Overseas Development Institute

Background Note

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The cocoa sector

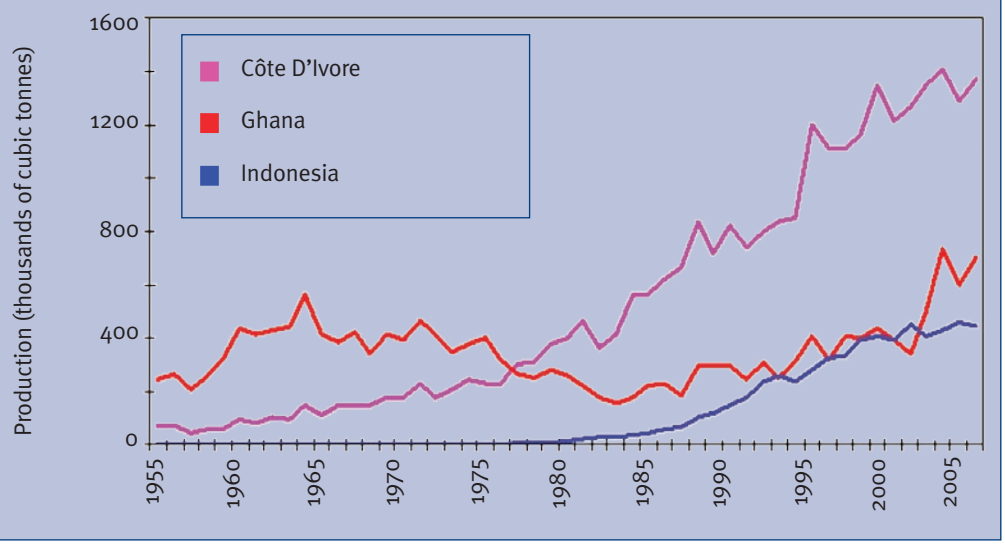
Expansion, or green and double green revolutions

Economic, ecological and technological factors have been the major driving factors of cocoa production internationally over the last three decades. In the late 1970s, as Ghana's cocoa sector came close to collapse, Côte d'Ivoire became the world's largest cocoa producer. Despite environmental disasters and the deep political crisis that Côte d'Ivoire has been embroiled in since the late 1990s, the country has at least provisionally retained its lead. Meanwhile in Ghana, production rose slowly during the 1990s, and after a boom in 2000, returned to the high level of the 1960s. The 1980s saw Indonesia enter the international cocoa market in a major way, and although production has since plateaued, and even fallen in some regions, largely because of the effect of the cocoa pod borer insect, the industry seems to be expanding into other parts of the archipelago.

Côte d'Ivoire, Ghana and Indonesia are currently the three major producing countries (Fig. 1). All three are predominantly smallholder enterprises, a clear sign of the efficiency of smallholders as compared to estates (Clarence-Smith 2006).

For centuries, cocoa production increases have been achieved through expansion and massive migrations at the expense of tropical forests. One can argue that a green revolution has recently started at unequal levels in different countries with the adoption of hybrids and fertilizers (Ruf, 2004). However, learning from past green revolutions, the danger of pollution and further environment degradation can be anticipated. Can a 'double green revolution', using new seed technologies and also non-cocoa trees and organic fertiliser be promoted?[1] This paper outlines the three options (production area expansion, green revolution, double green revolution) to see which way the future of cocoa production lies.

Figure 1: Cocoa production in Côte D'Ivore, Ghana and Indonesia 1955/56 - 2005/06



A history of cocoa production

In the 19th century, cocoa production began to expand beyond its native base in Amazonia and meso-America, spurred by an increased demand for chocolate as an item of mass consumption. Initially, the expansion took place in other parts of South America. However, the abundance of tropical forest reserves and the availability of cheap migrant labour in West Africa led to a rapid expansion of cocoa production there during the 20th century. Much of West Africa's labour force were migrants from the nearby Savannah and Sahelian regions. Cocoa farmers were often entrepreneurial migrants who opened up virgin forest lands for cultivation through innovative share-cropping arrangements, as well as the direct purchase of land from indigenous chiefs and populations.

In Asia, however, cocoa cultivation took hold at a far slower pace. Agricultural development had been oriented towards alternative commercial tree crops, such as rubber and oil palm. In addition, these plantations' exports had led to new investments and development linkages that fuelled the industry and service sectors. The resulting rise in wage rates in countries like Malaysia made them 'too developed' to grow cocoa, as labour is the main cost in cocoa production. The agricultural economies of large parts of Asia, such as Vietnam, were devastated by war between the 1940s and 1970s, which also affected cocoa production.

