

# INVESTMENTS FOR A SUSTAINABLE ENERGY FUTURE

**Corina PIRLOGEA**

*The Bucharest Academy of Economic Studies, Bucharest, Romania*

*corina\_pirlogea@yahoo.com*

## **Abstract**

Taking into account that today the consumption of energy has grown six times since half a century ago, investments are needed for diversifying the sources of energy consumption and raising the efficiency of energy use. In this article authors concentrate on declaring trends in the energy field in the last decade, with emphasis on production, consumption and installed capacity. We also focus on shaping a view for Romanian energy market, which even though it is a net importer of energy, it also has a great potential for various resources: natural gas, coal, oil, uranium ore and renewable resources. Finally the subject of financing investments in renewable energy is discussed. All this arguments combined may explain our country's average score for the Energy Sustainability Index that gives us a middle place in this country ranking.

**Keywords:** Renewable energy, Energy consumption, Investment, Sustainable development.

## **1. INTRODUCTION**

In a report of the Intergovernmental Group on Climate Evolution (GIEC), in 2001, it is explained that conventional resources of oil and natural gas will be available for another 40 years, according to current consumption (Badea, 2003). We do not know if this scenario is sure and reliable, but it certainly serves to mobilize humanity in making important changes in energy field. On the other hand, the only way to promote technical progress in the economy (and, implicitly, to replace conventional energy sources) is represented by investments (Cicea et al., 2009). Undoubtedly, any activity (including investment process) must be subordinated to efficiency criteria, by comparing the effects and the efforts of that activity (Cicea, 2008).

Therefore, the issue of renewable energy (RE) has gained importance over the past two decades, as the role of non-conventional energy and was recognized as a factor and essential condition for sustainable development. It will continue to gain in importance in coming years, from at least three reasons, which do not require any additional comment: climate change, the limits of fossil fuels, increasing energy demand.

Technologies for exploiting RE sources were developed such that their price began to fall and if to this fact are added the subsidies received, that an investment in energy from renewable sources can

recover faster than sceptics consider: for geothermal power, payback period is between 6 and 7 years; for wind farms, depending on the type of technology used, the investment is recovered in 7-10 years; for solar farms, depending on their size, the investment is recovered in 6-10 years. These times are estimated for the industrial operation, may change slightly depending on each country, but are used and considered mainly the values shown.

This work tries to promote investments in renewable energy by presenting trends in the energy field in the last decade for countries in Europe and mostly in European Union. By studying facts related to production, consumption, investments and types of funding, the general view of the energy field is drawn. Various organizations created a series of country indices to guide investors and those interested in the field in their decision making. Therefore, these country rankings are discussed, outlining the position of Romania in each of them.

## 2. LITERATURE REVIEW

The latest achievements in the field, is focused on studies, analyses, papers, research worldwide, stimulating legislative regulations. One of the most effective organization that supports and enhances the use and implementation of the renewable energy, the World Renewable Energy Network, it connects agencies, institutions, laboratories, companies and even individuals, for international distribution of applications and technologies of RE. As a proof can be mentioned the work *Renewable energy: Renewables: the Energy for the 21st Century*, which includes the work of 800 experts from over 100 countries.

In the same year, as the voice of the RE European industry the European Renewable Energy Council (2004) has developed; its members were able to make light for the decisions on energy future, examining costs, prices and tariffs specific to RE technologies, contributing to the literature with an analysis of the RE market development in the European Union.

Moreover, Quaschnig (2005) wants to challenge the vision that renewable energy would have a low efficiency. So he criticizes the fact that investment decision prevails economic elements (usually to choose investment options that bring the greatest benefits) and technical aspects or environmental, are not considered.

Later, Kaltschmitt & Streicher (2007) tried to create a solid basis for economic and environmental assessment of different RE sources. Across the world, Maithani (2008) conducted a comparative study (on policies, programs, stakeholders in RE field) to highlight the regulatory measures, financing

structures in the field and the general direction of each country (included in the study) regarding RE. Hanley & Barbier (2009) made a further analysis on the costs and benefits involved in RE, detailing ways of measuring costs and benefits and trying to assess the impact of investments in RE.

