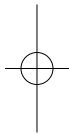
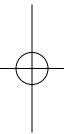


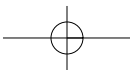
# Chocolate Forever

Dutch knowledge on sustainable cocoa

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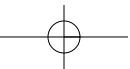
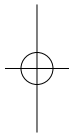
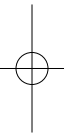
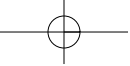


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## Foreword

The Hague, 1 November 2010

The international cocoa supply chain is complex. It starts in tropical countries, usually with small farmers, and ends as chocolate purchased by consumers all around the world. Many parts of the chain converge in the Netherlands. Amsterdam is the world's largest cocoa port, and over 25% of the global cocoa processing industry is based in the Netherlands. The Netherlands therefore has the interests, position, and responsibility to play an innovative role in sustainably producing this key raw material.

The Dutch cocoa sector has declared its ambitions by signing the Letter of Intent for Sustainable Cocoa on 4 March 2010. The private sector, NGOs, and the government have all expressed their willingness to work hard to ensure that cocoa consumption in the Netherlands is fully sustainable by 2025.

Knowledge is essential in achieving this aim—not only sharing the knowledge required to make the processes sustainable, but also identifying the knowledge requirements of the various stakeholders.

I am particularly pleased with the effort of the Royal Tropical Institute in conducting this study of knowledge issues. Key stakeholders across the Dutch cocoa sector have contributed their opinions to this publication and this is another good example of fruitful cooperation between participants in the chain. I am looking forward with confidence to seeing these issues addressed in the near future.

Marcel Vernooij



Department of Agriculture, Fisheries and Agribusiness  
Ministry of Economic Affairs, Agriculture and Innovation



# 1 The Dutch approach towards sustainable cocoa

Fifteen years from now [...] cocoa beans will be transported in the most sustainable way: in mega-bulk ships sailing towards Amsterdam! The Port of Amsterdam has introduced a reduced sea harbour tariff for certified beans, to further promote their production and use. Storage and trans-shipment of beans is being done in the most efficient way, as bulk cranes with energy efficient motors and innovative flywheels offload beans. The vermin in the warehouses is eradicated without using environmentally harmful substances. The space in the harbour is also being used as efficiently as possible; as many tonnes as possible have to be used per square meter for trans-shipment and storage. Transport from the warehouses to the processors mainly takes place on barges because of their low CO<sub>2</sub> emission and contribution to reducing traffic jams[...]

This story illustrates the vision of James Hallworth, Commercial Manager Bulk Logistics at the Port of Amsterdam, who is describing how the cocoa transport, storage and trans-shipment in the Netherlands might look fifteen years from now. The Port of Amsterdam is the world's largest cocoa harbour<sup>1</sup> and the Region of Amsterdam (Zaanstreek) is home to the most complete cocoa network in the world.<sup>2</sup>

In response to the extremely difficult economic circumstances faced by many cocoa farmers, and driven by the risks of future shortages of supply worldwide, the cocoa sector is currently on the move. A multitude of public and private players, together with members of civil society, have joined forces to make the cocoa sector sustainable. Furthermore, there is an increasing awareness among consumers regarding the difficulties faced by the cocoa sector and the challenges of sustainable cocoa production, in terms of poverty eradication, labour conditions and environmental management. In the Netherlands, there are a number of current initiatives where key actors have committed themselves to work towards securing sustainable cocoa production and consumption.

This commitment raises a set of questions, regarding the kind of knowledge needed for achieving a sustainable cocoa chain and the gatekeepers of this

<sup>1</sup> Port of Amsterdam Web site.  
<http://www.portofamsterdam.nl/smartsite21163.dws> (accessed 15 July 2010).

<sup>2</sup> Snijders, H. et al. (2007) De economische kracht van agrofood in Nederland. Rijksuniversiteit Groningen.





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knowledge. A sustainable cocoa chain involves a process of continuous improvement. How can one ensure that the right knowledge is being developed at the right moment and, in particular, that the available knowledge will be effectively used by the people who need it the most? One must take into consideration the different perspectives on sustainability of the cocoa chain, as well as the different interests covered by the 'knowledge agenda', i.e. whose interests are included and whose are left out?

The general aim of this publication on sustainable cocoa in the Netherlands is to examine the question of knowledge and the availability of expertise in the country, and to further compare Dutch cocoa knowledge with the knowledge in the broader international sphere. This comparison will serve to identify the strengths and weaknesses of the Dutch cocoa knowledge infrastructure and to provide recommendations for improving its international position.

The data was gathered through in-depth interviews with key Dutch figures involved in making the cocoa chain sustainable, which helped identify the main knowledge themes and questions. Furthermore, two expert meetings, one before and one after the interviews, were used for 'guiding' our research and fostering commitment among the experts towards the outcomes and recommendations of this publication.

This project is funded by the Ministry of Economic Affairs, Agriculture and Innovation (*Economische Zaken, Landbouw & Innovatie* – EL&I) and sparked from the National Stakeholder Meeting Cocoa (ChocoWorkGroup), which is presided by the EL&I and involves actors from businesses, government, NGOs, and other platforms. These stake holders are the primary intended audience of this publication.

### **The publication**

This book is part of a wider effort that seeks to achieve sustainable cocoa consumption in the Netherlands within fifteen years<sup>3</sup> and to contribute to the global sustainable cocoa economy (people, planet, profit).<sup>4</sup> It examines the status of the Dutch knowledge sector and how it can strengthen its knowledge base. The publication aims to present all themes and questions in a way that will do justice to the complexity of the topic, without engaging in in-depth scientific analysis of the subject matter. Due to the international nature of the cocoa chain, the language of this publication is English.

<sup>3</sup> Cocoa that will fall under sustainable cocoa includes for example certified organic cocoa, Fair Trade cocoa, Rainforest alliance, and cocoa certified by UTZ CERTIFIED.

<sup>4</sup> This wider effort has taken shape in the national agenda for promoting sustainable cocoa, initiated by the EL&I.

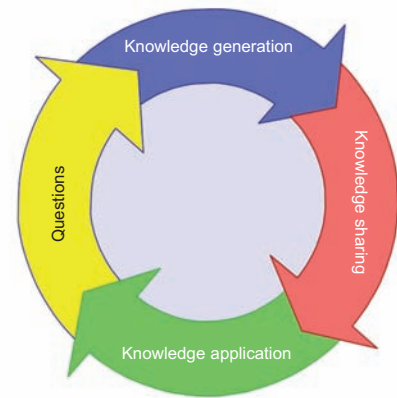
### How was the publication produced?

Several key questions guided this research: what is the needed expertise and where can it be found? How is the knowledge being developed and applied? What drives innovation? and What are bottlenecks? We used a combination of methods to gather the data and analyse the results. The initial desk research provided an inventory of the actors involved in the cocoa chain and the knowledge that is available to these actors on sustainable cocoa (annex 1). The subsequent data gathering utilised surveys, a number of in-depth interviews, and three expert-meetings.

The first phase of the research concentrated on identifying actors and institutions that are active in the cocoa and chocolate sector in the Netherlands. It provided an inventory how sustainability in the cocoa chain is being achieved, for example, by identifying sustainability projects initiated or funded by Dutch actors. The Buffer Stock Fund of the former Ministry of Agriculture, Nature and Food Quality (*Landbouw Natuur en Voedselkwaliteit* - LNV)<sup>5</sup> is an important example: in addition to Dutch partners, it also includes a number of foreign research institutes and companies in the implementation of projects.

We conducted an online survey among the actors involved in the Dutch cocoa and chocolate sector, the questions probed the relevant knowledge issues regarding the best way to improve the sustainability of the cocoa chain ('knowledge demand') and details about the knowledge and expertise available in the Netherlands and abroad ('knowledge supply'). We also had the opportunity to conduct surveys with a number of small- and medium-size entrepreneurs and a number of consumers in Amsterdam.<sup>6</sup>

In response to the online survey, Royal Tropical Institute (KIT) held a number of in-depth interviews with key actors. These interviews provided valuable insight into various key aspects: knowledge themes that dominate the agenda, the different drivers behind the knowledge agenda, the knowledge partners, open questions and bottlenecks. In addition to knowledge generation, also knowledge sharing and knowledge application emerged as important parts of knowledge development, which significantly contributes to sustainable cocoa consumption. These four steps are visualised in the knowledge loop (see figure 1.1) and will be used in the analysis of knowledge themes.



**Figure 1.1 The knowledge loop**

<sup>5</sup> Directie internationale zaken (2008) Initiatieven duurzame cacao. Ministerie van Landbouw, Natuur en Voedselkwaliteit.

<sup>6</sup> Courtesy of Enver Loke of the CHOCA festival (a festival on cocoa and chocolate in Amsterdam). <http://www.choca.nu>.

The participation of experts was beneficial in consolidating support for this project and guaranteeing high quality outputs. Two expert meetings were organised with representatives from Dutch cocoa actors, in order to prepare for the interviews and analysis. A third expert meeting was organised in the UK to reflect on differences in knowledge development on sustainable cocoa between the Netherlands and the UK.

### **Structure of the publication**

This publication is subdivided in seven chapters and annexes as follows:

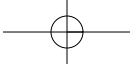
**Chapter 2 – Knowledge on sustainable value chains** – will focus on some of the history and challenges of knowledge questions that are relevant for sustainable value chains.

**Chapter 3 – The position of the Dutch cocoa sector in the international cocoa chain** – will focus on how the economic strength of the Dutch companies involved in the cocoa sector is related to the domestic knowledge base. Key issues covered in this chapter include how the Dutch position themselves in the global trend towards sustainability, and the different roles played by important actors.

**Chapter 4 – The issues at stake** – will focus on the issue of supplier failure and innovation. The chapter will also approach sustainability issues from a wider angle and will highlight some initiatives that are seen as remarkable, due to their emphasis on environmental aspects of sustainability or their push for promoting justice within the chain.

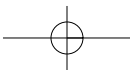
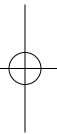
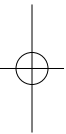
**Chapter 5 – Knowledge demand versus supply**–will analyse the Dutch position in terms of the existing knowledge infrastructure that can help fully realise sustainable consumption of cocoa. In order to adequately evaluate Dutch knowledge, comparisons will be made with the British know-how on sustainable cocoa. In addition this chapter will present a framework for knowledge development.

**Chapter 6 – What do the Dutch know?** – will draw conclusions from the analysis and will identify some key challenges that the Dutch sector has to address in order to improve its position in the international cocoa sector.



**Chapter 7 – Recommendations for a sustainable knowledge base**–will provide recommendations for the key actors involved in developing knowledge for the needs of sustainable value chain development.

The **Annexes** will provide (1) an overview of key-actors, supporters and platforms involved in the Dutch cocoa sector, and (2) an overview of the Buffer Stock Fund projects clustered around 5 themes.















## 2 Knowledge in sustainable value chains

By Bart de Steenhuijsen Piters<sup>7</sup>

Already in antiquity, the philosopher Socrates questioned what knowledge is and how one should pursue it. Socrates devoted much of his efforts to defining words and concepts: his method was to pose questions. Like a three year-old child would repeat 'why' (e.g., Why is the sky blue?), Socrates repeated question after question until no further question could be asked. He claimed that there are two very different sorts of knowledge. One is the ordinary 'trivial' knowledge, which concerns very specific (and ordinary) information, for example, the things we all know because we do them unconsciously. He claimed that having such knowledge does not give the holder any significant expertise or wisdom. The higher level knowledge could be described as definitional knowledge. In other words, if you can define a phenomenon it means that you understand it, and this knowledge is superior to everyday 'trivial' knowledge.

Socrates' contribution noted, Plato is usually credited as the founder of modern science and scientific thought. Plato asserted that a statement must meet three criteria to be considered knowledge: it must be justified (supported by evidence), true (in agreement with facts and reality), and believed. If one makes a claim, and another person questions it, then one would look for justification to convince the other person that this claim is true. Belief is knowledge if the belief is *true* and if the believer has a *justification* for believing it is true. Plato's definition of knowledge necessitates that statements are justified by facts, which can be falsified or validated. Today we refer to this systematic approach to knowledge simply as 'science'. This approach also put scientific knowledge in another league from our common day-to-day knowledge and restricted the access to this scientific league to only a few select players: the scientists! As Sir Francis Bacon put it a century earlier, 'knowledge is power and those who know, rule the world'.

This brings us to the question how to pursue knowledge today. How is scientific knowledge related to what one knows from experience? How can we learn from practical knowledge? And if different kinds of knowledge do co-exist, how can

<sup>7</sup> Director Development Policy and Practice, Royal Tropical Institute.

knowledge be organised so it can be transferred from one type into the other? To put it in context of the topic of this publication, a cocoa grower could argue the following, 'If I grow cocoa and obtain a good harvest, but cannot explain how I did it, then still you cannot say that I do not know how to grow cocoa.'

### **Agricultural knowledge systems**

Previously it was believed that knowledge could only be generated by undertaking a scientific research processes, in particular in regard to agriculture. Farmers were practising agriculture in the same way as during previous generations, and researchers believed that improvements could only be achieved through a transfer of knowledge from science to these farmers. In order to modernise agriculture, science had to test and validate innovations, which were transferred through a system of extension provision to the communities of farmers. The farmers only needed to apply this developed knowledge in order to obtain higher yields and better economic returns. If the farmers continued to live in poverty, they were either not suitable for the job or not yet linked into the extension system, the preferred response being to simply expand the extension system.

This dominant model created and developed a worldwide system of agricultural research and extension services that is today well established. In Europe and the USA, this model produced high input agriculture, which was based on the latest scientific knowledge. Besides industrial inputs, this type of agriculture was also very capital intensive, resulting in self-reinforcing economies of scale on farms and the pursuit of continuous innovation. The farmers' crop yields began to approach the levels projected in scientific models and obtained in research stations under ideal conditions. However, also the negative side effects of this system became increasingly apparent. The costs of the environmental damage – tolerated during the post-war decades of the twentieth century – were increasingly being transferred from society to the farmers. A new paradigm – 'the polluter pays' – was increasingly cut into the profitability of high-input agriculture.

The reputation of Western agriculture declined, and in response the demands to reduce the huge public subsidies that supported the agricultural sector were being appeased. In the Netherlands – a country known for its sophisticated agricultural research and extension system – public services to farmers were rapidly being downsized. The system was 'privatised', implying that now farmers and





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agribusiness had to take care of their own extension services and that research had to be sponsored by the agricultural sector.

Meanwhile, the linear model between science and extension was being challenged by social scientists. They questioned the superiority of scientific knowledge, citing evidence that innovations can also emerge without science through human ingenuity and interaction. Does a community of Ghanaian cocoa farmers not have a great knowledge base for farming? Is indigenous and practice-based knowledge inferior to scientific knowledge? And, why is it that in spite of sophisticated scientific knowledge systems diversity in farms and farming practices persists? Are farmers just stubborn people or is there something else at play, which has equal value to scientific knowledge? A distinction can be made between different schools of thought. During the 1970s, Farming System research that referred to a farm as being more than the sum of its parts was developed. This approach considers the internal relationships between system components to define the level of its outputs: an insight that provided the space to acknowledge the farmers' knowledge in effective handling of these interactions. Others focused more on the persistent diversity that exists in farming, whereby the



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dominant determining factor was the farmers' knowledge and farm management skills. In this school of thought, different farm models can co-exist based on equally valuable rationale of human behaviour. In the Farming System school of thought, science needs to study the rationale of these systems, but should continue developing knowledge based on an understanding what kind of knowledge is required. The diversity school of thought profoundly questions the role of scientific knowledge and emphasises the importance of social constructions

and power relations. In this view, development does not come about through the application of scientific knowledge, but rather through social processes of empowerment and emancipation.

Recently, approaches have emerged that do not try to define knowledge or engage in related rhetorical debates; rather they concentrate on the design of effective modalities that can enhance the communication and knowledge exchanges between science, practitioners, and other stakeholders. Multi-stakeholder approaches and 'innovation platforms' are among these new ways of creating and sharing knowledge and are yet to prove their value in terms of tangible results.

### **Knowledge for sustainable value chains**

As the previous sections demonstrated, there is a considerable research effort (with multiple approaches) which aims to provide stakeholders with knowledge that can be applied to stimulate development. But how do value chain stakeholders – notably the private sector – secure an adequate knowledge base and access to new knowledge? For example, companies often have their own Research & Development (R&D) department and do not rely on public research institutes for knowledge generation. This R&D can be technology based but can also include marketing research and consumer behaviour studies. It is different from public research in that this knowledge is not available to a larger audience: it is used to distinguish the company and its products from other companies and is, therefore, carefully safeguarded (accessing it without proper formal consent constitutes industrial espionage).

Pursuing sustainability in value chains presents several dilemmas regarding knowledge generation and knowledge sharing. First of all, a diverse set of actors – public, civil, and private – must come to a joint agreement about their joint intentions and ambitions. These parties are not accustomed to working with each other and act from the position of their own language, corporate culture, and other particularities. One actor may have had a negative experience with another actor, or there may be a considerable conflict of interests. This implies that the terms for realising knowledge exchanges need to be negotiated and moderated prior to any effort to jointly build knowledge. This touches on another dilemma that could impede the smoothness of the knowledge exchange process. The private sector pursues competitive advantages in order to better position itself in



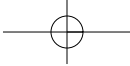
the market. As demonstrated above, knowledge is a strategic ingredient of the company's profile; therefore, sharing knowledge broadly across the value chain could be considered unnatural behaviour for a company. Before effective exchanges can be expected, the pursuit of chain wide sustainability must first deal with this conflict.

A third dilemma concerns the kind of knowledge needed for pursuing sustainable value chains. What do actors pursue when they have sustainability in mind? Is a 'Socratic dialogue' required for defining what is understood by sustainability? For example, one value chain actor could stress the need for technological development (e.g., disease-tolerant cocoa hybrids) while another actor could insist on studying fair-pricing mechanisms and consumer behaviour. How is it defined, or – the even more difficult question – who defines the agenda for knowledge generation? When particular actors have a dominant position in a value chain, setting the agenda for knowledge generation becomes a political process, which may undermine the collective goal to improve the sustainability across the value chain.

Finally, there is a fourth dilemma: How can this useful knowledge be shared with large numbers of farmers, companies and their employees, and in the end consumers? Sharing knowledge on chain wide sustainability issues requires a sound communication strategy. Reaching thousands of cocoa farmers (who may be illiterate) and informing even more Western consumers (who are overexposed to product information) is a monumental challenge that has no simple answer. Such a challenge requires a process of identifying good practice at each step of the value chain. What are effective approaches for involving large numbers of farmers in improving quantity and quality of production? For example, can we apply the Farmers' Field School approach to improve the sustainability of the production process, and at the same time involve *all* types of farmers (small and large, male and female)? What can be learned from other initiatives (e.g., UTZ CERTIFIED, the Rainforest Alliance, and Max Havelaar)?

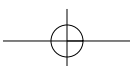
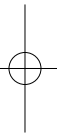
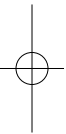
Clearly the preliminary conclusion is that the pursuit of sustainability in cocoa value chains requires a well designed knowledge management strategy. Central to this strategy is value-chain-wide learning from own practice and relevant experiences in other value chains or sustainability initiatives. Joint learning requires





the involvement of all parties and their commitment to share knowledge. This may seem as unnatural at first, but there is ample evidence that it is mutually profitable in the end: it enhances the generic profile of the value chain and its consumer products. After all, philosophic thought has emphasised for millennia that a 'good reputation is worth more than money' (Publilius Syrus, 100 B.C.).

