

The role of plastics in achieving the UN Sustainable Development Goals

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SUSTAINABLE DEVELOPMENT GOALS



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Executive Summary

The Sustainable Development Goals (SDGs) have been agreed under the United Nations General Assembly in 2015 and define 17 goals applicable globally to be achieved by 2030. The SDGs identify the challenges we face to make the planet a safer and more sustainable place for all its inhabitants.

These aim to describe the most important matters facing global development. Each goal has separate targets that enable governments around the world to implement and monitor changes across different economic sectors.

The goals cover a broad range of social and economic aspects and, unlike the previous Millennium Development Goals, are designed to be applicable to all parts of the world in order to provide a global framework for sustainable development.

The plastics industry has already contributed significantly to achieving sustainable development at global level and its contribution is instrumental in achieving the SDGs.

Given the ubiquitous nature of plastics as part of our everyday lives, all SDGs are connected to the plastics industry and plastic products. Without the contribution of the plastics industry, many of these goals would be unattainable.

Some of the critical areas where the plastics industry has had a crucial contribution is in global sanitation, health services, renewable energy as well as job creation across the waste management and recycling sectors.

Although the latest years have seen a growing sentiment against plastic pollution, public perception tends to ignore some of the most important benefits the plastic industry brings to everyday life. As world governments focus their attention to the implementation of the SDG goals under the 2030 Agenda it is critical to highlight areas under each SDG where the plastics industry has had and will continue to play a very important role to play in realising these goals at global level.

Plastic is an incredibly versatile material that brings numerous benefits to our everyday lives, enabling many other cutting-edge technologies and significantly reducing food waste. Plastic products have contributed globally to meeting societal needs in all economic sectors. However, plastic pollution and the mismanagement of plastic waste is a growing environmental problem that has received a lot of public attention in recent years and needs to be addressed.

Index

Introduction	1
Goal 1: No poverty.....	2
Goal 2: Zero hunger	4
Goal 3: Good health and well-being.....	6
Goal 4: Quality education.....	8
Goal 5: Gender equality	10
Goal 6: Clean water and sanitation.....	12
Goal 7: Affordable and clean energy.....	14
Goal 8: Decent work and economic growth	16
Goal 9: Industry, innovation and infrastructure.....	18
Goal 10: Reduced inequalities.....	20
Goal 11: Sustainable cities and communities.....	22
Goal 12: Responsible consumption and production	24
Goal 13: Climate change	26
Goal 14: Life below water	28
Goal 15: Life on land.....	30
Goal 16: Peace, justice and strong institutions.....	32
Goal 17: Partnerships for the goals.....	34

Introduction

The 17 UN sustainability goals provide a template for sustainable development until 2030. The goals cover a broad range of social and economic development aims and, unlike the previous Millennium Development Goals, are designed to be applicable to all parts of the world. These are not simply goals for the developing world. The goals all have separate targets. The sustainability goals and targets provide a framework for sustainable development throughout the world.

Plastics products have contributed significantly to the development of the fundamental aspects of our society and have brought huge benefits to mankind. Despite the obvious benefits that the materials bring, the public perception of plastics has never been high and has decreased in the last few years due to increased volumes of waste plastics reaching the wider environment. The longevity of plastics products, previously one of the strengths can be seen as a weakness of the material if it leaches into society.

This is largely a result of:

- A failure to correctly deal with product disposal of at the 'end-of-life' stage. Plastics are easily recycled but industry developments have not kept pace with societal developments.
- A failure of adequate waste management systems in parts of the world which allow products to reach the environment rather than the recycling stream.
- A failure of society to deal with littering.
- Poor waste management practices.

Plastics products have much to contribute to improving the quality of life and the sustainability of the planet. They are not inherently 'bad' and neither are they inherently 'good'. As with anything, the correct use of plastics can improve lives throughout the world but the incorrect use of plastics can also be detrimental. The industry is working hard to decrease the impact of plastics on the world but equally there is a need to recognise the significant beneficial effects plastics can have in achieving the UN sustainability goals.

This document is designed to examine the 17 UN sustainability goals from the point of view of the plastics industry, to show how the plastics industry already contributes to achieving the goals and to examine how the industry can be a vital partner in achieving the sustainability targets.

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Hitchin, 2019

Notes:

1. Portions of this document are taken from the UN Sustainable Development Knowledge Platform (<https://sustainabledevelopment.un.org/sdgs>). Their copyright is acknowledged.
 2. The targets for most of the goals are interlinked and most activities affect one or more goals. These are cross-referenced in the form: see 'UN SDG XX' where XX refers to the relevant goal in this document.
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Goal 1: No poverty



End poverty in all its forms everywhere

Extreme poverty rates have been cut by more than half since 1990 but 20% of people in developing regions still live on less than \$1.90 a day, and there are millions more who make little more than this daily amount, plus many people risk slipping back into poverty.

Poverty is more than the lack of income and resources to ensure a sustainable livelihood. Its manifestations include hunger and malnutrition, limited access to education and other basic services, social discrimination and exclusion as well as the lack of participation in decision-making. Economic growth must be inclusive to provide sustainable jobs and promote equality.

Challenges for plastics

The challenges to the plastics industry in reducing poverty are:

- The investment costs for a plastics processing site are high and there is a need for a substantial local or export market for the products to cover these costs.
- The investment costs mean that plastics processing sites tend to be located in areas where the rule of law is strong enough to prevent appropriation of substantial assets (see UN SDG 16).
- The market scale and transport difficulties in developing countries inevitably leads to sites being located in urban areas and the benefits of industrialisation are not seen in rural areas, even if the benefits of the products are.
- Some of the skill required are specific to the industry and the rise of Industry 4.0 may see a concentration of skills being located in developed countries and delivered via the Internet to the detriment of local skill development.
- The plastics industry is a mobile industry and recent years have seen production migrate to low-labour cost countries. This has benefited local development but as local costs rise, the industry can migrate once again to a lower cost country.

Opportunities for plastics

The plastics industry has much to contribute in terms of reducing poverty throughout the world.

- Plastics are light-weight materials and transport costs mean that production sites are generally located relatively close to the customer. This gives decentralised development opportunities and increased economic activity in the local area.
- The low size of the typical processing site means that it is a high volume employer (in the UK, the industry provides more jobs than the automotive and pharmaceutical industries combined). High employee numbers not only provide direct jobs but also reduce poverty in surrounding areas through the need for services and increased economic activity. The plastics industry is responsible for the economic health of entire regions in parts of the world.
- The industry brings employment to all parts of the world (see UN SDG 8). At the processing stage, plastics processing sites are predominantly SMEs (< 250

The use of plastics has dramatically reduced the cost of many household products and made them widely available. Plastic products are low-cost, durable and easily transported.

Goal 1 targets

- By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day.
- By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions.
- Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable.
- By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance.
- By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.
- Ensure significant mobilization of resources from a variety of sources, including through enhanced development cooperation, in order to provide adequate and predictable means for developing countries, in particular least developed countries, to implement programmes and policies to end poverty in all its dimensions.
- Create sound policy frameworks at the national, regional and international levels, based on pro-poor and gender-sensitive development strategies, to support accelerated investment in poverty eradication actions.

employees) and tend to be located close to their markets. These small companies provide local employment that is good for developing countries but more importantly they provide a base for skills training that can aid development (see UN SDG 4). Employment opportunities can range from low-skill machine operators through to high-skill maintenance and management positions.

- Plastics products are not only low-cost but, when used correctly, have a high-utility value. They can be used to improve crop yields (see UN SDG 2), increase the availability and distribution of clean water (see UN SDG 6) and therefore increase the productive capacity of areas to reduce poverty.

Action taken to date

The action taken to date has been driven mainly by economic pressures but the industry has already contributed to poverty reduction through actions such as:

- There are plastics processing sites in almost every country in the world. These provide employment and consequent poverty reduction through stable jobs and skills development (see UN SDG 8).
- The ability of plastics to increase the availability and distribution of clean water (see UN SDG 6) has enabled other economic activity to replace the time required to source clean water. This other economic activity, e.g., education and social, has reduced poverty and enabled community development.
- The benefits of improved water supplies and improved sanitation through plastics products has increased the resilience of communities (see UN SDG 6) and reduced the effects of climate change (see UN SDG 13).
- Improved crop yields (see UN SDG 2) have allowed communities to have adequate food and to move beyond subsistence farming to trading and consequent poverty reduction.
- Improved product protection in the transport phase mean that more of the harvested product reaches markets in saleable condition and improves the trading position of small-scale farmers (see UN SDG 2).
- The plastics industry provides high-quality employment opportunities for all genders and gender is not a barrier to progression in the industry (see UN SDG 5).

- Product development for developing countries means that plastics are widely used in the refugee and disaster relief camps where they can provide low-cost shelter and protection from the elements (see UN SDG13).

Future action

The plastics industry will continue to contribute to poverty reduction in a variety of areas:

- The increased use of plastics will continue to improve crop yields and retain product life to market (see UN SDG 2 and UN SDG 8). This will increase the income of small-scale farmers and further reduce rural poverty.
- The development of cheap, easy-to-maintain dwellings (see UN SDG 11) will reduce housing costs and therefore poverty in wide areas.
- Continued economic growth (see UN SDG8) will increase local markets for plastics products and increase the need for local production to provide employment and reduce poverty.
- The recycling of plastics will involve whole communities in the collection, transport, sorting and recycling processes. This is a new business area that will stimulate economic growth.
- The continued use of plastics in the 'cold chain' will enable medicines to be transported greater distances (see UN SDG 3) and increase economic activity in rural areas.

Summary

The plastics industry has contributed significantly in the past to the goals of UN SDG 1 and will continue to contribute in the future. Plastics products (both short- and long-life products) enable increased economic activity to reduce poverty and improve living conditions.

Plastics are used extensively in refugee camps throughout the world to provide low-cost housing and water distribution.

The Circular Economy is predicted to create over 200,000 gross jobs and reduce unemployment by 54,000 in the UK alone.

Source: Green Alliance - "Employment and the circular economy."

The plastics industry supports 166,000 jobs in the UK and millions globally.

Even simple single-use products such as PET water bottles have value after use in poor countries. In Northern Ethiopia these are collected and traded in markets as an efficient way of collecting and transporting water.

Goal 2: Zero hunger



End hunger, achieve food security and improved nutrition and promote sustainable agriculture.

It is time to rethink how we grow, share and consume our food. If done right, agriculture, forestry and fisheries can provide nutritious food for all and generate decent incomes, while supporting people-centred rural development and protecting the environment.

Right now, our soils, freshwater, oceans, forests and biodiversity are rapidly degrading and soil fertility is reducing. Climate change is putting even more pressure on the resources we depend on, increasing risks associated with disasters such as droughts and floods. Many rural women and men can no longer make ends meet on their land, forcing them to migrate to cities.

A profound change of the global food and agriculture system is needed if we are to nourish today's 795 million hungry and the additional 2 billion people expected by 2050.

The food and agriculture sector offers key solutions for development, and is central for hunger and poverty eradication.

Challenges for the plastics industry

The challenges to the plastics industry in helping to deliver zero hunger are in the appropriate selection, use and, increasingly, in disposal of plastics:

- The inappropriate use (and overuse) of plastics in the food system. This not only includes the use of excessive or difficult to recycle plastics (and combinations thereof) in retail food packaging applications but also includes the use of excessive or difficult to recycle plastics earlier in the food system (see UN SDG 12).
- The inappropriate disposal of plastics products used in the food system. This not only includes retail packaging but also includes the plastics used earlier in the food system. In most cases this is due to a lack of an appropriate waste management system to cope with recycling or reuse but can also include

poor consumer behaviour aspects such as littering.

