



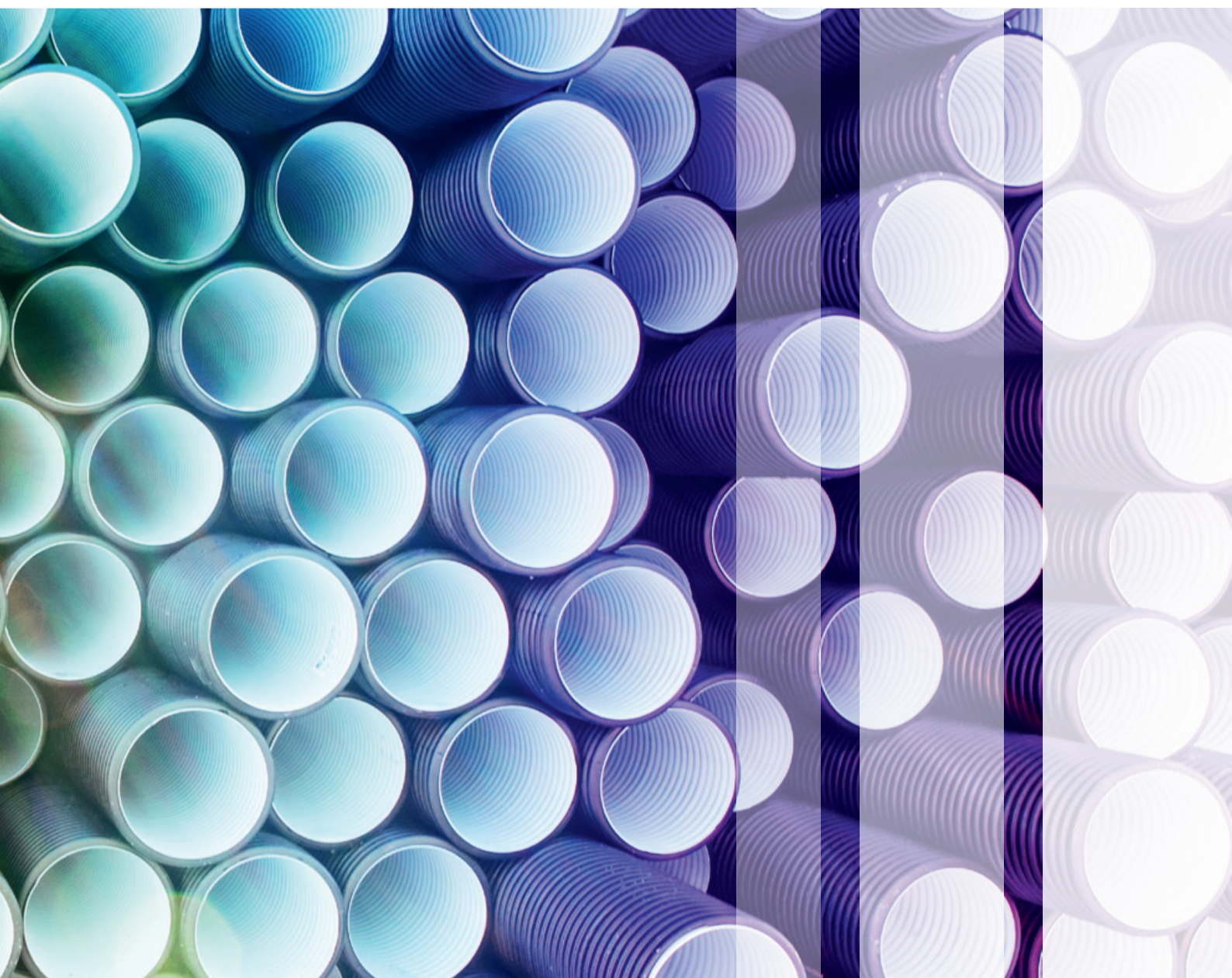
Dr. Wieselhuber & Partner GmbH
Unternehmensberatung



June 2016

Competitiveness of the European Plastics Converting Industry

A European Industry Study



Foreword

Resource efficiency, the circular economy, mass customization, e-mobility ... to name but a few. All of these megatrends have a common denominator: they critically rely on plastics products and components! Thus, the polymer industry is a key building block shaping the future economy as well as the industrial and private consumption. European plastics converters are at the heart of the polymer industry providing innovative products and solutions for various appliances in customer industries.

In recent times, more and more converter company executives state a critical opinion about the competitiveness of the European plastics converting industry. They particularly see the industries' future at risk if market and framework conditions continuously pose threats to the competitive strength of converters. Furthermore, management responses to market conditions, which develop and change at a faster pace become intensely complex. To assess how the industry structure developed recently and how it will develop in the future, plus insights on corporate pattern to cope with changing market conditions are thus a main interest for all stakeholders within the European plastics converter industry.

The European industry study on the "Competitiveness of the European Plastics converting industry" by Dr. Wieselhuber & Partner (W&P) in cooperation with the EU-level trade association of the plastics converting industry, EuPC, is focused on the assessment of the industries' current as well as future level of competitiveness. As one of the largest industry studies with a most representative industry sample, the study clearly showed that a more intense competition and many disadvantageous regulatory framework conditions constitute a massive threat to the competitiveness of EU plastics converters. However, study insights also show that converters can still rely on their strength in efficiency, innovation and customer proximity to maintain their competitiveness.

We very much like to thank all respondents of the industry study as well as the company executives and industry experts being available for the complementary interviews. This in-depth industry perspective is what makes this study unique and most valuable. We wish you a hopefully insightful and inspiring reading of the study.

Munich, June 2016



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Content

Foreword	3
Executive Summary	6
1. Objective of the Industry Study on European Plastics Converters	12
1.1 European Plastic Converter Industry	14
1.2 Objective of the Industry Study	15
2. Empirical Industry Study	16
2.1 Study Design	18
2.2 Industry Sample	19
3. Results of the Study in Detail	22
3.1 Assessment of the Competitive Environment	22
3.2 Assessment of the Regulatory Framework Conditions	28
3.3 Assessment of the Supply Situation	31
3.4 Assessment of the Market and Demand Conditions	34
3.5 Self-Assessment of the Competitiveness of EU Plastics Converters	37
4. Maintaining Competitiveness	40
4.1 Corporate Response to Maintain Competitiveness	42
4.2 Strategic Levers to Maintain Competitiveness	45
Contact	47





Executive Summary

Executive Summary

What is the current level of competitiveness of the European plastics converting industry and how will it develop in the near future? As plastics products are of highest relevance in many industry segments and for the satisfaction of consumer needs, this question is of particular interest. **The European industry study on the “Competitiveness of the European Plastics converting industry”** by Dr. Wieselhuber & Partner (W&P) in cooperation with the EU-level trade association of the plastics converting industry, EuPC, is focused on the assessment of the industries’ current as well as future level of competitiveness.

Based on a large scale-survey with **326 EU plastics converters from 19 European countries** and more than **20 complementary expert interviews** with mostly senior company representatives, managing owners and industry experts, the study provides a unique industry insight. Due to a most adequate match of the sample with the general industry structure in terms of company size, industry segments and country distribution of the EU plastics converting industry, the **results are highly valid and reliable for direct management as well as policy implications.**

The study design follows a basic industry structure model to assess the industries’ competitiveness in terms of the competitive situation, the regulatory framework conditions, the supply situation as well as the market and demand conditions. The analysis is complemented by a self-assessment of plastics converters and a compilation of most important management responses to maintain business competitiveness.

1. EU converters face a fiercer competition with an increase of non-EU competitors entering the EU market. Still EU companies compete mostly with other European plastics converters. However, for more than 30 % of the converters Chinese and Turkish companies are already highly relevant competitors. The common belief among European plastics converters is that the relevance of non-EU competitors will continue to increase and thus further intensify the competitive rivalry in the industry.

To defend their competitiveness and withstand in a fiercer competitive environment, EU converters leverage their innovativeness and customer proximity along with the constant drive for efficiency as market entry barriers wherever possible. The resulting innovative products and solutions are still very competitive in global markets. Accordingly unsurprisingly, also in export markets, EU converters mostly face other EU producers of plastics products as main competitors.

2. The bureaucratic and regulatory framework conditions within the EU are assessed as **mostly stable for plastics converters.** Nevertheless, cost burdens from direct taxes or necessary effort to comply with domestic and EU-driven regulations and requirements have worsened substantially compared to previous years. This development poses a massive threat to the competitiveness of EU plastics converters. Still, most converters expect a further worsening of the situation. As a result, study respondents from large, multinational active converters

assess a shift of their investment focus to outside of the EU. Small and mid-sized converters with a strong regional focus more directly face a decline in their cost competitiveness and sometimes place their longterm business success in question.

3. Assessing the level of **fragmentation of the EU single market**, the study clearly revealed that mostly domestic legislation and slow adoption of EU regulations within the member countries is responsible for **a still not level European playing field**.
4. **European converters have to deal with a twofold supply situation**. The serious disruptions in the availability of basic polymers in 2015 led to a critical assessment of most converters in the current and future reliability of polymer suppliers. Additionally more volatile prices are expected, which also may effect the short term competitiveness of particularly SME converters. Contrary to the situation with basic polymers, the availability as well as the industry cooperation with suppliers of specialized niche products/grades and machine and processing technologies is assessed as mostly positive. Furthermore, close linkages within these industry networks are positively highlighted as a key source for industry innovations.
5. Study results back the assessment of the **EU market as being attractive for most converters and their customer industries**. Apart from emerging non-EU regions with bigger growth options, predominantly attractive for large, multinational converters, the EU markets' attractiveness is driven by stable framework con-

