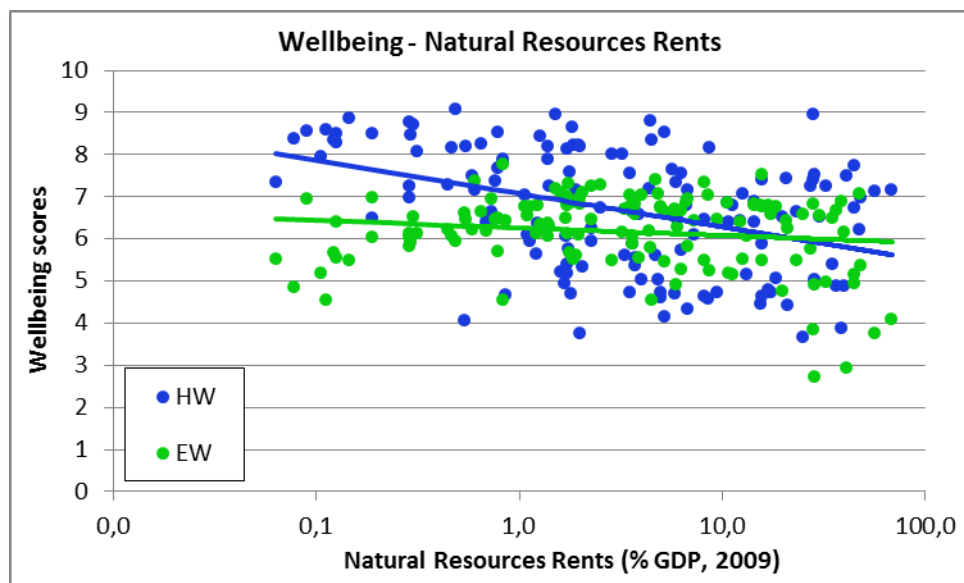


Figure 9

The figure shows a large spread for EW, even more so than for HW, while the trend lines show negative correlations with NRR. It is remarkable that the trend line for HW shows a (much) larger negative tangent than the trend line for EW. It appears that the wealth of natural resources correlates – on average – in a negative manner with the wellbeing of a country. The presented data support the idea of ‘resource curse’. However, also for natural resources quite some countries appear to perform contradictory to the average pattern.

#### 4.6 Results of correlation between wellbeing and characteristics

Preliminary conclusions of the correlation of five characteristics with the level of wellbeing of a country are summarized in table 1.

Characteristic	Correlation with	
	Human Wellbeing	Environmental Wellbeing
Income	++	-
Population size	-	0
Population density	+	0
Country size	-	0
Natural Resources Rents	--	-

+ or ++ medium or strong positive correlation

– or -- medium or strong negative correlation

0 no or no significant correlation.

Table 1

Two characteristics appear to correlate with both HW and EW: Income and Natural Resources Rents. The correlation with HW is – on average – positive for Income and negative for NRR. For EW the correlation is less strong and negative in both cases.

Unfortunately, averages do not provide the ultimate answer to the second research question: which factors, other than good governance, play a distinct role in the relation between Human and Environmental Wellbeing? Thus we'll have to search in more detail.

## 5. The countries with extremes values for HW and EW

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### 5.1 Countries with extreme values for HW and EW

We return to figure 1, the correlation between HW and EW, which is shown here again as figure 10. Two 'extreme' groups of countries have been distinguished:

- Violet: high levels of both HW and EW – Group A;
- Red: high level of HW but a low level of EW – Group B.

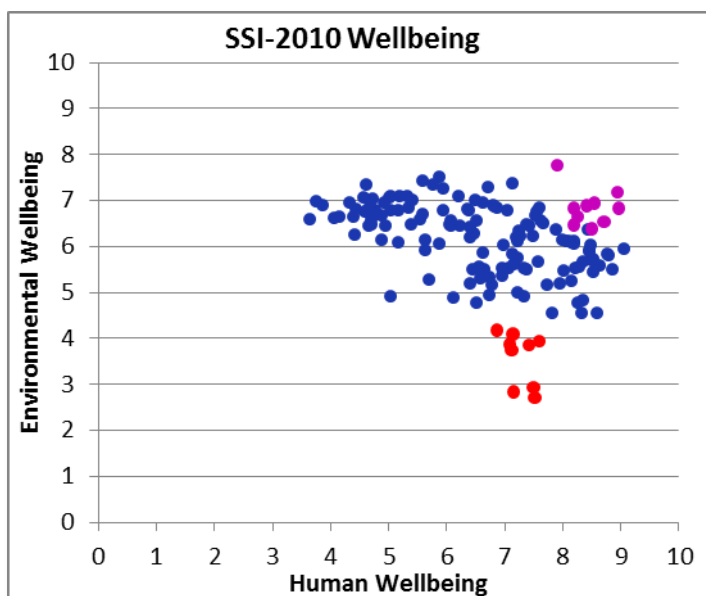


Figure 10

The SSI-2010 scores for the countries in each group are shown in table 2.

