

SUSTAINABLE VALUE IN EUROPE: SUSTAINABILITY PERFORMANCE OF THE CZECH REPUBLIC VERSUS THE EUROPE OF FIFTEEN

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Introduction

Sustainable Development is today the most popular concept of economic development. The survival of natural environments depends on maintaining a delicate balance between fauna, flora and humans. This balance is threatened today by human activities and their impact on the environment: population growth, economic expansion and consumer trends. Increasing global consumption of water, fossil resources (oil, gas) and other non-renewable raw materials is dangerously reducing the natural resources that will be available to future generations, since these resources cannot be renewed in the same proportions. Greenhouse gases, including CO₂, are contributing to climate change. Chemical substances released into the atmosphere contribute to phenomena like acid rain and the formation of tropospheric ozone. When these substances are discharged in bodies of water, eutrophication can occur. This encourages the proliferation of algae, which asphyxiate other aquatic organisms.

The concept of sustainable development appeared to the end of the 1970's and was first used to guide the development policies of nations before being declined at the level of enterprises. The needs of sustainable development will re-configure societies tomorrow. The philosophy of sustainable development stresses the priority of the characteristics of the value. According to this philosophy, the preservation of the nature is the most important common objective of humanity. It invites us to stop exploiting the nature and begin to cooperate with the beauty that surrounds us.

Globalization leads greater standardization of reports between different societies at global, regional and local level. This huge single market imposes and wants that the rules of games aim everywhere the same. This is done by international conventions but also by other recognized

technical standards. And each actor, public, private or of civil society wants its vision and values are integrated and respected. Also each actor public or private, State or company is considered participate in the creation or destruction of the sustainable value. How can we measure such contribution? Otherwise-said how can we measure the creation of sustainable value?

The measurement of the contribution of an economic entity (State, Institution, Enterprise, etc.) to the sustainability poses a problem today and is subject to several debates. The mass of information to treat and to integrate in the political strategies private and public is such that it is impossible in the reality of all days. It is that a series of actors are beginning to identify tools and scoreboards which, through a series of indicators, allow guide them in their daily work. Based on the information provided by the organizational entities themselves and the information made public, the approach of sustainable value constitutes today the approach most accomplished to assess the sustainable performance.

What is the approach of the sustainable value? By what method calculate? Such are the matter to which we will try to answer in this paper devoted to the extent of the sustainable performance in Europe.

Developed by Prof Frank Figge of Queen's University Belfast (United Kingdom) and Dr Tobias Hahn of IZT - Institute for Futures Studies and Technology Assessment in Berlin (Germany) [2; 3], sustainable value approach was used to assess the sustainability performance of companies. The aim of this research is to adapt this methodology to the assessment of sustainability of countries. The sustainability performance of the fifteen European countries (EU-15) will be analyzed based in the sustainable value approach. The choice of Europe is based on that the European Union wants to establish a position as

a forerunner of climate protection. The objective is to reduce total CO₂ output by 30 percent on 1990 values by 2020. The officials in Brussels have even set their sights on a 60 to 80 percent reduction in carbon dioxide emissions by the middle of the century. Also in the context of globalization and the enlargement of the Europe, it is interesting to analyze and compare the sustainability performance of new member countries with the performance of the Europe of 15. Since "many important decisions in the transition economies regarding economic development are taken without paying enough attention to their implications on the main dimensions of a sustainable development" [1]. For this aim the study of the sustainability performance of the Czech Republic will be provided.

In the first section of the following development, the main international and European institutional pressures to Sustainability are briefly presented and discussed. The sustainable value approach and the steps of the calculation of the sustainable value are presented in the section 2. In the section 3 are presented the triple-bottom-line indicators considered and the application of sustainable value approach to the case of Czech Republic. Section 4 summarizes the main findings.

1. Institutional Pressures to Sustainability in the International Level and European Union

We can date the emergence of environmental concerns of the 1970S. In effect, it is in 1972 that the first Summit of the Land was held in Stockholm. This event has placed for the first time the ecological issues to the rank of international concern. The participants adopted a declaration of 26 principles and a comprehensive plan of action to combat pollution. This Summit gave birth to the United Nations Environment Program (UNEP).

After ten years (in 1982), the world charter of the nature was adopted by the General Assembly of the United Nations. It consists of 24 articles in which are addressed:

- The principles for respect for nature and ecosystems (art. 1 to 5);
- The principles aimed at ensuring the integration of the conservation of nature in the socio-economic development (art. 6 To 13);

- And finally, it advocates the incorporation of these principles in the legislation of each State.