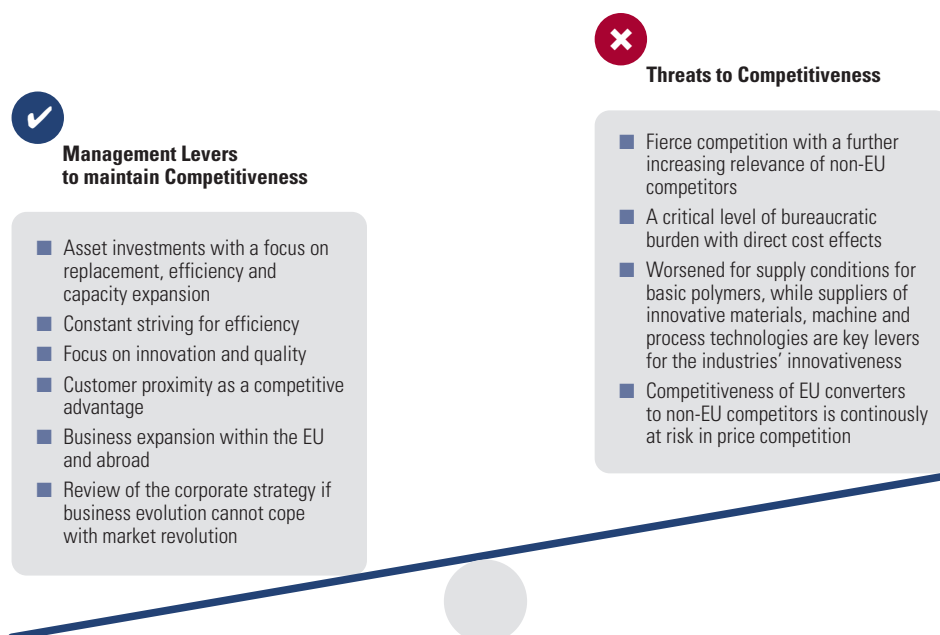


Figure 1: Management levers and threats to competitiveness

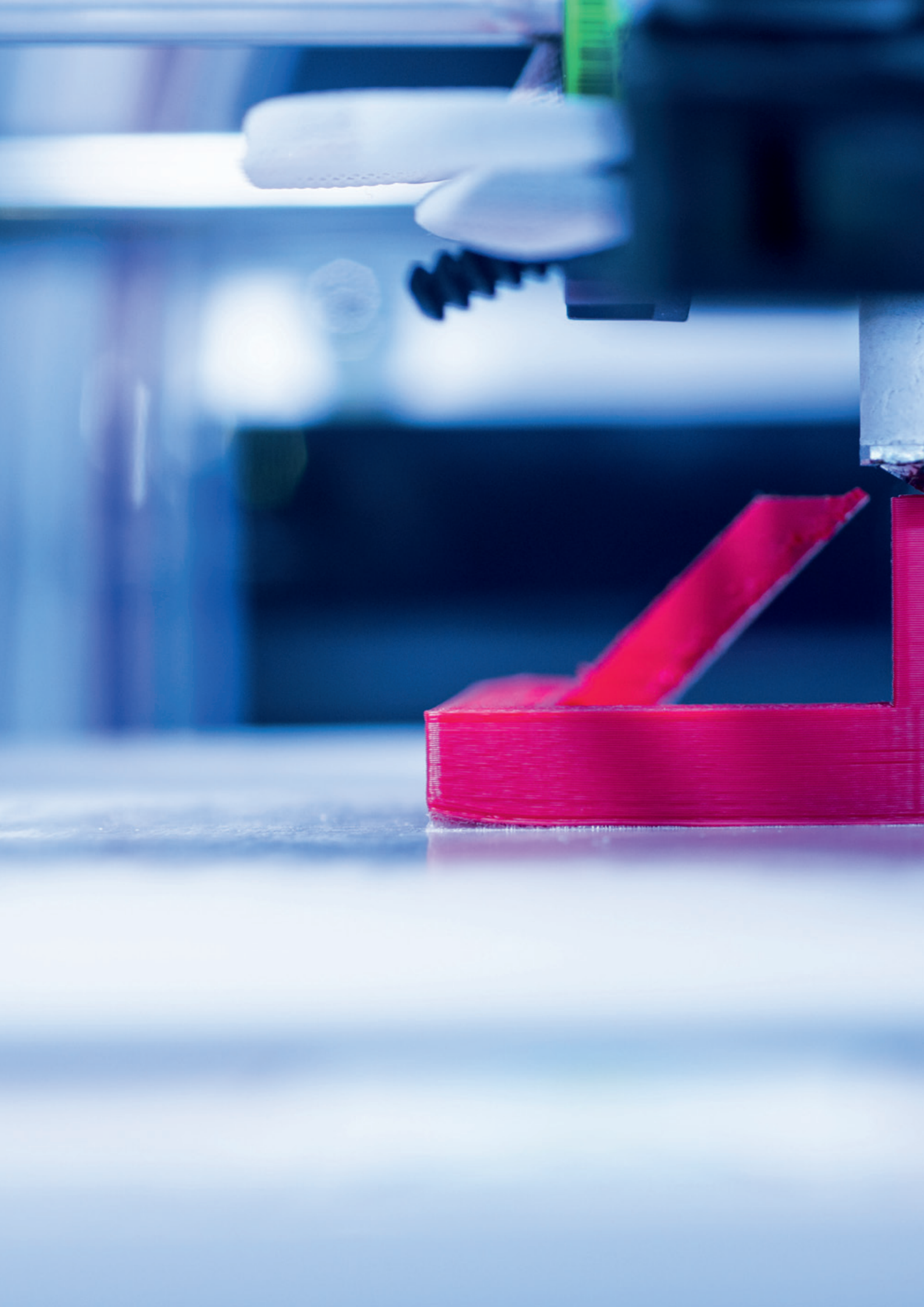
ditions and sufficient growth options for polymer products. EU plastics converters can leverage their main competitive advantages, efficiency, innovation and customer proximity, within such market conditions and defend their competitiveness to global competition.

6. Facing a more intense competition within the European market and threats to their competitiveness from the supply side as well as increasing burdens from the regulatory framework conditions, **EU plastics converters unsurprisingly have a very critical self-assessment of their competitiveness.** Compared to non-EU competition the vast majority of converters assess their competitiveness as worsened in terms of price, energy and labor costs. Contrary to these factors, converters assess their competitiveness as positive and still improving in terms of product quality, complementary service offers and substitutions for non-plastics products. This mixed picture reveals the conflict for most EU plastics converters: being highly competitive at the front-end with customer solutions while struggling to cope with disadvantageous cost structures at the back-end of their business. As a result, converters necessarily need to focus on efficiency and innovation at the same time, compared to many non-EU competitors.
7. To **maintain their competitiveness converters show some clear patterns of management and strategy responses.** Increasing efficiency and operational excellence is the predominant management objective to maintain competitiveness. To offer attractive products and solutions for customer industries, most converters focus and invest in innovation and leverage customer proximity with customized solutions. Additionally options for business growth are on the agenda of the management board together with a critical review of the business strategy, when it seems that business evolution cannot cope with market revolution.

The European industry study shows that the competitiveness of European plastics converters is still on a sound level but more and more at risk:

Fierce competition from non-EU competitors, further increasing cost burdens from policy-driven regulations and duties and a less reliable supply with basic polymers and qualified staff are the key factors diminishing the industries' competitiveness. However, a constant drive for efficiency and operational excellence as well as innovation and customer proximity are the key corporate levers to maintain the competitiveness on converting businesses.

Accordingly, the mix of a more cautious industry policy on the domestic as well as the EU-level combined with tailored and ambitious strategic management responses is the answer to maintain the competitiveness for European plastics converters to global competition.



A blue-tinted photograph of a factory interior. In the foreground, a red textured object is partially visible on the left. The background shows industrial machinery with various components, including a large cylindrical part and a circular light fixture. The overall scene is dimly lit, with a strong blue color cast.

1

Objective of
the Industry Study on
European Plastics
Converters

1 Objective of the Industry Study on European Plastics Converters

1.1 European Plastic Converter Industry

Megatrends like resource efficiency, the circular economy, mass customization and e-mobility all have a common denominator: they critically rely on plastics products and components. Thus, the polymer industry is a key building block to shape the future European industry and economy. European plastics converters are at the heart of the polymer industry providing products and solutions for various appliances in customer industries. Further, plastics converters together with the machine and process technology industry and polymer producers are main drivers for innovation in their customer industries.

Main Industry segments of EU plastics converter:
Packaging
Building & Construction
Automotive
Technical Parts
Consumer Goods
Agriculture

Unlike many other industry segments of comparable size and relevance the European converting industry is mostly made up of small- to medium-sized companies. Further, the industry is widely spread among the European countries following an often regional consumption of its products. As a result, many converters are located outside of big industry hubs within the EU and bring industry relevance and employment into regions beyond major cities. Accordingly, the European plastics converting industry with its close to **50.000 companies**, employing roughly **1.6 million people** and creating annual sales of **more than 280 billion €** is a critical backbone of the European economy.

With its roots in a big industry value chain, plastics converters are positioned somewhat in a sandwich between a highly consolidated polymer supply industry and multinational customer industries, like food, consumer goods, construction and automotive. Further, the converting industry itself has relatively low market entry barriers in basic appliances and thus is highly competitive. The ability to successfully conduct business in this environment is driven by the overall competitiveness plastics converters. The **key factors driving competitiveness** can be described in a basic industry structure model including the competitive situation, the regulatory framework conditions, the supply situation as well as the market and demand conditions.



Figure 2: Industry structure model

1.2 Objective of the Industry Study

Based on the industry structure model the competitiveness of European plastics converters shall be assessed. The main interest is on the current level of competitiveness of the European plastics converting industry and how it will develop in the near future. The study design and the assessment of competitiveness is aligned to hypothesis on the **potential major threats** to the industries' competitiveness:

- A fiercer competition among European converters and non-EU competitors entering the market.
- Disadvantageous regulatory framework conditions with a still fragmented European single market and critical cost burdens from taxation and regulatory compliance.
- A less stable feedstock supply and more volatile polymer prices in future, as well as worsening access to machine and process technologies and qualified staff.
- Unfavorable market and demand conditions in Europe for plastics converters.

Hypothesis on threats to the competitiveness of EU plastics converters

The study will assess these hypotheses based on a direct industry opinion from European plastics converters. Further, insights shall be derived as to how EU converters self-assess their competitiveness and what are the management responses on a corporate level to maintain competitiveness.

As a result, the study shall provide a sound basis for sustaining corporate responses of EU plastics converters to secure their competitiveness and maintain their position as a key driver for innovation at the heart of the European polymer industry.

Further, it shall provide a sound and neutral basis for any policy implications to further strengthen and improve the framework conditions for a successful future of European plastic converter industry.



The background of the slide is a close-up, top-down view of crumpled paper. The top half is dominated by bright yellow paper, while the bottom half is dominated by bright green paper. The crumpling creates a complex, textured pattern of folds and shadows. In the lower right quadrant, a small portion of white paper is visible, partially obscured by the green paper.

2

Empirical Industry
Study

2 Empirical Industry Study

2.1 Study Design

The study design followed the objective to capture a most adequate and representative picture of the European plastics converter industry. Therefore it was designed as an integrated three-stage survey.

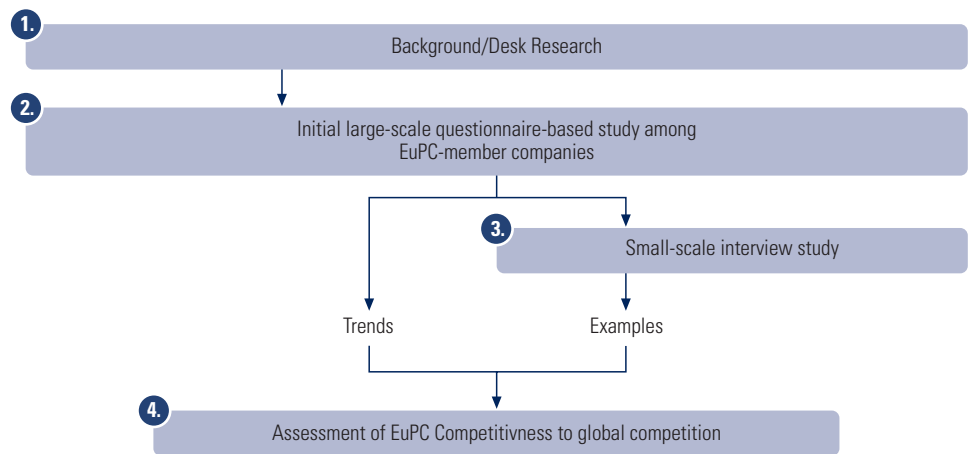


Figure 3: Industry study design

The first stage covered background analysis and desk research on key drivers of the industries' competitiveness. The results were used to develop the questionnaire for the large-scale survey. An initial draft of the questionnaire was discussed and fine-tuned with industry representatives. The final questionnaire was translated into 8 different languages to ensure a minimized barrier for participation and make it most convenient for converters to participate.

Multi-lingual online-Survey with the questionnaire available in 8 different languages:

English
Italian
German
French
Spanish
Dutch
Polish
Turkish

The questionnaires of the large-scale survey were available online for 8 weeks between mid January and mid March 2016. The acquisition of converters to participate was organized by EuPC and an invitation was distributed via national industry associations to their member companies. Additional reminders to participate in the survey were sent during the field phase of the study.

The online-questionnaire was necessarily focused on the assessment of most relevant issues. The objective was to investigate industry trends in their current state and their expected future development. Further information explaining driving factors and business effects for plastics converters were captured with the complementary interview study. The Interview study was conducted with participants of the large-scale online survey and additional industry experts. The interviews were based on a semi-structured guide including already preliminary results from the online survey to be discussed with company executives and experts. The interviews were conducted in March and April 2016. The average duration of the interviews was 45-60 minutes, regardless whether conducted in person or via telephone.

2.2 Industry Sample

In total **326 European plastics converters from 19 EU countries** participated in the large-scale survey and filled out the online questionnaire. However, not all respondents answered every question but noted the available outside option “not applicable/no answer”. As a result the available observations per question were below the total number of respondents, with more than 200 valid responses for the majority of the questions.

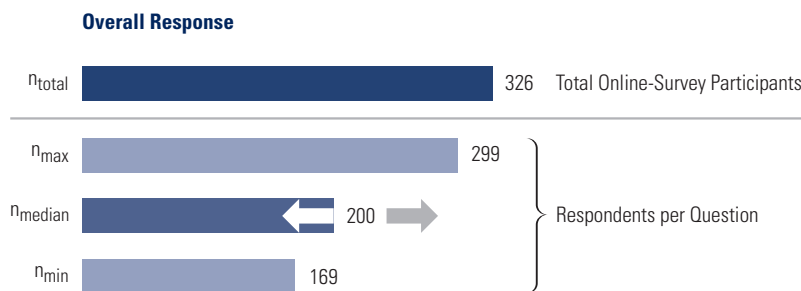


Figure 4: Total study respondents

The sample covered in the online survey represents the industry structure most adequate. 54 % of survey respondents have their headquarters in Italy, Germany, France and Spain. Together these countries also account for about 56 % of the annual quantity of plastics being converted within the EU.

The industry sample of the study is most adequate and represents the industry structure in product segments, country relevance and company size

Study respondents in company size are also a good representation of the heterogeneity of the European industry. The majority of plastics converters in Europe are small to medium sized companies. Accordingly the sample with about 74 % of small-to medium-sized companies is an adequate representation of the industry. The segmentation was made according to annual sales and thus different to the eurostat-segmentation following persons employed. To have a more adequate distinction between small and medium-sized converters the following grouping criteria for company size with annual sales was applied: Small companies: <20 mill. €, mid-sized companies: 20-100 mill. €, large companies: >100 mill. €.

