Maximizing Global Opportunities

How international standards can help your business grow overseas

bsi.

...making excellence a habit.™

Introduction

In the first 10 years of the 21st century, Brazil experienced a massive growth in foreign trade. Between 2000 and 2010 exports of Brazilian goods and services grew by 262%, almost twice the global average[1]. By 2014 exports were bringing US $228 billion to the Brazilian economy.

This increase has been driven by a huge demand for Brazil's natural resources, particularly in emerging markets. However, throughout this time, the EU has remained Brazil's single biggest customer, purchasing US $43.17 billion worth of products and raw materials in 2014 alone.

Although the 2015 crash in world commodity prices hit export values hard, the latest figures show that a corner may well have been turned. According to data from Trading Economics, exports from Brazil jumped 32.6 percent year-on-year to US $149.11 billion in January of 2017, the biggest annual rise since August 2011.

With such a wide range of natural resources and a diversified industrial sector, Brazil is well placed to drive forward into new markets. But this is not easy. Today's customers want to see resilience in their supply chains. Whether it's raw materials or a finished product, they need to know that what they are buying is of the highest quality and from a reliable source.

It is through the use and implementation of standards that businesses can guarantee this quality, both in the final product and in the company and processes that made it.

Since 1901, BSI has been working to provide these standards. Through our BSOL (Standards Online) library we provide over 42,000 global users with access to an up-to-date catalogue of over 95,000 International, American, European and British standards. Using our experience and expertise, we help businesses and organizations achieve the efficiencies and compliance to realize their full potential in a global marketplace.

In this report, we will look at the benefits that standards can bring to businesses exporting from Brazil and how the BSOL library provides the ideal tool for accessing these standards.

Working together, we can make excellence a habit.

Vince Improta
International Territory Manager
LATAM & Europe
BSI Group

“Since 1901, BSI has been working to provide the standards that set specifications, drive quality and minimize business risk.”

Contents

A history of BSI

“Before the twentieth century there were no standards.”

This may seem like a counter-intuitive statement. After all, society has always been awash with morals and ethics – rules on how to behave and what to do. However, we only need to think of passengers and goods having to be transferred between trains running on different gauges, to be reminded that there was often little consensus in the industrial process.

A growing recognition soon developed, that producing materials and components to a standard specification would lead to efficiencies that could both increase competition and open up new markets. This resulted in the very first meeting of the Engineering Standards Committee in 1901.

Convened by Sir John Wolfe-Barry, designer of London’s Tower Bridge, the committee published the first British Standard (BS1) in 1903. BS 1 tabulated the standard dimensions of steel angle sections, essential for structural engineers sourcing from different manufacturers.

This was soon followed by standards for the specification of sections and gauges of tramways, copper conductors, telegraph materials and cement. By 1931 the Engineering Standards Committee had been granted a Royal Charter and finally changed its name to The British Standards Institution (BSI).

After the end of World War II there was renewed focus on the need for global standards and in 1946 the first Commonwealth Standards Conference took place. This led to the International Organization for Standardization (ISO) of which BSI is a founding member.

The latter half of the twentieth century saw the emergence of business process standards, as it became increasingly apparent that the quality of a product was directly related to the quality of the process that made it. Many of the world’s most widely used ISO standards, such as the Quality and Environmental Management series (ISO 9001 and ISO 14001), started out life as original British Standards developed by BSI.