This publication will engage these dilemmas and analyse how knowledge generation and knowledge sharing takes place among Dutch actors involved in the cocoa chain. By clarifying their position as knowledge holders on sustainable cocoa chain development, the Dutch can play a more significant and recognisable role in the international discussions on this important matter. In addition, such an analysis supports the design of a knowledge management strategy that adequately addresses the global character of the cocoa sector and the diversity of chain actors and chain supporters.













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### 3 Does a Dutch knowledge base on cocoa still exist?

How can you speak of a Dutch knowledge base in a sector that is inherently international?

(P. van Grinsven, Mars, 2010)

The Netherlands play an important role in the international cocoa sector. Amsterdam is the biggest cocoa harbour in the world; annually a staggering 600,000 tonnes<sup>8</sup> is being imported from cocoa producing countries, such as Ghana and Ivory Coast. At CWT Sites, a warehousing company in the Port of Amsterdam, 150,000 tonnes of cocoa is stored, totalling 5% of world cocoa production.<sup>9</sup> The total amount of cocoa that passes through the harbour is 20% of world cocoa production, and the bulk of this percentage is processed into semi-finished products in the Zaan area, with Cargill and ADM as the major players. Chocolate manufacturing mainly takes place outside of the Netherlands, but the biggest chocolate production plant (owned by Mars) is located in Veghel.<sup>10</sup> In total the Dutch cocoa sector has an annual turnover of € 2.5 billion and employs over 10,000 people. Domestic yearly consumption of cocoa beans is around 37,000 tonnes, totalling almost 5 kg of chocolate per person.<sup>11</sup>

The large economic importance of cocoa for the Dutch economy, and the prominent role of the Dutch in the international cocoa chain, demands a strong knowledge infrastructure, one able to support the dynamic character of the Dutch cocoa cluster. According to a study by Snijders et al. (2007),<sup>12</sup> despite the Netherlands' important position, the Dutch know-how on cocoa is evaporating. There is no knowledge infrastructure that supports knowledge development specifically on cocoa. Three questions pop-up: First, is this really the case? Second, is this a problem, considering the fact that the cocoa sector is inherently international? And third, what is the Dutch position in the international cocoa chain in terms of generation and sharing of knowledge connected to sustainable cocoa? This last question is important, as the development of sustainable cocoa chains demands not only knowledge on cocoa, but also on sustainability issues and their mutual relationship.

<sup>8</sup> Port of Amsterdam Website.

<http://www.portofamsterdam.nl/smartsite21163.dws> (accessed 15 July 2010).

<sup>9</sup> NRC Handelsblad 27th of February 2006 'Cacao markt draait om Amsterdam: Overslag sterk afhankelijk van nabijgelegen verwerkende industrie'.

<sup>10</sup> Supermacht Website.

[http://www.supermacht.nl/index.php?option=com\\_content&task=view&id=307&Itemid=31](http://www.supermacht.nl/index.php?option=com_content&task=view&id=307&Itemid=31) (accessed 15 July 2010).

<sup>11</sup> Intentieverklaring – 4 maart 2010 'Duurzame cacaoconsumptie en -productie'

<sup>12</sup> Snijders, H. et al. (2007) De economische kracht van agrofood in Nederland. Rijksuniversiteit Groningen.



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Dutch companies occupy a strong position on the international market, where they import and export, produce and process a wide range of agricultural products. At the same time, the Netherlands serves as a major trading and logistical hub in Europe and as a result is often dubbed the *Gateway to Europe*. These large trade-flows primarily pass through the ports of Amsterdam and Rotterdam. The critical assessment of these trade-flows provides valuable customer feedback, which has contributed to the development of consumer oriented value chains, increasingly focused on high quality and sustainability. The combination of the Dutch playing a central position in international trade and the trend towards developing sustainable value chains helped the Dutch build a wide range of experiences with sustainability initiatives in a number of agricultural value chains (such as dairy and horticulture) but also in sectors (such as palm oil, coffee and soya beans). Another consequence is that the Dutch accumulated a lot of experience with developing certification schemes and creating transparency for consumers. The presence of certifying agents (such as, UTZ CERTIFIED and Max Havelaar) and the rapid development of the organic sector have also contributed to strengthening the Dutch position as frontrunners in the sustainability debate.

#### Where is the knowledge based?

The cocoa chain is an international production chain, with flows of money and cocoa streaming back and forth between businesses in different countries. Moreover, an ever increasing number of these businesses are multinational enterprises that cannot be pinned down to one country; they have offices, factories or warehouses all over the world. For the Netherlands, this means that business is not only being conducted with international partners, but also Dutch companies have become part of larger international operations. Many Dutch companies are foreign owned and certain activities, like research and development, have been transferred out of the Netherlands to other countries. With regard to the availability, development and exchange of knowledge this means that

- strategic decisions about research are often taken abroad;
- research and development centres are mainly based abroad;
- the people with knowledge tend to depart for those locations with concentrated R&D.<sup>13</sup>

<sup>13</sup> Interview P. van Langenberg, Theobroma, 2010.

There are very few Dutch players left. The Americans own De Zaan and Gerken, Bendsorp has become Belgian/French because it is owned by Barry Callebaut. De Baronie is the only independent chocolate factory, Verkade is English, and Droste is German. The Dutch chocolate industry is minute. The cocoa industry is present here, but, if you look at those who make decisions and show the most activity, you see that they are located in the United States and Switzerland, not the Netherlands. The processing plants and the warehouses are based in the Netherlands, not the head offices or research departments. So, in terms of logistics and processing the Netherlands is an important country but not in knowledge development and decision making.

(P. van Langenberg, Theobroma, 2010)

However, not all R&D takes place outside the Netherlands. For example, Cargill still has a R&D unit based in Amsterdam and Mars has been investing heavily in its Dutch research unit in Veghel, with some marked successes. A Dutch technical production innovation within Mars has recently been awarded with the 'make the difference award': 'our staff travels all over the world to help develop new production lines at other Mars factories' (T. Hoozeboom, General Manager of Mars Nederland).<sup>14</sup> Also, because international companies based in the Zaan still have primarily Dutch personnel and are primarily managed by Dutch division heads, there are still a number of individuals who have the necessary know-how. The Dutch cocoa cluster in the Zaan has received much praise. Moreover, since this is such a small group of people, they are personally acquainted with each other, and the lines of communication are short. So the Dutch cluster specialised in processing, storing and transporting cocoa still stands strong. The strong competitiveness and cooperation that distinguish the cluster make it interesting for multinational organisations to operate (part of) their business from the Netherlands.

Although traditionally the private sector has played and continues to play a key role in knowledge development on commodities, other actors and supporters are also involved. For example, the government also plays a role in maintaining private R&D facilities, which is to the benefit of surrounding SMEs and important

<sup>14</sup> <http://www.foreigninvestments.eu/testimonials/At-Mars-in-Veghel-the-innovations-also-taste-moreish.html> (accessed 14 September 2010).



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<sup>15</sup> Kan et al. 2010 discuss the role of the government in innovation in the Knowledge Investment Agenda 2006-2016. Available at <http://www.innovatieplatform.nl/en/platform/innovation%20in%20nl/> (accessed 10 August 2010).

<sup>16</sup> These 10 key-elements are (1) transparency; (2) compliance with applicable laws and regulations; (3) remuneration for quality cocoa, productivity and improved farmers' income; (4) access to credit and rural development services, and diversification; (5) market access and market information; (6) decent working conditions; (7) support for farmers' and workers' organisations; (8) clear land use planning and proper infrastructure; (9) rational natural resource management; and (10) conservation and wide-use of biodiversity. [http://www.roundtablecocoa.org/documents/RSC-E2%20%20REPORT%20OF%20THE%20SECOND%20ROUNDTBLE%20FOR%20A%20SUSTAINABLE%20COCOA%20ECONOMY\\_ENGLISH.pdf](http://www.roundtablecocoa.org/documents/RSC-E2%20%20REPORT%20OF%20THE%20SECOND%20ROUNDTBLE%20FOR%20A%20SUSTAINABLE%20COCOA%20ECONOMY_ENGLISH.pdf) (accessed 15 July 2010).

in terms of employment.<sup>15</sup> According to the Knowledge Investment Agenda it is important that the government continues to work with industry and knowledge institutes, in order to stimulate knowledge-intensive sectors and regions (Kan et al. 2010).

Knowledge on sustainable value chains does not only concern knowledge of 'commodity chains'; it is also connected to 'knowledge chains' – from preschool education and lifelong learning to excellent scientific research and innovative enterprise. This knowledge is based in and developed by a variety of actors: the private sector, banks, governments, universities, knowledge institutes, consultants, and NGOs. Especially now, with all eyes focused on sustainability, multi-stakeholder partnerships and platforms are becoming more important for knowledge generation and knowledge sharing. They also serve to build trust and define common goals. In this respect also international partnerships and forums are important, as knowledge on sustainable cocoa flows across borders. For example, the global Round Table Meetings on Building a Sustainable Cocoa Economy (RSCE 1 and RSCE 2) resulted in the formulation of ten key elements that laid the foundation for sustainable cocoa.<sup>16</sup> The round table also provided a platform for expert groups, which facilitated an exchange of knowledge and documentation on a number of key issues: social issues, best known practices in



the cocoa supply chain, sustainability initiatives and the challenge of compliance, and a study on traceability and tracking. Dutch representatives of Oxfam Novib and the Department of Trade and Industry of the (former) Ministry of LNV participated in these expert groups.<sup>17</sup>

The Netherlands has a vibrant multistakeholder cocoa community, and the Dutch government is heavily involved in stimulating its development. For example, the Ministry of EL&I coordinates a multistakeholder platform, the National Cocoa Stakeholder Meeting (or ChocoWorkGroup), which brings together an ever growing number of Dutch representatives from industry, governments, banks, NGOs, consultants, knowledge institutes, the Dutch Sustainable Trade Initiative (*Initiatief Duurzame Handel – IDH*) and others. These stakeholders are firmly committed to the realisation of sustainable cocoa consumption in the Netherlands. This platform was created in response to the first Round Table for a Sustainable Cocoa Economy, which was held in Ghana. Meetings in the Netherlands are held on a regular basis and are attended by the different stakeholders. In response to the second Round Table meeting, which took place in Trinidad & Tobago in 2009, the Dutch actors involved in the cocoa sector have translated the ten key elements into a national agenda for promoting sustainable cocoa, with a twofold goal:

- 1 To guarantee sustainable cocoa consumption within a period of 15 years.
- 2 To deliver a significant contribution to a global sustainable cocoa economy (people, planet, profit).

In addition, the ChocoWorkGroup has drawn up a National 10 Point Plan, which includes developing a global framework for sustainable cocoa, creating support for sustainable cocoa within the European Union, and developing a basic training package for farmers. An action point to consolidate the Dutch knowledge base on sustainable cocoa is also part of this plan.<sup>18</sup>

Another example of a multistakeholder initiative is UTZ CERTIFIED. This certification scheme works together with major stakeholders from industry, government, and civil society to improve the sustainability of the cocoa sector. UTZ CERTIFIED is also involved in the IDH. Financed by the Ministry of Foreign Affairs (Department of Development Cooperation) IDH aims at ‘the acceleration

<sup>17</sup> These documents—including a manual of best known practices in cocoa production, a description of various methods of traceability and tracing, and others—can be downloaded from <http://www.roundtablecocoa.org/showpage.asp?BackgroundDocumentsRSCE2> (accessed 15 July 2010).

<sup>18</sup> Nationaal 10-punten plan duurzame cacao (update 10 november 2009).

and up-scaling of sustainable trade through the formation of coalitions between governments, enterprises, labour unions and NGOs'.<sup>19</sup> Currently it focuses on eight commodities, one of which is cocoa. In addition to UTZ CERTIFIED, several key stakeholders participate in this initiative: two processors (Cargill and ECOM), three manufacturers (Heinz, Mars, and Nestlé), one retailer (Ahold), and three NGOs (Oxfam Novib, Solidaridad, and World Wildlife Fund (WWF)). Together, these partners have committed themselves to making the farmers' cocoa production techniques more efficient and sustainable, and to improving their self-organisation and market access.

Another multistakeholder initiative is the Tropical Commodity Commission (TCC), which is an alliance of eight NGOs (Hivos, Oxfam-Novib, Solidaridad, Oikos, Somo, Fairfood, India Committee of the Netherlands, and BothEnds) and two trade unions (FNV Bondgenoten and CNV BedrijvenBond). It seeks to improve the social, environmental and economic conditions at the low end of the coffee, cocoa and tea chains by cooperating with local NGOs and trade unions.

CHOCA is another forum that brings together cocoa actors. This chocolate festival, which takes place in Amsterdam, brings together primarily SMEs and consumers. Within a short period of time it has succeeded in involving both industrial players and NGOs, and thus providing them with a platform for communicating sustainability issues to a wider audience. Other networks that work on sustainability are Food Policy NL, MVO (CSR) Netherlands, National Sustainability Congress, NEVI (the Netherlands Association for Procurement), and SSZ (Study Centre for Snacks and Sweets Benelux).

### **Different roles in knowledge development**

Over the years a variety of stakeholders has come together on different occasions, in and outside the Netherlands, to discuss and exchange ideas on sustainable cocoa. Individually these different actors also play a role in knowledge development. Some play regulatory and coordinator roles (e.g., the government) while others (e.g., NGOs) lobby to increase the awareness of the social and environmental issues in value chains. The role for universities is mainly to conduct fundamental research, while consultants provide practical knowledge that is directly applicable for their clients. In addition to the difference in roles, the underlying motivation to promote knowledge development also differs: the private sector is

<sup>19</sup> IDH website.

<http://www.dutchsustainabletrade.com/nl/home>  
(accessed 15 August 2010).

primarily concerned with optimising their business and securing a good reputation; NGOs are mainly driven by societal concerns; and, the government is eager to strengthen its innovative power and promote the Dutch knowledge economy. Let us look briefly at these different roles.

### The private sector

The cocoa sector in the Netherlands has developed over time into a strong cluster. This has to be cherished, supported and protected, because there is always the possibility of losing it. The Port of Amsterdam plays a central role by being a logistical centre, a point where streams of cocoa pass through. In terms of knowledge, there is cooperation with Zaanstad and Wageningen; we have contacts with the Food Technology department there. Cargill has a research centre in the Netherlands, in Amsterdam, focusing on flavour and beverages. (H. Poelma, Cargill, 2010)

Traditionally the private sector has played an important role in knowledge development on cocoa processing, effective means of transport, and other related topics. (A well-known example is the invention of the cocoa press by the Dutch chemist and chocolate maker Coenraad Van Houten; the treatment known as 'Dutching'.)<sup>20</sup> The cocoa cluster – where the cocoa companies also organise logistics such as transport and storage – has created a competitive and cooperative environment around the Port of Amsterdam. In this innovative climate learning is essential.

The private sector is also an important gatekeeper of knowledge on cocoa production processes. To secure large quantities of good quality cocoa at affordable prices is a core interest. This requires investments in upgrading the product and production process in cocoa producing countries and in knowledge development on these issues. Partly private companies invest in their human resources for knowledge development and invest in their R&D unit. Partly they invest in knowledge development outside their company. A number of multinational companies are already investing heavily in research institutes that generate knowledge on, for example, new plant varieties, new ways of combating pests and diseases that can affect cocoa production, etc. In the UK this situation led to

<sup>20</sup> Van Houten 'devised a process for making chocolate powder by using hydraulic pressure to remove almost half of the cocoa butter from chocolate liquor. This reduced the fat content from over 50% to about 25%, and made a hard cake that could be pulverized. Then, in order to make this powder easier to mix into warm water, he treated it with alkaline salts, which also made the colour darker and removed some of the bitterness.'  
<http://www.chocolate.org/timeline/index.html>  
 (accessed 20 August 2010).

a strong link between research institutes and industry; in the Netherlands, however, this link is rather weak.

### **The role of the public sector**

The Dutch have a tradition of innovation. The Dutch government is very keen to strengthen the Netherlands' powers of innovation and promote its knowledge economy. This focus is important, as innovation has proven to be instrumental in achieving economic prosperity. With the establishment of the Dutch Innovation Platform in 2003, the Dutch government acknowledged this tradition of innovation and recognised its importance.<sup>21</sup>

The public sector has several important roles in knowledge development, by providing key investments in education, knowledge, innovation and enterprise. The government also plays an active role in knowledge development on sustainable cocoa chains. As mentioned earlier in this study, it is a key driver behind recent multistakeholder initiatives, and it also coordinates and finances multi-stakeholder initiatives. For example, the former Ministry of LNV financed part of the RSCE 1 and RSCE 2 and the Ministry of Foreign Affairs financed part of IDH. The Dutch government has also positioned itself as an important funding-agency for international research on sustainable cocoa. Thanks to the sustainable cocoa subsidy, provided at that time by the LNV with the aim to foster sustainable cocoa production and the cocoa chain, the Dutch are seen internationally as a key driver behind knowledge development (see box 3.1).

Remarkably, there were only a few Dutch knowledge partners that took advantage of this arrangement. NIZO Food Research (originally a Dutch company, today also present in France, Japan, UK, and USA) received money to conduct a study, along with Barry Callebaut, on the stability of cocoa powders in aqueous environments. The independent Netherlands organisation for Applied Scientific Research TNO was involved in the implementation of two projects funded by the buffer stock. One study was commissioned by the Amsterdam Entrepreneurs Organisation ORAM and focused on the eradication of vermin at cocoa storage locations. The other project examined the potential health benefits of chocolate consumption and was initiated by the Association for Bakery and Sweets Industry in the Netherlands (VBZ). Optisense BV received funding for research and development of optical biosensor technology for the detection of mycotoxins

<sup>21</sup> <http://www.innovatieplatform.nl>  
(accessed 20 August 2010).

in cocoa. The following table 3.1 gives an overview of the projects that were subsidised under this scheme (annex 2 gives a thematic overview of the projects).

### Box 3.1 The Buffer Stock Fund

The LNV provided a subsidy that stimulated the sustainable development of the cocoa and chocolate sectors for a period of four years (January 2004 to December 2007). This subsidy was derived from the Dutch part of the revenues generated through the sale of the cocoa buffer stock. This stock has been accumulating since 1974, when the Netherlands became involved in several International Cocoa Agreements. The rationale behind this stock was that by jointly buying or selling cocoa countries would be able to maintain a stable price on the world market. Because of the limited effect of this system and the liberalisation of trade, it was decided to liquidate the stock in 1993.

The total subsidy of 12 million Euro has benefited 22 different projects in both consumer and production countries (such as Cameroon, Côte d'Ivoire, Ghana, Nigeria, Trinidad and Tobago, Brazil, and Papua New Guinea). The allocation of the subsidy was in the hands of a steering committee of experts from the Dutch cocoa sector. The approved projects sought to contribute to the sustainable development of the sector and to foster

- capacity and institution building in countries of origin;
- system, process, or product innovations that contribute to strengthening the economic structure of the sector or the improvement of the quality of products, especially food quality;
- improvement in the wellbeing of employees working in the cocoa sector in origin countries and their families; and
- reduction of the environmental impact of the sector.

Types of activities eligible for this subsidy include research and development; general information supply; education, training and technical assistance; and investment.

A conference to evaluate the different projects is planned for 2011. Based on the positive reactions in the international cocoa sector, it is safe to say that the Netherlands contributes significantly to the realisation of sustainable development initiatives in the cocoa sector.



