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THE IMPORTANCE OF INVESTMENT FOR THE GREEN ECONOMY IN COUNTRIES AT DIFFERENT LEVELS OF DEVELOPMENT

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Abstract

Investment in renewable energy sources is gradually becoming the most popular investment in the world. Sustainable investment is an encouraged solution because it does no harm to nature. The aim of the study is to find out whether richer or less rich countries invest more in renewable energy sources. The richer a country is and attracts more foreign investment, the faster its economy grows. If a country is less rich, attracts less foreign investment, its economy grows slower. We found that investment in the green economy is following this trend as well. Countries invest in the green economy because they want to be either completely energy independent or become less dependent on other countries. It is important for the country's economy not only to invest in other countries, but also to attract foreign investment in order to strengthen the domestic economy. The high level of the country's economy is indicated by direct investment in foreign states. Economic development depends on the kind of investment. Economic growth can be predicted based on investment. Investment increases the productive potential of the economy. Net investment shows the country's economic situation. The economy is growing if the amount of total investment exceeds depreciation. Investment is very beneficial and important for the development and growth of the country's economy. All investments, including green investment, improve and increase the development and growth of the country's economy. Through the generated gross domestic product, investment affects the country's economy. Economic growth depends on foreign and domestic investment. The main problem of investing in renewable resources is the cost of technology: the higher the price, the longer the payback period is. Therefore, economically stronger countries can invest more in renewable energy sources. Economically stronger countries with favourable climate conditions invest more in renewable energy sources, while economically weaker countries with poorer climate conditions invest less in them. Economic growth depends on foreign and domestic investment The richer a country is and attracts more foreign investment, the faster its economy grows. If a country is less rich, attracts less foreign investment, its economy grows slower. KEY WORDS: investment, green economy, energy prices, GDP.

Introduction

Nowadays, there is a strong focus on the green economy. Therefore, investment in the green economy is significant for future generations. Green investment refers to investment associated with the implementation of environmental goals. The most popular types of investment in the world are business, raw materials, real estate, renewable energy sources. Sustainable investment is the best solution because it does no harm to nature (Doval, Negulescu, 2014). Countries invest in renewable energy sources, solar power plants, wind farms. Investing in renewable sources is a long-term process. Most of the available funds are being employed and profit or benefit is expected. Different financial instruments can be chosen for investing, which may differ from each other in terms of risk or return. The more profitable an investment, the riskier it is. "The high cost of technology is the main problem of renewable energy sources, which leads to a longer period in which investment projects will pay off" (Kanopka, 2015). In order to attract investment in different areas of renewable energy sources, it is important to correctly select subsidy and incentive schemes. It is not the size of renewable energy prices but their fluctuations that create the greatest investment risk, thus it would be more appropriate for the state to help stabilize those fluctuations. The main goal of the investor is to maximise the return and reduce risks. One way to derive income or benefit is by investing funds (European

Environment Agency, 2011). Currently, all countries are investing in the green economy. They want to be either completely energy independent or become less dependent on other countries. A share of the energy produced can be exported to other countries. Investment associated with environmental protection and renewable energy sources is called green investment. Green investment are friendly to nature (Solomatina, 2022). This term relates to activities for the implementation of environmental protection goals, such as landscape preservation, renewable source management, climate change prevention. Green investment is related to green finance i.e., green investments are finances that are used for the preservation of the environment. These are investments in renewable energy, reforestation, agriculture, and other activities that protect the environment. Green investment is an environmentally friendly union of finance and business. Globally, the main goals of green investment are reforestation, biodiversity maintenance, agriculture, protected area establishment, and renewable energy production and supply. Of all these goals, the supply of renewable energy and the creation of the green, sustainable, harmonious economy are becoming more popular. The green, sustainable, harmonious economy is an economy that does no harm to nature, reduces global warming (Kazlauskienė, Alekna, 2019). The European Commission encourages countries to invest in the green economy and thus preserve nature for future generations.