### 3. TRENDS REGARDING ENERGY

The value of global energy market in 2010, including both traditional and renewable energy was said to be around 6 trillion \$ (Freed et al., 2010). The world changes slowly from fossil fuels to clean energy, in its trial to contribute less to global warming, reduce security risks and pollution costs.

To find out how important renewable energy is nowadays, compared with traditional energy, we should look at the electricity generated. In Table 1, are presented values of electricity generated for countries in EU 27, in 2007, sorted from the greatest to the smallest values.

Gross electricity generation or production is the total amount of electrical energy produced by transforming other forms of energy. It can be seen that in 2007, Germany had the greatest generation of electrical energy from EU27; Romania had a production ten times smaller than Germany's, but more than many other developed countries, for example Luxembourg.

TABLE 1 – GROSS ELECTRICITY GENERATION IN 2007 (IN TWh)

	TOTAL	Coal	Oil	Gas	Other power station	Nuclear	Pumped Storage	Renewables
EU 27	3362	988	112	760	6	935	34	562
Germany	637.1	299.8	11.3	84.1	0.1	140.5	7.6	93.8
France	569.8	24.4	6.2	25.7	-	439.7	5.5	68.3
...	...	...	...	...	...	...	...	...
Austria	63.4	6.3	1.3	11.2	0.3	-	2.5	41.9
Romania	61.7	25.1	1.1	11.8	-	7.7	-	16
Portugal	47.3	12.4	4.9	13.1	0.003	-	0.4	16.5
...	...	...	...	...	...	...	...	...
Luxembourg	4	-	-	2.9	-	-	0.8	0.3
Malta	2.3	-	2.3	-	-	-	-	-

Sources: European Commision, 2011a and European Environment Agency, 2010

Electricity generated from renewable sources had a 15.6% of total generation in EU27 in 2007. In Romania, the 16 TWh generated are from hydro, wind and biomass and represent 26.7% of total electricity generated.

#### 3.1. Trends in production

EU 27 primary production of energy slowly decreased from almost 949 Million Tones oil equivalent (Mtoe) in 1998 to 927 Mtoe in 2004 and then found a rapidly fall to 812 Mtoe in 2009 (Eurostat, 2011a).

---

Primary production is referred to as the production obtained from natural sources, meaning that the transformation of energy from one form to another is not taken into account (for instance electricity, heat generation, coke ovens and others). From data available from Eurostat, in 2009, the largest European producers of primary energy were Norway with 216 Mtoe and United Kingdom with 156 Mtoe, followed by France and Germany with almost 128 Mtoe. Luxembourg, one of the richest country from European Union in 2009, had only a 0.106 Mtoe production of primary energy. Italy, Romania, Spain, Sweden and Turkey recorded each, around 29 Mtoe of primary energy production.

Regarding the renewable energy production, including biomass, hydropower, geothermal energy, wind and solar energy, it grew yearly, from 92.359 Mtoe in 1998 to 148.43 Mtoe in 2009 in EU27 (Eurostat, 2011b). The largest producer of renewable energy in Europe is Germany according to data available for 2009. It is followed by France, Sweden, Italy and Norway. In the same year Romania produced 5.27 Mtoe, more than United Kingdom (5.1 Mtoe) and Denmark (2.75Mtoe).

### **3.2. Trends in consumption**

In the last decade, the energy consumption of households, industry, transport and other sectors (excluding the consumption of energy producing industries), for countries in European Union, had an upward trend. So, 27 countries from EU reached a consumption of 1193 Mtoe in 2006, with 71 Mtoe more than in 2002. 2006 was the peak for final energy consumption and the moment it began to decrease, reaching 1113 Mtoe in 2009, a similar value recorded in 1999 (Eurostat, 2011c).

The “hungriest” European countries, when talking about energy, in 2009 were some of the largest producers, Germany with 213 Mtoe of final energy consumption, France with 156 Mtoe and United Kingdom with 137 Mtoe.