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**Table 3.1 Overview of sustainable cocoa projects supported by the (former) LNV**

PROJECT	ORGANISATION
Sustainable Cocoa Production through Improved Understanding of Seasonal Variability in Quality, Yield and Disease Resistance	Cocoa Research Ltd.
Proteomic Analysis of Witches Broom Disease of Cocoa	University of Wales
Selecting High Yielding Clones in the Presence of Phytophthora megakarya	The Ghana Cocoa Growing Research Association (GCGRA)
Safeguarding the International Cocoa Gene Bank, Trinidad (ICGT)	Cocoa Research Association (CRA) and Biscuit Cake Chocolate & Confectionary Association (BCCCA)
Stability of Cocoa Powders in Aqueous Environments	Barry Callebaut and NIZO
Research and Development of Optical Biosensor Technology for on Site Detection of Mycotoxins in Cocoa	Optisense BV
Sources and Prevention of PAH Contamination of Cocoa Beans in Cocoa Producing Countries	European Cocoa Association (ECA)
Promotion of a Rural Sustainable Development Model Based on an Innovative Vocational Dual Training System for Both Youngsters and Adults	European Institute for Co-operation and Development (IECD) and the Dutch Cocoa Industry
To Assess the Quality Attributes of the Imperial College Selection	The University of the West Indies in Trinidad
Safe Cocoa, Sustainable Production	European Cocoa Association (ECA) and CAOBISCO
Upgrading of the Upstream Cocoa Trade in Cameroon by Means of Sustainable Chain Management	ISCOM in co-operation with ADM and Masterfoods
To Eradicate Vermin at Cocoa Storage	Ondernemersvereniging Regio Amsterdam (ORAM)
Confronting the Threat of Cocoa Pod Borer (CPB) to Cocoa in Papua New Guinea	Cocoa Association of Asia and CABI International
Resistance to Cocoa Pod Borer (CPB)	ASEAN Cocoa Club and University of Reading
Improving the Efficiency of Cocoa Agro Forestry Systems in Bahia, Brazil	Instituto Floresta Viva and CEPLAC

PROJECT	ORGANISATION
Establishment Ability of Cocoa in Nigeria	International Institute of Tropical Agriculture (IITA) and the Sustainable Tree Crop Program (STCP)
Food and Chocolate	Vereniging voor de Bakkerij- en Zoetwarenindustrie (VBZ)
A Re-interpretation of Hybrid Vigour in Cocoa	Biscuit Cake Chocolate & Confectionary Association (BCCCA)
Roundtable for a Sustainable Cocoa Economy	International Cocoa Organisation (ICCO)
'Phoenix', Cocoa Rehabilitation in the State of Bahia, Brazil	Cargill, Brazil
Securing Future International Cocoa Quarantine	University of Reading and Biscuit Cake Chocolate & Confectionery Association (BCCCA)
Heavy Metals in Cocoa	European Cocoa Association (ECA), CAOBISSCO and CABI

The bulk of the subsidy was granted to a cluster of cocoa research organisations and associations in the UK: the University of Reading, Cocoa Research UK (CRUK), Cocoa Research Association (CRA) and Biscuit Cake Chocolate & Confectionary Association (BCCCA). Other research institutes closely related to these institutes are CABI and the University of Aberystwyth (part of the University of Wales). Examples of Dutch associations are ORAM and VBZ. The projects that received a subsidy from the Buffer Stock Fund focused on knowledge development on pests and diseases, rural development, and improving cocoa production.

In addition to subsidies, also regulation stimulates innovation in the Netherlands. Dutch laws and regulation are strict, which contributes to fostering a climate of innovation. The next chapter, covering innovation in the Harbour of Amsterdam, will give some examples of how the key players perceive these subsidies and regulation and will discuss their impact on knowledge development.

## The knowledge institutes

If we need to have a leaf sample analysis carried out to determine the genetic variability of a cocoa species, we send it to a university in the United States. [...] If Wageningen University would have the infrastructure available to conduct such research I would much rather send it to them. The point is that Wageningen doesn't focus on commodities on an institutional level. There are some people active in cocoa or coffee, but that's because of their own enthusiasm for a specific commodity.

(R. Nickels, *Original Beans*, 2010)

The research community's growing interest in knowledge development in the cocoa chain goes hand-in-hand with the growing importance of cocoa for the Netherlands. During the colonial period, Dutch researchers were able to study pests and diseases locally in the colonies of Indonesia and Suriname, stimulated by Dutch investments in local cocoa research facilities (Reyne, no date).<sup>22</sup> Also the British had established research facilities in Ghana and Nigeria. After the former colonies gained their independence, these institutes remained in place, and European researchers continued to work there. The generation of European cocoa-experts that came out of these institutes has not been replenished after independence, and today there is very little of this type of expertise left.

Currently the education system in the Netherlands does not focus on cocoa specifically. Whereas in 1997 the Food section of TNO still had a small department for cocoa and oils, this has disappeared with its reorganisation. The cocoa industry indicates that they mainly need technical oriented people who received intermediate vocational education. But these people appear to be scarce in the Netherlands. The industry responded to this by developing a practical online cocoa and chocolate manual, together with Aequor, the Education Fund for Food Suppliers (*Stichting Opleidingfonds Levensmiddelen Industrie - SOL*) and VBZ (Snijders et al., 2007). The companies use this manual to educate their employees. They received a subsidy for this from the Dutch Ministry of Economic Affairs.<sup>23</sup>

<sup>22</sup> <http://www.kitlv-journals.nl/index.php/nwig/article/view/5069/5836>  
(accessed 15 August 2010).

<sup>23</sup> For more information on this online manual see  
<http://www.cacaochocolade.nl/>  
(accessed 19 September 2010).



Although Wageningen University and TNO are still known for their cocoa expertise, their knowledge on cocoa has become fragmented and less technical. This explains why research programmes, for example of the European Cocoa Association, make use of other research agencies like CABI (UK), CIRAD (France) or LANADA (Ivory Coast).<sup>24</sup>

**Recent publications on cocoa research carried out by (PhD) students from Wageningen University:**

Ayenor, G.K. 2006. Capsid control for organic cocoa in Ghana: results of participatory learning and action research. PhD diss., Wageningen University. <http://library.wur.nl>.

(This study shows how an interactive participatory approach can improve research uptake and use. The background for this study was that only five percent of cocoa farmers adopted the recommendations of the Cocoa Research Institute of Ghana to increase yields. It was believed that one of the major problems was the application of conventional research models through linear processes of technology transfer.)

Cho, P. E. 2004 The impact of liberalization on the yield and income of cocoa farmers in Cameroon. Msc Master's thesis, Wageningen University. <http://library.wur.nl>.

Dormon E.N.A 2006. From a technology focus to innovation development: the management of cocoa pests and diseases in Ghana. Master's thesis, Wageningen University. <http://library.wur.nl>.

Hudson Asamani, E. 2004. The cocoa chain in Ghana: an option for small-scale cocoa processing. Master's thesis, Wageningen University. <http://library.wur.nl>.

Kermah M 2010 Climate change and shift in cropping systems: from cocoa to maize cropping system in Wenchi, Ghana. Master's thesis, Wageningen University. <http://library.wur.nl>.

Nembang, V.O.M. 2005. The effect of liberalisation of the Cameroonian Cocoa farmer 2005. Master's thesis, Wageningen University. <http://library.wur.nl>.

Sobo, D.A. 2004. The potentials of adding value to the production, processing and marketing of cocoa in Cameroon. Master's thesis, Wageningen University. <http://library.wur.nl>.

While initially the Dutch research community mainly focused on generating more and better quality cocoa (*technical knowledge*), the focus shifted towards understanding institutional factors that enable technological innovations (*institutional*

<sup>24</sup> <http://www.eurococoa.com/en/x/104/activities>  
(accessed 19 September 2010).

*knowledge*) (Huis, 2006).<sup>25</sup> An example is the Convergence of Science (CoS) project, which started in 2001 and was financed by WUR and DGIS (Dutch Ministry of Foreign Affairs). The CoS project started from the idea that farmers did not sufficiently apply scientific solutions, and thus science was not contributing as much as it could to alleviate poverty. It saw a strong complementarity between the involved stakeholders'<sup>26</sup> knowledge and problem solving capabilities:

It is believed that convergence is needed in technology development not only between natural and social scientists, but also between societal stakeholders (including farmers) and scientists. Participatory innovation processes are analysed to find more efficient and effective models for agricultural technology development. Efficient and effective are defined in terms of the inclusion of stakeholders in the research project, and centring the research on the needs and the opportunities of the farmers. In this way, stakeholders become the owners of the research process (Huis, 2006).

Of the nine PhD students involved in the first phase of the Convergence of Sciences programme two focused on cocoa in Ghana. In one of these studies the case of cocoa production in Ghana was used to understand the actors' innovations and innovation processes in a changing macro policy environment. The other study looked at levelling the playing field among scientists, including farmers, to manage cocoa capsids: facilitating learning towards integrated pest management in *Theobroma* for increased production in Ghana. This study showed that organising exchange labour groups (an institutional change) made it possible to remove affected cocoa pods (which is a very labour-intensive process), and thus stop the spreading of the fungus (Huis, 2006). CoS was followed-up by the ongoing CoS 2 (2008-2013), which focuses on agricultural innovation systems.<sup>27</sup>

In general, this shift from technical to institutional knowledge is partly the result of recognising that an integrated and interactive approach towards learning is necessary for improving the effectiveness of agricultural research. Also, it reflects the significant reduction in the Dutch knowledge base on technical issues at the producer level, which has several explanations. It is no longer common for Dutch researchers and development practitioners to live and work for a long period of time abroad. Currently researchers are attached to a certain institute only for a

<sup>25</sup> Oratie, Wageningen University. INSECT, RESPECT EN MAATSCHAPPELIJKE EFFECT Inaugurele rede, 23 februari 2006.  
Doer prof.dr.ir. Arnold van Huis. <http://library.wur.nl/way/bestanden/clc/1796752.pdf> (accessed 19 June 2010).

<sup>26</sup> These stakeholders include farmers, extension and research organisations, NGOs, policy makers, private enterprises, consumers, etc.

<sup>27</sup> The partners in the CoS 2 Programme are the Université d'Abomey à Calavi (UAC) in Benin, University of Ghana (UoG) at Legon in Ghana, the Institut Polytechnique Rural/Institut de Formation et de la Recherche Appliquée (IPR/IFRA) at Katibougou in Mali and nine chair groups of Wageningen University (WUR) (Irrigation and Water Engineering, Development Sociology, Technology and Agrarian Development, Communication and Innovation Studies, Agricultural Economics and Rural Policy, Development Economics, Crop and Weed Ecology, Entomology, Soil Quality, and Animal Production Systems).  
Additional Dutch partners are the Royal Tropical Institute (KIT) and Agriterra. <http://www.cos-sis.org/> (accessed 19 June 2010).

few years, while development organisations are increasingly working with local consultants. Consequently, in-depth knowledge on tropical commodities is no longer being developed or cherished. Moreover, the absence of support of the Dutch cocoa industry to research institutes in the cocoa producing countries has also contributed to a situation where only few Dutch 'cocoa experts' remain (M. Wessel, WUR, 2010).<sup>28</sup>

### The role of the social movement

**Integrating Producers Internationally** – In order for producers to feel a sense of ownership, to make a living wage, and to have more equal gender relations, they should be able to engage in and shape the discussion about the direction that sustainable cocoa production is developing in. Therefore it is necessary that they are present at international discussions, initiatives, and platforms on sustainable cocoa. By participating in such activities they have the opportunity to exchange ideas, experiences and knowledge, and thus improve their capacities. However, it is an open question whether their motive is this or if it is to negotiate a higher price. (Expert meeting, TCC, 2010)

There is a large social movement in the Netherlands, led by several NGOs, that highlights critical issues in the cocoa chain, such as labour conditions, environmental awareness, or earning a living wage. Such NGOs traditionally oppose industry stakeholders – especially multinationals – due to their strong influence on the cocoa chain. But civil society is increasingly being involved in attempts by industrial players to mainstream sustainable cocoa partnerships. Solidaridad and Oxfam Novib are the two best known examples. Both NGOs cooperate with industry, for example, by founding the cocoa programme for UTZ CERTIFIED and actively participating in the IDH network. Whereas Solidaridad's primary focus is on training and organising farmers in origin countries, Oxfam Novib focuses on lobbying and partner support. Both NGOs are also active in generating knowledge on social and (to a lesser extent) environmental issues and play a role in awareness raising. For example, Oxfam Novib last year started the 'Groene Sint' campaign, aimed at raising awareness of the abuse that takes place



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<sup>28</sup> Professor Dr. Marius Wessel of Wageningen University is one of the last cocoa experts in the Netherlands. Although retired, Wessels is still actively involved in advising businesses and supporting students who study the sector.



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on cocoa plantations. This campaign had an impact on supermarkets and larger stores that sell a lot of 'chocolate letters' (it is a Dutch custom to give chocolate letters as gifts for St. Nicholas day – 5 December). So far, seven stores have committed to sell only fair chocolate letters for the 2010 celebration.

Besides Solidaridad and Oxfam Novib, there are some other examples that illustrate the social movement, such as the Tropical Commodity Coalition (TCC) and Fair trade certifier Max Havelaar. TCC brings together different stakeholders in conferences and gives an annual overview of the progress made in the different sectors. Max Havelaar is another example of a development oriented organisation that actively engages in the cocoa sector and tries to reshape it by bringing Fairtrade products on the market.

As stated, these organisations bring forward a number of critical, largely overlapping issues. The main themes of their work are scaling up sustainable production and involving and supporting farmers in the sustainability debate. Both organisations play an important role in lobbying and raising awareness, not only on the level of consumers but also with producers from their target group. TCC advocates the participation of producer organisations in the sustainability debate,

#### Recent TCC publications on cocoa

##### *The Cocoa Barometer 2010*

(The Cocoa Barometer 2010 presents an analysis of the recent market developments in the certified cocoa sector and aims to fuel the ongoing discussions on building capacity and training of cocoa farmers).

##### *The Cocoa Barometer 2009*

(The Cocoa Barometer 2009 aims to make the cocoa value chain more transparent. In this report TCC explores the recent developments in the cocoa sector and the role of grinders and chocolate manufacturers to make the cocoa chain more sustainable).

##### *Sweetness follows, 2nd edition. A rough guide towards a sustainable cocoa sector*

(This report presents an overview of the world cocoa market and its main stakeholders. First, it provides a detailed overview of the sustainability challenges facing the cocoa sector. Second, it provides an overview of initiatives to manage sustainability in the cocoa chain. Third, it presents lessons from other commodity chains, such as coffee and timber. Recent developments and

for example at conferences. It also facilitates roundtable meetings in producing countries (e.g., Ghana, Ecuador, and Indonesia) where all stakeholders can interact. Through these meetings, producers get better acquainted with each other and can learn from each other's experiences. It also helps them to get their 'voice' heard at international round table meetings.

### **Redefining the Dutch knowledge position**

With all eyes now focused on sustainability issues in the cocoa chain, a major shift is taking place. A more diverse set of actors is beginning to play a role in the sector and there is a change in the kind of knowledge that is being developed in the Netherlands. Over the recent years, the Netherlands has developed a thorough knowledge base related to development of sustainable agricultural value chains. This knowledge base covers a wide range of products and different parts of the chain (e.g., production, processing, trade, marketing, etc.) but also addresses integral matters (such as agro logistics, tracking and tracing, bridging demand and supply, bridging theory and practice, etc.). Furthermore, the intense dialogue between companies, civil society and government has further enriched stakeholders with knowledge and experience, in particular regarding coping strategies for sustainability in terms of consumer responses.

trends show leverage points for ways to achieve more sustainable cocoa production and trade. Remaining objective – not promoting one initiative over another – various critical issues are addressed in the conclusions and recommendations).

#### *Combining Flavours! Tropical Commodity Conference Report*

('Combining flavours!', the Tropical Commodity Conference succeeded in its effort to build shared understanding and approaches to sustainability in the tea, coffee, and cocoa sectors. The stakeholders shared a sense of urgency reflecting the need to improve these commodity chains).

#### *Breaking the vicious circle in the cocoa sector by scaling up training for cocoa smallholders*

(This brochure provides an overview of organisations that offer capacity building services in four major cocoa producing countries: Ivory Coast, Ghana, Indonesia, and Ecuador. These organisations are potential partners for those actors that work to make the cocoa sector more sustainable).

<http://www.teacoffeecocoa.org/tcc/Publications/Our-publications>

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The next chapter examines some of the key challenges involved in sustainable cocoa production and consumption, specifically by looking at the role played by Dutch knowledge partners. Chapter 4 is divided in 3 parts: supplier failure, innovation in the harbour, and remarkable initiatives that push the boundaries.

#### Recent publications on sustainability in chains

Rosenberg, D., ECOM, Eckstein, M., WWF, Brett, C. and Olam 2009. *Sustainable Trading*. Dutch Sustainable Trade Initiative. <http://www.duurzamehandel.com/nl/idh-publicaties>.

(This publication addresses the questions of 'why' and 'how' traders have become key agents in promoting sustainability in the coffee supply chain and how this is being replicated in cocoa. It provides the illustrative case studies of Ecom (coffee) and Olam (cocoa)).

A number of Wageningen and University of Amsterdam (UvA) students have conducted research on sustainability in value-chains:

Add: Laan, T. 2006. Upgrading by producing for niche markets; the case of small cocoa farmers in Talamanca, Costa Rica. Master's thesis. International Development Studies, ISHSS, UvA.

Vuure, R.P. van. 2006. The Interaction of civic conventions aimed at improving gender equality for women working in the Ghanaian cocoa sector with their respective livelihood strategies. Master's thesis. International Development Studies, ISHSS, UvA.



## 4 Knowledge themes

### Part 1 Safeguarding supply

The risk that cocoa suppliers will not be able to meet the required demand is a serious threat to the cocoa sector. The trees that produce cocoa beans are generally old, are rooted in over-farmed soil, and are tended by poor farmers with little if any formal education. The majority of farmers are smallholders, which means that they grow cocoa as a cash crop on a small plot of land, along with food crops and occasionally also with other cash crops. From the income generated by these cash crops they pay their hospital bills, debts, their children's school expenses. Farmers rarely have any remaining financial means to utilise for on-farm investments. Crop losses are a huge problem, as a large portion of the harvest is usually lost to pests and diseases. Money to invest in new plant material, fertilizer or pesticides is lacking; the know-how to apply it is scarce. Farmers often work by themselves and receive little support in terms of training, advice, or access to credit. In this context, exasperated by poor infrastructure and their marginal position farmers sometimes keep their children from school and allow them to help or work on the farm (P. van Grinsven, Mars, 2010).

Because of these appalling conditions, the continuity of cocoa production is under threat. First, there is an exodus from the countryside as youngsters see no future there and seek other possibilities by migrating to the city. Additionally, crops like rubber, cassava, and oil palms have become more profitable for farmers. Cocoa production in West Africa shows a decreasing trend of 2 % per year, while, at the same time, demand for cocoa products, including high quality chocolate, is expected to increase in the near future. The cocoa industry is concerned about these developments and faces a major challenge: how to assure that supply continues to meet demand.