In 1992, at the conference of Rio de Janeiro, three non-binding instruments were adopted:

- 1- The Rio Declaration on Environment and development of 13 June 1992;
- 2- The program of action "Agenda 21" and the Declaration on forests;
- 3- As well as two international conventions: the framework convention on climate change and the convention on biological diversity.

The concept of sustainable development is endorsed at this summit of the land. It is described as a model where the current development must be carried out in meeting the needs of the present without compromising the resources of future generations.

In 2002, a conference dubbed "Rio 10" was held in Johannesburg from August 18th - 20th. The principles concerning the role of law and sustainable development have been adopted at this conference. These principles should guide the judicial power for the purposes of progress of sustainable development through the rule of law and democratic practices.

In the European Union, even if the article 2 of the Treaty of Rome already provides that it "appropriate to promote (...) sustainable growth non-inflationary respecting the environment," the genuine recognition of the environment as subject to full-fledged a community policy goes back to 1 July 1987. It is in effect to this date that the Single European Act introduces a title on the environment (sub-section VI, article 25 titles VII). The objectives are the preservation, protection, the improvement of the quality of the environment, the contribution to the protection of the health of persons, as well as the prudent and rational use of natural resources. This corresponds to the will to achieve a "high level of protection," according to the terms of the Treaty of Maastricht (signed by all States members of the European Economic Community) [1]. The achievement of these objectives is provided by the respect of certain fundamental principles (prevention, polluter pays principle, and the correction of the infringement of the environment to its source. The last Summit in Johannesburg marks a new stage of the Euro-

pean governments toward the integration of the movement of sustainable development as effective project for society.

If in the seventies and eighties this concern was basically scope by the protest movements and environmentalists, today the awareness is global. It is shared by all economic, social and political actors and also by cultural and religious groups in the world. A spill, the hole in the ozone layer, the greenhouse effect or the consequences of globalization is at the origin of a global contestation against companies and states. This phenomenon is now much broader than the sporadic actions carried out since some decades by the movements of defense of the environment.

The concept of sustainable development is not limited to the initial conservation of natural resources in an economic environment mastered. Innovation of sustainable development lies in its global approach of the problem. Thus, the protection of future generation's password by creating:

- A worth living environment, and perennial accessible to all;
- An economy which meets the needs of the poorest while respecting the environmental constraints;
- A social context that enables everyone to contribute to economic growth within firms or organizations highlighting their values of respect for the environment and social equity;

European countries are more and more confronted with the need to operate in a sustainable way and contribute to sustainable development. Catchphrases like "Eco-Efficiency" or the "Triple Bottom Line" express the idea that while striving for economic prosperity State decision makers should take into account the environmental and social consequences of their economic activities.

How has evolved sustainable performance of the fifteen countries members of the European Union since the last Johannesburg summit (2002)? What performance represents the Czech Republic as new member by comparison to the Europe of fifteen?

We will try to answer these questions by the application of the approach of the sustainable value.

2. The Sustainable Value Approach

2.1 The Sustainable Value as Evaluation of the Whole Performance

To create a value added, an organizational entity (company, a sovereign State or region) generally uses various resources (financial, but also environmental). Of course, it is preferable to use the least resources as possible to create the more value as possible. Such is the objective of any organizational entity. According to a financial logic, the financial market focuses especially on the economic capital. The objective is to find the best possible combination between risk and the profitability of the use of this resource. This, of course, goes against the logic of the creation of sustainable value, according to which, an entity does not use only economic capital but also environmental and social resources.

How can we determine whether an organizational entity created value with its economic, environmental and social resources? Generally, a value is created if the profitability exceeds the costs incurred.

$$\text{Value} = \text{Profitability} - \text{Costs.} \quad (1)$$

This formula is fundamental for any assessment of the economic performance of an entity. The approach of the sustainable value extends this basic rule of calculation of the value to environmental and social resources. The research and practice generally use an approach oriented charges (or costs) to assess and manage the environmental and social impacts. To substitute the terminology "profitability" to "charge" it is necessary to express the charges related to environmental and social impacts in monetary terms. This is the logic of the approach of the sustainable value which is to:

- determine the value created by the use of such or such environmental or social resource (or the emission of such or such environmental resource);
- compare the profitability of alternative uses of these resources (opportunity costs): when the same resources are used otherwise how additional value can be created? A value is created only if the profitability exceeds the opportunity costs.

