



The Future of Industry

Focus on Plastics
Manufacturing



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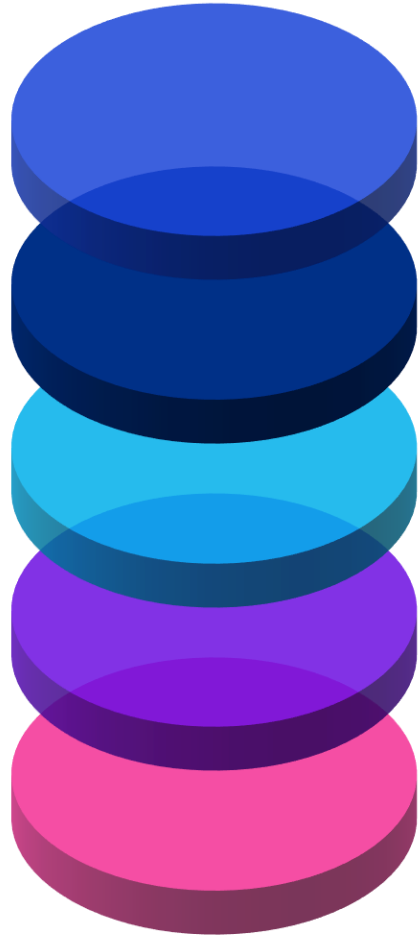
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Understanding the basics of the plastics industry



01 Industry Scope and Definition

The plastics industry produces, manufactures and trades plastic products.

02 Production Span

The plastics sector includes organisations that produce raw materials and manufacturers that process semi-finished and consumer-ready products.

03 End-of-Life (EOL) Management

In the context of the plastics industry, EOL management includes the collection, recycling and responsible disposal of plastic waste. Effective EOL management is crucial for reducing the environmental impact of plastic waste and conserving resources.

04 Global Scale

The global plastics industry is growing, valued at ~\$500 billion in 2020. Asia is the largest market for plastics, with China and India being the largest producers and consumers.

05 Main Concerns

There is a growing global concern about plastic pollution and waste, and governments and industry are taking steps to address this issue through regulations, taxes, and voluntary commitments to reduce plastic waste.

01

Sector Demand



The global demand for plastics is steadily growing, while the industry is transforming to overcome market risks



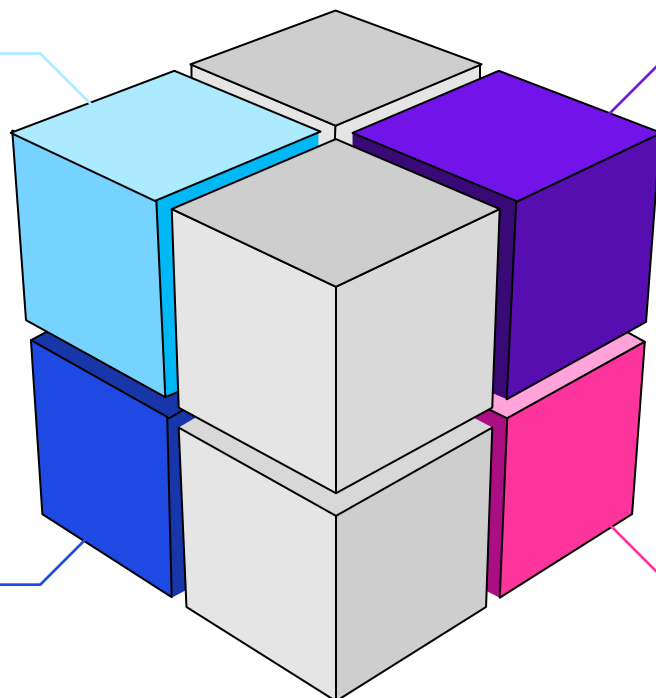
A growing market

The global plastic market size was valued at \$ 584.7 billion in 2021 and is projected to reach \$ 753.1 billion by 2026, growing at a CAGR of 5.2% from 2021 to 2026.



The key regional players

Asia-Pacific is the largest market of plastic products, accounting for over 50% of the global demand. China is the leading consumer, followed by India, Japan, and South Korea. North America and Europe are also significant markets for plastic products.



Growth factors

- Increasing demand from end-use industries like packaging, construction, automotive and electronics.
- Growth in population, urbanization and changing lifestyles, leading to increased consumption of packaged foods and beverages, personal care products, personal protective equipment and household items.