Literature review

Investment can be direct, for the purchase of equipment and the establishment of economic entities, and indirect, which do not affect the economic entity. Depending on the investor, the country or the person's permanent establishment, the investment can be foreign or domestic. Domestic investment is an investment that is invested within a country, while foreign investment is an investment that is invested from abroad or in foreign capital, with the aim of making a profit. Foreign direct investment is the basis of economic growth (Loiseau, Saikku, Antikainen, Droste, Hansjurgens, Pitkanen, Leskinen, Kuikman, Thomsen, 2016). It is important for the country's economy not only to invest in other countries, but also to attract foreign investment in order to strengthen the domestic economy. The high level of the country's economy is indicated by direct investment in foreign states. For the investor, direct investment has many advantages. Uptake of new markets in foreign countries is one of the main advantages (Quental, Lourenco, Nunesda Silva, 2011). Countries, wanting to attract foreign capital, want to show their attractiveness to investors. The competitiveness and advancement of a foreign country is enhanced by new technologies. Foreign direct investment results in the creation of new jobs in a foreign country and the loss of jobs in the home country. With increasing global competition, all countries are looking for ways to attract foreign and local investment in order to achieve economic growth. Economic development depends on the kind of investment (Sileika, Tamašauskienė, 2003). Foreign investment from similar countries may be more beneficial (Zdiarski, Swiatowiec, Troilo, Matys, 2017).

At the micro level, investment plays a crucial role. It is necessary for maximizing state income, ensuring the normal functioning of the economic entity. Investment increases the productive potential of the economy. Investment is the basis for accelerating technological and scientific progress, ensuring competitiveness, improving the development of the economy and its sectors, creating a base, raw materials for industry, solving the country's unemployment, security, defence, and environmental problems. In summary, we can say that investment is very beneficial and important for the development and growth of the country's economy. All investments, including green investment, improve and increase the development and growth of the country's economy.

The importance of investment for the green economy in countries at different levels of development

Gross domestic product is the main macroeconomic indicator that can describe the development of a country, standard of living, and economic growth (Mackevičius, Molienė, 2009). Through the generated gross domestic product, investment affects the country's economy (Žukauskienė, Navickas, 2018). Figure 1 shows that among the analysed countries, the highest gross domestic product is in the Scandinavian countries, i.e., in Norway, Denmark, Sweden, Finland, while the lowest is in Bulgaria. Scandinavian countries are more economically developed than Bulgaria. Foreign countries invest in states that are at a similar level of development. The richer a country is and attracts more foreign investment, the faster its economy grows. Investment, private capital flows increase the gross domestic product.





Source: Eurostat data

Figure 1 shows that the highest gross domestic product is in Norway. Norway has a well-regulated market economy, politics. Vital sectors, i.e., of oil production, renewable energy sources are controlled by the government. Norway is rich in natural resources: hydropower, oil, minerals, forests, fish. Norway is ranked seventh in terms of oil exports in the world. Oil money is invested abroad and domestically. This is due to the fact that over time, gas and oil resources will be depleted. The country has one of the highest standards of living, not only among Scandinavia and the Baltic states, but throughout the world. Norway is one of the most environmentally friendly countries. The country is investing heavily in renewable sources that will replace fossil fuels over time. There are excellent conditions for investing in wind energy. This investment would allow not only Norway to be supplied with energy, but it would be possible to export energy to other countries as well.



Fig. 2. Percentage of renewable energy in 2014–2020 Source: Eurostat data

Solar energy is the source of almost all renewable energy sources. Renewable energy sources can be water, solar, wind, biofuels, geothermal energy. The use of renewable energy sources is expanding very rapidly around the world. The solar and wind energy sectors are growing. The share of renewable energy in all countries has increased over the period analysed. In some very dramatically, in others not so much. This can be explained by a very strong focus on the green economy. Figure 2 shows that the share of renewable energy sources in Norway, Sweden, and Finland is increasing very rapidly. Scandinavian countries are investing heavily in renewable resources. Norway is investing heavily in hydropower. About 96% of Norway's electricity comes from hydropower plants. Norway is very strong not only in terms of economy, but also energy. Among the Baltic states, Latvia has the highest percentage of renewable energy sources at 42,132%. Bulgaria has the lowest percentage share of energy from renewable sources. Bulgaria is economically the weakest of all the countries analysed. The country benefits the most from tourists, thus tourism is given great attention and the state mainly invests in tourism.

Methods

Statistical data in Table 1 (see attachments) shows the difference between the countries' outward investment and inward investmentin the years 2005–2022. Table 2 (see attachments) presents the statistical data of the gross product per capita for the years 2005–2022. From the statistical data presented in the tables, it can be seen that as direct investment increases, the gross domestic product (GDP) per capita increases. I used the moving average method to confirm this point. This method is based on the average basis. It can be used to predict annual data. After applying the moving average method and performing the calculations, we can see in Tables 3 and 4 (see attachments) that as investment increases, the gross domestic product also increases — this can be seen from the result of year 2021.