Therefore, the sustainable value uses the thinking of opportunity cost which date of one hundred years but never used to enhance the environmental

and social resources. Opportunity Cost or economic opportunity cost is the value of the next best alternative foregone as a result of making a decision. It is a Keynesian term which has come into popular use in the recent decades. The notion of opportunity costs plays a crucial part in ensuring that scarce resources are used efficiently. The sustainable value compares the use of resources by the organizational entity to the use of resources by a benchmark and defines the cost of the resource by its opportunity cost. It expresses subsequently the sustainable performance in monetary terms. In this project the Benchmark is constituted by the EU-15. This means that the efficiency of the use of resources by each country is compared to the average of efficiency use of resources in Europe. The efficiency use of resources by the country will be compared with the efficiency created by the EU-15 with the same amount of resources the country uses.

The steps of calculation of the sustainable value will be now exposed.

2.2 Steps of Calculation of Sustainable Value

Step 1: How much of a resource does the country use?

The first step determines the quantity of resources used by one country during one year. This study focuses on economic, environmental and social resources as sustainable value approach can cover the three dimensions as demonstrated in many studies [2; 3; 4]. We adopt Triple-Bottom-Line indicators as we considered the three types of resources (economic, social and environmental). The choice of indicators will be described below.

Step 2: How much return does the country create with these resources?

In this step is established the return the country creates with resources determined in the previous step. In this study the return considered is the national income and output of a given country's economy measured by the Gross Domestic Product (GDP). The GDP is the value of goods and services produced within a country's borders in a given year.

Step 3: How much return would the benchmark create with these resources?

The third step focuses in establishing the return the benchmark would create by using the resour-

ces of the country. Each economic, environmental or social resource can only be used once. So, it is not possible to benefit from both returns (the return country creates and the return the benchmark would create). The eco-efficiency of the benchmark is calculated by dividing the gross value added of the EU-15 respectively by the total amount of each resource used in the EU-15. The eco-efficiency of the benchmark shows how much performance is created by the benchmark per unit of economic, environmental or social resource. It measures the contributions of organizational entities to the achievement of a legislative goal that represents the benchmark (or the value of reference).

Step 4: Which resources are used in a value creating way and which not?

To answer this question, the return the country creates will be compared to the return the benchmark would create with these resources (opportunity cost). The return that the country creates corresponds to its Gross Domestic Product (GDP) (see step 2). The opportunity costs have been calculated in step 3. In step 4, the opportunity costs of each resource will be subtracted from the Gross Domestic Product of the country. The result of this step is called value contribution. It shows how much more or less a country creates with a resource compared to the benchmark.

Step 5: How much Sustainable Value does the country create?

In the previous step, the calculation of the value contribution of each resource has been calculated. Given that the country uses more than a resource, the value created by the set of resources must be calculated. The value contributions of all resources considered are summed and divided by the total number of resources. The sustainable value is obtained. It reflects how much more (positive Sustainable Value) or less (negative Sustainable Value) return has been created due to the fact that resources were given to the country rather than to the benchmark. Countries create Sustainable Value when they use their set of resources more efficiently than a benchmark. By adopting such opportunity cost thinking, the sustainable value approach provides a monetary indicator for sustainability performance.

After having explained the conceptual framework of the approach of the Sustainable Value and steps of calculation, indicators of triple performance corresponding to main economic, environmental and social resources considered in this study will be now exposed.

3. Methodology and Data

3.1 Triple-Bottom-Line Indicators to Evaluate a Country in Its Sustainability Performance

The initiatives to build tools of reporting and measurement of sustainability performance of

Tab. 1: Triple-Bottom-Line indicators

Economic Aspects
Real GDP growth
Total investment
Environmental Aspects
Petrol [toe]
Gas [toe]
Electricity [toe]
Total Energy Consumption [toe]
SO _x - emissions [t]
NO ₂ - emissions [t]
CO - emissions [t]
VOC - emissions [t]
CO ₂ - emissions [t]
CH ₄ - emissions [t]
NO _x - emissions [t]
Waste generated [t]
Waste treated [t]
Social Aspects
Social Contributions
Employment
Serious accident at work
Education

Source: Own

an organizational entity (company or country) are spirit to multiply. This study is based on a scoreboard containing economic, environmental and social indicators. These indicators have been selected according to their relevance and the availability of data on the level of European Union policy objectives. A set of nineteen indicators are considered in this study (see table 1 below).

3.2 Scope of the Study and Sources of Data

This study is based on the analysis of the sustainability performance of the European Union on 15 members [8] prior to the start of the European Union Eastern enlargement in 2004. The countries are the following (see Fig. 1).

Fig. 1: Geographical scope of the study



Source: [8]

The sustainability performance of the Czech Republic as a new member is also studied and compared to the EU 15.

Data of economic, environmental and social indicators are collected from EUROSTAT. The period of study is five years: 2002; 2003; 2004; 2005 and 2006. This is to see the evolution of sustainability performance in Europe since the last Johannesburg summit (2002). The year 2007 is not included in this because of availability of data.