The cocoa boom in Southeast Asia

Since the 1980s, Asia has undergone significant structural changes, that have had key implications for cocoa production. Although the crop did not succeed in Malaysia, there has been a major smallholder coffee boom in Vietnam. This has been due to the massive migration of smallholders (as in Africa) and the development of sophisticated technology generating high yields (as in South America). Within 20 years, Vietnam had started pumping 700,000 tonnes of coffee into the world market.

At the same time, Indonesian smallholders have introduced intensive cocoa production, combining smallholder efficiency with massive migration and new technology, which aims to improve yields. In Indonesia, favourable natural conditions (alluvial soils and abundant rainfall), and strong economic incentives (no taxation on cocoa, a highly liberalised marketing system and frequent currency devaluations, which make export crops more competitive internationally) helped it push up levels of production. But this increase was also the consequence of the green revolution a few years before, which had improved knowledge and brought input subsidies to farmers.

In 1998, most subsidies were removed, following the Asian financial crisis. This caused the yield to drop in the main producing island, Sulawesi. At the same time, farms were massively infested by the pod borer, which caused a major decline in production in many regions (Fig. 2). As a result, the cocoa industry is expanding to new regions of the archipelago to increase production.

Recovery in West Africa

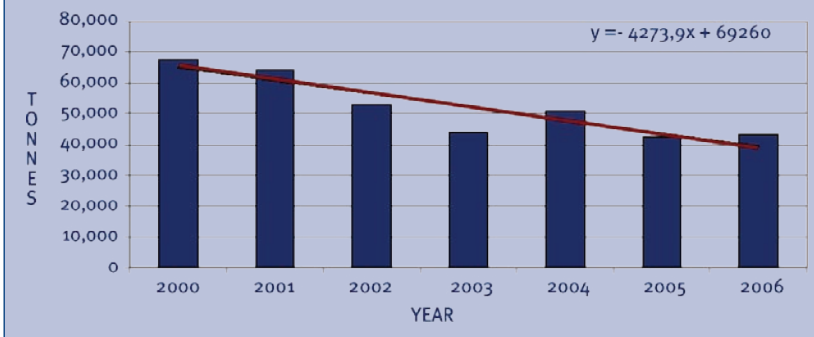
There had been a great deal of pessimism about the prospects for West African cocoa during the 1980s. The global drought and plantation fires in 1982-83 hit countries such as Côte d'Ivoire and Ghana badly. In the early 1980s, policies almost destroyed the cocoa sector in Ghana (Mikell, 1989). But cocoa production has rebounded impressively in both countries since then, partly due to an increase in Côte d'Ivoire producer prices in the 1980s, and in Ghana in the 1990s and the 2000s. In addition, in the case of Ghana, a partial liberalisation of domestic marketing has also played a positive role.

Much of the rebound and growth in both countries has come from the traditional, and increasingly unsustainable, methods of migration and massive forest clearings, rather than from increased yields. In the last few years, however, there have been signs that a new green revolution is in the making, first in Côte d'Ivoire and then in Ghana. With a dwindling supply of new forest lands, farmers have turned to more intensive methods of cultivation, using new seed technologies, fertiliser applications and technical innovations to increase production.

There has been a diminishing dependency on new forests in Côte d'Ivoire. At the same time, yields have been moving above 500 kg/hectare, in some cases reaching 1000 kg/ha by 2002/03. Unfortunately, since 2003/04, a dramatic taxation on cocoa has reversed the trend, discouraging farmers. Average yields are stagnating or even declining again in many regions of Côte d'Ivoire.

Ghana, on the other hand, is progressing rapidly. It had lagged behind, with a very low 'average' of around 250-300 kg/ha in the mid-1990s. This was due, in part, to an ageing and almost abandoned cocoa tree stock, planted below a dense canopy. Ghanian cocoa production is now above 400 kg/ha, with some regions above 500 kg/ha. It should keep

Figure 2: Cocoa production profile of 19 farms in Noling and Tampumea



Source: Ruf, 2007a

increasing production quickly, and in some cases farms are already producing over 1000 kg/ha.

