<table>
<thead>
<tr>
<th>CONTENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
</tr>
<tr>
<td>Water</td>
</tr>
<tr>
<td>Agriculture</td>
</tr>
<tr>
<td>Environment</td>
</tr>
<tr>
<td>Food</td>
</tr>
<tr>
<td>Housing</td>
</tr>
<tr>
<td>Transport</td>
</tr>
<tr>
<td>Energy</td>
</tr>
<tr>
<td>Safety</td>
</tr>
<tr>
<td>Communication</td>
</tr>
<tr>
<td>Culture</td>
</tr>
<tr>
<td>Recycling</td>
</tr>
</tbody>
</table>
Steel is one of the most common materials that we come into contact with every day. There is hardly any object that we use today that does not contain steel or that is not created with equipment made of steel. There are thousands of different steels with different properties. New steels are being developed every year.

Methods for the mass production of steel have been around for over 150 years. In this time, steel has become the material of choice in many applications that make our daily lives possible.

Steel occupies this position because of its versatility, strength and recyclability. There are few other materials that can be recycled over and over again without loss of properties. Even steel created 150 years ago can be recycled today and used in new products and applications.

The versatility of steel is well known. It can be used in applications as diverse as container ships and ballpoint pens. Steel can also be used in a wide variety of environments, including extremes of cold and heat, and in arid or wet climates.

We depend on the strength of steel. It is only possible to build skyscrapers because of steel’s strength, rigidity and durability. Similarly, aircraft undercarriages rely on steel to perform every time an airplane takes off and lands.

Today, all of us are challenged to use resources, energy and materials wisely. Steel helps us to meet this challenge easily. It is made with technologically-advanced processes and it is completely recyclable - time and time again - without loss of quality.

Steel contributes to sustainability on a grand scale. In 2009, more than one billion tonnes of steel was created from both raw iron ore and recycled steel. Every year, about a third of the new steel produced worldwide comes from recycled steel.

This brochure demonstrates just some of the ways that steel is being used in our day-to-day lives to foster our development and well-being.

“The basic building block of peace and security for all peoples is sustainable development. It is a key to all problems. It allows us to address all the great issues: poverty, climate, environment and political stability.”

Ban Ki-Moon
UN Secretary General
From birth and throughout life’s journey, steel helps to facilitate your health. Steel surfaces are hygienic and easy to clean.

These properties make steel an ideal material for medical instruments used in delicate operations, for screws to repair bone fractures, for pharmaceutical equipment to produce our medicines, for hypodermic needles to provide us with vaccinations, and even braces to keep us smiling.

**There in the background**

Steel is also there in the background. It provides the infrastructure of our hospital buildings, delivers clean water to hospitals using pumps and pipes, and helps us move about more freely with lifts and wheelchairs.

Steel brings us rapid assistance when and where we need it through the use of emergency vehicles and ambulances. Installed in steel containers, mobile hospitals can be operational with full medical facilities, including intensive care units, within 36 hours of a disaster.

Steel’s strength and durability also make it suitable for exercise equipment, like weights, treadmills and exercise bikes that contribute to a healthy lifestyle. This is especially important in our ever-growing cities where we increasingly use indoor gyms to help us stay fit year-round.

**Steel and health**

From sterile surgical instruments to exercise machines, steel is with us in many ways that benefit our health. Around the world, steel is in the hospitals we rely on, the pharmaceutical systems that manufacture our medicines and in emergency equipment that gets medical assistance to us rapidly, when it counts.
Meeting the world’s freshwater needs is a serious challenge. At least one in five people in the world lack an adequate supply of safe drinking water. Steel is helping to meet this growing need.

From obtaining and purifying our water to making it suitable for drinking, to delivering it safely, steel is there at every step. It is used to line boreholes, in filtering and holding tanks at water treatment facilities as well as pumps and pipes that carry the freshwater throughout the community all the way to our homes. In regions of freshwater scarcity, steel provides water through rainwater storage, drilling wells and desalination facilities.

In and around cities

Steel enables communities to build water-infrastructure such as canals, harbours, fish passages, culverts, sewers and storm-water detention. Steel bridges and tunnels allow people to get around water easily. Steel barriers are also important to prevent flooding in areas of increasing sea-levels around the world.