The assessment logic of Sustainable Value will be now explained by using the example of the performance of Czech Republic.

For example, in the Czech Republic 125,940,000 tons of CO₂ are emitted in 2005. At

Tab. 2: Benchmark efficiencies

Resources-efficiencies EU 15						
	2002	2003	2004	2005	2006	
Economic Aspects						
Real GDP growth	1,2 %	1,2 %	2,3 %	1,8 %	2,9 %	
Total investment	19,5 %	19,3 %	19,5 %	19,9 %	20,6 %	
Environmental Aspects						
Petrol	21 308,53 €/toe	21 387,12 €/toe	22 247,06 €/toe	23 220,22 €/toe	24 538,03 €/toe	
Gas	41 572,65 €/toe	39 905,01 €/toe	41 467,00 €/toe	43 309,29 €/toe	46 837,14 €/toe	
Electricity	47 529,37 €/toe	47 182,56 €/toe	48 455,97 €/toe	49 464,22 €/toe	50 977,26 €/toe	
Total Energy Consumption	9 686,89 €/toe	9 605,24 €/toe	9 956,15 €/toe	10 315,80 €/toe	10 854,72 €/toe	
SO _x - emissions	1 673 911,83 €/t	1 849 799,87 €/t	2 015 409,80 €/t	2 179 116,20 €/t		
NO ₂ - emissions	954 305,73 €/t	980 901,78 €/t	1 053 796,35 €/t	1 123 296,40 €/t	1 221 018,65 €/t	
CO - emissions	337 166,77 €/t	356 104,61 €/t	383 172,14 €/t	425 453,29 €/t	474 492,21 €/t	
VOC - emissions	1 125 970,86 €/t	1 185 769,27 €/t	1 270 923,26 €/t	1 377 410,37 €/t	1 498 002,89 €/t	
CO ₂ - emissions	2 762,47 €/t	2 747,65 €/t	2 859,24 €/t	2 982,87 €/t	3 153,13 €/t	
CH ₄ - emissions	579 125,49 €/t	611 775,35 €/t	661 851,24 €/t	699 360,64 €/t	748 988,61 €/t	
NO _x - emissions	8 958 644,88 €/t	9 130 975,77 €/t	9 538 203,38 €/t	10 022 535,55 €/t	10 977 149,99 €/t	
Waste generated	52 613,55 €/t	54 343,90 €/t	56 606,16 €/t	58 935,88 €/t	60 966,65 €/t	
Waste treated	114 992,50 €/t	123 807,68 €/t	138 808,14 €/t	158 870,63 €/t	167 732,65 €/t	
Social Aspects						
Social Contributions	13,9 %	14,1 %	13,9 %	13,9 %	13,8 %	
Employment	55 248,50 €/employee	55 969,08 €/employee	58 112,57 €/employee	59 675,37 €/employee	61 798,76 €/employee	
Serious accident at work	64 242 440 €/number	69 097 636 €/number	74 503 298 €/number	78 520 225 €/number		
Education	48 650,67 €/person	48 050,56 €/person	48 966,06 €/person	49 602,14 €/person	51 474,84 €/person	

Source: Own.

Tab. 3: Calculation of the Sustainable Value of the Czech Republic in 2005

Resources	Amount used by the Czech Republic	Gross Domestic Product Czech Republic	Gross Domestic Product EU 15	Value Contribution of resources
Economic Aspects				
Real GDP growth	6,311,976,300 €		1,588,716,000 €	4,723,260,300 €
Total investment	24,947,334,900 €		19,937,829,900 €	5,009,505,000 €
Environmental Aspects				
Petrol [toe]	6,940,000	100,190,100,000 €	161,148,298,113 €	-60,958,198,113 €
Gas [toe]	6,155,000	100,190,100,000 €	266,568,700,544 €	-166,378,600,544 €
Electricity [toe]	4,750,000	100,190,100,000 €	234,955,059,181 €	-134,764,959,181 €
Total Energy Consumption [toe]	25,776,000	100,190,100,000 €	265,900,012,098 €	-165,709,912,098 €
SO _x - emissions [t]	218,630	100,190,100,000 €	476,420,173,935 €	-376,230,073,935 €
NO ₂ - emissions [t]	277,850	100,190,100,000 €	312,107,904,632 €	-211,917,804,632 €
CO - emissions [t]	510,770	100,190,100,000 €	217,308,778,637 €	-117,118,678,637 €
VOC - emissions [t]	181,810	100,190,100,000 €	250,426,979,450 €	-150,236,879,450 €
CO ₂ - emissions [t]	125,940,000	100,190,100,000 €	375,662,617,266 €	-275,472,517,266 €
CH ₄ - emissions [t]	553,130	100,190,100,000 €	386,837,352,360 €	-286,647,252,360 €
NO _x - emissions [t]	24,200	100,190,100,000 €	242,545,360,195 €	-142,355,260,195 €
Waste generated [t]	2953746.753	100,190,100,000 €	174,081,655,020 €	-73,891,555,020 €
Waste treated [t]	2136100.593	100,190,100,000 €	339,363,641,012 €	-239,173,541,012 €
Social Aspects				
Social Contributions	16,230,796,200 €		13,926,423,900 €	2,304,372,300 €
Employment	4,892,000	100,190,100,000 €	291,931,915,190 €	-191,741,815,190 €
Serious accident at work	3914	100,190,100,000 €	307,296,752,831 €	-207,106,652,831 €
Education	9188299	100,190,100,000 €	455,759,293,676 €	-355,569,193,676 €
Sustainable value Czech Republic 2005			4,793,767,463,940 €	-2,806,380,730,952 €