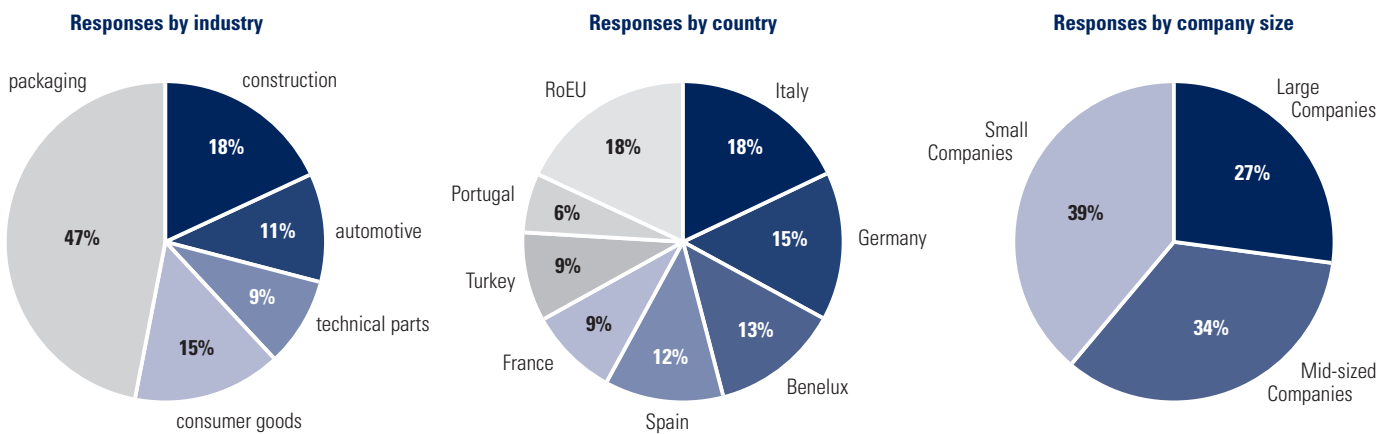


Figure 5: Industry sample structure

Managing partners or senior executives from plastics converters were interviewed for the complementary small-scale study

The affiliation of survey respondents to industry segments is adequate to the actual industry structure: Packaging and construction being the largest segments followed by consumer goods and automotive.

For the small-scale study **21 complementary interviews** were conducted with 18 executives from plastics converters and 3 industry experts from specialized consultants to the industry and national industry associations. The interviewees represented plastics converters from 10 different EU countries (Germany 4, Spain 2, Belgium 2, Netherlands 2, Austria 2, Greece 2, UK 1, France 1, Poland 1, Italy 1) and were predominantly active in rigid or flexible film production for various applications and the packaging industry.

The presentation of results follows the objective to give an adequate picture of the competitiveness of European plastics converters with the most relevant facts. Accordingly, the results of the large-scale survey are presented jointly for all responding converters. Whenever significant differences between respondents from different industry segments, regional origin or company size are observed, additional information on the differences is given.

The industry study with the combined respondents from the online survey and the interviews provides a most adequate cross-section of the European plastics converting industry. Any results can be taken as a representative picture of the current state of the industry and thus provide a sound basis to derive relevant implications for policy as well as management actions for European plastics converters.

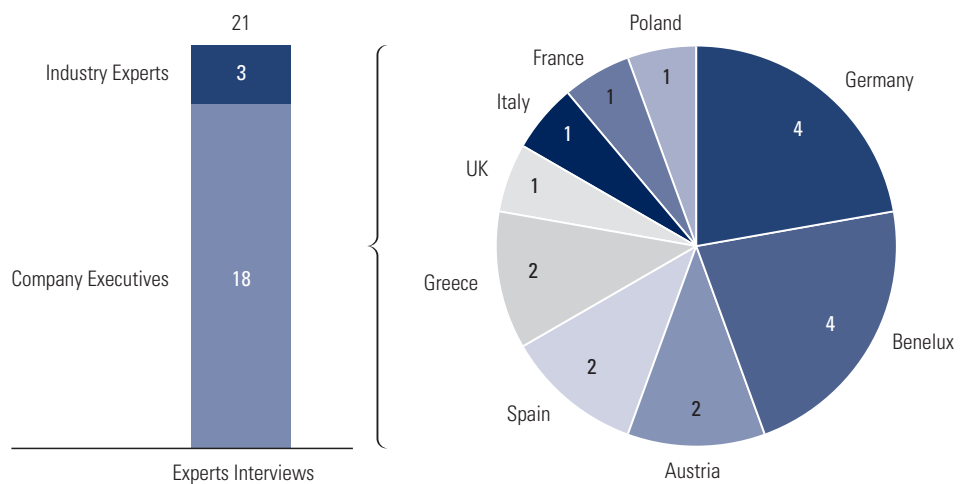


Figure 6: Experts interview sample





3

Results of the Study
in Detail

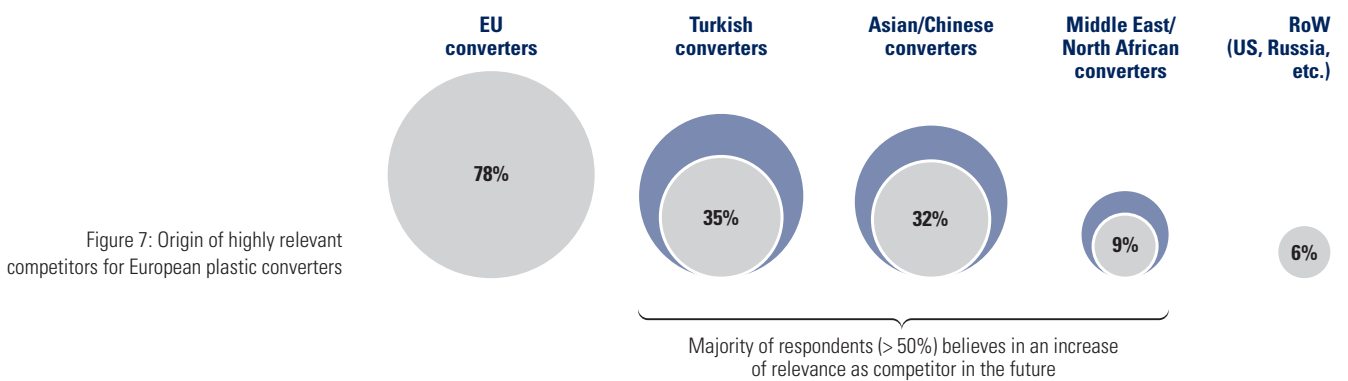
3 Results of the Study in Detail

3.1 Assessment of the Competitive Environment

Due to the maturity of the polymer industry in Europe, plastics have always been a highly competitive environment. Today the European converter industry is active in a globalized competition. Only a relatively small number of converters is active in products, where shipping incurs prohibitive costs, e.g. lightweight rigid packaging containers and bottles with large volumes. For these products proximity to customers is a prerequisite and oversea imports do not make sense. Nevertheless, for the majority of converters competition with importing converters is daily business.

However, the study shows that for all companies European converters are still the largest group of direct competitors. The inner European competition has even become more intense in recent years. Particularly converters from Eastern Europe largely invested in most modern production capacity can leverage cost advantages along with innovative customer service solutions.

For about one third of the European companies Turkish and Asian/Chinese converters are already highly relevant importing competitors. In particular, Turkish converters are very active in the European market, due to a mostly saturated domestic market, cost advantages and the regional proximity. Accordingly 85 % of the companies assess the European market as being relevant or highly relevant for Turkish converters.



In the future a more fierce competition with more market participants is expected by the majority of European converters. The driving force is the further increase of relevance of Turkish and Asian converters. Additionally converters from the Middle East and North Africa are expected to increase in relevance in the future, due to substantial advantages in feedstock supply and production costs. Nevertheless, only 8 % of the companies assess converters from these regions as relevant competitors today.

Taking an industry perspective, the assessment of the current as well as the future competition from importing converters differs somewhat from the general perspective: Nearly all industry respondents expect an increase in relevance from Asian converters, with technical parts being the exemption. New competition from Middle East/North African converters is expected as relevant by companies being active in packaging, automotive and technical parts.

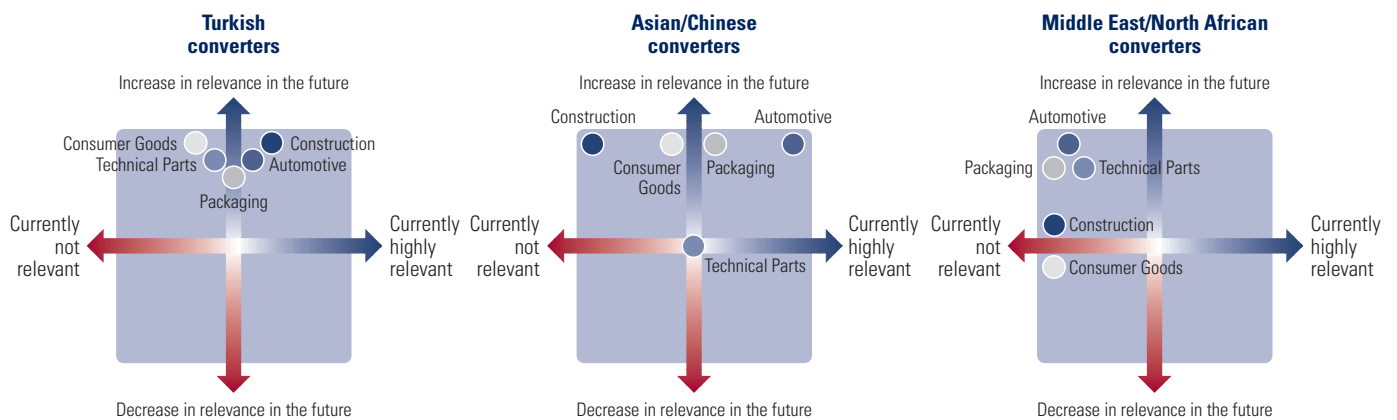


Figure 8: Industry perspective on the current and future relevance of importing converters

However, the more intense competition with a growing number of competitors is not the biggest threat to the competitiveness of European plastics converters. It's a growing competitive maturity of importing converters mostly from Asia, by increasing customer proximity.

Threat to competitiveness

Still, the predominant pattern of competition from importing converters is the offering of cheap commodities via European agents. Substantial and sometimes grant-aided advantages in costs for feedstock and production entirely cover shipping costs and import taxes. As a result importers imply a "next-door" competition for commodity products in Europe. The main disadvantage of this business approach is the focus on large quantities and a sometimes rather inflexible supply. As a result importers adjust and invest in local storage capacities for their basic products.

Competitive Maturity of importing converters

A second dimension of competitive maturity develops with the product solutions. As seen in other industries, e.g. electronics, machine engineering and automotive, Turkish and Asian converters will also enter the competition in high quality products as well as polymer-based systems and solutions for customer industries. The estimated timeline for this growing maturity of producers is seen by somewhere between 3-5 years in innovative product areas.

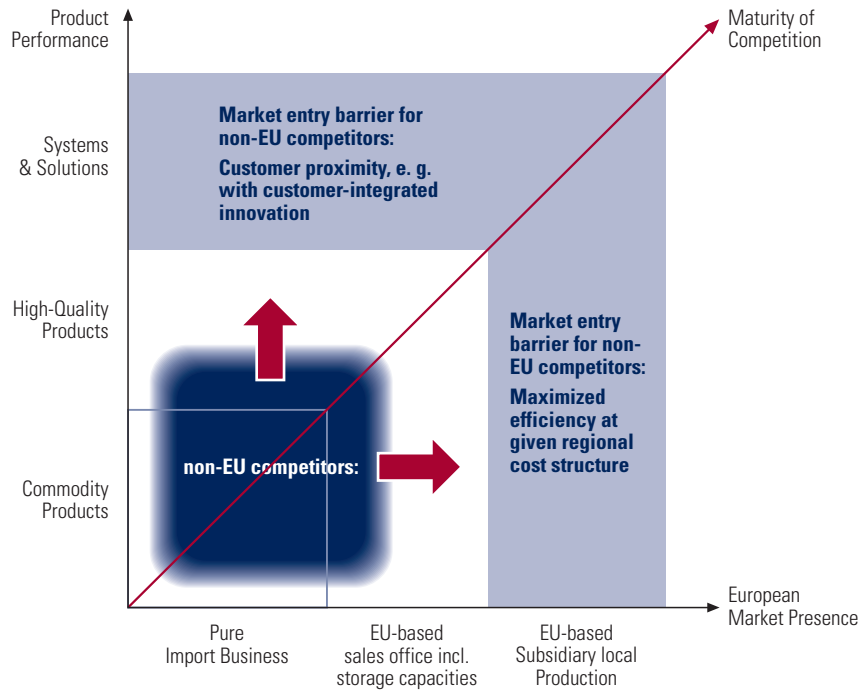


Figure 9: Competitive maturity of plastic converters

The necessary reaction of EU converters is a matter of common knowledge:

- Innovation**
- Customer proximity**
- Efficiency**

Innovative products from European converters make the EU a net-exporting region

As a response to this development, survey participants emphasized the common knowledge for the preservation of competitiveness for European converters: Further enhancing customer proximity with innovative products as well as flexible supply solutions and a constant drive for efficiency.