1901 First meeting of the Engineering Standards Committee (renamed BSI in 1931)

1901 Formed by Sir John Wolfe-Barry

1903 Published first British standard BS 1

1929 Granted a Royal Charter

1931 Renamed The British Standards Institution (BSI)

1942 Recognized by British Government as national standards body for the UK

1947 Founding member of International Organization for Standardization (ISO)

1955 UK Government introduce compulsory BSI kite-marking on car seat belts and motorcycle helmets

1979 Published first quality management systems standard BS 5750 which leads to ISO 9001

1991 Established BSI Americas

1992 Published BS 7750, the world’s first standard for environmental management systems

1996 Published BS8800, which goes on to inspire BS OHSAS 18001 Occupational Health and Safety Management

2003 Becomes a Business Superbrand

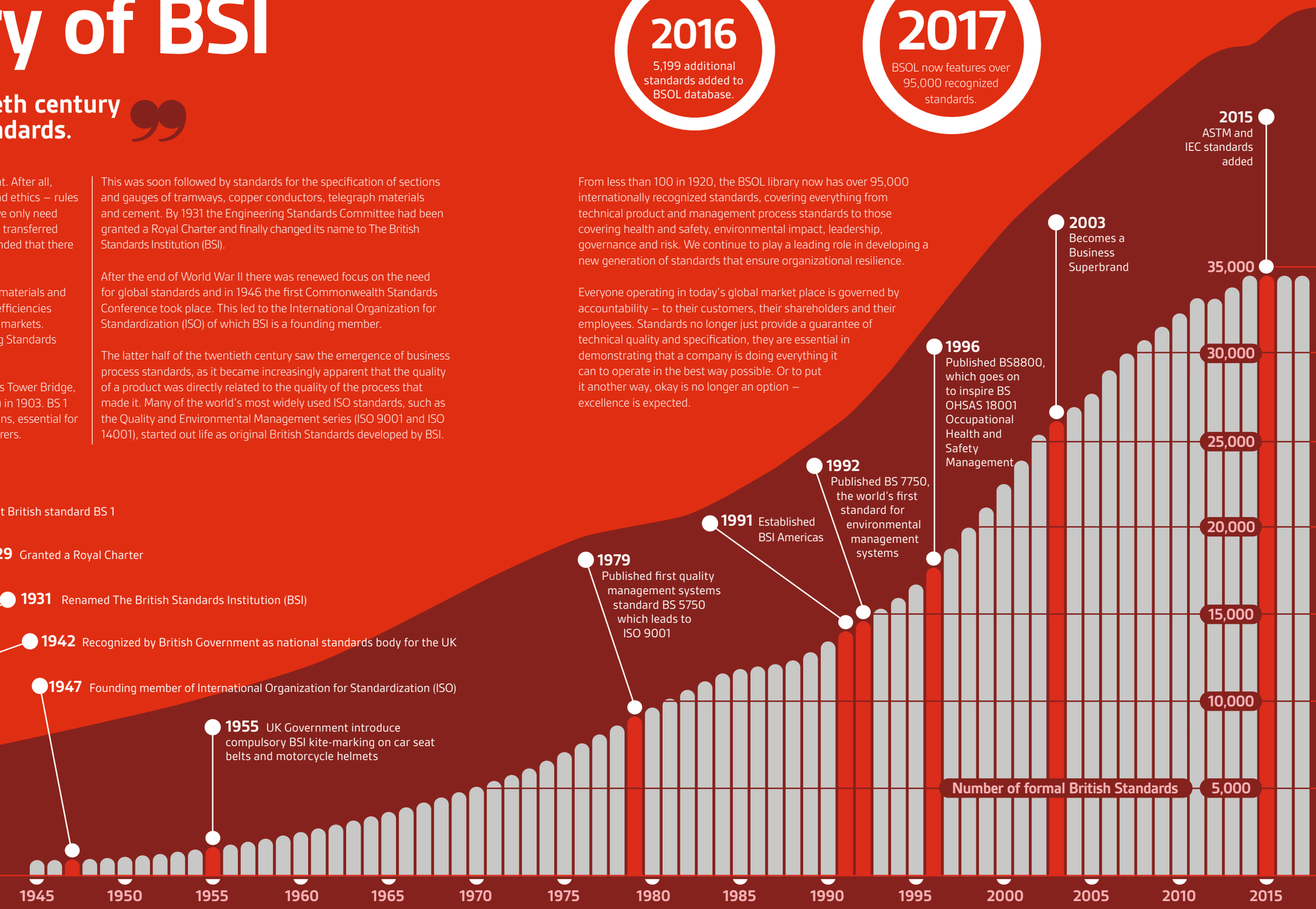
2015 ASTM and IEC standards added

2016 5,199 additional standards added to BSOL database.

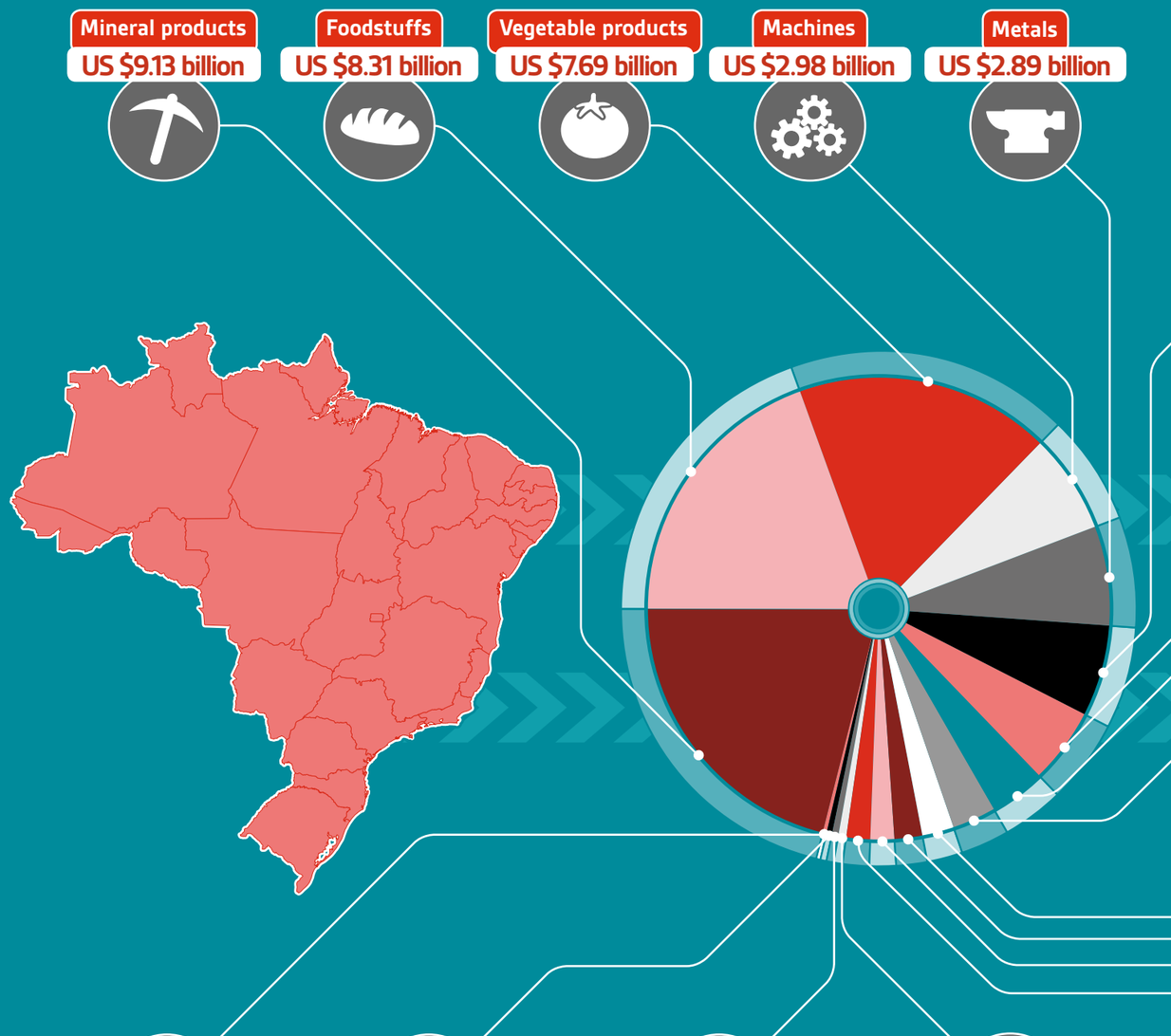
2017 BSOL now features over 95,000 recognized standards.

