

Green Entrepreneurship as a Connector among Social, Environmental and Economic Pillars of Sustainable Development. Why Some Countries are More Agile?

Zielona przedsiębiorczość jako łącznik filarów rozwoju zrównoważonego: społecznego, środowiskowego i ekonomicznego. Dlaczego niektóre kraje wypadają lepiej?

Ada Domańska*, Beata Żukowska, Robert Zajkowski*****

Maria Curie-Skłodowska University in Lublin, Maria Curie-Skłodowska sq. 5, 20-031 Lublin
*E-mails: * ada.domanska@umcs.lublin.pl, ** beata.zukowska @umcs.lublin.pl,*
****robert.zajkowski@umcs.lublin.pl*

Abstract

Sustainable development is a concept which is diffusing through many dimensions of peoples' life. As consumers, people can make their choices with regard to a sustainability idea. It is possible, mainly due to green entrepreneurship. Among UE members we can indicate those countries which are more engaged in ecopreneurship, and those which are less interested or ignore this issue. The main question of our research is why some UE countries outperform the others in green entrepreneurship development?

We believe that green entrepreneurship requires integration of all three pillars of sustainable development (economic, environmental and social). Only the integration of all three components can give the most satisfactory results. In our research we state that economic support from government and well-educated society create good conditions for green entrepreneurship. On this basis we put forward two hypotheses: enterprises operating in richer countries are more green-oriented and enterprises situated in countries where the society is more educated are more green-oriented.

Key words: sustainable development, pillars of sustainable development, green entrepreneurship, resource efficiency

Streszczenie

Zrównoważony rozwój jest koncepcją, która może wywierać wpływ na różnorodne aspekty ludzkiego życia. Będąc konsumentami, ludzie mogą dokonywać wyborów sprzyjających idei harmonijnego rozwoju społeczeństwa. Jednym ze sposobów tego rodzaju funkcjonowania jest sprzyjanie rozwojowi zielonej przedsiębiorczości. Wśród krajów Unii Europejskiej (UE) można zidentyfikować zarówno te, które sprzyjają eko-przedsiębiorczości, jak również te, które wykazują niższy poziom zainteresowania tą koncepcją lub wręcz wykazują ignorancję w tym zakresie. Stąd też, można postawić zasadnicze pytanie, co powoduje, że jedne kraje dominują nad innymi w obszarze rozwoju zielonej przedsiębiorczości?

Bezsprzecznie, jej rozwój wiąże się z integracją trzech kluczowych filarów zrównoważonego rozwoju (ekonomicznego, środowiskowego oraz społecznego). Zachowanie równowagi pomiędzy nimi wydaje się być sposobem na uzyskanie co najmniej zadowalających efektów zrównoważonego rozwoju. Na gruncie rozważań prowadzonych w niniejszym artykule postawione zostały dwie hipotezy, wskazujące, że przedsiębiorstwa działające w krajach UE cechujących się wyższym poziomem zamożności (mierzonej produktem krajowym brutto – PKB) oraz kładące nacisk na wyższy poziom edukacji i świadomości pro-ekologicznej, są silniej zorientowane na wspieranie działalności sprzyjającej rozwojowi zielonej przedsiębiorczości.

Słowa kluczowe: zrównoważony rozwój, filary zrównoważonego rozwoju, zielona przedsiębiorczość, efektywność wykorzystania zasobów

Introduction

Sustainable development is a concept which is diffusing through many dimensions of peoples' life. Being sustainable means operating in a harmony with the environment, with respect to the fact that economy and society are dependent on the long term balancing amongst, in part, contrary aspects. The pioneers of sustainable development among European countries stress that this way is a demanding journey rather than a simple path to the nearest greengrocers. That is why the sustainability problem is mostly illustrated in a form of an overlap which encompasses three pillars: economic development, social development and environmental protection.

Like it or not, people are consumers of various services and goods (some people claim that also ideas), reliant on access to natural resources.¹ Their decisions have a significant impact on the direction in which the world will develop. Part of them ignore the fact that irresponsible or reckless exploiting of the world resources could be entirely detrimental for the existence of human-being. But at the other end, there are suppliers – entrepreneurs who operate according to rules dictated by sustainable development idea. In our research we focus on green entrepreneurs whose actions in fact integrate all three dimensions of sustainability. We would like to present what criteria should be met in order to create the best pro-sustainable conditions for European companies aspiring to be *green-oriented*.

Green entrepreneurship (aka. as environmental entrepreneurship, eco-entrepreneurship or in short – ecopreneurship) is a term coined in the early nineties by authors such as Bennett (1991), Berle (1991) and Blue (1990). In subject literature, this term does not have one exact meaning. Starting with Berle's little idealistic interpretation: *green entrepreneurship is taking responsibility to create the world we dream of*, it is also defined as: *creating a value throughout ecological innovations and products* (Schaltegger 2002), *focusing on the sustenance of nature and life support, in the interest of opportunities to foster future products, processes, and services for economic gains to individuals and society* (Jolink, Niesten 2013); *the process of discovering, evaluating, and exploiting economic opportunities that are present in environmentally relevant market failure* (Dean, McMullen, 2007); actions of *entrepreneurs whose business efforts are not only driven by profit, but also by a concern for the environment* (Schuyler 1998). Schaltegger (2002) differentiates two definitions of ecopreneurship. A narrow definition deals with

