

WORLD COMMODITIES

Sugar



GARRY CHAPMAN » GARY HODGES

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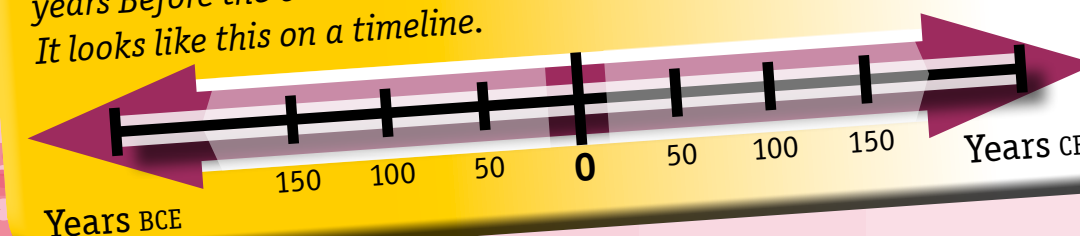
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Glossary words

When a word is printed in **bold**, click on it to find its meaning.

Some of the events in this book happened a long time ago, more than 2000 years ago. To understand this, people measure time in years Before the Common Era (BCE) and during the Common Era (CE). It looks like this on a timeline.



What is a world commodity?

A commodity is any product for which someone is willing to pay money. A world commodity is a product that is traded across the world.

The world's most widely traded commodities

Many of the world's most widely traded commodities are **agricultural** products, such as coffee, sugar and wheat, or **natural resources**, such as coal, iron ore and oil. These commodities are produced in large amounts by people around the world.

Coal, coffee, iron ore, oil, sugar and wheat are important commodities traded around the world.



Commodities and the world's economy

Whenever the world's **demand** for a commodity increases or decreases, the price of this commodity goes up or down by the same amount everywhere. Prices usually vary from day to day. The daily trade in world commodities plays a key role in the state of the world's **economy**.

MORE ABOUT...

The quality of commodities

When someone buys a commodity, they assume that its quality will be consistent. Oil is an example of a commodity. When people trade in oil, all barrels of oil are considered to be of the same quality regardless of where they come from.

Sugar is a commodity

Sugar is a crystalline substance used by people all over the world to sweeten the taste of food and drinks. It is also used in the manufacture of fruit juices, syrups, cakes and confectionery.

A natural sweetener

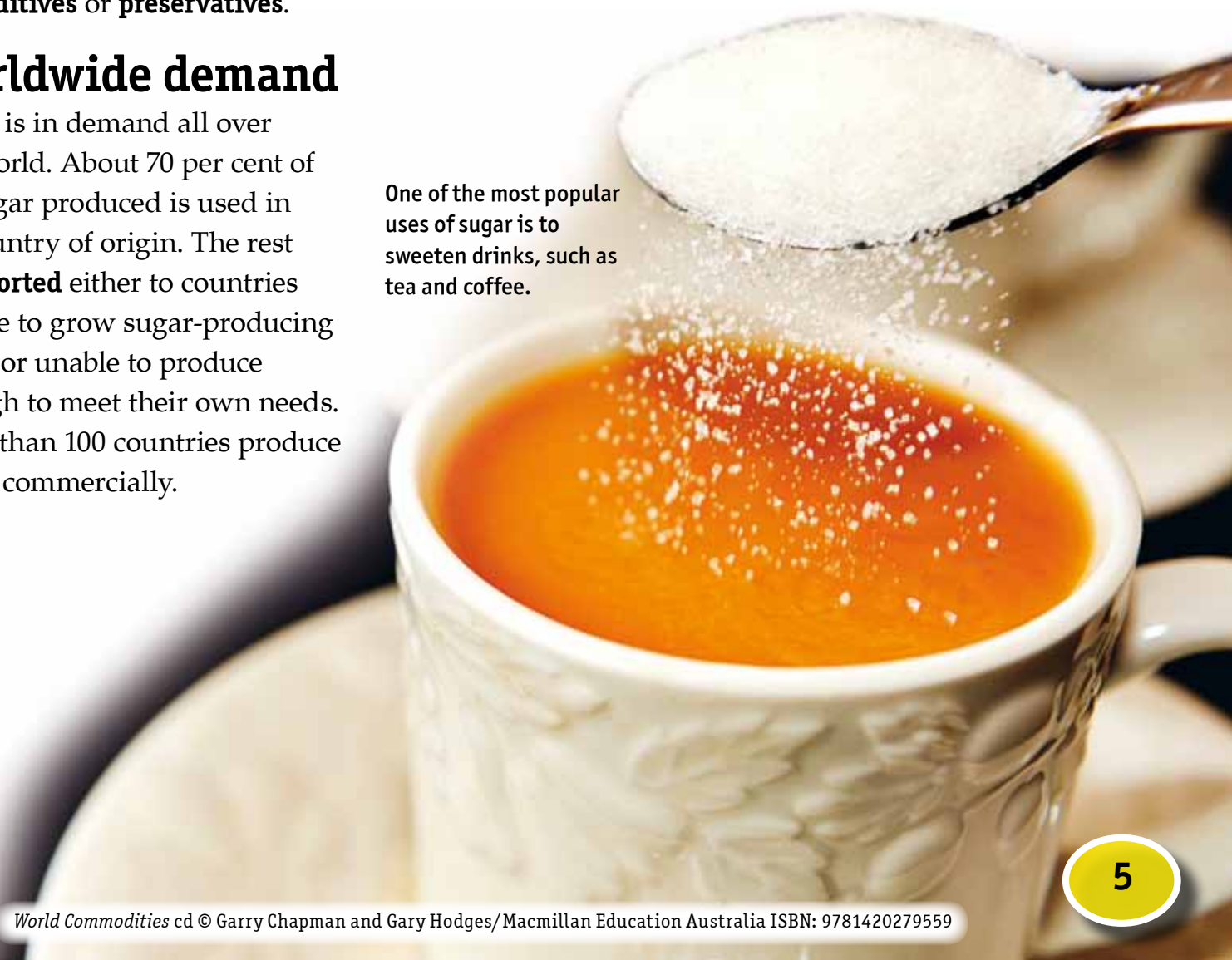
Sugar can take several forms, including sucrose, fructose and lactose. Sucrose is the most commonly used form of sugar and is sometimes called table sugar. It occurs naturally in fruits, vegetables and honey, but can be produced in commercial amounts only from sugar cane or sugar beet. When we refer to sugar in this book, we are referring to sucrose.

Sugar is a **carbohydrate**. It provides the human body with energy and contains no **additives** or **preservatives**.

