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FITCH REPORT

GREECE

Logistics & Freight Transport Report

Q2 2023

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Greece

Logistics & Freight Transport Report

Includes the Fitch Solutions Logistics Risk Index

Contents

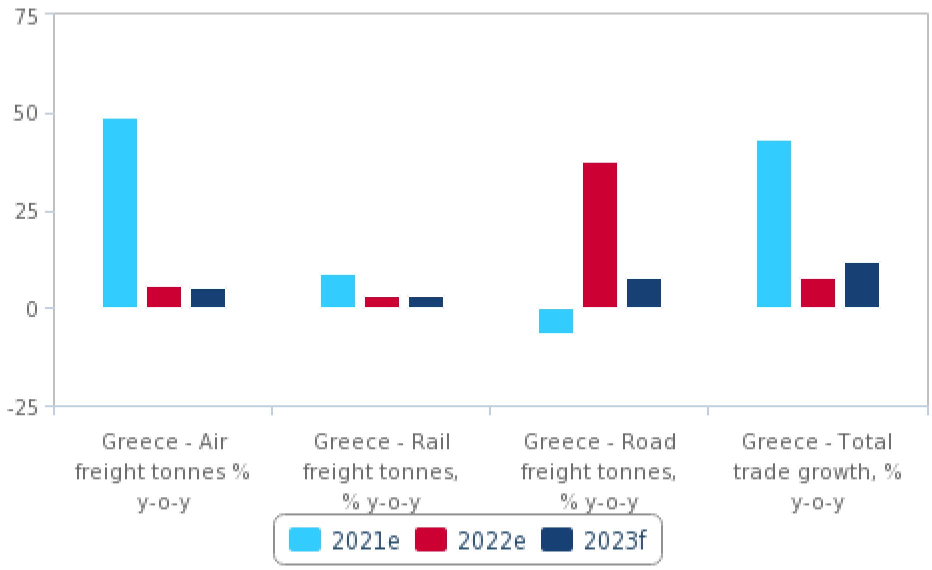
Key View

Key View: *Greek trade and freight growth will begin to slow from 2023 onwards as the post-pandemic recovery is complete and the general EU wide slowdown stemming from commodity price shocks, inflation and geopolitical pressure stemming from the Russian invasion of Ukraine weigh in activity. At present, we envisage positive gains across the freight mode which will be complemented by supportive trade dynamics out to 2027. Greece is continuing with its programme to privatise key infrastructure assets to reduce public debt and attract investment, but its investment needs remain considerable. Downside risks to our forecast stem from further shocks to key economic verticals such as tourism and higher than envisaged inflation - factors that could potentially induce a recession.*

Latest Freight And Shipping Updates

- **Trade:** Real trade growth in 2022 came in at 9.5% in 2022 largely due to the base effects of the Covid-19 downtrend of 2020. Real trade in 2023 is presently forecast at 2.7% as the EU wide economy cools down.
- **Road:** We expect road freight growth to cool from 2023 onwards as the post-pandemic recovery base effects subside. For now, we see an uptick of 8.6% to 406.2mn tonnes. For now, we note that growth is based on positive economic momentum but a potential recession of EU-wide economic hard landing presents downside risks.
- **Rail:** Rail freight volumes are estimated to have grow by 3.1% in 2022 and we forecast uptick of 3.2% in 2023 in line with wider economic momentum. We note that the deadly train collision in February, which claimed at least 57 lives, is likely to raise questions relating to railways infrastructure, reliability and state of operations as public outrage grows. Issues such as railroad operational efficiency levels and procedural requirements coupled with infrastructure requirements may become more prominent in civic an political discourse in the weeks and months ahead.
- **Air:** As private consumption and tourism continues to grow in 2023, we forecast growth of 5.4% in air freight tonnes, reaching 121,500 tonnes in terms of volume for the sector. Risks are weighed to the downside as a European economic slowdown could derail growth. Commodity price volatility, food price inflation and geopolitical aftershocks stemming from the Russia-Ukraine war all present risks.
- **Maritime Shipping:** The Port of Thessaloniki is Greece's largest port. Container and tonnage throughout are forecast to continue growing in 2023 by 1.1% and 2.1%, respectively. We forecast throughput tonnage to reach 15.0mn tonnes in 2023 and container volumes at just over 571,100 twenty-foot equivalent units.

Positive Gains In 2023 But Post-Pandemic Recovery Fully Complete
Greece - Freight Indicators, % chg y-o-y (2021-2023)

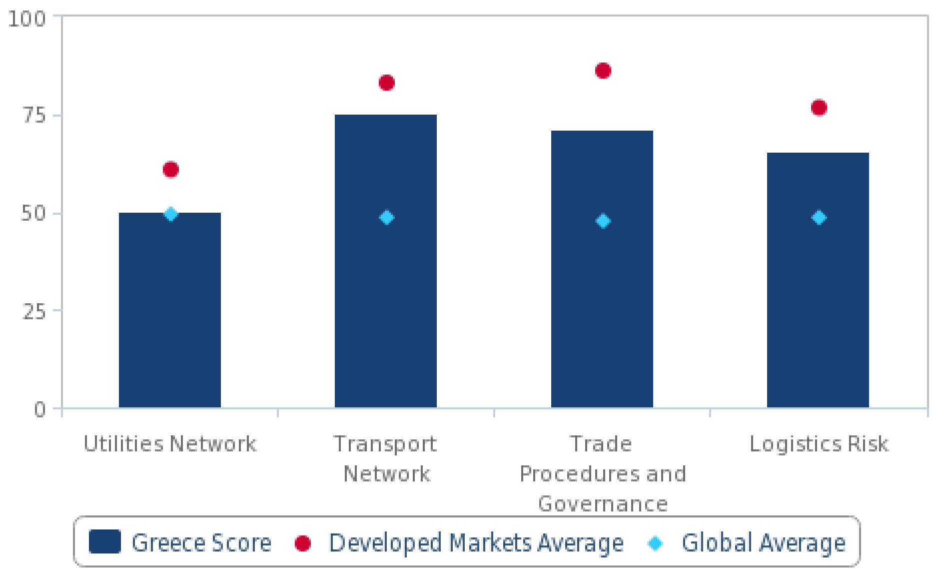


e/f = Fitch Solutions estimate/forecast. Source: Eurostat, local sources, Fitch Solutions

Logistics Risk Overview

Greece is ranked 26th out of the 27 developed markets for Logistics Risk, with a score of 65.5 out of 100. As a major regional transhipment trade hub, Greece is investing in its transport network across road, rail and maritime connections, giving supply chains a range of options. Investors in Greece stand to benefit from the country's high connectivity to international shipping routes and a well-developed transport network.

New Investments In Utilities & Infrastructure To Support Gains
Greece & Regional Averages - Logistics Risk



Source: Source: World Economic Forum, Fitch Solutions

Utilities Network (50.1/100): Greece has a well-managed utilities network, offering a reliable supply of electricity, fuel and water, as well as access to fast internet services. Fuel costs have been rising and energy prices have been skyrocketing since the start of the Russia-Ukraine war. The government is looking to invest heavily into alternative power sources as evidenced by the latest legislative reforms over H222 and the strong investments and commencement of renewables projects in Q123.

Trade Procedures And Governance (71.1/100): Greece is the one of the most attractive locations to conduct cross-border trade in globally. The market has a highly open attitude towards international trade, as both imports and exports are key components of its economy. Border compliance for exports can be time consuming and costly, but overall Greece has streamlined trade processes due to the extensive digitisation of EU customs procedures, which reduces the risk of delays that businesses will encounter during cross-border trade. In addition, Greece's transport network provides efficient turnarounds for cross-border traders, benefitting from strong international connections via overland, maritime and air transport modes.

Transport Network (75.3/100): Greece offers businesses a well-developed transport network, with extensive connections both locally and to international destinations. The market offers direct access to major global destinations via air, maritime and overland routes, which reduces cross-border trade costs. Ongoing modernisation plans of road, rail and port infrastructure will further boost transport efficiencies.

GREECE - LOGISTICS RISK

	Utilities Network	Transport Network	Trade Procedures And Governance	Logistics Risk
Greece score	50.1	75.3	71.1	65.5
Developed Markets average	60.8	83.1	86.1	76.7
Developed Markets position (out of 27)	26	24	25	26
Global average	49.4	48.6	47.7	48.5
Global position (out of 201)	103	32	46	51

Note: 100 = lowest risk; 0 = highest risk. Source: Fitch Solutions Logistics Risk Index

SWOT

Logistics & Freight Transport SWOT

Strengths	Weaknesses
• Strong tourism recovery over 2021-2022 driving air traffic. • Greece is strategically located as a transhipment hub to and from Europe, and is a major target for Mainland Chinese investment, as the latter looks to expand its influence in Europe. • Privatisation plans for large parts of the freight industry will have a positive impact on all freight modes. • The importance of Greece's shipping industry for global trade is helping the freight sector in general with tonnage and growth rates.	• The Greek rail sector has been traditionally neglected and requires investment. • The long-running economic crisis has weakened the country's main freight companies. • Many construction companies have been dealing with financial problems during the last few years. • Extensive unionisation of labour has resulted in crippling strikes, and strong opposition is expected to any privatisation attempts.
Opportunities	**Threats**
• Heavy rail sector CapEx envisaged over the coming decade. • Railways sector in particular is poised for strong investments and security and safety concerns are likely to take centre stage after the deadly railway collision incident in February 2023. • Further port and rail privatisations and investment create prospects for companies interested in developing Greece's role as a gateway into South Eastern Europe. • Greece has the potential to become a regional gas hub through the implementation of the Southern Gas Corridor. • Greece is one of the EU's entry points for goods. With the trade between EU economies and Asia increasing, spending on port and storage capacity is set to increase.	• The expected marked retreat of investment spending. • The EU's push to shift more freight onto rail due to environmental concerns will reduce the need for road freight, slowing growth for the sector in the future. • Prevailing uncertainty regarding the pandemic presents downside risks to our projections. • EU economic outlook set to darken over 2023. • Inflation and commodity price shocks to weigh on economic growth and consumer spending over 2023.

Industry Forecast

Trade Forecast

Key View: *Trade growth will begin to stabilise from 2023 onwards as the multi-year volatility brought forward due to Covid-19 subsides and the EU economic growth tapers-off. For now, we expect less favourable base effects and elevated inflation to contribute to a moderation of consumption growth, while net export growth will face headwinds from weakening external demand. In nominal and real terms, export growth is likely to outpace import growth in 2023 as consumer spending cools due to inflation and cost of living.*

Latest Updates

- Real trade growth in 2022 came in at 9.5% in 2022 largely due to the base effects of the Covid-19 downtrend of 2020. Real trade in 2023 is presently forecast at 2.7% as the EU wide economy cools down.
- Nominal trade growth in 2022 came in at an estimated USD208.2bn, up 7.95% y-o-y. In 2023, we forecast nominal trade growth at 7.3% to USD223.5bn.
- Trade growth will weaken over the long term. Severe structural issues facing Greece, namely an unsustainable government debt load, a dire demographic profile and the country's scant progress in improving productivity, will weigh on growth.
- Greece has received substantial investment interest from Mainland China in recent years, with Chinese state-owned firms investing in major infrastructure projects, such as the expansion and upgrade of the Port of Piraeus.

Short Term

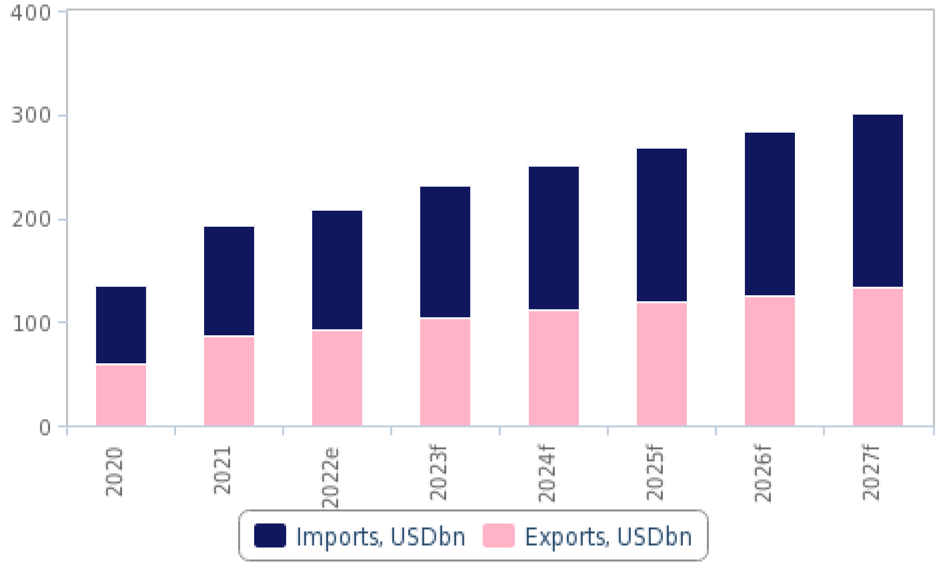
We forecast total real trade growth in 2023 at 2.7%, down from 9.5% in 2022 and 18.7% in 2021 as the base effects of the post-pandemic recovery subside. Cooling of the EU economy in the aftermath of the global inflationary pressures, commodity price shocks and the Russian invasion of Ukraine will act as a drag on trade.

Exports: We expect exports to grow at by 3.5% in 2023 in real terms to a nominal value of USD100.0bn. This return to growth will be supported by an upturn in external demand, as international trade returns to normality following the pandemic. Greece will need to significantly improve its competitiveness, and the country has attempted to do so by internally devaluing (by cutting wages), as it is unable to devalue its currency, though this has not yet provided a material boost to exports.

Imports: We expect Greek imports to grow by 2.0% in real terms in 2023 to USD123.5bn. Tax cuts and other business-friendly reforms will bolster fixed investment, while continuous robust labour market dynamics will support household demand. We expect private consumption to be supported by further unwinding of domestic demand, as well as the implementation of tax cuts, with reduced social security contributions and the suspension of the solidarity levy for private sector employees bolstering disposable incomes.