Based on their high-quality products and solutions, European plastics converters have a competitive edge relevant also beyond the European market. Accordingly Europe is a net-exporting region for processed plastics. From a company perspective the study revealed that most European converters’ export activities follow their customers. Being medium to small companies, most converters do not pursue export activities with their growth targets. But if customers invest abroad or as large multinationals have global subsidiaries, converters enlarge their business with those customers and export to their global sites. Accordingly competition in export markets follows the comparable pattern as in the EU market. As shown below, other European converters are the most relevant group of export competitors. Turkish as well as Asian/ Chinese converters follow in relevance as seen in the European market.

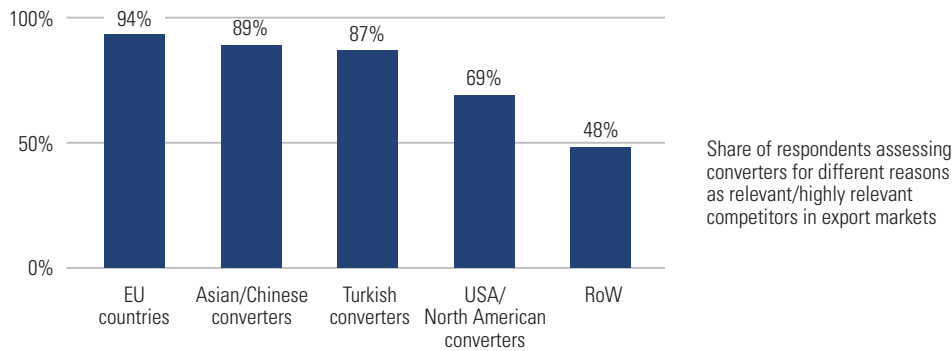


Figure 10: Origin of competitors in export markets

The competitive environment of European plastics converters is very challenging. In a mature market, competition has always been very intense among EU converters. Importing competitors from Turkey and Asia further increase competition mostly in already price-aggressive market segments. EU converters need to be aware of competitive advantages of importing converters in costs and a growing competitive maturity, which endangers their still strong position in the European market.

3.2 Assessment of the Regulatory Framework Conditions

The level of fragmentation is somewhere between 40-60% of a perfectly harmonized EU single market

The overall regulatory framework conditions within the European single market are assessed as constant compared to previous years and also in their future development by the majority of respondents and interviewed industry experts. This perception did not change from a national or from an industry perspective.

Study respondents answered that compared to previous years, conditions

- improved 12 %
- **remained constant 61 %**
- worsened 27 %

Further, study respondents answered that conditions in the future will

- improve 15 %
- **remain constant 55 %**
- worsen 30 %

Fragmentation is mostly pushed on a national level, sometimes in contrary to EU-driven harmonization

However, the level of fragmentation from domestic legislation, regulations and by-laws, driving the framework conditions, is assessed as too high and still far from a perfectly harmonized European single market. The root cause for this fragmentation can be found within the member states. EU legislation, by nature aiming at a legislative level playing field, is slowly or sometimes even not adopted to national law by the member states. Other factors further pushing the level of fragmentation are different domestic by-laws and authorities charged with the enforcement of legislation. Thus, companies need to adjust to these differences within the EU market with additional administrative effort. Key drivers for this fragmentation on a national level are different requirements for consumer safety, the use of raw materials, for processing technologies and approvals to sell different plastic products.

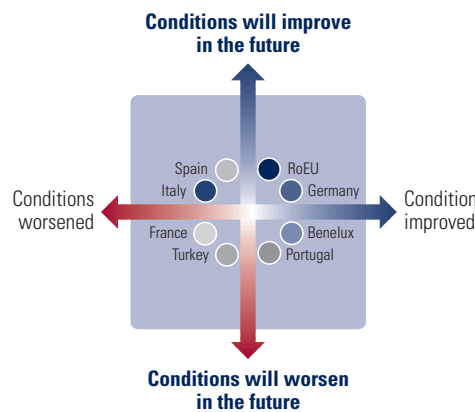
Accordingly the perceived change in the level of fragmentation differs quite substantially between respondents from different countries. Looking at the current level of fragmentation and whether it improved or worsened compared to previous years, the Benelux countries, France and Spain differ most from the general assessment.

The Spanish plastics converting industry is most divergent in its assessment of the regulatory framework conditions. More than one out of four Spanish converters (26 %) perceives conditions to have improved within the regulatory framework for doing business. Nearly the same share of converters perceives conditions to have worsened (29%). One has to note, that in particular Spain still copes with the massive economic crisis and that converters obviously benefit very differently from the slight economic recovery.

Within the Benelux countries and France only one out of sixteen companies follows the positive perception of changed conditions. Further, Benelux countries also differ in their perception of worsening conditions to the general assessment. Only 17 % of converters from Benelux perceive worsened conditions, compared to the negative assessment from 27 % of the converters in the total sample.

Further, Benelux countries also differ in their perception of worsening conditions to the general assessment. Only 17 % of converters from Benelux perceive worsened conditions, compared to the negative assessment from 27 % of the converters in the total sample.

Figure 11: Assessment of the overall regulatory framework conditions by country



The perceived change in the level of fragmentation differs between converters from different EU countries

The expected future development of framework conditions differs most in Germany, Italy and again in Spain compared to the general assessment. In Germany only 6 % of the converters expect improved conditions in the future compared to the 15 % of the total respondents. Contrary to this 20 % of Italian converters expect improved conditions. The share of companies expecting worsened conditions in Germany (33 %) and Italy (28 %) is close to the share of all respondents with 30 %. Here Spain is the exemption with “only” one out of five companies expecting conditions to worsen in the future. Again, the most recent economic crisis will have influenced this assessment.

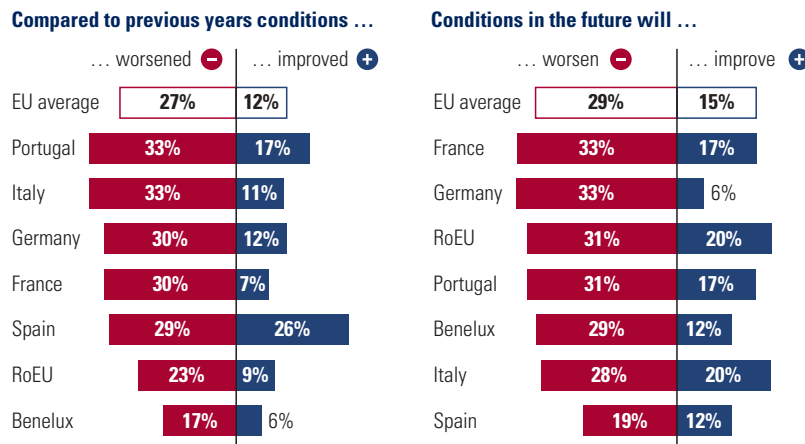


Figure 12: Assessment of the regulatory framework conditions by country

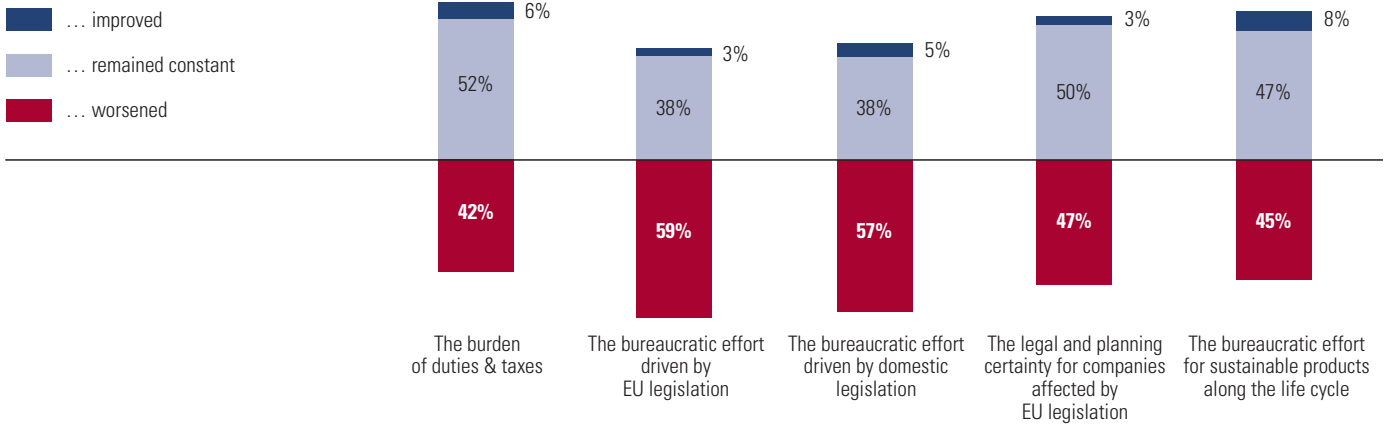
A direct threat to the competitiveness of European plastics converters comes from the high level of bureaucratic effort and taxes, resulting from complex regulatory framework conditions. Unsurprisingly but nevertheless well-founded, converters criticize this high level of expenses they have to incur. Typically they are substantially higher, compared to costs of importers and non-EU producers of polymer products.

For nearly half of the converters participating in the study, the burden of duties and taxes increased over the last years (43 %). For 52 % the level of duties and taxes remained constant on a critical high level. Accordingly, only 5 % have seen an improvement in the cost burden from regulatory framework conditions. The drivers behind such costs, the necessary bureaucratic effort is equally driven by EU as well as domestic legislation, based on the respondent’s assessment. Thus, the majority of converters have the perception that the tax and bureaucratic effort from EU (59 %) and national (57 %) legislation increased compared to previous years.

As shown, the necessary effort driven by domestic legislation is mostly coming from slow or heterogeneous adoption of EU regulations alongside with additional national regulations for companies. The EU administration itself is also a driver of bureaucratic effort for converters with a constant expansion of the regulatory framework. Particularly this continuous development of additional legislation is seen as a threat to the legitimate expectation for converters’ business activities within the EU. Company representatives from some of the multinational active converters participating in the interview study, mentioned scenarios for a dislocation of business assets from Europe due to an ongoing increase of the regulatory burden.

Converters perceive the ongoing expansion of the regulatory framework as a threat to the legitimate expectation for their business in the EU

Compared to previous years conditions ...



Conditions in the future will ...

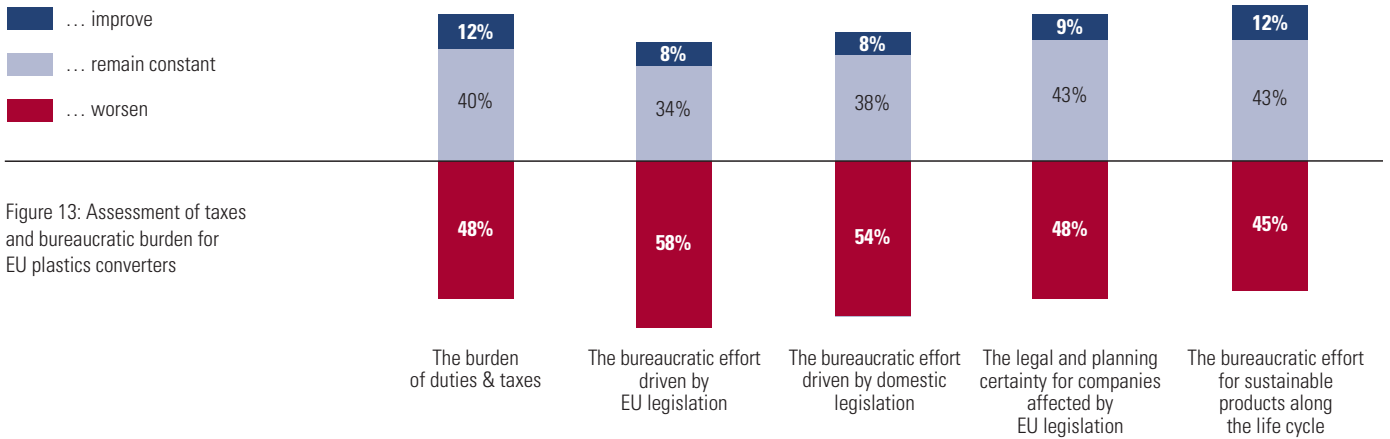


Figure 13: Assessment of taxes and bureaucratic burden for EU plastics converters

Although the bureaucratic burden for companies has always been ranked high and placed prominently on the agenda of policy discussions, most converters still expect a further increase in the necessary expenses and thus, a still worsening situation in the future. In detail, study respondents assessed that the burden from taxation and bureaucratic efforts in the future ...

