CBI
Ministry of Foreign Affairs

CBI Product Factsheet: Agricultural Engines and Engine parts in Eastern Europe

'Practical market insights for your product'

There is a growing market for agricultural machinery engine parts in Eastern Europe, thanks largely to EU investments in the agricultural sector. Hungary, Poland and the Czech Republic are the biggest engine markets in Eastern Europe with untapped potential for developing country exporters. Romania is the most likely candidate to import engines from the Developing Countries, with nearly a quarter of its engine imports already originating from there. The greatest opportunities lie in the parts of engines that are most prone to wear and tear, as well as in accessory parts for agricultural machines. The best way of accessing these markets would be through OEM subcontracting or selling through pan-European or national wholesaler networks.

Product definition

Engines and their parts are grouped under "Spark-Ignition Reciprocating Piston Engines", "Spark-Ignition Rotary Internal Combustion Piston Engines", "Compression Ignition Internal Combustion Piston Engines" and "Parts suitable for use only with these engines" (HS codes 84073100, 84073210, 84073290, 84073310, 84073390, 84073410, 84073430, 84073491, 84073499, 84079050, 84082010, 84082031, 84082035, 84082037, 84082051, 84082055, 84082057, 84082099, 84099100 and 84099900). This Product Factsheet analyses the market potential for engines and their parts as used in the agricultural machinery for the Eastern European market, which includes Poland, the Czech Republic, Hungary, Romania, Bulgaria, Slovakia and Slovenia.

Product specifications

Quality: Compliance with international standards and the European standards on safety is required, as well as conformity to existing EU and national legislation and practices. The ISO/TS 16949 standard is considered to be the highest level of quality. This standard is important for the European automotive industry as it outlines the best practices when designing, developing, manufacturing, installing or servicing automotive products.

The quality, reliability and expected durability of the engine parts used in European agricultural machinery is very high because the machines are used daily for extended periods of time and do not always have extensive maintenance schedules. When purchasing agricultural engine parts, consumers also attach much importance to fuel consumption and the cost of repairs. The quality of materials used in the production of

spare parts must be high to ensure their durability and safety and the supplied parts have to be carefully produced and inspected as defective parts may be returned.

Materials: Most heavy agricultural machinery, such as tractors, combine harvesters, forage harvesters, mowers, tedders and rakes, balers, ploughs, seed drills and field sprayers use predominantly diesel engines, while smaller and more outdated machinery may still use gasoline engines. Engine spare parts include mainly:

- Pistons and piston rings, connecting rods, water pumps, oil pumps, crankshafts, valves, fuel pumps, cylinder heads, cylinder liners, injection parts, gaskets and engine bearings.
- These parts can be purchased individually or as a complete "engine rebuild kit". The spare parts would typically need to be compatible with the specifications of the engine manufacturer and may vary in design and size depending on the make and model of the specific engine they have to fit. There are six main manufacturers of tractors and other agricultural machinery in Europe operating under a number of different brands.

Considerations for action

- For more information on requirements for exporting casting and forgings to the EU, please refer to the CBI Buyer Requirements database for more information on Labels and Standards: Sustainability in Casting and Forging

Packaging & Labelling*:* Spare engine parts are typically packaged in plastic bags and placed in cardboard boxes to protect them from being damaged. The packages are typically labelled with a picture and description of the contents, including the technical parameters of parts, the type/make of engine compatibility, and their specific part serial number.

In general, packaging is dependent on the buyer, either OEM or end-user consumer (aftermarket). For aftermarket applications, the packaging is typically one-way packaging, in which the packaging is discarded after a single use. Returnable packaging is the most often used by OEM suppliers, in order to reduce cost and improve efficiency of the packaging operations. Returnable packaging is not thrown away after use. The empty packaging is circulated by the OEM or a designated packaging operator. If you want to export to the EU, you must ensure that the packaging you use for your products meets all EU requirements. To reduce the harmful impact of packaging on the environment, the EU has specified legislation concerning the management of packaging and packaging waste.

Considerations for action

- For more information on requirements for packaging and packaging waste, please refer to the European Commission.

Design*:* In general, demand in Europe is shifting towards high-power and high-performance machinery. The design of parts depends on the make and model of the engine they must be fitted into. Agricultural machinery manufacturers use a brand-specific platform strategy but may also use the same or similar engines or engine parts for different brands under the manufacturer's umbrella. The complexity lies in

the fact that they all have their own specific part number so the expert is thus able to identify their common attributes. Currently, the compatibility of machines and equipment from different manufacturers still poses a challenge, which means that the suppliers will need to produce parts to the exact specifications of their buyers and will need to be able to adapt their production processes and the resulting product for different buyers. The latest developments in engine design relate to researching alternative propulsion technologies (such as biogas, fuel cells, etc.), the electrification of vehicles, and increasing engine power.