a start-up of an innovative company which produces ecological products or services. In a wider sense, ecopreneurship is *an innovative, market-oriented and personality-driven form of value creation through environmental innovations and products exceeding the start-up phase of a company*. This contradistinction is similar to division proposed by Isaak (1998). In his work two dimensions of *being green* were distinguished: *green businesses* – in which *greening* can be driven not only by ethical but also cost or marketing advantages – and *green-green businesses* designed and launched in order to be green totally in its processes and products. Farinelli et. al (2011) points out that the notion of *green entrepreneurship* can differ between developing (emerging) and developed countries. They argue that developed countries are more focused on the term *green* and on market opportunities, while developing countries channel their efforts on *entrepreneurship* and on market needs.

In our paper we do not equalled *green entrepreneurship* and *sustainable entrepreneurship* as identical concepts. According to the concept presented by Shepherd and Patzelt (2011), we consider ecopreneurship as a part of a broader concept connected with sustainable development. Nevertheless, we also assume, that all three components of sustainable development (social, ecological and economic) are indispensable for ecopreneurship as a building block of a development in European countries. In some sense both notions seems to be interrelated circularly, supportive and interrelated. Thereupon, it is obvious to analyse them as mutually supportive activities.

The main question of our research is why some member countries of the European Union outperform others in green entrepreneurship development? Following the Human Development Index (HDI), all of them can be identified as *very highly developed* or *highly developed*, but still we can indicate those countries which are more engaged in ecopreneurship, and those which are less interested in or ignore this issue.

On the basis of literature, we express the belief that green entrepreneurship can develop only under specific conditions. Without economic support and accurate social conditions, green entrepreneurship development is neither complex nor comprehensive. Hence, we assume that ecopreneurship requires, as mentioned earlier, all three pillars of sustainable development to be involved. Only the integration of all three components can give the most satisfactory results.

¹We should distinguish between non-renewable (like fossil oil) and renewable (like in some circumstances sun power) resources.

Pawłowski (2006), who states that sustainable development requires integration of moral, ecological, technical, legal, social, political and economic dimensions, highlights the importance of economic instruments such as fees, subsidies or market-based environmental policy instruments. In countries where economic governmental support for eco-innovations is higher, we can anticipate better green entrepreneurship indexes. Still, we should be aware that in poorer countries, governments have to struggle with more social-focused issues such as unemployment, poverty, inequalities, infrastructure backwardness and the like. Tackling those problems is prioritised, as those are the most visible and can have negative impact on social mood. Hence, we assumed that green entrepreneurship is more widespread in richer countries, in which social issues are not so pressing and governments may spend more on subsidies for eco-innovations and support for boosting eco-efficiency. On this basis, we state the following hypothesis:

H1. Enterprises operating in richer countries are more green-oriented.

Another condition that we expect to be indispensable for green entrepreneurship development is the level of the society environmental awareness. Eco-aware societies are more likely to demand environmental-friendly activities from their suppliers (producers and contractors). This may cause increasing demand not only for eco-products or eco-services but also for goods produced by those enterprises which operate in an eco-friendly way (i.e. take resource-efficiency measures). It encourages entrepreneurs to implement new, green ideas, as it can be beneficial from the economic point of view (growing demand, consumer willingness to pay more for ecologic products or services – McEwen, 2013). Seen from this angle, an ecopreneur may occur as an ordinary businessman who channels his effort on making profit. However, green entrepreneurs may as well be motivated by their internal environmental orientation or ethics. Still, developing of this motivation also requires ecological awareness.

Environmental awareness of society is determined by their education level. More educated people are more eco-aware consumers (Roberts 1996, Han et al. 2011). In addition, Rydzewski (2013) states that the willingness to sacrifice for the benefit of the environment increases along with level of education (measured with the length of education). On this basis, we formulated the other hypothesis:

H2: Enterprises situated in countries where society is more educated are more green-oriented.

A verification of the hypotheses was conducted in line with the methodology applied below.

Methodology and indicators

As a part of the paper there was an analysis carried out on small and medium-sized enterprises, operat-

ing in the member countries of the European Union (28 countries, UK included). The information used in this paper comes from the *Fact Sheets* of individual countries which describe the degree of implementation of the *Small Business Act Programme* in 2016. The advantages of employing this source are as follows: statistical credibility, completeness of contained data, and high comparability. However, delays in publishing some parts of information by certain countries or even a total lack of such information may constitute a significant drawback.

As part of the *Small Business Act*, different areas concerning directly green entrepreneurship and areas that seems to be supportive for its development were indicated.

To conduct reliable research, it is necessary to adopt an approach which will be relevant to describing such a multifaceted matter as green entrepreneurship. Therefore, the preparation of the complex indexes based on different variables seems to be more accurate than single indicators which are analysed separately (Nowak, 1985). We need to look at eco-preneurship from a broader perspective, taking into consideration at least a few important aspects. That is why, for the purpose of this analysis we composed a general index which is based on two groups of variables. The selection of indicators was to some extent arbitrary. They were adopted like in many other studies, but with regard to the fact that total freedom is unacceptable. Thus, in line with the most frequent understanding of the sustainable development, as an idea which is based on three pillars, we adopted variables which have links with them.