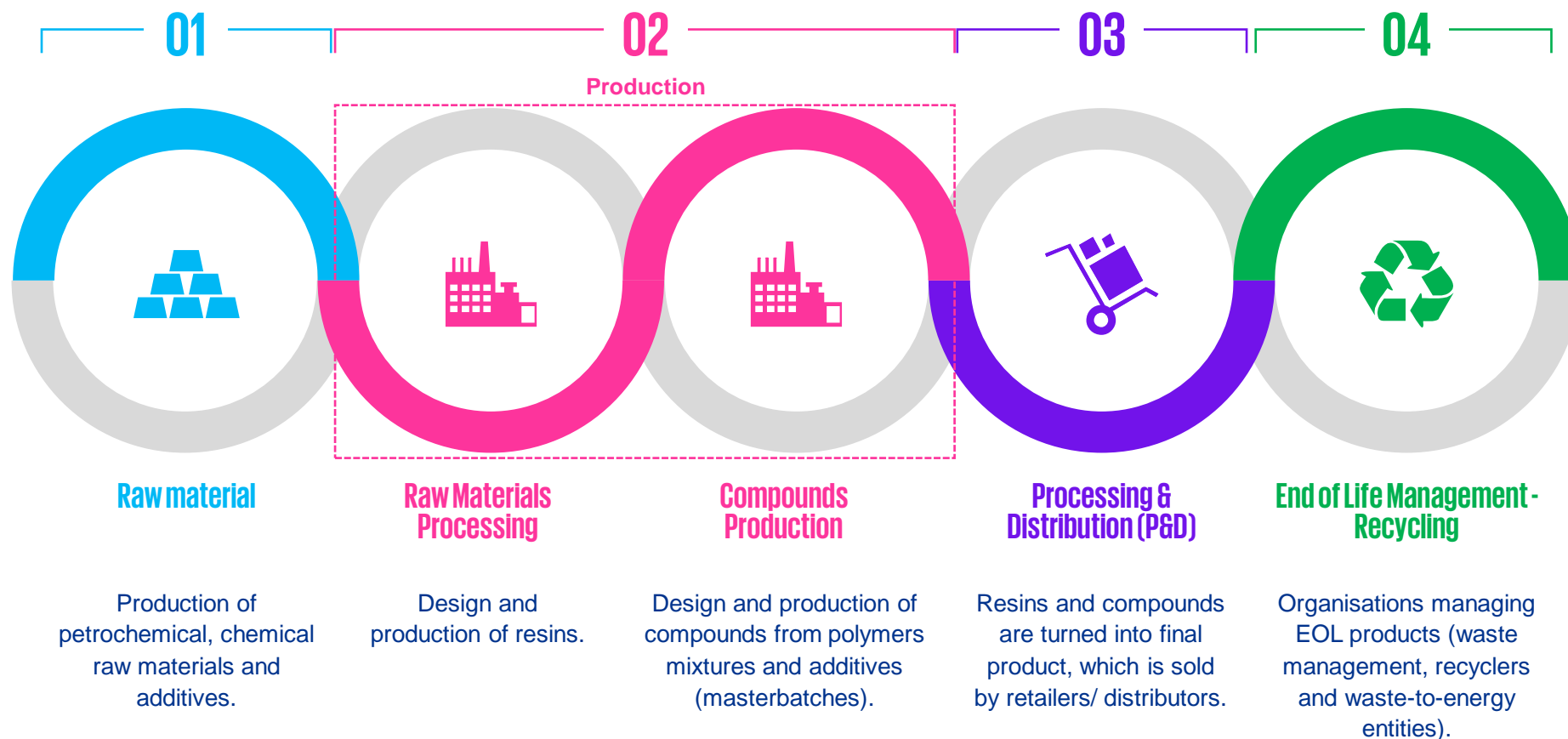
Market's risks

The plastic industry has faced criticism and concerns over its environmental impact, particularly with the growing accumulation of plastic waste in the oceans which negatively impacts marine life and ecosystems.

Governments, organisations and consumers are increasingly focusing on reducing plastic waste through initiatives such as recycling, overall banning of plastic products and using more sustainable alternatives.

Petrochemical processors, raw-material & compound producers, consumer-ready products and EOL players formulate the value chain

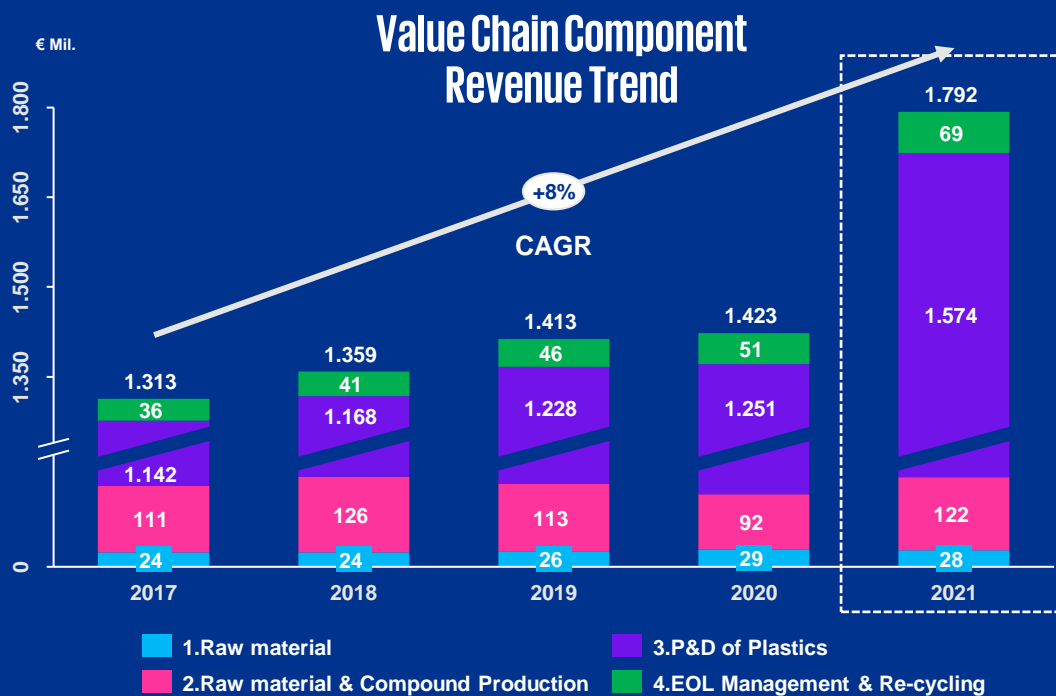
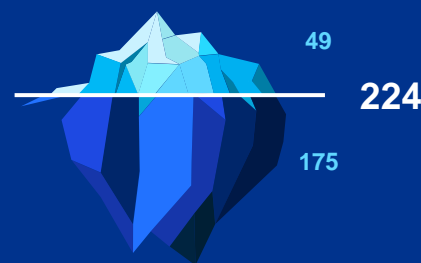
Our research focuses on organisations whose primary activity is the production within the Greek Plastics sector. Our analysis does not cover aspects of retail that concerns the end user or final consumer.