- The plastics industry is also being challenged by environmental campaigners for 'plastics-free aisles' in supermarkets where the issues of plastics litter and plastics in the oceans (see UN SDG 14) are areas of rising consumer concern.

The plastics industry delivers immense benefits in achieving this goal but major challenges remain for the industry, particularly in improving product reuse and/or managing appropriate disposal at end-of-life.

Without plastics packaging, food waste during transport can be as high as 50% Food waste during storage can also be reduced by more than 20% using well-designed plastics packaging.

Goal 2 targets

- By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.
- By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons.
- By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment.
- By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.
- By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed.
- Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries.
- Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect, in accordance with the mandate of the Doha Development Round.
- Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility.

Opportunities for plastics

Plastics products have already enabled more food to be produced from the available resources but there is more that the industry can do at all levels of the food system, such as:

- Plastics can be used to increase farm productivity and crop yields through the use of 'poly-tunnels' to extend growing seasons.
- Plastics pipes can be used to increase food systems resilience to drought by reducing the cost and effort of transporting water to crops.
- Plastics drainage pipes can reduce the effects of flooding by channelling excess water to drainage systems without excessive soil losses.
- Plastics products can reduce spoilage and wastage in the food system and allow more food to be delivered from the producer to the plate.
- Plastics products are fundamental to the operation of seed and plant banks that protect genetic resources and diversity.
- Plastics products can improve fishing yields and protect stocks through sensitive and appropriate design of fishing nets.

Action taken to date

The plastics industry has had clear benefits for the majority of the world's population through actions such as:

- Plastic pipes deliver a reliable source of water to crops and villages to increase crop yields and decrease repetitive labour tasks (see UN SDG 6 and UN SDG 8).
- Crop yields are significantly improved through the use of 'poly-tunnels' to improve yields and growing seasons.
- Plastics products are used to reduce food losses and degradation from vermin and other organisms at the producer level.
- Plastics films are used to protect silage for winter animal feed.
- Plastic fish boxes allow fresh fish to be protected, transported and consumed large distances from the delivery port.
- Correctly designed food packaging increases shelf life and greatly reduces waste between producer and plate. In most cases the environmental case for plastics is poorly made but research (American Chemistry Council, April 2018) shows that substitution of plastics

with alternative materials can result in increased environmental impact over the life of the product.

- Plastics enable food packaging, such as dispensing or child resistant caps, that are simply not possible with alternative materials.
- Modern harvesting equipment depends on plastics to function and has increased crop yields and reduced the manual labour required (see UN SDG 1).
- Water-logged and unproductive land can be drained and cultivated using land drainage piping.

The UN estimates that 800 million people suffer from hunger world-wide but this number would be far increased if not for the contribution of plastics in the food system.

Future action

The action taken to date have had clear benefits for most of the world's population but extending these benefits to those most at risk of hunger requires further action such as:

- Reducing the amount of packaging used to the minimum necessary for product protection to reduce the amount of plastic entering the waste stream.
- Reducing the diversity of plastics in individual food packages. This does not imply reducing the number or types of plastics used but reducing the number or types of plastics used in a single package. This will avoid commingling of plastics types in the waste stream and make recycling easier.
Note: In some cases, multi-layer packaging offers resource efficiency via shelf-life protection.
- Establishing recycling networks to recover valuable plastics materials before they enter the waste stream. This can assist with UN SDG 8 by providing work in developing countries provided these are not used as 'sinks' for plastics waste from developed countries.

Summary

The plastics industry produces the products that are vital to relieving hunger and both improving and changing the global food system. The industry produces the 'enabling products' to improve yields, improve harvesting practices, reduce food wastage and deliver more and better quality food to the 800 million hungry people in the world.

Plastic fishing nets have decreased the cost of nets and increased the yield of fishing. Fish protein is essential for food security in many developing countries and for small island states and in coastal regions, fish provides over 50% of the animal protein intake.

Sustainable fishing practices and the inappropriate disposal of fishing nets remain a significant issue (see UN SDG 16).

Refrigerators and freezers are essential for food storage. Both use plastics for insulation and ease of cleaning.

The threat of climate change (see UN SDG 13) and the contribution of the plastics industry are often linked. Plastics bring enormous benefits to improving food production and reducing hunger. The question is: Would you rather be definitely hungry today or possibly dead tomorrow?

Goal 3: Good health and well-being



Ensure healthy lives and promote well-being for all at all ages

Ensuring healthy lives and promoting the well-being for all at all ages is essential to sustainable development. Significant strides have been made in increasing life expectancy and reducing some of the common killers associated with child and maternal mortality. Major progress has been made on increasing access to clean water and sanitation, reducing malaria, tuberculosis, polio and the spread of HIV/AIDS. However, many more efforts are needed to fully eradicate a wide range of diseases and address many different persistent and emerging health issues.

Challenges for the plastics industry

The challenges to the plastics industry in ensuring healthy lives and well-being are:

- Medical plastics are traditionally single use to reduce cross-contamination and the spread of disease. Reducing the amount of waste through effective sterilisation processes whilst still preserving the benefits of plastics is a challenge for the industry.
- The health care industry generates large amounts of contaminated waste that must be ultimately be disposed of even it is reused before disposal. Potentially contaminated products cannot be treated as part of the standard waste stream. Medical waste is treated separately to standard waste and incineration is the standard method. Managing contaminated waste to recover the material or embodied energy requires improved processes and development.
- The use of medical plastics in developing countries presents specific problems with the long supply chains for delivery and recycling, if this is chosen as the disposal route.
- Exploring and quantifying the issue of micro-plastics. These are the result of physical or chemical breakdown of plastics products. Micro-plastics potentially enter the ecosystem as a result of wear from plastics in normal use or from inappropriate disposal of plastics and wear in the environment.

Whilst plastics are inert 'en masse', the affect of micro-plastics on the ecosystem needs further research.

- Reducing the by-products and hazardous chemicals used in the production of plastics raw materials or in the processing of plastics.

The overall challenge is to continue to

600,000 pacemakers are fitted every year and these are all insulated with plastic.

Goal 3 targets

- By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births.
- By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births.
- By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases.
- By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being.
- Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol.
- By 2020, halve the number of global deaths and injuries from road traffic accidents.
- By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes.
- Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all.
- By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.
- Strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control in all countries, as appropriate.
- Support the research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all.
- Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States.
- Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks.

deliver the recognised health benefits of plastics products without compromising the future.

Opportunities for plastics

The opportunities for the plastics industry in improving health and well-being are:

- Child mortality can be dramatically reduced through the provision of clean water and sanitation provided by plastics pipes (see UN SDG 6). The delivery of clean water is a major factor in improving health and well-being.
- Immunisation programmes are capable of saving up to 1 million lives/year (mainly children) and these depend on plastics for not only immunisation equipment such as disposable syringes but also on the 'cold chain' that is sometimes necessary to get the drugs to the point of delivery.
- Epidemics such as Ebola require barrier treatment that can only be provided by plastics products.
- Epidemics such as HIV/AIDS require specialist treatment that depends on plastics products.
- Traffic accidents can be reduced by transport applications (see sidebar) to make roads safer for drivers and other road users.
- The effect of traffic accidents can be reduced by the use of plastics in areas such as air bags, seat belts, soft bumpers and safety helmets.

Action taken to date

Despite the challenges, health care is an area where plastics have changed the landscape and enabled modern healthcare since the invention of surgical gloves in 1889. The plastics industry has contributed through:

- Pipes for clean water (see UN SDG 6) to reduce water-borne disease and reduce the labour intensity and dangers of water collection. Plastic drinking water pipes are extensively tested to ensure that they do not affect the quality of the transmitted water.
- Closed storage tanks or covers for water storage to provide water that is not only safe from contamination by water-borne disease, insects and animals but also does not provide breeding grounds for insects, e.g. mosquitoes.
- Barrier plastics such gloves, gowns and face masks and to prevent cross-contamination or infection in all areas of

health care and especially in surgery.

- Barrier plastics such as condoms for safe sex to prevent HIV/AIDS transmission and for birth control and family planning.
- Blood bags and tubing for the collection, transport and transfusion of blood.
- Medical tubing for drug administration, drainage and surgery.
- Stents and implants for surgery applications and life extension.
- Medicine containers provide controlled dosages through the use of plastics, e.g. inhalers.
- Child resistant caps and closures prevent the inadvertent ingestion of drugs or other substances (liquid or solid).
- Insulation and protection of medical devices and implants such as heart pacemakers for quality of life extension.
- Plasters, adhesives and wound dressings for wound treatment and assistance in recovery.
- Packaging and protection of drugs both individually (blister packaging) and in bulk.

Future action

The plastics industry will continue to contribute to the delivery of good health and well-being in the areas of:

- The development and improvement of the recycling or incineration of contaminated plastic waste to recover the material or the embodied energy.
- Improving the sterilisation capabilities of plastics to allow re-use and a reduction in the single-use applications of plastics.
- Reduction in the by-products and hazardous chemicals used in the production of plastics raw materials.

Summary

The past contribution of the plastics industry to improving health and well-being is one of the great achievements of the industry. Without plastics products the current standard of health care and well-being achieved in the developed world would not be possible. Plastics will continue to contribute as new applications are developed and as the standard of health care in the developing world rises to that of the developed world.

Safety helmets for workers, cyclists, motorcyclists and sports are essential for protection and safety. They save hundreds of lives every year throughout the world.

Protective clothing such as high visibility vests and outdoor clothing keep people safe and warm in poor conditions and allow people to enjoy active life styles.

Refrigerators and freezers are essential for storage of medical products. Both use plastics for insulation and ease of cleaning.

Drivers and road users are kept safe by plastics products such as safety belts, air bags, collision/impact foams, road markers, road cones and safety helmets for cyclist and motorcycle riders.

Roads are kept drained and water-free by plastic drainage pipes and drainage products.

Goal 4: Quality education



Goal 4: Ensure inclusive and quality education for all and promote lifelong learning

Obtaining a quality education is the foundation to improving people's lives and sustainable development. Major progress has been made towards increasing access to education at all levels and increasing enrolment rates in schools particularly for women and girls. Basic literacy skills have improved tremendously, yet bolder efforts are needed to make even greater strides for achieving universal education goals. For example, the world has achieved equality in primary education between girls and boys, but few countries have achieved that target at all levels of education.

Challenges for the plastics industry

This is a key SDG as it can break the cycle of poverty, unemployment, poor health and provide a route to economic growth and stability. The challenges to the plastics industry in helping to deliver quality education are:

- Education needs to be for all and lifelong to provide continued opportunities in a changing world.
- The plastics industry is a single sector industry and it is difficult, if not impossible, for such an industry sector to change the world. However, all progress is made by a single step at a time.
- The plastics industry provides the tools and basics that enable quality education for all and promote life-long learning.
- The industry needs well educated and trained staff to continue to develop processes and products. Skills shortages are becoming apparent in the developed world as well as in the developing world. Plastics processing is a world-wide industry and the challenge is not simply to provide quality education but also to provide the trained staff that the industry needs.
- The industry needs a pool of trained staff and this means being inclusive and working with everybody in recruitment and training (see UN SDG 5 and UN SDG 10).

Opportunities for plastics

The opportunities for the plastics industry in helping to deliver quality education and plastics enable modern education in a variety of ways:

- Plastic pipes provide clean water and sanitation (see UN SDG 6) but also reduce the daily labour of collecting clean water. This allows women and girls in developing countries more time to engage in education, decent work and innovation. This provides for improved growth and educational opportunities at the most needed level.
- Plastics allow the development of

Electronic whiteboards have replaced chalk and blackboards and distributed learning will replace conventional teaching.