Today, more than half of the world’s population lives in cities. In many cities, more than 40% of the total water supply is lost during distribution. Steel solutions reduce these loses. Tokyo has adopted corrugated stainless steel pipes for 90% of its extensive network of underground potable water pipes, eliminating leakages and lowering costs.

Steel and water

Steel plays a fundamental role in helping to make freshwater accessible for everyone. From rainwater storage tanks to complex pump and pipe-infrastructure, steel is involved in the entire process of water collection, purification and delivery. Steel enables us to manage water, from raindrops to ocean waves.
Agriculture without steel is unimaginable. From tilling the land and planting seeds to watering, harvesting, storing and transport crops, steel is a vital part of agriculture. Steel also facilitates the feeding, shelter and transportation of livestock. Some steel industry by-products are even used as fertilisers.

Steel has been involved in agriculture for much of history. From basic tools, such as hoes, picks, shovels, and forks, to the most technically-advanced tractors, ploughs and harvesters, steel is there. Continual developments in steel agricultural equipment have made farming easier and more efficient. In developed countries, as little as 3% of the workforce can feed the entire population, compared to over 75% just a hundred years ago.

On the farm

Steel’s durability and versatility make it ideal for countless farming applications. It is used for pipes and irrigation systems, for water tanks and buckets, and in scythes, sickles and shovels. Wool and fleece are gathered using steel shears and scissors. Many types of feed storage facilities are built of steel, including barns and silos. Steel is also an ideal material for automated animal-feeding systems. Crops and livestock are brought to local and global markets on trucks, trains, planes and ships – all made with steel.

Steel and agriculture

Agriculture is vital to our modern civilisation. It provides us with our food, clothing, and increasingly, our energy. Agriculture also continues to provide livelihoods, accounting for 35% of the world’s jobs.

From basic hoes, shovels and forks, to modern ploughs, irrigation systems and grain storage silos, steel is there every step of the way, making agriculture easier and more efficient.
An important part of protecting our environment is making efficient use of our natural resources. Steel is made primarily from iron, the fourth most abundant material in the earth’s crust. Improvements in energy efficiency have led to reductions of about 50% in energy required to produce a tonne of steel since 1975 in the top steel-producing countries.

By-products produced during steelmaking are put to good use. Slags can be used in road-making, while process gases provide energy. Every steel product contains recycled steel and is 100% recyclable.

Solar energy and water desalination in deserts, pressure resistant vessels for exploring deep waters, barriers for flood-prone areas and earthquake-resistant buildings are all made of steel.

Artificial reefs, made from a special steel mesh or recycled steel plates, are providing new habitats for coral and fish. By restoring coral reefs that have been bleached by rising temperatures, steel plays a part in fighting the effects of climate change.

Climate change

Steel is part of many solutions to combat climate change. Renewable energy sources, such as solar panels and wind turbines use steel. Steel also enables creative solutions to meet our energy needs. These include alternative energy sources, such as geothermal and wave energy.

Steel and the environment

Steel contributes to the health of our planet in many ways. Lightweight steel vehicles minimise the amount of fuel we use. Steel is also used to construct clean and economical sources of alternative energy. However, steel’s most important contribution to our environment is its infinite recyclability.
Steel is an essential part of our food supply network. It helps to grow, preserve, deliver, store, and prepare our food.

The machines and equipment that process what we eat and drink are also made with steel. Trucks and steel containers are used to transport our food. Shopping carts, cars, buses, and trains – all made with steel – help us to carry our food home.

In our kitchens steel is used in the production of knives, pots, pans, eating utensils, refrigerators and stoves. When we are finished with the cans that protect our food and drinks, steel's magnetic properties allow them to be efficiently separated from waste streams with magnets.

200 billion cans

Steel cans are an important part of our food distribution system. Almost 200 billion cans of food are produced in the world each year. Steel cans are strong, tamper-resistant and protect food and drink from moisture, oxygen and light. Steel cans naturally preserve their contents without any additives.

Several years ago, a 40-year-old can of corn was found in a house in the US. The corn inside had been kept safe from contaminants and most nutrients were still preserved. The corn also looked and smelled as though it had been canned recently.