The first group covers aspects which refer directly to eco-engagement of the companies in UE countries, and these are:

1. Percentage of SMEs that have taken resource-efficiency measures; 2015.
2. Percentage of SMEs that have benefited from public support measures for their resource-efficiency actions; 2015.
3. Percentage of SMEs that offer green products or services; 2015.
4. Percentage of SMEs with a turnover share of more than 50% generated by green products or services; 2015.
5. Percentage of SMEs that have benefited from public support measures for their production of green products; 2015.

The other group embraces variables which describe various aspects that can exist in each economy and are supportive for green entrepreneurship development. They represent both social and economic issues:

1. Percentage of SMEs introducing product or process innovations; 2014.
2. Percentage of SMEs introducing marketing or organisational innovations ; 2014.
3. Percentage of SMEs innovating in-house; 2014.

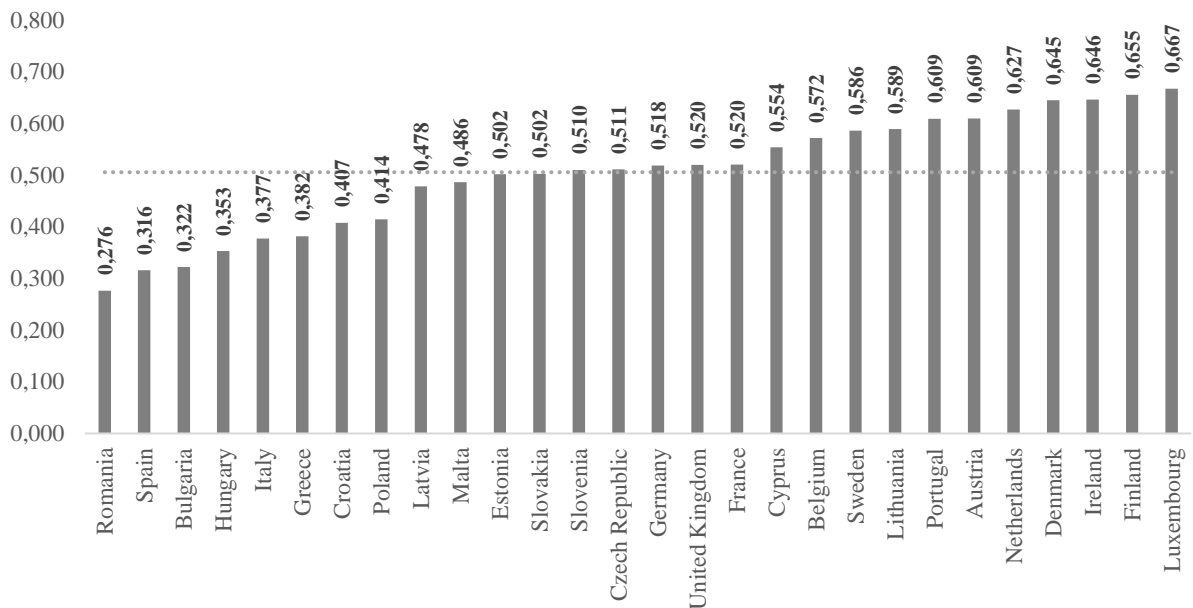


Figure 1. Indexes for all UE countries and their *green-orientation* rank, source: own study