Goal 4 targets

- By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and Goal-4 effective learning outcomes.
- By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education.
- By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university.
- By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.
- By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations.
- By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy.
- By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development.
- Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all.
- By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries.
- By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing states.

infrastructure and telecommunications (see UN SDG 9) and there are opportunities to use plastics to change the learning landscape. In the past, 1 teacher was needed for every 28-30 students. The availability of affordable and clean energy (see UN SDG 7) and the improved infrastructures (see UN SDG 9) means that 1 teacher can communicate and teach 28-30 million students through Internet technology. Learning about anything is possible through the plastics-enabled Internet. Plastics will inevitably be used to extend the reach of distributed teaching and to provide quality education for all through life-long learning.

- Solar panels using plastics materials can help to deliver power to remote areas and increase educational opportunities (see UN SDG 7).
- Quality education will help developing countries to improve and move from agrarian to industrialised nations. This will drive an increased demand for plastics products in water and sanitation (see UN SDG 6), industry and innovation (see UN SDG 9) and in sustainable cities and communities (see UN SDG 11). The plastics industry has much to gain and much to contribute from improving education and encouraging development.
- The development of societies from agrarian to industrialised will provide increased demand for plastics products across a range of areas from industrial to consumer products. The plastics industry has much to gain from supporting the UN SDGs provided these are supported in a sustainable manner.

Action taken to date

The plastics industry has contributed to quality education through:

- Supporting the basic developmental requirements that enable teaching and learning, e.g. reduced hunger (see UN SDG 2), good health and wellbeing (see UN SDG 3), clean water (see UN SDG 6), and energy (see UN SDG 7). Without these fundamental building blocks, education and advancement are always less important than the daily struggle for simple survival.
- The industry is world-wide and employs significant numbers of people. The industry is primarily concerned with employing people who are willing to work, contribute to and improve the

industry. It is largely indifferent to class, caste or gender (see UN SDG 5 and UN SDG 10) in employment. Vocational training is provided as required by companies to meet internal needs.

- The industry is not well served in education terms, i.e. there are few traditional training programmes to prepare for joining the industry. Most sector-specific training is provided on-site and in-house by companies and this helps to raise the general educational levels of the population. The industry will also gain from distributed learning by allowing key skills to be distributed to a diffuse industry spread around the world.

Future action

The plastics industry will continue to contribute to the delivery of quality education in the areas of:

- Developing the education infrastructure for the learning technologies of the future that can leverage the skills of teachers to reach more people without regard to social status.
- Improving living standards throughout the world to enable learning for all people to become the norm rather than the exception.
- Improving and achieving gender equality at all levels of the industry (see UN SDG 5) to remove the current gender imbalance at technical and management levels.
- Supporting education initiatives at the local level. This is primarily taking place in the developed countries where organisations such as the Worshipful company of Horners support teacher training about the plastics industry to 'promote positive perceptions of the plastics industry'.

Summary

The plastics industry has much to contribute and much to gain from achieving quality education throughout the world. Quality education will allow everybody to contribute to achieving the UN SDGs.

Learning is changing and plastics are essential for this transformation.

Local collection and reprocessing schemes can be established where littered plastics have a value and families can receive economic benefit to improve nutrition, health care and education.

"An investment in education always pays the highest returns."

Ben Franklin

Goal 5: Gender equality



Achieve gender equality and empower all women and girls

While the world has achieved progress towards gender equality and women's empowerment under the Millennium Development Goals (including equal access to primary education between girls and boys), women and girls continue to suffer discrimination and violence in every part of the world.

Gender equality is not only a fundamental human right, but a necessary foundation for a peaceful, prosperous and sustainable world.

Providing women and girls with equal access to education, health care, decent work, and representation in political and economic decision-making processes will fuel sustainable economies and benefit societies and humanity at large.

Challenges for the plastics industry

The challenges to the plastics industry in achieving gender equality are:

- The plastics industry is international in outlook but local in operations. It must work with local conventions and attitudes. Overcoming these to promote gender equality is a task that is probably beyond the plastics industry alone (see UN SDG 17).
- The plastics industry already has low discrimination barriers and women and girls are currently working throughout the plastics industry all over the world. The challenge is to transform and improve this work and the role of women in the industry to benefit not only women and girls but also the industry.
- The plastics industry is engineering based and achieving the right education and training to deliver the necessary skills (see UN SDG 4) is crucial in achieving gender equality. The industry needs to invest in gender-blind training to not only achieve this goal but also to increase the trained labour pool.
- Engineering was not traditionally seen as suitable for women and girls but this has changed dramatically. It now offers opportunities regardless of gender. This old view of engineering needs to change

throughout the world.

Opportunities for plastics

The opportunities for the plastics industry in improving gender equality are:

- The plastics industry is well suited to flexible working and can provide opportunities for everybody, not only women and girls, to balance work and family commitments and still contribute to the industry.
- The plastics industry's assistance in achieving good health and well-being (see UN SDG 3) will improve family planning and sexual and reproductive health to allow integration of women and girls into the workforce and assist in achieving this goal.
- The plastics industry's assistance in achieving clean water and sanitation (see UN SDG 6), will release women and girls from repetitive water collection to allow them to take part in education (see UN SDG 4) and work (see UN SDG 8).

The international aspect of the plastics industry will help transfer best practice on gender equality across the world.

Goal 5 targets

- End all forms of discrimination against all women and girls everywhere.
- Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation.
- Eliminate all harmful practices, such as child, early and forced marriage and female genital mutilation.
- Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate.
- Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision making in political, economic and public life.
- Ensure universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Programme of Action of the International Conference on Population and Development and the Beijing Platform for Action and the outcome documents of their review conferences.
- Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws.
- Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women.
- Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels.

This will improve gender equality in society and in the industry and help to achieve this goal.

- Women and girls are already working in the industry but in many cases this is in low-skill roles, e.g. machine minding and assembly. Giving women and girls the training and opportunities to advance could transform the sector and increase the labour pool and help to achieve decent work and economic growth (see UN SDG 8). This is already being seen in the developed world where women are taking an increasingly important role in the industry.

Action taken to date

The plastics industry has contributed to gender equality through actions such as:

- The plastics industry employment ratio is already very even between the genders and it is thought that women already make up nearly half of the industry employees (see UN SDG 8). The problem is that the majority of the women work in lower-level manual or support roles and that there are not enough women in technical and management roles.
- The plastics industry is not the only manufacturing industry where women are under-represented in technical and management roles. This is changing in for most manufacturing but progress needs to be more rapid to achieve this goal.

Future action

The plastics industry is already contributing to gender equality but there is still much to do:

- The industry needs to provide safe work, good pay and equal opportunities for advancement for all staff. This is already happening in the developed world but there is still much to be done in the developing world.
- The industry needs to train, train and train again. This training needs to be gender-blind not only for the benefit of women but also for the benefit of the industry. The industry already suffers from skill shortages in the developed world and in many parts of the developing world. Skills need improvement at all levels of the industry to allow everyone to achieve their full potential and to allow the industry to meet the challenges of the future.
- The industry does not simply need to

train and develop the people already in the industry. It needs to make all areas of manufacturing more attractive to all genders to increase the number of people in the industry. Women are a largely untapped resource for the technical and management skill base and their inclusion will benefit the industry and the people.

Summary

Gender equality is vital for progress and will be a key component in achieving all of the goals. No industry sector can hope to do more than influence achieving this goal but the plastics industry is pervasive across the world and can contribute more than many other sectors in achieving true gender equality.

The plastics industry already includes many women in the workforce and offers safe work and good pay.

By contributing to the sexual and reproductive health of women and assisting with family planning, the plastics industry is already helping to improve gender equality.

Goal 6: Clean water and sanitation



Ensure access to water and sanitation for all

Clean, accessible water for all is an essential part of the world we want to live in. There is sufficient fresh water on the planet to achieve this. But, due to bad economics or poor infrastructure, every year millions of people, most of them children, die from diseases associated with inadequate water supply, sanitation and hygiene.

Water scarcity, poor water quality and inadequate sanitation negatively impact food security, livelihood choices and educational opportunities for poor families across the world. Drought afflicts some of the world's poorest countries, worsening hunger and malnutrition.

By 2050, at least one in four people is likely to live in a country affected by chronic or recurring shortages of fresh water.

Challenges for the plastics industry

There is enough water for everybody in the world but it is not always in the right place at the right time and the infrastructure to remedy this is not present in much of the world. Plastics products are key to delivering this goal. The versatility and longevity of plastics products can provide many infrastructure solutions but this is not without challenges, these are:

- The developed world solutions to clean water and sanitation were enormously successful and without these the modern city would not be possible. These solutions were initially implemented with ceramics or metals but they systems are now being replaced or extended using plastics products. The challenge is transferring the developed world solutions to the developing world using the appropriate technology.
- Providing sanitation and hygiene to all and ending open defecation needs either major infrastructure or local projects to deliver the goal.
- Infrastructure projects have high capital costs and implementation requires high-level skills and technology that are not always available in the developing world.

Developing the required skills needs quality education (see UN SDG 4) and industry to drive innovation and infrastructure (see UN SDG 11).

- Infrastructure projects are often centrally planned and do not always take into account needs of the local people. There is also a history of large infrastructure projects having unintended and deleterious local environmental impacts (see UN SDG 10).

The challenge is to deliver infrastructure projects that deliver the goal at a local level and do not have unintended impacts.

Opportunities for plastics

There are enormous opportunities for the plastics industry to help in delivering this goal:

- The plastics industry has the technology to deliver large or small infrastructure projects that capture, store, treat and distribute clean water to wide areas without affecting water quality..
- The plastics industry has the technology to deliver large or small infrastructure

The range of benefits of plastics towards achieving this goal is extensive, proven and quantifiable.

It is almost inconceivable that this goal can be achieved without the plastics industry.

Goal 6 targets

- By 2030, achieve universal and equitable access to safe and affordable drinking water for all.
- By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.
- By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.
- By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.
- By 2030, implement integrated water resources management at all levels, including through trans-boundary cooperation as appropriate.
- By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.
- By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies.
- Support and strengthen the participation of local communities in improving water and sanitation management.

projects to collect, control, remove and treat contaminated water, particularly faecal contamination. These projects can be at the local level, e.g. septic tank technology, or at the city level, e.g. centralised municipal treatment systems. Effective treatment of contaminated water allows it to be recycled with low risk of disease transmission.

- Plastics products for clean water delivery, contaminated water removal and grey water recycling have low losses to the environment and are long-life products suitable for all environments.
- The plastic pipe sector has the technology to provide these solutions using local labour (see UN SDG 8) to provide a robust infrastructure (see UN SDG 9) that can deliver sustainable cities and communities (see UN SDG 11).

Action taken to date

The plastics industry, particularly the pipes sector, has already demonstrated the effectiveness of plastics products in the developed world through actions such as:

- Water capture and retention through the development and use of pond liners and covers to reduce losses from leakage and evaporation from local dams and ponds.
- Water delivery and distribution using plastics pipes and/or retro-fitted pipe liners with reduced leakage, reduced transmission losses and reduced micro-organism retention or growth. This can include large-scale trans-boundary schemes to transfer water from areas of surplus to areas of shortage.
- Water control and re-direction through guttering and down-pipes in housing and industrial developments.
- Flood risk abatement through drainage pipes, flood run-off pipes, flood water retention and storage schemes and flood water barriers/defences.
- Septic tanks and local sewerage treatment to reduce open defecation, the contamination of waterways and the spread of disease. Septic tanks need a good septic drain field and also maintenance and regular treatment to prevent groundwater pollution but can be an effective local solution to an infrastructure deficit.
- Sewerage and grey water piping to collect waste water locally for connection to a centralised municipal waste

treatment system. Plastics pipes are a long-life product and also have minimal losses or leakage and therefore avoid and reduce groundwater contamination.