Source: Own.

Tab. 4: Calculation of the Sustainable Value Margin of the Czech Republic in 2005

2005	Gross Domestic Product		Sustainable value
	Czech Republic		Czech Republic
	100,190,100,000 €	:	-2,806,380,730,952 €
Sustainable Value Margin			
Czech Republic 2005			-28.01

Source: Own.

the same time € 100.19 billion of Gross Domestic Product are generated and thus € 795.538 per ton of CO₂. The EU-15 however generated € 2,982.87 gross domestic product per ton of CO₂. In order to determine the opportunity cost of the Czech Republic's CO₂-emissions, we now have to calculate how much return the benchmark would have generated with the Czech Republic's emissions. Therefore, we multiply the Czech Republic's 125,940,000 tons of CO₂ with the CO₂-efficiency of the benchmark (125,940,000 tons of CO₂ x € 2,982.87 per ton of CO₂ = € 375.662 billion). These € 375.662 billion represent the opportunity cost of the Czech Republic's emissions. Comparing this opportunity cost, i.e. the return the benchmark would have generated with the CO₂-emissions, to the return the country actually generated with these emissions, we see that the benchmark would have generated more return with the resources than the Czech Republic. The value contribution of the Czech Republic's CO₂-emissions is therefore negative and amounts to € -275.472 billion.

To find out whether the Czech Republic used its resources in a value-creating way, we apply the methodology described above to every resource considered. For every resource we compare the return that is generated by the Czech Republic to the return the benchmark would have achieved with the resource (i.e. the opportunity cost). The spread between both figures is called value contribution. The value contribution thus shows how much more or less return the country has generated with the resource in comparison to the benchmark. In the last step of the evaluation the sum of all value contributions is divided by the number of resources considered in the assessment. The result of that division is called the Sustainable Value.

The Czech Republic created less return with its set of nineteen resources in 2005 than the

average in the European Economy (EU-15). A Sustainable Value is negative, about € -2,806.38 billion.

The Sustainable Value as an absolute figure thus shows, how much more (positive Sustainable Value) or less (negative Sustainable Value) return a country generates with a given set of resources in comparison to a benchmark.

As an absolute monetary figure Sustainable Value depends on country size. We tackle this problem by relating the sustainable value of the country to another indicator representing the size of the country: its Gross Domestic Product. The resulting indicator is called Sustainable Value Margin.

As we have stipulated previously, in this study we analyze the sustainability performance in Europe of the fifteen. The case of a country of the Eastern Europe (Czech Republic) is also analyzed. The study period is five years (2002-2006) in order to see the evolution of the integration of sustainable development in Europe since the last Summit in Johannesburg. To do this, the performance of each country is compared to the average of the performance in Europe of the fifteen between 2002 and 2006.

Table 5 provides an overview of the results of the study. It shows the rank of each country over the years 2002 to 2006 with respect to the creation of absolute Sustainable Value and regarding The Sustainable Value Margin.

As can be seen, **Germany** has held the top position in terms of absolute Sustainable Value creation between 2002 and 2006. However, in terms of Sustainable Value Margin, it is the **Netherlands** that has been heading the table during the same time. This is due to the different size of the countries. Bigger countries use more resources and are thus expected to produce higher (positive or negative) Sustainable Value figures. A prime example, Germany holds the top position in terms of abso-

Tab. 5: Country rank with regard to Sustainable Value and Sustainable Value Margin