Figure 1: Agricultural engines and engine parts

Source: Fotolia/Internet

Buyer Requirements

Legislative Requirements: The most important requirement for automotive components is that they comply with the technical standards set by EU legislation in order to guarantee vehicle and environmental safety.

Type-approval is a certification for various types of motor vehicles and their components, which includes agricultural and forestry tractors. The type-approval or certification is valid in all EU Member States and is required when selling any products in the EU. Many automotive components are not approved until the final assembly, in which case certification of individual components is not necessary, although these components will still have to comply with type-approval requirements.

The End of Life Vehicles (ELV) Directive aims to avoid environmental pollution during the scrapping process through reducing the hazardous materials used in vehicle production. Vehicles must be designed to facilitate proper dismantling and recycling (by coding the components) and the use of heavy metals such as lead, mercury, cadmium and hexavalent chromium is prohibited (with the exception of a few applications).

Considerations for action

- Check with your buyer, or with the approval authority of the country you want to export to, what the specific standards are for the parts you are manufacturing.
- Read more about type approval at the EU Export Helpdesk.

- Check if your buyer uses the International Material Data System (IMDS). This is a collective, computer-based data system developed by automotive OEMs to manage environmentally relevant aspects of the different parts used in vehicles. It has been adopted as the global standard for reporting on material content in the automotive industry.

Common buyer requirements: In addition to legislative approval, there are other common buyer requirements. While these are not obligatory in the legal sense, they are implemented by various competitors in the market and are thus necessary in order to compete effectively.

Quality Management: In order to apply for type-approval, production processes need to meet quality management criteria. ISO TS/16949 and ISO 9001 are accepted standard requirements and EU buyers and manufacturers often insist on them.

Corporate social responsibility (CSR) and the extent to which buyers expect a certain level of social and environmental performance is becoming increasingly important. Bigger EU companies have developed their own CSR policies and require their suppliers (and their sub-suppliers) to conform to these. Signing a supplier code of conduct is often a prerequisite. These codes of conduct generally cover compliance with local laws, protection regarding workers' health and safety, respecting basic labour rights and also business ethics. The implementation of an environmental management system is often a requirement for core suppliers.

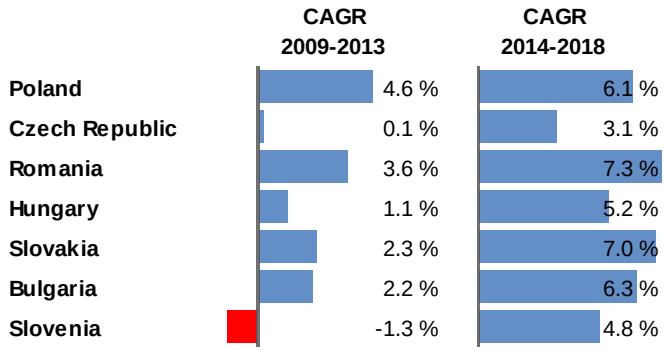
Considerations for action

- Implement ISO 9001 and ISO TS/16949, as it is a standard requirement of EU buyers. Click here for more information on ISO TS/16949 at the ISO website
- Most big car brands publish their CSR policies and supplier code of conduct on their websites. An internet search for these may give valuable insight into assessing your company's performance by comparison. Implement an environmental management system, such as ISO 14001, as it is a common requirement.

Macro-economic statistics

In 2013, Eastern Europe saw an average growth of 5.5% after the previous year's 6.8% contraction. Forecasts for 2014 and 2015 growth are estimated at 4.1% and 5.7%, respectively. Poland, one of Eastern Europe's largest markets, as well as Romania and Slovakia are all forecasted to have strong average growth of more than 6% through 2018.