In order to assure that farmers remain in the cocoa business and increase the quantity and quality of their production, industry partners are investing heavily

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in farmers. One of the frontrunners is Mars, which has committed itself to achieving 100 % sustainable sourcing of its cocoa by 2020. While multinational companies have their own initiatives, they are also increasingly collaborating to jointly tackle the problem of supply failure. Not only cocoa companies, but also governments, financial institutions, NGOs, labour unions and certifiers have been joining forces to provide support to farmers. A leading example of such efforts is the international Cocoa Livelihoods Program. This program focuses on enhancing farmer knowledge, improving farm productivity and crop quality, and improving farmer marketing skills on agriculturally diversified farms (see box 4.1).



#### Box 4.1 The Cocoa Livelihoods Program

The Cocoa Livelihoods Program is managed by the World Cocoa Foundation and is implemented by a consortium of five organisations, including Agribusiness Services International (ASI), an ACDI/VOCA affiliate; Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH; the International Institute of Tropical Agriculture (IITA)/ Sustainable Tree Crops Program (STCP); and SOCODEVI and Techno-Serve. In addition to the \$23 million in funding received from the Bill & Melinda Gates Foundation, over \$17 million in financial support and in-kind contributions is received from the private sector: major branded manufacturers (the Hershey Company, Kraft Foods, and Mars Incorporated); cocoa processors (Archer Daniels Midland [ADM] Company, Barry Callebaut, Blommer Chocolate Company and Cargill); and supply chain managers and allied industries (Armajaro, Ecom-Agrocacao, Guittard Chocolate Company, Noble Resources S.A., Olam International Ltd., Starbucks Coffee Company and Transmar Commodity Group Ltd.); and supporters to the technical partners (the German Ministry for Economic Cooperation and Development [BMZ]). The governments of the participating West and Central African countries are full partners in the program's implementation.<sup>29</sup>

The Dutch have positioned themselves as leaders in the process of mainstreaming sustainable cocoa. It is estimated that Dutch companies will invest around \$325 million in sustainable cocoa during the course of the next several years.<sup>30</sup> In the Netherlands a number of industry players have united forces, together with government and members of civil society, to realise the goal of sustainable cocoa and, by addressing the risk of supplier failure, to improve yields and profitability for cocoa farmers. One of the results is the UTZ CERTIFIED Cocoa Program, established by UTZ CERTIFIED, Cargill, Ecom Agroindustrial, Heinz Benelux, Mars, Nestlé and Royal Ahold, and the NGOs Solidaridad, Oxfam Novib and WWF.<sup>31</sup> With this initiative they want to at least double the current yields of approximately 400 kg/ha by training farmers in modern farming techniques, using new plant material and increased use of fertilizer. They also want to increase dialogue with authorities to improve enabling factors. The program focuses on the largest producer countries: Ivory Coast, Ghana, Indonesia, Nigeria, Cameroon, and Ecuador. By focusing on capacity building in the source locations and providing farmer training, the program aims to improve the farmers' productivity and the quality of their produce; which ultimately should be rewarded by the market, under the maxim: 'Better price for better products'. For 2012 the program has the following goals:

- 50,000 trained farmers and 30,000 certified farmers;
- 64,000 tonnes of certified sustainable cocoa;
- up to 25% increase in productivity for 50,000 smallholder farmers.<sup>32</sup>

<sup>29</sup> World Cocoa Foundation website, [http://www.worldcocoafoundation.org/what-we-do/current-programs/CocoaLivelihoodsProgram\\_summary.asp](http://www.worldcocoafoundation.org/what-we-do/current-programs/CocoaLivelihoodsProgram_summary.asp) (accessed 15 July 2010).

<sup>30</sup> <http://www.duurzamehandel.com/nl/cacao> (accessed 15 July 2010).

<sup>31</sup> <http://www.utzcertified.org/index.php?pageID=224> (accessed 15 July 2010).

<sup>32</sup> <http://www.dutchsustainabletrade.com/en/cocoa> (accessed 23 May 2010).

### Cocoa fermentation

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The founders of UTZ CERTIFIED are also involved in another joint initiative, the Cocoa Improvement Program, which started in 2008. Funded by the Dutch Sustainable Trade Initiative (IDH), this program brings together parties involved in the Dutch chocolate market. IDH is an initiative of the Dutch Ministry of Foreign Affairs to accelerate and scale up sustainable trade. A total of €9.7 million is available for the Cocoa Improvement Program, of which €3.6 million is contributed by IDH. The program is focused on promoting learning and helping to transform the cocoa sector toward full social, environmental, and economic sustainability. The learning components of this program are concentrated around training farmers in the production and marketing of sustainable cocoa.

It is expected that the program will catalyse and increasingly institutionalise sustainability in the cocoa sector, for instance by expanding the number of parties

involved; securing firm company commitment to purchase certified cocoa; encouraging government 'buy-in' and support for certification; and via collaborative initiatives among the three standards initiatives (Fairtrade Labelling Organisation, Rainforest Alliance, and UTZ CERTIFIED). The vision of this program is for this coalition to be recognised by 2012 as a major force behind these efforts: mainstreaming of certification, increased market demand for certified chocolate, institutionalisation of sustainability in the sector, and dissemination of innovative sustainability practices.

The next section will capture the main knowledge questions associated with mitigating the risks of supplier failure. In this first part, a distinction will be made between the three sub-themes – certification, training, and organisation – currently seen as key priorities on the road towards sustainability.

### Theme 1 Certification

Certification is a way to improve the farmers' state of affairs, by providing them with additional (or at least stable) income and other privileges, conditional on their compliance with certain requirements. Such requirements are outlined in documents called standards or codes of conduct, which are used by auditing committees to randomly check farms. The certified product, which eventually finds its way to the shelves of supermarkets, informs the consumer of the origin of a certain product through a labelling system. Besides providing consumers with information, certificates also provide marketing opportunities for companies involved in the branding of cocoa products.

At the moment there are four labels for sustainable cocoa and chocolate. These are EKO, for organic cocoa; Max Havelaar, for Fairtrade cocoa; Rainforest Alliance, for nature conservation; and UTZ CERTIFIED, for farmer support. Each of these certifiers focuses on different aspects of sustainability and has its own unique standards and approaches to rewarding farmers.

Dutch cocoa processors and cocoa chocolate manufacturers utilize these different schemes. Currently the focus is very much on UTZ CERTIFIED, which launched its Cocoa Program in 2007, with a focus on certification, training, and farmer organisation. Through UTZ CERTIFIED, multinational corporations aim to realize their sustainable sourcing objectives.



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Many complicated elements surround certification. One burning issue, repeatedly mentioned in interviews and at multi-stakeholder meetings, is the harmonisation of standards.

### Harmonisation of standards

Each label has its own specific attention points, its own standards, its own system of rewards, its own traceability systems, and so on. The fact that there are several certificates, which all operate differently, can cause confusion in the actual meaning behind a specific label and the differences between the various labels. Moreover, it is unclear whether these labels can actually realise the claims they make (S. Panhuysen, TCC, 2010). Is it necessary to have such variety of labels for certifying more or less the same product and process?

The push to combine the efforts of EKO, Max Havelaar, Rainforest Alliance, and UTZ in issuing certificates to farmer organisations originates from different actors: the Tropical Commodity Coalition, the Dutch Initiative for Sustainable Trade, and from industry players, such as Cargill. The certifiers have indicated that they are interested to collaborate in the pre-competitive stage of certification (the producer side), where there are a lot of similarities (e.g., how auditing takes place, or their involvement in capacity development for farmers). By joining forces the certifiers can, at the same time, increase the efficiency of the certification process and improve their credibility. Joining forces in the marketing of the produce is more complicated, as certifiers will seek to protect their commercial interests. Within this context, the fair trade organisation Max Havelaar shared this concern regarding competition among certification schemes:

Because every certifier wants to safeguard its own supply, there is a danger that there will be a new competition between the certifiers about who will actually get the certified cocoa (J. Harmsen, Max Havelaar, 2010).

This quote illustrates the prevalent fear that UTZ CERTIFIED will eventually attract the farmers and their produce, because they enjoy the support of industry. This is not an unrealistic fear as the supply of certified cocoa is lagging far behind demand. Another issue of concern is whether farmers will be able to select the certification scheme for which they want to produce their cocoa. The next box (4.2) summarises some of the other questions raised in the harmonisation debate.



**Box 4.2 Questions regarding harmonisation**

It is said that the different labels for sustainable cocoa have an 80 % overlap in their social and environmental criteria. Several questions often arise in discussions on the harmonisation of standards, for example: How can the different certification schemes be integrated? How can the four certifiers operate collectively, in order to certify as many farmers as possible? What are barriers or disadvantages involved in harmonisation? Does harmonisation of standards lead to weak compromises? Are there no alternative forms of certification available that could make the process faster and cheaper? Should they be actively sought out?

In the Netherlands the questions that surround certification are partly addressed at multistakeholder platforms, such as the meeting organised by IDH in November 2009 and a recent meeting organised by the World Cocoa Foundation, which took place in Utrecht (May 2010). In these meetings different actors and supporters of the cocoa chain exchanged ideas and brainstormed about bottlenecks and opportunities for mainstreaming sustainable trade (certification is perceived as an important vehicle for achieving this goal).

There are also a number of other 'learning communities' where peer-to-peer learning takes place. These learning communities are primarily international. One example is ISEAL, an international platform dedicated to improving and building synergies between standard-setting and certification organisations. Fairtrade Labelling Organizations International is both a member of ISEAL and learning network in itself. One of the activities of this association of producer networks and national labelling initiatives is to develop and review standards.

In order to cope with some of the challenges that the use of certification schemes generate, the different actors involved in the cocoa sector also build upon experiences with certification in other sectors. UTZ CERTIFIED builds upon its experience in coffee, where it is among the biggest certification programs in the world. Others learned from the research conducted on sustainable biomass. For example, Fair Food has used a document prepared by Cramer et al. (2007)<sup>33</sup> for testing a framework on sustainable biomass to explore alternative (cheaper) ways of certifying cocoa.<sup>34</sup> In this document three different certification systems were compared: the track and trace system, the mass balance system, and negotiable certificates. Currently, the Fairtrade Labelling Organizations are considering the mass balance system as an alternative way of certifying Fairtrade products. This

<sup>33</sup> [http://www.senternovem.nl/mmfiles/Cramer\\_toetsingskader\\_2007\\_EN\\_tcm24-328368.pdf](http://www.senternovem.nl/mmfiles/Cramer_toetsingskader_2007_EN_tcm24-328368.pdf) (accessed 10 July 2010).

<sup>34</sup> <http://www.fairfood.org/blog/blog-post/2010/08/05/book-and-claim-certificate-trading-a-new-and-unique-way-to-promote-the-sustainable-production-of/> (accessed 10 July 2010).



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<sup>35</sup> This means that regular cocoa is used for chocolate production, but consumers continue to pay a contribution for supplementing farmers' incomes. This contribution is directly transferred to an associated Fairtrade cooperative and invested in institutional capacity building and pre-financing. The efficiency gain from the abolishment of segregated processing allows the material increase of the Fairtrade premium while lowering the costs for chocolate producers at the same time.

<sup>36</sup> [http://193.42.212.136/www.utzcertified.org/index.php?pageID=111&showdoc=111\\_0\\_108](http://193.42.212.136/www.utzcertified.org/index.php?pageID=111&showdoc=111_0_108) (accessed 10 July 2010).

<sup>37</sup> In 2009 the initiative focused on certified coffee chains, in order to gain insights regarding this commodity, which is certified by all major international social and environmental certification programs. In 2010 the effort will continue along these lines, further adding tea and cocoa as additional commodities to be examined.

system prescribes to stop the practice of segregated processing of Fairtrade cocoa and conventional cocoa. UTZ CERTIFIED allows both mass balance and segregation for certified cocoa.

Also the Dutch SME Tony's Chocolonely is exploring the possibility to abandon segregated processing and replace it by an Organizational Development Mechanism (ODM). This mechanism separates the product flows and the money flows in the cocoa value chain.<sup>35</sup> This system is rather similar to the mass balance system, but there is a key difference: ODM aims to use part of the cost savings to increase the premium for farmers and for enhancing the farmers' organisational capacity. For this pilot, Tony Chocolonely received support from Oxfam Novib and input from students (Erasmus University and University of Tilburg) and the Dutch Consultancy firm CREM. The Rabobank Foundation was also involved as well as a steering group with representatives of Max Havelaar, the Royal Tropical Institute, the Ministry of Economic Affairs, the Organization for Economic Cooperation and Development (OECD) and the former CEO of the Netherlands Development Finance Company (FMO). The research community was also involved, through senior researchers from Wageningen University, Centre for International Development Issues Nijmegen (CIDIN), and Erasmus University to name a few.

### Gender in certification

Gender equity in certified value chains – such as cocoa – is a relatively new area of interest. In 2008, with the support of Solidaridad and Oxfam Novib, UTZ CERTIFIED explored the role of certification procedure support in promoting gender equality. In November 2008, they consulted NGOs and knowledge institutes in a gender workshop in the Netherlands; the findings were published in 2009 as a final report.<sup>36</sup>

There is a new Dutch initiative called 'Gender Equity in Certified Value Chains'. It is a three year collaborative effort between four organisations working in the development sector: the Royal Tropical Institute, Hivos, Oxfam-Novib, and Solidaridad. This year, 4C (an association involved with sustainable coffee) and IDH are also active in the initiative, as is ISEAL. The Global Standards Initiative focuses on exploring and understanding gender equality in certified value chains, looking for opportunities for improvement. Currently a number of cocoa cases are included in the initiative (R. Pyburn, Royal Tropical Institute, 2010).<sup>37</sup>



### Limits of certification

Because certification is not sufficient for guaranteeing sufficient supply, it is combined with investments in farmer training, this is called certification+ (see box 4.3).

#### Box 4.3 Certification +

The concept of Certification+, introduced by Solidaridad and Mars, states that the premium provided by certification is not meant to guarantee a living wage for farmers. By improving productivity and quality, farmers should be able to earn more for their cocoa and invest in improving their livelihood, especially in West Africa where cocoa production is concentrated. Therefore, these parties claim to go beyond certification by improving productivity through providing better plant material and fertilizer, training, and financing. In addition, Solidaridad is providing support to farmers in producing countries by lobbying and by working to strengthen civil society.<sup>38</sup>



<sup>38</sup> Solidaridad Jaarverslag 2009, [http://www.cbf.nl//Uploaded\\_files/Jaarverslagen/jaarverslag2009Solidaridad1278071400.pdf](http://www.cbf.nl//Uploaded_files/Jaarverslagen/jaarverslag2009Solidaridad1278071400.pdf) (accessed 10 July 2010).



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### Recent publications on cocoa certification schemes

Draaijer, B. 2008. Assessing implications for certification of a producer organisation: the case of Cocoa Abrabopa Association in Ghana. Master's thesis, Wageningen University. <http://library.wur.nl>.

Eisenlohr, U., Wyss Bisang B., de Vries, D., Lomax, J. and Mihaylova, E. 2009. 10 steps to establishing an Internal Control System. A guide for cocoa producer groups and consultants. UTZ CERTIFIED. <http://www.utzcertified.org/index.php?pageID=111>.

This is a training manual for producer groups that are required to set up and manage an Internal Control System for certification as required by the UTZ CERTIFIED Code of Conduct. (Publication was produced in collaboration with Solidaridad.)

Elzakker, van B., and Eyhorn, J.F. 2010. *The Organic Business Guide; developing sustainable value chains with smallholders*. IFOAM, Louis Bolk Institute.

[www.ifoam.org/pdfs/Organic\\_Business\\_Guide\\_web\\_teaser.pdf](http://www.ifoam.org/pdfs/Organic_Business_Guide_web_teaser.pdf).

(This guide provides the actors that work with organic produce with know-how on establishing, managing, and scaling up organic businesses and chains.)

Ruben, R. ed. 2008. *The impact of Fairtrade*. Solidaridad, CIDIN, Wageningen Academic Publishers. (This book gives an in-depth analysis of the impact of Fairtrade on the welfare of smallholders involved in fair-trade production).

UTZ CERTIFIED, Solidaridad 2009. *The role of certification procedure support in promoting gender equality in cocoa production*. Certification support network.

(The publication was produced in cooperation with Oxfam Novib)

UTZ CERTIFIED 2010. *Good Inside Chain of Custody*.

<http://www.utzcertified.org/index.php?pageID=111>

(The UTZ CERTIFIED *Chain of Custody* is an information trail, which has been set up to trace the certified product through the supply chain during handling, processing, and distribution – highlighting each step that involves a change of ownership).





## Theme 2 Farmer training

With plant material it is crucial to determine per situation what the best plant variety is and to make sure that it is locally available. The problem is that there is a huge gap between science and practice: scientists are focused on publishing fundamental research and farmers use whatever is available locally. The crux is to apply scientific knowledge locally.

(P. van Grinsven, Mars, interview 2010)

Farmer training in Ivory Coast

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© Max Havelaar



Cocoa production can be increased threefold by using sustainable agricultural techniques, new plant material, and fertilizer.<sup>39</sup> The availability of knowledge on these techniques and the appropriate inputs is generally not perceived as a problem (but requires ongoing investments). A lot is already known and investments are being made in technical research on combating pests and diseases, new plant material, and other topics. This research is mainly conducted outside the Netherlands, by private R&D departments, specialised cocoa research centres, and universities. Often they work together in the development of this – more technical – scientific knowledge. The key challenge is how to bridge the gap between this type of knowledge and the materials and knowledge that farmers use on the ground. There is a serious need to make science applicable in local circumstances, and thus to make it more useful for farmers. Mars responded to this need by investing in the development of new plant material with international research institutes: the University of Reading, CIRAD, International Food Policy Research Institute (IFPRI), United States Department of Agriculture (USDA) and organisations like Bioversity, and others. In order to reach farmers with these

<sup>39</sup> IDH Web site,  
<http://www.dutchsustainabletrade.com/nl/cacao-cacaoplantages> (accessed 10 July 2010).

materials, Mars cooperates with other actors such as companies, NGOs, governments, and farmer organisations.

Training is essential for reaching out to farmers. The central rationale, shared by the different actors involved in mainstreaming sustainable cocoa, is that farmer training increases farmer productivity levels and the quality of the produce, ultimately increasing farmer income. It is expected that this additional income will be invested in the well-being of their family members, their cocoa farms, and their communities. This should lead to the desirable future outcome of cocoa farming becoming an honourable profession, which strongly appeals to the young. Clearly training is an important element, but providing training to millions of farmers and workers is not an easy task. Several key challenges in training smallholders are presented in the next box.

#### Box 4.4 Challenges of training cocoa farmers

There are a number of challenges involved in training cocoa farmers. First of all, many farmers lack primary school education so a training program should be practical and connect to farmers' experiences and capacities. Second, the infrastructure to train farmers is either lacking or underdeveloped in many cocoa producing countries. Third, local extension services are in many places underdeveloped, which is linked to the limited investment in the cocoa sector and infrastructures from the side of the government in many cocoa producing countries. (H. Poelma, Cargill, 2010).

In response to these difficulties, the cocoa industry and their governmental and civil society partners have decided to organise – in both consumer and producer countries – the farmer training by themselves. The participatory training model that these partners use is the Farmer Field School (FFS) approach. In these schools farmers acquire agricultural techniques through field observation and experimentation. The topics of these field schools include pruning, control of pests and diseases, harvesting, fermenting, drying and storing cocoa beans. The Sustainable Tree Crop Program (STCP) – an international public-private partnership between industry, producers, researchers, government agencies, public sector institutions and conservation groups – has been a major player in setting-up these schools in West Africa.<sup>40</sup> The intergovernmental organisation CABI,<sup>41</sup> which recently opened an office in the Netherlands, has played an important role in developing the curriculum of these Farmer Field Schools for the STCP.

