



Fossil Energy Sources Trade: Leading Countries and Turkey's Situation

Fosil Enerji Kaynakları Ticareti: Lider Ülkeler ve Türkiye'nin Durumu

ABSTRACT

The mechanization that began with the Industrial Revolution changed the way work is done and created an environment where energy sources are intensively used. This demand for energy is met by fossil energy sources or renewable energy sources. Fossil kaynaklar, yüksek miktarda karbon içeren ve kömür, petrol ve doğalgaz olmak üzere üç gruba ayrılan kaynaklardır. These resources have a very long natural replenishment period and are also referred to as non-renewable (conventional) energy sources. In the second group, renewable energy sources are classified as geothermal, solar, wind, hydroelectric, hydrogen, biomass, wave, and tidal energy. The self-renewal process of these resources in nature occurs much faster compared to fossil energy sources. However, fossil energy sources are primarily used to meet energy needs. This situation lays the groundwork for the emergence of certain issues. For example, the presence of fossil resources in certain regions of the world creates the problem of inequality in access to energy resources. In this context, the lack of access to the energy resources needed by every country in the world leads to the trade of energy resources. Therefore, countries that are dependent on energy resources to meet their energy needs become energy importers, while countries that export energy resources become energy exporters. In this study, in order to analyze the trade status of fossil energy sources between 2011-2021, the export and import statuses of the top 50 countries were examined, and the countries that are exporters and importers of fossil energy sources were identified. On the other hand, Turkey's position among these countries has also been revealed.

Keywords: Fossil Energy Resources, Energy Trade, Energy Imports, Energy Exports

ÖZET

Sanayi Devrimi ile başlayan makineleşme, iş yapma biçimini değiştirmiş ve enerji kaynaklarının yoğun bir şekilde kullanıldığı bir ortam yaratmıştır. Enerjiye duyulan bu talep fosil enerji kaynakları veya yenilenebilir enerji kaynakları ile karşılanmaktadır. Fosil kaynaklar, yüksek miktarda karbon içeren ve kömür, petrol ve doğalgaz olmak üzere üç gruba ayrılan kaynaklardır. Bu kaynakların doğada yenilenme süresi çok uzun olup, yenilenemez (konvansiyonel) enerji kaynakları olarak da adlandırılmaktadır. İkinci grupta yer alan, yenilenebilir enerji kaynakları jeotermal, güneş, rüzgar, hidroelektrik, hidrojen, biyokütle, dalga ve gelgit enerjisi olarak sınıflandırılmaktadır. Bu kaynakların doğadaki kendini yenileme süreci fosil enerji kaynaklarına göre çok daha hızlı gerçekleşmektedir. Ancak, enerji ihtiyacının karşılanması için öncelikle fosil enerji kaynakları kullanılmaktadır. Bu durum, bazı durumların ortaya çıkmasına zemin hazırlamaktadır. Şöyle ki, dünyanın belirli bölgelerinde fosil kaynakların varlığı, enerji kaynaklarına erişimde eşitsizlik sorununu ortaya çıkarmaktadır. Bu bağlamda, dünyadaki her ülkenin ihtiyaç duyduğu enerji kaynaklarına erişiminin olmaması, enerji kaynaklarının ticaretine yol açmaktadır. Bu nedenle, enerji ihtiyaçlarını karşılamak için enerji kaynaklarına bağımlı olan ülkeler enerji ithalatçısı haline gelirken, enerji kaynaklarını ihraç eden ülkeler enerji ihracatçısı olmuştur. Bu çalışmada, 2011-2021 yılları arasında fosil enerji kaynaklarının ticaret durumunu analiz etmek amacıyla, ilk 50 ülkenin ihracat ve ithalat durumları incelenmiş ve fosil enerji kaynaklarının ihracatçısı ve ithalatçısı olan ülkeler belirlenmiştir. Diğer taraftan Türkiye'nin bu ülkeler arasındaki konumu da ortaya koyulmuştur.

Anahtar Kelimeler: Fosil Enerji Kaynakları, Enerji Ticareti, Enerji İthalatı, Enerji İhracatı

INTRODUCTION

With the 18th century industrialisation period, there has been a transition towards the use of machine power rather than manpower in societies. The change in the way things are done has created an environment where energy resources are used intensively. In this process, in order for societies to continue their existence, they must have energy resources or be able to access these resources uninterrupted, cheap, reliable and without harming the environment.