In summary, we can say that economic growth depends on foreign and domestic investment. The richer a country is and attracts more foreign investment, the faster its economy grows. If a country is less rich, attracts less foreign investment, its economy grows slower. The stronger the country's economy, the more it can invest in renewable energy sources.

Investment in electricity

Investment in renewable energy sources is one of the more important and relevant topics today around the world. There is ever-growing talk about investment in the green energy. Climate change makes it important to switch to renewable energy sources. Energy is the driving force of society. The entire world depends on oil and fossil fuels, which makes us wonder how we extract and use these fuels. An essential step towards the future of renewable energy is renewable energy sources (Piebalgs, 2008). We are moving towards the goal of being able to meet all emerging needs with renewable energy sources. Renewable energy sources are divided into potential and real energy sources (Matulionytė-Jarašiūnė, 2010).

The electricity sector of the Baltic states underwent very strong changes, which led to the price of electricity and the structure of the fuel balance. Falling and stable electricity prices is one of the main goals of opening up the electricity market (Šikšnelytė, 2016).

In the 1980s, many transitional-type developed and developing countries around the world began to carry out reforms in the electricity sector. The reform model of the sector included the creation of regulatory systems, legislation, privatisation, restructuring (Nagayama, 2007). Price has become a key parameter in electricity markets, and today it has many characteristics. The main characteristics of the price of electricity are as follows: prices are characterized by modernity, volatility; negative electricity prices are increasingly more visible; new prices are forming more and more often; prices are characterized by seasonality (Bobinaitė, Juozapavičienė, 2012).

The main tasks of the Estonian electricity sector are to increase the production of electricity, the use of local fuel in the production of electricity, and the productivity of transmission. Power plants in Estonia transmit electricity to consumers and retailers. Next, electricity is sold by retailers to consumers. Consumers must have a contract with network operators to receive electricity. Electricity producers compete in the wholesale market, offering electricity to large consumers and retailers. In Estonia, the main electricity comes from oil shale, thus electricity production is stable all year round. The rest of the electricity is produced from renewable energy sources. Figure 3 shows that the lowest electricity price is in Estonia and the highest in Latvia. In Estonia, consumers can freely choose from whom to buy electricity, as well as change supplier once a month. Latvia's electricity production is highly dependent on seasonality, as hydroelectric plants generate the most electricity (Jankauskas, 2006). More electricity is produced than consumed during rainy periods. Also, electricity produced from renewable energy sources in Latvia accounts for 32%. The Lithuanian energy system consists of renewable energy sources, thermal power plants, hydropower plants. Lithuania is currently investing heavily in renewable energy sources, i.e., solar power plants, wind farms are being built.



Fig. 3. Electricity prices for households consuming less than 1 000 kWh, 2017H1–2022H1. Source: Data of the statistical departments

Figure 3 shows how electricity prices have changed for household consumers using electricity up to 1 000 kWh. We see that from the second half of 2018 to the first half of 2021, electricity prices in Lithuania, Latvia and Estonia rose, with prices in Estonia being the lowest, but with the outbreak of the war in Ukraine, since 2021 they have jumped significantly upwards.



Fig. 4. Electricity prices for households consuming 1 000–2 500 kWh, 2017H1–2022H1. Source: Data of the statistical departments

Figure 4 shows that the prices for households consuming electricity from 1 000 to 2 500 kWh varied over the analysed period. In all Baltic states, prices rose in the first half of 2021 and were the highest during the entire period analysed.





Figure 5 shows the electricity prices for households consuming between 2 500 and 5 000 kWh. We see that prices in Lithuania and Latvia were high until the second half of 2019. Then, until the first half of 2021, they were decreasing, and from the first half of 2021, the prices in all the Baltic states skyrocketed. Electricity prices in Latvia are the highest for the entire period analysed.





Figure 6 shows that in Lithuania, Latvia, and Estonia, the electricity prices for households consuming between 5 000 and 15 000 kWh have risen sharply since 2021.



Fig. 7. Electricity prices for households consuming more than 15 000 kWh, 2017H1–2022H1. *Source: Data of the statistical departments*

Figure 7 shows that the electricity prices for households consuming more than 15 000 kWh in Lithuania, Latvia and Estonia have risen since the first half of 2021.