Future action

The actions taken to date show the effectiveness of plastics products in delivering clean water and sanitation to the developed world. The future actions are:

- To roll-out the appropriate parts of proven plastics technology to the developing world.
- To improve and update the water and sanitation infrastructure (see UN SDG 9) of the developing world to provide clean water and sanitation. This will reduce disease transmission and improve health in developing countries (see UN SDG 3) as well as helping to achieve this goal.
- To reduce water use in the plastics industry through the development of closed loop water systems at sites using water for cooling or other parts of the process. The plastics industry is already very good at this but water management can always be improved.

Summary

Providing clean water and sanitation is an area of real strength for the plastics industry. Plastics products are supremely effective in use and also have a long service life. Disposal is not yet an issue for products that have a service life of over 100 years and is not likely to be one for some time. All of the products used in the sector have a relatively low cost and a high utility value. The successes in the developing world provide a proven template for improving the infrastructure of the developing world.

Plastics pipes used for most applications have proven benefits over those of other materials.

Plastics make it possible to safely store and transport the essential chemicals used for water treatment.

Goal 7: Affordable and clean energy



Ensure access to affordable, reliable, sustainable and modern energy for all

Energy is central to nearly every major challenge and opportunity the world faces today. Be it for jobs, security, climate change, food production or increasing incomes, access to energy for all is essential.

Sustainable energy is opportunity – it transforms lives, economies and the planet.

Former UN Secretary-General Ban Ki-moon is leading a Sustainable Energy for All initiative to ensure universal access to modern energy services, improve efficiency and increase use of renewable sources.

Challenges for the plastics industry

The challenges to the plastics industry in achieving affordable and clean energy are:

- The plastics processing industry is an energy intensive industry, although not the largest, and requires approximately 1-2 kWh/kg to process a product from the raw polymer. The industry needs a high-capacity electricity supply to function and grow.
- The plastics processing industry needs a reliable energy supply to function because the operational pattern is normally 24/7 or 24/5. This can be an issue in developing countries where the electricity supply is neither stable nor consistent. Plastics processors in such countries, can use gas for tri-generation but this is still a barrier to progress.
- The high power and 24/7 requirements of the plastics processing industry can restrict the use of local renewable sources where there is a lack of substantial local energy storage. This can be a barrier to local industrial development.
- A key issue for the plastics industry is decoupling the link between growth in GDP and energy use. This can be achieved by increased efforts in energy efficiency in the industry. The methods to reduce energy use in plastics processing are clear but their implementation is relatively poor.

Opportunities for plastics

The opportunities for the plastics industry achieving affordable and clean energy are:

- Unless affordable and clean energy is achieved it will not be possible for growth to occur and the developing world will be restricted to an agrarian economy and progress towards any of the other UN SDGs will be severely limited.
- Decarbonising the energy supply is simply not possible without the use of plastics.
 - Wind energy relies on plastics for the production of wind turbine blades using fibre-reinforced composites. These are the only materials with the right combination of stiffness, density and fatigue resistance to produce economical blades.
 - Solar energy relies primarily on silicon technology but most solar cells are encapsulated in a polymer resin to protect the silicon cell. New technologies using printed polymers offer lower weight, flexible solar cells that will be easily transported and assembled. This technology would revolutionise the provision of low-cost distributed solar for the developing world.
 - Energy storage technology based on batteries (lithium-ion) and these can suffer from poor performance and fire issues. New technologies using plastics can provide higher energy densities and inherent safety.

The energy reaching the earth from 2 minutes of sunlight is enough to satisfy the complete demands of the world for one year.

It is simply evenly distributed and is not necessarily where it is needed.

Goal 7 targets

- By 2030, ensure universal access to affordable, reliable and modern energy services.
- By 2030, increase substantially the share of renewable energy in the global energy mix.
- By 2030, double the global rate of improvement in energy efficiency.
- By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology.
- By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support.

- Hydrogen gas (a decarbonised energy source) distribution will be a new opportunity for plastics pipes.
- Irrespective of the generation method used, the resulting energy must be transported from the generation site to the user and plastics remain the only suitable insulation material for electricity transport.
- Distributed (local) generation may reduce the distribution distance but will still rely on plastics for transport and use. Without plastics it will not be possible to create and transport energy for applications such as schools (see UN SDG 4), local water pumps (see UN SDG 6), local refrigeration for cooling vaccines and medicines (see UN SDG 3), local solar for recharging mobile communication and enabling mobile payments and Internet access (see UN SDG 8 and UN SDG 9).

Action taken to date

The plastics industry has contributed to achieving affordable and clean energy through actions such as:

- The distribution network in every developed country relies on plastics for insulation and protection. Without modern plastics, there would be no modern world.
- The modern world relies on plastics in almost every energy application from mobile phones through to heavy industry. Without modern plastics, there would be no modern world.
- The development and implementation of industrial-scale wind energy farms relies on plastics for turbine blades.
- The development and implementation of local-scale wind power relies on plastics for cable insulation for both generation and distribution.
- The development and implementation of large and local-scale solar power relies on plastics for both generation (solar panels) and distribution (cable insulation).
- The cables and fibres needed for fast Internet connections are protected by specially designed plastics pipes that not only protect the fibres but also allow for re-cabling or network extension when required.
- Plastic pipes are extensively used for long-life and safe network gas distribution.

Future action

Without plastics there is no possibility of achieving affordable and clean energy or delivering this to people but future action is required in the areas of:

- Improved energy efficiency in the plastics processing industry to reduce the overall energy intensity of the industry.
- An acceleration in the decarbonisation of industry through the use of renewable energy in plastics processing.
- The development of improved, distributed and more resilient power networks to provide local power for schools, medical facilities and water distribution (see UN SDG 9).
- The development of improved battery storage technologies to allow renewables to meet the high power and continuous demand of the plastics processing industry and of society.

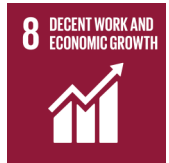
Summary

It is estimated that 1.2 billion people are without reliable power supplies and this dramatically affects their standard of living and development prospects. The plastics industry already enables the use and production of affordable and clean energy in the developed world but this can be extended to the developing world using the existing techniques and tools and developing new techniques and tools.

Affordable and clean power is a requirement for the transformation from an agrarian society into one where the UN SDGs can be met for the whole world

Paradoxically, some of the least developed nations also have the greatest available resources for the development of affordable and clean power.

Goal 8: Decent work and economic growth



Promote inclusive and sustainable economic growth, employment and decent work for all

Roughly half the world's population still lives on the equivalent of about US\$2 a day. And in too many places, having a job doesn't guarantee the ability to escape from poverty. This slow and uneven progress requires us to rethink and retool our economic and social policies aimed at eradicating poverty.

A continued lack of decent work opportunities, insufficient investments and under-consumption lead to an erosion of the basic social contract underlying democratic societies: that all must share in progress. The creation of quality jobs will remain a major challenge for almost all economies well beyond 2015.

Sustainable economic growth will require societies to create the conditions that allow people to have quality jobs that stimulate the economy while not harming the environment. Job opportunities and decent working conditions are also required for the whole working age population.

Challenges for the plastics industry

The challenges to the plastics industry in achieving decent work and economic growth are:

- The plastics processing industry is the development of a third-order society. The initial development from an agrarian society is to a pre-industrial society while the infrastructure necessary for an industrial society is created. This allows the growth of a plastics processing industry which is not possible without the necessary infrastructure. The plastics processing industry can contribute to infrastructure development (see UN SDG 9) and but without an effective infrastructure a plastics processing industry cannot exist.
- As a capital intensive industry, the plastics processing industry needs peace, justice and strong institutions (see UN SDG 16) to protect the rights and property of investors, employers and employees. The industry is not unique in

needing other drivers to promote stable and well-paid work.

- The plastics industry is a relatively mobile industry that follows the major customers and these tend to seek out low-wage economies. The industry has developed rapidly in low-wage economies but the trend is also for these economies to grow and for wages to rise. The presence of the plastics processing industry is thus a driver for decent work and economic growth.

Plastics processing companies in many countries train their staff to take on new jobs or responsibilities. Life-long learning and advancement does not always mean changing jobs.

Goal 8 targets

- Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries.
- Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors.
- Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services.
- Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead.
- By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.
- By 2020, substantially reduce the proportion of youth not in employment, education or training.
- Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms.
- Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment.
- By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products.
- Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all.
- Increase Aid for Trade support for developing countries, in particular least developed countries, including through the Enhanced Integrated Framework for Trade-Related Technical Assistance to Least Developed Countries.
- By 2020, develop and implement a global strategy for youth employment and implement the Global Jobs Pact of the International Labour Organization.

Opportunities for plastics

The opportunities for the plastics industry in achieving decent work and economic growth are:

- As an industrial society is established, economic growth and employment rise and there is a growth of a middle-class, e.g. China and India. This drives a growth in consumer activity and increased opportunities for the plastics processing industry to supply the plastics products that are necessary for consumers. Initially, these products will be low value items but development increases the value of the products and of the industry.
- The decent work, fair income (see UN SDG 1), security and social protection (see UN SDG 16) that the plastics industry can provide enables our employees to become consumers and to use more of our products.
- The opportunity does not stop with our employees but extends to the industries and to the supply chain that the plastics industry supports.
- Consumption figures show that the use of plastics is a good indicator of the developmental status of a country and that there are many countries where consumption and activity can increase to benefit both the industry and the country.
- As an enabling industry, the plastics processing industry produces products that not only help countries achieve this goal but also to lever progress in many of the other UN SDGs.

Action taken to date

The plastics industry has contributed to achieving decent work and economic growth through actions such as:

- As one of the largest employers in the world, the plastics industry already provides a huge amount of decent work around the world.
- The plastics industry is a highly regulated industry either through country-specific legislation or through the purchasing pressure of our customers. This means that working standards are generally high and consistent throughout the world.
- Many plastics processing companies around the world provide significant staff benefits to employees. These can range from free or highly-subsidised

meals for employees to family health protection. The industry values and invests in people because healthy employees are good employees.

- The plastics processing industry trains employees (see UN SDG 4) for job-related tasks and this allows everybody to breach education gaps and barriers (see UN SDG 5 and UN SDG 10).
- Plastics enable the mobile telecommunications and the Internet. This allows micro-payments and the economic development of some to the poorest people on the planet and provides access to banking, insurance and financial services to allow their integration into an economic society. This provides not only decent work but also economic growth.

Future action

The plastics industry will continue to contribute to the delivery of decent work and economic growth in the areas of:

- Training of staff that is not specifically job-related staff needs to increase to increase the available labour pool. Such training must be blind to gender, class or caste but based on ability and willingness to contribute.
- The industry needs to work with all suppliers and sub-contractors, as our customers do with us, to raise standards of employment and worker benefits.

Summary

The plastics processing industry is a decentralised industry that employs large numbers of people throughout the world. It can contribute to decent work and economic growth by both facilitating the necessary infrastructure for development and also providing jobs and financial stability in both the initial processing and in the recycling and recovery of the raw materials.

Plastics processing companies in countries as diverse as Bangladesh, Sri Lanka and Brazil regularly provide free or highly subsidised meals to employees.

Plastics processing companies in countries as diverse as Tunisia, Russia and Poland regularly provide assisted transport to reduce the cost and impact of commuting to work.

Goal 9: Industry, innovation and infrastructure

Build resilient infrastructure, promote sustainable industrialization and foster innovation

Investments in infrastructure – transport, irrigation, energy and information and communication technology – are crucial to achieving sustainable development and empowering communities in many countries. It has long been recognized that growth in productivity and incomes, and improvements in health and education outcomes require investment in infrastructure.

Inclusive and sustainable industrial development is the primary source of income generation, allows for rapid and sustained increases in living standards for all people, and provides the technological solutions to environmentally sound industrialization.