	Group A scores			Group B scores		
	High HW & high EW			High HW & low EW		
		HW	EW		HW	EW
<b>1</b>	Norway	8.96	6.84	United Arab Emirates	7.51	2.72
<b>2</b>	Sweden	8.94	7.18	Qatar	7.15	2.84
<b>3</b>	Austria	8.71	6.53	Kuwait	7.49	2.93
<b>4</b>	Switzerland	8.55	6.94	Oman	7.12	3.74
<b>5</b>	France	8.50	6.39	Libya	7.41	3.86
<b>6</b>	New Zealand	8.41	6.89	Saudi Arabia	7.09	3.88
<b>7</b>	Slovak Republic	8.26	6.66	Malta	7.59	3.95
<b>8</b>	Lithuania	8.20	6.83	Trinidad & Tobago	7.15	4.10
<b>9</b>	Estonia	8.19	6.47	Turkmenistan	6.86	4.19
<b>10</b>	Latvia	7.90	7.78			

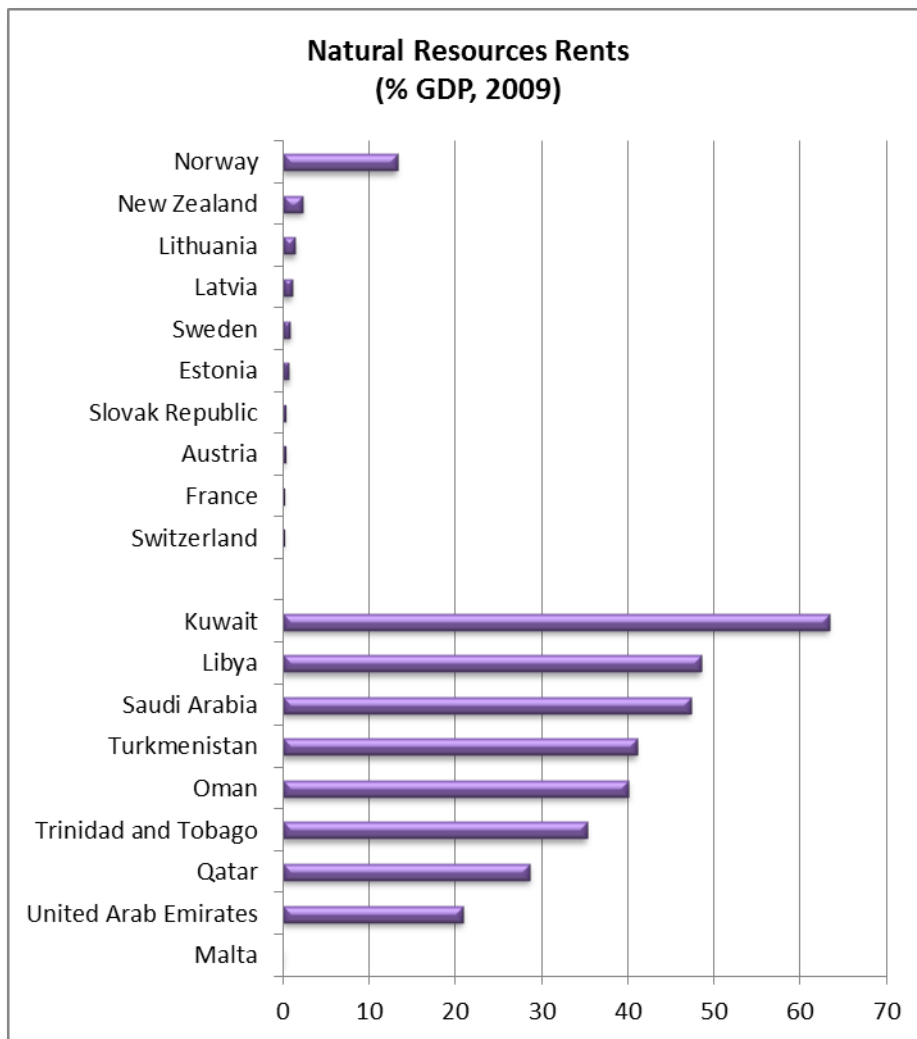
*Table 2*

We have investigated the differences between the two groups by zooming in on the five characteristics which already have been studied for the total number of 151 countries: GDP per capita, Population, Population density, Country size and Natural Resources Rents. Moreover, we have added three more characteristics, which may have a significant impact: Geography, Climate Zone and Independency. The results are summarized in the next table, where we also have included some remarks.