The Greek plastics sector has grown at an average annual growth rate of 8.5% from 2017 to 2021

The Greek Plastics Sector in 2021

- 224 companies were identified as key players of the sector.
- Annual growth at 16.2% compared to 2020.
- Average EBITDA Margin at 9.6%.
- This survey focused on organisations reporting revenue greater than €10mil. 49 enterprises make up 80% of the sector's revenue.
- Sector represents ~1% the country's total GDP.



€2.25b

Sales of the entire Plastics Sector for 2021

32%

Market size increase from 2021 compared to 2017



This spike in total revenue during 2021, can be mainly attributed to the top 3 P&D revenue leaders, since they grew by 25%, 40% and 105% respectively. This was primarily due to the P&D sub-sector highly contributing to healthcare Personal Protective Equipment (PPE) production during the pandemic. Nevertheless, the EBITDA increase of the P&D sub-sector slowed in 2021, reported at 3.8% in contrast to 17.9% in 2020.

22% of organisations contribute 80% of the total sector's revenue and are highly concentrated in the P&D sub-sector

€1,792m

2



€27.5m

Raw material

Revenue Trend

- While the sub-sector's revenue has on average been increasing by 3.3% during the past 5 years, in 2021 it decreased by 3.9%.

EBITDA Trend

- In 2021, the average EBITDA margin of the selected organisations was 11.5%.

Liabilities

2



€121.9m

Production

- While the sub-sector's revenue has on average been increasing by 8.5% during the past 5 years, in 2021 the increase jumped to 32.2%.

- In 2021, the average EBITDA margin of the selected organisations was 11.1%.

- In 2021, the subsector's liabilities increased by 9.16% compared to 2020.

42



€1,574.2m

Processing and distribution (P&D)

- While the sub-sector's has on average been increasing by 8.4% during the past 5 years, in 2021 the increase jumped to 25.8%.

24 out of 42 companies scored greater than AVG

- In 2021, the average EBITDA margin of the selected organisations was 12.3%.

18 out of 42 companies scored greater than AVG

- In 2021, the subsector's liabilities increased by 13.7% compared to 2020.

3



€68.5m

EOL management - Recycling

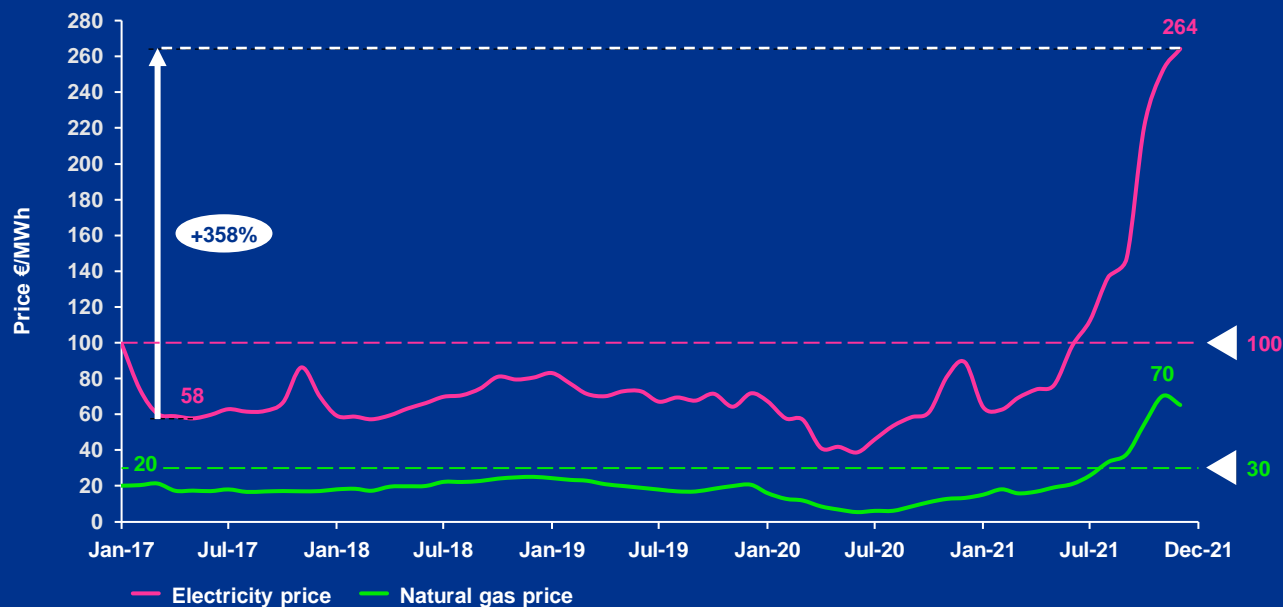
- While the sub-sector's revenue has on average been increasing by 17.4% during the past 5 years, in 2021 the increase jumped to 33.2%.

- In 2021, the average EBITDA margin of the selected organisations was 6.1%.