'Energy security' is a concept that has gained importance as much as the differentiation of the types of use of energy resources. Energy security, which is defined as the process until the energy is consumed, 'is a concept that requires the evaluation of many problems that may arise from terrorist attacks aimed at disrupting the infrastructure of production, transmission and distribution systems, interruptions that may arise from the lack of energy investments, problems that may arise due to natural disasters, strikes, lockouts, civil wars and occupations, and includes climate change' (Sevim, 2019, pp. 160-161), is divided into three categories: energy supply, demand and transport security.

Leyla Baştan Töke ¹ 
Mahmut Nevfel Elgün ² 

How to Cite This Article

Baştan Töke, L. & Elgün, M. N. (2025). "Fossil Energy Sources Trade: Leading Countries and Turkey's Situation", *Journal of Social, Humanities and Administrative Sciences*, 11(1): 15-23. DOI: <https://doi.org/10.5281/zenodo.14744710>

Arrival: 17 November 2024
Published: 30 January 2025

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This journal is an open access, peer-reviewed international journal.

¹ Phd student, Necmettin Erbakan University, Institute of Social Sciences, Department of Business Administration, Konya, Turkey.

² Assist. Prof., Necmettin Erbakan University, Faculty of Political Sciences, Department of Business Administration, Konya, Turkey.

Energy supply security is defined as ‘the ability to physically access the market for energy products at all prices without any problems and interruptions within the scope of sustainable development goals in order to achieve the welfare of the whole society and a well-functioning economy’ (Görgülü, 2008, p. 4). In order to ensure energy supply security, supply diversity should be increased. While countries that own energy resources aim to diversify their buyers in order to maintain or increase their economic welfare levels, energy importer states are also looking for ways to diversify their resources. In this way, it is ensured that consumers do not face energy shortages in times of economic or political crisis. On the other hand, producers continue to increase their income from energy by increasing consumer diversity (Sevim, 2019, p. 161).

In this study, starting from the distribution of energy resources worldwide, the market situation of these resources will be analysed and then Turkey's situation will be evaluated.

ENERGY RESOURCES MARKET and TRADE

Coal Market and Trade

Coal is a dark, solid and carbon-rich rock found between layered sedimentary deposits, formed by the decomposition and chemical differentiation of a part of many organic substances. It is formed as a result of the formation of optimum humidity and temperature in the swamps, the increase in the amount of acid in the environment, the decomposition of the organic substances needed, the decaying plants going down to the lower part of the water and covering the upper parts of the swamps (Sevim, 2019, p. 210).

Coal formed as a result of different reactions is divided into various types such as lignite, coke, hard coal, charcoal, peat, anthracite and graphite. This distinction is made according to the amount of carbon contained in the coal. In other words, peat is formed if the carbon content is less than 60%, lignite is formed if it is around 70%, hard coal is formed if it is around 80%-90%, and anthracite is formed if it is more than 90%. The calorific values of the resulting coals are 7,300-8,000 kcal/kg in anthracite, 4,500-7,500 kcal/kg in hard coal, 5,00-7,000 kcal/kg in lignite and below 2,600 kcal/kg in peat (Bayraç, 2020, p. 38).

The export and import data for the coal trade for the years 2011-2021 are shown in Table 1 in dollar terms on the basis of the first 50 countries:

Table 1: Export Data of the Top 50 Countries in Coal Exports between 2011-2021

Exporter Countries	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
World	141,009,931	128,758,014	112,079,056	97,410,626	76,092,527	72,048,576	107,534,627	124,564,027	113,469,342	82,663,192	124,126,616
Australia	48,235,174	43,740,769	38,400,855	35,194,457	29,627,987	28,303,803	40,555,931	47,206,168	44,412,200	32,725,103	43,934,893
Indonesia	25,523,153	24,293,180	22,773,242	18,697,806	14,662,406	12,898,710	17,867,695	20,634,196	18,957,160	14,547,621	26,538,188
Russian Federation	11,372,272	13,014,718	11,821,241	11,642,306	9,255,933	8,907,236	13,529,954	17,030,973	15,987,379	12,388,244	17,583,742
USA	15,934,570	14,855,617	11,248,415	8,456,470	5,669,867	4,386,100	9,884,168	12,120,837	9,859,336	6,072,849	9,709,488
South Africa	7,525,297	6,731,271	5,842,560	5,082,920	4,266,276	3,903,844	5,799,085	6,304,143	4,839,545	3,910,237	6,078,832
Canada	8,089,753	6,331,643	5,349,108	3,768,100	2,715,864	3,352,501	5,212,388	5,803,218	5,190,380	3,396,095	6,046,737
Colombia	7,856,413	7,298,845	6,253,846	6,426,670	4,257,412	4,392,669	6,816,780	6,576,500	4,883,977	3,542,690	4,380,488
Mongolia	2,262,085	1,880,396	1,116,153	848,603	555,023	971,756	2,256,655	2,786,222	3,074,373	2,123,670	2,763,937
Mozambique	9,862	587	1,615	1,293	2,756	6,29	184,793	761,561	1,016,661	590,789	1,079,327
Kazakhstan	1,849,645	967,123	578,853	558,072	438,888	301,984	445,346	428,244	449,671	339,784	945,564
Netherlands	1,545,492	1,524,757	1,178,743	862,699	685,379	641,137	727,887	691,934	464,995	437,116	875,967
Poland	1,163,235	960,244	1,240,084	935,365	732,774	659,141	816,868	722,639	622,805	507,316	828,034
Philippines	163,854	164,219	222,318	343,637	147,881	319,648	337,382	281,013	460,552	231,103	596,372
China	2,716,499	1,585,994	1,059,282	694,635	498,243	697,469	1,103,151	786,776	932,973	435,381	503,675
Vietnam	1,597,555	1,201,471	904,014	546,376	181,075	116,233	244,479	319,946	168,813	115,588	315,149
Belgium	737,281	638,311	493,738	332,767	222,418	193,179	236,678	251,285	212,8	168,272	284,99
CzechRepublic	1,190,458	826,92	589,933	482,175	325,863	290,242	330,347	293,487	206,883	87,527	237,828
United Kingdom	153,691	171,703	172,011	127,626	92,888	80,18	83,117	124,265	141,955	180,464	169,265
United Arab Emirates	-	8,304	1,524	784	509	641	696	313	364	584	163,615
Germany	65,717	65,073	65,476	53,442	37,262	46,655	46,977	45,425	70,296	68,774	125,295
France	22,029	30,7	18,199	28,837	14,374	17,812	8,472	4,449	32,931	23,196	124,525
Afghanistan	0	9,782	14,513	12,42	19,716	0	43,547	89,39	69,549	43,323	111,672
India	297,726	102,839	154,673	95,234	84,725	45,775	87,53	92,836	90,7	68,975	98,215
Oman	20	0	6	1	2	0	62	15	-	95,32	95,861
Spain	161,332	201,062	94,135	141,264	104,405	53,322	35,062	39,429	129,622	139,8	83,567
Peru	20,66	15,916	16,132	24,232	25,581	10,913	25,45	45,497	45,916	19,238	61,135
Venezuela	237,852	1,919	18,992	85,52	97,008	28,437	43,804	11,253	39,723	69,173	42,028
Ireland	5,552	9,47	12,878	12,147	16,166	17,871	21,204	34,43	34,067	40,582	40,479
Denmark	20,902	1,265	7,566	14,032	6,552	2,208	189	655	8,116	7,313	32,746
Italy	5,845	14,342	4,576	5,129	11,387	14,578	9,617	7,891	14,575	7,184	28,98
Botswana	7,209	8,934	9,54	16,01	16,623	7,373	6,803	9,66	13,739	15,788	26,561
Eswatini	12,344	17,783	26,091	19,627	13,124	13,922	21,377	18,738	16,685	19,856	24,364
Thailand	1,612	896	1,015	4,614	4,128	5,41	8,464	15,412	9,755	9,784	21,111
Egypt	48,177	53,69	43,002	48,164	38,588	34,735	28,833	28,724	24,793	14,344	16,198
Slovakia	3,898	5,237	5,603	4,681	2,162	2,023	17,908	23,651	7,499	10,191	15,994
Kyrgyzstan	630	3,718	4,789	7,083	5,711	5,355	5,139	11,032	14,93	15,541	15,334
Tanzania	5	1,697	4,003	2,053	1,51	1,824	1,96	3,971	5,943	5,831	13,198
Turkey	1,69	1,96	12,63	4,655	12,759	4,447	10,961	10,116	4,291	6,491	12,895
Lao People's Democratic Republic	14,254	10,178	17,872	566	414	631	8,137	11,771	20,391	27,001	11,458
Malaysia	52,393	19,804	32,073	17,756	10,108	15,896	58,291	27,927	5,544	2,614	10,778
New Zealand	3	33	239	228	17	14	0	2,44	21,135	16,893	10,276
Zambia	713	846	1,169	5,642	1,278	263	55	386	1,661	6,262	9,843

