

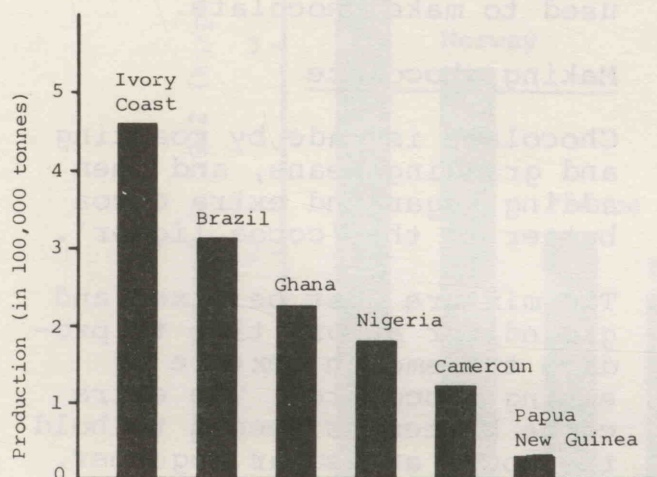
HOW IS PAPUA NEW GUINEA'S COCOA USED?

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INTRODUCTION

The cocoa industry is very important to Papua New Guinea's economy. Cocoa is the second most important agricultural export crop. Coffee is the most important. Village growers produce about half of the nation's cocoa. The growers usually depend on cocoa for most of their cash income.

Papua New Guinea produces about 30,000 tonnes of cocoa per year - only 1.7% of world production. The diagram below shows how Papua New Guinea compares with the main producing countries.



Cocoa production in Papua New Guinea compared with major cocoa producers

WHO BUYS COCOA BEANS?

Cocoa beans are bought by processing companies who may also be chocolate manufacturers. Papua New Guinea sells to various countries. These are shown in the diagram on p. 156.

COCOA PROCESSING

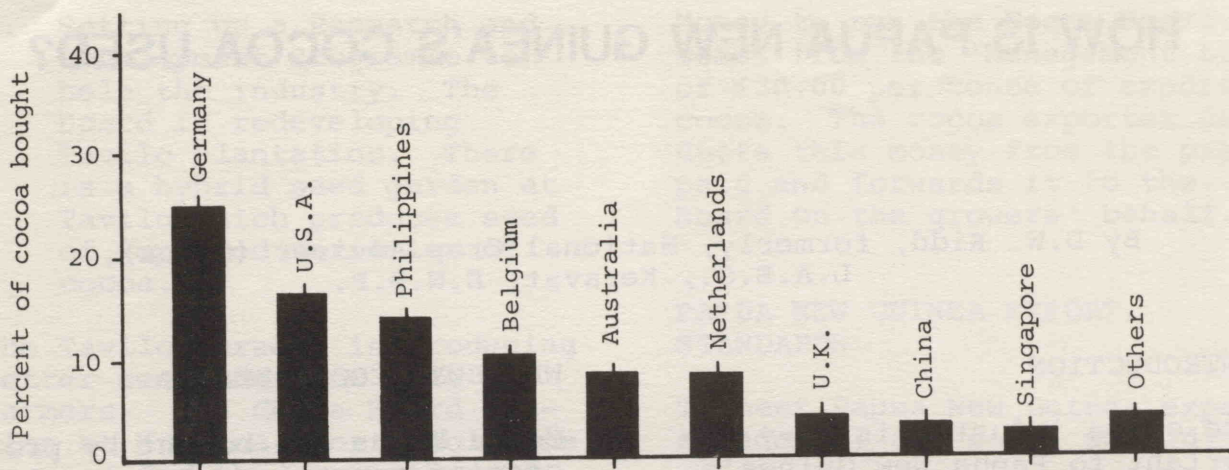
Cleaning

The companies which buy the cocoa must first clean the beans. This is done by passing them through air blasts, to remove light rubbish; then the beans are passed over vibrating screens, to shake out heavy objects; finally the beans are taken past electromagnets to remove metal objects.

Most factories keep a collection of surprising things found in their cocoa - including gear wheels, shoes, pipes, tobacco tins, balls of string, clothes, hammers, screw drivers and rocks of all shapes and sizes. Even live ammunition has been found!

Roasting

The cleaned beans are heated very quickly, kept moving and roasted at a high temperature for the required time. Roasting is usually at 140°C for about 40 minutes.



The main buyers of Papua New Guinea's cocoa (1981-2 production year)

Changes take place during roasting:

1. The flavour and smell change
2. The shell becomes brittle and is easily removed
3. The bean colour darkens
4. The beans dry out

Winnowing

The roasted beans are 'winnowed' (tossed around) to separate the shell from the bean. The shells are thrown away. Winnowing is done straight after roasting. If the roasted beans are left too long, they will re-absorb moisture and the shells will not come off easily.

During winnowing the cocoa bean becomes broken into pieces, called 'nibs.'