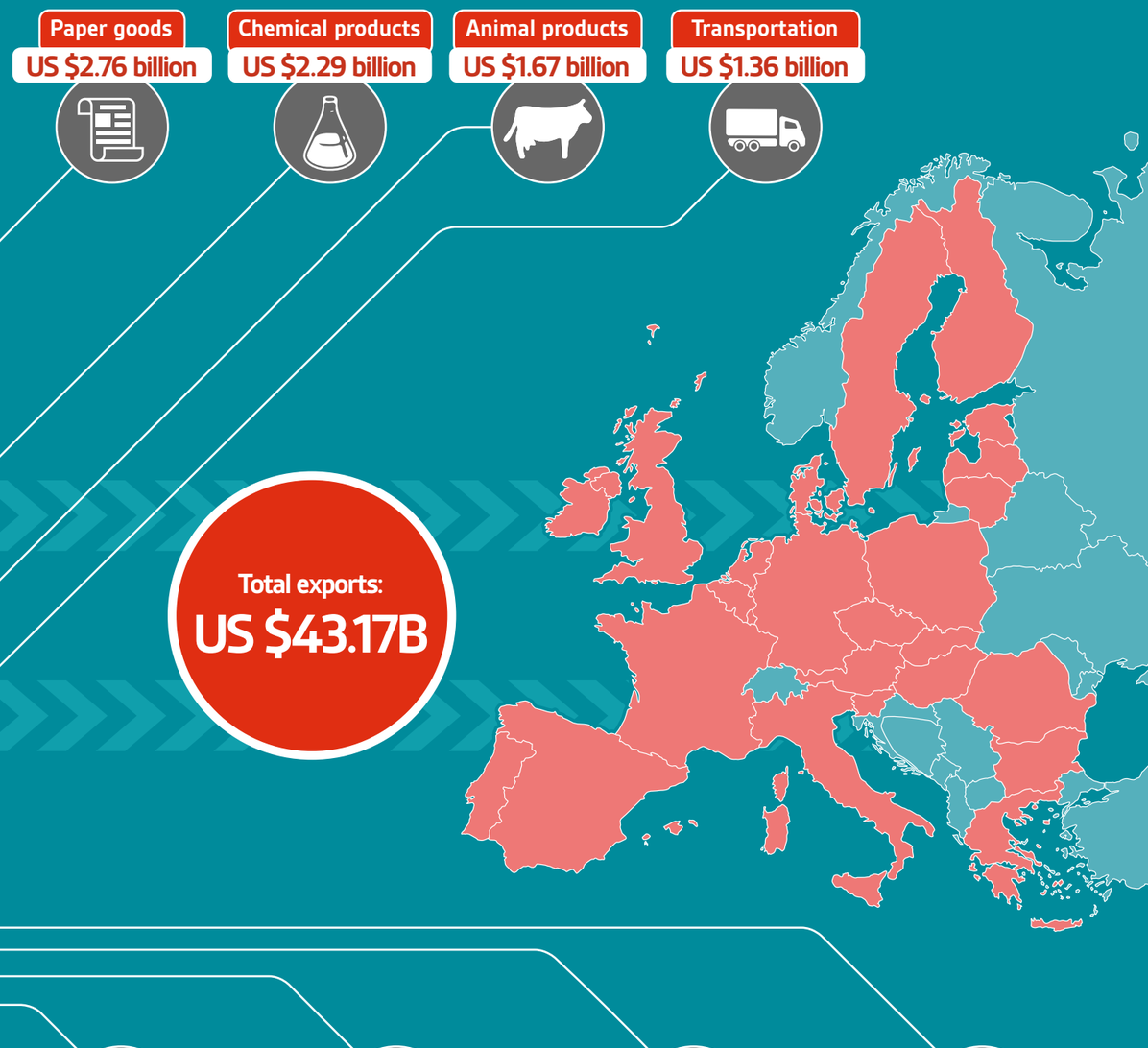
From less than 100 in 1920, the BSOL library now has over 95,000 internationally recognized standards, covering everything from technical product and management process standards to those covering health and safety, environmental impact, leadership, governance and risk. We continue to play a leading role in developing a new generation of standards that ensure organizational resilience.

Everyone operating in today’s global market place is governed by accountability – to their customers, their shareholders and their employees. Standards no longer just provide a guarantee of technical quality and specification, they are essential in demonstrating that a company is doing everything it can to operate in the best way possible. Or to put it another way, okay is no longer an option – excellence is expected.