Surprisingly, the biggest producer of energy, Norway, consumed only 18 Mtoe in 2009. In the same year, Italy, Spain and Sweden consumed more than their primary energy production. For this reason, Norway is considered a net exporter of energy, along with Denmark. The so called energy dependence of Norway for 2009 is -639.5% and for Denmark is -18.8% (Eurostat, 2011d). For net importers, the energy dependence is positive, for instance Malta was entirely dependent on energy imports in 2009, recording a value of 101.8%. Other countries with large values for energy dependence are Luxembourg, Cyprus, Ireland, Italy, Spain. Romania is also an energy importer, with 20.3% energy dependence, the smallest value among values of Member States importers (European Commission, 2011b). It is followed by Estonia with 21.2% energy dependence and United Kingdom and Czech Republic with 26%, values for 2009.

Regarding the renewable energy consumption, in EU 27, it had an increasing tendency (Eurostat, 2011e) for the last two decades. The renewable gross inland consumption doubled from 70.69 Mtoe in 1990 to 144Mtoe in 2008. Gross inland consumption refers to primary production and recovered products, total imports and variation of stocks, but without total exports and bunkers.

Germany was in 2009 the largest consumer of renewable energy (almost 28 Mtoe), followed by France (approximately 20 Mtoe), Italy (16 Mtoe), Sweden (15.8 Mtoe), Norway (12.2 Mtoe). In the same year, not so “hungry” for renewable energy were Cyprus (0.098 Mtoe), Luxembourg (0.121 Mtoe) and Ireland (0.641 Mtoe), Malta not consuming at all renewable energy. Romania can boast of 5.27 Mtoe in 2009 renewable energy gross inland consumption.

### **3.3. Trends in investments**

From 2004 till 2010, new investments in renewable energy have grown six and almost a half times, reaching in 2010, 211 billion dollars (REN21, 2011). Asia & Oceania, Europe and North America are the first three regions which gathered around 124 billion dollars financial new investments, meaning money invested in renewable energy companies and utility-scale generation as well as biofuel projects. In other words, new financial investments are total investments excluding small-scale projects and government and corporate R&D.

New renewable energy investments are classified by value chain as follows (UNEP, 2011):

- Investments in technology development: Venture Capital, Government Research & Development, Corporate Research, Development and Deployment (RD&D);
- Investments in equipment manufacturing;
- Investments projects.

In Europe the level of new financial investment in 2009 was 43.7 billion dollars, less than in 2007 and 2008, when our continent registered 48.4 billion dollars (UNEP, 2011). New financial investments exceeded 50.6 billion dollars in wind in developing countries around the world, more than in developed countries where they reached 44.1 billion dollars. Wind, Solar and Biomass are the first three prevailing renewables investors laid eyes on.

From 2004 till 2009, investment in energy with private participation had a fluctuating trend in Romania. It changed from almost 1240 million dollars in 2004, data available for Romania, to 2196 million dollars in 2009.

---

#### 4. FINANCING INVESTMENTS IN RENEWABLE ENERGY

The European Union must exploit its renewable energy sources (RES) potential for power generation, heat and transport, so it could reach 20% of RES in its gross final energy consumption by 2020. The development of this sector means considerable investment in the next years. A renewable energy project may seek finance in (Justice, 2009):

- Banks and financial institutions;
- Venture capital, private equity and funds (infrastructure funds and pension funds).

The types of funding (Alexander, 2011) given by banks and other financial institutions are: *corporate lending* (when the bank's funds facilitate the everyday activities of a company), *project finance or limited recourse finance* (when the company borrows funds for a certain project and the amount borrowed is related to the revenue generated from the project after a period of time) *mezzanine finance* (when the lender may convert to an ownership in the project or company if the loan is not paid back) and *refinancing* (when the existing debt is replaced with a new one for more attractive conditions and terms).

The second type of finance is taking into account the type of business, the stage of development of the technology and degree of risk associated. Venture capital is interested in higher risk projects, intervening in the first stages of project life cycle. Private equity is not a risk lover, intervening in the last stages of the business. Infrastructure funds and pension funds are risk averse and are looking so for projects with a lower risk.

According to BNEF, in 2010, almost all funding (13.5 billion dollars) of renewable energy projects was from bank loans and a few from equity capital (for instance the European Bank for Reconstruction and Development).

In developing markets, the risk associated to the renewable projects is very high, so another mean of enabling them is public finance, in the form of direct grants or soft loans. In Romania, there are three such funds functioning in order to sustain investments (Remrova, 2008): The Romanian Fund for Energy Efficiency (FREE), The Environment Fund and EU Structural Funds.