India	122,125,544	148,757,013	148,046,659	135,826,203	72,365,746	60,865,954	82,065,030	115,082,789	101,948,597	64,579,748	106,406,787
Korea	100,805,574	108,298,231	99,354,751	94,971,596	55,132,262	44,238,339	59,595,047	80,374,087	70,193,489	44,461,676	67,019,705
Japan	142,101,310	153,107,429	145,720,787	130,657,498	67,369,928	50,863,559	63,771,259	80,676,236	73,085,389	43,509,685	63,136,252
Germany	71,289,414	76,779,920	75,727,628	65,737,928	36,513,217	28,776,094	36,231,014	45,086,740	40,738,077	27,401,959	39,962,984
Netherlands	45,424,988	53,293,887	52,157,481	46,632,991	25,209,452	21,568,501	28,398,193	35,848,721	34,062,713	21,979,696	34,886,788
Italy	57,874,914	56,916,311	46,459,807	38,523,919	23,788,950	18,885,116	26,123,354	32,571,120	29,102,359	16,214,614	29,928,808
Spain	41,059,312	46,177,095	45,397,431	43,026,343	24,521,996	18,884,667	25,756,723	34,198,938	29,994,413	18,214,889	29,581,126
Thailand	32,897,397	35,843,174	38,916,858	33,216,456	19,395,570	15,234,888	20,035,155	28,452,518	22,284,239	17,643,217	25,505,137
United Kingdom	45,363,321	47,915,389	40,091,970	36,064,563	18,423,037	14,305,638	20,710,133	26,347,851	24,535,365	15,623,536	23,948,508
Singapore	33,584,449	39,879,315	35,538,674	34,326,201	18,204,612	15,060,191	21,405,724	27,968,565	24,224,539	14,385,067	22,675,673
Taipei, Chinese	30,384,470	35,750,509	33,573,234	32,096,516	16,069,861	12,910,667	16,836,698	23,346,537	21,326,199	12,624,769	19,889,322
France	52,506,385	47,630,970	45,645,002	38,834,510	22,815,906	17,967,128	23,853,234	28,465,973	24,597,066	11,597,684	19,185,448
Belgium	27,051,080	28,818,163	25,504,144	27,142,725	14,379,052	11,539,547	15,252,627	19,483,134	18,245,047	9,836,653	18,693,569
Canada	28,824,423	29,788,760	26,237,947	21,513,345	13,146,831	10,848,766	12,792,054	14,837,108	14,275,027	8,563,755	11,763,215
Greece	12,365,260	16,522,251	16,052,194	14,928,048	8,070,332	6,907,006	8,657,014	12,426,263	10,479,290	7,012,749	11,739,807
Poland	17,986,018	19,620,072	18,048,935	17,195,113	9,855,397	7,126,269	8,996,682	14,500,512	11,966,872	7,909,788	11,327,938
Sweden	14,505,828	17,027,038	12,751,816	12,170,885	7,315,465	5,974,837	7,700,764	10,594,364	8,117,040	5,679,295	9,473,678
Indonesia	11,154,455	10,803,250	13,585,810	13,072,429	8,063,264	6,730,579	7,063,600	9,161,335	5,704,589	3,391,684	7,047,199
Israel	8,645,707	9,472,040	9,062,483	8,459,613	4,552,180	3,271,931	4,490,556	6,126,655	5,940,718	3,755,667	6,336,380
Australia	21,496,212	22,410,762	19,708,205	18,575,197	7,268,176	5,936,714	7,234,116	10,253,681	8,615,668	4,790,869	5,621,207
South Africa	14,098,603	15,793,094	14,704,388	16,197,045	7,707,316	6,518,867	6,417,550	10,923,569	8,840,167	5,033,029	5,427,344
Brunei Darussalam	4	0	0	7	45	41	38	4	1,159,197	1,455,680	5,158,177
Portugal	8,448,644	9,555,226	9,355,129	8,161,383	5,465,885	4,286,735	5,548,689	7,186,604	5,437,115	3,870,143	4,782,867