What Brazil exports to the UK and EU





Manufacturing:
Sector trends

Through embracing international standards when making products for the domestic market, Brazilian manufacturers can make sure they are ready to fulfill their potential on the global stage.

In 2010, Brazilian industry was responsible for 26.4% of the GDP, employing 14% of the total workforce[1]. In the same year, Brazil exported US $45.6 billion worth of planes, cars, machines, parts and chemical and pharmaceutical products, more than double the value of the same sectors in 2000.

The success of Brazil's industrial sector has been driven in part by increased demand at home. Between 2003 and 2014, economic and social progress saw 29 million people lifted out of poverty[2] and it has been estimated that more than 40 million Brazilians joined the middle class in less than six years[3]. Domestic demand for goods and services has increased and this has led to many multinationals investing in plant and production facilities in order to capture some of this potential.

Brazil is now one of the world's 10 largest automotive markets[4] and research suggests that the 2014 to 2024 investment cycles of automotive manufacturers will be worth R $36 billion[5]. Investments such as these are important for Brazilian manufacturing, as multinational companies bring systems and expertise that can be shared within the wider business community.

Similar trends are also emerging in the pharmaceutical industry. The domestic market in Brazil is now the sixth biggest in the world, worth over US $30 million in 2016[6]. Foreign companies have been quick to try and gain access to this market and there have been a number of partnerships and acquisitions over the past decade.

US $1.61B

- the value of Brazil's Packaged Medicaments export market

0.46% of total world exports

Although this investment has covered all aspects of the sector there has been particular interest in makers of generic drugs. With aging populations and a growing middle class, combined with various government healthcare spending initiatives, there is expected to be an increasing world demand for generics.

In 2014, Brazilian 'packaged medicaments' still only accounted for 0.46% of total global exports. However, these figures mask some startling growth and global demand for drugs and medicines is only expected to get bigger.

The sale of Brazilian pharmaceuticals into the European Union, for example, was US $640 million in 2014, 340 times bigger than it was in 2000. By engaging with standardization and certification processes when producing drugs, companies can ensure that they are best placed to meet all the different international regulatory requirements and are ready to exploit the potential of these new export markets.

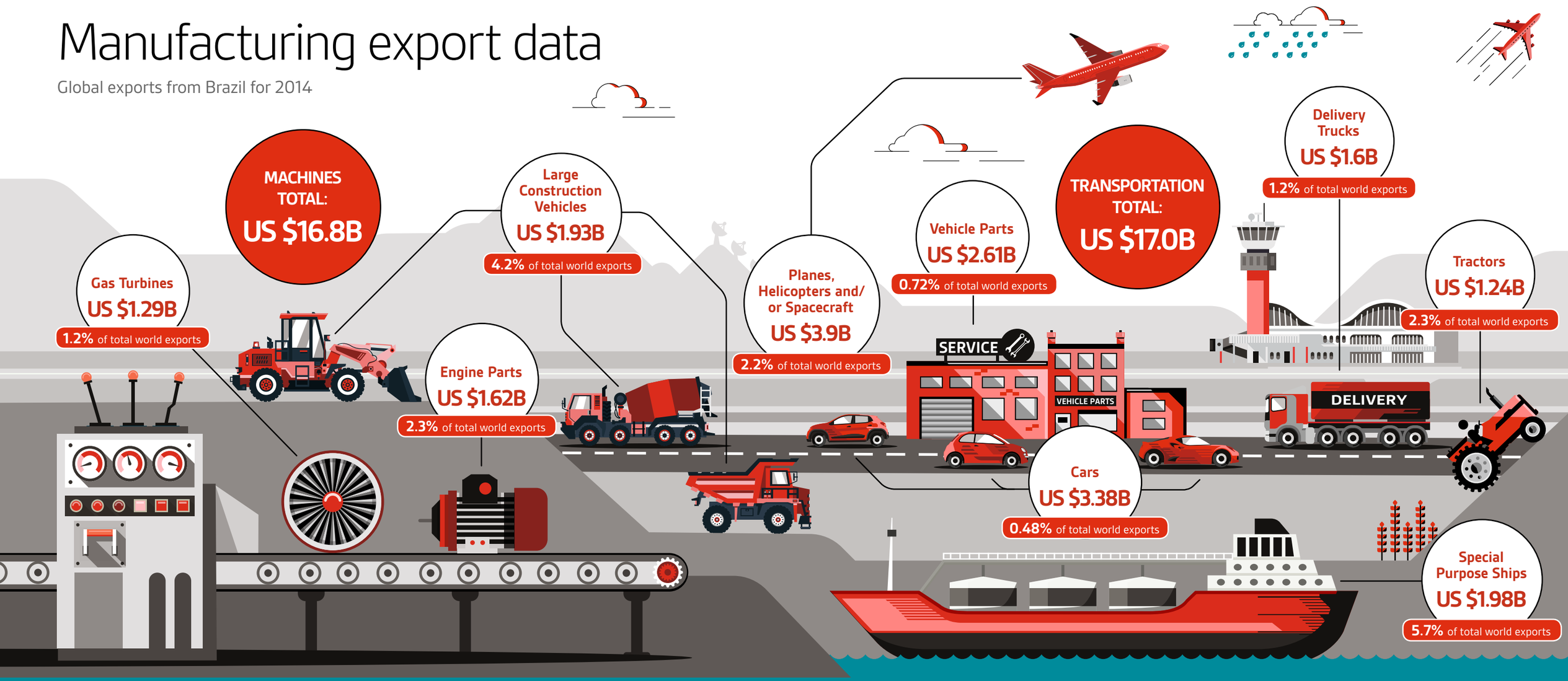
There are many benefits that the use of standards can bring to manufacturing businesses, whatever the product they are making, but with 75% of global trade composed of intermediate inputs[7], it is essential to ensure that new products are designed and made to internationally recognized specifications.