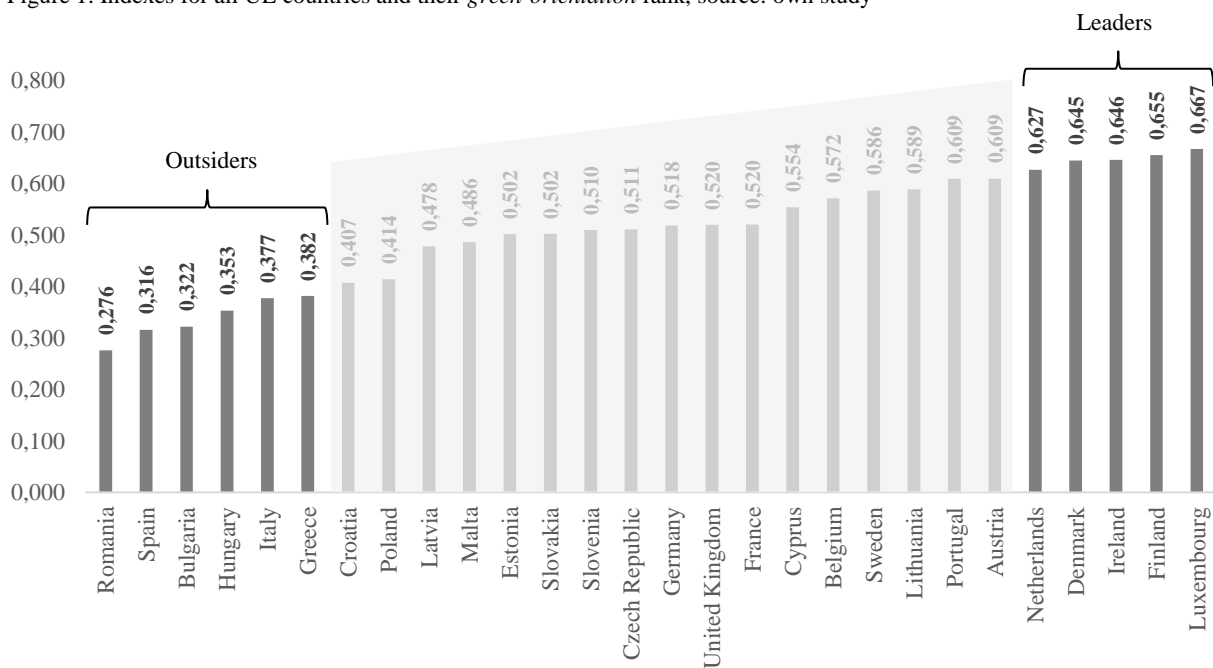


Figure 2. Indexes for selected Extreme Green Entrepreneurship Outsiders and Leaders, source: own study

4. National R&D available to SMEs (1-5); 2016.
 5. Entrepreneurship as a desirable career choice (%); 2016.
 6. High status given to successful entrepreneurship (%); 2016.
 7. Media attention given to entrepreneurship (%); 2016.
 8. Entrepreneurship education at basic school (1-5); 2016.
 9. Entrepreneurship education at post-secondary levels (1-5); 2016.
 10. Share of high growth enterprises (%); 2014.
- Due to the fact that the nominal values of variables

proposed to describe the business environment differ significantly, it was necessary to standardize them. The zero unitarization method was adopted to rank countries correctly. This method is applicable with both quantitative and qualitative variables and its simplicity leads to easy interpretation of gained results. Moreover, this method fulfil three important criteria (Kukuła, 2012):

1. After normalisation lengths of intervals of variability for all features are the same.
2. The lower and upper limits of intervals of variability for all features are the same: [0,1].

3. Features which have a zero value can be also normalised.

All of variables presented above are boosters (their growth causes the growth in the level of analysed phenomena).² The following formula of standardization was used then in the form (the distance indicator which moves individual countries away from the best result):

$$x_{s,K} = \frac{x_K - x_{Kmin}}{x_{Kmax} - x_{Kmin}}$$

where:

$x_{s,K}$ – value of a normalized variable x for a given country,

x_K – value of a raw variable x for a given country,

x_{Kmin} , x_{Kmax} – value of indicator in the weakest and the best country for a variable x .

The row data and results of unitarization related to all countries were presented in Appendix 1 (Table 5). After the normalisation of particular variables, the complex index was calculated which reflects mean *green-orientation* of entrepreneurship in a given country. The indexes for all UE countries and the position of particular countries based on them were presented in Figure 1.

It is crucial for one to realize that lower values of the very index reflects weaker enterprises' *green-orientation* in a given country.

We decided to indicate two sets of countries which are definitely better than others and those whose performances are the worst. To carry on an in-depth analysis, we set up the typical area of variation, for standardised data. It is calculated as the interval by deducting and adding the value of standard deviation to the mean. If the variable has a normal distribution, then this interval covers 68,26% of all the surveyed objects (entities). Next, we identified all countries which exceed this interval from both directions (from bottom and from above). We named them as **Extreme Green Entrepreneurship Leaders** and **Outsiders**. These countries were highlighted in Figure 2.

The group of Extreme Green Entrepreneurship Leaders is composed of the following countries: Luxembourg, Finland, Ireland, Denmark and Netherlands. In the set of Extreme Green Entrepreneurship Outsiders we can indicate: Greece, Italy, Hungary, Bulgaria, Spain and Romania (Table 1).

In further study we took into consideration **Extreme Green Entrepreneurship Leaders and Outsiders** identified beforehand. The ultimate goal was to compare these countries in order to diagnose root reasons of differentiations between green entrepreneurship development conditions. Moreover, we would like to shed some light on the question why

entrepreneurs from countries labelled as Leaders outperform the others in their green activities.

Findings

The wealth of the countries can be expressed by various indicators. The most common way of measure, which is used to present the general level of economic performances of several countries, is Gross Domestic Product (GDP). Unfortunately, nominal GDP is not relevant for an comparative analyses of economic growth among particular countries. Due to this, in this paper we used two relative ratios based on GDP which reflect more suitably the real wealth of the nations. The first is GDP per capita (current LCU) which is a measure of the total output of a country that takes GDP in US dollars and divides it by the number of the population in the country. It shows relative performances of the countries and depicts how wealthy is a statistical member of the society. The other is GDP per capita in purchasing-power-parity (PPP) which presents differences in the cost of living and the inflation rate of the analysed countries. This indicator is useful when the aim of the study is to compare differences in living standards between nations.

First crucial observation is that Extreme Green Entrepreneurship Leaders create substantially higher amount of GDP per capita and also GDP per capita in PPP than Extreme Green Entrepreneurship Outsiders – see Table 2. Additionally, the average GDP per capita in the group of Leaders achieved in 2016 over 57 thous. USD while in the group of Outsiders only 19 thous. USD. Similarly, GDP per capita in PPP amounts from 63 thous. USD in richer countries to 29 in poorer.

