

Source 1 : Extract from a news article

(The Telegraph; 25th Nov 2012)



## Non melting chocolate invented by Cadburys

Chocolate which does not melt in hot weather has been developed by Cadbury's – but it will not be sold in Britain because our summers are not warm enough.

Food scientists working at Cadbury's research plant in Bournville, near Birmingham, claim their new Dairy Milk bar will remain solid even when left in 40C heat for three hours.

But the company, which was taken over by American food giant Kraft two years ago says it will only sell the product in warmer countries like India and Brazil because there is “no market” for it in the UK.

Normal chocolate begins to melt at 34C. The non melting bars use a technique where ingredients are ground down in a container filled with metal balls. The smaller sugar particles are covered with less fat which makes the bars prone to melting.

Tony Bilsborough, head of corporate affairs at Kraft said there were no plans to release the new recipe in Britain because they “simply would not sell”

“It does not taste as good as Dairy Milk” he said.

Mr Davies, a geography teacher at BSCS has experienced first hand the chocolate in Australia, which also uses a similar 'non melting' formula.

A chemical is added.

*“It tastes totally rubbish”*

He says.

*“Australians don't eat much chocolate because it's so bad”*



## Source 2: Perfect climate growing conditions for cocoa

(International Cocoa Organisation)

### Where is Cocoa Produced?

Cocoa is produced in countries in a belt between 10°N and 10°S of the Equator, where the climate is appropriate for growing cocoa trees. The largest producing countries are Côte d'Ivoire, Ghana and Indonesia.

### Climate Conditions

The natural habitat of the cocoa tree is in the lower storey of the evergreen rainforest, and climatic factors, particularly temperature and rainfall, are important in encouraging optimum growth.

Cocoa plants respond well to relatively high temperatures, with a maximum annual average of 30 - 32°C and a minimum average of 18 - 21°C.

Variations in the yield of cocoa trees from year to year are affected more by rainfall than by any other climatic factor. Trees are very sensitive to a soil water deficiency. Rainfall should be plentiful and well distributed through the year. An annual rainfall level of between 1,500mm and 2,000mm is generally preferred. Dry spells, where rainfall is less than 100mm per month, should not exceed three months.

A hot and humid atmosphere is essential for the optimum development of cocoa trees. In cocoa producing countries, relative humidity is generally high: often as much as 100% during the day, falling to 70-80% during the night.

The cocoa tree will make optimum use of any light available and traditionally has been grown under shade. Its natural environment is the Amazonian forest which provides natural shade trees. Shading is indispensable in a cocoa tree's early years.



Source 3: Global Warming: the basics

(Words by Mrs \*expert\* Stanleigh)

Almost all scientists now agree that temperatures of the Earth's surface and seas is **WARMING**.

This is because the concentration of greenhouse gases in the atmosphere has gone UP

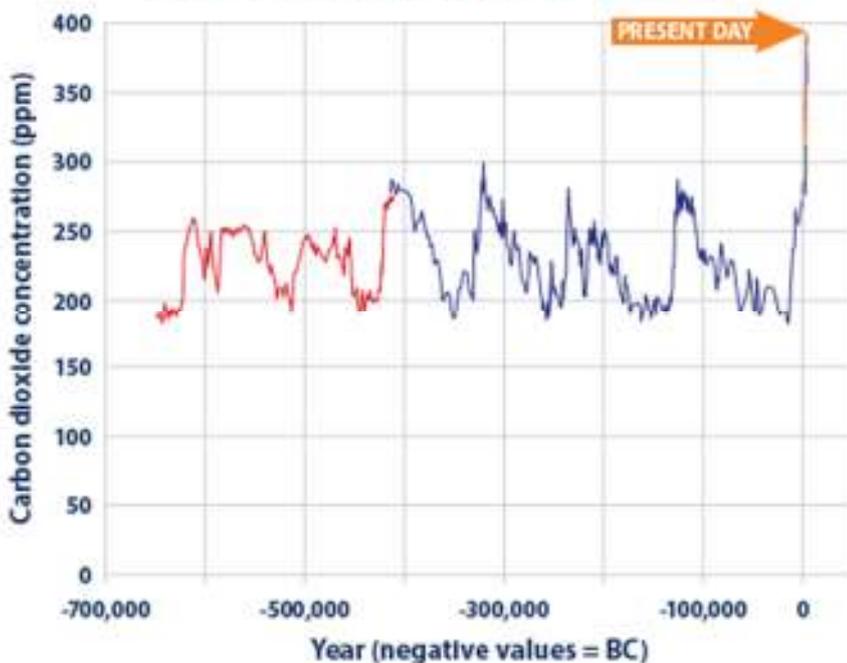
(There have always been some greenhouse gases in our atmosphere, without a greenhouse effect we would freeze to death!)



Greenhouse gases like heat. They hold on to heat. They transfer that atmospheric heat to the oceans too. *(By convection)*

**BUT** Human beings have added greenhouse gases like carbon dioxide, methane and carbon monoxide to the atmosphere, which stays there. *(You know how and why)*

Concentrations of Carbon Dioxide in the Atmosphere from 650,000 Years Ago to Present Day



Data source: Compilation of 12 underlying datasets

Source 4: Global

CO<sub>2</sub> increases according to 4 leading climate science organisations

organisations

Ppm= parts per million

BC =before current

*Source 5: Climate change and cocoa article (treehugger.com)*

# Planet Getting Too Hot for Chocolate?

## Study Finds Climate Change Could Threaten Cocoa Farmers

The world's cocoa supply could be in danger from climate change, according to a new study from the International Centre for Tropical Agriculture (CIAT), which says that prices are likely to skyrocket if preventative measures aren't taken. The report predicts that the expected annual temperature increase of more than two degrees Celsius by 2050 will leave many cocoa-producing areas in West Africa—the source of more than half the world's chocolate—too hot to continue growing the crop.