Although the sector has grown over the past 5 years, it has been impacted by the rise of energy prices and material cost

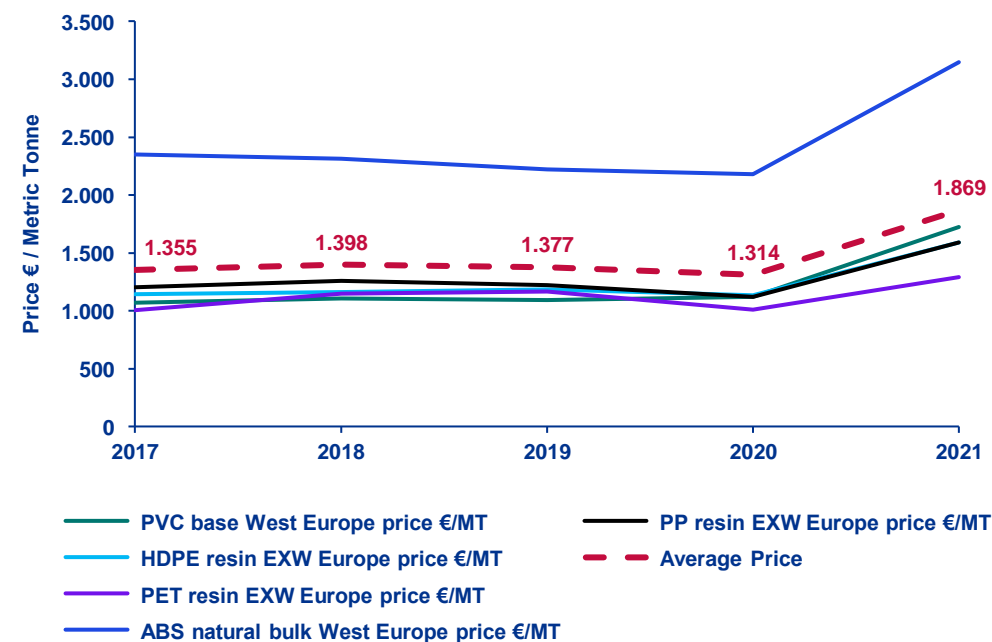
Energy price evolution in Greece

- On average, energy represents 30% of the total operating cost for the raw materials and compound producers.
- By the end of 2021, raw materials and compound producers in Greece had to pay up to 223% higher natural gas prices than at the beginning of 2017.
- Electricity prices in Greece have increased 358% between the beginning of 2017 and the end of 2021, where prices reached a high point of 264 €/MWh.



Plastic compound production price evolution

- Although material cost has been at a rise, supply chain disruptions eased by the end of 2021 with shipping cost also on the decrease.
- Plastic compound production prices have skyrocketed in the past 5 years, achieving a 40% rise.



02

Sector Supply

The global supply map per value chain link



In Greece, 10 organisations represent 50% of the market, while one key player is outperforming the market in terms of EBITDA

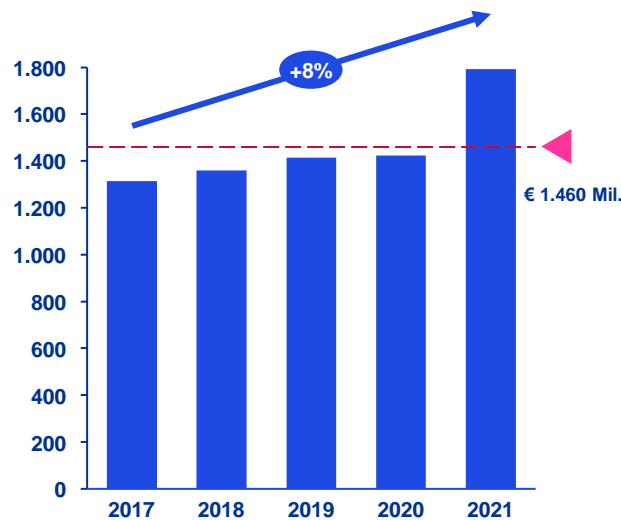


2021 Market Size

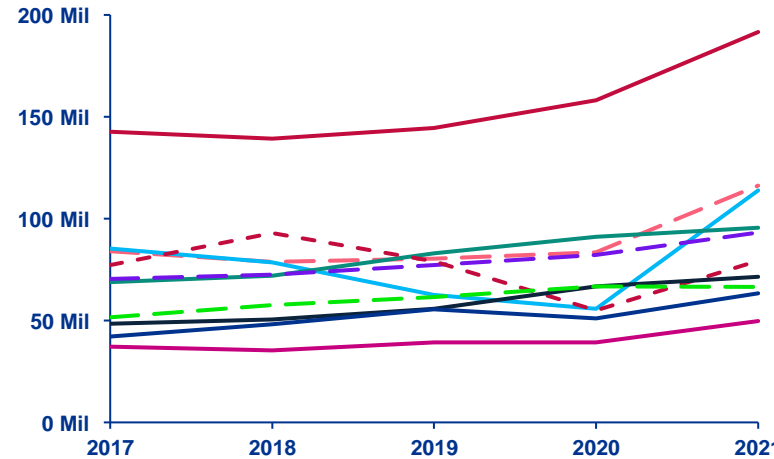
€ 1,792.1m

(selected key players revenues)