<sup>40</sup> Sustainable Tree Crop Web site, <http://www.treecrops.org/links/trainingmaterial.asp> (accessed 20 July 2010).

<sup>41</sup> CABI is specialised in information services and in applied research (their website provides a complete database of abstracts in the field of agriculture and the environment, see <http://www.cabdirect2.org/web/about.html>).





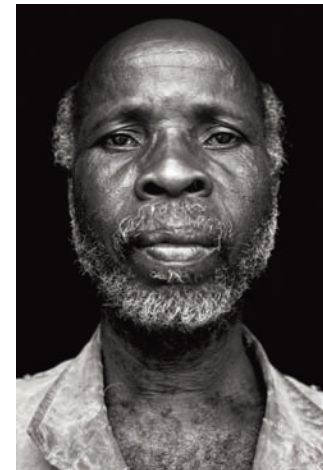
Alfred Kojo Dongoyo



Francis Otu Acquah



Georgin Ansaah



Konadio Kan Gah

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### Farmer Field Schools

Farmer Field Schools are intensive and expensive courses that quickly educate untrained farmers. At the moment, Mars is investing a lot in these courses so that farmers can improve and expand their production as soon as possible. This is an emergency measure and not viable in the long term.

Therefore, more sustainable ways of training farmers have to be set up, together with governments and research institutes. This could be done by linking up with existing structures such as extension services, but alternative ways also have to be explored.

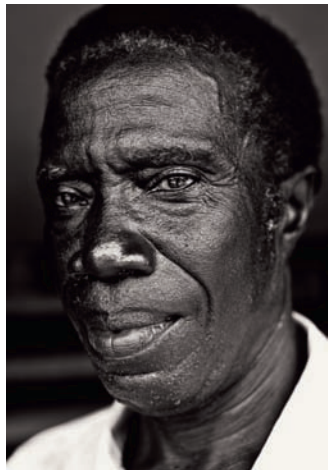
(P. van Grinsven of Mars, interview 2010)

FFS are generally perceived as an effective tool in training farmers, with two crucial drawbacks: FFS are expensive and there is little evidence that knowledge exchange between farmers takes place. Nevertheless, this farmer-based extension model is widely used by large industry players. They work together with local

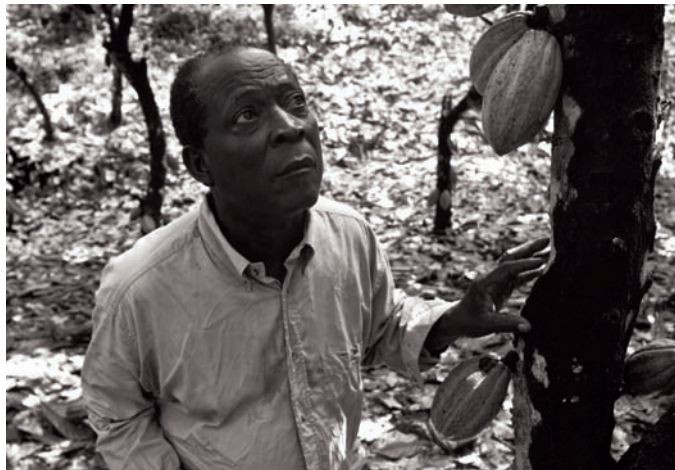




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knowledge institutes from producing countries as well as with governmental bodies. For example, in Ivory Coast the industry actors work together with *le Centre National de Recherche Agronomique* (CNRA) and *l'Agence Nationale d'Appui au Developpement Rural* (Anader). They do not only focus on the existing training curriculum but are also partners in developing and setting up new forms of farmer training.

**It is all about changing the farmers' behaviour. Therefore, you need training, just as you need inputs, financing, and market opportunities. Effective training, to get people to understand what they should do, has to be done at lowest possible costs in order to be able to reach the mainstream. There are different models with which we are experimenting; Farmer Field Schools is one of them. FFS is an expensive but effective manner to train some farmers, but the knowledge that some acquire does not sufficiently trickle down to others. How do you get adults to learn, that's the challenge. (D. de Vries of UTZ CERTIFIED, interview 2010)**

Alternative and additional forms of training are necessary, not only because it is necessary to develop cheaper alternatives but also because of the necessity to increase knowledge dissemination among farmers. Although farmers that receive the FFS training have to commit themselves to train three colleagues, in practice this knowledge dissemination is limited. There are a variety of potential explanations: the farmers have limited capacities as trainers; they do not share knowledge on purpose to retain an advantage over their neighbours; their neighbours could be physically located at a prohibitive distance; and other barriers.

To overcome this problem partners in the certification scheme are investing in an additional training model called Training of Trainers (ToT). Farmers that show enthusiasm and progress in acquiring new skills are offered the opportunity to become trainers themselves. They have to follow an additional course and if they pass they receive a certificate that allows them to train other farmers. These trainings are facilitated by the Dutch NGO Solidaridad, with other NGOs and companies, like Mars and Cargill, offering financing and consultants.

### **Theme 3 Farmer organisation**

Farmers could be organised in different ways, it could be on village level or an intermediary trader could be used for exchanging goods and services. What is crucial is control: we need to be able to check how things are organised. The underlying question is how to make sure that these kinds of structures become embedded in the community where we work.

(D. de Vries of UTZ CERTIFIED, interview 2010)

In order for farmers to receive training they need to be organised. Moreover, farmer organisations are the primary entities that receive certifications. Farmer organisations are able to distribute goods (plant material, fertilizer) and services (training, credit) among their members and act as farmer representatives. Thus organisations have the potential to provide not only economic benefits but also empower farmers. Organising farmers offers advantages also to industry, by providing support for the certification and auditing process, and by providing a distribution mechanism for inputs, training, and finance.

**You could also build up farmer organisations around entrepreneurs. You start looking among local people for individuals that can prove business affinity and have them set up an organisation with a commercial drive. Such persons can count on multinationals for support and get the opportunity to set things up and expand them rapidly.**  
(J. Eekma, IDH, 2010)

There are many different types of farmer organisations. There are small groups of farmers that organise on an informal basis to collectively transport cocoa beans. On the other hand, there are huge national associations, which even have the power to influence national policies. One of the most recognised forms of farmer organisation is the cooperative. In many developing countries cooperatives were created by governments and as a consequence were politicised. Because of past negative experiences, many farmers are suspicious of the cooperative movement and choose not to organise in a formal way.

This lack of trust and the additional incentives that are required make it very difficult to organise a group of farmers in practice. This effort is further complicated by the fact that organisations that are founded by external actors tend to set overly ambitious goals or scale up too rapidly. Sometimes the new organisation even conflicts with the existing structures already in place. Also, farmers do not necessarily see the benefits of becoming organised or have no trust. To successfully organise farmers requires providing them with clear incentives. There are also organisations that secure a cooperative status for financial reasons; they primarily use their front as a legal entity and thus do not represent farmer interests.

It is apparent that organising an increasing number of farmers is a serious challenge. The strategy of the actors involved in UTZ CERTIFIED was to start with improving and expanding existing cooperatives. In Ivory Coast, where UTZ started piloting the certification scheme, it is expected that around 20 % of the farmers can be easily included in existing organisations. These farmers live close to big towns and enjoy the benefit of good infrastructure. Improving the quality of existing farmer organisations – in order to shape them into a trustworthy business partner – is challenging because they often have low management and

negotiation capacity and have little capital to invest in improving their capacities. To set up new cooperatives or other types of farmer organisation is extremely difficult and it is a serious challenge to reach and organise the overall majority of farmers.

**There is a need to identify strong existing organisations, training materials to train weak existing organisations, and tools to work with producers who do not want to organise.**  
(E. Mangnus, Royal Tropical Institute, 2010)

Mars and Cargill invest in organising farmers within the framework of UTZ CERTIFIED. UTZ sets criteria for farmer organisation in its code of conduct, for instance related to the implementation of good practices, such as training, internal inspection and traceability, and to the correct distribution of the certification premium. Solidaridad is the partner that facilitates the organising effort and international organisations like TechnoServe are also involved. There are no clear-cut answers on how farmers should be organised and thus the actors involved in the cocoa program and their international partners mainly rely on what works best in practice. The sector is currently experimenting with building up farmer organisations around promising entrepreneurs, but there are also other examples. In a project with Cargill, Solidaridad experimented with appointing intermediary traders as certificate holders and allowing them to organise and train farmers. However, some traders proved to be very unreliable. Solidaridad had to adapt its tactics and is currently looking for the 'enlightened traders' in the community: individuals who are good businessmen and have sincere intentions.

Apart from UTZ CERTIFIED members, others also are involved in promoting sustainable sourcing practices and thus also in training and farmer organisations. For example, in Ghana where the input provider Wienco (originally a Dutch company) has been offering organised farmer groups an all-in-one package of financing, training, and inputs. The farmers have to pay everything back according to a specific credit scheme. Sitos, a large warehouse company in the Netherlands, also has been investing in improving the quantity and quality of cocoa production in producing countries. Sitos has been involved in financing cocoa cooperatives in Ivory Coast, which produce cocoa for the European Fairtrade market.





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ADM responded to the difficulty of organising farmers with their Socially & Environmentally Responsible Agricultural Practices (SERAP) Program (2005), which rewards select West African cooperatives committed to implementing sustainable practices. By providing incentives at the cooperative level – at least half of which go directly to individual farmers – SERAP seeks to foster collaboration among growers as they work to address social and environmental issues. The program is based upon specific, transparent criteria in such areas as:

- Cooperative Management
- Product Quality Management
- Social Environment Management
- Physical Environment Management

During the 2009-2010 growing year, the number of participating co-ops in Ivory Coast grew to more than 40, representing more than 15,000 farmers. Similar programs based on the same values and principles are being developed in other origin countries.<sup>42</sup>

**Both for giving training, supplying the right planting material and extending credit, it is important that farmers are organised. Organising farmers is difficult in the African context, where there is no history of cooperation-building. There is a lot of cooperative knowledge in the Netherlands; the question is how this can be of use in Africa.**

**(H. Poelma, Cargill, 2010)**

The Dutch have substantial expertise in organising farmers (e.g., The Rabobank). Also a number of Dutch knowledge institutes have experience with strengthening farmer organisations (e.g., Agriterro, CIDIN, the Royal Tropical Institute, and Wageningen University). A recent bulletin of the Royal Tropical Institute gives an overview of different types of farmer organisations and how these farmer groups connect with businesses buying their produce.<sup>43</sup> The knowledge on organising farmers that is embedded within Dutch knowledge institutes is less visible because the research that takes place at these institutes is not focused only on cocoa and is more thematic and institutional.

<sup>42</sup> <http://www.adm.com/en-US/responsibility/Documents/ADM-Cocoa-Sustainability-Brochure.pdf>

<sup>43</sup> Mangnus, E. and Steenhuijsen Piters, B. de (2010) Dealing with small-scale producers. KIT Publishers: Amsterdam.

### Recent publications on technical issues

Zuidema, P.A. 2003. Model description and technical program manual of CASE2 version 2.2: a physiological production model for cacao. <http://library.wur.nl/way/bestanden/clc/1685107.pdf>.

(This report is one of the results of a cocoa research and modelling programme conducted by the Wageningen University on behalf of the Dutch Cocoa Association [NCV]. It provides a detailed description of the CASE2 [Cacao Simulation Engine for water-limited production] model and a technical manual of the CASE2 program, written in the Fortran language. CASE2 is a physiological model for cacao growth and yield. For the the CASE2 model, there is also a user's manual [Zuidema & Leffelaar 2002b].)

Chaidamsari, T. 2005. Biotechnology for cocoa pod borer resistance in cocoa. PhD diss., Wageningen University, Plant Research International. <http://library.wur.nl/wda/dissertations/dis3786.pdf>.

(This thesis describes the first steps in applying biotechnological approach to pest management of the cocoa pod borer (CPB) through the production of transgenic, CPB-resistant cocoa trees; in their pod wall the bacteria *Bacillus thuringiensis* produce an anti-insect toxin.)

### Other themes and some reflections

Certification, training, and efforts geared at organising farmers are key approaches for mitigating the risks for supplier failure. But they are not the only issues, and they do not provide the ultimate solution. For example, without having access to the adequate inputs (plant material, fertilizer, and pesticides) farmers will not be able to apply what they have learned. Adequate inputs have to be available and accessible at affordable prices. Only the combination of training and access to inputs will lead to improved yields and in turn increased farmer income. Clearly this also entails costs. At the moment the industry is shouldering a large part of these costs, but in the long run farmers will by themselves have to secure bank loans for purchasing inputs. Financing is another key theme that is important for safeguarding the supply of produce.

There are different financing options that can be explored, of which some are already in place, for example, the company Wienco makes it possible to purchase

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inputs 'inputs on credit' in Ghana. It is worthwhile to look at scaling up the already existing successful initiatives and exploring other suitable (financial) institutions that can provide loans. This effort would face a number of barriers. Because cocoa producing countries (especially in West Africa) are considered as high-risk and low yield areas, financial institutions are generally not interested in investing in agriculture and providing loans to farmers. Generally speaking, agriculture is risky business; farmers depend on a lot of factors for having a successful harvest: the timing of preparing plots of land, sowing, applying inputs and harvesting are crucial, as are climate and weather. But the problem is not only related to the creditworthiness of farmers, it also has to do with the existing lack of trust that farmers have in local banks. A recent book of the Royal Tropical Institute on Value Chain Finance gives a number of practical examples on how farmers that are embedded in a value chain can get access to finance.<sup>44</sup>

Even if the cocoa farmer's access to financing could be improved, there are no guarantees that the farmers will actually invest this additional income in their own farms and communities. Will they spend their money on fertilizer, irrigation systems, or will they pay off their other debts, buy a television set or spend money on entertainment? Can investments in their local community be stimulated? How can this be done? What partnerships are needed? What are the drawbacks of such initiatives?

<sup>44</sup> KIT and IIRR (2010) Value Chain Finance. Beyond microfinance for rural entrepreneurs. Royal tropical Institute, Amsterdam; and International Institute of Rural Reconstruction, Nairobi. Downloadable at <http://www.kit.nl/smartsite.shtml?id=SINGLEPUBLICATION&ItemID=2740>.

Another issue that requires some reflection is the issue of inclusion vs. exclusion. Although the aim is to certify, train, and assist as many farmers as possible, it is



inevitable that in the end some farmers will receive training as well as financed planting materials and fertilizer, whereas other will not. It is essential to examine the principle that will guide this decision making: Which should be preferred, the least developed areas or places where a number of conditions are met (e.g., adequate transport and training infrastructure)? Ideally, vibrant local entrepreneurs would be involved, but can they be located? What are the future expectations that such decisions evoke?

The issue of inclusion and exclusion is also relevant for looking at the extent to which suppliers of cocoa are involved in setting standards, and the extent to which 'sustainability' is a shared agenda. Max Havelaar and TCC responded to this concern by involving farmers in multistakeholders agreements, which help them organise and also strengthen their joint voice.

### **Final observations**

Supplier failure is one of the main drivers for industry to invest in sustainable sourcing of cocoa. Due to increased risks that cocoa farmers in the future might not be able to produce the required quantity and quality of cocoa, it becomes increasingly important to make on-farm investments. To assure that increased quantities of cocoa are available on the market, cocoa farming has to be lucrative for farmers. The main themes in this context are certification schemes, training farmers, and organising farmers. The questions posed by the Dutch actors in the cocoa chain vary from how the costs of training schemes can be lowered to how successful initiatives can be scaled up.

### **A culture of learning by doing**

It is remarkable that industry and some other players while seeking to overcome the risks of supplier failure primarily act on the basis of 'learning by doing'. It would be possible to apply lessons learned from previously applied research, but actors tend to look for their own solutions. Currently, there is a trend towards more exchange of experiences and different companies work together in certification schemes and training programmes. There is also a trend of an increased use of inter-disciplinary and applied learning trajectories. Bringing the knowledge that is generated through these processes to the surface requires a process of matchmaking between scientists and industry, and also between the research community and the farmers locally in source countries.



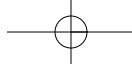












## Part 2 Dutch Innovation in The Amsterdam Ports Region

### Introduction

A wide range of activities is clustered in the Amsterdam Ports Region; yearly a staggering 600,000 tonnes of cocoa passes through the Amsterdam harbour, which equals about one fifth of world production. The cocoa mainly comes from West African producing countries. Before the cocoa beans and cocoa products are ready for (further) processing, they are handled by a number of companies involved in transport, loading, and storing of cocoa, as well as in certification, quality control, and logistical services. More than half of the produce that enters the country is being processed in the Amsterdam Ports Region, by companies like ADM, Cargill, and ECOM Agroindustrial Corporation Ltd. In turn, they supply a wide range of chocolate manufacturers, of which only a few are located in the Netherlands. The next box 4.5 lists the main companies operating in the Amsterdam Port Region.

#### Box 4.5 Key players in Amsterdam Ports Region

*Port of Amsterdam (Gemeentelijk Havenbedrijf Amsterdam)*, a public enterprise under the Municipality of Amsterdam, is charged with managing, running, and developing the port. Port of Amsterdam plays a foremost regulatory role by controlling traffic, enforcing laws and regulations, and administering environmental inspection. In order to remain innovative, Port of Amsterdam continually invests in improving its facilities, for example, by strengthening networks, development and innovation connected to real estate and infrastructure. The main aim is to stimulate economic activity and employment in the entire Amsterdam Ports Region. Port of Amsterdam assists port users and protects the collective interest of the port. Port of Amsterdam runs under so-called chain management, and provides support to specific key sectors and markets. To apply chain management, Port of Amsterdam concentrates on a number of specific sectors, such as food, distribution and value added logistic activities, and agricultural bulk. The Amsterdam Ports Region has a long history in the food sector. The location, infrastructure, facilities and practical experience in the region have proved to be very attractive to the cocoa sector, making Amsterdam the world's largest cocoa port.<sup>45</sup>

<sup>45</sup> <http://www.amsterdamports.nl>  
(access date 15 August 2010)



### *Shipping companies*

Shipping companies such as Delmas/CMA CGM, Grimaldi Lines, and NileDutch transport cocoa to Amsterdam from cocoa producing countries primarily in West Africa. These ships transport cocoa beans as 'mega bulk', in containers as bulk, or in bags. In addition to beans, these ships also transport semi-finished products like cocoa liquor, butter, and cake. Once these products arrive in the port, they are stored or trans-shipped either to the cocoa producing industry in the area or to processors in other European countries. Ter Haak Group and Maja Stuadoors Amsterdam BV belong to the group of trans-shipment companies specialised in loading and off-loading ships.

### *Warehousing companies*

The cocoa is stored by one of the six warehousing companies in the area, which are CWT Sitos, C. Steinweg-Handelveem BV, Unicontrol Commodity BV, Unieveem, Vollers Holland BV, and H.D. Cotterell BV. These companies store the cocoa for the industry or for expected sale on the cocoa market and check the quality of the cocoa. The warehousing companies work together within the European Warehouse keepers Federation (EWF), with the objectives to improve their logistic services and to exchange knowledge. EWF has its office in Amsterdam.

### *Processing companies*

Also a number of companies involved in cocoa processing are located in this region: Cargill, Gerkens Cacao, ADM, and ECOM Dutch cocoa. Continental Chocolates is a chocolate manufacturer that also operates in this port.