Trade Growth Projected But Greece To Sustain Annual Trade Deficits

Greece - Imports & Exports Value (2020-2027)



e/f = Fitch Solutions estimate/forecast. Source: Eurostat, Fitch Solutions

Medium Term

Through our medium-term forecast period (2023-2027), we expect Greek trade in real terms to grow at a steady average rate of 3.9%, increasing from USD223.5bn in 2023 to USD289.9bn in 2027. The Greek economy continues to face significant challenges, exacerbated by the Covid-19 pandemic; however, just before the onset of Covid-19 and the damaging impact it had on the economy, Greece has been moving towards surer footing. Specifically, a series of fiscal and business environment reforms, and likely improved relations with external creditors will significantly increase the attractiveness of the Greek market to foreign investors albeit challenges will remain.

Exports: Exports will increase from USD100bn in 2023 to USD129.1bn in 2027. Net exports are dependent on the mixed eurozone outlook, and demand from key eurozone trading partners will continue to be weak over the medium term, affecting export growth for Greece. That said, there is still an unwinding of pent up consumer demand, alongside a sharp recovery in tourism-related exports, following the EU's adoption of the Digital Covid Certificate for travel.

Imports: Imports will increase from USD123.5bn in 2023 to USD160.8bn in 2027. One key factor underpinning this will be resilient levels of private consumption, which will ensure demand for imported consumer goods remains elevated. Private consumption, which accounts for around 70% of GDP, will remain the most important growth driver in Greece over the coming years. Falling unemployment has contributed to a slow pick up in household demand.

KEY TRADE INDICATORS (GREECE 2020-2027)

Indicator	2020	2021	2022e	2023f	2024f	2025f	2026f	2027f
Agricultural raw materials, imports, USDmn	450	589	632	687	730	776	813	854
Agricultural raw materials, imports, % y-o-y	-15.4	30.8	7.2	8.8	6.3	6.3	4.7	5.0
Ores and metals, exports, USDmn	3,046	4,302	4,512	4,985	5,330	5,636	5,917	6,239
Ores and metals, exports, % y-o-y	-4.4	41.2	4.9	10.5	6.9	5.8	5.0	5.4
Ores and metals, imports, USDmn	2,198	3,523	3,726	4,155	4,488	4,847	5,129	5,444
Ores and metals, imports, % y-o-y	-3.7	60.2	5.8	11.5	8.0	8.0	5.8	6.1
Iron and steel, exports, USDmn	944	1,141	1,300	1,464	1,580	1,686	1,778	1,884
Iron and steel, exports, % y-o-y	3.9	20.9	13.9	12.6	8.0	6.7	5.5	6.0
Iron and steel, imports, USDmn	1,015	1,588	1,873	2,107	2,298	2,500	2,670	2,859
Iron and steel, imports, % y-o-y	-11.2	56.5	17.9	12.5	9.1	8.8	6.8	7.1
Manufactured goods, exports, USDmn	15,141	18,256	19,264	20,900	22,063	23,117	24,038	25,094
Manufactured goods, exports, % y-o-y	6.6	20.6	5.5	8.5	5.6	4.8	4.0	4.4
Manufactured goods, imports, USDmn	32,825	40,819	46,525	51,345	55,080	59,103	62,268	65,802
Manufactured goods, imports, % y-o-y	0.0	24.4	14.0	10.4	7.3	7.3	5.4	5.7
Fuels, exports, USDmn	7,670	13,299	14,478	17,024	18,835	20,475	21,909	23,553
Fuels, exports, % y-o-y	-35.8	73.4	8.9	17.6	10.6	8.7	7.0	7.5
Fuels, imports, USDmn	11,054	20,080	17,696	18,753	19,573	20,456	21,150	21,925
Fuels, imports, % y-o-y	-33.9	81.6	-11.9	6.0	4.4	4.5	3.4	3.7

e/f = Fitch Solutions estimate/forecast. Source: Eurostat, UNCTAD, Fitch Solutions

TRADE OVERVIEW (GREECE 2020-2027)

Indicator	2020	2021	2022e	2023f	2024f	2025f	2026f	2027f
Imports, real growth, % y-o-y	-7.63	16.07	9.90	2.00	4.00	4.00	4.46	4.65
Exports, real growth, % y-o-y	-21.55	21.94	9.00	3.50	4.25	3.00	4.30	4.65
Total Trade, real growth, % y-o-y	-14.37	18.67	9.49	2.68	4.11	3.54	4.39	4.65
Imports, USDbn	74.61	105.01	115.61	128.43	138.36	149.05	157.47	166.86
Import growth, % y-o-y	-13.11	40.75	10.09	11.09	7.73	7.73	5.65	5.97
Exports, USDbn	60.26	87.87	92.41	104.10	112.42	119.95	126.54	134.09
Export growth, % y-o-y	-26.80	45.81	5.16	12.65	7.99	6.70	5.49	5.97
Total trade, USDbn	134.87	192.88	208.02	232.53	250.77	269.01	284.01	300.95
Total trade growth, % y-o-y	-19.81	43.01	7.85	11.78	7.85	7.27	5.58	5.97

e/f = Fitch Solutions estimate/forecast. Source: Eurostat, Fitch Solutions

Long Term

Over our long-term forecast period (2023-2032), we forecast Greek trade in real terms growing steadily at an average rate of 4.2% y-o-y. Real exports will barely just outperform imports, growing at an average rate of 4.17% y-o-y, reaching USD173.75bn in 2032. Imports will increase at a marginally lower average rate of 4.15% y-o-y, reaching USD173.8bn in 2032. Over the long term, trade growth will continue at a steady pace, but the pace of growth will be dependent on the successful economic recovery of the eurozone in general and of Greece's main trading partners.

MAIN IMPORT PARTNERS (GREECE 2015-2021)	2015	2016	2017	2018	2019	2020	2021
GERMANY, USDmn	5,207.5	5,428.7	5,962.8	6,873.7	6,925.4	6,954.5	8,455.1
GERMANY, USDmn, % of total	11.3	11.8	11.3	10.9	11.2	12.6	11.3
ITALY, USDmn	4,035.0	4,305.4	4,626.1	5,345.1	5,414.3	5,101.8	6,594.7
ITALY, USDmn, % of total	8.7	9.3	8.8	8.5	8.8	9.2	8.8
CHINA (Mainland), USDmn	2,832.0	3,124.3	3,073.7	4,064.5	4,545.7	4,279.3	5,913.8
CHINA (Mainland), USDmn, % of total	6.1	6.8	5.8	6.4	7.4	7.7	7.9
RUSSIA, USDmn	3,761.3	3,114.3	3,848.1	4,878.4	4,443.0	3,349.4	5,058.3
RUSSIA, USDmn, % of total	8.2	6.7	7.3	7.7	7.2	6.1	6.7
IRAQ, USDmn	3,320.3	2,590.2	3,567.2	5,335.3	5,101.9	2,303.2	4,879.3
IRAQ, USDmn, % of total	7.2	5.6	6.8	8.4	8.3	4.2	6.5
TOTAL, USDmn	46,130.8	46,168.1	52,820.6	63,141.0	61,734.0	55,273.6	75,107.1
TOTAL, top five trade partners, USDmn	19,156.0	18,562.8	21,078.0	26,497.0	26,430.3	21,988.2	30,901.2
% from top five trade partners	41.5	40.2	39.9	42.0	42.8	39.8	41.1

Note: Total imports is from the IMF's Direction of Trade Statistics; there may be some discrepancy with data used elsewhere in this report. Source: IMF

MAIN EXPORT PARTNERS (GREECE 2015-2021)	2015	2016	2017	2018	2019	2020	2021
ITALY, USDmn	3,262.3	3,136.5	3,469.3	4,107.5	4,118.5	3,723.8	4,687.1
ITALY, USDmn, % of total	11.7	11.4	10.9	10.7	11.2	10.8	10.2
GERMANY, USDmn	2,093.1	2,169.7	2,321.1	2,533.9	2,567.8	2,740.3	3,460.1
GERMANY, USDmn, % of total	7.5	7.9	7.3	6.6	7.0	8.0	7.5
CYPRUS, USDmn	1,711.0	1,807.2	2,097.4	2,239.9	2,315.2	2,264.9	3,017.8
CYPRUS, USDmn, % of total	6.2	6.6	6.6	5.8	6.3	6.6	6.5
TURKEY, USDmn	1,897.7	1,490.5	2,213.7	2,417.7	2,207.5	1,528.2	2,424.6
TURKEY, USDmn, % of total	6.8	5.4	6.9	6.3	6.0	4.4	5.3
BULGARIA, USDmn	1,501.8	1,451.3	1,581.1	1,761.6	1,836.0	1,760.3	2,314.3
BULGARIA, USDmn, % of total	5.4	5.3	4.9	4.6	5.0	5.1	2,220.1
TOTAL, USDmn	27,787.7	27,552.2	31,962.6	38,529.6	36,777.7	34,345.7	46,097.6
TOTAL, top five trade partners, USDmn	10,465.8	10,055.2	11,682.6	13,060.6	13,045.0	12,017.5	15,903.9
% from top five trade partners	37.7	36.5	36.6	33.9	35.5	35.0	34.5

Note: Total exports is from the IMF's Direction of Trade Statistics; there may be some discrepancy with data used elsewhere in this report. Source: IMF

Shipping Forecast

***Key View:** The rate of tonnage and box throughput in Greece will slow in 2023 as the base effects of the spot-pandemic recovery subside and the EU economic momentum feels the headwinds stemming from inflation, commodity price shocks and the geopolitical ramifications of the Russian invasion of Ukraine. For now, we do expect positive gains over the medium-term horizon to 2027 and beyond. Greece is progressing quickly with its privatisation programme, which aims to reduce public debt, increase efficiency and attract investment, despite the pandemic. The government is investing heavily in rail, in which the major component is linking rail to major ports.*

Latest Updates

- The Port of Thessaloniki is Greece's largest port. Container and tonnage throughout are forecast to continue growing in 2023 by 1.1% and 2.1%, respectively. We forecast throughput tonnage to reach 15.0mn tonnes in 2023 and container volumes at just over 571,100 twenty-foot equivalent units (TEUs).
- Piraeus is Greece's largest passenger port and a key freight port; we forecast growth of 1.3% in terms of throughput tonnage in 2023, with volumes reaching 12.1mn tonnes. Piraeus will continue to lose container volumes in 2023 and over the forecast period to 2027 to the larger Port of Thessaloniki.
- In line with a drive to privatise key infrastructure assets in Greece, partially as a requirement of Greece's bailout deal with creditors, the Greek government moved forward with the privatisation of two of the country's largest ports. The increased participation of private investment in Greek infrastructure bodes well for the port sub-sector. Our Infrastructure team estimates that the port industry experiences real growth of around 3.7% in 2022 and is forecasting around 3.2% y-o-y gains averaged annually over 2023-2032.
- In November 2022, in a reversal of policy decision, Greek Prime Minister Kyriakos Mitsotakis announced that it would call off the privatisation of the Alexandroupolis portend that it should remain state-owned. The Prime Minister cited geopolitical developments as a crucial driver behind the strategic rethink.
- In May 2022, a joint venture (JV) between **Mytilineos**, **Rover Maritime** and **HDK** was awarded for the USD146mn upgrade to Thessaloniki port. This improvement will support overall prospects at the facility and lead to greater handling capacity.

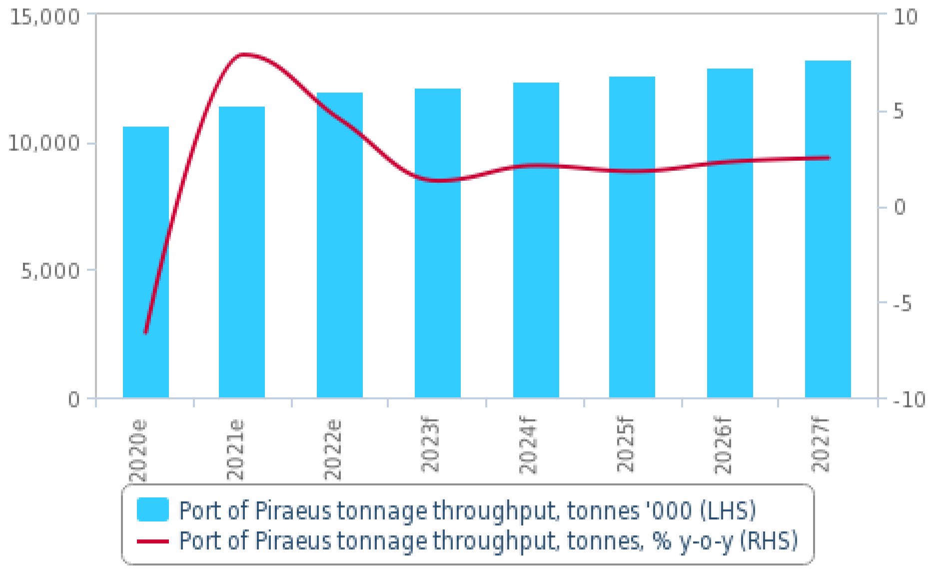
Short Term

In 2022, we forecast 1.3% growth in throughput tonnage at Piraeus, reaching 12.1mn tonnes. In terms of container throughput, we forecast the Port of Piraeus to contract by 18.5% in 2022, falling to 409,239 TEUs. We see the Port of Thessaloniki growing in 2023. We forecast throughput tonnage at Thessaloniki to grow at a rate of 1.1% y-o-y in 2023, from 15.7mn tonnes in 2022 to 15.87mn tonnes in 2023. In container terms, we expect Thessaloniki to record growth of 2.1% y-o-y, from 559,657 TEUs in 2022 to 589,250 TEUs in 2023. Uptick in 2023 is expected to slow at both ports as headline economic performance tapers-off following a slowdown in European and Greek economic performance.

The relative stability of the Greek economy, compared to previous years, will provide a more supportive environment for consumers, businesses and the government to make larger purchases. This will benefit trade through the main ports in Greece. Even as uptick in 2023 is slower compared to 2022, growth will remain in positive territory.