Worldwide demand

Sugar is in demand all over the world. About 70 per cent of all sugar produced is used in its country of origin. The rest is **exported** either to countries unable to grow sugar-producing crops or unable to produce enough to meet their own needs. More than 100 countries produce sugar commercially.

One of the most popular uses of sugar is to sweeten drinks, such as tea and coffee.



Where is sugar grown and where is it consumed?

Two very different types of plant – sugar cane and sugar beet – provide the world with most of its sugar. These plants grow in very different climates. Their product is consumed all over the world.

Sugar cane

Sugar cane is a tall grass with jointed stalks that grow several metres tall. Its stalks contain sugar. Sugar cane is grown in **tropical** and sub-tropical regions, where it is moist, warm and sunny.

Sugar beet

Sugar beet is a root vegetable belonging to the beetroot family. It has a leafy stem and a large root. Sugar is found in its root. Sugar beet is mainly grown in places with a cool, **temperate** climate, such as parts of Europe, Japan and the United States.



Sugar comes from two main sources: sugar cane (left) and sugar beet (right).

COMMODITY FACT!

More than 100 countries produce sugar. About 78 per cent of that sugar comes from sugar cane. The rest comes from sugar beet.

Sugar production and consumption

Brazil is the world’s largest producer of sugar cane. In Brazil, sugar cane is grown as a food product and also as a source of ethanol – an environmentally friendly **biofuel** for vehicles. Most cars in Brazil run on a mix of regular petrol and ethanol.

India is the world’s largest consumer of sugar. More than 60 per cent of the sugar in the country is consumed by food-processing companies and the rest by the public.

Barbados, in the Caribbean, is a country with a thriving sugarcane industry.

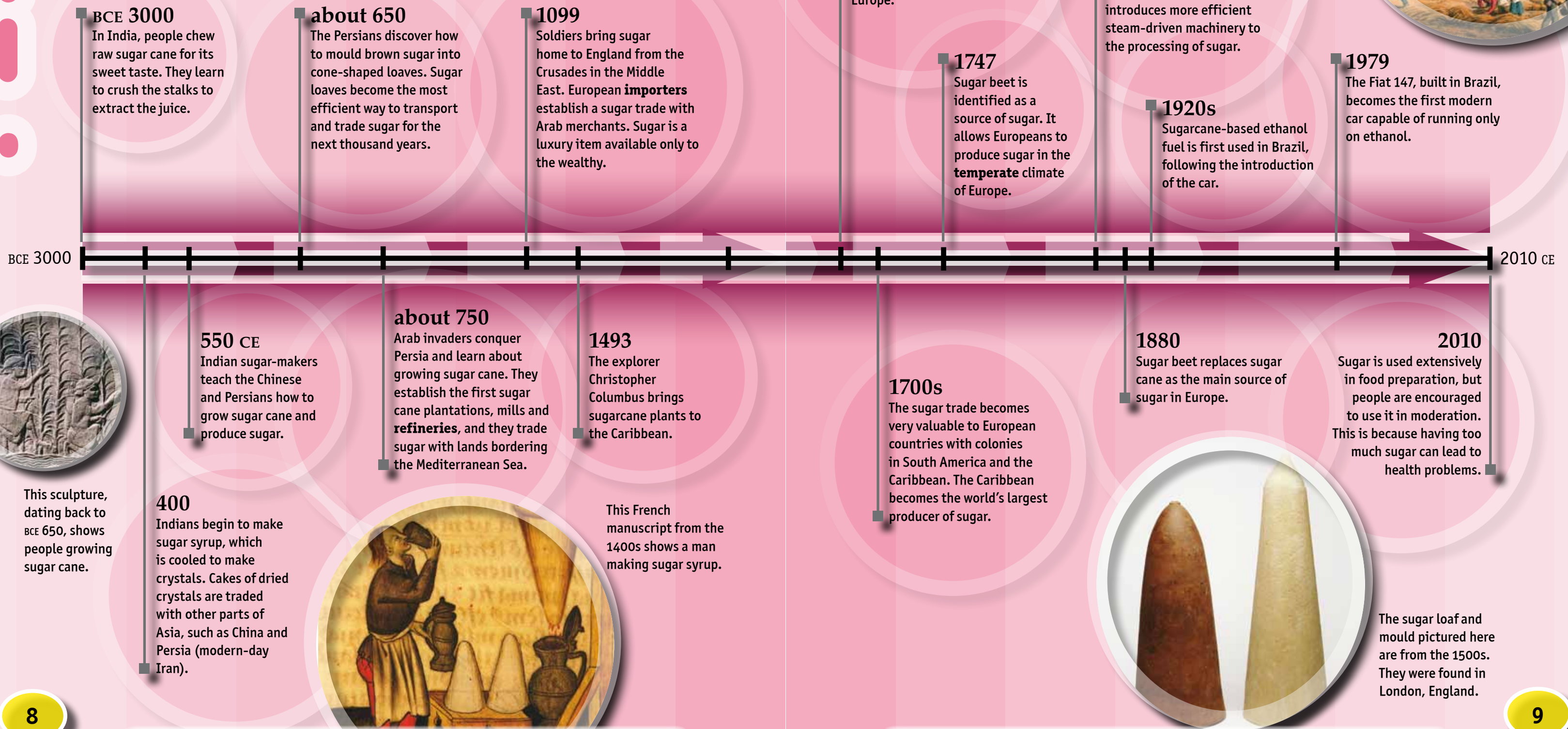


THE WORLD’S MAJOR PRODUCERS AND CONSUMERS OF SUGAR (2008)

Producer	Amount of sugar produced	Consumer	Amount of sugar consumed
Brazil	32.29 million tonnes (35.52 million tons)	India	22.55 million tonnes (24.81 million tons)
India	25.94 million tonnes (28.53 million tons)	European Union	20.47 million tonnes (22.52 million tons)
European Union	16.38 million tonnes (18.02 million tons)	China	14.73 million tonnes (16.20 million tons)
China	15.40 million tonnes (16.94 million tons)	Brazil	11.86 million tonnes (13.05 million tons)
Thailand	7.77 million tonnes (8.55 million tons)	United States	9.81 million tonnes (10.80 million tons)

Timeline: The history of sugar

Humans have enjoyed the sweet taste of sugar for more than 5000 years. The Indians were the first to discover how to turn sugar cane juice into crystals. Today, people all over the world enjoy sugar.



How is sugar made?

Sugar is made from sugar cane and sugar beet. Both plants produce sugar in large amounts for harvesting and processing.

Sugar cane

Sugar cane is a tall grass which contains sugar in its stalks. Once planted, it takes about 9 to 16 months to grow. It is usually harvested between June and December.