The Port of Amsterdam's policy goal is to strike a balance between economic benefits and sustainability. It seeks to meet this goal through a multifaceted approach – funding, regulation, and coordination. Also external funding, EU regulation and changes in consumer demand contribute to establishing this balance and stimulate innovation. There have been two important subsidies that stimulated sustainable practices in the Port of Amsterdam. The first is the sustainable cocoa subsidy that became available through the Buffer Stock Fund (see Chapter 3). The second is the Sustainability and Innovation Fund of the Port of Amsterdam (see Box 4.6).



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#### Box 4.6 The Sustainability and Innovation Fund

Sustainability is high on Port of Amsterdam's agenda. The Municipality of Amsterdam has the ambition to develop its harbour in the coming ten years into one of the most sustainable ports of Europe. Sustainable entrepreneurship is an important precondition for development of the port. In order to realise this goal, in 2009 it created the Sustainability and Innovation Fund (*Duurzaamheid - en Innovatiefonds Haven Amsterdam - DIHA*). The fund disperses a total of 2 million Euros for eligible projects, for example, projects that contribute to more efficient use of space, waste management and efficient logistics.<sup>46</sup>

This section of the publication will look beyond sustainable sourcing practices and will focus on sustainable cocoa practices higher up in the value chain (processing, manufacturing, transport, warehousing, packaging, etc.). As previously highlighted, the Dutch play a key role in processing, transport, and distribution of cocoa. This clustering of activities around the Port of Amsterdam gives the Netherlands a competitive advantage over other countries. The following section of the publication will examine the way in which this economic strength is translated into knowledge development on sustainability issues. This section is structured according to two sub-themes, which emerged as priorities during interviews with various companies in the harbour: (1) efficient use of space, energy, and transport; and (2) health, food safety, and consumption. The first theme mainly touches upon innovations that service both environmental and economic purposes. The second theme focuses more on exploring business opportunities and damage control.

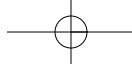
#### Theme 1 Efficient use of space, energy, and transport

Cocoa processors and chocolate manufacturers also work on improving sustainable production processes in the Netherlands. Most initiatives are in the environmental sphere and primarily focus on issues such as efficient energy use and waste reduction. In some cases, companies also have projects on renewable energy sources and carbon sequestration. Also the Municipality of Amsterdam has a strong environmental focus. Cocoa transporters and warehouses are mainly interested in efficient use of space and economic means of transport. Let us look take a closer look at how sustainability is embedded in the policy of companies working in the Amsterdam Ports Region.

<sup>46</sup> Port of Amsterdam Website, <http://www.portofamsterdam.nl/DIHA> (accessed 15 August 2010).







Taking care of the environment in the port area and the influence of the Port on its surroundings is an important aspect of its policy. An example is the careful and effective management of the available space. The harbour has limited amount of space, which may even shrink in the future due to city planning developments. Yet Port of Amsterdam has the ambition to double the tonnage that is being stored and transhipped from 65 million tonnes in 2006 to 120 million tonnes in 2020. To change the way companies utilise space is a complex process with many conditions that have to be met. This creates an enormous challenge for the Port – to increase space efficiency and to devise win-win opportunities, together with all key parties involved in the harbour. There are some available techniques, such as mobile walls for storing cocoa beans in bulk and computer programs for efficiently storing semi-finished cocoa products.

**The desire of companies to transport as cheaply and efficiently as possible goes hand-in-hand with environmental gains. By using cheaper ways of transport (shipment) and continuously searching for the most efficient means of transport (for example more economical engines) both financial costs and environmental costs are being reduced. This is not only the case for transport, but for all kinds of costs in the production process where energy can be saved. (M. Versteeg, Sitos, 2010).**

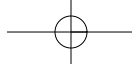
With respect to logistics and transport the aim is to increase efficiency. Some of the implemented innovations – bulk transport and bulk storage – are Dutch inventions currently widely used in the cocoa sector.<sup>47</sup> The introduction of low weight trucks (by a Dutch company: Inverness Transport)<sup>48</sup> is another innovation that reduces the number of trucks needed. The desire of companies to transport cocoa as cheaply and efficiently as possible often also serves environmental objectives and can result in a comparative advantage. This recognition of a win-win situation opened up possibilities for private companies to receive public funding. For example, in 2009 the warehouse company C. Steinweg-Handelsveem BV was granted a subsidy from the Port's Sustainability and Innovation Fund for an installation of a specially adapted loading station to encourage transport by train. Another example is the Ter Haak Group, which received a subsidy from the same fund to revitalise an almost redundant railroad connection. In addition to

<sup>47</sup> Bulk transport, besides its economic benefits, also has some negative effects, such as the loss of jobs and the shortening of the traceability-line of the initial smaller loads leaving the farm gates (the cocoa cannot be traced down beyond the moment of shipment).

<sup>48</sup> <http://www.invernesstransport.nl/> (accessed 15 August 2010).



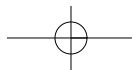
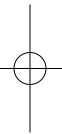


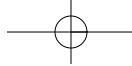


rail transport, the use of barges for domestic transport (*binnenvaart*) is being promoted as another environmentally friendly option.

The overall challenge is to make more efficient and effective use of obsolete or underused water and rail infrastructure. In practice this means that waiting areas for barges are being constructed closer to the terminals, so that they do not have to wait for their spot somewhere outside the port. Maja Stuwadores Amsterdam BV, a shipping company, received a subsidy in 2009 from the Port's Sustainability and Innovation Fund for an energy-saving innovation that reduced use of diesel fuel in transshipment cranes. While operating, the cranes generate energy that can be captured by using flywheels or by storing it in lithium batteries, which recaptures about half of the expended energy. This energy can be used for craning capacity, thus reducing the required amounts of diesel fuel and reducing pressure on the motors.

Looking at the generation of knowledge which contributes to the efficient use of space, energy, and transport, a few observations can be made. First, funding is an important trigger for innovation but is not a prerequisite: a shift in logistic services can generate environmental as well as economic gains. An example is CWT Sitos, this company participates in the construction of a barge terminal for tranship of goods to Antwerp, Rotterdam, and the Dutch hinterland. A second observation is that Port of Amsterdam plays an important role acting as broker between all the involved parties – such as harbour companies and railway partners – bringing diverse interests together. Also private networks play a role, for example, in the European Warehousekeepers Federation the members work together to improve their logistic services and to exchange knowledge on warehousing conditions and mechanisation.





### Recent publications on efficient use of space, energy and transport

Agentschap NL. 2010. Keten efficiency-projecten in de Industrie [Chain efficiency projects in the industry]. Economische Zaken, Den Haag.  
[www.nlenergieenklimaat.nl/.../factsheet\\_Industrie\\_O9\\_tcm24-340401.pdf](http://www.nlenergieenklimaat.nl/.../factsheet_Industrie_O9_tcm24-340401.pdf).

(A fact sheet that provides examples on chain efficiency project in the industry.)

Factsheet Duurzaamheid. 2009. Port of Amsterdam. [www.ivv.amsterdam.nl/.../factsheet\\_duurzaam\\_2009.pdf?iprox](http://www.ivv.amsterdam.nl/.../factsheet_duurzaam_2009.pdf?iprox).

Lammers, J. 2004. Transport besparing, mooi meegenomen, Goede buur blijkt geld waard, clusters bieden kansen [Transport savings, a good bargain, it pays to be a good neighbour, clusters offer opportunities]. [www.joslammers.nl/docs/tb-reportages.pdf](http://www.joslammers.nl/docs/tb-reportages.pdf).

(It explains how to reduce on transport costs, by using packaging, different materials, digital information, or company clusters. Besides theory four success stories are presented.)

Lammers, B., Rijswijk, H. and Sterre, P. 2010. Logistiek tussen de bedrijven door [Logistics between companies]. TNO, Netherlands.

(This practical book explains how logistics chains between companies can be improved. In addition to providing a theoretical background, it also provides lessons, tools, and techniques).

## Theme 2 Health, food safety, and consumption

The transport of cocoa beans from tropical countries to the Netherlands also brings some unwanted visitors. Insects, such as the Warehouse or Cocoa Moth, lay their eggs over cocoa beans or on jute bags. The larvae are mobile and start to eat their way into any edible matter, such as cocoa beans and chocolate. The Cocoa Moth, was exterminated until recently by applying methyl bromide, a toxic gas that has been prohibited for some years now. The search for feasible safe alternatives continues to this day.











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In places where large quantities of cocoa are stored, such as the warehouses in the Port of Amsterdam, the abundance of insects attracts other sorts of vermin (e.g., rats and mice) who damage beans and bags. Some companies have tried to combat the vermin on their own. For example, C. Steinweg-Handelsveem BV keeps their warehouses cooled to a constant temperature of 10°C so that larvae remain in a state of hibernation. Another example is CWT Sitos' use of an air-locked CO<sub>2</sub> room, which can be pumped full of CO<sub>2</sub> thus killing every living organism in the room. Both systems are effective but expensive (in the case of Sitos the load of cocoa has to stay inside the room for two weeks).



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Faced by the serious challenge of combating vermin at cocoa warehouses, some companies decided to cooperate. For example, EWF members exchange knowledge on alternative (environmentally friendly) methods for combating pests and diseases. The Committee Cocoa Warehouses of ORAM (*Ondernemersvereniging Regio Amsterdam*) (involving six warehouses), together with TNO and other parties, is also exploring new ways of eradicating vermin at cocoa storages (also in light of tightening EU regulations). This has to contribute to the improvement of the quality of cocoa beans in storage and decrease the amount of pesticides being used. ORAM and TNO received a subsidy from the Buffer Stock Fund for this effort. The approved project was divided into a brainstorm and a pilot phase. Within the pilot phase the warehouse directors, ORAM staff, TNO researchers, and some external experts were brought together to think 'outside the box' and generate as many ideas as possible. Six of these ideas were eventually executed

in pilot projects, in order to test their practical applicability and associated costs. The pilot projects included gassing, packaging, pheromone traps, gamma radiation, and electric sheets. Even though the results of some pilot projects were disappointing (they yielded no effect or involved large risks), the follow-up of several pilot project demonstrated that some of the proposed techniques are promising (see table 4.1 next page).

**Table 4.1 The six pilot projects executed by TNO**

Pilot project	TNO expertise	External expertise	Applicability
<b>Gassing</b>	• Safety Expert	• Dow	• It can be applied, but depends on permit
<b>Packaging</b>	• Chemical Analyst		• Possibility for application in origin countries (needs some adaptation)
<b>Parasite wasps</b>		• Koppert	• Risks involved
<b>Pheromone traps</b>	• Feromone Specialist	• Entomologist (University of Amsterdam)	• Not possible on a large scale
<b>Gamma radiation</b>		• Isotron	• Very expensive
<b>Electric sheets</b>			• Not successful

The 'gassing pilot', seeking to develop an alternative to methyl bromide (sulfuryl fluoride), used a gas developed by the Dow Chemical Company, which proved successful in test sprayings. Nevertheless, gassing is a complicated process surrounded by legal restrictions: Dow is still in the process of getting a permit for sulfuryl fluoride in the Netherlands. Another pilot investigated the packaging material in which the cocoa beans arrived, in response to the observation that different loads contained different amounts of insects. TNO experts researched the different types of bags (including jute bags) and their chemical compounds, such as oil. There was no identifiable difference between different materials and the presence of insects in the Netherlands. The introduction of parasite wasps as a means of natural control of insect populations was explored in another pilot, with the Dutch company Koppert Biological Systems<sup>49</sup> supplying the know-how and the wasps. However, the pilot's findings revealed a number

<sup>49</sup> Koppert is the international market leader in the field of biological crop protection and natural pollination. Koppert's mission is to become the most preferred partner in developing and marketing pollination systems and integrated pest management for protected and high-value crops, by being a reliable provider of innovative, effective and top-quality solutions.

[http://www.grow2gether.eu/koppertbiologicalsystems\\_en.html](http://www.grow2gether.eu/koppertbiologicalsystems_en.html) (accessed 20 August 2010).



of risks: the population of insects is season sensitive and the application of wasps on a large scale has not yet been tested (so far the tests have been conducted in separate and closed spaces). Another means of natural control is the use of pheromone traps, which lure insects with the help of pheromones. This method turned out to be very suitable for monitoring specific insect populations, but not for eradicating them on a large scale. Together with Isotron,<sup>50</sup> a European sterilisation service provider with a local branch in Etten-Leur, TNO explored the possibility of eradicating insects by using gamma radiation. Although this is an effective method, it would be very expensive to create a radiation facility in the harbour. Moreover, it is an open question whether clients and consumers would accept radiation treated cocoa beans. The final pilot project, in which electric sheets were used to electrocute insects, was halted because of practical problems and legal issues.

The different project partners played different roles. The TNO wrote the project proposal for the subsidy, facilitated the project (conducted the study), supplied expertise, and wrote the end report. However, the initiative to apply one (or more) of these options in practice has to come from the warehouses and the other project partners, such as the chemical company Dow. Other knowledge partners included the service providers Koppert and Isotron, which delivered part of the technical know-how for the pilots.

In addition to environmentally friendly ways of combating vermin, the industry in the Netherlands is involved in a number of other health and safety related issues. For example obesity is an increasing problem in our society. Due to its large sugar content, chocolate is seen as a fattening product. On the other hand, cocoa has high level of flavonoids, which are thought to have beneficial effects on the body's cardiovascular system. The Dutch Association for the Bakery and Sweets Industry received a subsidy from the Buffer Stock Fund to study all available literature about the possible health effects of chocolate consumption.

Other companies address, sometimes through joint collaborations, other topics such as working conditions and safety. For example, ORAM is working to reduce the weight that workers lift per load. According to EU-standards, the permitted maximum is 22,5 kilos per person, while a standard load of cocoa beans is between 60 and 70 kg. As it is not feasible for three or four persons to carry a

<sup>50</sup> Isotron Web site, <http://isotron.kunststofplaza.nl/5>  
(accessed 20 August 2010).

single cocoa bag, there is a need to come up with an alternative. Some other initiatives seek to respond to the high risks of fires in industrial dryers and the fires that can occur in cocoa storage facilities. Food research scientists from NIZO (a Dutch independent contract research company) developed knowledge useful for application in drying cocoa (and other commodities). It has helped several food producing companies to determine the critical process parameters which prevent smouldering. This was necessary because the combination of heat, air, and the fine partition of the powder introduces a serious risk in the processing of products such as cocoa: about 80% of the recorded fires in industrial dryers are the result of spontaneous combustion of powders (smouldering). NIZO also developed an early detection system based on one of the reaction products of smouldering powders.

Sitos responded to anticipated provincial and municipal regulation on reducing fire hazards through shed partitioning by developing an air-tight storage where it is possible to quench fires by using CO<sub>2</sub>. Sitos set up a cocoa shed and employed the system of the Dutch company Ansul Fire Conservancy (*Brand-beveiliging*), all of which required substantial investment by Sitos. However, because it was not put forward as government priority, other companies were not pushed to make similar investments.

Implementing sustainable solutions is also connected to meeting consumer demand and needs. Barry Callebaut worked together with NIZO on 'stability of cocoa powders in aqueous environments' (more commonly known as 'hot chocolate'). They also received a subsidy from the same Buffer Stock Fund. Cargill, ADM and Dutch Cocoa participated in the advisory committee for the project. Its results demonstrated that the dissolution time, and temperature are key-components that determine the processability of cocoa powders towards for example instant hot chocolate.<sup>51</sup>

### Reflections

The strong position of the Port of Amsterdam as a distribution centre of cocoa and its innovative climate illustrate that the Dutch knowledge infrastructure on cocoa is still very much alive and addresses the needs of the sector. There are different knowledge partners: competitors, input suppliers, companies that deliver goods, and knowledge institutes (such as the TNO and NIZO). The

<sup>51</sup> <http://www.nizo.com/about-nizo/nizo-in-short/>  
(accessed 20 August 2010).

government, through subsidies and regulation, plays a major role in knowledge development and innovation. Strict regulation is not always appreciated by companies working in the harbour, especially when it does not correspond with European regulation. Not surprisingly, subsidies are welcomed, although their short-term programming is regarded as a weakness, as there is no follow-up to initiated projects.

**Within the Port there is no lack of knowledge. There is a strong cluster of cocoa related industries. The advantage of this is that everybody knows each other and communication lines are short. There is a real cocoa culture in the Netherlands, which has grown throughout its history. Moreover, the Dutch mentality of being independent, critical, and socially responsible puts the right pressure that is needed for change. (J. Hallworth, Port of Amsterdam, interview, 2010)**

The cocoa cluster in the region surrounding the Port of Amsterdam is known for its innovation promoting climate, where companies both compete and cooperate. The major drive for innovation is efficiency and economic gains, but there are other stimulating factors. The Port of Amsterdam is actively positioning itself internationally as a sustainable port, and the companies in the port have to continue expending considerable efforts (both individual and collective) in order to realise this goal.

In terms of a sustainable cocoa, it is worthwhile to highlight a number of innovations which demonstrate that knowledge exchange and knowledge generation is an important feature of the cluster. Knowledge development on sustainable cocoa in the cluster is by and large based on 'learning by doing', and being a pioneer involves addressing and overcoming practical challenges. For example, bulk storage of beans, which is highly efficient in terms of use of space, has a negative side-effect: the beans dry during storage and consequently weigh less upon delivery than when they arrived in the warehouses (which needs knowledge of the natural processes in cocoa in order to avoid raising issues of business trust and integrity) (J. Steijn, ORAM, interview 2010).

The main drive for innovation in logistics and the processing of cocoa is the search for efficiency. The companies know their core business best and are always looking for ways to improve their performance by making it more efficient, meeting customer demands, satisfying rules/regulations/social pressure, and other actions. When they use external knowledge, it is mostly through confidential contract research or through their direct suppliers. Besides TNO, WUR is a research partner in the domain of food technology. But, learning also happens collectively and in a more public arena. For example, warehouse keepers cooperate through the European Warehouse keepers Federation (EWF). Another example is the active role played by the municipality and industry players in multi-stakeholder meetings and platforms on sustainable development in the cocoa sector.

Going back to the vision presented by James Hallworth at the beginning of this publication, it is apparent that almost all features of a sustainable port are to some extent met in the Port of Amsterdam. But, there are still considerable challenges that will test the commitment of companies operating in the Port to achieving sustainability in the sector. Some of these goals yet to be met include using the space in the harbour more efficiently, increasing the scale of vermin eradication without using environmentally harmful substances, and lowering sea harbour tariffs for certified products. The rationale behind the last option is that certification is a cost-intensive process, so every cost reduction contributes to a good cause, even though sea harbour tariffs are only a minute portion of the end product. The challenge is to devise criteria that are easy to apply and do not create unnecessary complexity.



## Part 3 Remarkable sustainability initiatives

To adequately cover the breadth and variety of visions on sustainability in the Netherlands, it is necessary to expand the scope of this study to some remarkable, smaller-scale initiatives. These initiatives are remarkable because they move beyond securing supply and help to push the sustainability debate further. They take place in different segments of the chain and are not primarily driven by risks or regulation; instead they are the result of the search for alternative and smart ways of achieving sustainability in the cocoa chain. This section will also discuss how local circumstances can either stimulate or hinder these initiatives. It will not cover all of the important sustainability cocoa initiatives in the Netherlands, but it will provide a good overview of key projects. A distinction will be made between the different initiatives of SMEs, conventional players, and other actors actively involved in the production of organic cocoa.