Figure 2: GDP (current prices) Compound Annual Growth Rate (CAGR) for 2009-2013 and estimate for 2014-2018 for selected Eastern European Countries



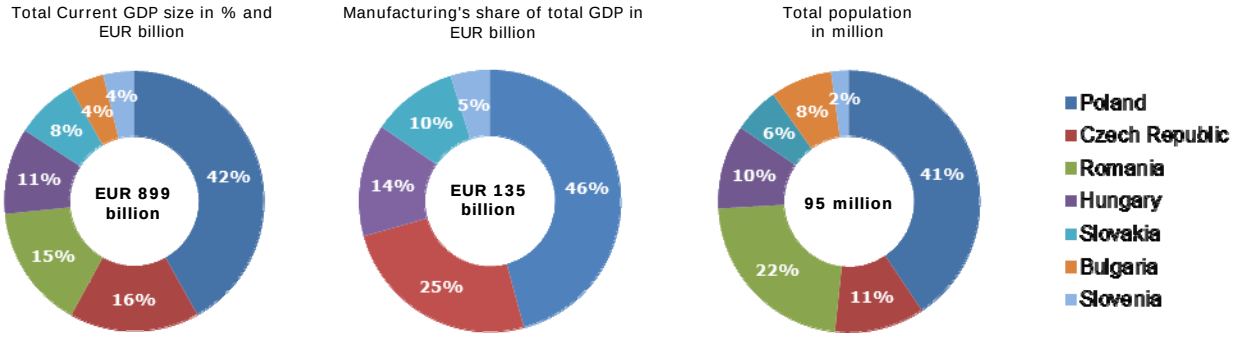
Data source: IMF 2014, World Economic Outlook Database

The value of GDP for the seven Eastern European countries covered by this document was estimated at €899 (or roughly one-tenth of the GDP value for the EU5 countries, i.e. the biggest Western European economies: Germany, France, the UK, Italy and Spain) in 2013. Poland is the largest market in Eastern Europe, with a GDP of

approximately €377 billion and value of manufacturing at €62 billion, accounting respectively for more than 40% share of total GDP and manufacturing values for the seven Eastern European countries in question. The Czech Republic is the second largest Eastern European economy with a strong manufacturing base, followed by Romania and Hungary. Bulgaria and Slovenia are relatively small economies, together accounting for less than 10% of the total Eastern European GDP.

In 2013, the EU agricultural machinery market was estimated to be worth €24.8 billion – equivalent to 30% of global sales. The EU is also the biggest manufacturer of agricultural machinery, with sales of more than €26 billion in 2011.

Figure 3: Key 2013 macroeconomic indicators for Eastern Europe, in € billions (population in millions)