- will improve 10 %
- will remain constant 39 %
- **will worsen 51 %**

Asked for a comparison to other regions in the globalized economy, multinational active converters responded, that the regulatory framework conditions in the EU are comparably higher than in the US for example, or in Asia. Thus, they constitute a lower competitiveness of the EU market. Nevertheless, for Asia it was mentioned that despite a lower level of regulation, there is also a lower level of accountability of authority actions.

The results of the companies' assessment of the regulatory framework conditions are a clear indication for a threat to the competitiveness of EU converters. The intense competitive environment demands the highest focus on defending the current level of competitiveness from European plastics converters. A still further increase of bureaucratic burden and necessary effort to comply with regulatory requirements weakens the ability to apply this focus and preserve the industries competitiveness. Accordingly, policy makers on a EU and a national level should be most cautious about the industries' perspective, when refining economic policy in the future.

3.3 Assessment of the Supply Situation

As a converting industry, plastics processing companies critically rely on three types of supply:

- Supply of feedstock
- Supply of processing technology and machines
- Supply of skilled labor force

The supply with some basic polymers was subject to massive disruptions in the last year. On the one hand there was the temporary critical shortage in the supply of PE and PP alongside with highly volatile prices as a major shock for the European industry. On the other hand European producers of PVC were subject to a fundamental industry consolidation, with changes of ownership and industry structure over the last two years. As these three types of polymers together constitute about 60 % of processed plastics in Europe, these disruptions had an effect on the assessment of the supply situation by European converters.

Accordingly 60 % of the converters see a worsened supply of basic polymers compared to previous years. Further, 39 % of the converters expect a further worsening of the supply situation in the future. The effect for European converters differs mostly by company size. Large, multinational converters start to actively evaluate options for global sourcing or a dislocation of production facilities towards thriving global hubs of the petrochemical and upstream industry. Small to medium-sized converters cannot easily enter a globalized sourcing of polymers and also have a lock-in effect with their operations footprint within the EU. These companies, being the majority of European converters, face a substantial threat to their competitiveness from a less reliable and more volatile supply of feedstock.

The 2015 supply shock is a threat to the competitiveness of mostly large converters in the EU and still a critical challenge for small to medium sized multi-national companies

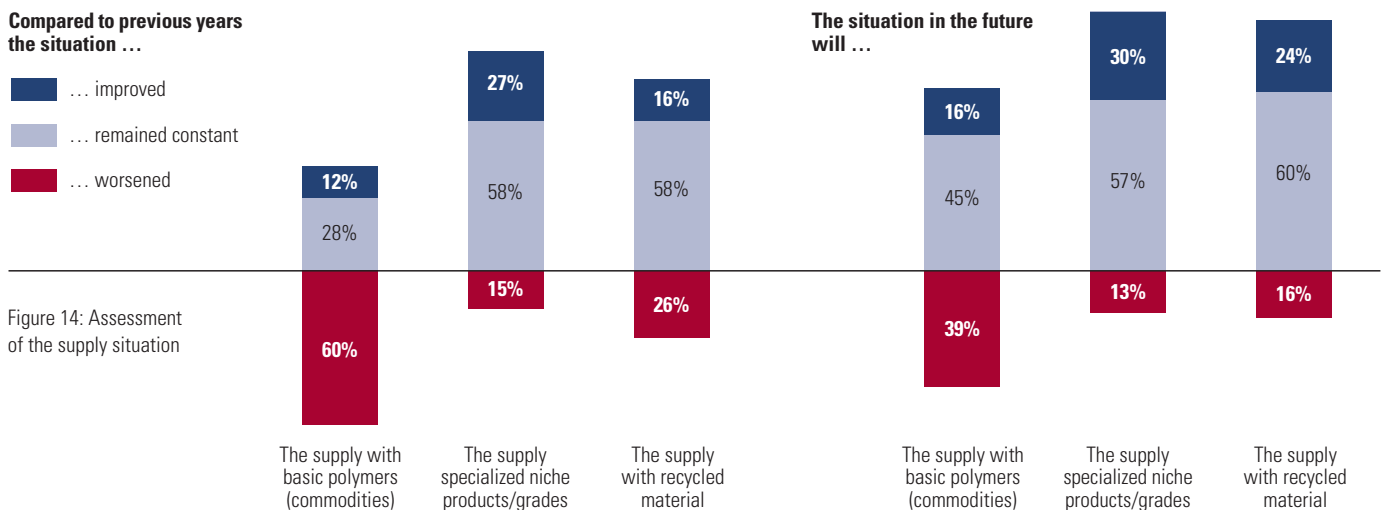


Figure 14: Assessment of the supply situation

Figure 15: Assessment of the supply with basic polymers by company size



Figure 16: Assessment of the supply with niche products by company size



The picture is different for the supply of specialized niche products and grades. The situation is assessed as mostly constant or improved compared to previous years by nearly 85 % of the survey participants. The picture is comparable for the supply of recycled material, with three out of four companies assessing a constant or improved situation. Nevertheless, 26 % of the converters see a worsened supply for recycled material compared to previous years and thus, a threat to initiatives for a circular economy in plastics apart from energy recovery.

New and innovative materials are mostly developed in close cooperation between converters and polymer suppliers

New and innovative materials are one of the key drivers for converters to develop innovative plastics products. Accordingly access to such materials is crucial for converters to remain competitive. The direct market access to such innovative materials is assessed as constant or improved by 72% of the converters. In some cases even more relevant for a single company, is the joint specification or development of innovative materials with suppliers. Somewhat different to the perceived eroded partnership of suppliers and converters in basic polymers, still 81% of the companies assess development cooperation with suppliers as positive.

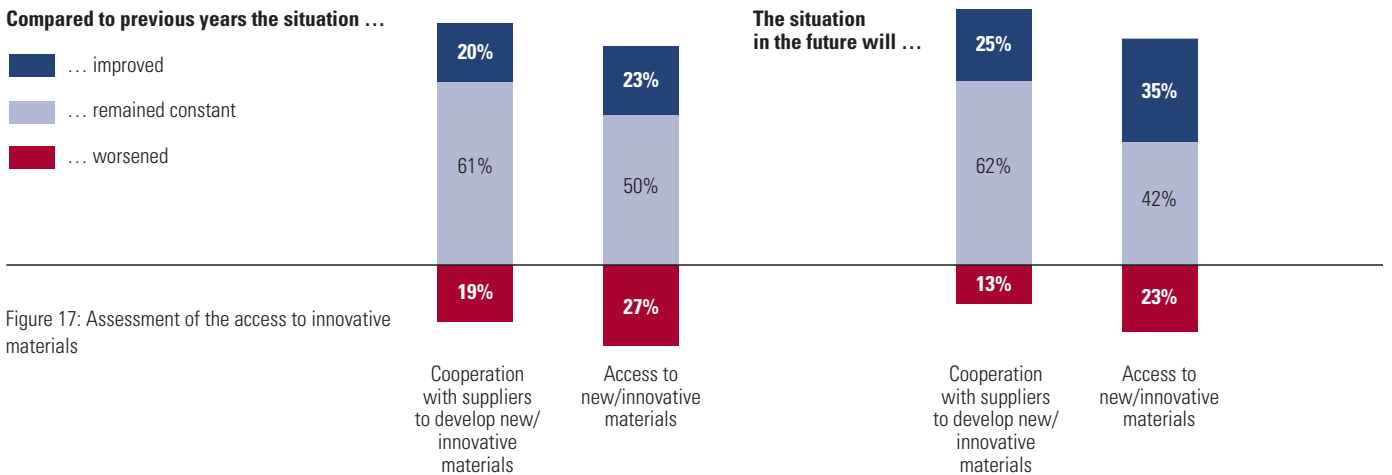


Figure 17: Assessment of the access to innovative materials

Producers of machine and processing technologies are seen as the dominant driver of innovation in the industry

Like plastics converters, European producers of processing machinery and technologies face a comparable threat to their innovativeness from global competition and a commoditization of their products. The close linkage between converters and the machine industry is thus crucial to maintain competitiveness for either side. Accordingly, only an absolute minority of less than 5 % of the converters sees a worsened cooperation compared to previous years or in the future.

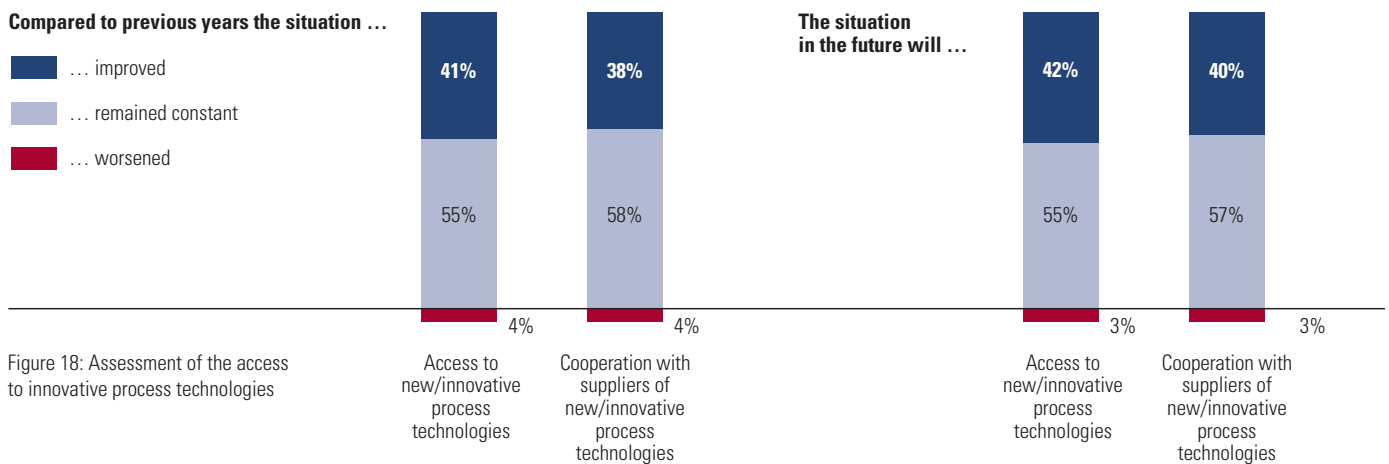


Figure 18: Assessment of the access to innovative process technologies

The maintenance and further development of a skilled labor force is critical to the competitiveness of European converters. Due to the EU economic crisis, the framework conditions on the domestic labor markets differ largely between EU countries. Accordingly, the assessment of the supply situation differs between southern and central European countries. Regions still facing a high rate of unemployment, provide much less difficulties for converters to attract and develop a skilled workforce. For Germany, France and the Benelux countries, the maintenance and development of skilled staff is already today difficult. Again, the majority of small to medium sized companies faces bigger problems, as they have limited options to attract staff, e.g. with employer branding like big and better known converters.

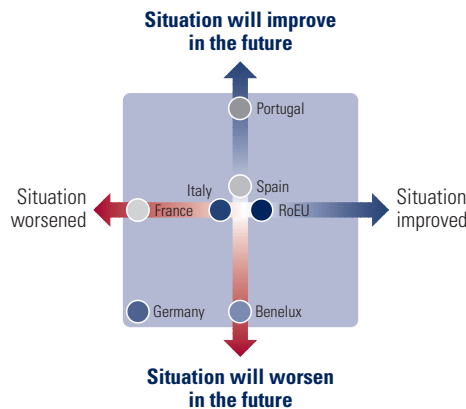


Figure 19: Assessment of the access to skilled staff by regions

The overall supply situation for European converters has become more difficult. In particular smaller companies are largely effected by a worsened supply of basic polymers. Nevertheless, the competitiveness of EU converters mostly depends on their innovativeness, with the two main supply levers, innovative materials and processing technologies. Here, the traditionally close relationship between material and machine suppliers together with converters prevails. As partners within an integrated value chain, they mutually rely on innovation to remain competitive beyond commodity markets.

To defend their competitiveness European converters need to further engage in joint innovation with suppliers, both in materials and in processing technologies

3.4 Assessment of the Market and Demand Conditions

The competitiveness of European plastics converters in the front end towards customer industries is driven by influencing factors of the market and demand situation. The most relevant factors are

- a stable customer basis
- industry customer demands
- end-user opinion and demand for plastics products

Customer industries have a strong commitment to the European market

Due to the regional focus of most EU converters a stable customer base within the EU is crucial for any current and future business success. Based on the converter's assessment, customer industries have a strong commitment to the European market. Accordingly, 81 % of the respondents think that the EU market stays relevant or even gains relevance for customer industries to sell their products. Asked for investments of customer industries within the EU market, 76 % of the respondents assess constant or increased investments in Europe compared to previous years. Yet, nearly one out of four converters expects declined investment activities from customer industries in the EU.

23 % of the converters expect declining future investment activities from customer industries in the EU

The assessment of the future development is closely linked to this perception, with about one out of five converters expecting a worsened commitment to the European market from customer industries. As a result, converters need to closely follow this development, as a bigger dislocation of customers' production from the EU would of course harm their business activities.