### 1 SMEs' involvement in sustainability initiatives

Although, Dutch SMEs which manufacture chocolate products (e.g., bonbons, brownies, ice-cream, exclusive chocolate bars, etc.) do bear the responsibility of achieving sustainability in the cocoa chain, only a few SMEs have actively taken it on. However, the ones that do participate show a determined commitment and drive to manufacture the best product. In this section, three important SME initiatives will be highlighted: (1) Original Beans, (2) Van Velze, and (3) Tony's Chocolonely.

#### The restoring economy of Original Beans

Original Beans was founded on the idea of building a restoring economy on the basis of consumption. Because we define sustainability as leaving a situation as you have found it, it is not sufficient to produce as responsibly as possible because there is always damage inflicted. Therefore, we must restore the damage we do in the entire chain.  
(R. Nickels, Original Beans, 2010)

Original Beans is a small chocolate company, founded in 2008 on the idea that 'what we consume we must replenish'. Although this seems like a simple idea,



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implementing it is a big challenge. Original Beans begins by using a Life-Cycle Assessment (LCA) to identify the footprint of the entire chain from production until the package is discarded in the rubbish bin (see box 4.7). This macro-analysis is used to analyse the environmental damage in terms of energy, water, and waste.

#### **Box 4.7 A Life-Cycle Assessment (LCA)**

A LCA quantifies and compares the impacts of products. Generally LCA is seen as complex and time-consuming, but it is a scalable concept: it can be adapted according to the desired amount of details and precision. There are a number of software programmes, readily available on the Internet, that can be used to conduct a LCA. In the Netherlands, a number of institutes support SMEs in conducting such macro-analyses. For example, the National Institute for Public Health and the Environment has set up a LCA centre of expertise, which is linked to a network of researchers who can provide tailor-made advice.<sup>52</sup> The Interfaculty Environmental Science Department (IVAM) is another agency that supports SMEs in implementing a LCA. IVAM is a research and consultancy agency in the field of sustainability, established by the Universiteit van Amsterdam and the 'Chemiewinkel Amsterdam'. Since 1993, IVAM has formed an independent unit within UvA Holding BV.<sup>53</sup>

By employing the LCA method, Original Beans learned that the main environmental damage in the cocoa chain take place in three different phases: production, processing, and packaging. Cocoa production in origin countries goes hand-in-hand with land conversion: the resulting deforestation is a major contributor to CO<sub>2</sub> emissions. Other pollutants are the pesticides and artificial fertilizer used during the production phase. As a carbon intensive process, also cocoa processing entails environmental costs. The packaging material used for wrapping chocolate is made from fossil fuels and is not biodegradable; the glue and ink contain the toxic substances toluene and cadmium respectively. Currently, Original Beans is finalising the development process of a fully biodegradable foil for its chocolate bars.

The LCA does provide insight in environmental issues but it does not directly address economic concerns. For viable economic options fundamental choices have to be made on where you get your cocoa from. Original Beans' policy is to exclusively source from forest systems, while respecting the diversity of trees and making sure that cocoa production in the forest does not adversely affect the carrying capacity of the forest. This is achieved primarily by replanting

<sup>52</sup> <http://www.rivm.nl/milieuportaal/dossier/lca/> (accessed 31 August 2010).

<sup>53</sup> <http://www.ivam.uva.nl/index.php?id=74> (accessed 31 August 2010).

trees without using pesticides or artificial fertilizers. For every bar of chocolate sold, local community farmers plant a tree that will support the forest – not just the rare cacao trees, but various species of trees that are necessary for maintaining a healthy biodiversity. Eventually the farmer is paid a fair price both for producing cocoa and for his work in these environmental services. New cocoa trees generate immediate revenue for the farmers, and the some of the other trees (e.g., teak) are an investment that will yield income in the future.<sup>54</sup>

In the production phase, Original Beans works directly with cocoa farmers and is actively involved in organising them. Currently, Original Beans is exploring the possibility of sourcing Ecuadorian cocoa, produced by indigenous people living in the rain forest, which requires establishing a knowledge infrastructure. In this example, Original Beans works together with the Progreso fund and program, a leading network for hands-on business development assistance to smallholder farmers. In Congo, Original Beans buys EKO certified cocoa from a local cocoa trader that works together with the Dutch Louis Bolk Institute (Agro Eco). Around 10,000 farmers are involved in this business. In Congo, Original Beans is supported by the *Deutsche Gesellschaft für Technische Zusammenarbeit* (GTZ), a federally owned organisation in Germany and the Dutch Foundation DOEN. The goal is to stimulate larger companies to source high quality cocoa from Congo.

In tackling the technical issues involved in processing and packaging, Original Beans works together with different partners, both Dutch and international. These partners are mainly companies that supply packaging or are involved in the processing of the cocoa used by Original Beans. These are traditional companies that need to be additionally stimulated to change their customary business practices. As a client, Original Beans provides this incentive. According to R. Nickels, their suppliers of packaging and cocoa products have become convinced about the potential of improving their business through more environmentally friendly practices, and are exploring the use of alternative sources of energy, for example, using energy from windmills or water turbines by a processor.

<sup>54</sup> <http://www.originalbeans.com/conservation/consume-replenish/>  
(accessed 15 August 2010).

### **The environment does not have to pay for Van Velze's chocolates**

Robbert van Velze is the owner of a small chocolate company in Amsterdam. He buys his cocoa from Belcolade, a Belgian chocolate producer which supplies



chocolate certified by the Rainforest Alliance. These cocoa beans are sourced from a Dutch plantation in Costa Rica. Van Velze uses three criteria for selecting his cocoa products: it has to be produced in a sustainable manner, the taste has to be right, and the level of bitterness has to meet his specifications. Van Velze makes a number of luxury chocolate products. He sells sustainable chocolate at the same price as normal chocolate, even though sustainable chocolate incurs higher production costs. (In the words of Van Velze, 'the extra costs are for the owner, not for the consumer.')

Van Velze is excited about using sustainable chocolate and uses this added value as a unique selling point, as there are only few SMEs that sell this type of chocolate. He sees it as the tastiest chocolate on the market and, furthermore, finds the great fulfilment in his commitment to run a sustainable business. Van Velze is currently looking for sustainable white chocolate and other sustainable ingredients. His suppliers, such as Belcolade, inform him about the available sources, sustainability issues, and options. He also receives information from Paul Elshof, who works for the European Cocoa Platform and is involved in the Dutch Labour Union (FNV Bondgenoten) where he participates in such initiatives as the cocoa barometer (developed by the Tropical Commodity Coalition) and the FNV cocoa news letter.<sup>55</sup>

### **Tony in Africa: Bringing higher margins to farmers**

This chapter already addressed some aspects of the initiatives of the Dutch SME Tony's Chokolonely, which seeks to devise alternative certification schemes that can bring higher margins to farmers.

Remarkably, this small chocolate enterprise is a spin-off from the Dutch television programme 'Keuringsdienst van Waarde' (Consumer Intelligence Agency – CIA), which explores the different ways in which advertisers mislead consumers. Teun ('Tony') van de Keuken, one of the TV-journalists from CIA, prepared in 2002 a series of episodes that covered low farmer incomes and unacceptable labour conditions in cocoa production in West Africa. It also uncovered the meagre progress made towards the implementation of the Harkin-Engel protocol (2001).<sup>56</sup> Teun came to the conclusion that he had to personally take action. This resulted in the launch of Tony's Chokolonely's chocolate bars in November 2005. The market demand for Tony's chocolate exceeded all initial expectations. Tony's chocolate

<sup>55</sup> [http://www.fnvbondgenoten.nl/site/branches\\_bedrijven/branches/industrie/voedingsindustrie/982314/1439073](http://www.fnvbondgenoten.nl/site/branches_bedrijven/branches/industrie/voedingsindustrie/982314/1439073) (accessed 31 August 2010).

<sup>56</sup> The Harkin-Engel protocol is a protocol from the Chocolate Manufacturers Association for the growing and processing of cocoa beans and their derivative products in a manner that complies with ILO Convention 182 concerning the prohibition and immediate action for the elimination of the worst forms of child labour. Accessible at <http://www.cocoainitiative.org/images/stories/pdf/harkin%20engel%20protocol.pdf> (access date 31 August 2010).



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can now be found on the shelves of many supermarkets. The Keuringsdienst van Waarde continued with its research and produced additional programmes that dealt with the topic of slavery in the cocoa industry. Teun van de Keuken visited traders to find out 'who was earning what' in the cocoa and chocolate business. Also, he researched his own chocolate bars and came to the shocking conclusion that even Tony's Chocolonely was not '100% slavefree'. As a result, Tony's Chocolonely changed the logo on its chocolate bars from '100% slavefree' to 'Moving towards 100% slavefree'. With its new project – 'Tony in Africa' – Tony Chocolonely is looking for ways to increase the income of African cocoa growers and improve the farmers' bargaining position. By establishing a model value chain, 'Tony in Africa' aims to demonstrate the commercial feasibility of this approach to producing cocoa. The knowledge partners (mainly Dutch) that are involved in the project come from different Dutch universities, consultancy firms, and the Rabobank.

There is a large number of other Dutch SMEs involved in chocolate manufacturing. A small survey among a number of them revealed some of the main concerns on achieving sustainability in their business. Although some SMEs foresee that sustainable cocoa and chocolate will become increasingly important in the marketplace, they are generally worried about quality and costs. They recognise that the conditions for cocoa farmers must improve, but, before they would start using sustainable cocoa several key aspects would have to change: the demand for sustainable chocolate has to increase, the supply has to improve, and the assortment has to increase. Some have problems with the taste of organic chocolate. There are also questions regarding the preparation of sustainable chocolate products and potential technical differences. If this is the case, they expect their supplier to deliver this type of expertise. The SMEs point to Het Backershuis as an important player; the majority of SMEs buys their cocoa and chocolate from this company. If Het Backershuis can supply sustainable products at reasonable prices and high quality, SMEs could shifting from conventional to sustainable chocolate manufacturing. But this would not happen automatically. Many SMEs work together with cocoa processors with which they have built a stable business relationship. They know the taste and quality of the product they buy and are reluctant to change to another provider of cocoa products (which would deliver a different type of product). While most processors already offer some certified cocoa products, there is little variety compared to the different

conventional cocoa products on offer. Some SMEs expressed willingness to make the shift from conventional to sustainable, provided their supplier obtained a certificate, such as Rainforest Alliance. With certified cocoa, buyers know exactly what they are buying, where the chocolate comes from, and how this improves the position of cocoa farmers in source countries. The key needs that need to be met in order to promote wider use of sustainable cocoa are to increase the assortment of sustainable cocoa, to provide low prices, to offer certificates that are well-known and desired by consumers, and to maximise impact on farm-level.

## **2 Traders' contributions to environmental sustainability**

This section highlights one valuable trader initiative in the field of environmental sustainability: the involvement of Theobroma in agroforestry in Sierra Leone.

### **Theobroma invests in agroforestry**

**We should look at the result farmers get per effort instead of result per hectare.**

*(P. Langenberg, Theobroma, 2010)*

Theobroma is an international trading company with at least 80 years of experience in trading commodities, mainly cocoa. Traditionally cocoa was bought in origin countries and further processed and sold in consumer countries; however, for 5 years now, Theobroma has been processing cocoa in origin countries. Headquartered in Amsterdam, Theobroma has a factory in Nigeria and export related activities in Cameroon and Sierra Leone.

Theobroma's initial investments in cocoa production in sourcing countries were focused on improving cocoa production through farmer trainings. Roughly 2 years ago, it started to invest in sustainability projects, which in addition to economic improvements also aim towards accomplishing environmental and social improvements. An example, which will be further elaborated in this section, is Theobroma's involvement in an agroforestry project in Sierra Leone.

The plantations in Sierra Leone were established in a traditional and unsustainable way, by cutting down forests and planting rows of cocoa trees. Because all cocoa trees on these plantations are of the same type and age, these monocultures



are very vulnerable to plagues and diseases. Both the quality and quantity of the beans deteriorated with time. Further, the trees became old and the soil is drained of all nutrients. This inspired Theobroma to work on establishing a new kind of cocoa plantation in Sierra Leone: growing cocoa trees along with other crops, such as tobacco and fruit. These cocoa gardens are diverse ecosystems that are more resilient to plagues and diseases; they also benefit from preserving the natural nutrient cycle and require less hours of labour.

In the Netherlands, Theobroma works together with the University of Wageningen (forestry expert Frits Mohren) to determine the optimal combination of crops for the local conditions. Students from Wageningen are involved in implementing this research. Other partners of Theobroma are German partners such as Welt Hunger Hilfe, who support Theobroma in training farmers. There is also a good relationship with the government of Sierra Leone with whom there is a constant dialogue on the best ways to achieve sustainable cocoa production in the country.

### **3 Paving the way for organic cocoa production**

Agro Eco – Louis Bolk Institute (LBI) has played a major role in paving the way for organic cocoa production in West Africa. Agro Eco – LBI is a mid-sized organisation engaged in research and consulting on sustainability. Headquartered in Driebergen, the Netherlands, it has local offices in Accra, Ghana and Kampala, Uganda. AgroEco-LBI has more than 20 years of experience in setting up organic projects in developing countries. Recently they started with organic cocoa production in the Eastern Region in Ghana, where they work together with the government and farmers who were involved in the Convergence of Science project. As of January 2009, a total of 250 Ghanaian smallholders were involved in organic cocoa production.

There are several techniques of organic cocoa production that have been fully developed by different institutes (including AgroEco – LBI) and are ready to be applied on a wider scale. But there are all kinds of practical problems and limitations that inhibit the transfer of this knowledge to those who would best benefit from it. The experience of AgroEco – LBI in Ghana illustrates some of these difficulties (see box 4.8).



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**Box 4.8 Problems with knowledge application****1 The use of alternative inputs**

In Ghana, spraying against pests is seen as very important by farmers and is even mandatory under government policy. The government conducts a countrywide mass-spraying programme with chemical pesticides. AgroEco – LBI succeeded in convincing the government that organic pesticides on the basis of neem seeds could provide a viable alternative to chemical pesticides. However, this was neither an easy nor a quick process.

First, the Cocoa Research Institute of Ghana (CRIG) had to test the neem seeds, lasting two years and costing \$70,000, before they were finally approved for use. However, whereas conventional farmers are sprayed for free, AgroEco – LBI was charged with paying for the spraying with the organic farmers. AgroEco – LBI responded by collecting neem seeds in the North of the country, bringing them to the farmers and training farmers on how to make the neem concoction for the sprayings. However, CRIG decided that the quality of this mixture was not adequate and insisted on the use of bottled neem from India in order for the product to become part of the mass-spraying scheme. (which results in a fourfold increase in price). Fortunately, the effort of AgroEco-LBI was in the end successful and currently in some cocoa growing districts the neem concoction is used in the spraying programme.

**2 Shade management**

Organic cocoa plantations are biologically diverse and naturally have lots of shaded areas. Over the years AgroEco – LBI discovered that cocoa farmers that employ good shade management have hardly any problems with insects. To monitor and to further publicise this process, a project was set up years ago by the Natural Resources Institute (NRI) and CRIG, financed by the Department for International Development in the UK. Pheromone traps for capturing insects were developed and made available to CRIG; however, CRIG still needs to secure a funded project in order to pay for the deployment of the traps.

**3 Bringing technology to the farm**

Biological pest and disease management in cocoa farming has been a major area of research and has been explored by numerous international institutes and companies, such as the French Agricultural Research for Development Centre (CIRAD), Mars, and the United States Department of Agriculture. Some successful experiments have been conducted and have produced positive results, e.g., using *Trichoderma* to combat Black Pod disease. Nevertheless, the effectiveness of such alternative inputs has been tested only in isolated experimental plots; the inputs have not yet been made readily available to farmers and have not been integrated in the training curricula provided to farmers (e.g., in the integrated pest management – IPM – strategies taught in the FFS). This is a typical example of a technology that is fully developed but is still sitting on the shelf. AgroEco – LBI, together with the Royal Tropical Institute and Tradin Organic Agriculture (a Dutch trader that is a world leader in organic commodities), responded to this problem by drafting a proposal for large-scale application of *Trichoderma*, together with local partners, in Cameroon and Togo (B. van Elzakker, AgroEco – LBI, 2010).



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### Reflections

The remarkable sustainability initiatives are very diverse. Not only in terms of the actors involved, but also in terms of the motivation behind the initiative. SMEs are generally no frontrunners in making their business sustainable. They tend to position themselves as dependent on what suppliers offer them. However, we have seen some interesting exceptions presented in this section, such as Original Beans and Tony's Choclonely's. In their attempts to make a difference they are supported by both donors and knowledge partners to optimise the tools and schemes they use. Van Velze is another exceptional example of an SME that is pro-actively involved in realising the supply of sustainable chocolate products in smaller chocolate shops.



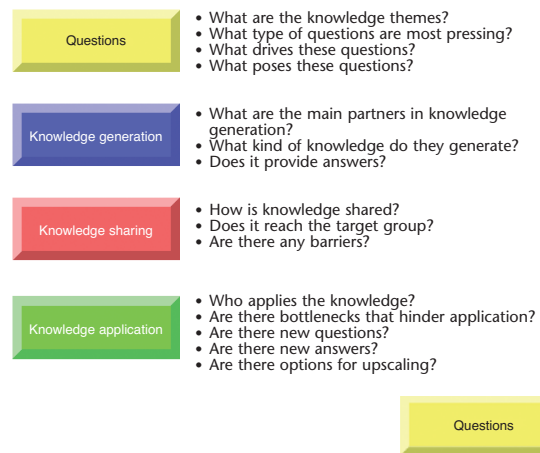
Cocoa trader Theobroma offer another pallet of initiatives. Theobroma pushes the boundaries on the supply side, by integrating environmental sustainability aspects explicitly in their sourcing programme.

AgroEco – Louis Bolk Institute is again another example, illustrating the experience of Dutch players in organic cocoa production. Moreover, this example also shows the value of expertise on the ground; enabling them to understand the feasibility of the application of organic cocoa practices in real life situations.

### Conclusions

The concluding section of this chapter will utilise the knowledge loop (presented in chapter 1) to present an analysis of the three knowledge themes in more detail. In the knowledge loop we made a distinction between knowledge questions, knowledge generation, knowledge sharing, and knowledge application. Figure 4.1 provides a summary of the questions.

**Figure 4.1 Knowledge questions**



In this chapter three broader knowledge themes are discussed: the risks of supplier failure, innovation in the harbour and remarkable sustainability initiatives. The themes are divided in different sub-themes, addressing a number of questions. The type of questions that are most pressing for the different knowledge themes and the drivers behind these questions are very different. We have seen

that supplier failure is one of the main drivers for industry to invest in sustainable sourcing of cocoa. While around the Port of Amsterdam, the drive for innovation mainly derives from the competitive environment, in which these companies are embedded, supplemented with policy incentives (both subsidies and regulation). The Port of Amsterdam's strong effort to position itself internationally as a sustainable port provides another stimulating factor. Sustainability initiatives that were marked as remarkable are primarily driven by the desire to make a difference or by creative win-win opportunities. Instead of being hindered by existing structures and interests, these initiators (SMEs, traders, and knowledge institutes) push the boundaries or find their own way to realise sustainability goals and develop their own partnerships.