Looking at all five graphs, we can summarize that among the Baltic states, the lowest electricity prices are in Estonia, and the highest in Lithuania and Latvia. All the figures show that the price of electricity has grown sharply since the start of the war in Ukraine in 2021. While the war is going on, electricity prices in all states remain high.

Conclusions

Countries invest in the green economy because they want to be either completely energy independent or become less dependent on other countries. It is important for the country's economy not only to invest in other countries, but also to attract foreign investment in order to strengthen the domestic economy. The high level of the country's economy is indicated by direct investment in foreign states. Economic development depends on the kind of investment. Economic growth can be predicted based on investment. Investment increases the productive potential of the economy. Net investment shows the country's economic situation. The economy is growing if the amount of total investment exceeds depreciation. Investment is very beneficial and important for the development and growth of the country's economy. All investments, including green investment, improve and increase the development and growth of the country's economy. Through the generated gross domestic product, investment affects the country's economy. Economic growth depends on foreign and domestic investment.

The main problem of investing in renewable resources is the cost of technology: the higher the price, the longer the payback period is. Therefore, economically stronger countries can invest more in renewable energy sources.

Economically stronger countries with favourable climate conditions invest more in renewable energy sources, while economically weaker countries with poorer climate conditions invest less in them. Economic growth depends on foreign and domestic investment The richer a country is and attracts more foreign investment, the faster its economy grows. If a country is less rich, attracts less foreign investment, its economy grows slower.

Electricity prices in the Baltic states have risen sharply since the first half of 2021. This significant jump in prices was influenced by the outbreak of the war in Ukraine.

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Attachments

Table 1. The difference between countries' outward investment and inward investment in 2005–2022.

TIME	Bulgaria	Denmark	Estonia	Latvia	Lithuania	Finland	Sweden
2005	-22 789.0	74 092.0	-7 883.2	-3 921.0	-6 541.6	23 205.7	352 201.0
2006	-34 200.0	74 253.0	-6 575.4	-5 340.0	-8 001.5	60 454.0	319 971.0
2007	-49 320.8	89 050.0	-6 604.4	-6 829.0	-9 562.5	17 329.0	326 818.0
2008	-59 888.9	222 056.0	-6 469.6	-7 384.0	-8 020.2	22 221.0	433 472.0
2009	-64 931.0	301 976.0	-6 649.1	-7 376.0	-8 317.9	31 318.0	262 022.0
2010	-62 042.7	456 652.0	-7 488.8	-7 437.0	-9 585.7	38 112.0	281 144.0
2011	-64 703.1	533 902.0	-8 922.2	-8 625.0	-9 941.5	34 344.0	272 942.0
2012	-67 298.2	561 077.0	-9 755.7	-9 380.0	-10 480.5	41 495.0	156 209.0
2013	-66 352.2	606 289.0	-11 013.7	-10 372.0	-11 211.5	41 076.0	287 575.0
2014	-70 240.7	529 116.0	-12 094.6	-10 975.0	-10 896.6	19 516.0	616 495.0
2015	-74 874.2	578 947.0	-11 829.1	-11 845.0	-11 368.2	11 896.0	319 232.0
2016	-75 660.7	598 409.0	-12 674.6	-11 756.0	-11 818.3	27 520.0	350 163.0
2017	-78 713.3	650 416.0	-13 538.0	-12 869.0	-12 750.1	29 119.0	170 870.0
2018	-81 628.2	694 410.0	-14 925.8	-13 290.0	-12 735.9	49 535.0	513 883.0
2019	-85 126.2	738 453.0	-15 998.2	-14 125.0	-14 390.7	53 987.0	547 682.0
2020	-89 454.2	746 130.0	-19 377.6	-14 716.0	-15 340.0	44 081.0	373 536.0
2021	-94 082.0	930 927.0	-19 890.6	-15 913.0	-16 971.8	48 840.0	608 050.0
2022	-98 869.3	990 439.0	-20 954.8	-17 266.0	-19 156.1	44 505.0	1 211 294.0