Planting cuttings

Sugar cane grows from cuttings planted by hand. It reaches full growth in about a year. Although new stalks will grow after each harvest, each cycle will offer a little less sugar than the previous one. After about ten cycles, a new cutting must be planted.



Harvesting by hand

In some **developing countries**, the cane is cut by hand using large knives. Before harvesting the cane, the fields may be burned to rid them of unwanted leaves and dangerous snakes, leaving the stalks and roots unharmed.



Harvesting by machine

In other countries, the rotating, sharp blades of a combine harvester cut the stalks at the base, leaving the roots untouched. The leaves are stripped and blown back into the cane field, while the stalks are placed in a large transporter.



Transporting to the mill

It is important to transport the cane quickly to a sugar mill nearby before it loses its sugar content. The cane is often moved by train or truck.



COMMODITY FACT!

Sugar cane is usually grown in large plantations, or cane fields, where it sometimes yields up to 20 kilograms (44 pounds) of sugar for every square metre of land.

Sugar beet

Sugar beet is a vegetable that stores sugar in its large, bulb-shaped root. It is mostly grown in the Northern Hemisphere, where it is planted in spring (late March and early April) and harvested in autumn (late September and October).



This modern vehicle is used to harvest sugar beet quickly and easily.

Sowing and harvesting

Traditionally, sugar beet was sown and harvested by hand. During the harvest, one person would pull the beet from the ground by its leaves and another would slice the top of the root and the leaves off with a sharp tool. The beets were then loaded onto carts and sent for processing.

Today, sugar beet is sown and harvested by machine. A roto beater removes the leaves and the top of the root before a harvester lifts the root, cleans away the soil and places it in a truck. The truck then transports the beets for processing.

Preparing sugar for consumption

Once harvested, sugar cane and sugar beet are processed in similar ways to extract sugar.

Processing sugar cane

When sugar cane reaches the sugar mill, the entire stalk is processed to extract sugar and the leftover material is saved for different uses.

Washing, chopping and crushing

First, the cane is washed and chopped into small pieces. Then it is shredded by revolving blades. Water is added and the shredded cane is crushed by large rollers. This process releases cane juice, which contains about 10 per cent to 15 per cent sugar.

Filtering

The cane juice is filtered, then mixed with **calcium hydroxide** and allowed to sit. The calcium hydroxide catches impurities and settles them for easy removal. The cane juice is then boiled to **evaporate** much of the liquid. This creates a syrup containing about 60 per cent pure sugar.

Crystallisation

The syrup is sprinkled with sugar crystals to produce a mixture of clear crystals and sticky, brown **molasses**. The mixture is then spun rapidly to separate the crystals from the molasses. The crystals are cleaned with steam and air-dried. As the sugar cools, more crystals form. The raw brown sugar is stored, ready to be sent to a **refinery**.



Processing sugar beet

Sugar beet is washed, sliced and soaked in hot water to extract the sugar. Impurities are removed and the liquid is filtered, then heated to evaporate much of the water. The remaining sticky syrup, known as molasses, contains more than 60 per cent pure sugar. Once cool, the syrup is spun rapidly to separate sugar crystals from the molasses. The crystals are cleaned with steam and air-dried.

Refining sugar

By the time it reaches a refinery, there is no difference between sugar produced from sugar cane and that produced from sugar beet. At the refinery, raw sugar is purified to produce pure-white sugar. This often requires treatment with chemicals and additional filtration, crystallisation and spinning. The sugar crystals are then sifted to produce different types of sugar.



There are many different types of sugar, each suited to different uses.

COMMODITY FACT!

Sugar is very useful in cooking. It helps cakes and bread to rise, prevents **preserved** food from spoiling, keeps the colour in fruit by holding water, and brings out the flavour in many different foods.

DIFFERENT TYPES OF SUGAR

Name	Appearance	Uses
Table sugar	Pure-white crystals	Household uses • sweetening drinks
Sanding sugar	Larger, coarser grains	Decorating cakes and biscuits
Castor sugar	Smaller, finer grains	Baking
Icing sugar	Very fine grains	Icing cakes • making powdered drinks
Brown sugar	Brown grains, often sticky	Household uses • sweetening drinks • enhancing the flavour of food

COMMODITY FACT!

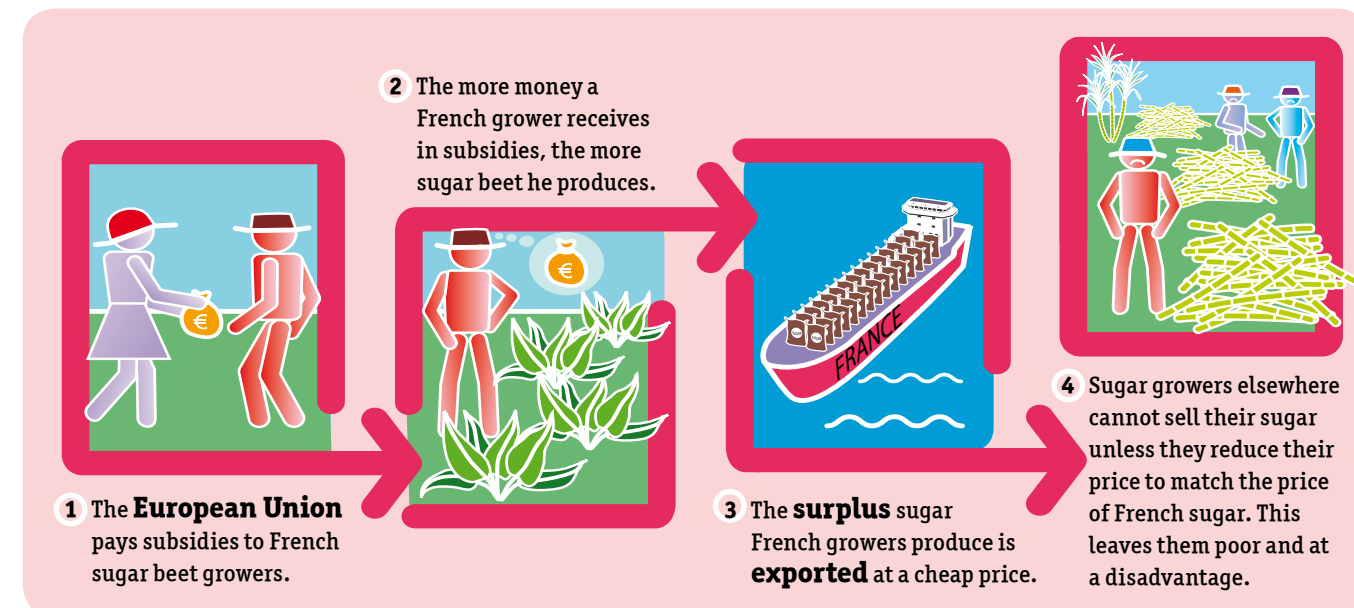
When sugar cane is crushed, it produces a stringy material called bagasse. Bagasse is dried and used as fuel for the mill's boilers. It can also be used as **mulch** in cane fields, food for farm animals or to produce paper and cardboard.