Steady Box Throughput Gains

Greece - Port of Piraeus Throughput Tonnage, 000' tonnes, % change y-o-y (2020-2027)



e/f = Fitch Solutions estimate/forecast. Source: Port Authority, Fitch Solutions

Medium Term

Over our medium-term forecast (2023 to 2027), Piraeus is set to register average annual box and tonnage throughput growth of -8.7% and 2.0%, respectively. Throughput tonnage will rise from 12.1mn tonnes in 2023 to almost 13.2mn tonnes in 2027. Container throughput is forecast to decrease from 409,239 TEUs in 2023 to 316,670 TEUs in 2027. We are of the view that a number of shipping liners will move their box operations to Thessaloniki at the expense of Piraeus.

The Port of Thessaloniki will register average growth of 1.7% y-o-y in terms of throughout tonnes and 3.0% y-o-y in container throughput over our medium-term forecast period. This is an increase in throughput tonnage terms from 15.9mn tonnes in 2023 to just over 17.0mn tonnes in 2027. In terms of container throughput, we forecast a rise from 571,100 TEUs in 2023 to 649,561 TEUs in 2027.

MAJOR PORTS DATA GREECE (GREECE 2020-2027)

Indicator	2020e	2021e	2022e	2023f	2024f	2025f	2026f	2027f
Port of Piraeus tonnage throughput, tonnes '000	10,645	11,491	12,004	12,161	12,411	12,635	12,922	13,239
Port of Piraeus tonnage throughput, tonnes, % y-o-y	-6.6	7.9	4.5	1.3	2.1	1.8	2.3	2.5
Port of Piraeus container throughput, TEU	445,949	480,912	502,042	409,238	387,829	368,558	343,900	316,670
Port of Piraeus container throughput, TEU, % y-o-y	-8.9	7.8	4.4	-18.5	-5.2	-5.0	-6.7	-7.9
Port of Thessaloniki tonnage throughput, tonnes '000	14,158	15,109	15,686	15,863	16,143	16,395	16,718	17,075
Port of Thessaloniki tonnage throughput, tonnes, % y-o-y	-5.6	6.7	3.8	1.1	1.8	1.6	2.0	2.1
Port of Thessaloniki container throughput, TEU	460,780	522,354	559,657	571,103	589,249	605,582	626,482	649,561
Port of Thessaloniki container throughput, TEU, % y-o-y	2.7	13.4	7.1	2.0	3.2	2.8	3.5	3.7

e/f = Fitch Solutions estimate/forecast. Source: Eurostat, Fitch Solutions

Long Term

Over our long-term forecast period (2023-2032), we expect steady growth at Thessaloniki which will consolidate its position as the main port in Greece. At present, we forecast average annual box growth over 2023-2032 to come in at 3.3% y-o-y taking total TEU volumes to over 775,500 by 2032. In terms of tonnage thought, average growth is envisaged at around 2% which will see total volumes surge past 19.0mn tonnes at the facility by 2032.

COSCO Pacific could face increasing competition, with the Port of Piraeus potentially competing for clients with the port of Thessaloniki to the north. Thessaloniki is developing its role as a transit gateway for goods into Central and Eastern Europe, a role Piraeus is also planning to offer. Piraeus lags behind Thessaloniki in both box and tonnage terms. The tender for the USD145.6mn Thessaloniki port extension project received expressions of interest from seven companies and consortia. The second stage of the tender was completed in 2021, with the following companies making binding technical and financial offers: **Archirodon Group**, **Intrakat Construction** and **Intercantieri Vittadello** consortium; Mytilineos and Rover Maritime JV; an **AVAX**, **Etermar** and **NV Besix** JV; and an **Acciona Construccion** and **Dredging International** JV.

The Greek transport infrastructure sector is benefitting from private investment, which is taking on a more central role as the government continues privatising state-owned assets. We expect strong growth in the port sub-sector over the coming years due to an influx of foreign investment. This will facilitate greater tonnage and container throughput at the country's ports. Despite Covid-19, Greece has continued with its privatisation agenda. The expansion of the Port of Piraeus has continued and the government has pushed ahead with tenders for the commercialisation of 10 regional ports across the country. These have attracted significant interest from different consortiums and will continue to attract investment from Chinese players over the rest of our forecast period to 2032.

Road Freight Forecast

Key View: *The Greek road freight sector faced significant volatility over 2020-2022 owing to the Covid-19 pandemic and the recovery base effects as lockdowns eased. From 2023 onwards, we forecast growth rates beginning to stabilize and trend upwards in a sustainable fashion over the medium-term to 2027. We note that our bullish outlook is based on steady investments into Greece's transport sector with roads, highways and bridges in particular benefitting from strong capex levels. The road freight sector will also be supported by privatisation efforts and improving headline economic momentum. In the long term, increased employment will cause domestic consumption to increase, which will support the continuous dominance of road freight, given most consumer goods are typically transported by road. Downside risks stem from a potential European slowdown in 2023, inflationary pressures and commodity price volatility which could all induce a recession.*

Latest Updates

- We expect road freight growth to cool from 2023 onwards as the post-pandemic recovery base effects subside. For now, we see an uptick of 8.6% to 406.2mn tonnes. For now, we note that growth is based on positive economic momentum but a potential recession of EU-wide economic hard landing presents downside risks.
- Our Infrastructure team has identified as the Greek road freight sector as the largest beneficiary of a number of headline transportation linked investment projects including multiple new upcoming road concessions and tenders. Multiple new tenders are expected to be announced over the coming months.
- Steady growth will be supported by road sector investments, privatisation efforts and high capital exenditure (capex) aimed at motorway upgrades.
- By the end of our forecast period in 2032, road is forecast to still account for just under 99% of total freight volumes in Greece at over 785.2mn tonnes hauled annually. We note that strong capex geared towards transport infrastructure will support demand.
- The Egnatia Odos motorway is undergoing a privatisation process and in Q221 **GEK Terna**-**Egis** emerged as the preferred bidder. The total value of the concession is estimated at EUR2.8bn.
- A number of other headline highway development and privatisation projects are also under way and will support growth in the road sector over the coming decade.

Short Term

We expect the road freight sector to continue to grow in 2023 after having posted above-trend recovery over 2022 which was after the Covid-19 collapse of 2020-2021. At present, we see road freight growth of 8.55% in 2023 taking total tonnage to 406.1mn tonnes.

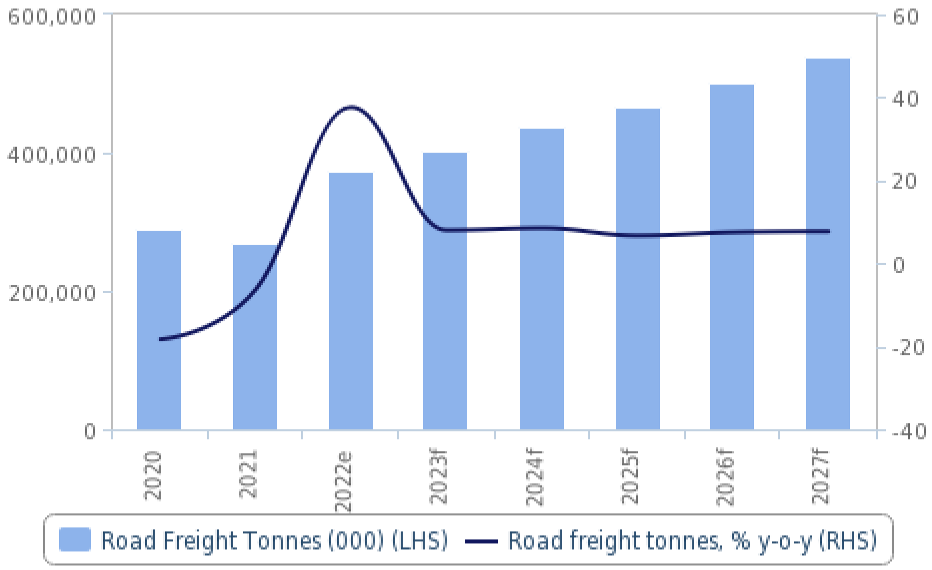
The economic growth was strong in 2022 at 4.95% as domestic economic actiicry surged supported by tourism and other key economic verticals. For now, we see inflation and commodity price shocks coupled with wider EU slowdown to bring headline economic growth to around 1% in 2023. That being said, the outlook for the road freight sector is much better as it will be buoyed by strong investments into transportation and infrastructure projects to make up for the slowing consumer spending growth.

The Avax-Mytilineos consortium was declared the winner for the major Eastern Ring Road Thessaloniki (Thessaloniki Flyover)public-private partnership (PPP) tender in September 2022. The USD441.8mn PPP project includes the development, financing and modernisation of the13km Eastern Inner Thessaloniki Road.

Upcoming tenders include the Thessaloniki-Edessa E02 highway PPP project (estimated budget of EUR300mn), with an expected tender by the end of 2023, and the 43km Drama-Amfipoli highway (estimated budget of EUR275mn), both of which were approved for tender by PPP by the Inter-Ministerial Committee for Public-Private Partnerships in June 2022. Another likely upcoming tender is the Salamina-Perama underwater link, set to replace the current ferry link. An EIA was submitted in 2022, relaunching the project after more than a decade of delays. Cost of the works are estimated around EUR400-500mn

Heavy CapEx To Support Road Freight Outperformance

Greece - Road Freight Tonnage (2020-2027)



e/f = Fitch Solutions estimate/forecast. Source: Eurostat, Fitch Solutions

Medium Term

Over the course of our medium-term forecast period, between 2023 and 2027, we see the road transport sector growing substantially at a rate of 7.8% y-o-y, from 406.1mn tonnes in 20223 to 544.4mn tonnes in 2027. Growth drivers, such as household spending, will continue to be fragile over the medium term and there are ongoing risks form commodity price shocks.

Greece's road network is also directly linked to many cities in South Eastern Europe, and indirectly with many more across the continent, making it a trade hub for goods carried by road. Over the medium term, growth rates and tonnage numbers will depend on the recovery in Europe in general. Investment in road infrastructure will benefit the road transport sector, and as business confidence slowly returns over the medium term, the total value of planned investment is expected to increase.

ROAD FREIGHT (GREECE 2020-2027)

Indicator	2020	2021	2022e	2023f	2024f	2025f	2026f	2027f
Road Freight Tonnes (000)	289,246	270,994	372,840	402,671	436,966	466,366	501,521	540,052
Road freight tonnes, % y-o-y	-18.3	-6.3	37.6	8.0	8.5	6.7	7.5	7.7
Road freight tonnes-km (mn ton km)	25,161	21,053	25,588	26,917	28,444	29,754	31,319	33,035
Road freight tonnes-km, % y-o-y	-10.8	-16.3	21.5	5.2	5.7	4.6	5.3	5.5

e/f = Fitch Solutions estimate/forecast. Source: Eurostat, Fitch Solutions

Long Term

Over our long-term forecast period (2023-2032), we see the road freight sector growing at an average rate of 7.7% y-o-y, rising from 406.1mn tonnes in 2023 to 785.2mn tonnes in 2032. Over the long term, road freight will continue to grow in relation to the economic growth domestically, but also the recovery in the eurozone. Greece's road network does not only serve domestic needs, and while Greek demand for road haulage is recovering gradually, there is scope for faster growing transit volumes. Three of the Pan-European Corridors, which aim to facilitate efficient trade across Central and Eastern Europe, end in Greece. Corridor Nine stops at the eastern port of Alexandroupolis, Corridor 4 stops at Thessaloniki on the Adriatic cost and Corridor 10 at Igoumenitsa on the west coast of Greece. These corridors directly link Greece with European cities such as Bucharest, Odessa, Belgrade and Zagreb, and indirectly with many more. Given an economic recovery domestically, and a better outlook for European economies, road freight will increase as it is an integral part of trade activity with Europe.

Rail Freight Forecast

Key View: *We forecast steady yet modest gains in the Greek rail freight sector in 2023 and over the medium-term to 2027 with momentum being supported by strong investments to bolster infrastructure. Railways have historically suffered from poor CapEx levels in contrast to other freight modes and national railroad safety and capabilities will come under increased scrutiny in the aftermath of the deadly crash in February 2023. EU funding and the Greek government's privatisation programme mean investment in rail will be substantial through our long-term forecast period to 2032 and potentially beyond.*

Latest Updates

- Rail freight volumes are estimated to have grow by 3.1% in 2022 and we forecast uptick of 3.2% in 2023 in line with wider economic momentum. We note that the deadly train collision in February which claimed at least 57 lives is likely to raise questions relating to railways infrastructure, reliability and state of operations as public outrage grows. Issues such as railroad operational efficiency levels and procedural requirements coupled with infrastructure requirements may become more prominent in civic an political discourse in the weeks and months ahead.
- The Greek railways company **TrainOSE** renamed to **Hellenic Train** in July 2022. The Greek government continues to develop expansion plans for the national railways sector including a recently announced EUR4.5bn programme. Hellenic Train and the Greek government recently inked an agreement to develop;op hybrid and new trains and upgrade digital services.
- Rail freight volumes are forecast to grow at an average rate of almost 3.25% y-o-y through to 2027, as Greece continues to seek investment in its rail network and pursues its privatisation agenda in the sector. However, rail freight volumes will still account for under 2.0% of total freight volumes over the coming decade.
- The Greek rail infrastructure sub-sector is dynamic. Significant public investment in the country's rail sub-sector, backed by EU funding, will be supportive of growth. Greece's government is currently advancing with construction of the EUR1.5bn Thessaloniki metro and the Line 4 Metro project in Athens, a EUR1.5bn project currently in tender and backed by loans from the European Investment Bank (EIB).
- The board of the EIB approved funding for Line 4 of the Athens Metro and trains for the route in Greece in February 2018. In November 2020, an **AVAX**-**Ghella**-**Alstom** consortium won the tender for the construction of the first section (Section A), Alsos Veikou-Goudi, which is 12.8km long and has 15 stations. Work is scheduled to take up to eight years. In February 2022 the EIB signed an agreement to provide a EUR580.0mn (USD663.0mn) loan to **Attiko Metro** to fund the construction of the new line.