Source: Eurostat data

 Table 2. Real GDP per capita in 2005–2022

TIME	Bulgaria	Denmark	Estonia	Latvia	Lithuania	Finland	Sweden
2005	4 170	44 400	11 070	8 210	7 960	34 250	37 990
2006	4 480	45 990	12 230	9 280	8 690	35 490	39 540
2007	4 800	46 210	13 230	10 280	9 770	37 210	40 590
2008	5 120	45 700	12 590	10 050	10 130	37 330	40 100
2009	4 970	43 220	10 770	8 760	8 720	34 150	38 030
2010	5 080	43 840	11 060	8 550	9 050	35 080	39 950
2011	5 320	44 240	11 890	8 940	9 820	35 810	40 920
2012	5 390	44 170	12 320	9 680	10 330	35 140	40 380
2013	5 390	44 410	12 540	9 980	10 810	34 660	40 510
2014	5 470	44 890	12 960	10 270	11 290	34 390	41 180
2015	5 700	45 630	13 230	10 760	11 620	34 460	42 580
2016	5 910	46 720	13 620	11 110	12 070	35 330	42 920
2017	6 120	47 740	14 410	11 590	12 760	36 380	43 430
2018	6 330	48 450	14 920	12 140	13 400	36 740	43 760
2019	6 630	48 970	15 410	12 540	14 060	37 150	44 180
2020	6 410	47 890	15 280	12 330	14 050	36 220	42 910
2021	6 950	50 010	16 490	12 980	14 820	37 290	45 280
2022	7 250	51 460	16 250	13 320	14 970	37 780	46 250

Source: Eurostat data

Table 3. The difference of the moving average method results between countries' outward investment and inward investment in 2005–2022

TIME	Bulgaria	Denmark	Estonia	Latvia	Lithuania	Finland	Sweden
2006	-14148	79132	-7021	-5363	-8035	33663	332997
2007	-47803	128453	-6550	-6518	-8528	33335	360087
2008	-58047	204361	-6574	-7196	-8634	23623	340771
2009	-62288	326895	-6869	-7399	-8641	30550	325546
2010	-63892	430843	-7687	-7813	-9282	34591	272036
2011	-64681	517210	-8722	-8481	-10003	37984	236765
2012	-66118	567089	-9897	-9459	-10545	38972	238909
2013	-67964	565494	-10955	-10242	-10863	34029	353426
2014	-70489	571451	-11646	-11064	-11159	24163	407767
2015	-73592	568824	-12199	-11525	-11361	19644	428630
2016	-76416	609257	-12681	-12157	-11979	22845	280088
2017	-78667	647745	-13713	-12638	-12435	35391	344972
2018	-81823	694426	-14821	-13428	-13292	44214	410812
2019	-85403	726331	-16767	-14044	-14156	49201	478367
2020	-89554	805170	-18422	-14918	-15568	48969	509756
2021	-94135	889165	-20074	-15965	-17156	45809	730960

Source: Authors own colculations

TIME	Bulgaria	Denmark	Estonia	Latvia	Lithuania	Finland	Sweden
2006	4483	45533	12177	9257	8807	35650	39373
2007	4800	45967	12683	9870	9530	36677	40077
2008	4963	45043	12197	9697	9540	36230	39573
2009	5057	44253	11473	9120	9300	35520	39360
2010	5123	43767	11240	8750	9197	35013	39633
2011	5263	44083	11757	9057	9733	35343	40417
2012	5367	44273	12250	9533	10320	35203	40603
2013	5417	44490	12607	9977	10810	34730	40690
2014	5520	44977	12910	10337	11240	34503	41423
2015	5693	45747	13270	10713	11660	34727	42227
2016	5910	46697	13753	11153	12150	35390	42977
2017	6120	47637	14317	11613	12743	36150	43370
2018	6360	48387	14913	12090	13407	36757	43790
2019	6457	48437	15203	12337	13837	36703	43617
2020	6663	48957	15727	12617	14310	36887	44123
2021	6870	49787	16007	12877	14613	37097	44813

Table 4. Real GDP per capita results after applying the moving average method

Source: Authors own colculations

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Joana Zukauskiene, Kaunas University of Technology PhD candidate in economics. Master of Business Economics. Field of scientific research, green economy, international trade. Disertation topic: The impact of international trade on the European green economy. Disertation aim of the study is to develop an econometric model of the impact of inertnational trade on the European Green Economy, which would allow a more accurate assessment of existing processes and propose sound economic policy measures to prevent and address emerging problems and ensure stable and sustainable. Scientific publication: The labor force migration impact on countries with different economic development level J. Žukauskienė, V. Navickas (2018). Address: Gedimino g. 50, LT-44239 Kaunas- Lithuania. Phone: +37060603779. E-mail: joana.zukaus@gmail.com. ORCID 0009-0005-2265-0658.

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