This time-lag in yield changes between Côte d'Ivoire and Ghana reflects the time it takes for national policies to take effect, especially taxation policies. It is also due to the inherent time-lag in the cocoa cycle itself. In Côte d'Ivoire, the massive plantation boom occurred from the 1970s until the late 1980s. In Ghana, however, the new cocoa boom in the Western region started in the mid-late 1980s and really exploded in the 1990s and early 2000s.

The outlook: Intensification or expansion?

Cocoa demand is likely to continue to be strong, because it is driven by two factors. Firstly, there are no alternative crops or synthetic products to make chocolate (despite Europe now allowing chocolate manufacturers to include up to 5% of non-cocoa butter), so demand for cocoa will remain. Secondly, international market demand is likely to be sustained by new health-related applications — for example, by using the polyphenols in cocoa.

On the supply side, although there is still a large gap in the yields between West Africa and Indonesia, the differing dynamics in the two regions are leading to a slow convergence. African cocoa, primarily that from Ghana, has started a process of relative intensification, while Sulawesi smallholders fight against yield decline (from 1500-2000 to 900-1200 kg/ha in the alluvial plains and from 1000-1300 to less than 600 kg/ha in the hills). Does the future of cocoa lie with the increasing intensification in West Africa (Ghana, and Côte d'Ivoire if the taxation policy changes, but also Cameroon and Nigeria), or with the expansion of the already intensive systems in Asia (mostly across the vast Indonesian Archipelago and in Vietnam)?

Africa is likely to remain the main driving force in cocoa for the next two decades. This does not mean that the ranking of producers among African (and non-African) producers will not change. In both regions, the green revolution in cocoa could be as successful as the green revolution in rice. It will also certainly bring problems too, such as pollution and a lack of sustainability. This implies that there will need to be a kind of 'double green revolution', with more organic inputs, such as the use of chicken dumps in locations where there is a husbandry unit nearby, and the use of timber trees in the farming systems. In fact, NGOs such as Riecerca & Cooperazione in Ghana are already proving that farmers can participate in the timber market by planting timber trees in or beside their cocoa farms.

More generally, cocoa production is being threatened by economic and ecological factors, and farming systems will need to diversify to reduce these risks. Cocoa production remains sensitive to the social and political conflicts inherent to cocoa booms. This is particularly true where major expansions in cocoa production have been driven by massive and rapid migrations. Few would have predicted that Côte d'Ivoire would descend so quickly into serious civil turmoil. Other cocoa-producing countries will need to remain aware of this.

This background note was prepared by François Ruf, CIRAD (francois.ruf@cirad.fr), for an ODI/International Food Policy Research Institute workshop: 'Production, markets and the future of smallholders: The role of cocoa in Ghana', held on 19 November 2007 in Accra, Ghana. To find out more, and read the other papers prepared for this workshop, visit: http://www.odi.org.uk/plag/events/07_ghana_cocoa.htm

References and endnotes

Endnotes

1. Green revolutions, such as the one developed on rice in Asia, have been a great success, but problems have rapidly appeared: the heavy investment costs, waste of water, pollution, biodiversity loss and, finally, a possible decline of production after it has reached its' peak. The concept of a 'double green' revolution outlines the need to respect some basic laws of scientific ecology, and implement a better use of resources through water management, biomass, biodiversity, and biologiocal pest management, etc. (Griffon and Weber ,1998).

References

Clarence Smith, W.G., 2000. Cocoa and Chocolate, 1765-1914. Routledge, London and New York.

Contamin et Memel-Foté (eds), 1994. Le modèle ivoirien en questions. Karthala-Orstom, Paris.

Griffon, M. and Weber, J. 1998. Economic and institutional aspects of double green revolution. Development of Research network for Natural Resources, Environment and Ecology (USA). 1998/12:9(4):39-42.

Mykell, G., 1989. Cocoa and Chaos in Ghana. Paragon House, New York.

Ruf, F. and F. Lançon, 2004. From Slash and Burn to Replanting: Green Revolutions in the Indonesian Uplands. The World Bank, Regional and Sectorial Studies, Washington, p. 220.

Ruf, F., 2007. Current Cocoa production and opportunities for re-investment in the rural sector. Côte d'Ivoire, Ghana and Indonesia. Contributed paper presented at the World Cocoa Foundation (http://www.worldcocoafoundation.org/about/documents/FRuf_paper.pdf). WCF, Washington, p. 35.

Ruf, F., 2007. The new Ghana Cocoa Boom in the 2000s. From Forest Clearing to Green Revolution. The European Union and CIRAD, Montpellier, p. 40.

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