Grinding

The cocoa 'nibs' are ground to a thick paste called 'cocoa liquor'.

Pressing

The 'cocoa liquor' is squeezed at very high pressures, so that the fat is pressed out. The

fat - known as cocoa butter - makes up about 57% of the weight of the beans.

The pressed solid which remains is re-ground. It then becomes the cocoa powder which is used in the food industry and sold in packets for making cocoa drinks.

At this stage, cocoa is tested to make sure that it does not contain bacteria.

The cocoa butter is mainly used to make chocolate.

Making chocolate

Chocolate is made by roasting and grinding beans, and then adding sugar and extra cocoa butter to the 'cocoa liquor'.

The mixture must be mixed and ground for a long time to produce the smooth texture of eating chocolate. The extra cocoa butter is needed to hold the cocoa and sugar together.

One of the most popular forms of chocolate is 'milk chocolate'. It has milk powder added. The ingredients of 'plain' or 'dark' and 'milk' chocolate are shown in the table.

Ingredient	Dark chocolate	Milk chocolate
Cocoa bean	38.0%	14.0%
Sugar	47.6%	46.9%
Cocoa butter	14.0%	16.0%
Lecithin *	0.4%	0.4%
Dried milk		23.6%

* *Lecithin is a substance which helps the other ingredients mix together smoothly.*

You can see that cocoa makes up a very small part of a bar of milk chocolate!

MARKETING CHOCOLATE

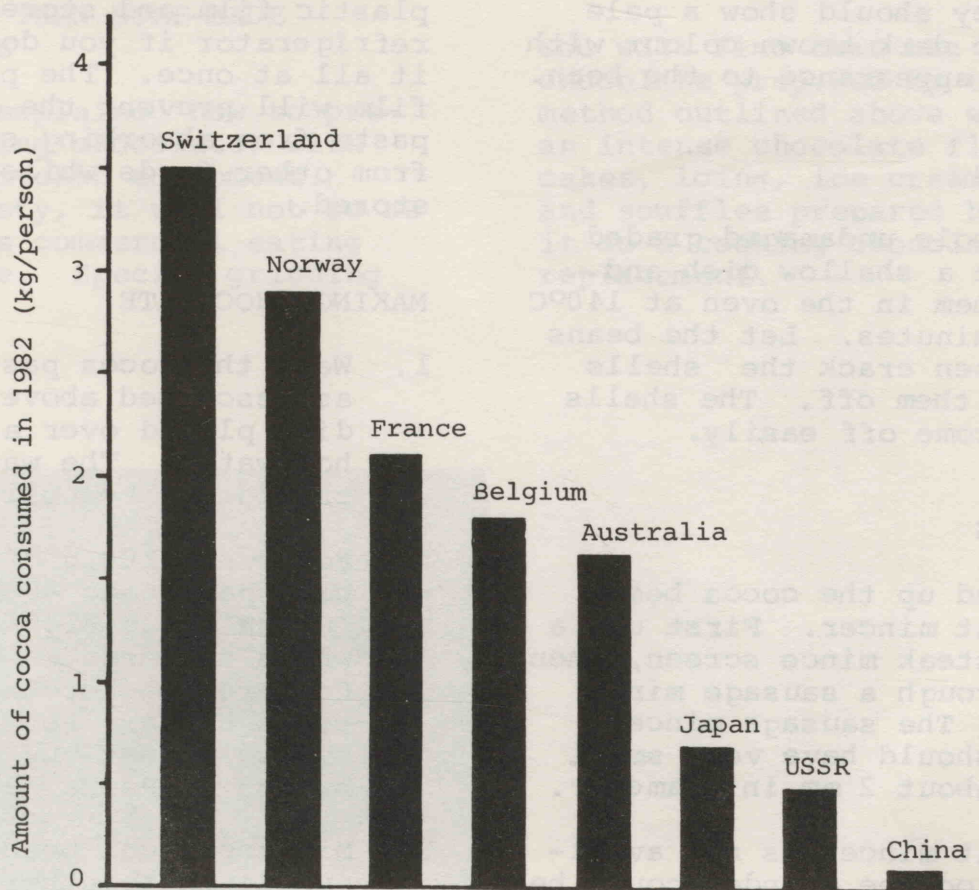
Chocolate products are usually expensive because of the long processing needed. We also have to pay for packaging, advertising, distribution, storage

and profits for the manufacturer and people who sell the product

It is interesting to note that the amount of cocoa consumed per person varies greatly in different countries. This is shown in the diagram below.

The countries where chocolate is most popular usually have a cold climate or a cold winter. The producing countries are unlikely to be big consumers of cocoa as chocolate is difficult to produce, handle and store in tropical climates.

Europe is already a big market for chocolate. Japan, China and USSR are areas which could become important markets. Papua New Guinea is in a good position to sell to all three of these possible markets.



Annual cocoa consumption (1982) in kg per person, for various countries