Even if they are initially targeted at local consumers, by complying with international standards, businesses are ensuring interoperability in global value chains ●

MAXIMIZING GLOBAL OPPORTUNITIES

Manufacturing export data

Global exports from Brazil for 2014



10 vital standards for the manufacturing industry

1	BS EN 61508-1:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems. General requirements.
2	ISO 22745-1:2010	Industrial automation systems and integration. Open technical dictionaries and their application to master data. Identification of concepts and terminology.
3	ASTM F1503-02:2007	Standard practice for machine/process capability study procedure.
4	BS 8887-1:2006	Design for manufacture, assembly, disassembly and end-of-life processing (MADE). Terms and definitions.
5	BS 8888:2017	Technical product documentation and specification.
6	BS ISO 7718-1:2016	Aircraft. Passenger doors interface requirements for connection of passenger boarding bridge or passenger transfer vehicle. Main deck doors.
7	BS ISO 24394:2008+A1:2012	Welding for aerospace applications. Qualification test for welders and welding operators. Fusion welding of metallic components.
8	BS ISO 6966-2:2005	Aircraft ground equipment. Basic requirements. Safety requirements.
9	BS ISO 15622:2010	Intelligent transport systems. Adaptive cruise control systems. Performance requirements and test procedures.
10	BS EN ISO 15008:2009	Road vehicles. Ergonomic aspects of transport information and control systems. Specifications and test procedures for in-vehicle visual presentation.

Food and agriculture:
Sector trends

In today's market place, consumers want a quality product made by a quality process. Farmers and food producers are increasingly looking to quality management and environmental standards to ensure both excellence and sustainability.

Over the past 20 years, the productivity of Brazilian agriculture has boomed. Since 1990, total output has more than doubled and livestock production has almost trebled[1]. The value of food and agriculture exports has risen by over 500% since 1995 and in 2014 they were worth over US $87 billion to the Brazilian economy, accounting for more than 38% of total exports.

Brazil is now the world's second largest agricultural exporter and the biggest single supplier of coffee, raw sugar, fruit juice, poultry meat and frozen bovine meat. It also provides almost half (40%) of the world's soybeans.

Much of this increase has been achieved through significant improvements in productivity. Investment in research has led to developments in areas such as better nitrogen fixation and new crop varieties and Brazil has become a leader in tropical agriculture technology.

Economic reforms and domestic food security schemes are also credited as having had a considerable influence on production levels throughout the sector, from the smallest family farms to the largest agribusiness.

Despite the recent drop in commodity prices, there remains a huge need for Brazilian produce. The world population is set to increase by over 16% in the next 15 years, reaching 8.5 billion in 2030[2] and it still needs to be fed. And with an extra 1.4 billion people expected to join the global middle class between 2009 and 2020[3], tastes are changing. The International Coffee Organization, for example, estimates that the demand for coffee is set to rise by 25% between 2015 and 2020[4].

Maximizing these opportunities will be hard. Changes in weather patterns and consumer choices are exerting new pressures on producers. The recent drought saw a drop in yields for 2015[5], bringing into sharp focus the affect that climate and natural resource issues may have on long-term productivity.

Alongside this, many of the recent food origin initiatives, such as the farm to fork and fair trade schemes, are encouraging consumers to think about how food on their plate is produced and importers are passing these concerns onto exporting countries.

For today's customer, quality is no longer just defined by taste. A quality product needs to have been produced by a quality process that is both responsible and sustainable. It will also meet standards governing food safety, storage, transport and hygiene.

Large food wholesalers need to ensure the products they are buying comply with all relevant regulations and will not leave them exposed further down the line. They want to know that they have resilient supply chains that are well placed to survive future shocks.

This means that for producers and suppliers, quality control is essential. Quality management standards such as ISO 9001 provide the framework for ensuring that good standards are maintained throughout harvesting, processing and packaging. Coffee estate growers using ISO 9001 say they are better able to provide the quality guarantees that large roasters demand[6].

Engaging with standardization will reduce waste and improve sustainability. Research has shown that the implementation of standards leads directly to increases in operational efficiency resulting in a 5.3% impact on the turnover of businesses in the sector, as well as a 9.9% impact on the value of exports.