Chile	6,495,646	6,107,808	6,633,374	6,040,648	2,961,004	2,352,298	3,279,299	4,278,759	4,658,845	2,645,835	4,751,364
Denmark	2,553,890	2,865,422	3,684,970	2,705,547	1,668,605	1,299,714	2,048,916	2,569,910	2,412,867	1,519,963	4,322,287
Lithuania	7,477,767	7,463,836	7,170,509	5,643,468	3,217,249	2,711,594	3,887,804	4,898,313	4,409,899	2,414,593	4,321,448
Finland	9,456,122	9,207,603	9,342,155	8,396,750	3,994,487	3,787,902	4,921,129	6,531,172	5,802,468	3,430,493	4,286,330
Pakistan	5,199,413	5,270,312	5,473,296	5,609,124	3,022,858	1,983,027	3,139,637	4,922,447	3,913,908	2,270,679	4,216,847
Austria	6,176,454	6,357,141	6,534,278	5,971,008	3,435,105	2,410,120	3,046,250	4,533,132	4,228,948	2,482,111	4,057,020
Brazil	14,264,036	13,588,697	16,536,508	15,746,647	7,380,844	2,898,856	2,966,954	5,042,501	4,651,642	2,613,734	3,995,459
Egypt	1,700,214	2,933,269	2,028,553	3,044,000	1,747,291	1,384,758	1,750,712	3,562,761	2,909,011	3,806,581	3,728,829
Czech Republic	5,581,592	5,876,142	5,414,169	5,656,797	2,968,614	1,686,421	3,178,126	3,967,919	3,740,778	2,147,228	3,590,511
Malaysia	7,846,406	8,963,271	7,152,870	7,713,475	3,289,736	2,825,737	3,953,902	5,724,763	6,461,097	4,604,511	3,478,182
Romania	4,418,943	4,167,594	4,190,050	4,795,548	2,518,047	2,298,563	3,031,791	4,256,037	4,102,503	2,272,505	3,417,853
Hungary	4,649,277	4,397,320	4,488,642	4,309,046	2,182,826	1,842,724	2,276,633	3,207,589	2,880,184	1,685,494	2,883,099
Slovakia	4,746,958	4,281,638	4,515,683	3,640,618	2,192,610	1,744,072	1,908,988	2,762,668	2,293,374	1,831,829	2,614,606
Bulgaria	4,022,467	4,753,684	4,487,692	3,515,423	2,244,979	1,894,506	2,636,102	2,973,477	3,151,910	1,473,134	2,079,377
New Zealand	5,490,084	4,608,738	4,399,525	3,982,122	2,246,107	1,771,428	2,217,112	2,880,906	2,807,741	1,541,303	1,941,965
Philippines	7,874,160	7,618,780	6,611,621	6,340,037	3,952,412	2,905,141	3,476,644	5,160,572	3,468,523	1,346,246	1,886,526
Peru	3,664,943	3,675,693	3,355,453	3,017,554	1,630,996	1,618,140	2,470,827	2,871,995	2,476,082	774,419	1,818,521
West Asia							152,658			142,258	1,696,073
Ireland	2,401,148	2,402,798	2,490,833	2,119,059	1,549,300	1,129,915	1,425,106	1,629,266	1,305,790	1,001,144	1,640,213
Côte d'Ivoire	1,747,085	2,752,776	2,929,670	2,598,938	1,514,440	1,024,302	812,443	1,548,771	1,485,630	1,436,707	1,463,317
Serbia	1,193,034	900,507	1,321,562	1,105,712	761,856	688,884	934,161	1,388,487	1,012,865	836,349	1,341,389
Switzerland	3,629,482	2,815,604	4,099,616	3,871,208	1,231,425	944,065	1,153,718	1,656,954	1,308,835	956,374	1,221,802
Norway	1,019,491	1,140,971	1,465,986	904,462	440,166	174,307	657,463	1,727,949	1,545,006	976,116	1,155,245
Uruguay	948,222	1,685,091	1,564,140	1,341,005	850,239	425,528	280,418	1,182,400	990,612	731,598	1,111,576
United Arab Emirates		280	714	193	34,085	414	33,145	2,498,579	2,960,404	21,440,696	946,234