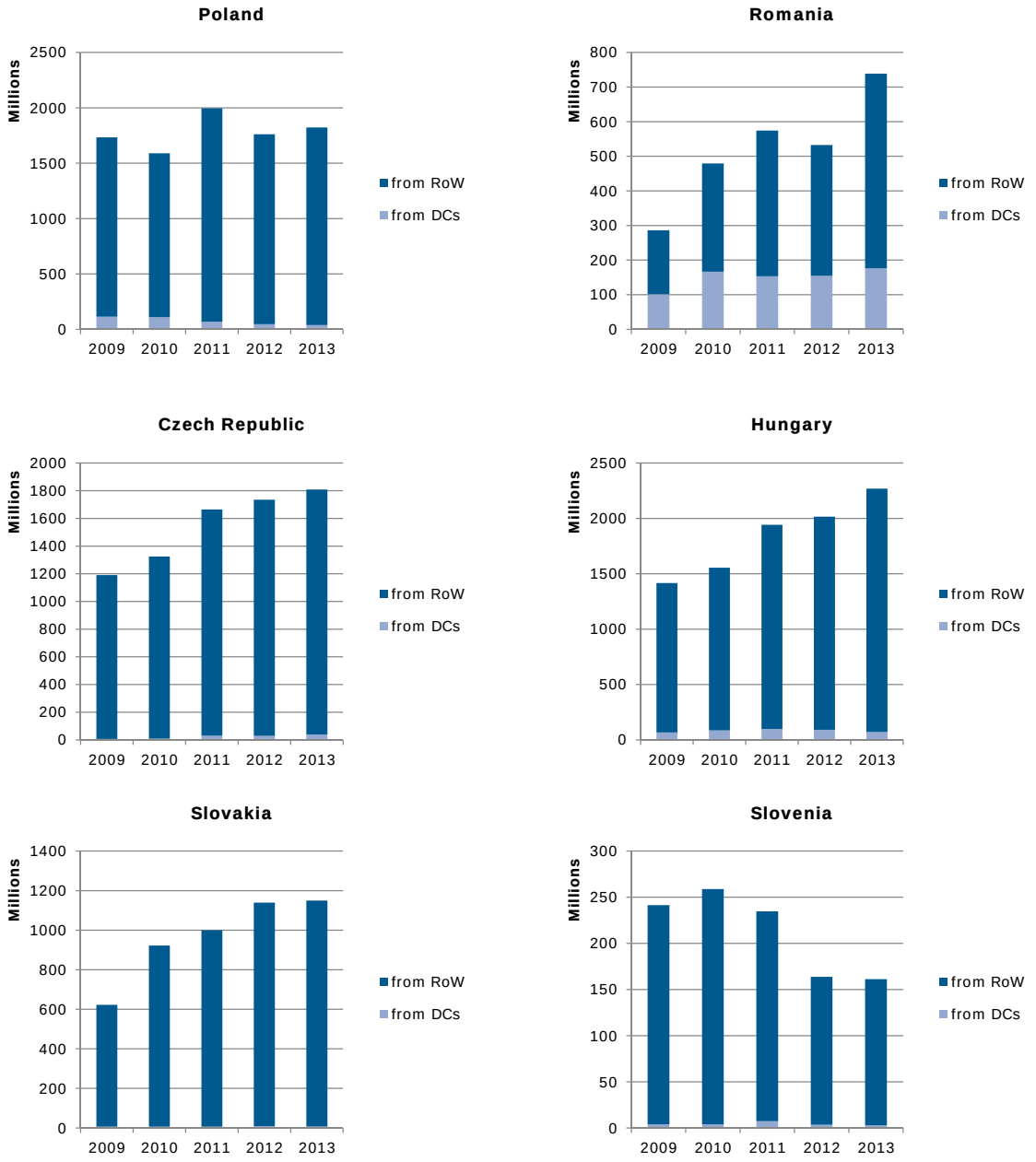


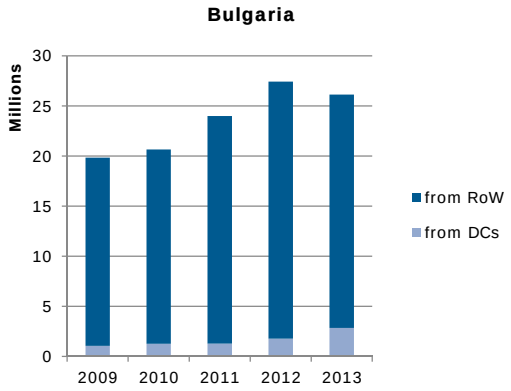
**No data available for Bulgaria and Romania*
Data source: IMF and OECD 2014

Trade Statistics

Imports and exports:
Eastern Europe imports roughly €8 billion worth of engines and engine parts. Combined, Poland, Hungary and the Czech Republic represent over 74% of the total imports of engines and engine parts into Eastern Europe. The imported engines and parts are mainly shipped from Eastern and Western Europe as well as other developed countries such as Korea and Japan. The value of engine imports from the Developing Countries (DCs) to Eastern Europe was estimated at €339 million (4.2% of total engine imports) in 2013 and has grown at a 3% CAGR between 2009 and 2013. Romania imports by far the most from the DC in terms of value (€177 million), followed by the Czech Republic (€39.5 million). Poland has actually seen a sharp drop in its DC engine imports going from €114 million in 2009 to €39 million in 2013. The biggest DC exporters of engines to Eastern Europe are Turkey (€199 million), China (€36 million) and Brazil (€25 million) together accounting for roughly €260 million or close to 77% of all engine imports from DCs. The future outlook is that the imports from DCs will continue to grow.

Figure 4: Imports of engines and engine parts by country, in € million (the range of the y-axes varies by country due to different import levels)



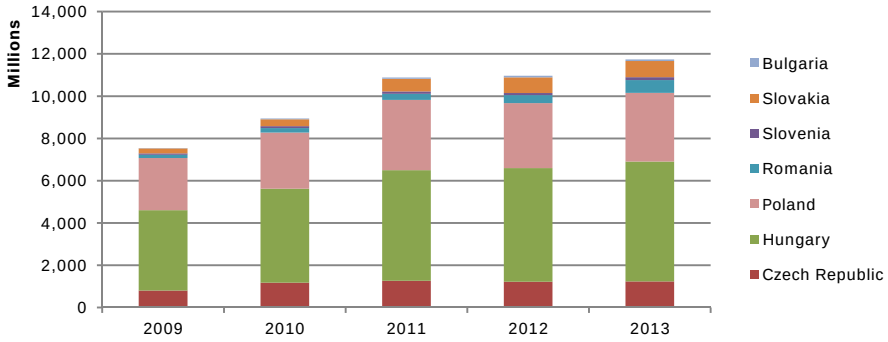


RoW: Rest of the world
Data source: Eurostat 2014

Eastern Europe is a net exporter of engines and their parts, having exported approximately €11.7 billion of those in 2013. Hungary is the largest exporter with €5.7 billion, followed by Poland with €3.2 billion and the Czech Republic with €1.2 billion. Together these countries account for 86% of Eastern Europe's engine and related parts exports. The engines are mainly exported within the EU countries, with roughly 75% of exports sold there as well as to other developed countries such as Russia, Korea, the United States and Japan.