Through its BSOL database, BSI provides access to a comprehensive library of over 95,000 internationally recognized standards, helping customers worldwide to guarantee the quality of their products and ensuring that they are ready to maximize new opportunities in a rapidly changing marketplace ●

Standardization had a

9.9%

reported impact on exports

> **Coffee estate growers using ISO 9001 say they are better able to provide the quality guarantees that large roasters demand[6].**

Food and agriculture export data

Global exports from Brazil for 2014

Asia · Europe · North America · South America · Africa · Oceania

Soybeans
US $23.6B
40% of total world exports

Raw Sugar
US $9.81B
34% of total world exports
WORLD LEADER

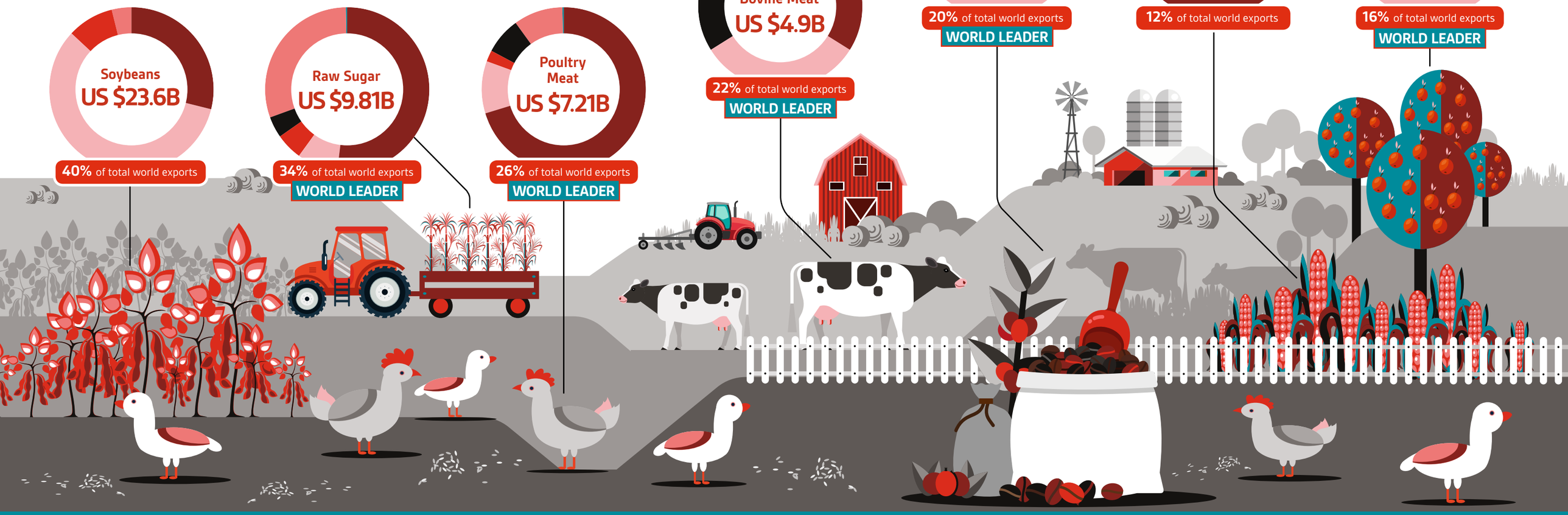
Poultry Meat
US $7.21B
26% of total world exports
WORLD LEADER

Frozen Bovine Meat
US $4.9B
22% of total world exports
WORLD LEADER

Coffee
US $6.14B
20% of total world exports
WORLD LEADER

Corn
US $4.18B
12% of total world exports

Fruit Juice
US $2.51B
16% of total world exports
WORLD LEADER



10 vital standards for the food and agriculture industry

1	BS EN 13140:200+A1:2009	Agricultural machinery. Sugar beet and fodder beet harvesting equipment. Safety.
2	BS 5202 (series), ISO 2817:1999	Methods for chemical analysis of tobacco and tobacco products. Determination of silicate residues insoluble in hydrochloric acid.
3	ASTM F2341-05 (2016)	Standard practice for user requirements for livestock, meat and poultry evaluation. Devices or systems.
4	ISO 2917:1999	Meat and meat products. Measurement of pH. Reference method.
5	BS EN 12268:2014	Food processing machinery. Band saw machines. Safety and hygiene requirements.
6	ASTM E460-12	Standard practice for determining effect of packaging on food and beverage products during storage.
7	BS EN 15593:2008	Packaging. Management of hygiene in the production of packaging for foodstuffs. Requirements.
8	BS EN 12630:1999	Fruit and vegetable juices. Determination of glucose, fructose, sorbitol and sucrose contents. Method using high-performance liquid chromatography.
9	BS ISO 4150:2011	Green coffee or raw coffee. Size analysis. Manual and machine sieving.
10	BS 5305:1984	Code of practice for cleaning and disinfecting of plant and equipment used in the dairying industry.

Minerals and mining:
Sector trends

Only resilient companies will prosper in the current international commodity markets. By embedding an imaginative and forward thinking culture, businesses involved in mining and mineral extraction will be best placed to utilize the new technologies that are delivering previously unthought-of operational efficiencies.

“From product quality and efficient practices to health and safety and resilient supply chains, standards are an essential tool for ensuring a healthy future.”

Brazil is now one of the world's major mineral suppliers. It is the fifth largest mineral producer, the second largest producer of iron ore and manganese[1] and is home to 98.53%[2] of global niobium resources.

As such, the mineral and mining industries have played a significant role in Brazil's export boom. In 2000, the export of minerals was worth US $4.94 billion, making up just 8.6% of the total export value. Yet by 2011, minerals were responsible for 28% of total exports, bringing in US $74.2 billion to the Brazilian economy. In the same year, the National Mineral Production Department reported that there were 8870 mining companies operating, with the sector generating over 2.2 million jobs[3].

Much of this growth has been driven by the rapid urbanization in China. By the time they peaked in 2011, the value of exports of iron ore to the Chinese market was US $19.9 billion, over 70 times bigger than in 2000, accounting for 46% of the total iron ore exports for that year.