Till now, the Romanian Fund for Energy Efficiency has signed 26 financing contracts, totaling 13.698 million dollars, (FREE, 2011) in the field of efficient use of energy and exploitation of renewable energy sources.

The Environment Fund is an economic and financial tool for support and implementation of projects on environmental protection. The Administration of Environment Fund manages this public fund (AFM,

2011) and designs aid schemes for projects. The aid scheme for promoting clean energy and energy production from renewable sources had a budget for 2007-2011 period of 2.345 million lei (Ministerul Mediului, 2009).

EU Structural Funds operates for the 2007-2013 period of time, through an Operational Sectoral Programme Raising Economic Competitiveness, in order to fund projects for renewable energy sources exploitation. The total budget of this major field of intervention is of 56 million euro (2004 prices) (FSE, n.d.), representing the Community's contribution.

## 5. SUSTAINABLE ENERGY FUTURE FOR ROMANIA

There are several country rankings made for the energy field, that outline an overview of each country included, influencing in this way investors and guiding the countries to improve their situation in the future.

World Energy Council is calculating the Energy Sustainability Index, taking into account two aspects: Energy Performance (75%) and Contextual Performance (25%). Energy performance includes equal proportions of three elements: Energy security, Social Equity, Environmental Impact Mitigation. The second aspect, the one regarding Contextual Performance is measured by using three items (with equal weights): Political strength, Societal strength, Economic strength. All these elements are measured by means of indicators, giving scores from 1 to 10, obviously a higher score meaning a better situation in that category.

The table below finds the results for the year 2010 for Romania and the countries that occupy the leading places and final places. One can easily see where there were lower scores, but that overall we have a note of 5.13, which ranks us 40 of 91 countries analyzed.

TABLE 2 – RANKING BASED ON ENERGY SUSTAINABILITY INDEX IN 2010

Rank	Country	ENERGY SUSTAINABILITY INDEX 2010						TOTAL
		Energy security	Social equity	Environmental impact mitigation	Political strength	Societal strength	Economic strength	
1	Switzerland	9.88	6.66	10.00	10.00	9.77	8.88	9.02
2	Sweden	9.00	6.22	9.88	9.66	9.88	7.22	8.51
...	...	...	...	...	...	...	...	...
39	Camroon	8.88	1.22	8.44	1.22	0.33	5.00	5.18
<b>40</b>	<b>Romania</b>	<b>6.44</b>	<b>6.77</b>	<b>3.77</b>	<b>4.77</b>	<b>5.11</b>	<b>0.77</b>	<b>5.13</b>
41	Philippines	4.00	5.55	6.88	2.77	2.44	5.22	4.98
...	...	...	...	...	...	...	...	...
90	Ethiopia	0.22	1.77	5.44	0.77	1.22	0.44	2.06
91	Mongolia	0.77	1.11	1.11	2.88	1.66	3.55	1.42

Source: World Energy Council, 2010

The lowest scores are found under *Economic strength*, calculated on the basis of Macroeconomic Stability, Cost of living expenditure, Availability to the private sector but also at the *Environmental Impact Mitigation*, calculated by using Energy intensity, Emissions intensity, Effects on air and water and Efficiency of Electricity Production. Also, the *Political strength* does not have a passing grade, because our country has not got a good situation, when speaking of: Political Stability, Regulatory Quality and Effectiveness of government, indicators which helped obtaining 4,77.

The Country Attractiveness Indices (CAI) is another index providing scores for national renewable energy markets, renewable energy infrastructures and their suitability for individual technologies. It is calculated by The Ernst & Young, on a regular basis. Romania entered this ranking in November 2010 as a result of its developing wind market. The CAI in 2010 is presented in Table 3, for the first two most “attractive” countries, for Romania and for the two less “attractive” countries.