The sugar trade

The sugar trade is one of the most complex trades in the world. It involves subsidies, quotas, price controls and preferential arrangements.

Protecting domestic sugar growers

Many governments try to protect their **domestic** sugar growers so that these growers are able to make a decent living from growing sugar crops. This is usually achieved through subsidies or quotas. A subsidy is an amount of money paid by the government to a grower to lower the cost of farming sugar crops. A quota places limits on the amount of the product that can be **imported**. With fewer imports entering the country, there is less competition, making it easier for domestic growers to sell their products.



Subsidies are paid to growers by governments to protect their domestic sugar industries.

Selling surplus sugar

Once their domestic sugar needs have been met, some countries try to sell their surplus sugar to other countries. Usually, this means their surplus sugar is 'dumped' on the world market at a heavily reduced price so that it will sell easily. Unfortunately, the cheap surplus sugar brings the world price down, making it very difficult for growers from **developing countries** to get a reasonable price for their sugar.

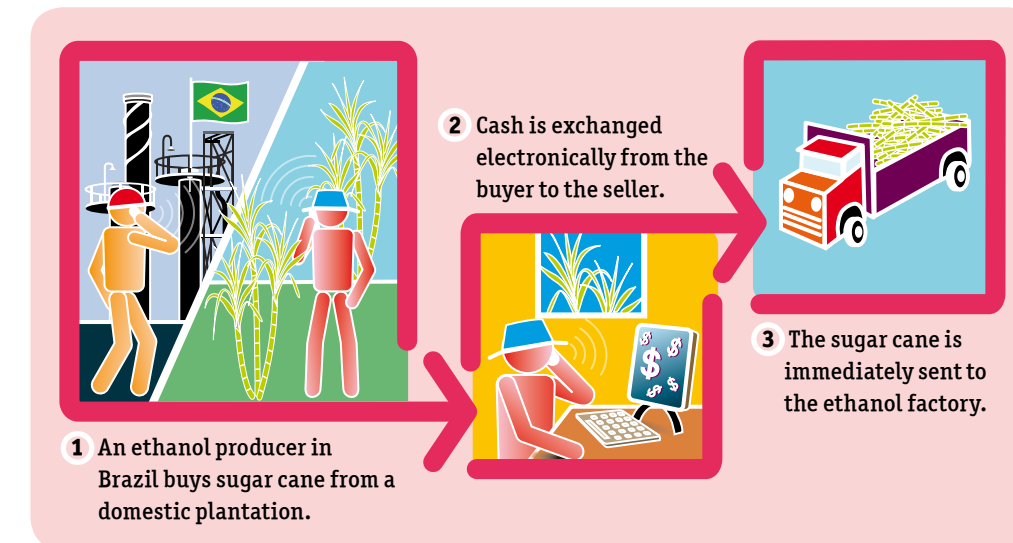
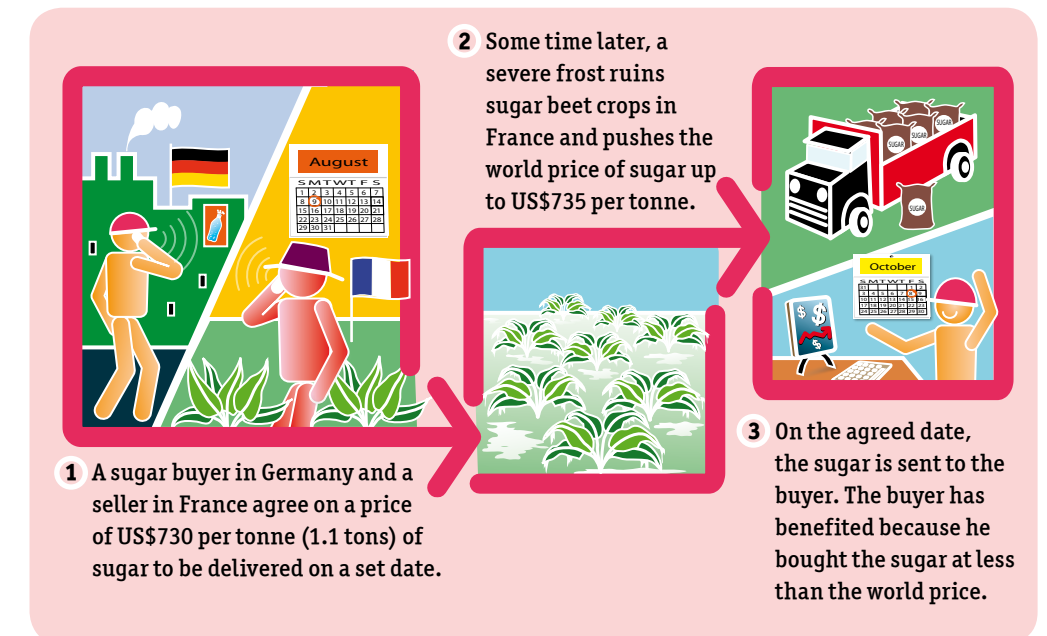
Exchanges

An exchange is a place where commodities such as sugar are bought and sold. At an exchange, sugar is bought and sold in both the futures market and spot market.

The futures market

Trading in the futures market involves buying and selling contracts that are set in the future. Buyers and sellers agree on a price, which will be paid when the sugar is delivered at a date in the future.

The futures trading of sugar takes place in three main stages. The sugar buyer is agreeing to buy sugar at a future date for a set price.



The spot trading of sugar is a simple transaction between a sugar grower and an ethanol producer that takes place in three main stages.

COMMODITY FACT!

Although sugar is consumed and produced in more than 100 countries throughout the world, only about one-quarter of sugar produced is traded internationally.

Supply and demand

The sugar trade is determined by **supply** and **demand**. When consumers are eager to buy the commodity, the demand for sugar increases. Consumers rely on producers to supply it.

Factors affecting supply

It is difficult to make a good living from selling sugar crops. The cost of harvesting equipment, fertilisers and labour can be very high. This is why some countries pay subsidies to **domestic** sugar growers. Subsidies ensure that sugar growers can continue supplying the market. Supply may also be affected by natural events, such as droughts or floods, which can destroy crops. This would affect domestic and **export** supplies, and cause prices to rise.