Technological progress is the foundation of efforts to achieve environmental objectives, such as increased resource and energy-efficiency. Without technology and innovation, industrialization will not happen, and without industrialization, development will not happen.

Challenges for the plastics industry

The challenges to the plastics industry in assisting the delivery of this goal are:

- In many areas, there is a perception that industry is ‘the enemy’ but industry is the main driver of economic growth, improved sustainability and is an essential in attaining all of the UN SDGs. Industry is a core driver of development to overcome poverty, to release people from low-quality labour and to achieve the other development goals. Overcoming this perception is a major challenge.
- The circular economy concept to improve resource efficiency for materials, water and energy to reduce environmental and societal impacts is a relatively new concept for the industry and needs to be rapidly developed and implemented.
- Infrastructure developments must be developed and implemented to be resilient and sustainable with

deleterious environmental effects minimised. In most cases, plastics products are enablers in infrastructure projects but have much to contribute and must be managed correctly.

- All elements of the plastics industry are innovative driven. The challenge is to focus innovation on reducing impacts and in transferring appropriate and accessible innovations to the developing world.

Opportunities for plastics

The plastics industry is already contributing to this goal but the opportunities for further contributions are huge:

- As a provider of enabling technologies, virtually no industry, innovation or infrastructure development is possible without using plastics products. At the most basic level, the use of plastics for

Innovation research and development in plastics is world-wide and helping to achieve this goal by developing people and skills.

Goal 9 targets

- Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all.
- Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry’s share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries.
- Increase the access of small-scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets.
- By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities.
- Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending.
- Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States.
- Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities.
- Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020.

cable and wire insulation enables modern electrical and electronics engineering to function.

- The plastics industry is already present in almost every country in the world and will help to develop industry and drive progress towards this goal.
- Food production, processing and protection between producer and plate will allow not only more food to be produced but more food to be treated and arrive with the consumer (see UN SDG 2).
- Plastics products in phones, phone towers and telecommunications will allow developing countries to 'leapfrog' developed nations in communications technology and applications to drive economic growth.
- The use of plastics products in water and sanitation infrastructure projects (see UN SDG 6) can reduce water-gathering labour (see UN SDG 8), reduce disease transmission (see UN SDG 3) and improve crop yields (see UN SDG 2). There is a major opportunity to use plastics to improve water management (both in the collection and disposal).
- The plastics industry will contribute to transport infrastructure development through sustainable transport systems ranging from mass-transit systems to road and materials transport systems.
- The vehicles used in the transport systems will inevitably use plastics for light weight and safe solutions.

Action taken to date

The plastics industry has already contributed strongly to the development of the developed world's industry, innovation and infrastructure:

- Without flexible, durable and low cost cable insulation, modern society would simply not be possible. Without cable insulation, the current industry, innovation and infrastructure of the developed world would cease to exist and there would be no possibility of achieving this goal.
- The contribution of the plastics industry to areas such as power generation, power distribution (see UN SDG 7), electrical products (including telecommunications, mobile phones and internet technology), clean water and sanitation (see UN SDG 6), medical technology (see UN SDG 3) are such that the current developed world society would not be possible

without the plastics industry.

- The plastics industry is a large-scale employer both directly and indirectly. The UK plastics industry is estimated to consist of over 5,200 companies and to employ more than 166,000 people. This makes it larger than the automotive and pharmaceutical sectors combined. However, as an enabling industry, the plastics sector is often overlooked in terms of the economic benefits it brings to industrial development.

Future action

The future is bright for the plastics industry and it can contribute enormously and effectively to achieving this goal:

- At the industry level, it is estimated that every job in manufacturing will create 2.2 jobs in other sectors. For the UK, this means that the plastics industry creates another 365,000 jobs in other sectors. A small plastics factory can be a valuable addition to a region's economy.
- Recycling is a 'new' industry that will increase investment in industry and require a new infrastructure for waste management and re-processing.
- The industry is actively working towards the circular economy and as an inclusive industry (see UN SDG 5) the industry can, if appropriately directed, use small-scale, easily transferred and sustainable industrialisation to lever the economic benefits of industry to the wider society.

Summary

The plastics industry can help to achieve this goal in many ways. As an industry of itself it can contribute to the development of industry but, perhaps more importantly, the products can be used in a wide range of infrastructure projects to raise the quality of life for millions of people.

Mobile technology allows developing countries to 'leapfrog' developed countries and go straight to mobile communications without having to go through the fixed line technology of the developed world.

In some developing countries the mobile network has enabled internet access, banking, micro-payments and social development that would otherwise not be possible.

Plastics products are essential for data storage and retention. Magnetic tapes, CDs, DVDs and most storage media rely on the unique properties of plastics. Without plastics, the information age would not be possible.

A plastics processing site Malaysia directly employs 200 people but creates another 440 jobs in the economy.

Goal 10: Reduced inequalities



Reduce inequality within and among countries

The international community has made significant strides towards lifting people out of poverty. The most vulnerable nations – the least developed countries, the landlocked developing countries and the small island developing states – continue to make inroads into poverty reduction. However, inequality still persists and large disparities remain in access to health and education services and other assets.

Additionally, while income inequality between countries may have been reduced, inequality within countries has risen.

There is growing consensus that economic growth is not sufficient to reduce poverty if it is not inclusive and if it does not involve the three dimensions of sustainable development – economic, social and environmental.

To reduce inequality, policies should be universal in principle paying attention to the needs of disadvantaged and marginalized populations.

Challenges for the plastics industry

The challenges to the plastics industry in reducing inequalities are:

- The plastics processing industry cannot develop directly from an agrarian economy (see UN SDG 8) but needs a developed and effective infrastructure.
- The plastics processing industry can assist the development of the necessary infrastructure (see UN SDG 9) but it is impossible for the industry to develop before the infrastructure is in place. This requires imported products to develop the infrastructure before the local industry can develop to support local needs and assist in the reduction of inequalities. The challenge is to reduce inequalities during the development phase.
- The plastics industry is global in scope but local in character. This means that the local ethos can dominate even when multi-national companies are involved. The challenge is to ensure that policies to reduce inequalities are applied evenly and fairly around the world.

Opportunities for plastics

The opportunities for the plastics industry in reducing inequalities are:

- Reducing inequalities drives progress at the country level and improves development in areas where plastics can contribute, e.g. poverty reduction (see UN SDG 1), good health (see UN SDG 3) and clean water (see UN SDG 6).
- Reducing inequalities means developing the infrastructure to support growth and this increases the opportunities for plastics to contribute to infrastructure development (see UN SDG 9) although this may mean importing whilst the local industry develops.
- Increasing the income of the bottom 40% of the population will create more consumers of plastics products in all sectors. People living in poverty do not

The plastics processing industry enables progress and reduced inequalities.

Goal 10 targets

- By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average.
- By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status.
- Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard.
- Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality.
- Improve the regulation and monitoring of global financial markets and institutions and strengthen the implementation of such regulations.
- Ensure enhanced representation and voice for developing countries in decision-making in global international economic and financial institutions in order to deliver more effective, credible, accountable and legitimate institutions.
- Facilitate orderly, safe, regular and responsible migration and mobility of people, including through the implementation of planned and well-managed migration policies.
- Implement the principle of special and differential treatment for developing countries, in particular least developed countries, in accordance with World Trade Organization agreements.
- Encourage official development assistance and financial flows, including foreign direct investment, to States where the need is greatest, in particular least developed countries, African countries, small island developing States and landlocked developing countries, in accordance with their national plans and programmes.
- By 2030, reduce to less than 3 per cent the transaction costs of migrant remittances and eliminate remittance corridors with costs higher than 5 per cent.

consume plastics products, although they may use them.

- Reducing inequalities allows selection of the best candidate for the job regardless of gender (see UN SDG 5), race, class or caste. This drives progress and can improve performance in any business sector.

Action taken to date

The plastics industry has contributed to reducing inequalities through actions such as:

- The plastics processing industry is already helping to reduce poverty (see UN SDG 1) and hunger (see UN SDG 2) which serves to reduce inequalities.
- Fiscal, wage and social protection is widely supported by the plastics processing industry and its customers. Customers can drive reduced inequalities through purchasing policies and the industry can also drive this down the supply chain with purchasing policies that include non-discriminatory requirements.
- The industry already has non-discriminatory policies for hiring, training, development and progression but this is also an area for improvement in consistency across the world (see below).
- The industry enables infrastructure development in areas such as mobile telephony and Internet connection to provide micro-payments and access to banking, insurance and financial services. This reduces inequalities by integrating the poorest people into an economic society.

Future action

The plastics industry will continue to contribute to reducing inequalities in the areas of:

- Despite the current progress in non-discriminatory policies there is more work to do in gender equality (see UN SDG 5) in the plastics processing industry to remove the gender imbalance at higher levels of the industry.
- The industry needs further documented action in the area of open hiring and progression to select the best employees for all levels of work. The industry needs to be seen to be taking positive action to eliminate discriminatory laws, policies and practices in all areas of the business.
- The industry needs to provide

documented action in the area of paying fair wages to all employees, especially in low income countries.

Summary

Reducing inequalities is not something that the plastics processing industry can achieve alone. The contribution of the industry to the other UN SDGs helps to drive progress and the reduction of inequalities but there is more work to be done in this area.

A plastics processor in Malaysia has 4 separate religious worship areas on site to cater for the variety of religions employed at the site.

Small recycling initiatives such as chemical recycling and production of materials from littered plastics can be used to reduce inequalities in developing countries.

Goal 11: Sustainable cities and communities



Make cities inclusive, safe, resilient and sustainable

Cities are hubs for ideas, commerce, culture, science, productivity, social development and much more. At their best, cities have enabled people to advance socially and economically.

However, many challenges exist to maintaining cities in a way that continues to create jobs and prosperity while not straining land and resources. Common urban challenges include congestion, lack of funds to provide basic services, a shortage of adequate housing and declining infrastructure.

The challenges cities face can be overcome in ways that allow them to continue to thrive and grow, while improving resource use and reducing pollution and poverty. The future we want includes cities of opportunities for all, with access to basic services, energy, housing, transportation and more.

Challenges for the plastics industry

Already over 50% of the world's population live in cities and in the next decades most of the growth in developing countries will be through urban expansion. This places pressure on existing, often crumbling, infrastructure for clean water and sanitation (see UN SDG 6), on health and well-being (see UN SDG 3) and on infrastructure (see UN SDG 9). Whilst many of the UN goals affect rural people, in the future they will affect the increasing number of urban dwellers even more:

- Delivery of clean water is difficult in rural areas because of 'distance', in urban areas 'volume' is the issue. Poor sanitation can lead to epidemics and health crises in rural areas but in urban slum areas, epidemics will spread faster and affect many more people. The challenge is to use the properties of plastics to provide the volume of clean water and subsequent sanitation requirements necessary for the development of sustainable cities and communities.
- Cities need the healthcare benefits of plastics (see UN SDG 3) to provide the

resilience that enables high-quality routine healthcare as well as a rapid response to disease and epidemics.

- A sustainable city needs transport systems that reduce pollution, poor energy use and minimise travel times. The plastics industry must enable the improvement and delivery of the improved and integrated transport infrastructure needed for cities.
- Waste management is a major issue for cities and the plastics industry. Cities generate huge amounts of waste that is often poorly collected and treated. It is estimated that 2 billion people around the world do not have access to an effective waste management system. This waste is then poorly handled and often finds its way into the wider

Cities and societies depend on the unique properties of plastics to support the current lifestyles.