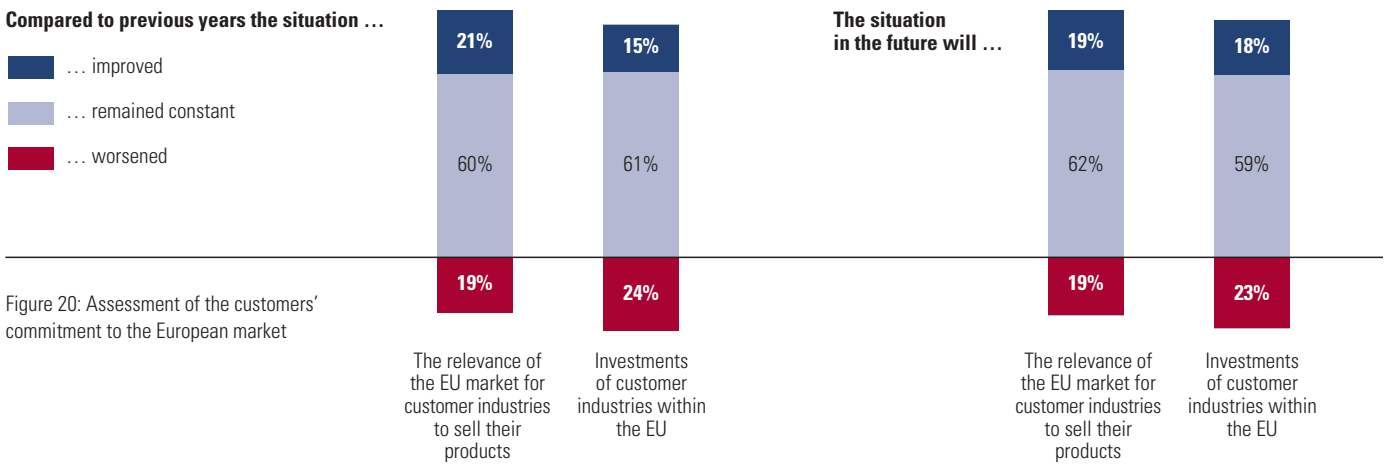


Figure 20: Assessment of the customers' commitment to the European market

Patterns of EU converters to hold the pace of innovation for their customers:

- R&D spending
- Customer integrated innovation
- Industry cooperation with the machine and polymer industry
- Science cooperation

The ability to meet customer demands is directly linked to the competitiveness of plastics converters. EU converters mostly focus on innovative products and are thus, at the heart of innovation at their customers. This distinctive position in the global competition was defended and remained constant, according to the assessment of the majority of converters. Yet, every third converter has seen an improvement in providing innovative products and solutions for customer industries. In particular the close customer proximity of EU converters is assessed as a competitive advantage in this matter by the vast majority of respondents. As the converters' strive for continuous innovation, the future expectation to provide relevant innovations for customers industries is equally positive.

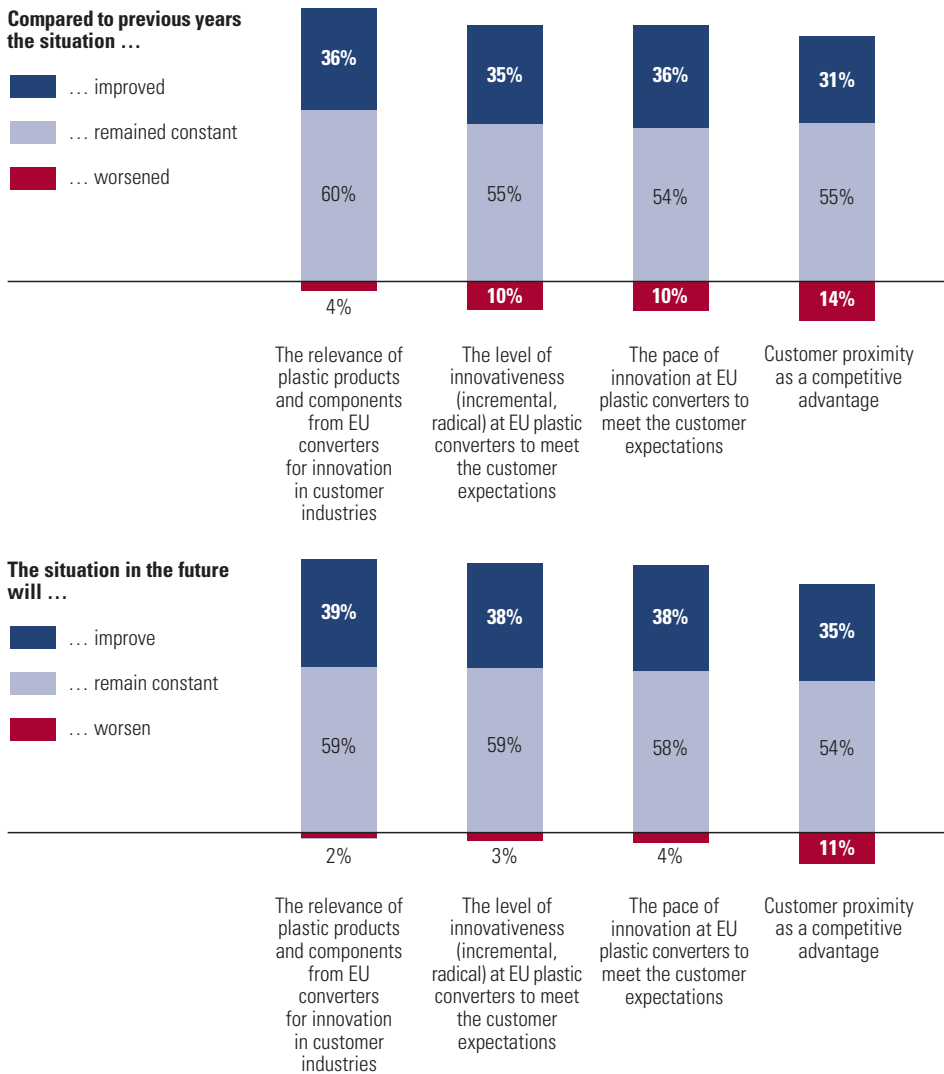


Figure 21: Assessment of the converters' innovativeness to meet customer demands

As a result, European plastics converters have a dominant position as reliable and mostly preferred suppliers in their customer industries, as assessed by the majority of respondents. Nevertheless, 29 % of the converters have seen a setback as a preferred supplier compared to previous years and still 26 % expect a further threat to this position in the future.

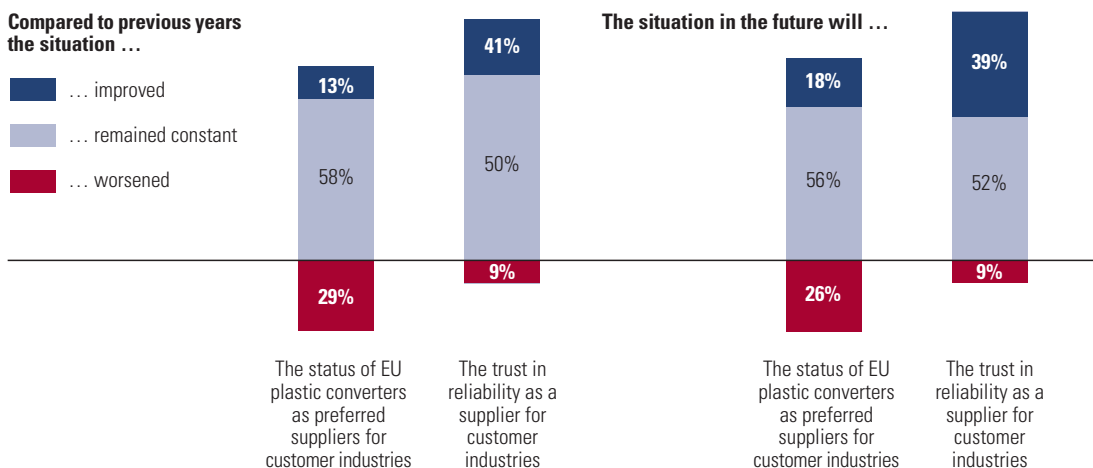


Figure 22: Assessment of the converters' positioning as industry supplier

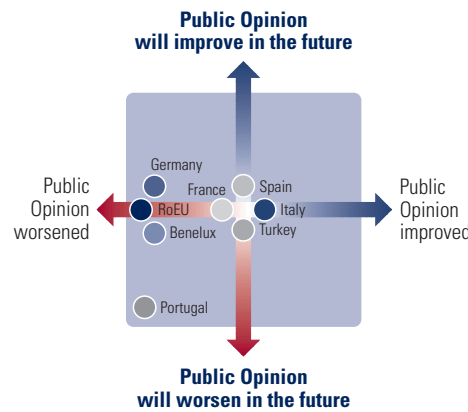


Figure 23: Assessment of the public opinion about plastics products by region

Despite the unquestionable benefits of polymer products for a resource efficient Europe, the public opinion about plastics is selectively very critical. For example, policy initiatives to ban plastic bags are driven by a mostly emotionally charged discussion but hard facts. Such a critical environment can influence customers' decisions to deploy plastics products and accordingly harm the competitiveness of converters over other solution providers. In particular converters from Portugal, Germany and the Benelux countries have to face this

threat to their competitiveness, whereas the other big players in plastics processing, Italy, France and Spain, can rely on a stable and mostly positive public opinion about plastics products.

74% of plastics converters assess the EU market conditions as attractive for their growth targets

The positive opinion from the majority of converters about the European market and demand conditions can be summarized in their assessment of own regional growth targets. Two thirds of the converters have the opinion that the EU market is equally attractive or improved in attractiveness to meet their individual growth targets. Asked for the assessment of future conditions this expectation is supported by an even larger number of respondents.

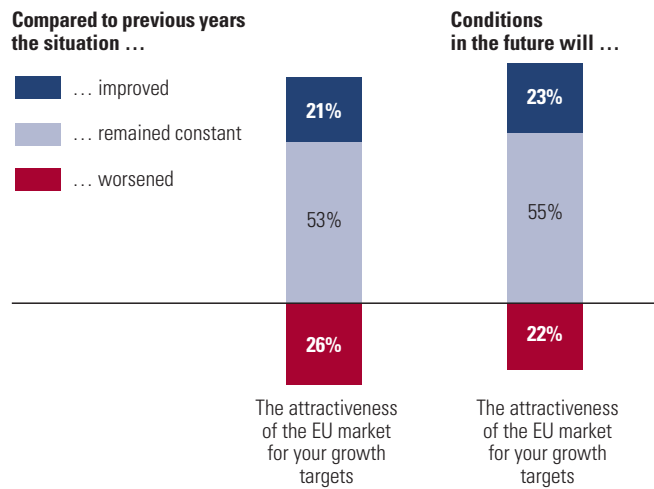


Figure 24: Assessment of the attractiveness of the EU market for growth targets

Large, multinational converters aim for growth options beyond the EU market in emerging economic regions

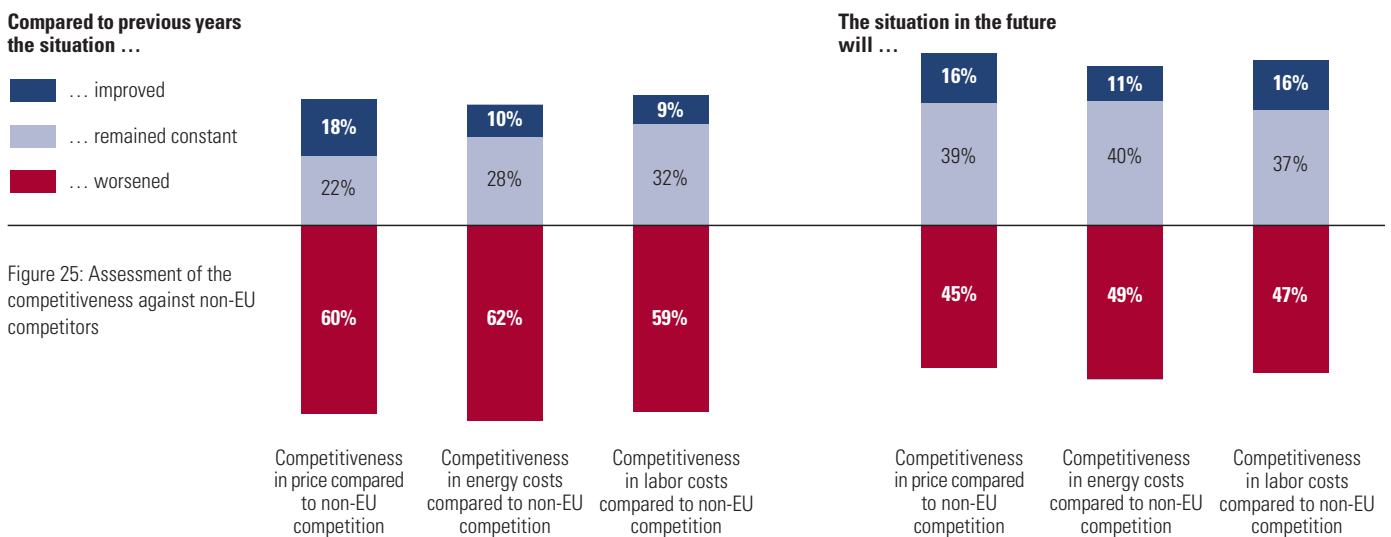
The 26% of respondents assessing a declined attractiveness of the EU market are mostly large, multinational converters. For these global players growth targets are oriented at emerging economic regions in the world, where up to double-digit economic growth rates are accessible. For these converters the European market is a mostly mature market with limited growth options apart from crowding out and acquisitions. Middle and South America as well as India are such globally attractive regions for these converters, to name but a few. From a product perspective, these regions are attractive for highly innovative products as in the EU and if shipping costs are insignificant, also for basic quality products.