Source: (TradeMap, 2022)

Looking at the table, imports worth 1,051,241,792 USD were made worldwide in 2021. The top three leaders of imports are China, USA and India. China imported 258,053,155 USD, the USA 138,383,896 USD, and India imported 106,406,787 USD. It is observed that there was a decrease in imports in 2020. It is possible to say that this is due to the Covid19 outbreak experienced worldwide.

In the 19th century, the first oil-related conflict took place in the Caucasus Region (Baku) between Germany, Britain and Russia, whose dependence on oil was constantly increasing. After the conflict in the Caucasus Region, the second major conflict was caused by the large oil reserves discovered in the Middle East Region. The fact that oil is a cause of conflict stems from the fact that energy is considered as the source of power. Oil, which is seen to have a more advantageous position than coal in meeting energy needs, and oil companies supported by the state have become the biggest power in terms of oil production (Uslu, Sözen, & Çelik, 2007, p. 85). In the table created with petrol import data, Turkey does not rank among the top 50 countries.

Natural Gas Market and Trade

As a colourless, odourless, flammable and lighter-than-air gas, natural gas ranks second only to crude oil in the world energy market. Natural gas, which is used for the heating needs of households and for production purposes in industry, is considered as an important input for cement, electricity, chemistry, textile sectors and cycle power plants (Bayraç, 2020, p. 33).

Compared to other fossil fuels, the use of natural gas as a fuel causes 20-40% less carbon dioxide (CO2) emissions, 80% less carbon monoxide emissions, 30-50% less sulphur dioxide emissions than oil and coal. In addition, volatile heavy metals, solid particles and sulphur are not released (Kulagin, Grushevenko, & Kapustin, 2020, p. 430).

Countries operating in the natural gas trade are becoming bases of political, military and economic competition. The natural gas crisis between Europe and Russia in recent years is a vivid example of natural gas rivalries. In this process, Turkey, on the other hand, aims to increase its storage areas, supply methods, diversity of suppliers and become a

natural gas trading hub in order to increase its energy security and reduce its current account deficit rather than being a natural gas importer (Demirtaş, 2022, p. 190).

According to the data in the BP Statistical Review of World Energy, the results obtained when the annual growth rates in the natural gas market for 2021 are as follows (BP, 2022, p. 34):