Country	Rank Sustainable Value					Rank Sustainable Value Margin				
	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
AUSTRIA	7	6	7	7	8	6	6	7	6	7
BELGIUM	9	9	10	8	7	9	9	9	8	8
CZECH REPUBLIC	15	15	15	15	15	16	16	16	16	16
DENMARK	5	6	6	6	6	2	3	3	4	4
FINLAND	11	10	11	11	11	12	12	12	12	12
FRANCE	2	2	3	3	3	5	5	5	5	6
GERMANY	1	1	1	1	1	3	4	4	4	3
GREECE	14	14	14	14	13	14	15	14	14	14
IRELANDE	10	8	9	10	9	11	11	10	10	9
ITALY	12	12	12	12	12	10	10	11	11	11
LUXEMBOURG	8	7	8	9	10	8	9	10	9	10
NETHERLANDS	3	3	4	2	4	1	1	1	1	1
PORTUGAL	13	13	13	13	14	15	14	15	15	15
SPAIN	16	16	16	16	16	13	13	13	13	13
SWEDEN	5	4	5	5	5	4	3	2	2	2
UNITED KINGDOM	4	11	2	4	2	7	8	6	7	5

Source: Own

lute Sustainable Value creation due to its size. The Sustainable Value Margin accounts of this size. As table 5 shows, Netherlands has used its resources more efficiently overall. The same effect can be observed with **Spain** who is the last in the ranking in terms of absolute Sustainable Value creation (from 2002 to 2005) but climbs ranks to position 13 in the ranking of Sustainable Value Margin.

Table 6 shows the absolute Value in 2002-2006 in the ranking order of Sustainable Value in 2006. Germany, as mentioned, proves to be the top performing country in terms of absolute Sustainable Value. According to the calculation method of the Sustainable Value approach, the fact that the resource bundle has been used by Germany rather than the EU-15 average has created a value of almost 8064 billion € in 2006. On the negative side Spain has a negative Sustainable Value of more than 2868 billion € in 2006. Therefore, it can be estimated that more than 2868 billion €

additional Gross Domestic Product could have been created if the resources had been used by the EU-15 average rather than Spain.

As mentioned above, large countries can be expected to create a higher (positive or negative) Sustainable Value than small countries. The size effect must be corrected to allow comparison of the Sustainability performance of countries irrespective of their size. The Sustainable Value Margin is used for this aim. The Netherlands, the leader in the Sustainable Value Margin in 2006, has a Sustainable Value Margin of 4.33. Netherland therefore uses its resources (economic, environmental and social) 4.33 times more efficiently compared to the EU-15 benchmark. Germany only has a Sustainable Value Margin of 3.47. It therefore uses resources less efficiently than Netherlands. However, more Sustainable Value is created, as Germany is bigger than Netherlands. The Czech Republic, the laggard in this ranking,

Tab. 6: Sustainable Value Creation of European Countries 2002 - 2006

SUSTAINABLE VALUE IN BILLION OF €					
	2006	2005	2004	2003	2002
GERMANY	8063.49	6595.13	6138.79	6431.33	6122.35
UNITED KINGDOM	3266.01	1076.93	2139.85	-467.99	804.79
FRANCE	2949.78	1864.17	2009.11	2139.62	1829.37
NETHERLANDS	2335.45	2114.77	1915.62	1934.94	1762.33
SWEDEN	1170.44	974.53	988.64	879.58	726.92
DENMARK	690.29	679.18	656.22	604.13	537.48
BELGIUM	310.71	51.21	-96.21	-136.14	-156.86
AUSTRIA	292.36	224.96	224.18	143.09	214.58
IRELAND	76.63	-72.41	-90.67	-132.78	-201.11
LUXEMBOURG	8.48	-11.84	-5.95	-1.45	-10.72
FINLAND	-279.07	-323.50	-354.03	-365.01	-288.18
ITALY	-878.90	-1839.07	-1370.66	-1252.40	-1328.11
GREECE	-1122.24	-2272.66	-2135.54	-2117.21	-2060.04
PORTUGAL	-1554.59	-2058.53	-1903.20	-1661.55	-1798.62
CZECH REPUBLIC	-2244.58	-2806.38	-2854.19	-2689.58	-2608.35
SPAIN	-2868.88	-5834.69	-5720.94	-5472.59	-5634.78

Source: Own

has used 19 times less efficiently its resources than the benchmark EU-15.