3.5 Self-Assessment of the Competitiveness of EU Plastics Converters

Facing a more intense competition within the European market and threats to their competitiveness from the supply side as well as increasing burdens from the regulatory framework conditions, plastics converters unsurprisingly have a very critical self-assessment of their competitiveness.

Compared to previous years, costs for energy and staff increased for EU converters and thus worsened their competitiveness against non-EU converters. As a result, the ability to withstand fierce price competition is harmed for most EU converters in comparison to non-EU competitors. About 60% of the respondents assess worsened conditions in these three dimensions of converters' competitiveness. Asked for the future expectation of their competitiveness nearly every second converter expects a further worsening of the conditions in energy and labor costs as well as price competitiveness.

About 60% of EU plastics converters face a worsened competitiveness against non-EU competitors



Positively notable in this self-assessment is the fact that still about every fifth converter stated an improved competitiveness in price compared to non-EU competition. Product innovation and the ability to demand higher prices for more product value is the predominant factor behind this perception of the some respondents. The constant urge for efficiency and cost reduction additionally drives the positive assessment of competitiveness from respondents reporting improved conditions.

As the energy market within the EU is still highly fragmented and in particular non-wage labor costs are driven mostly by national legislation, a closer look at the converters assessment from a national perspective provides further valuable insights:

Italian converters have suffered most from a decline of competitiveness regarding prices compared to previous years. Contrary to that, in Germany and Portugal a bigger share of converters has seen an improvement in their price competitiveness than converters facing a decline. This is particularly remarkable as the majority of converters from these two countries incurred worsened competitiveness in energy and labor costs resulted in higher costs for energy and staff. The explanation for German and Portuguese converters is mostly rooted in their innovative, distinctive products and services alongside with a constant drive for efficiency.

Most converters in Germany and Portugal face higher costs for energy and labor – but still more converters in these countries assess their price competitiveness as improved and not worsened

For Portugal one can add that it has mostly recovered from the economic crisis and can still produce on a very cost competitive level within the EU. But alongside with the recovery, costs started to increase again and thus lead to a negative assessment compared to previous years.

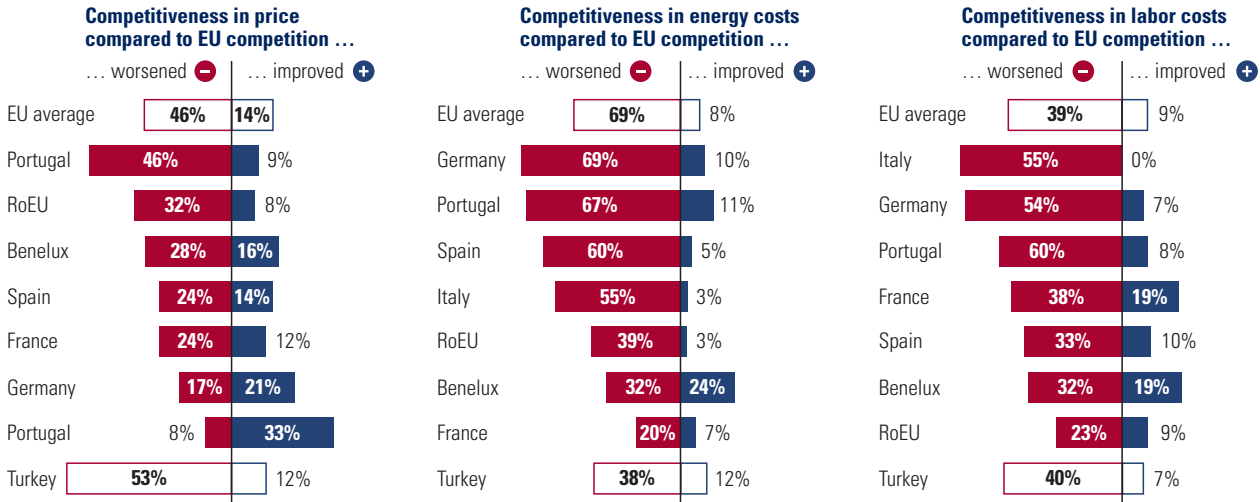


Figure 26: Assessment of the competitiveness by country

The vast majority of respondents assess positively the competitiveness of products and services offered to customers. In particular, 20% and 27% of the converters even state an improvement of their competitiveness compared to previous years over non-EU converters.

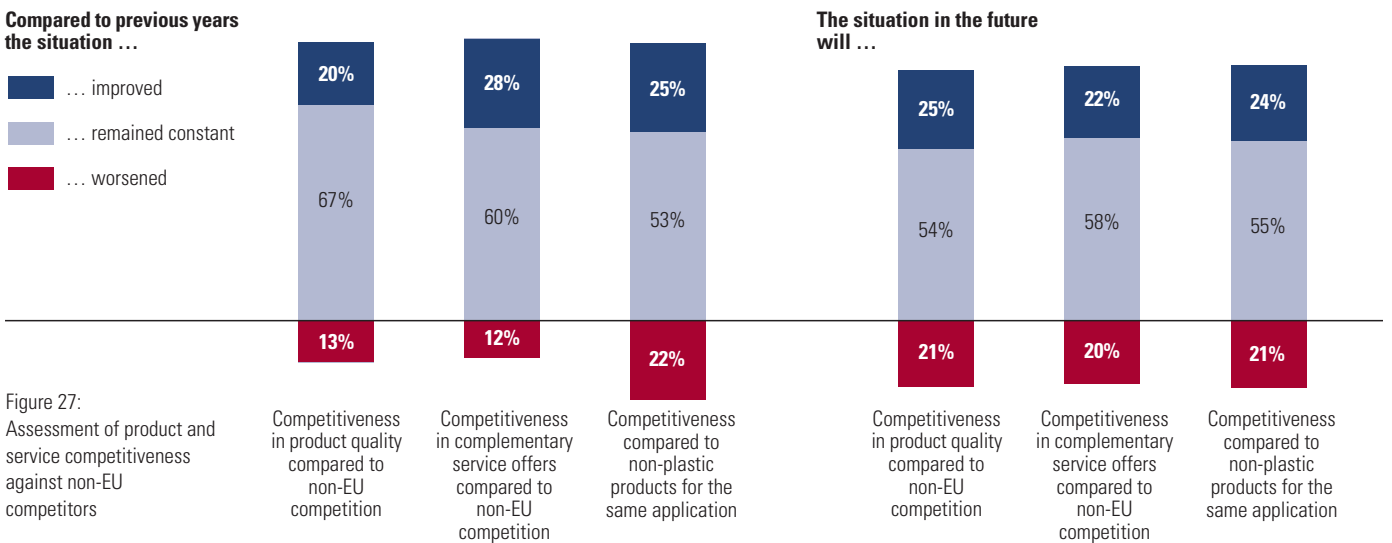


Figure 27: Assessment of product and service competitiveness against non-EU competitors

This assessment holds true from a national perspective, where again German and Portuguese converters stand out with the biggest share of converters assessing improved competitiveness in product and service quality.

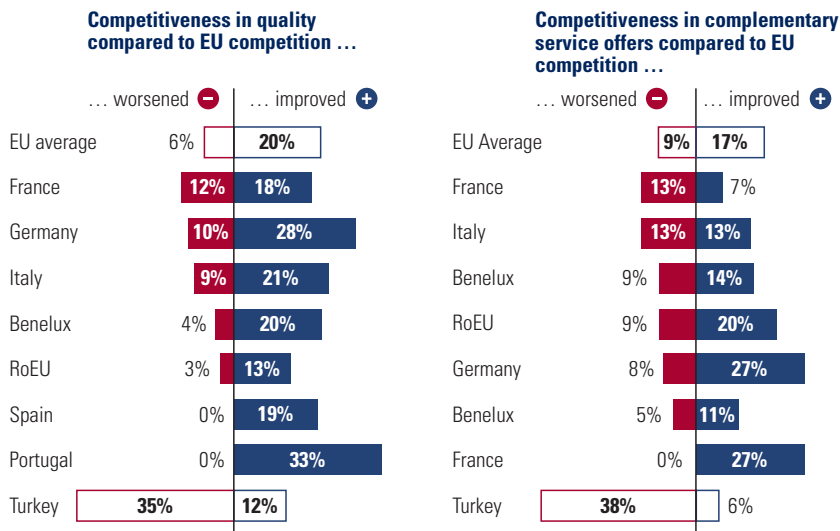


Figure 28: Assessment of the competitiveness by country

The self-assessment of Turkish converters on their competitiveness is quite remarkable. Compared to previous years, most converters face a worsened competitiveness in price. Every third converter in Turkey further assessed competitiveness in product quality and service offers as worsened to non-EU competition. Accordingly, competition from Asia, active in comparable commodity products gained competitiveness on the European market on the account of Turkish converters

Turkish converters face a worsened competitiveness in the European market to non-EU competition, mostly from Asia





4

Maintaining
Competitiveness

4 Maintaining Competitiveness

4.1 Corporate Response to Maintain Competitiveness

The assessment of the five key factors driving competitiveness by the European plastics converters proved the challenging competitive environment for converters. Besides unquestionable and notable strengths of EU converters, market conditions continuously pose a threat to competitiveness of the European industry:

- More fierce competition among European plastics converters and a further increasing relevance of Asian and Turkish converters as competitors within the European market.
- A critical level of bureaucratic burden resulting in increased necessary management attention and effort as well as increased direct costs, in mostly constant regulatory framework conditions with a still notable level of fragmentation of the European market.
- Worsened supply conditions for basic polymers for European converters, while suppliers of innovative materials, machine and process technologies are key levers for the innovativeness of European plastics converters.
- Mostly positive market conditions with a strong customer base committed to the European market and relying on plastics converters as innovative and reliable suppliers for customer industries.
- Competitiveness of EU converters to non-EU competitors is continuously at risk in price competition, from increased costs for energy and staff. However constant striving for efficiency and innovative products and solutions still preserve the head start of EU converters to global competition.

Management response to maintain competitiveness:

- Increase efficiency**
- Focus on innovation**
- Expand business activities**

To maintain their competitiveness, European converters show a clear pattern of management response to the challenging market environment: First, increasing efficiency and reducing energy consumption and second, investments in innovation and expanding business activities by entering new product and regional markets. The high relevance of these management responses, holds true for all company sizes.

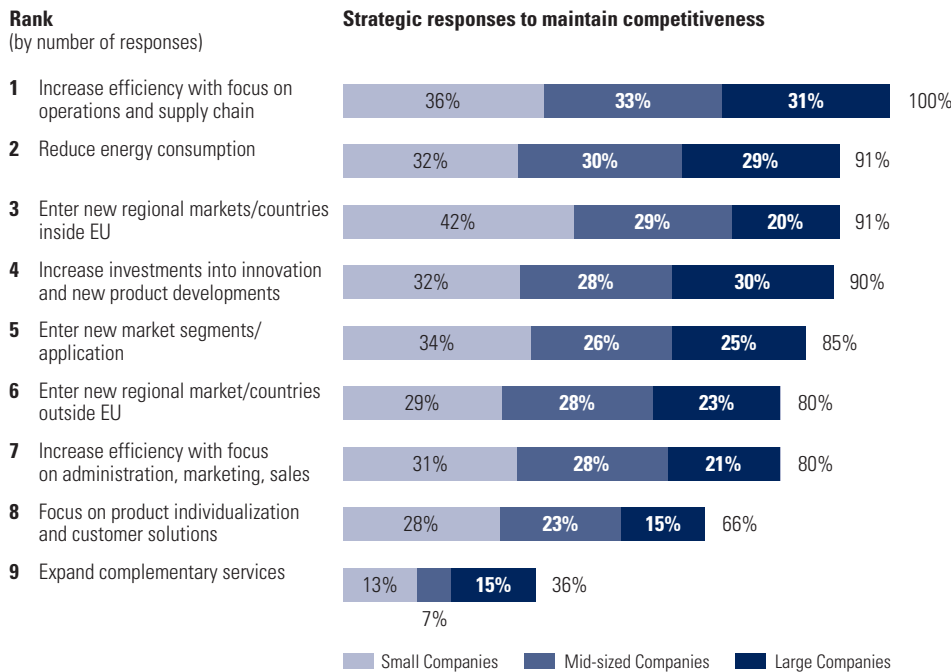


Figure 29: Management responses to maintain competitiveness

Converters also pursue strategic activities to maintain competitiveness and expand their businesses to meet growth targets. In a mostly mature market, substantial growth options are mostly accessible by business consolidation. Accordingly, the acquisition of quantities to achieve economies of scale is the predominant strategic response of EU converters. Foreign investments for growth inside and outside the EU are also used by many converters. The preference and the ability to pursue such targets of course depends on the company size and thus more large converters follow M&A and foreign investment activities than small to medium sized converters.