Taking GDP per capita as a general wealth indicator of the pointed out countries, we can conclude that our first hypothesis that enterprises operating in richer countries are more green-oriented, was confirmed. The level of affluence of the countries goes in line with the orientation of the companies for *green engagement*.

According to the Annual Report of Small Business Act, the governmental support for the companies, related to development of the *green-oriented* activities in particular, plays a crucial role in leading countries (Annual Report, 2017). There is abundant evidence that richer nations which create higher amount of GDP are able to allocate more finance resources for supporting the green technologies development, environmentally friendly solutions and pro-environmental investments in enterprises, reduce general environmental pressure and finally better resource effi-

²In the case of inhibitors (if it increases, the value of analysed phenomena decreases) opposite scaling formula for standardizing should be applied. It took the form of:

$$x_{s,K} = 1 - \frac{x_K - x_{Kmin}}{x_{Kmax} - x_{Kmin}}$$

By using this type of standardization data can be compared and aggregated. In addition, the diversification of scaling for boosters and inhibitors allow to determine the correct direction and strength of an occurring phenomenon.

Table 1. Extreme green entrepreneurship leaders and outsiders, source: own study.

Extreme Green Entrepreneurship Leaders			Extreme Green Entrepreneurship Outsiders		
Total-index			Total-index		
Country	Index value	Rank	Country	Index value	Rank
Luxembourg	0,667	1	Greece	0,382	23
Finland	0,655	2	Italy	0,377	24
Ireland	0,646	3	Hungary	0,353	25
Denmark	0,645	4	Bulgaria	0,322	26
Netherlands	0,627	5	Spain	0,316	27
			Romania	0,276	28

Table 2. GDP per capita and GDP per capita in PPP in Extreme Green Entrepreneurship Leaders and Outsiders, source: <https://data.worldbank.org/>

Extreme Green Entrepreneurship Leaders			Extreme Green Entrepreneurship Outsiders		
Country	GDP per capita (current LCU)	GDP per capita, PPP (constant 2011 international \$)	Country	GDP per capita (current LCU)	GDP per capita, PPP (constant 2011 international \$)
Luxembourg	100 738,68	102 389,44	Greece	17 890,57	26 778,50
Finland	43 401,23	43 346,38	Italy	30 661,22	38 370,46
Ireland	43 401,23	71 472,30	Hungary	12 820,09	26 700,76
Denmark	53 578,76	49 029,01	Bulgaria	7 469,03	19 242,62
Netherlands	45 637,89	50 538,61	Spain	26 616,49	36 304,85
			Romania	9 522,77	23 027,29

Table 3. Major education indicators in leaders and outsiders countries, source: Global Education Monitoring Report, Accountability in education: Meeting our Commitments, United Nations Educational, Scientific and Cultural Organization UNESCO, 2017

Extreme Green Entrepreneurship Leaders			Extreme Green Entrepreneurship Outsiders		
Country	Mean years of schooling (years)	Government expenditure on education (% of GDP)	Country	Mean years of schooling (years)	Government expenditure on education (% of GDP)
Luxembourg	12,00	nd	Greece	10,5	nd
Finland	11,20	7,20	Italy	10,9	4,1
Ireland	12,30	5,80	Hungary	12,0	4,6
Denmark	12,70	8,50	Bulgaria	10,8	3,5
Netherlands	11,90	5,60	Spain	9,8	4,3
			Romania	10,8	2,9

ciency of companies, productivity and businesses' efficacious as whole (Hall et. al, 2010). Indirectly, this phenomena accelerate a multiplier effect of the economy and finally increase the pace of economy's growth. And further, a reciprocal ties between economic achievements and expenditures on pro-ecological purposes boosts a pro-environment orientation of the companies and the like. But the leading countries need relevant knowledge that allows them to be more compliant with a sustainable development concept. Being green requires good understanding of benefits derived from integration of economic, social and environmental pillars of long-term society development. Literature provides support to the point that more affluent societies are better educated and present the higher level of pro-environmental awareness. It is possible to draw a link between education of the society (well-educated societies) and pro-ecological attitude. It also seems quite logical to take prerequisite that better educated consumers, entrepreneurs, management staff and workers create favorable conditions for *green-oriented*

entrepreneurship development. Considerations related to the education level were a springboard to browse through the mean years of schooling and government expenditures of schooling as major indicators which in long term are substantial for the general level of society's education. The relevant data were collected in Table 3.

An approach from this perspective suggests that the mean period of education in Extreme Green Entrepreneurship Leaders countries is significantly longer. The average of education years in the first group of countries reaches slightly more than 12 years while in the group of *green-outsiders* it is 11. Moreover, they spend on education more than Outsiders. The percentages of government expenditures on education reveal a deeper difference. Leaders in green entrepreneurship spend almost 7% of GDP on education and Outsiders slightly more than 4%. As mentioned above, wealth of the countries is directly connected with the level of spendings on education issues.