Short Term

We expect Greece's rail freight sector to witness a slowdown in growth in 2023 as was the case in 2022 with the subsiding of multi-year Covid-induced volatility over 2020-2021. We estimate rail freight growth at 3.1% in 2022 and are forecasting 3.2% in 2023, both slower y-o-y compared to the 9% estimated in 2021 due to one-off base effects due to pandemic recovery. As Greece's motorway network's backbone is essentially completed, railway is expected to emerge as the focus of large-scale infrastructure projects over the coming years, with a projected EUR800mn to be invested over 2022-2023. However, the rate of growth in rail freight will underperform road freight over coming years, against a backdrop of weak growth across the eurozone and persistent structural weaknesses, which will limit Greece's ability to ramp up exports and drive rail freight volumes.

A raft of improvements on Greek railways have been announced by the Hellenic Railways Organisation (OSE) over recent years, along with a number of cross-border railway projects, including with Bulgaria and Albania. These are often supported by EU funding and boost trade across the region. The deployment of these projects will benefit rail freight volumes in Greece significantly.

Heavy CapEx Crucial For Long-Term Sustained Growth

Greece - Rail Freight Tonnage (2020-2027)

e/f = Fitch Solutions estimate/forecast. Source: Eurostat, local sources, Fitch Solutions

Medium Term

Through our medium-term forecast period (2023-2027), we see Greece's rail freight sector increasing steadily at an average rate of 3.25% y-o-y, rising from 3.25mn tonnes in 2023 to 3.70mn tonnes in 2027, on the back of the country's importance in overall trade to and from Europe.

Sea-rail intermodal services will continue to have potential for growth. A larger rail freight sector would benefit the shipping sector and enhance trade into Europe. Increased investment in the rail infrastructure sector, in line with gradual privatisation, presents major upside to our forecasts. Italy-based **Ferrovie Dello Stato Italiane** wants to deploy Hellenic Train operations to connect the ports of Piraeus and Thessaloniki with the railway network of Central and Eastern Europe, taking advantage of the liberalisation of the European rail freight market. That said, sustained weakness in the eurozone will limit growth potential.

A consortium of OSE, Greece-based firm **Ergose** and the Albanian Ministry of Infrastructure and Energy have begun a study for the construction of a 130km mixed-traffic railway line connecting Greece with Albania. The project, CB Railway, envisages building a line from the existing Greek railhead at Florina to the Albanian city of Pogradec, via the Kristallopigi-Bilisht border crossing. The project has a budget of EUR845.7mn. The proposed project is also central to building a rail link that will connect the Greek Port of Thessaloniki with the Albanian Port of Durres, as well as Montenegro and Serbia.

RAIL FREIGHT (GREECE 2020-2027)

Indicator	2020e	2021e	2022e	2023f	2024f	2025f	2026f	2027f
Rail freight tonnes ('000)	2,805.2	3,057.7	3,153.6	3,254.1	3,359.0	3,468.9	3,582.8	3,700.7
Rail freight tonnes, % y-o-y	-12.0	9.0	3.1	3.2	3.2	3.3	3.3	3.3
Rail freight tonnes-km (mn ton km)	355	575	764	819	882	937	1,002	1,073
Rail freight tonnes-km, % y-o-y	-27.5	61.7	32.8	7.2	7.8	6.2	6.9	7.1

e/f = Fitch Solutions estimate/forecast. Source: Eurostat, Fitch Solutions

Long Term

Through our long-term forecast period (2023-2032), we expect Greece's rail transport sector to grow at a steady average rate of 3.3% y-o-y, from 3.25mn tonnes in 2023 to 4.35mn tonnes in 2032. The rail freight sector will become increasingly important as an alternative to road freight. Privatisation will create prospects for companies interested in developing Greece's role as a gateway into South Eastern Europe; however, the scale of Greece's financial and economic difficulties could deter investors. A push from the EU to have more goods carried by rail than by road due to environmental concerns will, however, help the rail freight sector grow in the long term.

Air Freight Forecast

Key View: *Greek air freight volumes over 2020-2021 were severely volatile owing to the multi-year impact of the Covid-19 shocks but began to stabilise from 2022 onwards. At present, we forecast positive gains of around 5.4% in 2023 with uptick being supported by recovery in tourism and greater belly-hold capacity as passenger jet frequency increases. The country's air transport sector infrastructure is in strong need of further investment, which we expect to be forthcoming over the next few years given the importance of Greece's tourism sector to its economy. As such, our medium-term outlook is relatively positive. A major European macroeconomic slowdown, inflation and commodity price shocks will all present downside risks over the next 10-12 months.*

Latest Updates

- As private consumption and tourism continues to grow in 2023, we forecast growth of 5.4% in air freight tonnes, reaching 121,500 tonnes in terms of volume for the sector. Risks are weighed to the downside as a European economic slowdown could derail growth. Commodity price volatility, food price inflation and geopolitical aftershocks stemming from the Russia-Ukraine war all present risks.
- Over our medium-term forecast period through to 2027, we forecast an average growth rate of 7.6% y-o-y for air freight tonnes taking total volumes to just over 165,600 tonnes by YE27. Risks are weighed to the downside as tourism growth could stall and investments into the airport infrastructure could face roadblocks.
- **Aegean Airlines** has signed agreements with **Avation** to buy three ATR 72-600 aircrafts. Acquisition of new aircraft will improve efficiency gains and reduce overhead costs.
- The privatisation trend is also benefitting the airport sub-sector. Recent developments will see substantial private investment in the Greek airport infrastructure sub-sector throughout our 10-year forecast period. Past 2023, we expect a contraction in the infrastructure sector, given the current lack of large-scale projects in the pipeline; however, there are several prospective projects which bring upside risk to the second half of the forecast period. In Q123, the government noted that it is likely to sell a 30% stake in Eleftherios Venizelos International Airport in Athens. The state owned Kalamata airport is next in line as the national sovereign wealth fund noted in H222 that four operators had signalled interests in acquiring 40 year operational rights.
- In March 2023, Aegean Airlines noted that it would commence new twice weekly flights to Riga, Latvia from May onwards it the carrier continues to bolster its regional route networks in the post-pandemic environment. In February 2022, Aegean Airlines noted that it would commence 10 new direct flights to destinations across the MENA reign including Egypt, Saudi Arabia, Jordan and Lebanon among others.

Short Term

We estimate air freight growth to have come in at 5.9% in 2022 as the country's tourism sector gained traction following multi-year Covid-19 downtrend. At present, we expect air freight growth to come in at 5.4% in 2022 to a total of 121,500 tonnes. Risks are weighed to the downside due to a European economic recession which cannot be ruled out at present and challenges related to the tourism sector which may be hit in the event of a resurgence of Covid-19 and slowdown in EU wide spending that would derail tourism, consumer demand, ICT and other luxury items linked to air freight.

While household wealth has been decimated by Greece's long economic crisis, household spending is slowly recovering. This will offer some support to air freight in terms of creating demand for consumer electronics. Greek consumer confidence is rising steadily, and the combination of continuous robust job creation will support further gains, feeding through to increased spending.

Tourism is another supportive factor to air freight, as it presents increasing opportunities for bellyhold cargo on flights. Covid-19 hit Greece's tourism industry hard, and we expect its impact to be long lasting, with total arrivals, international tourism receipts, and total domestic spending on hotels and restaurants only exceeding their pre-pandemic highs by 2023. The country reopened its borders and allowed tourism activities to resume from H220, and according to our Tourism team, tourism-related activities in the country have surprised to the upside.

Another sector that contributes to air freight volumes is pharmaceuticals, as air freight offers timely transportation of such goods using temperature-controlled technology. Greece will remain a highly challenging pharmaceutical market due to the ongoing financial difficulties facing the state. The government has imposed numerous policies to offset the lack of state funding, such as clawbacks and rebates on both inpatient and outpatient drugs, resulting in many medicines becoming unprofitable. This trend is set to continue, with industry contributions making up an increasing share of public medicine expenditures.

Relatively Sedate Momentum From 2022 As Multi-Year Volatile Fades

Greece - Air Freight Tonnage (2020-2027)

e/f = Fitch Solutions estimate/forecast. Source: Eurostat, Fitch Solutions

Medium Term

Over our medium-term forecast (2023-2027), we see Greece's air freight tonnage increasing at an average rate of 7.6% y-o-y, rising from 121,500 tonnes in 2023 to 165,600 tonnes in 2027. Greece's population will continue to age, as the pensionable population grows at a faster rate than other demographic groups. Growth in the young adult population will contract due to lower birth rates and migration. Consumer-facing sectors that most stand to benefit from an ageing population are those associated with the manufacturing and sales of products related to health and convenience, which is a positive for the air freight sector due to its key position in the transport of pharmaceuticals. Private investment will continue to take a more central role in infrastructure development, as the government continues to privatise state-owned assets, which is apparent in the airport infrastructure sector.

AIR FREIGHT (GREECE 2020-2027)

Indicator	2020	2021	2022e	2023f	2024f	2025f	2026f	2027f
Air Freight Tonnes (000)	73.0	108.9	115.3	121.5	139.1	148.0	156.3	165.6
Air freight tonnes % y-o-y	-30.8	49.1	5.9	5.4	14.5	6.4	5.6	6.0

e/f = Fitch Solutions estimate/forecast. Source: Eurostat, Fitch Solutions

Long Term

Over our long-term forecast period (2023-2032), we expect Greece's air freight sector to grow at an average rate of 7.4% y-o-y, rising from 121,500 tonnes in 2023 to 233,800 tonnes in 2032. The air freight sector will benefit from current privatisation and investment efforts in air freight infrastructure. When domestic demand picks up as employment rates and wages increase, the air freight sector will follow with stronger growth. However, the scale of ongoing financial and economic difficulties in Greece could deter potential investors, meaning that it may take a while for the economy to grow to levels that will benefit the air freight sector. Growth in the economy, trade and, especially, consumer demand will be important factors for the air freight sector to expand over the long term.

Recent developments will see substantial private investment in the airport infrastructure sector through the coming decade, supporting air freight volumes. On February 14 2019, the Greek parliament approved a new concession contract for the Eleftherios Venizelos International Airport of Athens, extending the current ownership structure of the airport to 2046, beyond a previous concession end date of 2026. As part of the deal, the private investors in the airport, Canada-based fund **PSP Investments** and Greece-based firm **Copelouzos Group**, have agreed to invest up to EUR2.9bn in the airport. Additionally, in February 2019, the government signed a concession contract for the Kasteli airport, a greenfield airport project to be built as a replacement for the Heraklion International Airport in Crete, Greece's second-busiest airport. The project, awarded to **Ariadne Airport Group**, formed by India-based **GMR Airports** and Greece-based contractor **GEK Terna**, will involve investment of EUR850mn. Major works at both Kasteli and Athens will be complemented by investment in a number of regional airports, tendered under a joint concession in 2015. As part of the concession agreement, concessionaire **Fraport**-**Slentel** will invest EUR1.4bn in the 14 airports over the coming years.

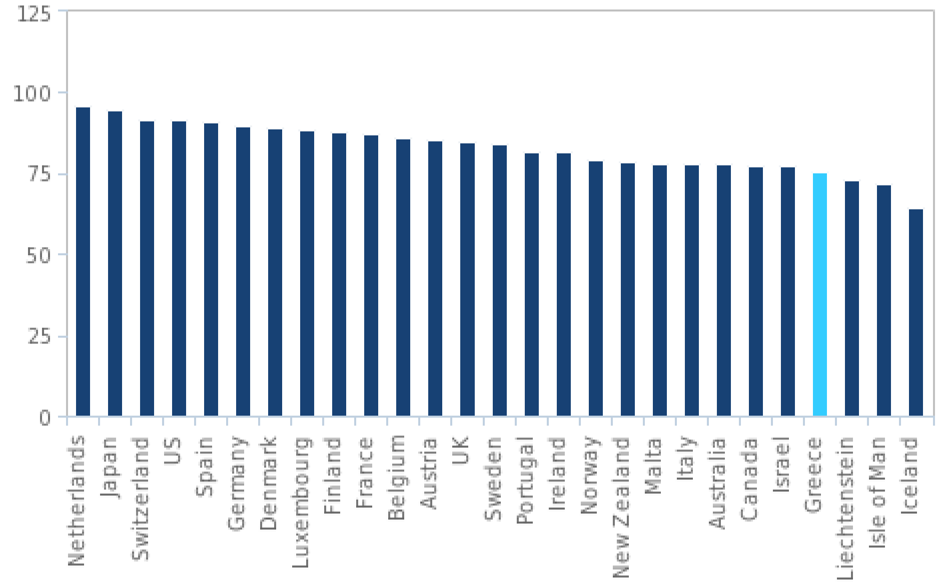
Logistics Risk

Transport Network Analysis

Key View: *Greece offers businesses a well-developed transport network, with extensive connections both locally and to international destinations. The market offers direct access to major global destinations via air, maritime and overland routes, which reduces cross-border trade costs. Ongoing modernisation plans of road, rail and port infrastructure will further boost transport efficiencies. Greece places 24th out of 27 developed markets, with a score of 75.3 out of 100 for our Transport Network pillar.*

Heavy Infrastructure CapEx & Public - Private Partnerships Crucial For Long-Term gains

Developed Markets - Transport Network



Note: 100 = Lowest risk; 0 = highest risk. Source: Fitch Solutions Logistics Risk Index.