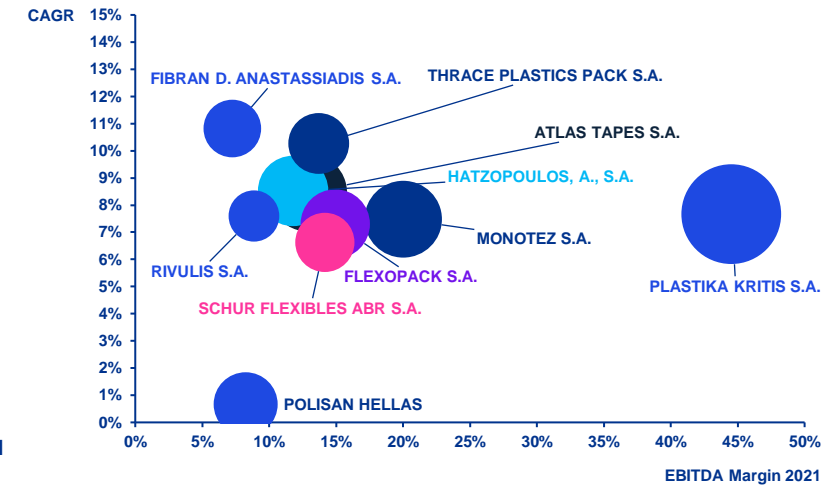
Market size evolution 2017 – 2021 (mil €)



5-year Revenue Growth Trend (€)



Key Players Profitability 2021



- During 2021, the top 3 stakeholders increased their reported revenues 21%, 39% and 104% respectively during 2021, leading to a sectoral revenue increase of 8.5%.
- PLASTIKA KRITIS make up the industry leader in terms of revenues and in EBITDA margin.
- The average EBITDA (€) of the selected key players if the leader was to be excepted are €10.8 Mil, while the mean EBITDA margin is 11.8%, indicating a profitable sector.
- Setting into perspective that the key players' liabilities grew only 2% on average during the last 5 years, while their mean debt to equity ratio was 0.99 in 2021, the sector apart from profitable, is also healthy.

The raw materials extraction sub-sector has steadily grown at an annual rate of 3% over the past 5 years

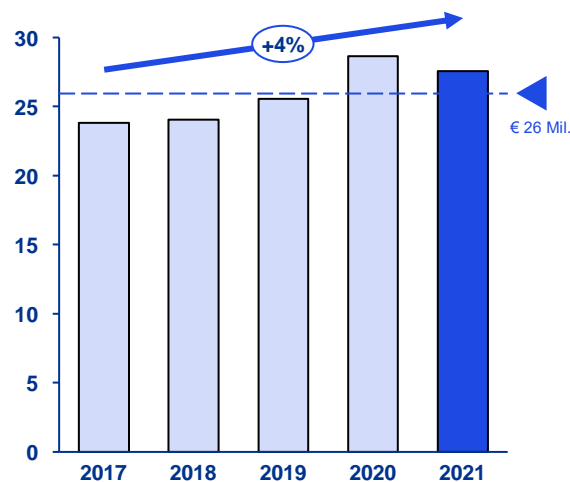


2021 Subsector Market Size

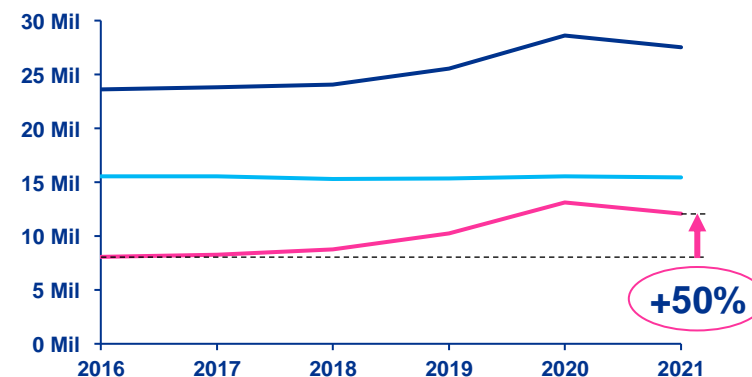
€27.5m

(selected key players revenues)

Market size evolution 2017 – 2021 (mil €)

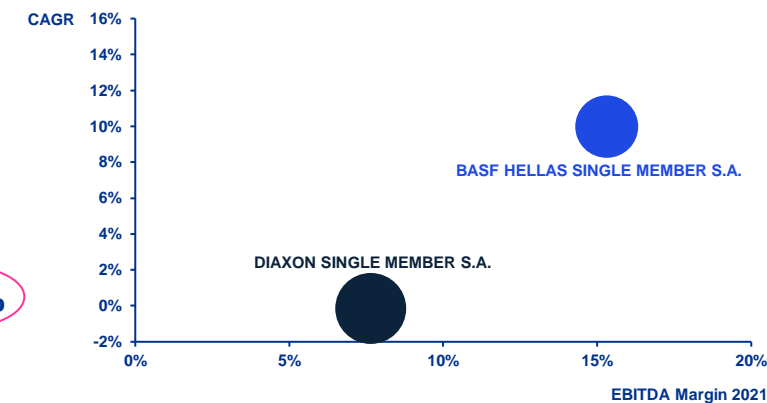


5-year Revenue Growth Trend (€)



— BASF HELLAS SINGLE MEMBER S.A.
— DIAXON SINGLE MEMBER S.A.
— Sub-Sector

Key Players Profitability 2021



- Over the past 5 years, 2 main industrial companies have been identified as the key players of the raw materials extraction subsector, leading to a sectoral revenue increase of 15.7% from 2017.
- DIAXON possesses a slight advantage in the market share, while BASF has increased its market share during the past 5 years by increasing its revenue by 50% in this specific BU.
- The average EBITDA (€) of the selected key players were €1.5 Mil in 2021, while the mean EBITDA margin is 11.5%, indicating a profitable sector.