Table 4. Supportive processes for the education of society, dource: https://ec.europa.eu/environment/ecoap/indicators/index_en

Extreme Green Entrepreneurship Leaders			Extreme Green Entrepreneurship Outsiders		
Country	Eco-innovation related academic publications	Eco-innovation related media coverage	Country	Eco-innovation related academic publications	Eco-innovation related media coverage
Luxembourg	320	317	Greece	137	317
Finland	315	93	Italy	118	232
Ireland	168	31	Hungary	31	nd
Denmark	254	18	Bulgaria	0	77
Netherlands	125	87	Spain	105	237
			Romania	53	96

It is necessary to mention that the datasets do not contain figures for Luxembourg and Greece. But even excluding them from the calculations, the divergence is crucially significant wherefore they as well could be neglected.

Education should be perceived broadly not only as a simple delivery of knowledge but also as an instilling and expanding general ideas. It is crucial for understanding the modern world and, in particular, the idea of sustainable development of societies. This holistic approach to education is fundamental for confirmation of the other hypothesis. Well educated societies, aware of environmental issues are more likely to demand from business a more ecological attitude. People who understand that over-generational survival of the human being is strongly connected with a balance between economic, social and environmental wisdom would in some sense exert pressure on the companies to be more ecologically friendly.

But the additional question emerged: how does the society (youth) learn about ecological and environmental issues? Critical for exchanging knowledge between different groups of society-stakeholders are: dissemination of scientists publication (and their popularization) as well as the activity of media as a common source of information for general public (Falk and Dierking, 2000). To examine this supplementary remark the data from EUROSTAT were considered (Table 4).

Eco-innovation related academic publications (per mln population) factor represents institutions involved in publications with the following list of English key-words in the title and/or abstract: eco-innovation, energy efficient/efficiency, material efficient/efficiency, resource efficient/efficiency, energy productivity, material productivity, resource productivity (The Eco-innovation, 2016). The other factor: eco-innovation related media coverage is a number of hits in all electronic media covered by *Meltwater News* with key-word *Eco-innovation* (translated in all EU-27 languages).

Firstly, looking on the data presented in Table 4, we can draw an analogy between countries identified as Green Leaders and the effectiveness of popularisation academic publications related to this issue. The average ratio for Leaders achieved 236,4 publication per one million people while in the group of Outsiders the mean accounts for only 78,2 publications. It

can serve as an argument that academic knowledge addressed to the general public in an adjusted way can be supportive for the development of green entrepreneurship and indirectly can act in favour of sustainable development.

Extensive series of studies suggest that media can affect public understanding of science and increase awareness of various findings presented during meetings of academia-people (Miller et. al., 2006). Currently, electronic media are seen as one of the important sources of up-to-date information. Besides, electronic media as a tool of knowledge dissemination should be more popular and used more frequently in well developed countries. Surprisingly, we were baffled by the data which revealed that Eco-innovation related media coverage is on average more widespread in Green Outsiders (215,75), while in Green Leader appropriate ratio counts only 109,2. This divergence suggests that in Green Outsiders countries much is implemented to raise green-awareness but still left a lot to transfer promotion of some ideas into real act of behavior. This remark is only a simple presupposition which opens additional scope for further research in this issue.

General education, dissemination of the academic knowledge and media engagement should result in the level of general society awareness, and in the case of our research, in area of green entrepreneurship. To examine this issue, the ratios of lack of awareness were taken into consideration. We used the results gained from one question asked during the Eurobarometr survey conducted in 2010. Researches asked: *How would you judge the current situation of the environment in your country?* Respondents had five options to choose: very good, rather good, rather bad, very bad and DK – don't know. In Europe, the proportion of the surveyed citizens that consider themselves to be informed on environmental issues range is rather high. It turned out that on average, in the group of Leaders 3,32% of the members of society admitted that they do not have any knowledge how important environment and ecological matters for the survival of nations are. Among the Outsiders, the lack of consciousness (percentage of DK answers) equals 4,65%. Although this difference seems to be insignificant, in fact it could be a considerable reason of lower pro-environment awareness.

Conclusions

Green ecopreneurship is an indispensable component of sustainable development in all countries. Nevertheless, ecopreneurship is perceived as an economic phenomenon which overlaps economic, ecological as well as social aspects. In order to support this phenomenon, green-oriented companies should be encouraged to keep balance between economic, social and ecological wisdom. Our fundamental conclusion is that the best conditions for sustainable development of ecopreneurship occur in affluent countries. It is strictly connected with possibilities of these countries to allocate substantial resources not only for the direct support for these companies but also for supportive activities like general education, pro-ecological education, dissemination of knowledge and creating general awareness related to the importance of environmental issues for the long term existence of society. Yet, there is one threat connected with the activities of the countries. Providing long term subsidies for green-oriented companies can make them dependent on regular support, and without it they would get unable to be green-oriented on their own. Hence, it is important to preserve balance in all aspects of sustainable development.

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Table 5. Row values of the data, source: <https://ec.europa.eu/jrc/en/science-update/launch-small-business-act-country-fact-sheets-2016>.