Factors affecting demand

The demand for sugar is usually quite high because it is used in the preparation of food and drinks all over the world. As the world moves towards the use of alternative clean fuels in vehicles, the growing preference for ethanol, a **biofuel**, may also boost demand for sugar.

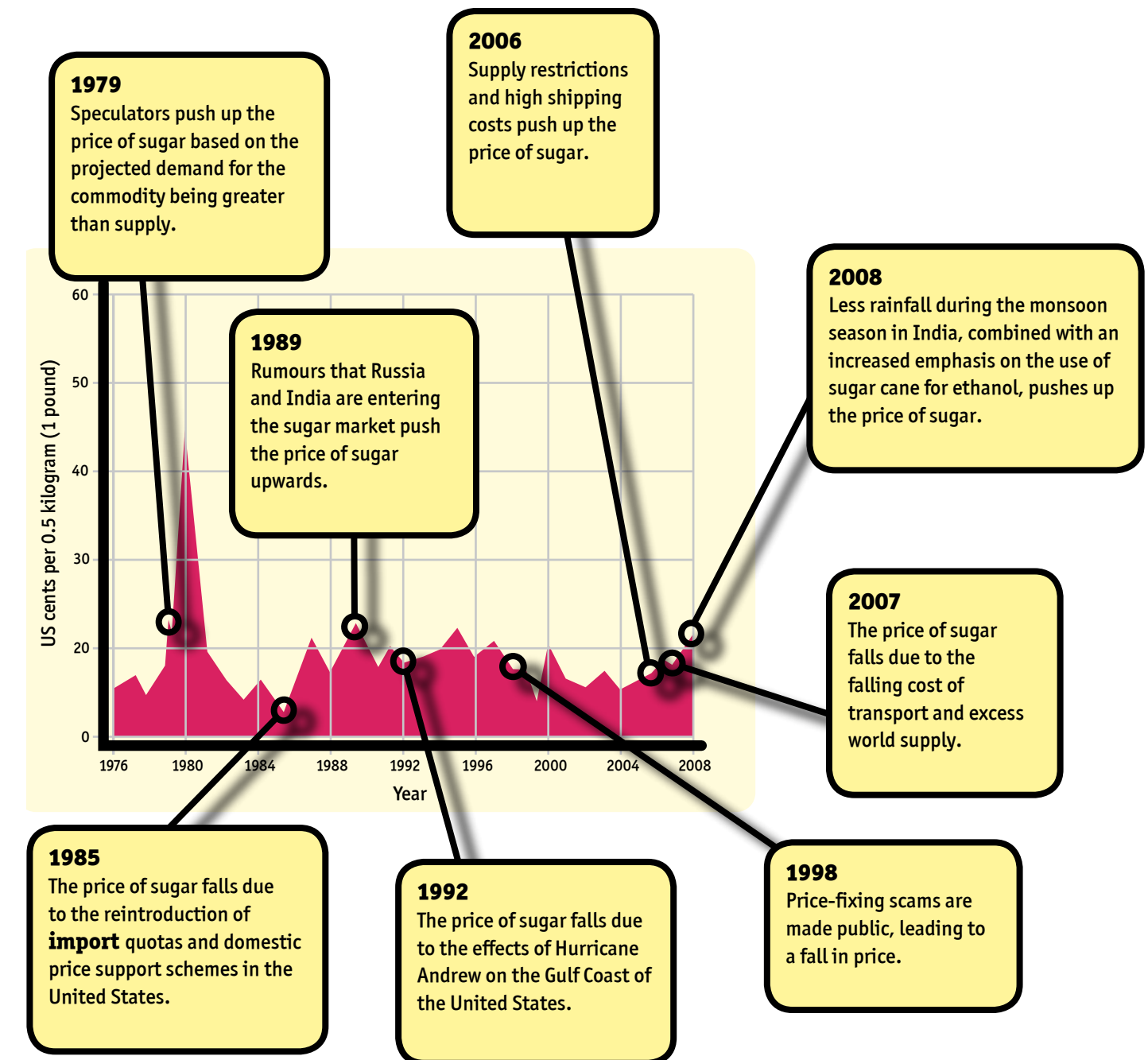
THE WORLD'S TOP EXPORTERS AND IMPORTERS OF SUGAR (2008)

Exporter	Amount of sugar exported	Importer	Amount of sugar imported
Brazil	20.14 million tonnes (22.15 million tons)	Russia	2.52 million tonnes (2.77 million tons)
Thailand	5.11 million tonnes (5.62 million tons)	United States	2.37 million tonnes (2.61 million tons)
India	4.23 million tonnes (4.65 million tons)	European Union	2.01 million tonnes (2.21 million tons)
Australia	3.29 million tonnes (3.62 million tons)	Nigeria	1.57 million tonnes (1.73 million tons)
Guatemala	1.33 million tonnes (1.46 million tons)	Iran	1.45 million tonnes (1.60 million tons)

Price variations

When the global demand for sugar is greater than its supply, the price of sugar increases. In the same way, when the supply of sugar is greater than the demand for it, the world sugar price falls.

THE RISE AND FALL OF THE WORLD PRICE OF SUGAR



The world price of sugar experiences highs and lows over time. Events around the world influence the supply of and demand for the commodity, which changes the price.

Codes of practice

Codes of practice govern the way most commodities are traded internationally. The purpose of these codes is to ensure that commodities are fairly priced and traded.

International regulation

The sugar trade is regulated by the World Trade Organization (WTO). It is an international body with more than 150 member countries. The WTO helps countries to negotiate trade agreements which will ensure that any business between them is conducted fairly. Disputes over trade issues may be dealt with by the WTO. However, it is the governments which signed the agreements that are ultimately responsible for settling disputes.

The Anti-Dumping Agreement

Perhaps the most important agreement governing the sugar trade is the Anti-Dumping Agreement. It aims to prevent large sugar producers, such as the United States and the **European Union**, from dumping their **surplus** sugar on the world market. Both the United States and the European Union use subsidies and quotas to protect their sugar producers. Under such systems, growers often produce much more sugar than their **domestic** markets need. The excess is dumped on the world market at low prices. This forces the world price of sugar down. It means smaller producers earn less for their sugar.



In January 2010, protesters gathered outside the office of the Department of Trade and Industry in Manila, the Philippines, to demand the regulation of sugar and bread prices.

International Sugar Organization

The International Sugar Organization (ISO) is based in London and made up of 85 member countries. It was set up to administer the International Sugar Agreement of 1992. Although not strictly a regulatory body, the ISO aims to improve international cooperation on sugar-related issues. It also sponsors projects which help **developing countries** to make their **agricultural** practices more efficient.

MORE ABOUT...