TABLE 3 – ALL RENEWABLES INDEX AT NOVEMBER 2010

Rank	Country	All renewables	Wind index	Solar index	Biomass	Geothermal	Infrastructure
1	China	71	76	60	58	51	76
2	US	66	66	72	61	67	60
...							
<b>22</b>	<b>Romania</b>	<b>43</b>	<b>46</b>	<b>32</b>	<b>43</b>	<b>38</b>	<b>43</b>
23	Egypt	43	44	48	37	27	40
...							
29	Austria	40	38	40	49	34	52
30	Finland	38	41	20	50	24	40

Source: Ernst & Young, 2010

So, on a scale of 1 to 100, China is the most attractive country when talking about renewable energy, followed by US. The “All renewable index” is calculated by combining the index on wind, solar, biomass and infrastructure in different proportions; it seems that the wind index has the greatest general influence, because it counts 68% in the overall index.

Romania has an overall index for renewables of 43, meaning it is an attractive country for investors. Wind energy potential in Romania is considered the largest in southeastern Europe, Moldova and Dobrogea being the most suitable areas for wind farm development. It is even more attractive than Norway, one of the five largest producers of renewable energy in Europe and the first producer of primary energy on the continent.

## 6. CONCLUSIONS

Important aspects about energy in Europe and in European Union were underlined through this paper. The largest energy producers were revealed and also the largest consumers. The new era of renewable

energy was also depicted with stating the possibilities for investing in this field. These possibilities refer to financing, meaning funds and institutions that sustain investors in their investment decision regarding renewable energy. They also refer to the most wanted green resources (wind and solar) and to the countries that either have a great potential for these resources, either develop technologies and equipment for those who have a great potential.

In this context, Romania finds its place as a country with an important potential in terms of renewable energy, waiting to be exploited. The country attractiveness is said to be relatively good compared with other European countries, even though the energy sustainability of the country is low and reveals poor energy performance.

### ACKNOWLEDGEMENTS

This work was co-financed from the European Social Fund through Sectoral Operational Programme Human Resources Development 2007-2013; project number POSDRU/107/1.5/S/77213 „Ph.D. for a career in interdisciplinary economic research at the European standards”.

### REFERENCES

- AFM, (2011), *Prezentare*, retrieved from <[http://www.afm.ro/info01\\_prezentare.php](http://www.afm.ro/info01_prezentare.php)>.
- Alexander, J. (2011), *Sources of Financing for Renewable Energy*, retrieved from <[http://greatlakes.edu.in/gurgaon/pdf/Sources\\_of\\_Financing\\_for\\_Renewable\\_Energy.pdf](http://greatlakes.edu.in/gurgaon/pdf/Sources_of_Financing_for_Renewable_Energy.pdf)>.
- Badea, A. (2003), *Surse regenerabile de energie, componenta importanta a dezvoltarii energetice durabile*, retrieved from <[http://www.lusarom.ro/html/CO2\\_Surse%20regenerabile.pdf](http://www.lusarom.ro/html/CO2_Surse%20regenerabile.pdf)>.
- Cicea, C., Vasilescu, I. and Banacu, C. (2009), Direct investment analysis, starting point to attract new investors in economy. A macro-systemic approach, in *Proceedings of the 11th International Business Information Management Association (IBIMA) conference on „Innovation and Knowledge Management in Twin Track Economies”*, Cairo, 157-161.
- Cicea, C. (2008), The Binomial Relation Effects – Efforts in Human Economic Activities, in *Proceedings of the 9th International Business Information Management Association (IBIMA) conference on „Information Management on Modern Organization”*, Marrakech, 490-494.
- Ernst & Young, (2010), *Renewable energy country attractiveness indices*, retrieved from <[http://www.ey.com/Publication/vwLUAssets/Renewable\\_energy\\_country\\_attractiveness\\_indices\\_-\\_Issue\\_27/\\$File/EY\\_RECAI\\_issue\\_27.pdf](http://www.ey.com/Publication/vwLUAssets/Renewable_energy_country_attractiveness_indices_-_Issue_27/$File/EY_RECAI_issue_27.pdf)>.
- European Commission, (2011a), *EU Energy in figures 2010*, retrieved from <[http://ec.europa.eu/energy/publications/statistics/statistics\\_en.htm](http://ec.europa.eu/energy/publications/statistics/statistics_en.htm)>.
- European Commission, (2011b), *Key figures*, retrieved from <[http://ec.europa.eu/energy/observatory/eu\\_27\\_info/doc/key\\_figures.pdf](http://ec.europa.eu/energy/observatory/eu_27_info/doc/key_figures.pdf)>.