The raw materials and compound production sub-sector has steadily grown at an annual rate of 7% over the past 5 years

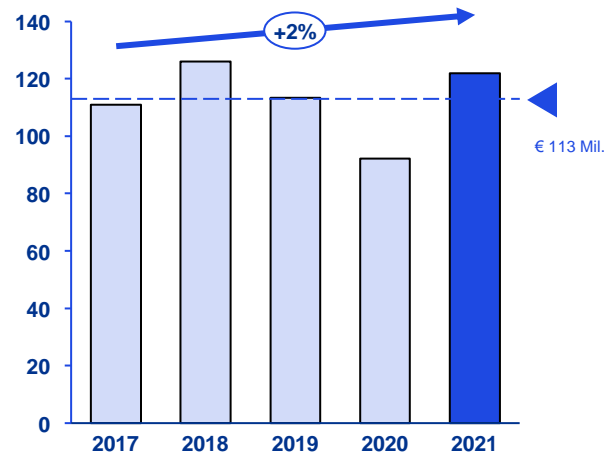


2021 Subsector Market Size

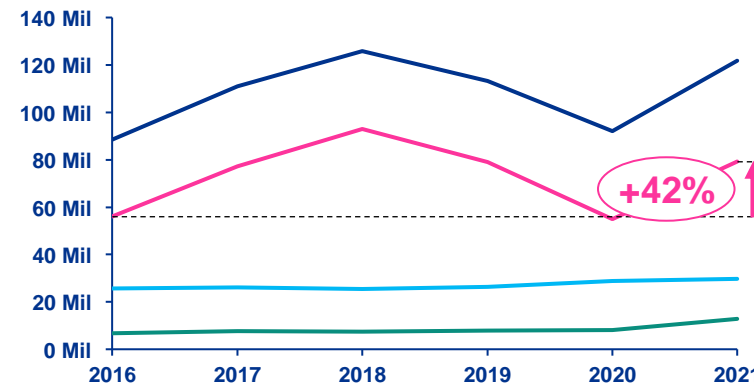
€121.9m

(selected key players revenues)

Market size evolution 2017 – 2021 (mil €)

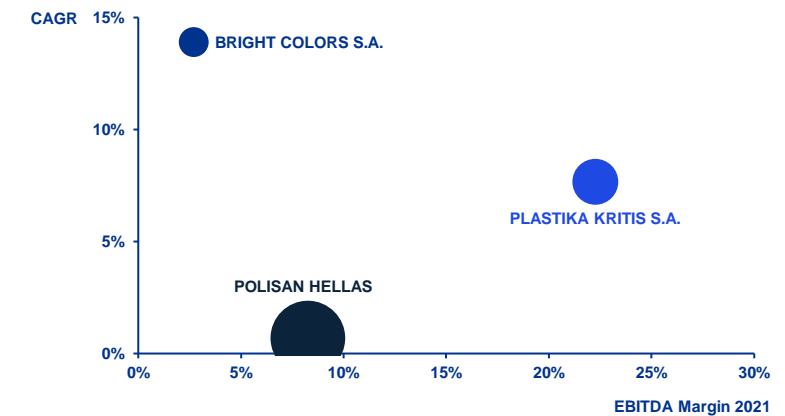


5-year Revenue Growth Trend (€)



— BRIGHT COLORS S.A.
— PLASTIKA KRITIS S.A. (Masterbatches)
— POLISAN HELLAS
— Sub-Sector

Key Players Profitability 2021



- Over the past 5 years, 3 main industrial companies have been identified as the key players of the raw materials and compound production subsector, leading to a sectoral revenue increase of 9.8% from 2017.
- In 2021, POLISAN HELLAS possessed the 65% of the plastics masterbatch and resin market, while PLASTIKA KRITIS BU of masterbatches made up a strong pillar of the subsector, possessing the 25% of the market in 2021.
- The average EBITDA (€) of the selected key players were €4.5 Mil in 2021, while the mean EBITDA margin is 11.1%, indicating a profitable sector.

The processing and distribution of plastics consists the main pillar of the industry, with a CAGR of 8%