Latest Transport Network Analysis

- The Greek transport infrastructure sector is benefitting from a renewal of investment from the private sector, given that it is taking on a more central role as the government continues privatising state-owned assets. Our Infrastructure team notably expects strong growth rates in the port and airport sub-sectors over the coming years, owing to an influx of foreign investment. In addition, the creation of new infrastructure is Crete's main target, as the island suffers from outdated infrastructure, while projects in Western Greece are related to supplementary infrastructure for motorways and railways. Our Infrastructure team forecasts strong real growth of about 2.0% for the transport infrastructure sector over the 2023-2032 forecast period.
- There are multiple road and rail infrastructure development projects currently under way which include the EUR2.8bn privatisation of the Egnatia Odos highway, tender for the the Attic Odos motorway, the Thessaloniki-Edessa E02 motorway expansion and the Athens Corinth-Patras motorway development. Furthermore, the ports sector will also see growth, especially with the USD146mn upgrade to the Thessaloniki port.
- In 2022 the tender for the USD145.6mn Thessaloniki port extension project was awarded to the **Mytilineos SA**, **Rover Maritime SL** and **HDK SA** joint venture.The scope of work includes construction of a new 153m quay wall at Pier 6, of which 470m will have a depth of 17.7m. This will increase the pier's container handling capabilities.
- Some regional-level ports are undergoing privatisation. The first three tenders for regional ports began in 2020 and are attracting strong national and international interest. These include the ports of Alexandroupolis, Kavala and Igoumenitsa, with majority stakes on offer. In November 2022, Prime Minister Mitsotakis stated that the privatisation of the Alexandroupolis port would likely to called off due to the geopolitical complications in the aftermath of the Russian invasion of Ukraine. That being said, future

policy changes may reverse the decision.

- The airport infrastructure is also slated to gain fresh private sector investment over the 2023-2024 period. The Kalamata airport is the last major state-owned and operated facility and authorities stated that they have recited four bids for a 40-year operation concession in H2 2022 with a possible award likely in 2023. The authorities are likely to offer up to 30% of Athens International Airport Eleftherios Venizelos by H223 in a bid to raise up to EUR1bn.

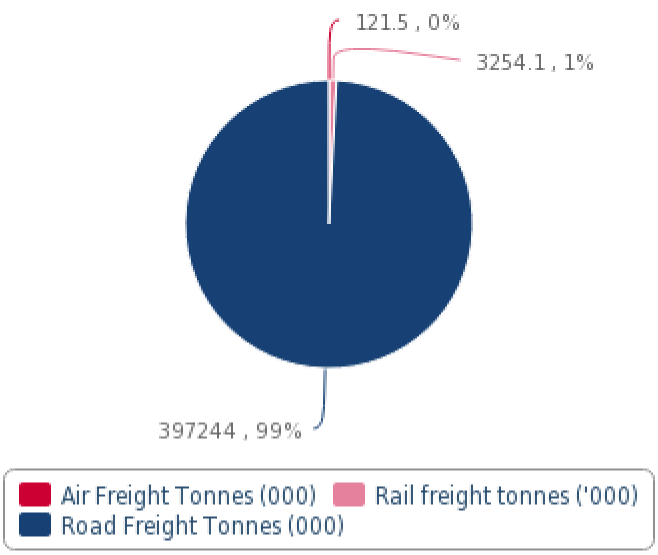
Extent And Quality Of Transport Network

Businesses in Greece benefit from an extensive transport network, offering well-developed internal connections and strong links to major global markets. Road coverage is good, and the availability of multi-lane expressways have somewhat alleviated the issue of congestion, even though there is still room for improvement, particularly as most internal supply chains are reliant on roads. Increased investment in the railway network assists in diverting traffic off the roads, easing congestion, even if road freight dominates. International connections via sea and air are strong, facilitating exports of mineral products to global markets. Consequently, Greece scores a high 82.6 out of 100 for Extent of the Transport Network, ranking 18th out of 27 developed markets.

In addition to the numerous supply chain options, businesses also stand to benefit from the high quality of transport infrastructure in Greece, which reduces the risk of disruption and delays. Roads, rails and ports receive regular investment in order to ensure that they are up-to-date and prevent congestion, and wear and tear. Ports boast modern technology, facilitating high-speed transport, making them attractive for international trade. Airports offer similarly modern facilities, which result in swift turnaround times for freight, with a low risk of congestion and delays. Even though Greece ranks last out of 27 developed markets, it ranks a strong 54th position out of 201 markets globally for Quality of the Transport Network, scoring 68.1 out of 100.

Road Freight To Remain In Pole Position

Greece - Freight Mode Breakdown, '000 tonnes & % share (2023f)



f = Fitch Solutions forecast. Source: Eurostat, Fitch Solutions

Road

Supply chains in Greece are heavily reliant on the road network, benefitting from the large number of motorways, albeit with a low density. Greece's road network stretches for 117,000km, of which 2,320km is motorway. Electric vehicle (EV) charging infrastructure is set to establish itself as a viable and increasingly attractive area for investment across Europe over the coming decade, as policymakers look towards EVs to realise their long-term ambitions to decarbonise the transport sector.

GREECE - ROAD RISKS

Total Road Network	
117,000km	• The road network stretches to 117,000 km, which is well below the average for developed markets. • The key transport routes between all the main seaports and urban areas are served by multi-lane expressways, ensuring that road-based supply chains are well catered for.
International Connections	
Roads connect to neighbouring markets	• Major highways link Greece to other major cities across Europe with increasing efficiency, as international cooperation serves to harmonise the continental transport network. • One of the nine corridors of the trans-European transport networks (TEN-T) passes through Greece.
Infrastructure Quality	
35.4% of roads are paved	• The quality of the paved roads is high; however, most of the roads are unpaved. • The availability of few paved roads means that road-based supply chains will struggle with a lower degree of efficiency and higher costs.
Usage	
Accounts for 99.6% of internal freight tonnage	• Roads are the dominant freight mode in Greece, and road transport carries 99.6% of total cargo transported in the country. • However, the road network is subject to large traffic volumes, particularly in major cities, which results in congestion.
Disruption	
8.3 road deaths per 100,000 people	• Road accidents are not a common source of supply chain disruption, as shown by the rate of road deaths, which is low by global standards (global average of 17). • The over-reliance on this mode of transport is, nonetheless, a potential risk for

investors.
- Growth in supply chain usage and the number of personal vehicles increases pressure on the road network, as well as risks of road congestion, air pollution and high maintenance costs.

Planned Projects

- **Overview:** Our Infrastructure team notes that road infrastructure will receive significant investment over the coming years, given Greece's expected rapid uptake of EVs over the decade.
- **Privatization And Upgrades**: A number of projects are under way which include Egnatia-Odos motorway privatisation, the Attic Odos motorway privatisation, the Thessaloniki-EdessaE02 highway upgrade tender and the Athens Corinth-Patras upgrade.
- **EV infrastructure:** Greater consideration of the emissions entailed in the use of petrol and diesel vehicles, both among policymakers and the wider public, will see both cohorts move towards viewing EVs as a viable choice of transport, alongside other low-emission modes, including public transport and micro-mobility devices. Policymakers will prove key in this gradual shift in public opinion, as authorities will need to demonstrate that sufficient charging infrastructure exists to serve a growing fleet of EVs and alleviate any 'range anxiety'.

Source: CIA World Factbook, WHO, Fitch Solutions

Railways

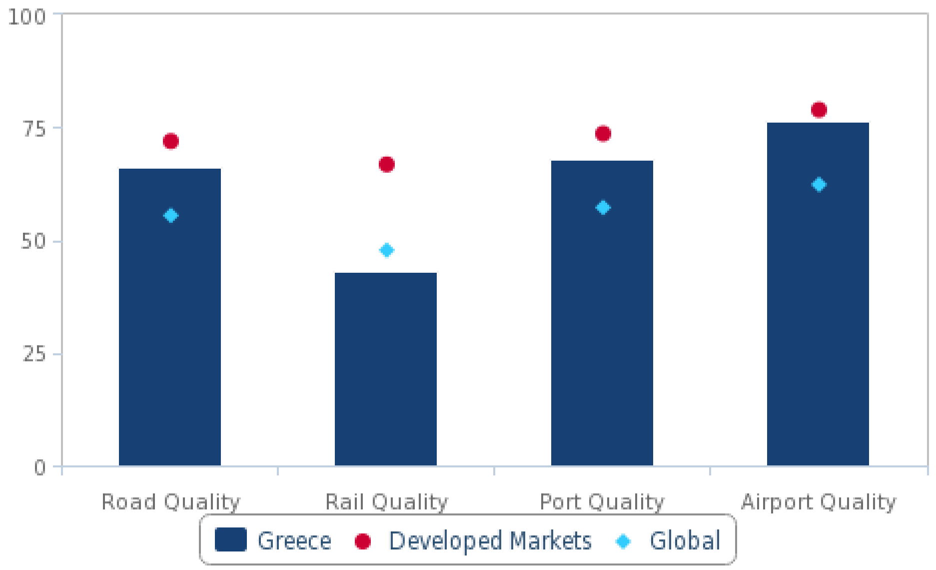
Greece has 2,548km of railway, of which 1,565km is standard gauge and about 49% is electrified. The country also boasts 961km of narrow (1.0m) gauge railway. As road infrastructure is so well developed and vast in Greece, rail freight has a smaller role in the overall freight mix. There is continued pressure from the EU for member states to decrease their reliance on road haulage due to emission and congestion issues, and move freight onto other modes of transport, such as rail.

GREECE - RAIL RISKS

Internal Coverage		
Total railway network: 2,548km	• Greece does not boast an extensive railway network, which hinders transportation choice between major commercial areas. • The existing railway network provides a viable diversification option to road-based supply chains.
International Connections	
Rail connections to North Macedonia and Bulgaria	• Greece has rail connections to neighbouring markets North Macedonia and Bulgaria. • One of the nine corridors of the TEN-T network that link European markets passes through Greece.
Infrastructure	
	• Rail infrastructure quality is lagging - it is the lowest quality among developed states and the 61st poorest globally. • Greece is in the process of modernising its ailing rail infrastructure.
Usage	
Accounts for under 1% of internal freight tonnage	• The railway network is mostly geared towards passenger transport, diverting some traffic off the roads, which helps to alleviate congestion. • However, the dominance of road-based supply chains means that Greece only carried 0.8% of total freight in 2022. • Modernisation plans bode well for diverting more freight traffic from the road network.
Disruption	
	• Rail worker strikes against privatisation could paralyse rail transport.
Planned Projects	
	• **Overview:** The Greek rail infrastructure sub-sector is dynamic. • Significant public investment in Greece's rail sub-sector, backed by EU funding, will be supportive of growth. Greece's government is currently advancing with the construction of the EUR1.5bn Thessaloniki metro and the Line 4 Metro project in Athens, a EUR1.5bn project currently in tender and backed by loans from the European Investment Bank. • Additionally, the government is pressing forward with several smaller rail projects in the Peloponnese region, including the electrification of the Kiodo-Rhododafni. • National railway operator Hellenic Rail stated in Q322 that it plans to develop new trains as part of a wider government initiated upgrade of th railway sector.

Source: CIA World Factbook, Fitch Solutions

Stable Transport Infrastructure With New Investments Set To Drive Improvements
Greece & Developed Markets Average - Infrastructure Quality Score



Note: Scores out of 100, higher score = lower risk. Source: Source: World Economic Forum, Fitch Solutions

Ports

The Port of Thessaloniki is the main trade seaport in Greece and is poised to see decent growth over the short-to-medium term. Both the ports of Thessaloniki and Piraeus are two of the biggest seaports in the Mediterranean. In line with a drive to privatise key infrastructure assets in Greece, partially a requirement of Greece's bailout deal with creditors, the government has advanced with the privatisation of two of the country's largest ports.

PORT RISKS

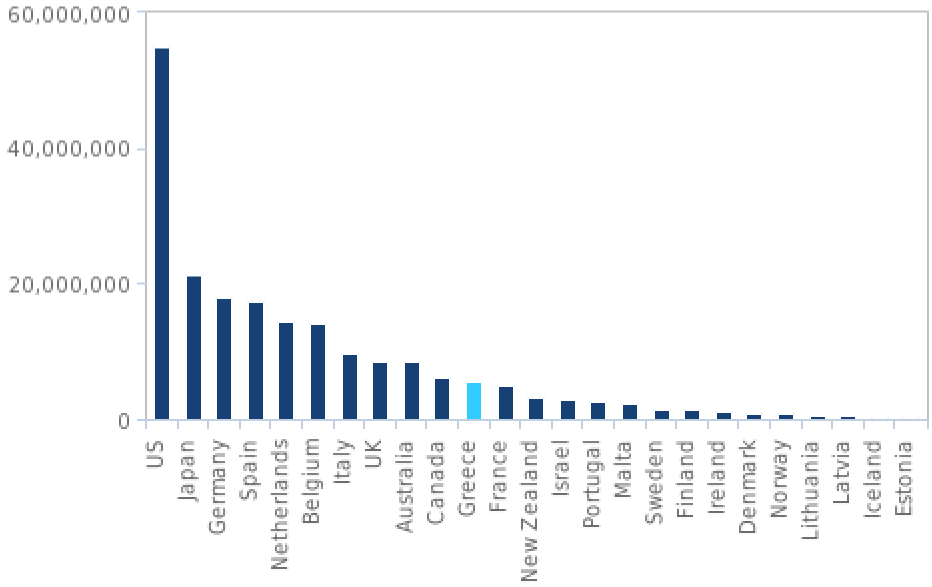
Internal Coverage	
Main container port: the Port of Thessaloniki	• Greece has a well-developed port sector, with ports located all along the coastline, meaning there is a low risk that the port sector would ever be entirely closed. • The major seaports are in the northern and southern parts of the country, with the largest container port being the Port of Thessaloniki.
International Connections	
Annual container throughput - 5.8mn twenty-foot equivalent units (TEU)	• Greece's ports have benefitted from considerable investment and development of berths to accommodate mega-sized containerships of up to 24,000TEUs, which ensure that they remain up-to-date and able to cater for the largest vessels in service.
Infrastructure Quality	
	• Export and import supply chains using Greek sea ports benefit from its world-class facilities, which help ensure efficient turnaround times and reduce the risk of unforeseen delays. • Continuous investment in ports should ensure that Greece maintains strong maritime trade connections, and efficient export and import supply chains.
Usage	
Port of Thessaloniki container throughput: 581,411 (2023 forecast) TEUs Port of Piraeus container throughput: 401,000 TEUs (2023 forecast)	• The Port of Thessaloniki is Greece's largest regarding throughput. • The increased participation of private investment in Greek infrastructure will bode well for the port sector.
Disruption	
	• Any disruption to port activity could cause significant problems for supply chains, as disruptions to road and rail have resulted in port disruptions during protests in the past.
Planned Projects	
	• **Overview:** A strong pipeline of expansions keeps Greek ports operating efficiently, while competing with other major ports in Europe. • In May 2022, a joint venture between Mytilineos, Rover Maritime and HDK was awarded for the USD146mn upgrade to Thessaloniki port.