	Group A High HW & high EW	Group B High HW & low EW	Remarks
Income (GDP per capita, PPP)	High income countries.	8 High income countries + Turkmenistan (Upper middle income).	Not discriminating between the two groups
Population size	Wide range from small to big.	Wide range from small to big.	Not discriminating between the two groups
Population density	Wide range from low to high.	Wide range from low to (very) high.	Not discriminating between the two groups
Country size	Wide range from small to big.	Wide range from small to (very) big.	Not discriminating between the two groups
Natural Resources Rents, NRR (% GDP)	Ranging from 0.02 to 2.28 and an outlier of 13.21 for Norway	Ranging from 20.9 to 63.6, with an exception for Malta: 0.	Very discriminating: A: little or no NRR B: high level of NRR
Geography	9 European countries + New Zealand	6 MENA countries + Malta, Trinidad & Tobago and Turkmenistan	None specific
Climate zone	All countries temperate zone	Most countries dry and hot, except Malta (Mediterranean) and Trinidad & Tobago (Tropical)	None specific
Independency	6 countries > 40 years; 4 countries since 1991/1992	8 countries > 40 years; Turkmenistan since 1991	None specific

*Table 3*

The level of Natural Resource Rents (NRR) appears to be the only really discriminating one of the characteristics studied. Figure 11 shows the level of NRR for the two groups of countries.



*Figure 11*

Apparently, the availability of Natural Resources in the Group B countries is detrimental to the level of wellbeing, particularly Environmental Wellbeing. Therefore, we'll study the correlation between Natural Resources Rents and Wellbeing in more detail in the next paragraph.

## **5.2 Natural Resources Rents and Good Governance**

Figure 9 has shown a significant downward trend for HW and less so for EW, with increasing values of NRR (in % GDP). Why is the pattern of NRR and Wellbeing as it is? Could Good Governance offer a convincing explanation in this respect? Very often, a high level of NRR is associated with a lack of Good Governance.



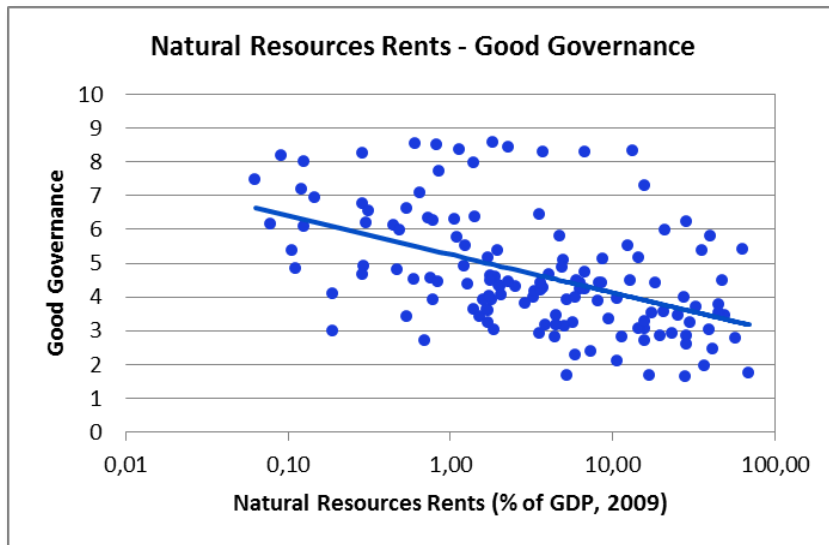


Figure 12

Figure 12 seems to support the supposed – negative – correlation between Good Governance and Natural Resources. However, quite some countries have high scores for Good Governance, in spite of an abundance of natural resources. Zooming in on the two groups of ‘extremes’, i.e. Group A with high HW and high EW and Group B with high HW and low EW, offers an interesting graph (figure 13).