The International Sugar Agreement (1992)

In March 1992, ISO members established an International Sugar Agreement. It aimed to improve cooperation between sugar-trading countries, provide governments with a forum in which to discuss sugar-related issues, and to provide information about sugar trading. The United States was not prepared to consent to certain aspects of the agreement and soon quit the ISO.



The ISO aims to improve working conditions in developing countries.

International politics and sugar

Several key issues dominate the way the world sugar trade operates. Subsidies and quotas are two such issues. These practices can affect the price of sugar and can also limit the profits other countries make from selling their sugar.

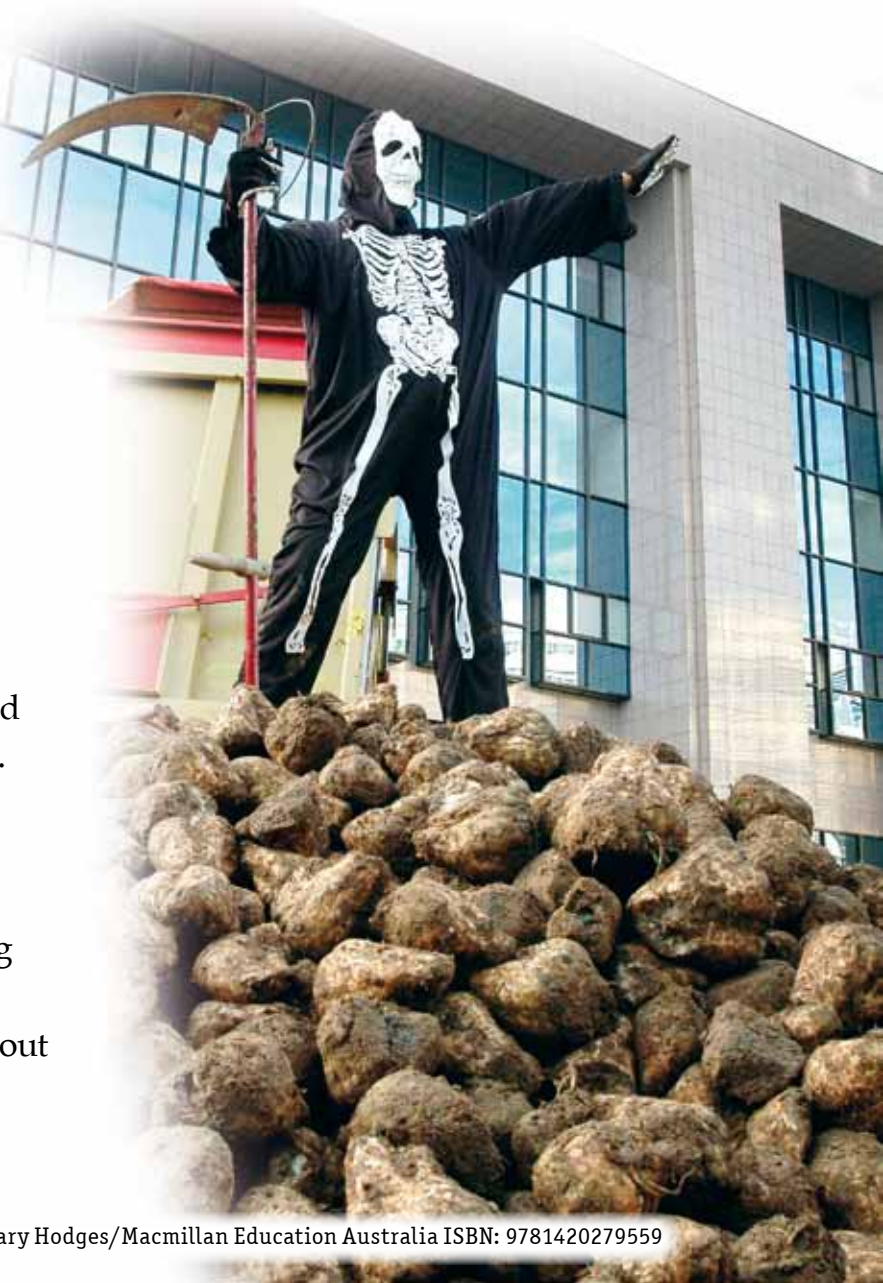
United States

The sugar **lobby** in the United States is very powerful. Lobbying has resulted in various sugar-related initiatives being made into law. The *Farm Security and Rural Investment Act* of 2002 guarantees sugar growers an attractive price for their sugar, supported by tough quotas and taxes on **imports**. The **domestic** price of sugar has generally been around three times the value of the international price of sugar as a result of protective measures.

European Union

Similar pressures are placed on political parties, candidates and elected representatives in the **European Union**. The Common Agricultural Policy was created to favour growers in the European Union over those in other countries. However, the policy is being revised slowly to lower quotas and to change the way subsidies are handed out so that **surpluses** are reduced.

A person dressed as the grim reaper stands on a pile of sugar beets as part of a protest against the European Union's plan to cut subsidies in 2005.



Developing countries

Developing countries have few options for dealing with sugar prices that have been lowered by cheap surpluses entering the market. One strategy that may help these countries in such a situation is to approach the World Trade Organization (WTO) for assistance. They could also lobby **developed countries** for preferential status in the sugar trade, which is what the European Union awarded to African, Caribbean and Pacific countries as part of its Common Agricultural Policy.

'Low world sugar prices and the dumping of sugar are a problem ... I would like to see sugar subsidies cut and a global levelling of the playing field. European farmers should farm something more suitable to their climate. This would allow developing countries, particularly the small-scale growers, to grow more sugar cane for the world market, which would improve my situation. I can't grow anything other than sugar cane.'

Mzo Mzoneli, sugar cane grower, Natal, South Africa
(Source: http://www.maketrade4fair.com/en/index.php?file=sugar_casestudy01.htm)



These sugar growers in Kenya, East Africa, are hoeing their land to plant tomatoes instead of sugar because the local sugar factory went out of business.

Environmental issues and sugar

Much of the environmental damage caused by sugar production occurred many years ago, when the industry was new. Though production equipment and farming practices have changed over time to lessen the damage, some practices are still in use today and cause concern.