Goal 11 targets

- By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums.
- By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.
- By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries.
- Strengthen efforts to protect and safeguard the world's cultural and natural heritage.
- By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations.
- By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management.
- By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities.
- Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning.
- By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels.
- Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials.

ecosystem (see UN SDG 14 and UN SDG 15). It is estimated that 82% of the plastics waste in the oceans comes from Asia and that 90% comes from 10 rivers (8 of which are in Asia). The plastics industry must accept the challenge of enabling and facilitating waste management systems to recover valuable resources, either as materials or as energy, and prevent them entering the ecosystem. In the developed world, littering and the poor disposal of plastics is largely 'personal' but in the developing world littering is largely 'structural' because of the lack of waste management systems.

- Resilience to natural disasters such as floods can be mitigated by effective control and management of resources. The plastics industry will need to work with infrastructure partners to deliver effective resilience to cities.

Opportunities for plastics

The major opportunities for the plastics industry are:

- Providing the essential pipes and infrastructure products to enable clean water, sanitation and grey water recycling (see UN SDG 6) to improve living and to reduce the incidence of epidemics.
- Providing the healthcare products to combat routine healthcare issues as well as disasters such as epidemics (see UN SDG 3)
- The plastics industry will be necessary to improve and deliver the improved transport infrastructure needed for the modern city (see UN SDG 9).
- Designing, implementing and assisting in waste management systems to reduce the leakage of plastics to the environment (see UN SDG 14 and UN SDG 15).
- Designing and implementing food processing, packaging and transport systems to maximise the utility of food produced at some distance from cities (see UN SDG 2).
- Designing and producing plastics products for buildings to reduce energy use and improve comfort (see UN SDG 7).
- Assisting in the development of connected and SMART cities to reduce the impact of urban living (see UN SDG 9 and UN SDG 7).

Action taken to date

The plastics industry and the infrastructure it enables are essential for the existence of the modern city:

- Without clean water and sanitation the city as we know would not be sustainable, or indeed possible. The role of the plastics industry in helping to deliver clean water and sanitation (UN SDG 6) and good health (see UN SDG 3) have been crucial in allowing the development of the urban environments.
- Transport infrastructure and vehicles depend on plastics to function. Areas such as water control, electrical insulation for mass-transit systems and light-weighting of vehicles are only some of the areas where plastics have contributed to the development of effective cities.
- Communications in an urban environment are vital to provide the connectivity necessary for development at both the city and the state level. Without plastics, the essential telecommunications infrastructure would not be possible.
- Cities and dwelling use enormous amounts of energy for climate control in commercial buildings and housing. Plastics are widely used for insulation reduce energy use from heat gains and losses. Products such as PVC-U windows save energy not only in heating but also in air conditioning use (one of the fastest rising users of energy in hot countries).

Future action

The plastics industry will continue to be integral to the development of sustainable cities and communities. Most of the opportunities be fulfilled naturally due to the unique properties and applications of plastics. The biggest future challenge is to manage the use, re-use and potential disposal of plastics at the end-of-life.

Summary

The high utility and long-life of plastics has enabled the world to create modern cities and to support the world's growing population but the use of plastics in packaging needs to be managed to reduce pollution of the land and sea.

The 'plastics-free life' in the 21st century is bound to be as short and as unpleasant as one in the Middle Ages.

The bloggers give many tips but they all revolve around packaging. Few realise that:

- Their keyboard is plastic, their computer relies on plastics to function, their blogs are distributed, stored and read over wires insulated with plastics.
- Their healthcare relies on plastics.
- Their clean water and sanitation relies on plastics.

Lets try to avoid throwing the baby out with the bathwater!

Recycling rates for plastics in Europe are already high and increasing rapidly.

PVC doors and windows avoid the use of chemicals such as paint and varnishes as well as the painting maintenance load.

Goal 12 Responsible consumption and production

Ensure sustainable consumption and production patterns

Sustainable consumption and production is about promoting resource and energy efficiency, sustainable infrastructure, and providing access to basic services, green and decent jobs and a better quality of life for all. Its implementation helps to achieve overall development plans, reduce future economic, environmental and social costs, strengthen economic competitiveness and reduce poverty.

Sustainable consumption and production aims at 'doing more and better with less', increasing net welfare gains from economic activities by reducing resource use, degradation and pollution along the whole lifecycle, while increasing quality of life. It involves different stakeholders, including business, consumers, policy makers, researchers, scientists, retailers, media, and development cooperation agencies, among others.

It also requires a systemic approach and cooperation among actors operating in the supply chain, from producer to final consumer. It involves engaging consumers through awareness-raising and education on sustainable consumption and lifestyles, providing consumers with adequate information through standards and labels and engaging in sustainable public procurement, among others.

Challenges for the plastics industry

The challenges to the plastics industry in achieving sustainable consumption and production are:

- The plastics industry has been demonised in the press for a variety of reasons but primarily because of plastics in the oceans (see UN SDG 14). This SDG is not simply focused on industry but on society as a whole and the plastics industry must improve communications to show that plastics are 'part of the solution' and not 'part of the problem'.
- The ocean waste issue is not simply a plastics problem, it is an issue of rapidly rising middle-classes in countries, e.g. India and China, without the concomitant construction of a waste

management infrastructure. This has led to poor waste management and leakage of post-consumer use plastics into the environment.

- The plastics industry needs to work harder and faster to improve waste management, particularly in developing countries. This will enable increased recycling rates for all plastics and improved production and consumption. In-house recycling is already very high throughout the industry but the recycling of 'post-consumer waste' needs improvement. This can be physical recycling where the plastics are cleaned and reprocessed for new plastic products

Plastics are not the problem - they can be reused almost endlessly. The problem is using them irresponsibly and this must change for the industry to survive.

Goal 12 targets

- Implement the 10-year framework of programmes on sustainable consumption and production, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries.
- By 2030, achieve the sustainable management and efficient use of natural resources.
- By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.
- By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.
- By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.
- Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.
- Promote public procurement practices that are sustainable, in accordance with national policies and priorities.
- By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.
- Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production.
- Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products.
- Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities.

or chemical recycling where the plastic is broken down into the component chemicals and reassembled into new plastics. The less desirable alternative is 'energy from waste' where the plastic is burnt to recover the embodied energy, as is the 42% of petrochemicals that are simply burnt with no prior use.

- The biggest challenge to the plastics processing industry is to start a 'fact-based' discussion about plastics where the real contribution of plastics to modern society can be recognised.
- The perceived challenge of oil depletion and plastics is mythical. Plastics use only $\approx 4\%$ of global oil production where $\approx 45\%$ is used for transport and $\approx 42\%$ for energy and heating. Transport, energy and heating are the largest single-use of petrochemicals whereas almost all plastics can be recycled for multiple use before finally being burnt for energy or heating.

The raw materials for plastics can be sourced from biomass and, whilst these may be currently more expensive, the technology is readily available. Running out of oil is not the real problem for plastics.

- Responsible consumption and production is not simply an issue for the plastics industry, it is as much a societal issue that depends on the consumer as much as on the industry.

Opportunities for plastics

The opportunities for the plastics industry in sustainable consumption and production are:

- Improving waste management and increasing recycling rates are major opportunities for the plastics industry. Recycling technology is largely mature but improvement is needed in sorting technology to adequately separate the various plastics. Consumer attitudes to waste also need improvement so that plastics are regarded as resources and not as waste.
- Improving chemical recycling methods to recover the chemical constituents for the production of new plastics.
- Improved waste management is particularly needed in developing countries where the rising numbers of middle-classes is driving consumption without a suitable waste management infrastructure for recycling or recovery.
- It is estimated that one third of all food

produced is wasted. Improved food packaging can reduce waste and packaging averages only 1-3% of the total product weight.

Action taken to date

The plastics industry has contributed to sustainable consumption and production through actions such as:

- Plastics products are used extensively for insulation products and windows to reduce the use of heating or air conditioning and save energy. Heating is a single-use of petrochemicals in almost every case.
- The use of plastics in almost any application is more resource efficient than that of other materials.
 - Plastics reduce the use of water for cleaning and processing most alternative materials.
 - Plastics reduce the volume and weight of packaging and save transport fuel (a single-use of petrochemicals).
- Improved design for light-weighting and recycling to both improve resource efficiency and recycling rates. This will continue into the future to improve effectiveness and profitability.
- The plastics processing industry is working to reduce energy use during production. This was initially driven by economics but is increasingly being driven by sustainability issues.

Future action

The plastics industry will continue to contribute to the delivery of sustainable consumption and production in the areas of:

- The plastics processing industry has worked to reduce plastics leakage to the environment at the site level. More work is needed to prevent consumer leakage and improve waste management.

The solution is not to ban plastics but to establish the waste management and recycling infrastructure to recover and recycle these valuable materials.
- Improved design for reduced materials content and recycling.

Summary

Plastics are an integral part of achieving responsible consumption and production.

"Oil in the future will not be burnt away and wasted in energy and transport but reserved for high-value processes and products such as plastics manufacturing..... and the energy trapped within the plastics can either be recycled or recovered and used for heat generation."

Ray Hammond
"The World in 2030"

Plastics pipes used for gas and water have a guaranteed service life of 50 years.

Recycling of plastics at the end of their service life is growing rapidly but must increase faster and go further.

Plastics are widely used and visible because of their long-life and durability, these factors must be used to the benefit of society and achieving this goal.

Goal 13: Climate action



Take urgent action to combat climate change and its impacts

Climate change is now affecting every country on every continent. It is disrupting national economies and affecting lives, costing people, communities and countries dearly today and even more tomorrow.

People are experiencing the significant impacts of climate change, which include changing weather patterns, rising sea level, and more extreme weather events. The greenhouse gas emissions from human activities are driving climate change and continue to rise. They are now at their highest levels in history. Without action, the world's average surface temperature is projected to rise over the 21st century and is likely to surpass 3°C this century – with some areas of the world expected to warm even more. The poorest and most vulnerable people are being affected the most.

Affordable, scalable solutions are now available to enable countries to leapfrog to cleaner, more resilient economies. The pace of change is quickening as more people are turning to renewable energy and a range of other measures that will reduce emissions and increase adaptation efforts.

But climate change is a global challenge that does not respect national borders. Emissions anywhere affect people everywhere. It is an issue that requires solutions that need to be coordinated at the international level and it requires international cooperation to help developing countries move toward a low-carbon economy.

Challenges for the plastics industry

The challenges to the plastics industry in combating climate change and its impacts are:

- The plastics industry must seek to reduce the overall carbon footprint (a measure of the direct and indirect greenhouse gas emissions) to reduce the industry's impact on the climate. This is an internal action that involves reducing energy use, the major component of greenhouse gas emissions in the

industry, as well as other emission factors such as heating and transport.

- The industry needs to increase the amount of recycled materials used (see UN SDG 12) to use the carbon locked up in most plastics materials as effectively as possible.
- The industry needs to increase the use of non-petrochemical based materials to reduce additional greenhouse gas emissions to the atmosphere.
- However, reducing the greenhouse gas emissions of the industry is not enough and the industry needs to contribute to the development of the necessary infrastructure (see UN SDG 9) for disaster risk mitigation.
- As with many other SDGs, the value of plastics in achieving a sustainable world and climate action needs to be based on facts rather than on emotions, plastics have much to offer in combating climate change and this needs recognition.

Opportunities for plastics

The plastics industry has much to offer in combating climate change and in disaster risk reduction. The opportunities for the plastics industry are:

- Reducing greenhouse gas emissions is not only good for climate action but also reduces costs (both actual and compliance costs) and is financially attractive to the industry. Companies who supply customers with carbon footprint data, plans to reduce the

The plastics industry is already taking action to reduce greenhouse gas emissions.

Goal 13 targets

- Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.
- Integrate climate change measures into national policies, strategies and planning.
- Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.
- Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly \$100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and capitalise the Green Climate Fund as soon as possible.
- Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.

carbon footprint and the costs will be have a competitive advantage over companies who continue with business as usual.