Eastern Europe exports approximately €1.7 billion worth of engines and engine parts to the Developing Countries. The biggest DC importers of engines from Eastern Europe include China (€538 million), Turkey (€435 million), Mexico (€265 million) and Brazil (€104 million).

Figure 5: Exports of engines and engine parts, in € million



Data source: Eurostat 2014

For more information on automotive trade statistics, please refer to CBI Market Trade Statistics

Market trends and opportunities

The greatest opportunities for DC exporters lie in the contracting out of the production of engine parts that are the most prone to wear and tear, such as oil pumps, flywheels, injection parts, power take-offs and exhaust parts. They can be manufactured for OEMs or sold in the aftermarket.

The easiest way to market this would be to arrange a meeting with local agricultural parts wholesalers or the OEMs and/or component/systems suppliers and approach them with a subcontracting offer. The Eastern European OEMs are not as large as their Western European counterparts and they may be easier to access for DC exporters. Initial contact can be made through trade fairs or via e-mail or phone.

The aftermarket in Eastern Europe is especially well-developed due to the large share of aged agricultural machinery and the tendency to utilize old machinery for a longer period. Exporters targeting the aftermarket sector may find it advantageous to enter the sector through the independent distributor channel, as distributors tend to carry a larger variety of parts in their inventory rather than focusing on a few selected suppliers. Another way of selling agricultural parts would be through retailers, such as tractor and implement dealers, agricultural engineers, rural stores, workshops, etc. Approaching smaller dealers would be much more time-consuming and capital-intensive than approaching the wholesalers and generally be a more difficult path for a new exporter. This option should only be explored once the exporter is relatively well-established in a local market.

Hungary, Poland and the Czech Republic present the biggest opportunities for the engines and engine parts exporters due to the volume of their imports and strong economies. They are all well-established automotive hubs, which import engines and engine parts for the purposes of their own consumption as well as for production and exports. Together, these countries represent an import market worth €5.9 billion. All of these countries only import between 2-3% of their engines and engine parts from developing countries, indicating that there is currently an opportunity for the DC exporters to sell more in these countries.

Romania is the fifth biggest Eastern European market for engines and engine parts, with imports in 2013 worth €739 million (up from €286 million in 2009). About 24% of these imports come from developing countries, indicating the country's willingness to source their automotive parts from the DCs.

For more information on automotive market trends, please refer to CBI Market Trends

Price

Apart from the distribution of new parts, the aftermarket for agricultural parts also encompasses a lively distribution of used or overhauled parts and components. Pricing depends on the supply chain positioning. The aftermarket, in particular, is very discount-driven and has varied mark-ups at each distribution step, and for different parts and components. Due to large variation in types and models of parts, it is difficult to provide a general overview of agricultural engine prices, but it is possible to provide some insight into margins imposed by different players in the supply chain. Based on the margin ranges, DC suppliers selling to the tier 3 supplier in the OEM supply chain could price their products at between 64% and 81% of the OEM delivery price. In order to better ascertain prices of specific products and models, search the internet to determine the appropriate range, or talk directly to wholesalers and/or retailers. The differences in price of branded spare parts will not be great among the various countries. Those players who are present in several European countries have largely harmonised their prices; any differences in pricing may occur because of different logistics and local costs.

OEM supply chain	**Margin**
Tier 1 supplier delivering to OEM	6-8%
Tier 2 supplier delivering to tier 1	6-15%
Tier 3 supplier delivering to tier 2	10-25%
Aftermarket OES supply chain	**Margin**
Tier 1 delivering to OEM for OES sales through approved service chain	10-30%
Tier 1 delivering to OEM for OES sales through independent outlets	10-25%
OEM delivering OES parts through its approved service chain	25-65%
OEM delivering OES parts through independent outlets	30-40%

Main sources

- European Commission's macroeconomic publications
- IMF – good source for macroeconomic information
- OECD – good source for macroeconomic and industry-specific information
- European Commission's Directives and Regulations pertaining to wheeled agricultural or forestry tractors
- CEMA – Agricultural Machinery in Europe
- Trade fairs are a good place to network, to meet buyers and to promote your company. The most prominent agricultural machinery trade fairs in Eastern Europe are: the Polish Agricultural Trade Fair: Polagra-Premiery and the Czech Agricultural Trade Fair: TECHAGRO, Slovakian Agrosalon Nitra

This survey was compiled for CBI by Global Intelligence Alliance