No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Variables	Percentage of SMEs that have taken resource-efficiency measures; 2015	Percentage of SMEs that have benefited from public support measures for their resource-efficiency actions; 2015	Percentage of SMEs that offer green products or services; 2015	Percentage of SMEs with a turnover share of more than 50% generated by green products or services; 2015	Percentage of SMEs that have benefited from public support measures for their production of green products; 2015	Percentage of SMEs introducing product or process innovations; 2014	Percentage of SMEs introducing marketing or organisational innovations; 2014	Percentage of SMEs innovating in-house; 2014	National R&D available to SMEs (1-5); 2016	Entrepreneurship as a desirable career choice (%); 2016	High status given to successful entrepreneurship (%); 2016	Media attention given to entrepreneurship (%); 2016;	Entrepreneurship education at basic school (1-5); 2016	Entrepreneurship education at post-secondary levels (1-5); 2016	Share of high growth enterprises (%); 2014;
UE-28	95	30	26	18	23	30,9	34,89	28,77	2,5	56,9	66,6	53,3	2,02	2,79	9,19
Austria	91	40	43	28	28	40,71	46,06	36,55	2,77	46	76	x	1,38	2,9	7,32
Belgium	91	50	24	23	24	48,26	45,14	42,29	2,74	54,2	54,5	54,7	1,95	3,24	7,96
Bulgaria	78	48	13	22	19	14,04	14,75	11,8	1,94	52,9	66,9	40,7	1,64	2,3	10,92
Croatia	92	39	23	21	30	25,43	30,84	22,18	1,7	62,2	45,6	47,2	1,61	2,33	9,19
Cyprus	79	64	32	38	34	32,84	31,11	30,48	2,18	72,2	65,7	42,4	1,75	2,79	2,16
Czech Republic	88	63	22	22	64	30,83	25,74	28,02	2,24	x	48	x	1,58	2,4	8,3
Denmark	93	35	32	28	22	34,65	39,98	30,36	2,5	x	x	x	3,1	3,43	x
Estonia	56	49	24	46	34	17,36	15,03	15,8	2,85	53,2	63,6	52,7	2,76	3,29	9,19
Finland	89	54	36	16	41	44,1	37,26	39,85	2,77	40,3	83	71,4	2,36	3	10,21
France	94	31	34	12	20	35,47	41,62	31,77	3,01	56,9	69	45,2	1,7	3,24	8,54
Germany	88	37	31	14	24	41,56	49,09	38,6	2,49	51,8	78,9	50,5	1,7	2,59	8,52
Greece	75	4	30	24	3	34,61	40,14	32,1	2,49	63,3	65,9	38,5	1,84	2,62	x
Hungary	82	38	18	22	15	15,07	15,22	12,58	2,28	52,8	71	40,6	1,46	2,59	12,05
Ireland	96	29	37	16	23	45,72	52,52	41,33	2,78	56,3	83,1	72,2	2,18	2,7	12,58
Italy	82	6	15	21	8	32,67	34,6	30,81	2,43	63,3	69,7	52,3	1,85	2,91	6,84
Latvia	79	54	17	30	46	11,89	18,97	10,18	2,2	55,2	57,8	56,3	2,29	2,89	12,81
Lithuania	72	66	29	34	28	35,69	24	30,38	2,61	68,81	58,33	55,14	2,37	3,07	11,04
Luxembourg	90	61	48	22	40	36,95	54,35	32,24	3,07	42	69,6	45,9	1,96	3,12	9,68
Malta	x	16	23	31	22	26,71	30,78	23,87	x	x	x	x	x	x	13,67
Netherlands	89	39	27	26	9	42,93	32,51	37,14	3,18	77,9	60,2	57,3	3,28	3,57	9,64
Poland	82	50	28	21	41	13,27	11,39	10,66	2,21	61,9	56,2	53,3	1,64	2,05	9,46
Portugal	94	37	26	23	32	42,08	37,81	37,34	2,76	68,8	63,4	68,8	2,1	3,1	8,57
Romania	62	8	x	28	0	4,92	8,84	4,54	2,16	72,4	75,1	67,4	2,35	2,73	2,34
Slovakia	90	52	34	25	28	16,72	22,44	14,01	1,96	50,6	60,1	60,9	2,06	2,77	11,5
Slovenia	79	38	33	31	26	x	33,19	25,79	2,3	56,8	69	65,9	1,71	2,61	7,62
Spain	86	21	29	11	1	18,6	25,52	15,85	2,69	53,7	50,7	49,6	1,74	2,15	9,48
Sweden	88	53	38	17	17	40,41	35,1	35,08	2,56	53,6	69,9	62	2,5	2,54	12,31
United Kingdom	97	19	26	16	34	32,58	45,45	25,26	2,27	58,8	77,2	61,1	1,77	2,5	12,91

Table 6. Unitarized values of the data, source: <https://ec.europa.eu/jrc/en/science-update/launch-small-business-act-country-fact-sheets-2016> and own calculations