And the report says the decline could begin as soon as 2030. In the report, *Predicting the Impact of Climate Change on the Cocoa-Growing Regions in Ghana and Côte d'Ivoire* [PDF], CIAT predicts that in warmer conditions, heat-sensitive cocoa trees will struggle to get enough water during the growing season. Drier-than-ever dry seasons won't help the trees, either.

*"By 2050, a rise of 2.3 degrees Celsius will drastically affect production in lowland regions, including the major cocoa-producing areas of Ghana. Farmers in these areas are particularly vulnerable since cocoa production is often their primary source of income.*

*"Many of these farmers use their cocoa trees like ATM machines," said CIAT's Dr. Peter Laderach, the report's lead author. "They pick some pods and sell them to quickly raise cash for school fees or medical expenses. The trees play an absolutely critical role in rural life."*

### Why Not Just Plant New Cocoa Trees Elsewhere?

The report's findings show that the ideal conditions for cocoa-growing will shift to higher altitudes—but most of West Africa is relatively flat, so there is not a lot of land at higher elevation to move to.

But even where there is higher land, establishing new cocoa-producing areas could trigger the clearing of forests and important habitats for flora and fauna. Which means, yes, exacerbating climate change even further.

Source 6: A CNN news report (USA) of Jan 17th 2012

## Who consumes the most chocolate?

Chocolate is an \$83 billion a year business. That makes the industry's value larger than the Gross Domestic Product (GDP) of more than 130 nations on earth, World Bank figures show. Europeans account for nearly half of all the chocolate the world eats, according to the International Cocoa Organization. The average Brit, Swiss or German will each eat around 11 kilograms (24 pounds) of chocolate a year.

In Asia, chocolate hasn't traditionally been the sweet of choice. Right now, Indians eat only 165 grams (less than 6 ounces) of chocolate a year. The Chinese eat only 99 grams (3.5 ounces). But as Asian economies grow, so is their demand for indulgent treats. This year, chocolate sales in China are expected to rise 19 percent to \$1.2 billion. India expects to see a 7 percent jump to \$633 million. And in Indonesia chocolate sales are expected to leap 25 percent to \$1.1 billion - ballooning to nearly \$2 billion by 2015. In fact, Asian markets are expected to hold a 20% share of the global market by 2016.

Valentine's Day, which is just around the corner, means big business for chocolate companies. In the U.S. alone, more than 58 million pounds of chocolate candy are sold during Valentine's week. That's \$345 million in sales in just one week.

Since the Cocoa protocol was signed in 2001 (which promised to end the worst forms of child labour) the chocolate industry has made nearly a trillion U.S. dollars. According to the watchdog group Stop the Traffik, only 0.0075% of that money has been invested into improving the working conditions for children in West Africa.

Africa produces more than 75% of the world's cocoa. The Ivory Coast alone produces more than 35% of the world's cocoa, says the International Cocoa Organization. More than three-fourths of all the world's cocoa comes from West Africa – but the entire continent of Africa only accounts for about 3 percent of its consumption.

### World CONSUMPTION of cocoa: 2008/09

Europe – 49.32%  
North America – 24.22% (United States only – 20.19%)  
Asia and Oceania – 14.49%  
South America – 8.68%  
Africa – 3.28%

### Top 5 countries, Net world Cocoa EXPORTS: 2008/09

Ivory Coast – 37.01%  
Ghana – 19.16%  
Indonesia – 15.33%  
Nigeria – 8.71%  
Cameroon – 7.03%

### Top 5 countries, Net world Cocoa IMPORTS: 2008/2009

United States – 20.96%  
Germany – 13.20%  
Belgium – 6.28%  
United Kingdom – 5.63%  
France – 5.47%

Source 7: Selected information about Kit Kat (Wikipedia.com)

Kit Kat bars are produced in 13 countries by Nestlé: UK, Canada, Australia, South Africa, Germany, Russia, Japan, [China](#), Malaysia, [India](#), Turkey, [United Arab Emirates](#), and [Bulgaria](#). Kit Kat bars in the United States are produced under licence by The Hershey Company, a Nestlé competitor, due to a prior licensing agreement with Rowntree.

In December 2009, it was announced that the four finger variety of Kit Kat would use Fairtrade chocolate **(at least in Britain and Ireland)** from January 2010.[29] It has also been announced that the Fairtrade Kit Kat promotion will be extended to the finger edition as of January 2010.

In March 2010, Kit Kat was targeted for a boycott by Greenpeace for using palm oil, which the environmental organisation claimed resulted in destruction of forest habitats for orangutans in Indonesia.[35] A YouTube video by Greenpeace went viral[36] and Nestlé announced a partnership with The Forest Trust to establish "responsible sourcing guidelines" and ensure that its products did not have a deforestation footprint. They aimed to achieve a fully sustainable method of palm oil harvesting by 2015.

**Fig: Green tea flavoured Kit Kat's for the Japanese market.**



Source 8:

Ask your teacher to show you this video clip!

<http://blog.carbonica.org/post/2010/03/Nestles-Kit-Kat-gets-the-hall-of-shame-treatment-from-Greenpeace.aspx>

Source 9: foodmiles.com

The carbon dioxide released by just one aeroplane flight from Ghana to London is 312kg (a distance of 3176 miles)

PER MILE this is approx. how much carbon 3 types of transport release:

<b>Boat:</b>	<b>8 kg</b>
<b>Petrol Car:</b>	<b>0.4 kg</b>
<b>Aeroplane:</b>	<b>10 kg</b>

(A smaller vehicle/engine is not necessarily more carbon efficient)

Source 10: You!

Use your IL and your book as your last source.