The oil and gas industries have also contributed significantly to the dramatic rise in Brazil's export revenue. Between 2000 and 2011, exports of crude and refined oil rose from US $0.958B to US $27.26B. This has been due in part to the recent discovery of the pre-salt oil reserves in the Santos and Campos basins. Since 2006, a number of multi-billion-barrel deep-water oil fields have been brought into production and by June 2016 Petrobas had 52 wells operating in the pre-salt fields, producing one million barrels of oil per day[4].

However, since they peaked in 2011, commodity prices have crashed. Between 2013 and 2016, for example, iron ore lost almost 80% of its market value. This has seriously affected the income from Brazil's mineral exports. In 2015, despite exporting 22 million more metric tons of iron ore, revenues were down by 45%[1].

Cycles in commodity prices are nothing new. Revenues can always be increased through greater production, and in boom times this is often how money is made. But when prices are low, businesses need to find alternative ways to increase profits and there are many new technologies currently offering opportunities for operational efficiencies to companies involved in mineral extraction.

One of the biggest single costs incurred by the sector is in the supply of power to operations. Recovering minerals from the ground consumes energy and some companies have already taken control of their supplies, realizing energy savings of between 10% and 40% through renewable installations. By generating its own electricity through wind, solar, hydro or biomass power, a mine can not only reduce costs, but protect itself against any future fluctuations in the energy market, and, where the supply is variable, align working processes with energy availability[5].

There are many other new technologies that have the potential to help increase operational efficiencies in the mining sector. Additive manufacturing (more commonly known as 3D printing), for example, will enable companies working in remote locations to custom manufacture critical parts, minimizing delays caused by unexpected maintenance issues and reducing the need to hold large parts inventories on site.

Wearable technology is also set to have a potential impact on efficiencies. By incorporating data gathering technology into miners' clothing, operators will be able to directly locate workers and heat, cool and ventilate only occupied areas of a mine.

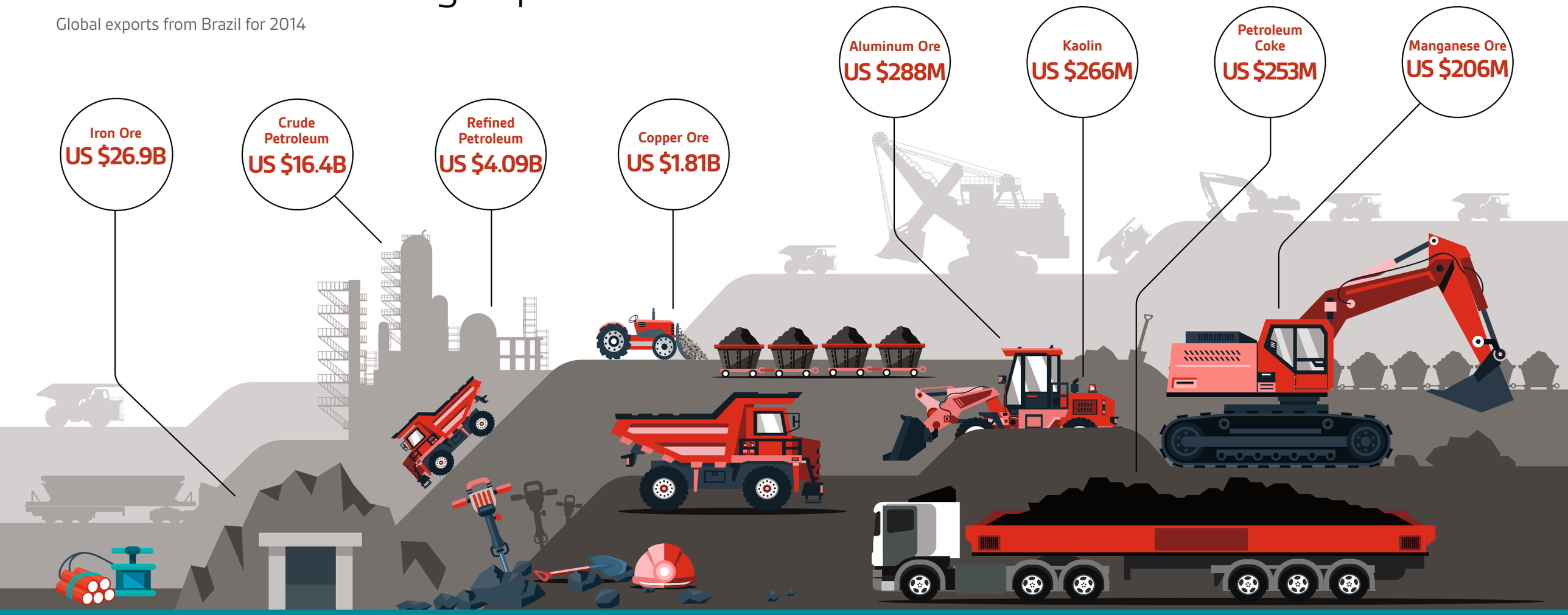
In the end, it is the companies that strive to pursue every potential for operational efficiencies that will be best placed to thrive, despite the pressures of the current market. Securing a forward thinking culture that has the ability and imagination to utilize the latest technological innovations is crucial.