Strategic response to maintain competitiveness:
Growth targets
Internationalization
Review corporate strategy

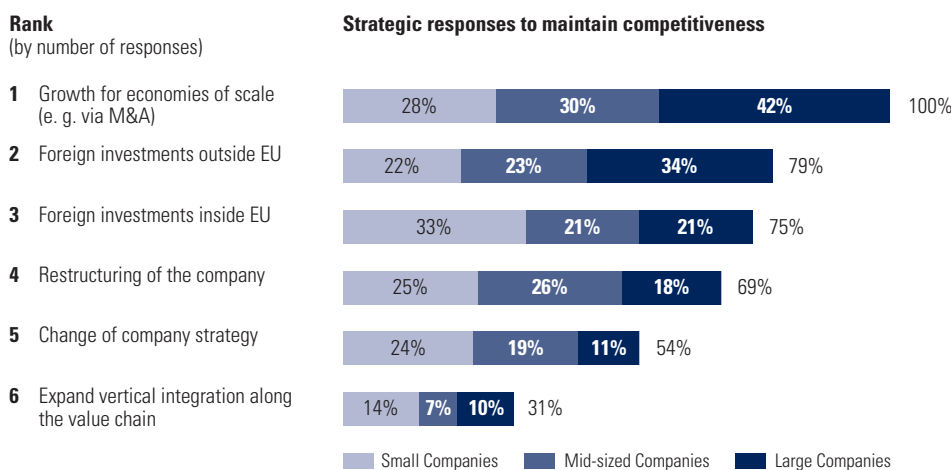
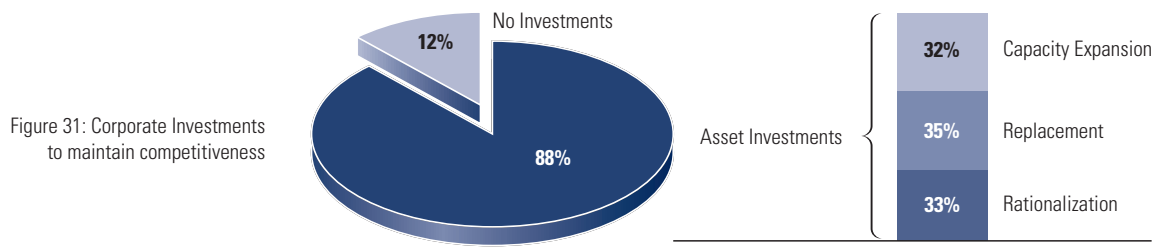


Figure 30: Strategic responses to maintain competitiveness

As complementary activities to maintain their competitiveness, European converters further invest in their assets and thus show a strong commitment to the European market. The vast majority of 88 % of the companies have most recently invested in their operations footprint or plan to do so. These investments aim at a higher level of efficiency and automation of production equipment as well as an expansion of production capacity.



- Physical asset investments:**
- Capacity expansion**
- Replacement together with increased efficiency**
- Automation/rationalization**

The latter is mostly driven by a growing market demand, in particular in profitable niche markets, where a large number of converters are active. Nevertheless, an expansion of production capacity comes at the cost of a necessary equipment utilization and acquisition of quantities. Converters within some market segments need to be very aware of such an expansion of capacities and whether it may be the starting point to enter the commodity trap, with a purely price driven competition.

Looking at the investment in detail and from the perspective of different industry segments, European plastics converters typically invest more than 1% of annual sales. In some industries the majority of companies even invests more than 3% of the sales volume in an expansion of production capacity as a predominant motive for such capital expenditure. Alongside with the investment motives in question, higher levels of efficiency are always a key focus of any investment in operations equipment and process technologies.

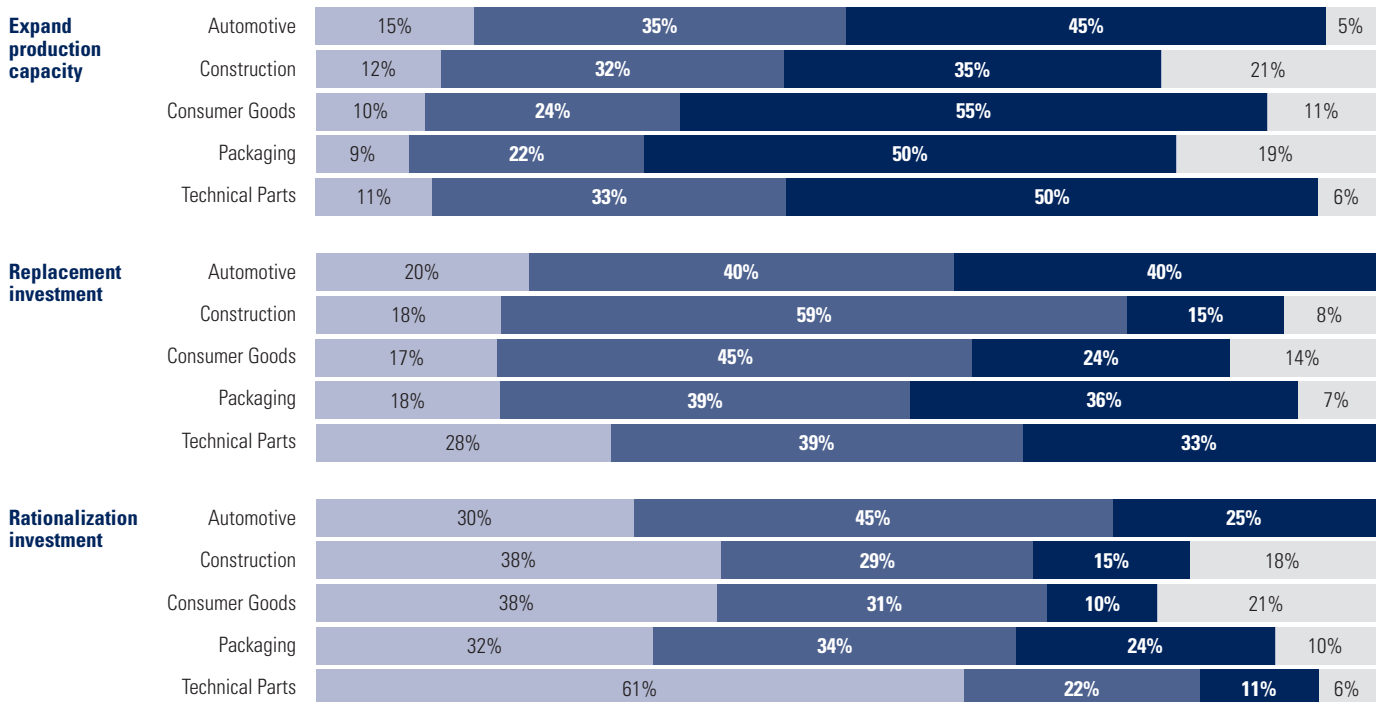


Figure 32: Corporate Investments by industry

- no investments
- investment of less than 1% of annual sales volume
- investment between 1-3% of annual sales volume
- investment of more than 3% of annual sales volume

4.2 Strategic Levers to Maintain Competitiveness

As clear as most of the strategic and management levers to maintain competitiveness seem to be, they are not that easy to operate. Converters' management needs to carefully select initiatives to pursue and individually frame their implementation.

Innovation: pillar to competitiveness, if more than a marketing label

Most converters state that they will critically rely on innovation to maintain their competitiveness. Yet, there is often a gap between converters labeling themselves as "innovative" and their actual ability to deliver new, beneficial and distinctive products for customers. The problem for most converters is at the two ends of a mostly defined new product development process. At the back-end it's a fuzzy innovation strategy and a lack of ideas. At the front-end it is often an insufficient innovation marketing and time-to-market performance. Comprehensive innovation management thus starts with a clear innovations strategy linked to the corporate strategy, and a thorough idea-generating stage. Further, innovation marketing differs from marketing for established products in many ways and needs to be shaped individually for every company. Otherwise new products stumble into the market and sales and diffusion rates stay well below initially planned figures. From our industry practice, we know that many executives from plastics converters are very self-critical when assessing their innovation performance as a lever for competitiveness.

Customer Proximity: a driver of distinction, customization and critical complexity

If products do not offer differentiating features, price is the predominant decision factor. Nevertheless, European converters often provide a large bundle of complementary services, which still make a difference over cheap commodity suppliers. Close cooperation with customers offers the opportunity to develop distinctive individualized product solutions and shape individual supply chain and service packages. Customer industries will always welcome such further support offers, but are rarely willing to pay substantially higher prices. Accordingly, converters need to be very cautious and consider the additional effort resulting from add-on services. Many companies underestimate cost effects for customizing products, smaller production lots, more change-overs and additional working capital for an extensive inventory. Excellent, KPI-driven product management is the lever to balance benefits from customer proximity and additional effort.

Efficiency: the right focus – yet often still room for improvement

The constant and intensive focus on efficiency is a constant pattern of optimization for most plastics converters. Price competition and increasing costs for energy urge converters to do so. The predominant focus is on equipment efficiency, operations and product design with less material usage. Nevertheless, it is difficult for many converters to combine customer proximity coming with mass customization and smaller lots in process or batch production with a straight focus on a most efficient production. As a result there is often still room for improvement within operations to increase efficiency. To gain such excellence it is necessary to combine perspectiveness from shop floor management with the supply chain configuration. Accordingly initiatives on lean management, overall equipment effectiveness (OEE), optimized change overs and procedural KPI need to be aligned with an optimization of the entire supply chain, including production planning, warehousing, and working capital management to name but a few. Converters following such a holistic approach for an optimized value chain can keep their head start from competition with a higher level of efficiency.

Internationalization: not always the easy way to growth

Many converters stated that they will pursue international growth targets: Large multinational companies focus on emerging markets and the US for a business expansion, whereas small to mid-sized converters focus on a further penetration of the European market. In particular, the latter attempt to leverage chances of the European single market. But the empirical assessment and the experts' interviews revealed that there is still a substantial level of fragmentation also within the EU. Different industry structures, distribution channels and inherited customer preferences may provide substantial market entry barriers for converters. Mid-sized converters with limited financial and – even more relevant – limited management resources need to carefully consider robust market opportunities as well as resulting expenditures from entering new regional markets. To deliver growth and thus, capitalize competitiveness, converters need a consistent strategy for the business expansion. This includes a decent and hard facts-based evaluation of the growth levers, being export, regional sales offices or the set-up of a local production in a subsidiary.

Review of the corporate strategy: business evolution cannot cope with market revolution

Most European plastics converters have a long-standing business history and an impressive track record from organic growth. Business success was created in a mostly steady market environment. But not only is competition becoming more fierce with new market entrants, also industry structures and distribution channels began to change rapidly in the last couple of years. Business consolidation at different levels of the polymer industries' value chain endangers established personal relationships between customers and suppliers. New technologies, most prominently additive manufacturing and 3D-printing, grow in their maturity and will enter standard business applications beyond prototyping and rapid tooling. Digitalization will further push customer integration beyond linked supply chains and big data usage will open up new opportunities for efficiency in operations with predictive maintenance and embedded quality control.

Together, these drivers of change in the industry will impose massive pressure on plastics converters to adapt. Only those companies being cautiously aware of the upcoming change and necessary business adoptions will be able to take advantage of this situation. Of course, this begins with a review of the corporate strategy, to identify levers for future competitiveness. Additionally any revised strategy needs a consistent implementation to match internal strength and leverage them with external chances.

Our Consulting Approach:

We support plastics converters at the front end, that is, regarding every process focused on the customer – especially in the areas of market and competitive strategy, digitalization, iMarketing, sales, product and range policies, innovation and product management, management of product lifecycles.

At the back end, that is, regarding the value chain and financial architecture, we offer consulting – especially in the areas of organization and leadership, operational excellence, individual solutions for Industry 4.0, variability, complexity management, supply chain, working capital management, and financing.

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