- According to our Key Projects Database, port projects to the value of USD1.4bn are currently under construction, at planning stage or have a contract awarded.
- In November 2022, the Greek Prime Minister stated that the potential privatization of the Alexandroupolis port would likely be called off as the geopolitical climate were encouraging the government to reevaluate its decisions.

Source: World Bank, UNCTAD, Fitch Solutions

Port Upgrades To Drive Further Throughput

Developed Markets - Container Throughput, twenty foot equivalent units (2020)



Source: UNCTAD

Airports

Greece's airports cater not only for domestic freight demand, but also act as a hub for other European states. The country boasts 77 airports, 68 of which have paved runways. Eleftherios Venizelos International Airport is Greece's largest airport.

GREECE - AIR TRANSPORT RISKS

Internal Coverage	
Total of 68 airports with paved runways; six have runways at least 3,047m needed for the largest planes in service to land	• Greece's main airport is Eleftherios Venizelos International Airport. • Air freight is a marginal freight mode in Greece, forecast to account for less than 0.1% of the overall freight mix in 2023; a scenario that will remain unchanged by the end of 2032.
International Connections	
0.5 air passengers carried per capita	• Greece offers strong international links for passengers, serving numerous airlines, including the national flag carrier Aegean Airlines, as well as other major international operators, such as Aer Lingus, airBaltic, Air Canada, Air China, Air France and Air Serbia, among others. • Greece is a popular tourist destination.
Infrastructure Quality	
	• Greece's airport infrastructure is relatively mature and has received significant investment over the years.
Usage	
Air freight volumes: 121,500 tonnes (2023 forecast)	• In 2023, air freight will continue to be the smallest freight mode in Greece, accounting for less than 0.1% of the total mix. • The economic situation in recent years has meant that air freight has had little investment or incentives to develop.
Disruptions	
	• Strike action has the potential to pose disruptions to supply chains.
Planned Projects	
	• **Overview:** The robust Greek pharmaceutical sector will support the air freight industry as the huge eurozone pharmaceutical industry is reliant on air freight. • The Kalamata airport operational contract is likely to issued for a 40 year period in 2023 while a 30% initial public offering (valued at EUR1bn) of the Eleftherios Venzielos airport in Athens is also expected by H2 2023.

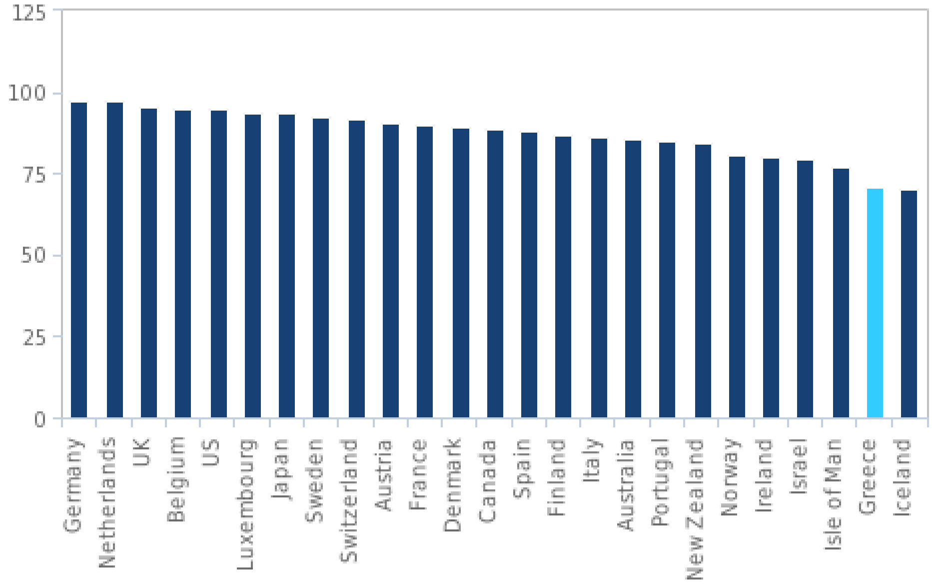
Source: CIA World Factbook, World Bank, Fitch Solutions

Trade Procedures And Governance Analysis

Key View: *Greece is the one of the most attractive locations to conduct cross-border trade in globally. The market has a highly open attitude towards international trade, as both imports and exports are key components of its economy. Border compliance for exports can be time consuming and costly, but overall Greece has streamlined trade processes due to the extensive digitisation of EU customs procedures, which reduces the risk of delays that businesses will encounter during cross-border trade. Greece's transport network provides efficient turnarounds for cross-border traders, benefitting from strong international connections via overland, maritime and air transport modes. Greece ranks 25th out of 27 developed markets for the Trade Procedures and Governance, with a high score of 71.1 out of 100.*

Stable Score But Lagging Behind Most EU Peers

Developed Markets - Trade Procedures & Governance



Source: Note: 100 = Lowest risk; 0 = highest risk. Source: Fitch Solutions Logistics Risk Index.

Latest Trade Procedures And Governance Analysis

- The Greek government is trying to invest in road, rail and port infrastructure to improve their efficiency, and we believe this will lead to even more efficient trade lead times and lower transportation costs.
- NextGenerationEU recovery funding will directly support investment levels in the energy efficiency of buildings, renewable energy assets and the facilitation of low-emission travel. Activity in the deployment of renewable energy assets in Greece will sustain investment in grid infrastructure. The spread of Greece's project pipeline across various development stages also informs our positive outlook for the industry's long-term growth. New investments into transport and critical infrastructure should bolster operational efficiencies, institutional operations and bureaucratic process streamlining.
- In 2022, Greece and Turkiye signed a protocol to develop bilateral trade and enhance cooperation in multiple fields. Climate change, environmental protection, energy cooperation and transport sector engagements are some of the areas targeted for improvement. Bilateral trade between Greece and Turkiye came in at USD5.2bn (TRY70.5bn) in 2021, up 69.2% y-o-y.

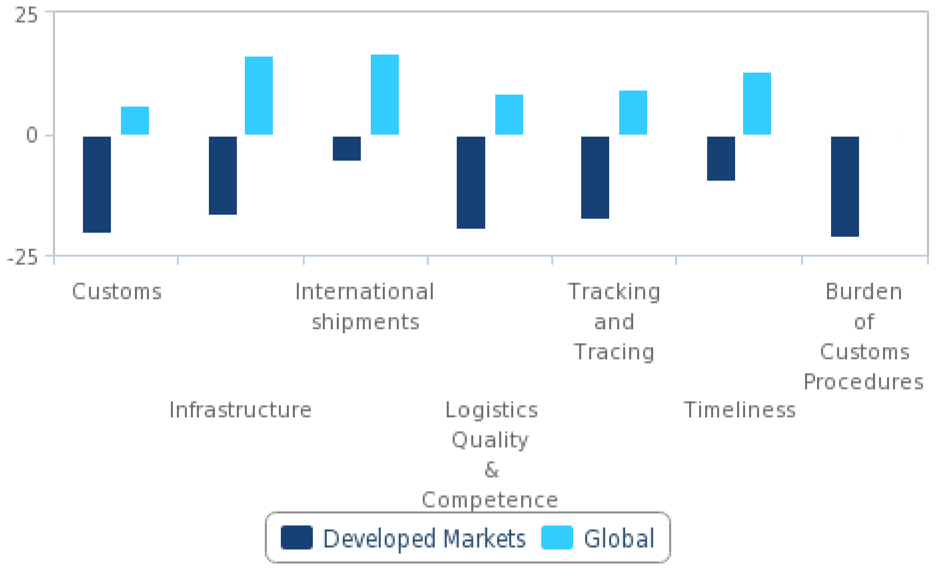
Ease And Costs Of Trade

Streamlined trade bureaucracy, the adoption of digital procedures, and the availability of modern and efficient transport infrastructure mean that Greece is one of the easiest locations in the world to engage international trade with. Border compliance for exports can be time consuming and costly, but documentary compliance is efficient and cost-effective, reducing turnaround times. This elevates the market's appeal and makes it easy for firms reliant on imported inputs to access goods from abroad. As a result, Greece ranks 26th out of 27 developed markets, with a score of 70.0 out of 100 for Ease of Trading.

The market's performance is attributable to its international shipments, infrastructure and timeliness, which have the largest positive deviations from the global average. Well-connected and good quality infrastructure boost Greece's freight capabilities with domestic and regional linkages. This broadens supply chain connections and increases revenue prospects. Documentary compliance for imports and exports are efficient, and well-functioning logistics further enhance the ease of conducting cross-border trade in the country. Additionally, several free trade agreements assist traders by minimising bureaucracy with key trade partners.

Significant Room For Improvement

Greece - % Deviation From Regional & Global Average Trade Procedures Scores



Note: Higher value= lower relative risk. Calculation based on percentage difference from the average score for the region/world. Source: World Bank Logistics Performance Index, Fitch Solutions.

Border compliance for exports can be time consuming and costly in Greece, but the documentary compliance process is streamlined, resulting in overall efficient trading procedures, especially for imports, which drives down costs for businesses. The country is well connected to international shipments and offers supply chains speedy turnaround times, which improves traders' competitiveness. Consequently, Greece scores 72.2 out of 100 for Connectivity, ranking 25th out of 27 developed markets.

GREECE - TRADE PROCEDURES AND GOVERNANCE RISKS

Border Compliance

- The export border compliance process is time-consuming and costly.
- Integrated systems allow for a once-off clearance upon entering the EU, which bodes well for businesses located in the bloc.

Documentary Compliance

- Compiling necessary documents required to export and import in Greece is efficient and poses a limited cost burden to businesses.
- Obtaining, preparing and submitting documents for import and export processes is not burdensome, boosting Greece's appeal for international trade.

Ports And Inland Transport

- Greece's transport network is highly efficient, with quick turnaround times from ports to roads, boosting supply chain efficiency.
- Greece has the sixth largest seaport in Europe, boasting modern technologies and capacity to accommodate mega-ships and large freight volumes .

Corruption

- Businesses face risks of encountering corrupt practices when dealing with customs in Greece.
- All companies engaged in international trade should ensure that due diligence programmes are followed closely to reduce the risk of implication in corrupt activities, which can lead to fines and reputational damage if discovered.

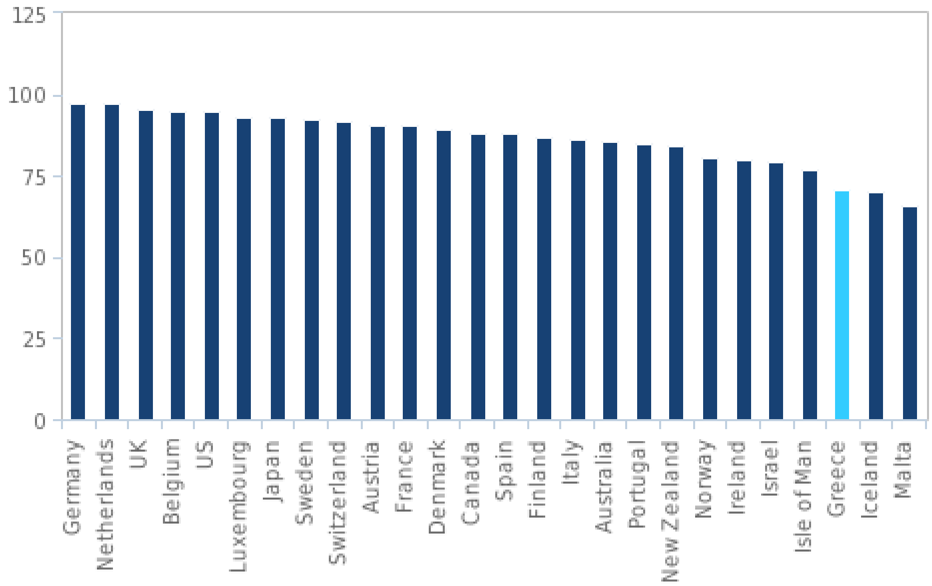
Source: National sources, Fitch Solutions

Utilities Network Analysis

Key View: *Greece has a well-managed utilities network, offering a reliable supply of electricity, fuel and water, as well as access to fast internet services. Fuel costs have been rising and energy prices have been skyrocketing since the start of the Russia-Ukraine war. The government is looking to invest heavily into alternative power sources as evidenced by the latest legislative reforms of over H222 and the commencement of new construction undertakings aimed at the development of solar and renewable energy initiatives. Overall, Greece scores 50.1 out of 100 for Utilities Network, ranking 26th out of 27 developed markets.*

Strong Investments Into Renewables Likely To Bolster Score In The Future

Developed Markets - Utilities Network



Note: 100 = Lowest risk; 0 = highest risk. Source: Fitch Solutions Logistics Risk Index

Latest Utilities Network Analysis

- **Eunice Energy** signed a memorandum of understanding with a **McDermott**-led consortium to develop the 2GW Greece-Africa Power (GAP) Interconnector project in February 2023. The EUR2.5bn (USD2.7bn) project will form a link between the 200MW Atherinolakkos thermal power plant in Crete to the Egyptian city of Marsa Matruh.
- In February 2023, the Greek government issued an approval for the construction of the EUR340mn floating storage and regasification unit off the city of Corinth. **Motor Oil Hellas** will develop the project with expected capacity of 4.3bn cubic metres (cu m) per annum. With a storage capacity of over 210,000cu m, the import thermal is expected to be operational by 2025.
- In Q123, **KGAL** stated that it had formed a joint venture with **Pfalzsolar** for the development and construction of two solar parks in Greece. The projects, with a combined capacity of 176MW, will include the 95MW Evros project and the 81MW Volos project and will both be connected to the grid by Q424.
- A consortium of **Public Power** (PPC), **DEPA Commercial** and **Damco Energy** has started the construction works on an 840MW gas-fired power plant in Alexandroupolis, Greece. Construction is expected to end in 2026.
- **Korkia** has unveiled plans to develop more than 1GW of solar photovoltaic (PV) power plants in Greece. According to the plans, Korkia will collaborate with **GH Energy** and **AA Sunshine** to develop power plants in Thessaly and on the island of Crete respectively with constriction expected to commence in 2024.
- **United Group**, the new owner of **Nova-Wind**, stated in Q322 that it is slated to spend EUR2bn on its greek network expansion over the next five years. The move will support 10Gbps FTTx network over the coming years.
- **Cero Generation** has selected **Ameresco** and **Sunel Group** to develop a 100MW solar photovoltaic (PV) project in Greece.