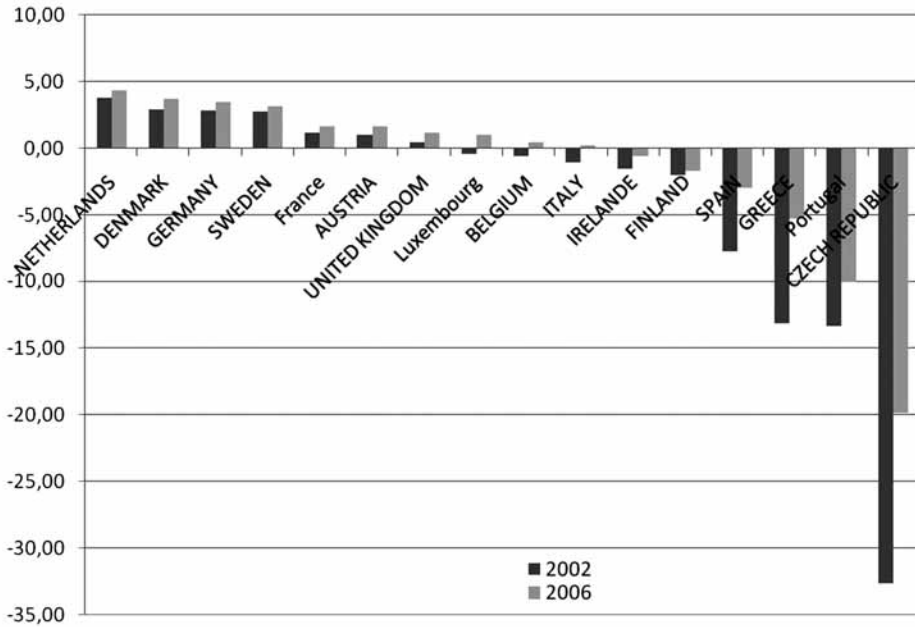
Overall, in 2006 15 countries of the sixteen European countries used their bundle of Triple-Bottom-Line resources more efficiently than in 2002. The **Czech Republic** is the country that improved the efficiency of the use of its economic, environmental and social resources most: Czech's Sustainable Value Margin rose from -32.6 in 2002 to -19.78 in 2006, representing an improvement by a factor of 12.82. This positive performance trend is mainly due to improvement of Czech's social contributions and serious accident at work. The second best performance improvement between 2002 and 2006 is achieved by **Greece**. In 2006, Greece used its resources almost 7.89 times more efficiently compared to 2002. Accordingly, Greece's Sustainable Value Margin improved from -3.15 in 2002 to -5.26 in 2006. The reasons of this positive trend are

the improvement in gas consumption, VOC-emissions and serious accident at work. **Sweden** makes the biggest jump ahead in the ranking of the Sustainable Value Margin, coming from rank 4 in 2002 and ending on rank 2 in 2006.

Conclusion

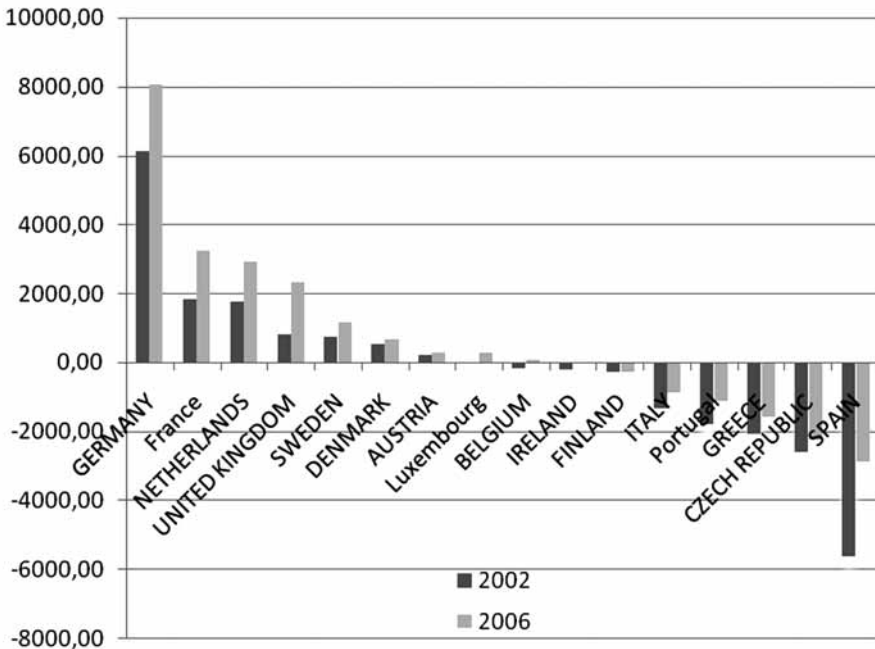
The sustainable value approach assesses how efficiently organizational entities (in this study: countries) use their resources. In this project, the use of nineteen different resources (economic, environmental and social) has been analyzed in sixteen European countries. The sustainable value measure the value that is created or lost through the resource use in a country relative to a benchmark. It allows meaningful quantitative comparisons of sustainability performance of organizational entities. It covers the three resources important in the context of sustainable development (economic, environmental and social).