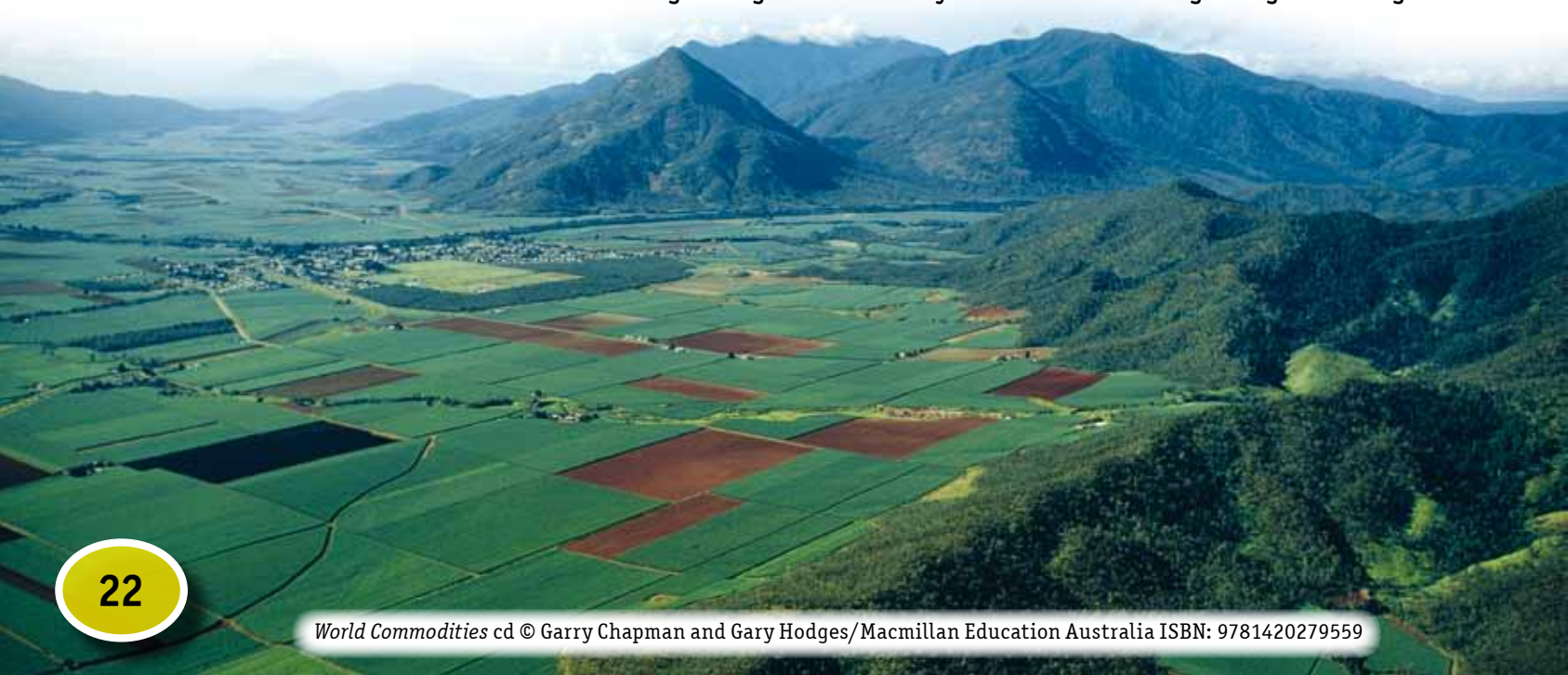
Air pollution

For many years, growers burned their cane fields before the harvest to rid them of snakes and unwanted leaves. This practice still occurs in some countries, especially those with poor access to modern harvesting machinery. The burning of cane fields releases great amounts of polluting gases into the atmosphere. This contributes to **global warming** and **climate change**.

Destruction of the landscape

In the early years of sugarcane farming, many hectares of natural forest were cleared to make way for cane plantations. Many plant and animal **habitats** and species were lost to this process. Some of these regions have never recovered. Today, many governments have strict rules regarding the use of land for farming.

This rainforest region in Queensland, Australia, has been cleared to grow sugar cane. The only trees that remain are growing on the ridges.



Problems with waterways

When forests are cleared to make way for cane plantations, **soil erosion** results. Soil and fertilisers often get washed or blown into rivers, streams and other waterways. They pollute the water and change the **ecosystems** of plants and animals depending on these waterways.

During processing, water is used to wash the cane, to make the syrup and to clean equipment. Wastewater from these processes contains harmful substances that can contaminate waterways if disposed of inappropriately. Most sugar-processing plants now have wastewater treatment systems that remove the harmful substances.



Processing sugar cane produces a lot of wastewater, which can pollute the surrounding environment if it is not treated before disposal.

MORE ABOUT...

Soil erosion

Sugar cane can be grown on steep hillsides, but this leads to high rates of soil erosion. In the Caribbean and South Africa, sugar cane is sometimes grown on hillsides that are more than twice as steep as the recommended slope of 8 per cent.

Social issues and sugar

Sugar cane is often grown in **developing countries**, where the biggest social issues are the pay and working conditions of sugar growers. Sugar also plays a part in public health issues, such as tooth decay and obesity.

Protecting the welfare of sugar growers

Sugar growers in developing countries are usually poor and make very little from the sale of their sugar crops due to conditions in the world market. They may also be taken advantage of by the companies that buy their sugar crops for processing. To protect them, governments can introduce strict guidelines for the **domestic** trade of sugar. Governments can also introduce subsidies or other forms of financial assistance.

Brazilian sugar cane is used in the production of ethanol, or **álcool**, for vehicles. This increases the income of Brazil's sugar growers.



Brazil

Brazil, the world's largest sugar producer, found a way to boost the welfare of sugar growers by introducing a **biofuel** program in the 1970s. About half of the sugar cane grown in the country is now used to produce ethanol. The ethanol industry supports sugar growers by maintaining schools and providing access to healthcare services for their families. Money from the ethanol industry also helps to provide a decent wage for sugar growers.

Sugar and public health

Sugar is often associated with public health issues. Consuming too many sugary foods and drinks may cause a number of diseases and health conditions.

Tooth decay

Sugar can lead to tooth decay. Bacteria in our mouths convert sugar to lactic acid, which eats away at our teeth. To prevent this, brushing and flossing after every meal are recommended, especially if the meal has a high sugar content.

Obesity

Eating a lot of sugary and fatty foods is a direct cause of obesity. People who are obese have a greater risk of developing diabetes, a disease that prevents the body from correctly processing sugar.

Enjoy sugar in moderation

The sugar industry promotes the importance of sugar for a healthy lifestyle. It recommends a balanced diet and regular exercise as the ideal way to maintain good health. It also recommends that sugar be consumed in moderation.

Biscuits and cakes contain a lot of sugar, which can create health problems.



COMMODITY FACT!

The recommended daily intake of sugar varies according to a person's age, health and the amount of exercise he or she does. Some health authorities recommend that for a healthy person who consumes about 8400 **kilojoules** (2000 calories) in his or her daily diet, no more than 40 grams (1.4 ounces) of processed sugar is desirable.