Steel and food

Steel is part of every step of our food supply network. Cultivation, manufacture, preservation, and delivery of food would not be possible without steel. The use of steel cans also reassures us that the food we buy in the market will be as fresh and nutritious as on the day it was packed.
Humanity’s need for housing is great and growing. About 1.1 billion people are living in inadequate housing conditions in urban areas alone. Steel is an ideal material to help meet their needs, whether it is for basic housing or luxury apartments.

Our homes provide us with comfort and shelter from the elements. Steel frames, structural beams and foundations support our homes. Steel panels and roofs protect us from extremes of temperature, water and wind. Steel locks and bolts help to keep everything we treasure, safe. Within our homes washing machines make our lives easier, refrigerators keep our food fresh, while steel ducts, pipes, and taps circulate air and provide clean drinking water. Steel also provides elegant light fixtures and furniture.

Limitless possibilities

The possibilities of building with steel are limitless. Its strength-to-weight ratio is the highest of any residential building material.

Steel is easily formed and joined. It can withstand natural disasters including hurricanes and earthquakes. Steel is also impervious to attacks from termites or fungi. Steel facilitates the conversion of obsolete buildings, such as warehouses or train stations into modern living or working spaces, extending their useful life.

Steel and housing

Innovative steel solutions are fundamental to meeting humanity’s growing need for shelter. Steel is one of the most sustainable building materials with unique characteristics that favour its use in the construction industry. Steel is long-lasting, versatile, earthquake resistant, and 100% recyclable.
Steel has moved us through the centuries. From carriages to bicycles, automobiles, trains, ships, submarines, planes, and spacecraft, steel facilitates our mobility. Steel is essential in all transport infrastructure. Roads, railways, bridges, tunnels, sea ports, and airports all use the strength and versatility of steel to move us and our goods.

Steel and your car

Cars are one of the most popular modes of transport in the world. There are approximately nine cars for every 100 people. Steel makes up approximately 55% of an automobile's overall mass. Power trains, gear boxes or vehicle bodies are all made from steel. Seat-belt buckle and anchors and crash-energy absorbing side-bars are also made from steel to keep you safe. Even tyres are strengthened with steel wire.

Transport accounts for over 25% of total world energy use. New lightweight Advanced High-Strength Steels (AHSS) have the potential to reduce energy consumption of automobiles by 50% over their life cycle. AHSS can already be found in many vehicles on the road today.

Many current automotive advances, such as fuel cell vehicles, would not be possible without steel.

Steel and transport

Mobility is essential in our modern society. Steel provides transport solutions that move us quickly, efficiently and economically. It also helps to keep us safe as we move. Innovative advances in steel design ensure that steel will continue to contribute to the development of fuel-efficient transport solutions long into the future.
Steel is critical for supplying the world with energy. It is indispensable for energy production, distribution and application. It is used in mines and offshore oil platforms, oil tankers and gas pipelines that deliver our fuels, hydroelectric dams, backing for solar panels and storage for fuel cells. Steel is also used in pylons and cables for electricity distribution. Generators, transformers, and electric motors made of electrical steel create energy to power our world.

**Renewable energy, increased efficiency**

With concerns over climate change increasing, there is an urgent need for solutions to meet our rapidly growing energy needs in a sustainable manner.

Steel helps to make clean and renewable energy available. It is used in the construction of wind turbines, and in photovoltaic solar panel systems that harness energy from the sun. Steel-based solutions can convert ocean wave energy into electricity. Steel is also needed for hydrogen storage tanks and hydrogen fuel cells.

Steel reduces our need for energy by providing energy-efficient solutions. Fuel-efficient vehicles and innovative modular construction methods are just two examples of how steel reduces energy-consumption, while minimising the impact of our lives on the environment.

**Steel and energy**

Every time you switch on an electrical appliance, you are using steel. Hi-tech electrical steels are used to create the power you use.

Pylons and cables made of steel transport the electricity directly to you. Steel is also used in the creation of renewable energy including hydrogen fuel cells, wind turbines, and solar panels. Steel powers your world, day and night.
Steel provides essential safety in all aspects of our lives. Property gates, door locks, keys, and safes keep us and our personal belongings secure. Hand and guard railings help to prevent accidents in stairwells. Steel is used in fire extinguisher casings, water sprinkler systems and fire doors. Steel is also the material of choice when constructing earthquake-resistant buildings and skyscrapers.