- European Environment Agency, (2010), *Gross electricity generation from RES in EU-27*, retrieved from <<http://www.eea.europa.eu/data-and-maps/figures/gross-electricity-generation-from-res-in-eu27-gwh-199020132007>>.
- European Renewable Energy Council, (2004), *Renewable energy in Europe: Building Markets and Capacity*, James and James Science Publishers Ltd.
- Eurostat, (2011a), *Total production of primary energy, 1000 toe*, retrieved from <<http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=ten00076>>.
- Eurostat, (2011b), *Primary production of renewable energy*, retrieved from <<http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=ten00081&plugin=1>>.
- Eurostat, (2011c), *Final energy consumption 1000 toe*, retrieved from <<http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=ten00095>>.
- Eurostat, (2011d), *Energy dependence %*, retrieved from <<http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tsdcc310>>.
- Eurostat, (2011e), *Gross inland energy consumption by fuel, Renewable energy*, retrieved from <<http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tsdcc320>>.
- FREE, (2011), *Finanțarea proiectelor de către Fondul Român pentru Eficiența Energiei: stadiul actual*, retrieved from <[http://www.free.org.ro/index.php?option=com\\_content&task=view&id=63&Itemid=78%E2%8C%A9=ro&lang=ro](http://www.free.org.ro/index.php?option=com_content&task=view&id=63&Itemid=78%E2%8C%A9=ro&lang=ro)>.
- Freed, J., Hodas, S., Collins, S. and Praus, S. (2010), *Creating a clean energy century*, retrieved from <[http://ourenergypolicy.org/docs/10/Third\\_Way\\_Report\\_-\\_Creating\\_a\\_Clean\\_Energy\\_Century.pdf](http://ourenergypolicy.org/docs/10/Third_Way_Report_-_Creating_a_Clean_Energy_Century.pdf)>.
- FSE, (n.d.), *Valorificarea resurselor regenerabile de energie*, retrieved from <<http://www.fonduri-structurale-europene.ro/poscce/valorificarea-resurselor-regenerabile-energie.html>>.
- Hanley, N. and Barbier, E.B. (2009), *Pricing nature: cost-benefit analysis and environmental policy*, Edward Elgar Publishing.
- Justice, S. (2009), *Private financing of renewable energy – a guide for policymakers*
- Kaltschmitt, M. and Streicher, W. (2007), *Renewable energy: technology, economics and environment*, Berlin: Springer.
- Maithani, P.C. (2008), *Renewable energy in the global context*, New Delhi: Concept Publishing Company.
- Ministerul Mediului, (2009), *Fondul pentru Mediu – Sursă de finanțare a proiectelor de energie verde*, retrieved from <<http://www.finmedia.ro/conferences/conferintele/energia-regenerabila/ed1/prezentarile/Gabriela%20Niculae.pdf>>.
- Quaschnig, V. (2005), *Understanding renewable energy systems*, London: Ed. Earthscan.
- Remrova, M. (2008), *Financing of Renewable Energy Projects in the Carpathians*, retrieved from <[http://www.unido.org/fileadmin/media/documents/pdf/Energy\\_Environment/carpathians\\_session3\\_1.pdf](http://www.unido.org/fileadmin/media/documents/pdf/Energy_Environment/carpathians_session3_1.pdf)>.
- Sayigh, A.A.M. (2000), *Renewable energy: Renewables: the Energy for the 21st Century*, World Renewable Energy Congress VI, Brighton, UK, Elsevier Science.
- The World Bank, (n.d.), *Investment in energy with private participation (current US \$)*, retrieved from <<http://data.worldbank.org/indicator/IE.PPI.ENG.Y.CD>>.
- UNEP, (2011), *Global Trends in Renewable Energy Investment 2011*, retrieved October 25, 2011, from <[http://www.unep.org/Renewable\\_Energy\\_Investment/](http://www.unep.org/Renewable_Energy_Investment/)>.
- World Energy Council, (2010), *Energy Sustainability Index*, retrieved from <[www.worldenergy.org/documents/index\\_2010.xls](http://www.worldenergy.org/documents/index_2010.xls)>.