Is the sugar industry sustainable?

To sustain something is to keep it going for a very long time. There are three aspects to keeping the sugar industry sustainable: making sure sugar-growing communities can survive, protecting the environment in which sugar is grown, and maintaining the **demand** for sugar.

Caring for communities

The communities that rely on jobs in the sugar industry must remain sustainable. This means growers must make enough money from their sugar crops to support themselves and their families.

To achieve this, prices must be kept at competitive levels for all and trade should be made fairer. Governments can also do more to help their disadvantaged sugar growers. Brazil, the world's largest producer of sugar, has taken steps to ensure the sustainability of its sugar growers by developing its ethanol industry. In the ethanol industry, growers have an additional buyer for their sugar crops, which means a more stable source of income.



In **developing countries**, such as Haiti, in the Caribbean, sugar growers struggle to make a living from selling sugar.

Protecting the environment

A number of changes to the way sugar cane is grown and harvested have improved the environmental sustainability of the industry. Harvesting machines have reduced the need for fields to be burned. Improved fertilisers mean the soil and waterways are better looked after. Major cane-producing countries, including Australia and the United States, now have guidelines to ensure environmental sustainability in the sugar industry. These guidelines include finding other uses for the waste products from sugar processing and ensuring that wastewater is properly treated before it enters surrounding waterways.

Ongoing demand for sugar

The demand for sugar is likely to always exist because the commodity is widely used in drinks and food. The demand for sugar crops is expected to grow as the **biofuels** industry develops. In recent years, people have learned that in order to protect Earth from **global warming**, cleaner alternative fuels must be used by industries, vehicles and homes. Ethanol is one solution to the problem. It is already widely used in Brazil and, one day, it might be used in more countries around the world. To meet a growing demand for ethanol, more sugar cane may also be required.

Burning cane fields contributes to global warming.



COMMODITY FACT!

The United States and Brazil lead the world in ethanol production. Together they produce about 90 per cent of all ethanol.

The future of the sugar industry

The sugar industry faces an interesting future. The need to pay sugar growers fairly for their crops, people's changing diets and innovations in technology will have an impact on the industry and the importance of sugar as a commodity in the future.

Will the sugar trade change?

The United States and the **European Union** provide subsidies, which protect their sugar industries and limit competition from other countries. The **surplus** sugar they dump on the world market lowers the world price of sugar. Struggling sugar growers in **developing countries** will continue to earn very little unless they also begin to receive government assistance or find alternative sources of income.



More ethanol factories may be built to meet the expected growth in **demand** for biofuels.

The rise of the ethanol industry

The use of ethanol as a transport fuel may grow in the future, especially as a substitute for petrol. Brazil, which is one of the leaders of the ethanol industry, has offered to increase its ethanol **exports** to India and has announced plans to provide **biofuel** research and production facilities for Africa. It is eager to establish a world market for biofuels, such as sugar-based ethanol. However, as more land is set aside for sugarcane plantations rather than food crops, food prices may start to rise.

Switching to sugar substitutes

Medical studies suggest that there is a link between excessive sugar consumption and health conditions, such as obesity, tooth decay and diabetes. Many health-conscious people have started choosing foods with low sugar content or using sugar substitutes.

Improved farming practices

Now that there is better understanding about the impact of sugarcane farming on water quality and **global warming**, farming methods have changed. Cane growers now **mulch** their fields with waste cane products. This solves a waste disposal problem, improves the quality of the soil and helps to prevent **soil erosion**. A process called drip fertigation has lessened the harm caused by chemical fertilisers. Using drip fertigation, fertilisers are drip-fed to the plants with pinpoint accuracy.

In the future, more efficient farming practices, such as drip fertigation, may help to make sugar cane a more sustainable crop.



COMMODITY FACT!

In the cane fields of Mauritius, the introduction of drip fertigation has reduced the use of chemical fertilisers by up to 30 per cent.

Find out more



Websites for further information

- **All about sugar cane**

Learn more about sugar cane and how it is grown.

http://www.plantcultures.org/plants/sugar_cane_landing.html

- **An introduction to sugar beet**

Learn more about how sugar beet is grown in the United Kingdom.

http://www.ukagriculture.com/crops/sugar_beet_farming.cfm

- **Types of sugar**

Learn more about the different types of sugar and how they are used.

<http://www.food-info.net/uk/products/sugar/types.htm>

- **Sugar and your health**

Learn more about the health advantages and disadvantages of sugary foods.

<http://www.betterhealth.vic.gov.au/bhcv2/bhcarticles.nsf/pages/Sugar>



Focus questions

These questions might help you to think about some of the issues raised in this book.

- What are some of the practices which have been introduced in recent times to ensure that the production of sugar does not harm the environment?
- What are the benefits and disadvantages of the United States and the **European Union** providing subsidies to protect **domestic** sugar growers?
- Do government subsidies and quotas harm or help the sugar industry?
- Should ethanol be the fuel of choice for all motorists?

Glossary

additives	substances added to food so it tastes or looks better
agricultural	related to farming or used for farming
biofuel	a fuel which is made from living things or their waste
calcium hydroxide	a white powder used to make cement, plaster and other products
carbohydrate	one of a group of foods that are broken down by the body to produce energy
climate change	a change in the world's weather conditions over a period of time due to natural events or human activities
colonies	countries which have been settled and are governed by a more powerful country
demand	the amount of a product consumers want to buy
developed countries	countries that are very industrialised
developing countries	countries in the early stages of becoming industrialised
domestic	relating to a person's own country
economy	a system that organises the production, distribution and exchange of goods and services, as well as incomes
ecosystems	communities of plants and animals that interact with one another and with the environments in which they live
European Union	an association of 27 European countries set up in 1993, with its own currency and market
evaporate	change from a liquid to a gas, especially by heating
exported	sold or sent to another country
global warming	the gradual increase in world temperatures over time
habitats	the natural environments of plants or animals
importers	people, companies or countries which buy or bring in a product from another country
kilojoules	units of measurement for energy
lobby	a group of people who try to influence lawmakers or other public officials on behalf of a particular cause
molasses	a sticky, brown syrup made from sugar plants
mulch	loose materials, such as woodchips or straw, spread over the ground to protect the soil and hold in moisture
natural resources	the naturally occurring useful wealth of a region or country, such as land, forests, coal, oil, gas and water
preservatives	chemicals used to preserve food
refineries	factories where raw sugar is processed to create different sugar products
soil erosion	the loss of soil caused by wind blowing it away or water flowing over the soil and washing it away
supply	the amount of a product that producers are able to sell
surplus	an amount which is more than is needed
temperate	not very hot and not very cold
tropical	hot, wet and humid

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