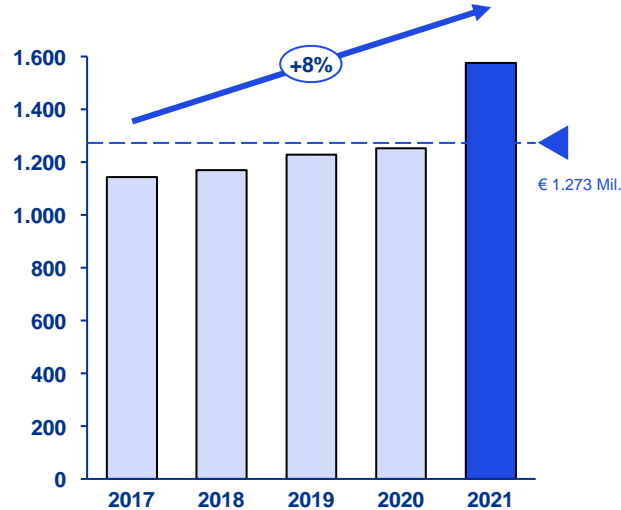


2021 Subsector Market Size

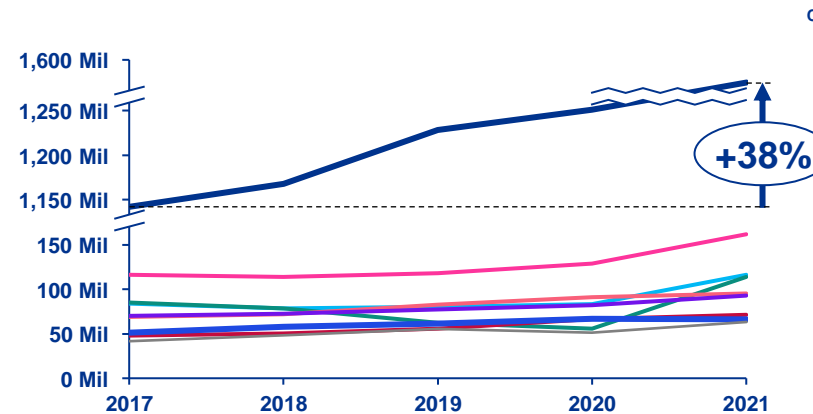
€1,574.2m

(selected key players revenues)

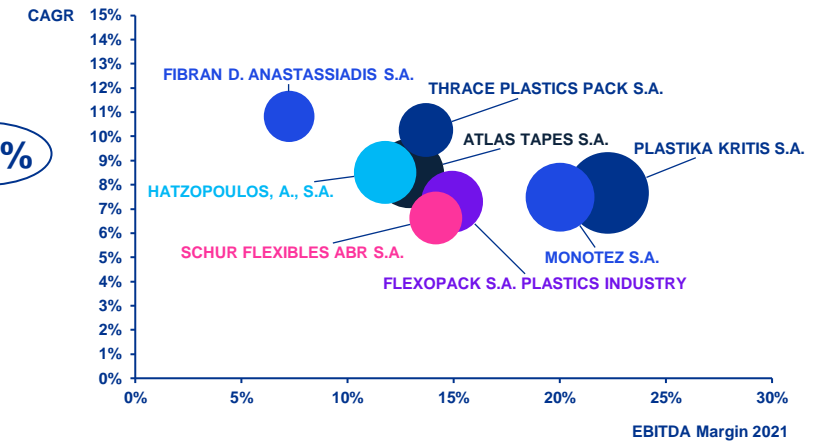
Market size evolution 2017 – 2021 (mil €)



5-year Revenue Growth Trend (€)



Key Players Profitability 2021



- Over the past 5 years, 42 main industrial companies have been identified as the key players of the processing and distribution of plastics subsector, leading to a sectoral revenue increase of 37.8% from 2017.
- In 2021, the top 7 selected companies held 50% of the market, with PLASTIKA KRITIS being the market leader, while the upward path of ATLAS S.A. and MONOTEZ S.A. have driven the sector to a 25% growth in terms of revenue.
- The average EBITDA (€) of the selected key players were €16.2 Mil in 2021, while the mean EBITDA margin is 12.3%, indicating a profitable sector.

The EOL Management and Recycling sub-sector makes up an upcoming link in the value chain with a CAGR of 17%

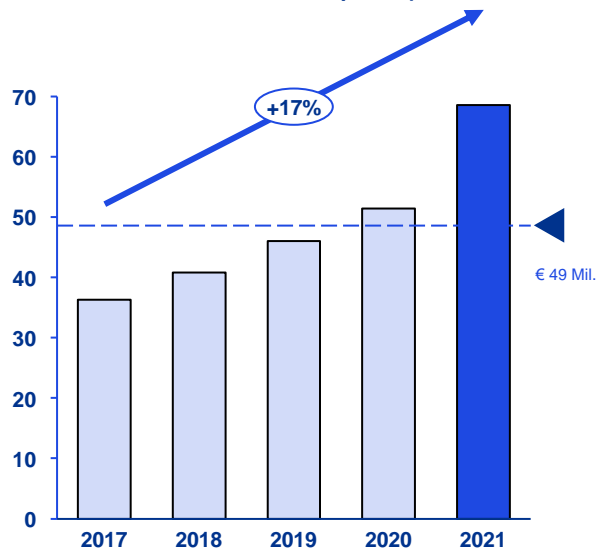


2021 Subsector Market Size

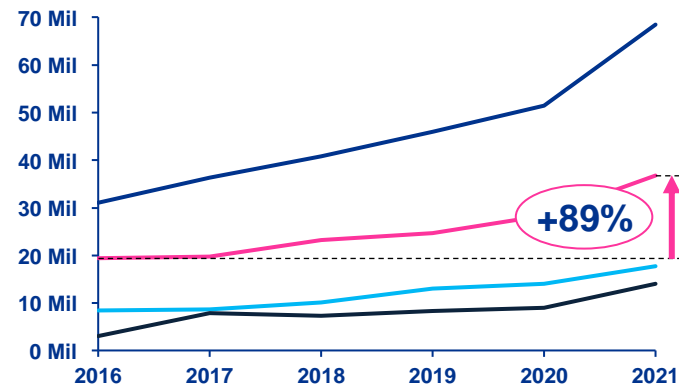
€68.5m

(selected key players revenues)

Market size evolution
2017 – 2021 (mil €)