84%
of companies say that using standards enhances their reputation

Through the use of standards, the latest internationally recognized processes and systems can be embedded throughout an organization, ensuring excellence in all areas of the business. From product quality and efficient practices to health and safety and resilient supply chains, standards are an essential tool for ensuring a healthy future ●

Minerals and mining export data

Global exports from Brazil for 2014



10 vital standards for the minerals and mining industry

1	BS ISO 16878:2016	Iron ores. Determination of metallic iron content. Iron (III) chloride titrimetric method.
2	ASTM D2892-16	Standard test method for distillation or crude petroleum (15 – Theoretical plate column).
3	BS EN ISO 17776:2016	Petroleum and natural gas industries. Offshore production installations. Major accident hazard management during the design of new installations.
4	BS ISO 21283	Iron ores. Determination of specific surface area. Test method using air-permeability apparatus (Blaine).
5	BS EN ISO 19296	Mining and earth moving machinery. Mobile machines working underground. Machine safety.
6	BS EN 1127-2:2014	Explosive atmospheres. Explosion prevention and protection. Basic concepts and methodology for mining.
7	BS EN ISO 22721:2007	Conveyor belts. Specification for rubber or plastics covered conveyor belts of textile construction for underground mining.
8	BS ISO 17757	Earth moving machinery and mining. Autonomous and semi-autonomous machine system safety.
9	BS ISO 1998-4:1998	Petroleum industry. Terminology. Refining.
10	BS EN ISO 20815:2010	Petroleum, petrochemical and natural gas industries. Production assurance and reliability management.

Why choose BSOL?

- A faster, easier way to work with standards.
- Available 24/7 and revised every single day, BSOL keeps customers/subscribers completely up to date.
- Using an out of date document could mean product recall or a project failure. BSOL brings peace of mind, because it guarantees everyone has access to the right documents, wherever they are in the world.

BSOL is a comprehensive online standards library giving access to over 95,000 internationally recognized standards including ISO, EN, BS, CEN, CENELEC, ASTM and IEC standards in one easily searchable and cost effective solution.

Download standards anywhere in the world

Registered users can find what they are looking for in seconds – searching by number, keyword or phrase, standards can be viewed through the BSOL online viewer or downloaded as PDF.

Automatic update alerts

Group email alerts send notifications around key standards to all registered users letting them know what's changed and when.

Flexible, cost-effective access

Subscribers can choose from 53 subject-related modules or build a custom collection with the standards crucial to their business.

Stay ahead with exclusive content

BSOL is the only way to subscribe to PAS documents, BSI books and draft standards, connecting customers to the latest innovations and trends and leaving them best placed to anticipate and influence the future of their industry.

Unrivaled depth

Businesses with older equipment or buildings can search a complete archive of historical standards – as far back as 1919.

Dedicated support

The BSOL Knowledge Centre provides free access to experts via the phone, or email.

Reduced costs

Tracking and maintaining a library of documents costs precious time. A BSOL subscription means customers will never purchase another duplicate document.

Reduced risk

Having guaranteed access to the latest standards helps reduce liability and risk of using out of date documents. It also makes compliance with contracts or audit requirements simple.

Three ways to work with BSOL

1 Subscribe to the full collection

The full collection contains over 95,000 internationally recognized standards including ISO, EN, BS, CEN, CENELEC, ASTM and IEC standards.

2 Subscribe to subject based modules

The BSOL database is broken down into 53 standards based modules and 3 book modules. Each module contains all the standards related to a specific subject, and many contain thousands of individual standards.

3 Create a custom collection

Choose from the complete BSOL library to build an easily accessible collection of the standards.

Training and certification

Why train with BSI?

BSI is one of the world's leading providers of training, information and knowledge on standards.

Expert teams tailor top quality training to organizations of all sizes and for every type of activity - ranging from leading multinationals and innovative start-ups to educational institutions, governments and charities.

BSI tutors work across the world to transfer the knowledge, skills and tools needed to promote excellence and embed change. These trainers will:

- ✓ Determine how standards can help your organization
- ✓ Help teams plan and implement
- ✓ Embed monitoring, auditing and compliance

For more information go to www.bsigroup.com/pt-BR/Normas/British-Standards-Online

Certification

For over a century, BSI has led the way in standards. Certifying with BSI sends a clear message to customers, competitors, suppliers, staff and investors that a business is committed to being the best it can be.

With more than 80,000 certified clients and more full-time assessors than any other certification body worldwide, BSI is one of the largest and most experienced certification providers. Driven to ensure the long-term health of your company, after certification, BSI will provide regular visits to assess and ensure compliance, carefully matching their industry experience to customer need and giving free analysis, benchmarking performance against other organizations in the same sector.

For more information go to: www.bsigroup.com/pt-BR/Normas/British-Standards-Online

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Disclaimer

Whilst every effort has been made to ensure the accuracy of the material in this document, BSI and the report's authors will not be liable for any loss or damages incurred through the use of the report.

The British Standards Institution (BSI, a company incorporated by Royal Charter), performs the National Standards Body activity (NSB) in the UK.

BSI, together with other BSI Group Companies, also offers a broad portfolio of business solutions other than the NSB activity that help businesses worldwide to improve results through Standards-based best practice (such as certification, self-assessment tools, software, product testing, information products and training).

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All data in this report has been taken from OEC (Observatory of Economic Complexity) visualization engine for international trade data atlas.media.mit.edu, or the Cebr (Centre for Economics and Business Research) Centre Ltd report: The Economic Contribution of Standards to the UK Economy, June 2015, unless noted below (figures quoted from data in February 2017):

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If you would like to find out more about creating your own digital standards collection via BSOL please get in touch:

BSI Group
Rua Gomes de Carvalho,
1069 – 18th floor - Vila Olímpia
São Paulo / SP
CEP: 04547-004
bsigroup.com

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