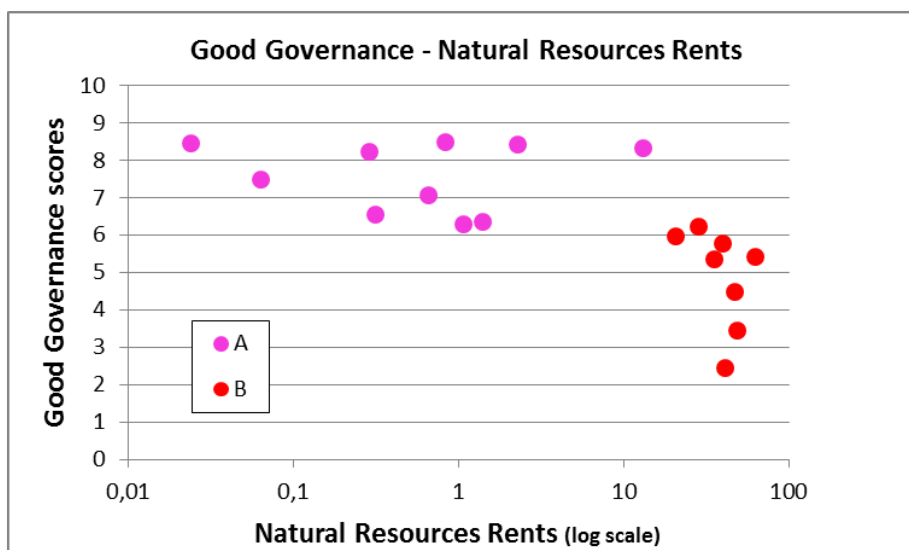


Figure 13

This figure clearly shows the substantially lower scores for Good Governance for the Group B countries. An exception is Malta, which cannot be presented on the logarithmic scale of the graph, since it has a NRR value of 0.

## 6. Conclusions

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1. Correlating the data of all 151 countries included in the SSI, shows **on average** a negative correlation between Human Wellbeing (HW) and Environmental Wellbeing (EW). However, there appears to be a large spread in the results. This proves that higher levels of HW are not in all cases incompatible with higher levels of EW. The absence of countries with a relatively low score for HW with at the same time also a low score for EW is remarkable.
2. There appears to be a rather strong positive correlation between Human Wellbeing and Good Governance. However, there is – unexpectedly – a slightly negative correlation between Environmental Wellbeing and Good Governance.
3. Income (GDP per capita) correlates – on average – positively with Human Wellbeing and negatively with Environmental Wellbeing.
4. Zooming in on two groups of extreme countries offers only one (very) discriminating factor: the presence of Natural Resources. Natural Resources Rents have a negative correlation with Human Wellbeing as well as with Environmental Wellbeing, be it to a lesser extent. But a fossil fuel rich country like Norway doesn't follow the average pattern.
5. There appears to be a statistically significant negative correlation between Natural Resources Rents and Good Governance. All Group B countries except Malta, i.e. all oil rich countries in Group B, show low scores for Good Governance.
6. The results presented in the current study, are based on the actual situations in the various countries. The study does not reveal along which path the countries have reached their current situation over the past decades or even centuries. There may have been circumstances during this development that could shed further light on the current relation between Human and Environmental Wellbeing.
7. In spite of the interesting findings of the study, the data do not yet reveal the ultimate answer(s) to the research questions. We have identified two factors which play a discriminating role: Income and Natural Resources, but these factors do not explain everything, since many countries differ from the average pattern. Thus other factors than the characteristics studied must have an impact as well. One can think of a country's policy with respect to development towards a sustainable society, or leadership (Rondinelli, 2009), the presence of persons who have mobilized an effective driving force towards sustainability (like Gro Harlem Brundtland in the Nordic countries), or shifting political preferences etc.

8. If a country's policy with respect to development towards a sustainable society plays a major role in the relation between Human and Environmental Wellbeing, more so than 'just' Good Governance, this would mean that Human Wellbeing and Environmental Wellbeing are NOT at an unavoidable collision course. It would also mean that the rapid further development of countries like China and India is not an unavoidable threat to the sustainability of our planet. If it turns out to be – to a large extent – a matter of policy, that would be very hopeful and promising. So we have to and will further examine this issue.

## 7. Acknowledgements

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We are thankful for the inspiring and constructive support, suggestions and contributions of Lex van Deursen, Candice Stevens and Piet Ververgaert. However, the content of this article is the sole responsibility of the authors, as well as are any remaining errors.

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