Called Delfini solar, the facility will have the joint venture Ameresco Sunel Energy serving as engineering, procurement and construction contractor. The proposed facility is likely to be complete by Q323.

- The Greek government is looking to leverage the ongoing energy price crisis to push through a vast array of legislative changes, which pose a wide upside risk to renewable growth. In response to Russia's invasion of Ukraine and its subsequent economic implications, the EU and Greece in particular are looking at new policy reform and funding support to speed up diversification efforts away from imported energy by promoting renewables.
- The Interministerial Committee of Strategic Investments of Greece has granted the status of flagship investment of exceptional importance to Hive Energy's proposal for the construction of a EUR226.4mn (USD222.5mn) solar-hydrogen-plus-storage project in Greece. Called Bluesky300, the proposed facility will feature a 200MW solar photovoltaic power plant, 100MW lithium ion batteries and a 50MW electrolyser.
- During Q322, Greece's Ministry of Environment and Energy was able to secure new legislation in parliament that would speed up and increase renewable deployments, which would be supported by mobilising EUR44bn in funds for structural energy reform. The plans aim to reduce licensing time from five years to 14 months, install 3.5GW energy storage by 2030, and increase grid connections for renewables. Furthermore, the government's non-hydropower renewables energy capacity targets have been raised to 25GW by 2030 and although we currently forecast the market will reach 19GW by this time, these measures pose upside risks to our outlook.
- **PPC Renewables**, the green energy unit of **PPC**, has launched a tender for the construction and commissioning of a 550MW solar power plant at the site of the former Ptolemaida lignite mine in Greece. The project, estimated to cost EUR216.0mn (USD222.4mn) excluding VAT, will be located in the municipalities of Eordaia and Kozani, in the Western Macedonia region.
- The Regulatory Authority for Energy has granted a licence to **Fos Anavras Monoprosopi MIKE** for the construction of a solar PV park in the administrative region of Thessaly, Greece. The licence for the 200MW solar PV plant will be valid for 25 years. The PV plant will come up in the municipalities of Almyros and Domokos.
- **Siemens Gamesa Renewable Energy** has secured a contract from Intrakat for the 36MW Karkaros wind farm in Greece. The power plant will feature seven units SG 5.0-145 model turbines and will serve 30,000 homes. Commissioning of the project is expected to start in September 2023.
- Italy-based **Terna** plans to invest around EUR750mn (USD782mn) to expand the existing 300km-long 500MW Italy-Greece interconnector to 1GW. The scope of work includes the construction of a new 200km-long 500MW extension to extend the existing 400kVdc connection. Work is set to start in 2023, while commercial operations are planned to start in 2030.
- **Econergy Renewable Energy** has signed a partnership agreement with **Terna Energy** to develop and build a 460MW solar portfolio in Greece. Under the agreement terms, Econergy will acquire 49% of the share capital of a local firm that owns the companies, which are developing a pair of solar projects - 240MW and 220MW - in the Kilkis region. The total investment, estimated at EUR265mn (USD278.6mn), involves around EUR130mn (USD136.6mn) from Ecoenergy. Construction is due to start in Q423 with commissioning expected in Q424.
- Spain-based **Iberdrola** has started the construction of the 50.4MW Askio III wind farm in Greece. The project is located next to the Askio mountain in Western Macedonia region and it will feature 12 units of **Vestas Wind Systems**' 4.2MW turbines. Iberdrola intends to finalise the installation of turbines in Q323.
- **Elpedison**, a unit of **Hellenic Petroleum** and **Edison**, has submitted an application to the Regulatory Authority for Energy to develop an independent FSRU project in Thessaloniki, Greece. The project will have a LNG storage capacity of 170,000cu m and will be able to produce 20mn cu m of LNG per day. The project will also comprise of several onshore and underwater pipelines to connect the FSRU with two of Elpedison's electricity production units in Thessaloniki. The project is expected to be operational in 2025.

Utilities Costs And Availability

Greece's utilities sector is well developed and able to cater to the demands of the industry. Fuel, water and electricity are widely available, which makes the country an attractive location for manufacturing. Internet services are available and at high speeds, which supports high-tech operations, e-commerce and cloud services. Greece scores 69.5 out of 100 for Availability of Utilities, ranking 16th out of 27 developed markets.

Although utilities are widely available in Greece, electricity is, especially, quite costly, partly due to support for renewable energy over cheaper, coal-fired power. The cost of fuel in the country also remains higher than the global average. Overall, Greece scores 30.8 out of 100 for Cost of Utilities, ranking 25th out of 27 developed markets.

Electricity

Our Infrastructure team notes strong upside risk from the non-hydropower renewables power generation sector. Our Renewables team expects to see robust capacity growth in the non-hydro renewables sector in Greece over the coming decade. Developments in non-hydropower renewables capacity will come at the expense of conventional thermal, which accounted for 50.7% of Greece's total domestic electricity capacity in 2021. We at Fitch Solutions forecast this proportion to fall to 36.3% in 2031, while the share of non-hydropower renewables capacity will rise from 39.2% in 2022 to 55.1% in 2031. Large-scale reductions in thermal capacity will continue to drive the need for rapid expansion of the renewables sector. Our Renewables team now expects 10GW of net non-hydro renewables capacity to come online between 2022 and 2031.

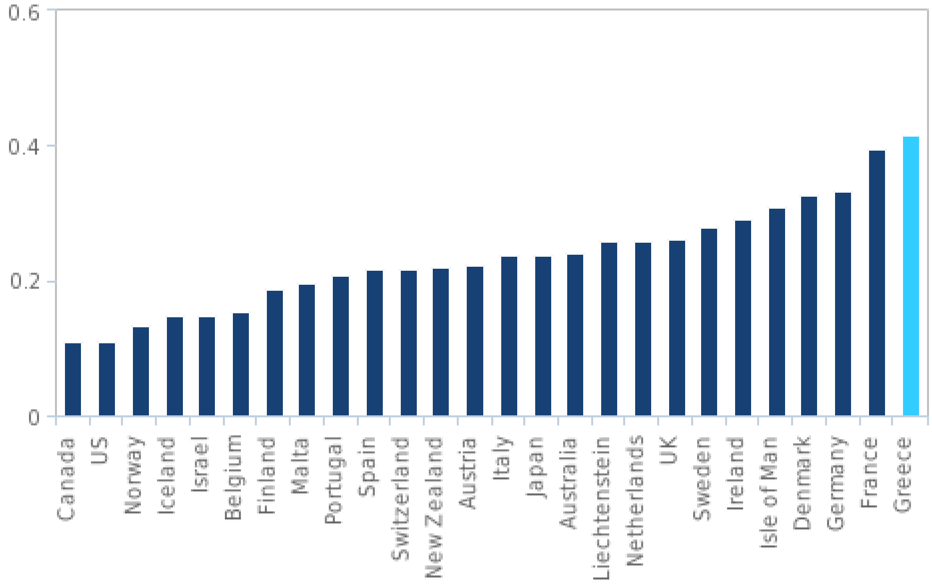
GREECE - ELECTRICITY RISKS	
Source	
Energy mix (2023 forecasts): non-hydropower renewables (39.2%); natural gas (32.6%); hydropower (10.4%); coal (10.0%) and oil (8.4%)	• Electricity generation is well diversified, with non-hydropower renewables generation and natural gas accounting for most of Greece's installed capacity. • Greece seeks to phase out coal-fired power by 2026. • This will create opportunities for cleaner-energy solutions to take up a greater share of capacity generation over the medium term.
Availability	
100% of the population has access to electricity	• Investors in Greece enjoy strong electricity connections, with 100% of the population connected to the grid.
Reliability	
8.3% of total output is lost through transmission and distribution	• Greece has the fourth-highest rate of transmission and distribution losses, which indicates less efficient power transmission and reliability compared to developed markets standards.
Cost	
USD0.42/KWh.	• Greece has the highest electricity costs among developed markets. • High energy costs are partly due to the support for renewable energy sources, as the cost of the green transition is, in part, passed onto the consumer.
Planned Projects	
	• **Overview:** As Greece accelerates the phasing out of coal power, renewable energy and its related infrastructure will be the primary focus of investment over the coming years.

- Greece is set to receive EUR30.5bn of EU Covid recovery funding, EUR17.8bn in grants and EUR12.7bn in loans under the Recovery and Resilience Facility through to 2026. This will directly support investment levels in the energy efficiency of buildings and renewable energy assets, which provides upside risk to our otherwise pessimistic outlook on the Greek energy and utilities infrastructure sub-sector.

Source: International Energy Agency, national sources, Fitch Solutions

High Power Costs Driving Interest In Renewables

Developed Markets - Cost Of Electricity, USD per KWh



Source: World Bank, Fitch Solutions

Fuel

The Greek government is committed to attracting investment in its upstream exploration sector and maintaining production through to 2031 - plans which may receive a boost given the recent rise in the oil price. Meanwhile, the government is in the process of developing a new liquefied natural gas terminal at Alexandroupolis, with North Macedonian and Bulgarian partners, and with funding from the EU. The project received a final investment decision in January 2022.

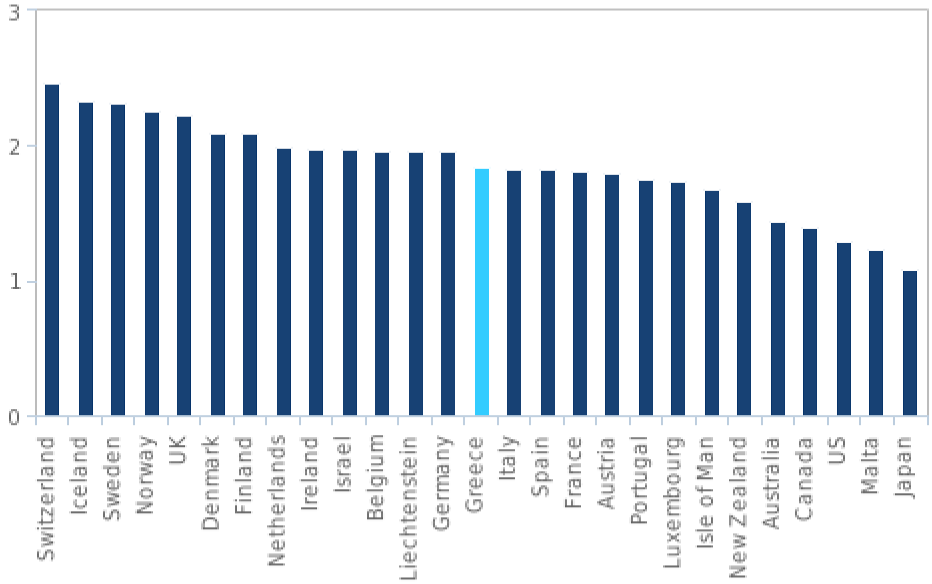
GREECE - FUEL RISKS

Source	
Little domestic oil reserves; crude oil imports mainly from Iraq, Kazakhstan, Russia, Saudi Arabia, Libya and Egypt, among others	• Greece has little oil and gas reserves, and this is unlikely to change in the coming years. • Greece is a net exporter of refined fuels. • Greece's largest refined fuels trade partners include Lebanon, Turkey and Italy, among others.
Availability	
Refined petroleum net exports: 102,000b/d (2023 forecast)	• Greece is a net exporter of refined fuels. • Our Oil & Gas team forecasts Greece to export around 102,000b/d net exports in 2023.
Reliability	
	• Self-sufficiency for refined fuels mitigates the possibility for disruption to the fuel supply.
Cost	
USD2.11 per diesel litre	• Greece's fuel prices are the 15th lowest among developed markets, where the regional average stands at USD1.93 per diesel litre. • Transport fuel prices globally have hit new highs due to the Russia-Ukraine conflict.
Other Risks	
	• Domestic fuel distribution systems face increased risks of disruptions due to cyberattacks.
Planned Projects	• **Overview:** Greece's push towards decarbonisation and climate change goals will lead to reduced investment in the oil sector .

Source: National sources, Fitch Solutions

On Par With Wider EU Average

Developed Markets - Cost Of Fuel, USD per diesel litre



Source: EIA, Fitch Solutions

Telecommunications

The Greek telecoms market is largely subdued due to the country's macroeconomic environment, which exercises downward pressure on both operator investment and consumer purchasing power. The mobile market is nearing saturation, with a penetration of approximately 142% by the end of 2021. Our Telecommunications team believes that there is a large share of unused SIMs arising from prepaid plans, which poses a downside risk to Greece's telecommunications growth outlook. All operators offer fixed and mobile services, and wireline broadband adoption is rising on the back of fibre network incentives and increasing investor appetite. Potential growth in the mobile segment stems from increasing usage of data through 4G and 5G. The acquisition of **Wind Hellas** by **Forthnet** owner **United Group** promises to inject fresh competition into the market, as a new converged services operator emerges from the operation.