- ✓ It was observed that there was a 10.4% growth in total imports as pipeline and LNG in the USA, a 2.1% decrease when compared between 2011-2021, and the share of 2021 in total imports was 7.5%. When the situation of exports is analysed, it is observed that there was a 28.3% growth in 2021, a 15.9% growth compared to 2011-2021, and the share of exports in 2021 was 17.5%.
- ✓ In North America, pipeline and LNG imports grew by 4.8% in total imports, 6.4% between 2011-2021, and the share of 2021 is 8.4%. According to export data, it is seen that there is a growth of 11.1% in 2021, a decrease of 1.1% when compared to 2011-2021, and the share of 2021 in exports is 7.4%.
- ✓ In Brazil, 81.2% growth in total imports in pipeline and LNG, 5.7% growth when the years 2011-2021 are compared, and the share of 2021 in total imports is 1.7%. It is seen that natural gas exports have not been made in Brazil in the last decade.
- ✓ In South Carolina LNG, a state located in the Southeastern region of the USA, 35.9% growth in total imports, 4.4% growth between 2011-2021 and 1.4% share in 2021. According to export data, there is a 21.9% contraction in pipeline and LNG in 2021, a 4.7% contraction between 2011-2021, and the share of 2021 is 2%.
- ✓ It is seen that pipeline natural gas imports in Europe grew by 4.6% in 2021, decreased by 0.5% compared to 2011-2021, and the share of 2021 in total imports was 33.4%. According to export data, it was measured that there was a 45.8% decrease in 2021, a 4.6% decrease when the years 2011-2021 were compared, and the share of 2021 in total exports was 0.4%. It is seen that natural gas has not been exported via pipeline in Europe since 2011.
- ✓ In Russia, natural gas imports by pipeline grew by 45.6% in 2021, decreased by 9.5% between 2011 and 2021, and the share of 2021 in total imports was 1.5%. According to total export data, it is seen that there is a growth of 1.3% in 2021, a growth of 0.7% between 2011-2021 and the share of 2021 is 23.6%.
- ✓ In the Commonwealth of Independent States (Azerbaijan, Belarus, Armenia, Kazakhstan, Kyrgyzstan, Moldova, Uzbekistan, Russia and Tajikistan), natural gas imports by pipeline grew by 3% in 2021, 0.8% compared to 2011-2021, and the share of 2021 in imports was 2.7%. The growth in natural gas exports by pipeline is 25.4% in 2021, 0.6% compared to 2011-2021, and the share of 2021 is 7.5%.
- ✓ In the Middle East, natural gas imports via pipeline and LNG grew by 8.4% in 2021, decreased by 5% compared to 2011-2021, and the share of 2021 was 1%. In natural gas exports by pipeline and LNG, there is a 6.3% growth in 2021, a 0.4% growth compared to 2011-2021, and the share of 2021 is 14%.
- ✓ In Africa, natural gas imports by pipeline and LNG will grow by 85.6% in 2021, no change is observed when the years 2011-2021 are compared, and the share of 2021 is 0.4%. In natural gas exports by pipeline and LNG, there is a growth of 18.5% in 2021, a growth of 0.4% when the years 2011-2021 are compared, and the share of 2021 is 9.4%.
- ✓ It is seen that China's natural gas imports by pipeline and LNG grew by 17.3% in 2021, with a growth of 18.2% when the years 2011-2021 are compared, and the share of 2021 is 10.7%.
- ✓ In India, natural gas imports through pipelines and LNG decreased by 8.1% in 2021, with a growth rate of 6.8% when the years 2011-2021 are compared, and the share of 2021 is 3.3%.
- ✓ In OECD Asia, natural gas imports by pipeline and LNG will grow by 5.1% in 2021, with a growth rate of 0.5% compared to 2011-2021 and a share of 16.7% in 2021. The growth rate in natural gas exports with LNG is 2.3% in 2021, 15.3% growth compared to 2011-2021, and the share of 2021 is 10.6%.
- ✓ In regions other than OECD Asia, natural gas imports with LNG grew by 8.6% in 2021, with a growth of 13.8% compared to 2011-2021 and a share of 6.2% in 2021. In natural gas exports by pipeline and LNG, there is a 3.8% contraction in 2021, and the share of 2021 is 7.5%.

When evaluated worldwide, it is seen that total pipeline natural gas trade is 11.6% and LNG trade is 5.6%. For the years 2011-2021, natural gas trade by pipeline has a share of 0.8% and LNG trade has a share of 4.6%. In total, the share of natural gas trade by pipeline is 49.5%, while the share of LNG is 50.5%.

Data on liquefied natural gas exports worldwide between 2011-2021 is shown in Table 5, while data on gaseous natural gas imports is shown in Table 5:

Switzerland	1,555,093	1,834,148	1,822,847	1,455,777	1,096,405	831,295	941,73	1,137,329	1,199,106	783,056	1,409,421
Brazil	2,882,540	3,587,218	4,181,123	4,027,858	2,568,331	1,278,083	1,230,116	1,535,581	1,293,127	1,003,166	1,189,144
Denmark	197,558	315,014	428,386	118,649	95,881	98,479	75,726	68,91	208,644	341,184	1,031,535
Romania	1,368,156	1,294,566	591,554	221,723	58,908	271,228	253,109	430,99	673,858	353,724	971,949
Argentina	564,543	1,104,452	2,531,079	2,234,024	1,382,861	742,735	1,258,067	1,408,736	1,266,024	968,824	964,806
China	4,651,658	8,564,984	9,915,334	11,614,155	9,690,679	7,553,916	8,523,380	11,642,233	1,161,098	1,140,620	789,329
Latvia	522,994	600,692	629,189	489,771	344,484	263,495	379,638	425,892	242,295	144,642	510,226
Serbia	906,718	844,04	740,492	643,908	536,756	325,551	444,282	556,812	629,779	467,224	505,043
Sweden	591,612	526,598	503,939	320,468	225,505	180,933	179,988	247,737	167,959	134,684	464,655
Armenia	407,534	516,665	571,766	463,738	429,468	346,339	355,949	368,336	419,049	427,286	460,787
Croatia	393,84	709,758	726,661	401,338	285,852	258,893	345,344	361,426	309,962	261,31	313,612
Georgia	222,065	303,92	304,211	355,893	417,454	306,723	310,137	251,925	335,549	323,622	312,543
Slovenia	486,517	476,437	446,624	436,952	389,656	277,19	316,507	257,325	292,96	183,821	271,315
Moldova	0	0	0	0	0	0	0	0	0	0	264,236
Chile	79,052	32,452	19,716	5,23	1,639	0	1,549	114,342	464,572	286,331	247,746
Lithuania	1,440,656	1,542,640	1,321,648	1,098,969	659,745	193,91	288,456	383,235	279,995	91,796	245,968
Estonia	235,029	254,002	308,88	212,419	163,038	102,83	105,108	132,531	98,144	71,134	176,067
Portugal	836,072	989,534	1,214,063	1,314,256	929,099	718,534	684,725	728,083	187,335	112,963	162,894
Morocco	213,067	381,738	463,527	435,584	300,839	207,788	244,213	271,98	255,194	149,331	158,449
Uzbekistan	-	-	-	-	-	-	0	3	0	47,811	154,153
Malaysia	296,059	304,128	549,825	597,829	328,022	145,405	188,003	158,896	168,513	115,719	106,803
Israel	123,224	9,728	312,451	89,47	117,003	129,861	128,978	211,17	232,719	120,547	85,05
Bosnia and Herzegovina	133,092	146,148	102,923	88,733	78,877	45,912	55,261	67,524	78,488	59,996	66,928
Kyrgyzstan	69,127	78,234	64,158	50,5	40,246	40,285	41,737	46,188	45,029	47,679	56,753
Uruguay	36,66	17,508	26,016	15,58	39,309	43,593	27,019	35,203	34,773	21,016	43,002
Tajikistan			0	0	0	0	0	0	11,499	17,875	38,123
Azerbaijan	0	0	2	0	2,36	48,705	69,821	340,274	225,393	5,102	19,385
Macedonia, North	62,228	71,87	60,506	63,732	49,474	40,261	63,701	72,607	80,454	71,252	2,681
Montenegro	1	0	4	1,009	2,413	1,6	1,5	1,861	2,5	2,148	2,464
Free Zones	919	900	1,066							1,098	2,248
Lao People's Democratic Republic	1,189	468	227	142	226	237	177	137	261	153	701

Source: (TradeMap, 2022)

When the natural gas foreign trade data for 2010-2021 are analysed, it is seen that imports worth USD 176,507,523 were made in 2021. The three leading countries of imports are Germany, the United Kingdom and Italy. According to the table created with Turkey's natural gas import data, it is not among the top 50 countries.

CONCLUSION and RECOMMENDATIONS

Energy holds a position that closely affects and directs economic, political, social, societal, and military developments in the international arena under current conditions. According to the IEA (International Energy Agency) forecasts, a significant portion of the world's energy demand over the next 30 years will be met by fossil resources, particularly oil and natural gas. In the global energy market, producers, countries along the transportation routes, and major consumers are important decision-makers.

When examining the market for fossil energy sources, China and India are the most significant competitors of the USA and the EU in the fields of oil and natural gas. To guarantee energy security and supply, they have focused on developing various energy projects with Kazakhstan and Turkmenistan. The role of being an energy corridor between the Middle East, Central Asia, the Caspian Region's energy resources, and the EU provides Turkey with a significant advantage in becoming a full member of the EU. It is necessary to produce alternative policies aimed at reducing the region's dependency in meeting the energy demand of Turkey's rapidly growing economy. In Turkey, the inability to meet the high demand for oil and natural gas, which are particularly fossil resources, through domestic production has led to the procurement of these two sources through energy imports. In Turkey, the import dependency rate for oil is 94%, and for natural gas, it is 98.8%, which significantly contributes to the overall energy import dependency rate of 76% (Bayraç, 2020, p.54).

Considering that energy affects all activities of a country economically, socially, and politically, if there is dependency in meeting energy demand in countries, this dependency must be addressed by diversifying countries and resources to ensure energy security. In this context, the Oil Crisis of 1973 is the first event that demonstrated the importance of energy security (Yılmaz, 2012, p. 33). In 1973, Syria and Egypt attacked Israel, and the Arab-Israeli War began. During this process, Arab countries, believing that the United States supported Israel, used oil as a weapon through the embargo decision. The embargo decision reflected on oil prices, and consequently on oil trade and the economy, leading to a global crisis (Öztürk & Saygın, 2017, p. 2).

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