Fig. 2: Sustainable Value Margin trends: European countries



Source: Own

Fig. 3: Sustainable Value trends: European countries



Source: Own

Tab. 7: Sustainable Value Margin of European Countries 2002 - 2006

SUSTAINABLE VALUE MARGIN					
	2006	2005	2004	2003	2002
NETHERLANDS	4.33	4.12	3.9	4.06	3.79
SWEDEN	3.73	3.31	3.44	3.19	2.75
GERMANY	3.47	2.94	2.78	2.97	2.86
DENMARK	3.16	3.28	3.33	3.2	2.91
UNITED KINGDOM	1.68	0.59	1.21	-0.28	0.47
FRANCE	1.63	1.08	1.21	1.34	1.18
AUSTRIA	1.14	0.92	0.96	0.64	0.98
BELGIUM	0.98	0.17	-0.33	-0.5	-0.59
IRELANDE	0.43	-0.45	-0.61	-0.95	-1.54
LUXEMBOURG	0.25	-0.39	-0.22	-0.06	-0.45
ITALY	-0.59	-1.29	-0.99	-0.94	-1.03
FINLAND	-1.67	-2.06	-2.33	-2.5	-2
SPAIN	-2.92	-6.42	-6.8	-6.99	-7.73
GREECE	-5.26	-11.50	-11.49	-12.35	-13.15
PORTUGAL	-10.00	-13.80	-13.2	-11.99	-13.28
CZECH REPUBLIC	-19.78	-28.01	-32.34	-33.24	-32.6

Source: Own

The results reveal a mixed pattern when it comes to the sustainability performance of each country. Germany and Netherland are the countries leaders respectively in terms of the absolute Sustainable value and the Sustainable value margin. Both countries create extremely positive Sustainable value over the entire reviewed period (see Fig. 2). Germany managed to use the majority resources considered to create value in every single year of the review period. Over the period 2002-2006, the sustainable value increased by 31.7 %, from 6122.35 billion € to 8063.49 billion €. With a sustainable value margin between 3.79 (2002) and 4.33 (2006), Netherland ranked in the top of the European countries studied. The Czech Republic is the country that improved the efficiency of the use of its economic, environmental and social resources most: Czech's Sustainable Value Margin rose from -32.6 in 2002 to -19.78 in 2006, representing an improvement by a factor of 12.82.

This research demonstrates that a monetary evaluation of sustainable performance is today possible with the information that is already available.

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ABSTRACT**SUSTAINABLE VALUE IN EUROPE: SUSTAINABILITY PERFORMANCE OF THE CZECH REPUBLIC VERSUS THE EUROPE OF FIFTEEN****Amel Ben Rhouma**

The concept of sustainable development has been developed during the last twenty years mainly on a macro-economic level. The objective of this concept is to increase or at least to stabilize the well-being per capita of the planet over time while preserving the interests of present and future generations. The measurement of the contribution of an economic entity (State, Institution, Enterprise, etc.) to the sustainability poses a problem today and is subject to several debates. The mass of information to treat and to integrate in the political strategies private and public is such that it is impossible in the reality of all days. It is that a series of actors are beginning to identify tools and scoreboards which, through a series of indicators, allow guide them in their daily work. Based on the information provided by the organizational entities themselves and the information made public, the approach of sustainable value constitutes today the approach most accomplished to assess the sustainable performance.

The aim of this research is to adapt this methodology to the assessment of sustainability of countries. The sustainability performance of the fifteen European countries (EU-15) will be analyzed based in the sustainable value approach. The case of a country of the Eastern Europe (The Czech Republic) is also analyzed. The study period is five years (2002-2006) in order to see the evolution of the integration of sustainable development in Europe since the last Summit in Johannesburg. Sustainable value is a monetary measure of the actual value created by the country's use of a bundle of economic, environmental and social resources. A country creates positive (or negative) Sustainable value if it earns a higher (or lower) return than the average (EU-15) with its available economic, environmental and social resources. The analysis of country's sustainability performance based on the Sustainable value approach looks at the use of nineteen different economic, environmental and social resources. The results reveal a mixed pattern when it comes to the sustainability performance of each country. Germany and Netherlands are the countries leaders respectively in terms of the absolute Sustainable value and the Sustainable value margin. Both countries create extremely positive Sustainable value over the entire reviewed period. Germany use the majority of economic, environmental and social resources considered in a value creating way. The Czech Republic is the country that improved the efficiency of the use of its economic, environmental and social resources most.

Key Words: Sustainable value, Sustainable Development, European Union.

JEL Classification: M38.