- The upgrading and improvement of infrastructure to reduce or mitigate climate change risk (see UN SDG 9) will need plastics to be feasible. This includes projects such as:
 - Improved and efficient low-cost housing for developing countries.
 - Improved water collection, e.g. dam liners to reduce water evaporation, distribution, e.g. pipes, to provide clean water (see UN SDG 6) and combat the effects of climate change, e.g. desertification.
- Improved flood management and drainage capability using plastic pipes and geo-cellular sustainable drainage systems (SuDS) to store or reuse surface water at source.
- Plastics will be an essential part of impact reduction by enabling the telecommunications networks for monitoring and early warning systems.
- Disaster relief in the event of severe climate change events will inevitably use plastics for essential items such as tents, water containers, tarpaulins, packing for medical supplies. These will all be packaged in a strong reusable box for transport and delivery to the point of need.

Action taken to date

The plastics industry has contributed to combating climate change and its impacts through actions such as:

- Decoupling the growth in greenhouse gas emissions from the growth of the plastics industry. This is part of the larger efforts to decouple the growth in greenhouse gas emissions from the growth in GDP. This is the result of improved energy efficiency and cost competitiveness in the industry.
- The products of the plastics industry are mainly lightweight and many plastics processors are close to their customers. This reduces transport emissions (and costs) in product delivery.
- Plastics are essential in reducing vehicle weight and improving transport fuel efficiency. This is not simply for automobiles but also for aeroplanes which use plastics to achieve improved fuel performance.

- Plastics have been responsible for lightweighting of many products to reduce the carbon emissions resulting from product transport.
- Plastics have excellent thermal insulation properties and are widely used for building insulation and windows to reduce heating or air conditioning use and the resulting greenhouse gas emissions.
- The plastics industry is essential for the production, storage and transport of clean energy (see UN SDG 7) that reduces greenhouse emissions from energy production.

Future action

The plastics industry will continue to contribute to combating climate change and its impacts in the areas of:

- Increasing the resource efficiency of the industry. This covers areas as diverse as increasing energy efficiency, decreasing water use and improving material efficiency through product light weighting.
- Decreasing the raw material carbon impact by increasing the use of alternative bio-based materials that do not increase the amount of carbon in the ecosystem.
- Developing products for the production, storage and transport of clean and affordable energy (see UN SDG 7).
- Developing products and systems for disaster risk early warning systems.
- Developing products for disaster relief in the event of climate change events.

Summary

Climate action is concerned with both reducing greenhouse gas emissions to reduce climate change and with strengthening resilience in the event of climate change events. The plastics processing industry can contribute to both of these areas and help to achieve this goal.

Plastics products provide the tools necessary for mitigating the effects of climate change events and disasters.

Plastics products in buildings, e.g. insulating foams and windows, reduce heating oil or gas use significantly.

“If plastics in packaging were replaced by traditional materials then world energy consumption would double.”

Source: Plastics Europe/
Gesellschaft für umfassende Analysen.

Plastics are part of the solution to mitigating climate change. They are not simply part of the problem.

Goal 14 Life below water



Conserve and sustainably use the oceans, seas and marine resources

The world's oceans – their temperature, chemistry, currents and life – drive global systems that make the Earth habitable for humankind.

Our rainwater, drinking water, weather, climate, coastlines, much of our food, and even the oxygen in the air we breathe, are all ultimately provided and regulated by the sea. Throughout history, oceans and seas have been vital conduits for trade and transportation.

Careful management of this essential global resource is a key feature of a sustainable future.

Challenges for the plastics industry

The challenges to the plastics industry in managing and protecting life below water are many and this is one of the most contentious issues facing the plastics industry in assisting with the UN SDGs. The challenges are:

- Ocean plastics are a very visible and public issue and there are many groups discussing this issue and lobbying for action. This consumer pressure has led to pressure for 'plastics-free aisles' in stores, legislation for 'bag taxes' and bans on single-use and short-life plastic products such as straws and coffee cups. The industry is not well placed to defend certain applications and supports many of these initiatives.

However, some of the initiatives are based on emotion rather than science and the industry needs to be robust in providing science-based evidence and mounting a defence of plastics on the basis of their overall utility to mankind.

If this challenge is not met then the future for the entire industry will be clouded by this issue and the benefits of plastics will be lost in the resulting noise.

- Most of the plastics entering the oceans are from countries with a rapidly growing middle-class but with no effective waste management system. This includes most of the developing

world and particularly China. The challenge is to reduce leakage of plastics into the environment (see UN SDG 15) and, in this case, into the seas.

- The packaging industry is often accused of 'over-packaging' products. This needs to be balanced with the need to protect products (often foodstuffs) and the need for hygiene. The challenge is to economically and environmentally justify the use of all plastics in packaging and to reduce their use to the minimum.
- Plastics do not degrade in the same

- 82% of the plastics entering the oceans comes from Asia.
- 2% comes from the USA and Europe
- 16% comes from the rest of the world.

Goal 14 targets

- By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.
- By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.
- Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.
- By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.
- By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.
- By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.
- By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism.
- Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries.
- Provide access for small-scale artisanal fishers to marine resources and markets.
- Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in UNCLOS, which provides the legal framework for the conservation and sustainable use of oceans and their resources.

manner as many other materials. The longevity of plastics is now potentially a bad thing - how times change. Plastics do not degrade conventionally but gradually break down into smaller and smaller particles which can then be ingested and incorporated into the marine food chain. These particles then make their way up the food chain (fish is a major source of protein in developing countries) to humans. The effects of micro-plastics need clarification. Plastics are inert materials and the major risk is from the additive packages that many plastics contain.

- Whether the loss is to the sea or the land (see UN SDG 15) the challenge is in preventing the loss of valuable raw materials from the processing and use system and into the wider environment. The circular economy provides a model system but the plastics industry must engage more, whether voluntarily or not, in ensuring that plastics are a vital part of the circular economy.

Opportunities for plastics

The opportunities for the plastics industry in managing and protecting life below water are:

- Preventing the loss of plastics materials to the marine environment. These are valuable current and future raw materials and represent potential lost profits (both current and future). This needs a combination of industry and societal action but industry can lead the way through internal industry programmes such as ‘Operation Clean Sweep’ and external awareness programmes that highlight the real areas of loss to the system and methods of stopping waste entering the oceans.
- Assisting in the removal of existing plastics in the oceans. Plastic in the oceans is not simply a pollutant, it is a potential future raw material. There are a variety of schemes being developed to harvest plastics raw materials from the oceans but all of these depend on plastics (for nets, flotation devices or other applications). It should not be forgotten that plastics are not simply the problem, they are also part of the solution.
- Improving recycling methods to allow recovery of plastics materials from the waste stream. This may need improved recycling or materials technology to allow full recovery.

Action taken to date

The plastics industry has contributed to managing and protecting life below water through actions such as:

- The industry is already exceptionally good at post-process waste recycling, i.e. internal recycling, because of the recognition that this is valuable raw material. However, the industry and society are not good at recycling post-consumer waste. The problems here are:
 - Post-consumer waste is often dirty and/or contaminated.
 - Post-consumer waste is often widely distributed on land and in the oceans.
- The industry is already widely engaged in programmes such as ‘Operation Clean Sweep’ to prevent pellet loss from the system.

Future action

The plastics industry will continue to contribute to managing and protecting life below water in the areas of:

- The industry must lead in eliminating single-use and trivial applications of plastics, e.g. coffee stirrers and micro-beads where the use of plastics is debateable or indefensible. Consumer pressure and legislative pressure will help to remove unsuitable applications and will not be resisted by the industry.
- The industry must take action to determine the exact effect of micro plastic particles on the ecosystem. Plastics are generally inert (see above) but ‘absence of evidence is not the same as evidence of absence’.
- The industry must work with recyclers to identify and assist in removing difficult to recycle materials (or combinations thereof) from the supply chain.
- The industry must work with, and develop, projects to assist in the future removal of plastics from the oceans.

Summary

This goal is mainly concerned with preserving and managing marine ecosystems but the current publicity is focused mainly on plastics pollution as a result of poor waste management. This cannot be ignored and places the industry at severe reputational risk. The industry needs to do more in this area to assist in achieving this goal.

- 90% of the plastics entering the oceans comes from 10 river systems.
- 8 are in Asia: the Yangtze; Indus; Yellow; Hai He; Ganges; Pearl; Amur; Mekong
- 2 are in Africa: the Nile and the Niger.

It is our environment too!

“The ocean is expected to contain 1 tonne of plastic for every 3 tonnes of fish by 2025, and by 2050, more plastics than fish (by weight).”

The New Plastics Economy
Ellen Macarthur Foundation

The only problem with this is the source of the numbers:

- The plastics data is based on a study of the San Francisco bay area that made projections until 2025. These were then extrapolated to the world and again to 2050.
- The fish data is based on a phytoplankton study which estimated 899 million tonnes of fish but later this was revised to between 2 billion and 10.4 billion tonnes.

Fishy numbers?

Goal 15 Life on land



Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss

Forests cover 30 per cent of the Earth's surface and in addition to providing food security and shelter, forests are key to combating climate change, protecting biodiversity and the homes of the indigenous population. Thirteen million hectares of forests are being lost every year while the persistent degradation of drylands has led to the desertification of 3.6 billion hectares.

Deforestation and desertification – caused by human activities and climate change – pose major challenges to sustainable development and have affected the lives and livelihoods of millions of people in the fight against poverty. Efforts are being made to manage forests and combat desertification.

Challenges for the plastics industry

The challenges to the plastics industry in managing and protecting life on land are very similar to those for protecting life below water and this is also a contentious issue for the plastics industry. The challenges are:

- Whilst ocean plastics are currently a public issue, 80% of the plastic in the oceans originates from land-based sources (the remaining 20% consists of products such as discarded fishing nets). Reducing or eliminating land-based sources will therefore dramatically affect the plastics entering the oceans (see UN SDG 15).
- Not all of the plastic that escapes from the processing/use system enters rivers and oceans and the materials that remain on land represent a significant challenge to the plastics industry.
- The challenge of reducing material leakage from the system by improved waste management is the crucial issue. The industry is already working hard to reduce leakage at the process level (see UN SDG 15) and countries with efficient waste management systems are starting to achieve excellent recycling rates for

many products (although there is still much to be done to reduce leakage through poor behaviours such as littering).

A significant issue is that many of the applications of plastics that help to achieve other UN SDGs will result in products reaching their end-of-life phase in countries which do not have a waste management system and that these materials will not be handled properly. The challenge to the industry is to develop methods to either recover the material, or alternatively, the embodied energy, to prevent material leakage.

- Whether the loss is to the sea (see UN

Plastics entering the oceans also indicates a failure of waste management on the land. The plastics materials are discarded on the land and then make their way to the oceans.

Goal 15 targets

- By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.
- By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.
- By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world.
- By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development.
- Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.
- Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources.
- Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products.
- By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species.
- By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts.
- Mobilize and increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems.
- Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation.
- Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities.

SDG 14) or the land the challenge is in preventing the loss of valuable raw materials from the processing and use system and into the wider environment. The circular economy provides a model system but the plastics industry must engage more, whether voluntarily or not, in ensuring that plastics are a vital part of the circular economy.

- A significant challenge is in the use or substitution of bio-based polymers. The challenge here is to enable the efficient and cost-effective substitution of petrochemicals without driving excessive land use for bio-based precursor production or driving up the cost of food production in the developing world.