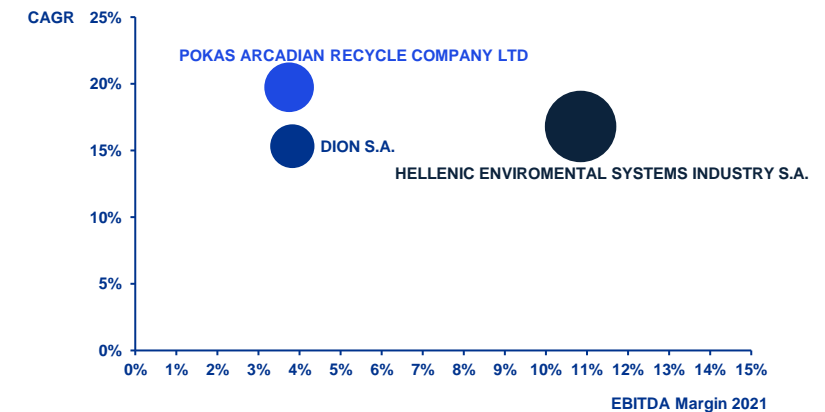


5-year Revenue Growth Trend (€)



— HELLENIC ENVIRONM. SYSTEMS INDUSTRY S.A.
— POKAS ARCADIAN RECYCLE COMPANY LTD
— DION S.A.
— Sub-sector

Key Players Profitability 2021



- Over the past 5 years, 3 main industrial companies have been identified as the key players of the EOL Management and Re-cycling subsector, leading to a sectoral revenue increase of 88.8% from 2017.
- In 2021, HELLENIC ENVIRONMENTAL SYSTEMS INDUSTRY S.A. possessed the 54% of the subsector, marking a 89% growth in revenue during the 5-years span. Along with DION S.A. & POKAS growth during 2021, the sector gained another 33.2% compared to 2020.
- The average EBITDA (€) of the selected key players though were €1.7 Mil in 2021, while the mean EBITDA margin is 6.1%, indicating that the last link of the Plastics Industry value chain is not as profitable as the previous ones.



03

**Local
Market
Insight**



Market experts revealed that the local market is experiencing conventional challenges...

01

Energy Crisis

The energy crisis has hit the industry with such severity, it is threatening organisational competitiveness as well as sustainability. Producers are responding with partial production reduction and even considering the overall suspension of certain production units.

Current loan rates to finance development remain high for the majority of organisations. Additionally, accessing financial aid and appropriate tools are also reported as current obstacles for growth. Moreover regulation doesn't provide sufficient investment incentives compared to other countries.

02

Financing Hurdles

03

Tax Framework

The tax framework, which is characterized by instability and high tax rates, is a significant obstacle to business activity which causes substantial distortions. The most profound example is the VAT exemption given to importers from the European Union countries.

04

Regulation & Consumer Shifts

Regulatory measures and policies restricting the use of plastic products are a major growth hinderance. Additionally, shifting consumer demand to alternative products is another pressure the industry is experiencing.

...but also difficulties in the ESG arena

Market experts strongly support that embedding ESG principles into organisational business strategy is key for the plastics sector. However transitioning to a circular economy poses unique challenges...



Infrastructure Absence



The sector's ability to transition to a circular economy model, heavily depends on the appropriate infrastructure. In this context, improving the Greek waste management system is key. Unfortunately, the current situation is disappointing. Recycling remains low due to lack of infrastructure and public awareness. The efficient waste management and recycling is an important and sustainable solution.



Research and Development



Increasing recycling rates is pivotal for the circular economy transition. Therefore it is key to invest in product design since plastic packaging that contains only one material, from the large family of polymers, is easier to separate in the recycling facilities. Significant research and development has already been achieved. Moreover, develop technologies to reduce energy consumption during the production but also the recycling process is crucial.



ESG Legislation



Governance is crucial for the plastics sector. It is called upon to lead and manage challenges related to the implementation of ESG specific legislation. As ESG principles are relatively new, application is lacking expertise, with plastics leaders called upon to adhere to directives that are constantly evolving.

Nevertheless, they also highlighted various opportunities organisations should take advantage of

01

EOL Management

- Creation of the appropriate infrastructure for the sustainable product and material end-of-life management.
- Implementation of large-scale awareness and educational programs.
- Such initiatives will empower us nationally to achieve the objectives of the European Green Deal targets and accelerate the adoption of the Circular Economy.

02

Industrial Renaissance

- Tension between China and the USA are heading towards the formation of a bipolar industrial world.
- Local organisations in cooperation with European professional bodies should increase efforts in co-shaping the advocacy agenda to the European Union, to create the framework for a European "Industrial Renaissance".

03

Chemical Recycling

- Chemical recycling should be further developed, since it can be utilised as an alternative solution for recycling materials that cannot be processed by mechanical recycling.
- This is a crucial innovation of the plastics industry in becoming more sustainable.

04

Business Models

- It is necessary for Greek entities to have easy and effortless access to the latest information regarding legislation that immediately affects them.
- When information is easily accessible and legislation is revealed, organisations should carry out a thorough assessment of their current business model, products and all the related processes to define required changes.

05

Obligation Enforcement

- Current legislation states that the collection of recyclable materials should be carried out through a sorting system into separate streams at the source.
- Nevertheless, this specific system has been adopted only by a few municipalities nation wide.
- Authorities should further enforce this directive not only through "punishment", but also through incentives.

06

Packaging Redesign

- Product packaging should play an increasing role and specifically designed so that it can be recycled and reused. This will ensure, from the design stage, the required waste prevention.
- Focus should also be given to extending product robustness and life duration for use over multiple times.

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