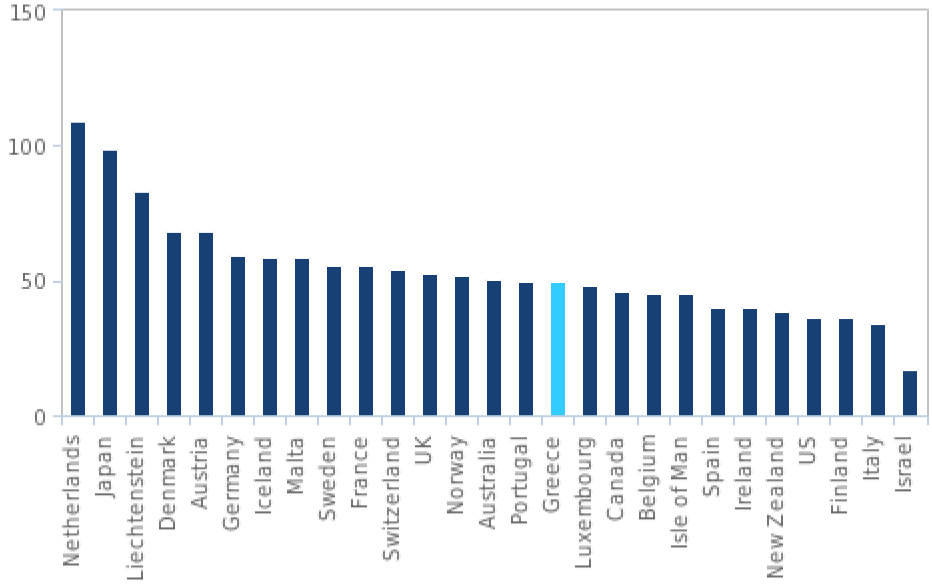
GREECE - TELECOMMUNICATIONS RISKS

Source	
Cosmote, Vodafone and WIND dominate as the main telecommunications providers.	• The Greek mobile market is largely dominated by incumbent Cosmote, which our Telecommunications team estimates accounted for 51% of the mobile market in Q222. • Cosmote's leader status has largely remained unchallenged, as Vodafone has so far been the only operator able to compete on the converged services front. • The remaining of the market corresponds to Vodafone (30%) and Wind, which Fitch Solutions estimates accounts for 19.5% of the market.
Availability	
49.4 broadband subscribers per 100 people (2021 estimate).	• Internet penetration is low in Greece, providing businesses with a narrow customer base for e-commerce. • High-speed internet connections are widely available, supporting the use of the internet for communication, storage and transactions between businesses.
Reliability	
	• The three mobile operators have all launched 5G services, increasing efficiency and reliability of services. • According to Netflix's ISP Speed Index, Greece had the 19th highest average internet speed in Europe as of January 2022, faster than in economies such as Poland, Austria and Turkey, but slower than in peers such as France, the UK and Switzerland.
Cost	
Fixed broadband internet tariffs: USD28.0 per month	• Cosmote dominates among the three main players, but tariffs are competitive and are the ninth-lowest among developed markets, faring better than the likes of Finland, Italy and Belgium.
Other Risks	
	• Businesses are exposed to cybercrime threats.
Planned Projects	
	• **Overview:** Based on the latest available operator data, the Greek mobile market ended Q422 with around 14mn subscribers, relatedly flat growth y-o-y due to market maturity. • United Group finalised the acquisition of Wind Hellas in January 2022, after obtaining regulatory approval one month earlier. United Group confirmed it will be investing another EUR2bn in Greece over to 2027, in a bid to expand the operator’s fibre offerings and 5G connectivity, as well as scale up its pay-TV portfolio.

Source: Fitch Solutions

5G, IoT, M2M & FTTx Present Room For Growth

Developed Markets - Broadband Subscribers Per 100 People (2021)



Source: World bank, Fitch Solutions

Water

Access to drinking water is widespread in Greece and there is currently an adequate supply for industrial use. Agriculture is the highest consumer of water, using 80.4% of freshwater withdrawals, while industry is the lowest, using 1.9% of freshwater withdrawals. Greece's water availability per capita is the 11th highest among developed markets.

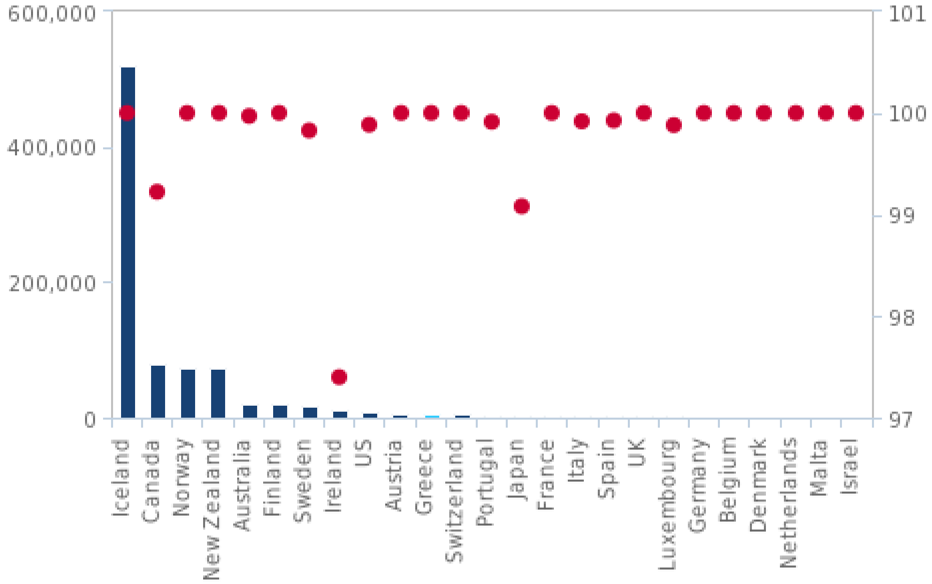
GREECE - WATER RISKS

Source	
Renewable internal freshwater resources per capita: 5,325 cubic meters (cu m)	• Greece has the 11th highest water availability among developed markets. • A number of islands in Greece, such as Milos, Nisyros and Amorgos, are drought stricken and are being forced to import greater amounts of water every year.
Availability	
100% of the population has access to improved drinking water	• Water is widely available to the population, with 100% of the rural population having access to drinking water sources, and 100% of the population is also connected to the mains sanitation network. • This reduces the possibility that pollution will contaminate the fresh water supply and reduces water challenges for industrial and home use.
Reliability	
	• Water supply in Greece is reliable and easily accessible.
Cost	
Water tariffs in Athens and Thessaloniki: USD1.34/cu m	• Due to subsidies from the state, tariffs are low. • Water is typically billed by the cubic metre.
Planned Projects	
	• Overview: Water infrastructure industry value is expected to see real growth of around 1.5% in 2023.

Source: CIA World Factbook, Fitch Solutions

Strong Water Management Practices In Effect

Developed Markets - Water availability, cu m per capita (LHS) and population with access to basic water services, % (RHS)



Source: World Bank, Fitch Solutions

Logistics & Freight Transport Methodology

Logistics Risk Index Methodology

Our Operational Risk Index quantitatively compares the challenges of operating in 201 markets worldwide. The index scores each market on a scale of 0-100, with 100 being the lowest risk. The entire index consists of 24 sub-index scores and 90 individual surveys and datasets, which all contribute to the headline score.

Each market has a headline Logistics Risk Index score, which is made up of three categories of analysis, each further broken down into sub-categories. The individual categories and sub-categories are also scored out of 100, with 100 the lowest risk.

The Logistics Risk Index score is calculated using the average of the **Utilities Network**, **Transport Network** and **Trade Procedures And Governance** scores.

Utilities Network: This indicator assesses both the cost and availability of four key utilities: electricity, fuel, water and internet services, with markets offering cheaper and more reliable supplies scoring highly.

Transport Network: This indicator assesses the extent and quality of road, rail, port and air transport networks, which indicate capacity to meet businesses supply chain needs.

Trade Procedures And Governance: This indicator assesses the ease of exporting and importing goods in a given market based on the available connections to international supply chains and the impact of bureaucracy and customs procedures on trade times and costs.

WEIGHTING OF INDICATORS (%)

	Weighting
Utilities Network	**33 of which**
Cost Of Utilities	50
Availability Of Utilities	50
Transport Network	**33 of which**
Quality Of Transport Network	50
Extent Of Transport Network	50
Trade Procedures And Governance	**33 of which**
Ease Of Trade	50
Costs And Connectivity	50

Source: Fitch Solutions

Freight Transport & Shipping Industry Methodology

Our industry forecasts are generated using the best-practice techniques of time-series modelling and causal/econometric modelling. The precise form of model we use varies from industry to industry, in each case being determined, as per standard practice, by the prevailing features of the industry data being examined.

Common to our analysis of every industry is the use of vector autoregressions, which allow us to forecast a variable using more than the variable's own history as explanatory information. For example, when forecasting oil prices, we can include information about oil consumption, supply and capacity.

When forecasting for some of our industry sub-component variables, however, using a variable's own history is often the most desirable method of analysis. Such single-variable analysis is called univariate modelling. We use the most common and versatile form of univariate models: the autoregressive moving average model (ARMA).

In some cases, ARMA techniques are inappropriate because there is insufficient historical data or data quality is poor. In such cases, we use either traditional decomposition methods or smoothing methods as a basis for analysis and forecasting.

We mainly use OLS estimators and in order to avoid relying on subjective views and encourage the use of objective views, we use a 'general-to-specific' method. We mainly use a linear model, but simple non-linear models, such as the log-linear model, are used when necessary. During periods of 'industry shock', for example poor weather conditions impeding agricultural output, dummy variables are used to determine the level of impact.

Effective forecasting depends on appropriately selected regression models. We select the best model according to various different criteria and tests, including but not exclusive to:

- R2 tests explanatory power; adjusted R2 takes degree of freedom into account
- Testing the directional movement and magnitude of coefficients
- Hypothesis testing to ensure coefficients are significant (normally t-test and/or P-value)
- All results are assessed to alleviate issues related to autocorrelation and multicollinearity

We use the selected best model to perform forecasting.

Human intervention plays a necessary and desirable role in all of our industry forecasting. Experience, expertise and knowledge of industry data and trends ensure analysts spot structural breaks, anomalous data, turning points and seasonal features where a purely mechanical forecasting process would not.

Industry-Specific Methodology

There are a number of principal criteria that drive our forecasts for each transport variable:

- GDP Growth

As transport activity is heavily influenced by real GDP growth, this factor is examined to ascertain its relationship with overall trade volumes. Projected GDP growth is calculated using our own macroeconomic and demographic forecasts. The level of port throughput activity is also influenced by real GDP growth. This is used to represent the level of demand in a market and movement in this indicator will indicate changes in net exports volumes, hence throughput volumes.

- Real Trade Volumes

The sum of imports and exports plays a particularly important role in developing markets with a small domestic industrial sector. The focus is on goods, as services do not employ transport. The volumes are forecast based on the following criteria:

- Trends manifested through historical data
- The impact of future step changes to the economy (such as future membership of the EU or some other regional body)

The port throughput forecasts consider historical trends in trade data and the impact of changes to the trade openness in an economy, such as sanctions or membership of trade unions.

- External Factors

External factors also influence the shipping throughput forecasts. These include the likelihood and impact of strikes at local port level, and future investment plans that aim to improve port capacity.

Freight Transport Tonnage Estimates

We aim to generate best estimate figures for freight transport for markets where raw data on freight tonnage is not published or accessible. The estimate for tonnage data integrates macroeconomic, total area, transport and infrastructure data into our model. A parent market is selected which represents the benchmark for the region, and we then use weighted scale factors to adjust the raw data of the parent to calculate estimated proxy figures for a given market.

The three indicators for which we estimate tonnage data are road freight, rail freight and air freight.

One indicator used in estimating for all three indicators is real GDP. This is the value of output for a given market adjusted for inflation. This is used to represent the size of an economy and the level of transport activity. It is one of the main scale factors used when generating our estimates.

The additional indicators used in freight tonnage estimations are given below:

- Population: The number of people living in a market. The data is sourced from the UN and the World Bank.
- Total Road Length: The total length of the road network. The data is sourced from the CIA World Factbook.
- Total Area: The sum of all land and water areas within international boundaries. The data is sourced from the CIA World Factbook.
- Number Of Airports With Paved Runways: The number of airports with concrete or asphalt landing surfaces. The data is sourced from the CIA World Factbook.
- Length Of Railways: The total length of the railway network. The data is sourced from the CIA World Factbook.
- Number Of Airline Take-Offs: The number of domestic registered carrier departures worldwide from a given market. The data is sourced from the World Bank.

Road Freight

Road freight tonnage data is estimated with parent market data, which is then scaled by a 25% weighting for real GDP, 25% for population and 50% for total length of roads.

The population represents demand for goods and thus the size of the road freight market. The total length of the road network determines how much freight can be carried by heavy trucks and goods vehicles.

Rail Freight

Rail freight tonnage data is estimated with parent market data, which is then scaled by a 25% weighting for real GDP, 25% for total area and 50% for length of railways.

The length of railways and land size will determine the demand and capacity to carry rail freight. A large market with an active railway network will likely use this to move greater volumes of goods over long distances.

Air Freight

Air freight tonnage data is estimated with parent market data, which is then scaled by a 25% weighting for real GDP, 50% for number of airline take-offs and 25% for number of airports with paved runways.

The number of domestic airline take-offs is used to represent how active the airline market is. Airports with paved runways indicate that a market is able to accommodate larger planes which carry goods.

Sources

Sources used in Freight Transport & Shipping reports include local transport ministries, officially released company results and figures, established think tanks and institutes and donor agencies such as the World Bank and the Asian Development Bank.

For shipping tonnage and container data we source information from port authorities, officially released shipping company performance reports, and established port news reports and articles.

Fitch Solutions, 30 North Colonnade, Canary Wharf, London. E14 5GN, UK

Tel: +44 (0)20 7248 0468

Fax: +44 (0)20 7248 0467

Web: www.fitchsolutions.com

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For further information

Division: International Relations & Regional Policy

SEV Hellenic Federation of Enterprises

T. +30 211 5006 104

E. ir@sev.org.gr

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