Vehicle safety

In all forms of travel there is an associated crash risk. That is one of the main reasons why all types of passenger vehicles, including cars, trucks, buses, and trains use steel in their construction. One of steel’s most important safety attributes is its ability to collapse like an accordion, thereby absorbing the energy of a crash. Steel becomes stronger as it bends, reducing the chance of intrusion into the passenger compartment.

The steel skeleton of a vehicle provides its base strength. However, there are many other steel components in a typical car that are designed to keep you safe. These include seat tracks to keep passenger seats in place, steel buckles and seat-belt anchors, and steel door beams that help absorb the energy of a side-impact collision. Steel also brings road safety by providing road signs, traffic signals, street lights for night driving, and crash barriers.

Steel and safety

Steel protects you in simple ways, such as steel-toed boots that keep your feet safe, or cans that store your food safely. Steel also protects in complex applications such as buildings designed with steel to resist earthquakes, or steel-bodied vehicles that protect you and your family when travelling. Steel has many ways of keeping you safe.
Take something as basic as your daily newspaper that connects you with the world. Steel was used in countless ways to produce and deliver it to you. From the facilities that produced the paper and ink, the trucks that transported it to the giant steel presses for printing, to the transportation network that delivered it to you. When you are through with your newspaper, trucks deliver it to recycling facilities that use equipment made of steel.

**Satellites and beyond**

Radio transmitters are the basis for many of our methods of communications. They are used in baby monitors, toys, mobile telephones, radar, and satellites. Radios also play an important role in communications between emergency services and have many applications in industry. All radios contain steel components to enable communication.

Steel is an integral part of many other communication devices. Ballpoint pens rely on a steel sphere less than 1 millimetre in diameter to dispense ink. Approximately 25% of an average computer is made of steel. Many people rely on satellite dishes to provide them with a wide variety of television channels. The actuators in these dishes are made of high-tech steel. Steel is also used to protect communication cables that cross continents and even the ocean floor.

**Steel and communication**

Almost every form of human communication uses steel in some way. Newspapers and books could not be created without steel presses. Computers and pens contain steel and are produced using steel equipment. Postal systems around the world depend on steel sorting equipment and infrastructure to deliver our letters and packages. Steel is there even when we make a telephone call, all along the line.
All around the world, steel brings culture into our lives. Impressive sculptures, delicate watches, museums and music all utilise different attributes of steel. Steel is also there in the buildings we use to celebrate our cultures and ceremonies. The roar of a crowd in a football stadium would not be heard without steel.

Enjoy

Music today is as diverse as today's steel and its applications. The complexity of a grand piano's steel strings, the lingering sound of a triangle and the beat of a steel drum all use steel to transport us away from the everyday.

We also use steel to create culinary delights. From grill plates and woks to high-tech stainless steel kitchens and gadgets, steel helps us create the taste sensations that are part of our culture.

Steel is recreation, from the slide in the children's playground to the roller-coaster in the amusement park. Movie theatres, libraries, sport stadiums or concert halls would not exist without steel active in the background.

Steel and culture

Steel plays a key role in our cultures. It is part of the clothes and jewellery that we wear, and the music, sports and entertainment that we enjoy. Steel inspires artistic sculpture and architectural grandeur, and provides safe and strong playgrounds for children of all ages. Steel enriches our lives.
Steel is the most recycled material in the world. More steel is recycled than all other recyclable materials combined, including aluminium, glass and paper.

Steel is also easy to recover from any waste stream through the use of a magnet. It is the only material that can be extracted from other waste so simply.

Steel is also the only material in the world that has a guaranteed recycled content. Scrap steel is an essential component in the production of new steel. The unique properties of steel mean that no matter how many times you recycle the material, it remains unchanged.

High recycling rates

As recycled steel is an essential element in the production of new steel, recycling rates for steel are very high. In North America more steel is recovered from scrapped vehicles than is used in the production of new cars.

In 2008, nearly 90% of all the steel used in packaging in Japan was recycled to make new steel products.

The energy and CO₂ benefits of using steel are clear when the full life cycle of a product is taken into account. This is because at the end of its useful life, a steel product is fully recyclable.

Steel and recycling

The recycling of scrap steel is vital to the production of new steel. Recycling enables steelmakers to conserve energy in the production of steel as well as to conserve the earth’s resources. Steel is one of the easiest materials to recover from waste streams. It can be recovered using just a magnet.