Opportunities for plastics

The opportunities for the plastics industry in managing and protecting life on land are:

- Preventing material leakage and recovering either the material or the energy before plastics get into rivers or oceans. This is better, and easier, than action after the material has been dispersed and distributed by rivers (see UN SDG 14).
- Good water management (see UN SDG 6) can help to prevent habitat degradation, desertification and biodiversity loss. The opportunity is to use plastics wisely to provide clean water for growing populations without habitat destruction.
- The contribution of plastics to sustainable cities (see UN SDG 11) will allow the increasing urbanisation to take place with reduced pressure on forests and reduced climate change (see UN SDG 13). Plastics have much to contribute in this area.
- The retention and protection of biodiversity relies on repositories such as seed banks and DNA banks to retain and protect species for the future. These would be impossible to develop, operate or manage without the unique properties of plastics.
- Improving recycling methods to allow recovery of plastics materials from the waste stream. This may need improved recycling or materials technology to allow full recovery or small-scale incineration technologies to recover the embodied energy without excessive harmful emissions.
- Plastics can be used to substitute many

of the threatened hardwoods in construction applications and the plastics can be re-used or recycled at the end-of-life stage.

Action taken to date

The plastics industry has contributed to managing and protecting life on land through actions such as:

- Good, and minimal packaging, improves the yield of food sources and protects the food on the journey to the consumer. This can help to protect forests by reducing the amount of land needed for food production and reducing the need for 'slash and burn' agriculture.
- Technologies such as tree protectors and area protectors to encourage and manage tree and plant growth whilst protecting the trees from animal depredation
- The plastics industry provides the enabling technologies for seed banks and DNA banks to protect species from extinction and to provide the basis for future reintroduction of species.

Future action

The plastics industry will continue to contribute to managing and protecting life on land in the areas of:

- Leading the way in eliminating single-use and trivial applications of plastics (see UN SDG 14).
- Working with recyclers to identify and assist in removing difficult to recycle materials (or combinations thereof) from the supply chain (see UN SDG 14).

Summary

This goal is concerned with preserving and managing land-based ecosystems to stop desertification, land degradation and biodiversity loss. This can be achieved by improving and refining waste management systems to recover valuable raw materials and/or their embodied energy, preventing materials loss from the production/use system (the circular economy) and assisting in providing the tools for environmental recovery.

The presence of 'plastic bag trees' (or trees covered with plastic bags) indicates a failure of the system to capture waste at the most basic level. This can be from personal littering or from institutional waste management failure.

It is our environment too!
Again.

Goal 16: Peace, justice and strong institutions



Promote just, peaceful and inclusive societies

This goal is dedicated to the promotion of peaceful and inclusive societies for sustainable development, the provision of access to justice for all, and building effective, accountable institutions at all levels.

Challenges for the plastics industry

The challenges to the plastics industry in helping to achieve peace, justice and strong institutions are:

- The plastics processing industry is a capital intensive industry that requires high skill levels and secure supply chains. It is thus unlikely to develop or prosper significantly in countries which do not have peace, justice and strong institutions.
- The plastics processing industry needs a robust and dependable infrastructure to function. Countries which do not have peace, justice and strong institutions are also unlikely to have an infrastructure which can support a viable plastics processing industry.
- The plastics industry is a world industry and companies will choose to locate and develop plastics processing sites in countries which have peace, justice and strong institutions.

These factors limit the industry's ability to contribute to this goal because the industry is not generally present in countries which do not already have peace, justice and strong institutions.

Where countries with existing peace, justice and strong institutions fail to maintain these then the plastics processing industry's response is limited due to the diffuse nature of the industry.

Opportunities for plastics

The opportunities for the plastics industry in helping to achieve peace, justice and strong institutions are:

- The plastics processing industry can help to achieve many of the other UN SDGs, e.g. UN SDG 4, UN SDG 6, UN SDG 8 and UN SDG 9. Achieving these goals increase sustainable development and

will improve a country's stability. This will also indirectly help to achieve peace, justice and strong institutions.

- The plastics industry needs to treat all workers with respect see UN SDG 5 and UN SDG 10) irrespective of seniority gender, race, class or caste. Reducing all types of inequality at all levels will assist in the development of peace, justice and strong institutions.

Action taken to date

The plastics industry has helped to achieve peace, justice and strong institutions through actions such as:

- The industry has already contributed to development by helping to achieve many of the UN SDGs. This development has helped to promote the achievement of peace, justice and strong institutions.
- The industry has a generally good record of labour relations and equitable treatment of workers irrespective of seniority gender, race, class or caste (see UN SDG 10).

Peace, justice and strong institutions are a necessary precursor for achieving almost all of the UN SDGs.

Goal 16 targets

- Significantly reduce all forms of violence and related death rates everywhere.
- End abuse, exploitation, trafficking and all forms of violence against and torture of children.
- Promote the rule of law at the national and international levels and ensure equal access to justice for all.
- By 2030, significantly reduce illicit financial and arms flows, strengthen the recovery and return of stolen assets and combat all forms of organized crime.
- Substantially reduce corruption and bribery in all their forms.
- Develop effective, accountable and transparent institutions at all levels.
- Ensure responsive, inclusive, participatory and representative decision-making at all levels.
- Broaden and strengthen the participation of developing countries in the institutions of global governance.
- By 2030, provide legal identity for all, including birth registration.
- Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements.
- Strengthen relevant national institutions, including through international cooperation, for building capacity at all levels, in particular in developing countries, to prevent violence and combat terrorism and crime.
- Promote and enforce non-discriminatory laws and policies for sustainable development.

-
- The plastics processing industry provides good jobs, rewarding work and a structure for development. All of these contribute to the development and retention of peace, justice and strong institutions.

Future action

The plastics industry will continue to help to achieve peace, justice and strong institutions by action in the areas of:

- Assisting in achieving the other UN SDGs to promote sustainable development.

Summary

It is difficult for the plastics processing industry to directly and significantly contribute to the achievement of this goal but the contribution of the industry in achieving the UN SDGs will help in this area.

The author has worked in the plastics processing industry in 44 different countries. Peace, justice and strong institutions are needed for a strong plastics processing industry.

Goal 17: Revitalize the global partnership for sustainable development



Revitalize the global partnership for sustainable development

A successful sustainable development agenda requires partnerships between governments, the private sector and civil society. These inclusive partnerships built upon principles and values, a shared vision, and shared goals that place people and the planet at the centre, are needed at the global, regional, national and local level.

Urgent action is needed to mobilize, redirect and unlock the transformative power of trillions of dollars of private resources to deliver on sustainable development objectives. Long-term investments, including foreign direct investment, are needed in critical sectors, especially in developing countries. These include sustainable energy, infrastructure and transport, as well as information and communications technologies. The public sector will need to set a clear direction. Review and monitoring frameworks, regulations and incentive structures that enable such investments must be retooled to attract investments and reinforce sustainable development. National oversight mechanisms such as supreme audit institutions and oversight functions by legislatures should be strengthened.

Challenges for the plastics industry

The challenges to the plastics industry in revitalizing the global partnership for sustainable development are:

- Some people see plastics as the opposition and demonise the plastics industry. The reality is that it is an enabling industry. It produces the products that the customers want and as their desires and needs change then so will the industry. The challenge for the industry is to change quickly and responsibly so that it can continue to produce products that produce vast benefits for society whilst at the same time phasing out products that are detrimental to society.
- The plastics industry is not an independent entity. It consists of people who are doing their best to advance

Goal 17 targets

Finance

- Strengthen domestic resource mobilization, including through international support to developing countries, to improve domestic capacity for tax and other revenue collection.
- Developed countries to implement fully their official development assistance commitments, including the commitment by many developed countries to achieve the target of 0.7% of ODA/GNI to developing countries and 0.15 to 0.20% of ODA/GNI to least developed countries. ODA providers are encouraged to consider setting a target to provide at least 0.20% of ODA/GNI to least developed countries.
- Mobilize additional financial resources for developing countries from multiple sources.
- Assist developing countries in attaining long-term debt sustainability through policies aimed at fostering debt financing, debt relief and debt restructuring, as appropriate, and address the external debt of highly indebted poor countries to reduce debt distress.
- Adopt and implement investment promotion regimes for least developed countries.

Technology

- Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism.
- Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms.
- Fully operationalize the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology.

Capacity building

- Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the sustainable development goals, including through North-South, South-South and triangular cooperation.

Trade

- Promote a universal, rules-based, open, non-discriminatory and equitable multilateral trading system under the World Trade Organization, including through the conclusion of negotiations under its Doha Development Agenda.
- Significantly increase the exports of developing countries, in particular with a view to doubling the least developed countries' share of global exports by 2020.
- Realize timely implementation of duty-free and quota-free market access on a lasting basis for all least developed countries, consistent with World Trade Organization decisions, including by ensuring that preferential rules of origin applicable to imports from least developed countries are transparent and simple, and contribute to facilitating market access.

themselves, their employer and society. The plastics industry is part of society and it is our world too! The challenge is for the industry to act in a clear and responsible manner and for all of the people involved in the industry to individually act in a responsible manner.

- The plastics processing industry has, for too long, been reticent about discussing the publicising the benefits of plastics to society. The challenge in this area is for the industry to promote the undoubted benefits that plastics bring to society and to show that plastics make modern society possible.
- The plastics processing industry is traditionally a science-based industry and criticism of the industry is traditionally emotion-based. These very different approaches have hampered communication between the industry and its critics. The challenge for the industry is to engage with the critics in a reasonable manner, to respect their motivations and to form partnerships to meet the common challenges.

Opportunities for plastics

The opportunities for the plastics industry in revitalizing the global partnership for sustainable development are:

- Achieving the UN SDGs will have a transformative effect on the world and living standards across the world. This will change the face of the plastics industry. Raising living standards across the world will raise the total demand for many of the products of the plastics processing industry. There will obviously be casualties as certain products are phased out due public or legislative pressure but the industry is flexible and adaptive. It will change to produce new products that help to achieve the UN SDGs and to do so sustainably.
- The plastics processing industry is multi-faceted and adept at forming multi-stakeholder initiatives. The opportunity for the industry is to be part of the process of change and to drive change (which it does very well) rather than to be purely reactive and have change forced on it.
- The plastics processing industry is world-wide and can use the technological strengths to assist the developing world in capacity building and in sustainable and appropriate technology development.

Action taken to date

The plastics industry has contributed to revitalizing the global partnership for sustainable development through actions such as:

- The plastics processing industry is already working with organisations and programme such as ‘Operation Clean Sweep’ to prevent pellet loss from the system.
- The plastics processing industry has already developed Voluntary Commitments at the European level throughout the polymer industry e.g. VinylPlus, PCEP, SCS etc.
- The plastics processing industry is already working to create a science-based discussion of how to achieve the UN SDGs through collaborative action.
- The plastics processing industry is working to improve energy efficiency, resource efficiency and carbon emissions. Some of this is driven by economics, some is driven by legislation and some is driven by a desire to improve sustainability. The motives don’t really matter, the results do.
- The plastics processing industry is already working to transfer technology and skills to developing nations. This may be driven by an initial desire to reduce costs but again, the motives don’t matter. Developing the technology base of a country will raise living standards and help to achieve the UN SDGs.

Future action

The plastics industry will continue to contribute to the revitalizing the global partnership for sustainable development in the areas of:

- Working with partners to improve the environmental credibility of the industry based on science and evidence rather than on emotion.
- Working with external partners to show improved performance through unbiased external judgement.

Summary

A single industry sector such as the plastics processing industry obviously cannot achieve the UN SDGs alone. We must form partnerships to achieve these. The plastics industry is a vital partner for many of the UN SDGs and is willing to assist in achieving the goals.

“No man is an island, entire of itself; every man is a piece of the continent, a part of the main. If a clod be washed away by the sea, Europe is the less, as well as if a promontory were

John Donne

“Some people change their ways when they see the light, others when they feel the heat.”

Caroline Schoeder

It is our world too!