No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Variable	Percentage of SMEs that have taken resource-efficiency measures; 2015	Percentage of SMEs that have benefited from public support measures for their resource-efficiency actions; 2015	Percentage of SMEs that offer green products or services; 2015	Percentage of SMEs with a turnover share of more than 50% generated by green products or services; 2015	Percentage of SMEs that have benefited from public support measures for their production of green products; 2015	Percentage of SMEs introducing product or process innovations; 2014	Percentage of SMEs introducing marketing or organisational innovations; 2014	Percentage of SMEs innovating in-house; 2014	National R&D available to SMEs (1-5); 2016	Entrepreneurship as a desirable career choice (%); 2016	High status given to successful entrepreneurship (%); 2016	Media attention given to entrepreneurship (%); 2016;	Entrepreneurship education at basic school (1-5); 2016	Entrepreneurship education at post-secondary levels (1-5); 2016	Share of high growth enterprises (%); 2014;	Total-index
UE-28	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Austria	0,854	0,581	0,857	0,486	0,438	0,826	0,818	0,848	0,723	0,152	0,811	x	0,000	0,559	0,448	0,609
Belgium	0,854	0,742	0,314	0,343	0,375	1,000	0,798	1,000	0,703	0,370	0,237	0,481	0,300	0,783	0,504	0,572
Bulgaria	0,537	0,710	0,000	0,314	0,297	0,210	0,130	0,192	0,162	0,335	0,568	0,065	0,137	0,164	0,761	0,322
Croatia	0,878	0,565	0,286	0,286	0,469	0,473	0,483	0,467	0,000	0,582	0,000	0,258	0,121	0,184	0,611	0,407
Cyprus	0,561	0,968	0,543	0,771	0,531	0,644	0,489	0,687	0,324	0,848	0,536	0,116	0,195	0,487	0,000	0,554
Czech Republic	0,780	0,952	0,257	0,314	1,000	0,598	0,371	0,622	0,365	x	0,064	x	0,105	0,230	0,533	0,511
Denmark	0,902	0,500	0,543	0,486	0,344	0,686	0,684	0,684	0,541	x	x	x	0,905	0,908	x	0,645
Estonia	0,000	0,726	0,314	1,000	0,531	0,287	0,136	0,298	0,777	0,343	0,480	0,421	0,726	0,816	0,611	0,502
Finland	0,805	0,806	0,657	0,143	0,641	0,904	0,624	0,935	0,723	0,000	0,997	0,976	0,516	0,625	0,699	0,655
France	0,927	0,435	0,600	0,029	0,313	0,705	0,720	0,721	0,885	0,441	0,624	0,199	0,168	0,783	0,554	0,520
Germany	0,780	0,532	0,514	0,086	0,375	0,845	0,884	0,902	0,534	0,306	0,888	0,356	0,168	0,355	0,553	0,518
Greece	0,463	0,000	0,486	0,371	0,047	0,685	0,688	0,730	0,534	0,612	0,541	0,000	0,242	0,375	x	0,382
Hungary	0,634	0,548	0,143	0,314	0,234	0,234	0,140	0,213	0,392	0,332	0,677	0,062	0,042	0,355	0,859	0,353
Ireland	0,976	0,403	0,686	0,143	0,359	0,941	0,960	0,975	0,730	0,426	1,000	1,000	0,421	0,428	0,905	0,646
Italy	0,634	0,032	0,057	0,286	0,125	0,640	0,566	0,696	0,493	0,612	0,643	0,409	0,247	0,566	0,407	0,377
Latvia	0,561	0,806	0,114	0,543	0,719	0,161	0,223	0,149	0,338	0,396	0,325	0,528	0,479	0,553	0,925	0,478
Lithuania	0,390	1,000	0,457	0,657	0,438	0,710	0,333	0,685	0,615	0,758	0,339	0,494	0,521	0,671	0,772	0,589
Luxembourg	0,829	0,919	1,000	0,314	0,625	0,739	1,000	0,734	0,926	0,045	0,640	0,220	0,305	0,704	0,653	0,667
Malta	x	0,194	0,286	0,571	0,344	0,503	0,482	0,512	x	x	x	x	x	x	1,000	0,486
Netherlands	0,805	0,565	0,400	0,429	0,141	0,877	0,520	0,864	1,000	1,000	0,389	0,558	1,000	1,000	0,650	0,627
Poland	0,634	0,742	0,429	0,286	0,641	0,193	0,056	0,162	0,345	0,574	0,283	0,439	0,137	0,000	0,634	0,414
Portugal	0,927	0,532	0,371	0,343	0,500	0,857	0,637	0,869	0,716	0,758	0,475	0,899	0,379	0,691	0,557	0,609
Romania	0,146	0,065	x	0,486	0,000	0,000	0,000	0,000	0,311	0,854	0,787	0,858	0,511	0,447	0,016	0,276
Slovakia	0,829	0,774	0,600	0,400	0,438	0,272	0,299	0,251	0,176	0,274	0,387	0,665	0,358	0,474	0,811	0,502
Slovenia	0,561	0,548	0,571	0,571	0,406	x	0,535	0,563	0,405	0,439	0,624	0,813	0,174	0,368	0,474	0,510
Spain	0,732	0,274	0,457	0,000	0,016	0,316	0,367	0,300	0,669	0,356	0,136	0,329	0,189	0,066	0,636	0,316
Sweden	0,780	0,790	0,714	0,171	0,266	0,819	0,577	0,809	0,581	0,354	0,648	0,697	0,589	0,322	0,882	0,586
United Kingdom	1,000	0,242	0,371	0,143	0,531	0,638	0,804	0,549	0,385	0,492	0,843	0,671	0,205	0,296	0,934	0,520