#### Knowledge generation

Knowledge that can provide answers to pressing questions is generated in different ways. In the case of the first knowledge theme 'supplier failure', we have seen that the urgent character of this problem facilitated a speedy response. Multinational companies primarily act on the basis of 'learning by doing'. For technical matters companies utilise their internal knowledge (R&D unit) or they rely on traditional contacts with universities, research institutes (locally in sourcing countries), and consultants. (These external knowledge partners are generally not Dutch.) For more institutional or practical issues, it is less clear who the industry players can turn to. One explanation for this lack of clarity is that research on more institutional issues is not conducted solely to understand cocoa related issues. Bringing such knowledge to the surface requires a process of matchmaking between scientists and industry. In order to better utilise applied research, it is necessary to facilitate matchmaking between the research community and the farmers locally in source countries.

Most innovations that contribute to achieving sustainability in the Amsterdam Ports Region were made possible by public funding. Regulation (also anticipated changes in regulation) and consumer demand are additional triggers for innovation; however, they have a smaller impact than subsidies (or when combined with subsidies). Innovation mainly involves technical improvements and savings made in use of space and energy (i.e., contributions to efficiency improvements). Innovations in the Port were also directed towards health and safety issues and

damage control. Extensive co-operation between companies also contributes to fostering a climate of innovation. Neither the actors that work directly in the Port nor those working in the field of innovation did speak of any knowledge gap: they were able to find solutions to most problems fairly easily. They could build on their own – or on their competitors' – experience and when needed could reach out to external experts. These external experts are suppliers or Dutch technical institutes, such as TNO. The remarkable initiatives work both with Dutch and foreign knowledge partners. In these initiatives Dutch universities (e.g., Wageningen University) still play an important role.

Generation of knowledge for the remarkable initiatives takes place in different ways. The Dutch Keuringsdienst van Waarde – the founders of Tony's Chocolonely – were the first to generate knowledge on a mass scale for Dutch consumers of chocolate. Their unconventional way of bringing malpractices in the cocoa sector to the surface, through their television programme, received a lot of media attention. Later, when Tony's Chocolonely established a 'responsible chocolate chain' as a response to these malpractices, many new questions emerged. They became involved in a new business, with players that initially viewed them with suspicion. By attending platforms and roundtables on sustainable cocoa they got to know the sector, earned credit, and established linkages. The challenge for Tony's is to improve their own chocolate bar in a way that can provide more benefit to producers. Original Beans deals with other types of questions. On the one hand, they look for effective ways of applying the knowledge generated by the Life-Cycle Assessment on entry-points for developing a sustainable chocolate bar. On the other hand, they look for ways of generating long-term economic benefits for cocoa farmers. Van Velze is mainly interested in securing access to sustainable white chocolate and other sustainable ingredients for his chocolate.

The trader Theobroma, involved in agroforestry, has questions that are more technical. Theobroma is interested to know more about the optimal combination of crops under local conditions.

AgroEco – LBI mainly seeks to discover how to apply their knowledge and scale up the production of organic cocoa, in the existing context that hinders this expansion. By combining research and practice within their own organisation,

AgroEco – LBI generates knowledge on organic cocoa practices in a very holistic way. Because they have no direct business interest, they follow a long-term approach and deliver a valuable contribution to knowledge generation on sustainability in the cocoa chain.

#### Knowledge sharing

For Dutch companies concerned about supplier failure, knowledge dissemination involves answering two key questions: (1) how to translate science into something that can be applied on the ground, and (2) how to reach large numbers of unorganised – or ineffectively organised – farmer groups. The Dutch research community responded to these questions in different ways. One interesting example of participatory research is the CoS project. Farmer Field Schools are another example of bridging science and local practices. In terms of reaching large numbers of farmers, the training of farmers and the training of trainers are used as methods to disseminate knowledge. Generally, the partners involved in mainstreaming sustainable cocoa basically learn by doing and are looking for ways to exchange knowledge. During the course of the efforts to disseminate knowledge a number of barriers have emerged:

- the high costs involved;
- the farmers' lack of organisation; and
- the competition among certifiers.

For promoting innovation in the Port of Amsterdam, there are two key questions regarding knowledge dissemination: (1) how to scale up effective pilots, and (2) how to better utilise the knowledge embedded within companies so that it contributes to sustainable cocoa production and consumption (for example peer-to-peer learning or strengthening ties with institutions of higher education).

For the SMEs involved in the remarkable initiatives the dissemination of knowledge is the key. Tony's Chocoloney's main vehicle for disseminating knowledge is the media. Their television programme records the learning process and shares it with the public. In a new initiative, Tony's in Africa, they consulted a group of Dutch experts, functioning as a kind of steering group. Original beans actively communicate their approach and the type of knowledge they generate. By working together with local NGOs in sourcing countries, they share their knowledge



with farmer groups. All SMEs are open to the public and provide information about their activities.

For traders, knowledge dissemination seems to be somewhat different. As traders do not directly sell to consumers, their projects and knowledge development does not enter the public arena. Knowledge dissemination in this case is meant to support a specific initiative, and takes place with their direct partners (including farmers).

AgroEco – LBI is very active in knowledge dissemination and makes the results of their research available to the wider public. It also participates actively in both national and international multistakeholder meetings.

#### Knowledge application

In the course of applying knowledge with the aim to overcome the risks of supplier failure, some practical difficulties have been identified. Applying knowledge often requires additional investments (in terms of labour, input, etc.), and farmers generally lack access to resources that could finance these additional investments. Without clear incentives and support, farmers easily choose to continue their conventional way of doing things. This is a lose-lose situation. Reaching large groups of unorganised farmers and helping them apply new knowledge remains an enormous challenge for the industry actors.

There are a few difficulties to applying knowledge in the Port of Amsterdam. First, innovative pilots are generally small in scale, and it is difficult to increase the scale of these initiatives so that they can work together with the large-scale operations in the port (e.g., wide scale application of parasitic wasps).

With respect to the remarkable initiatives, another picture emerges. All initiatives have some problems to apply knowledge. For example, AgroEco – LBI runs into all kinds of local problems, such as the interest of governments in cocoa producing countries to invest mainly in conventional cocoa, or the absence of local incentives for applying alternative inputs. All initiatives that concern working with farmer groups face the challenge to strengthen these groups and provide incentives to cooperate. Another difficulty with application is that these (overall) small initiatives prove to work on a small-scale, but haven't been tested on a larger scale. Scaling up is a challenge also because it requires a market.







## 5 Knowledge: demand versus supply

### Introduction

The knowledge loop in the previous chapter illustrated the difference in demand for knowledge according to the specifics of actor, theme, and time factors. Currently the private sector is primarily concerned with mitigating the risks of supplier failure and their commitment to source cocoa in a sustainable way has been secured. In the harbour the pressing issues are space and efficiency. Actors involved in the remarkable initiatives have a different set of priorities. For example Tony Chocolonely wants to develop an alternative certification scheme, while Theobroma is interested in determining the optimal combination of crops for the local conditions. It has also become clear that different knowledge partners can help address these issues. We have already identified some of these partners and the different knowledge roles they play. Also, it was outlined how these different knowledge partners are involved in knowledge development in the cocoa sector.

Subdivided into two portions, this chapter will analyse knowledge supply and demand. First, it will provide an overview of knowledge supply by different Dutch and foreign knowledge partners. Second, a framework will be presented to distinguish different types of knowledge which correspond to different knowledge partners.

### Knowledge supply

One of the primary objectives of this study is to reveal the added value of knowledge developed by Dutch knowledge partners on sustainable cocoa production and consumption. Conducting an assessment of Dutch knowledge requires gaining insight into knowledge on sustainable cocoa generated outside the Netherlands, and a good idea of the whole spectrum of knowledge developed by Dutch actors that can contribute to sustainable production and consumption processes

### Dutch knowledge partners

Different actors play different roles in knowledge development, with universities as traditionally very important partners. In the Netherlands, the best resources on cocoa related issues were found at Wageningen University (WUR); however, in recent years these resources have become fragmented into different departments. For example, the Department of International Plant Research focuses part of its research on sustainable production, food security, and climate change; here it also partly deals with constraints on cocoa production.<sup>57</sup> The Laboratory of Entomology and the Communication and Innovation Studies Group (both part of WUR) contribute to participatory research that studies the causes of low productivity of cocoa in Ghana, using farmers' perspectives and insights. Also the International Cluster (another WUR structure) has worked on governance issues in the cocoa chain through its thematic research on markets, trade, and sustainable rural development.<sup>58</sup> The Biological Farming Systems Group is involved in research on 'Certified Cocoa Production in Ghana: Farm characterization, farmers' perceptions, and scenario assessment'.<sup>59</sup> Also the Convergence of Sciences (CoS) Programme falls under the WUR (see section on knowledge institutes in chapter 3). This programme seeks to improve the livelihood of smallholders in Africa by exploring new pathways for implementing agricultural innovations (tailored to the specific opportunities, conditions, and needs of these farmers). The programme tries to achieve a dual convergence, between farmers and scientists and between natural and social scientists. In the programme there is joint collaboration between three African Universities and several Dutch partners.<sup>60</sup>

<sup>57</sup> Its key activities include building substantial experience in breeding perennial woody crops, developing environmentally friendly strategies against *Phytophthora*, conducting studies on the molecular basis of resistance against pests and diseases, and developing technologies for the selection of superior beans.

<http://www.pri.wur.nl/UK/research/research+themes/Sustainable+production+and+food+security/Cocoa+production+constraints>  
(accessed 10 September 2010).

<sup>58</sup> Ton, Giel, Goffrey Hagelaar, Anna Laven and Sietze Vellema. 2008. Chain governance, sector policies and economic sustainability in cocoa. Markets, Chains and Sustainable Development Strategy and Policy Paper, no.12. Stichting DLO: Wageningen.  
<http://www.boci.wur.nl/UK/Publications/>

<sup>59</sup> [http://www.bfs.wur.nl/UK/newsagenda/archive/agenda/2010/MSc\\_proposal\\_Indira\\_Moreno\\_Echeverri.htm](http://www.bfs.wur.nl/UK/newsagenda/archive/agenda/2010/MSc_proposal_Indira_Moreno_Echeverri.htm) (accessed 20 September 2010).

<sup>60</sup> <http://www.cos-sis.org>  
(accessed 20 September 2010).

#### Recent publications on disseminating knowledge in cocoa chains

Ayenor, G.K. Roling, N.G., Padi, B. Van Huis, A. Obeng-Ofori, D. Atengdem, P.B. 2004. Converging farmers' and scientists' perspectives on researchable constraints on organic cocoa production in Ghana: results of a diagnostic study. *NJAS Wageningen Journal of Life Sciences*, Vol 52, No 3-4.

(This study identifies the major constraints on organic cocoa production at Brong-Densu and surrounding communities in the Suhum-Kraboaa-Coaltar District, Eastern Region, Ghana. This study identifies problems including low yields, persistent pest management constraints, and low adoption rates for technologies developed by the Cocoa Research Institute of Ghana. A Participatory Learning and Action Research approach was adopted to collectively design of an action plan with all stakeholders).



Dormon, E.N.A., Huis van. A., C. Leeuwis, C., Obeng-Ofori, D. and Sakyi-Dawson, O 2004. Causes of low productivity of cocoa in Ghana: farmers' perspectives and insights from research and the socio-political establishment. *NJAS wageningen journal of life sciences*, Vol 52, No 3-4. <http://library.wur.nl/ojs/index.php/njas/article/viewFile/336/55>.

(This study shows the relevance of using a diagnostic approach to disseminate knowledge. Based on the idea that current research and extension messages do not adequately address the farmers' problems and context, a diagnostic study was carried out to better understand the farmers' views on the problems of cocoa production. Although the study supports the approach, it also argued that its outcomes could have been significantly affected by various contextual factors – including stakeholder selection and the relationship between the researcher and the participants – thus skewing the findings. Hence, the outcomes of a diagnostic study should be approached with care).

Duindam, J., 2006. Exploring of use of neem formulations in cocoa pest and disease management in Ghana: fine-tuning demand driven integrated crop management with farmers within the COS-framework. Report no. 06-02 Wageningen University. <http://library.wur.nl>.

Other knowledge partners with cocoa expertise in the Netherlands include Agro Eco – Louis Bolk Instituut (organic farming expertise), CABI (agronomy and training of farmers), TNO (combating vermin, health issues, and cocoa), and Agriterra (farmer organisation). A number of consultancies are also active, such as CREM and AidEnvironment. CREM has a number of reference projects on sustainable cocoa, for example on analysing practical opportunities for selling sustainable chocolate. We have seen that banks are also important gatekeepers of knowledge. Knowledge is also generated through peer-to-peer knowledge exchanges and various platforms and meetings.

Next to the knowledge partners that have a clear focus on cocoa, there is an active Dutch research community which conducts research on wider issues, such as global value chains or sustainable agricultural development. For example, the CERES Research School for Resource Studies for Development, which is a nationwide research and PhD network for studies on resource dynamics, development and social transformation (both globally and locally). The database of this

research network contains a number of studies conducted by Dutch members on cocoa related issues.<sup>61</sup> The thematic CERES network 'Value Chains, social inclusion and local economic development' also offers relevant expertise on how NGOs, private companies, and governments can work together towards promoting inclusion and poverty reduction. A number of Dutch universities and knowledge institutes and their senior researchers on value chain development are involved, among them: the WUR, the Institute of Social Studies (ISS), CIDIN, the Erasmus University, the University of Amsterdam, the Free University, the University of Groningen, the University of Utrecht, the Maastricht School of Management, the Royal Tropical Institute, and the University of Tilburg.

#### Recent publications on governance in cocoa chains

Laven, A.C. 2010. Risks of Inclusion. Shifts in governance processes and upgrading opportunities for small-scale cocoa farmers in Ghana. PhD diss., University of Amsterdam. Amsterdam: KIT Publishers. <http://www.kit.nl/smartsite.shtml?id=SINGLEPUBLICATION&ItemID=2854>.

(This PhD study provides a detailed description and analysis of upgrading opportunities for small-scale cocoa farmers in Ghana. It shows how and why producers do (or do not) benefit from being inserted in a global value chain that is increasingly driven by multinational cocoa processors and chocolate manufacturers. The study contributes to the recent discussions on hybrid governance structures, in which both public and private actors play a role).

Ton, G., Hagelaar, G., Laven, A. and Vellema, S. 2008 Chain governance, sector policies and economic sustainability in cocoa. A comparative analysis of Ghana, Côte d'Ivoire, and Ecuador Markets, Chains and Sustainable Development. Strategy & Policy paper no. 12. <http://www.kit.nl/smartsite.shtml?id=SINGLEPUBLICATION&ItemID=2617>.

(This paper shows that the specific economic conditions for sustainability in producing countries are an outcome of the interplay between market coordination and state governance. Chain actors – e.g., farmers, processors, and traders – are constrained and/or enabled by the national economic policies, the rules in the market place and political economic power relations in creating competitiveness in global markets. Crucial aspects influencing the performance of the cocoa value chain – such as production volumes, product quality, and distribution of value between chain actors – are to a large extent a result of the changing institutional governance systems and its 'enabling environment').

<sup>61</sup> <http://www.onderzoekinformatie.nl/nl/search?query=cocoa&startpos=%2Fnl>  
(accessed 20 September 2010).

Vellema, S., Admiraal, L. and Valk, O. 2006. Quality control in cross-border agro-based supply chains: modes of regulation in coffee, cocoa, bananas, palm oil, timber and aquaculture. Den Haag: LEI, rapport 4.06.03. <http://library.wur.nl/WebQuery/wurpubs/348899>.

(This report describes the regulation and quality control of products and process in a selection of cross-border agro-based supply chains. The factual presentation reveals the specific nature of regulation in a product group. It also provides a basis for comparing the modes of regulation and outlines a discussion on horizontal policy and strategy issues. The review of the presented material identifies a number of issues that help identify cross-product dimensions of regulation. The epilogue elaborates on the continuum between regulation grounded in public interests and the one grounded in particular private interests).

### Knowledge supply outside the Netherlands

There are a number of cocoa growing institutes based in cocoa producing countries. In 1938 the Cocoa Research Institute of Ghana (CRIG) was established at Tafo (Akim Abuakwa), to serve as the Central Cocoa Research Station of the Gold Coast Department of Agriculture (on the recommendation of the Agricultural Adviser to the British Minister of State for the Colonies). At that time, cocoa production was declining due to pest and disease outbreaks and this research station was set up to investigate the problems and introduce control measures. In 1943 this Ghanaian station was expanded into the West African Cocoa Research Institute (WACRI) in 1944, and a sub-station was established at Ibadan, Nigeria. After gaining independence (Ghana in 1957 and Nigeria in 1960), WACRI was dissolved, giving birth to the Cocoa Research Institute of Ghana (CRIG) and the Cocoa Research Institute of Nigeria (CRIN).<sup>62</sup>

CRIG has a mandate to study cocoa, coffee, kola, shea, and cashew, as well as to explore efficient management of newly established farms until they come into full bearing. Currently the main areas of research at CRIG include nursery studies; plant population density and planting patterns; plant nutrition; weed control; tree canopy manipulation; studies in the connection between shade, fertilizer, and crop yields; as well as suitable permanent and temporary shade for cocoa.

<sup>62</sup> <http://www.crig.org/home.php>  
(accessed 17 June 2010).

CRIN has a mandate to conduct countrywide research on different crops: cocoa, kola, coffee, cashew, and tea. The main research objectives of CRIN are the improvement of the genetic potential as well as agronomic and husbandry practices (including processing and storage of crops); the identification of the ecology and methods of pests control and combating diseases; the investigation of the effective utilisation of the crops and their by-products, and the feasibility of small-scale production of such end-use products; the integration of the cultivation of mandate crops into farming system; and the translation of research results and improved technologies into regular farmer and manufacturer practice. CRIN's overall goal is to improve production and the socio-economic conditions of the affected populations.<sup>63</sup>

Another well-known cocoa research institute based in a cocoa producing country is the Cocoa Research Unit (CRU) in Trinidad (previously known as the Cocoa Research Scheme). CRU is a lively institution with strong international ties that provides important contributions to current cocoa research. Research activities include germplasm conservation, morphological and molecular characterisation of cacao accessions, screening of germplasm for resistance to diseases, germplasm enhancement (pre-breeding for desirable traits), and quality and flavour assessment. CRU is also responsible for the maintenance of the International Cocoa Genebank. CRU is a department in the Faculty of Science and Agriculture (FSA) at the University of the West Indies (UWI). Its partners include CIRAD, the Cocoa Research Association UK, and the University of Reading.<sup>64</sup>

Another significant cocoa research institute from an important producing country is the Indonesian Coffee and Cocoa Research Institute (ICCRI), situated in Jember, East Java. It was established in 1911 by the Dutch as a 'Besoekisch Proefstation'. Before 1981, the institute was a subordinate station of the Bogor Research Institute for Estate Crops. In 1981, with a decree of the Minister of Agriculture, it was transferred into a national research institute – Jember Research Institute for Estate Crops – under the Agency for Agricultural Research and Development (AARD). It was given a mandate to conduct the countrywide research and development on coffee and cocoa. Its key activities cover agronomy, breeding, soil and fertilisation, plant protection, physiology, post harvest technology, economy and statistics, and biotechnology. The institute receives funding from three different sources, namely from state owned plantations (for day-to-day operations), the

<sup>63</sup> <http://www.crin-ng.org/aboutus.php>  
(accessed 18 June 2010).

<sup>64</sup> <http://sta.uwi.edu/cru/cruProfile.asp>  
(accessed 20 June 2010).



Indonesian Agency for Agricultural Research and Development (AARD) (budget for research), and its own income from the sale of research products, planting materials for coffee and cocoa, and other services.<sup>65</sup>

In addition to national cocoa research institutes in producing countries, there are also a number of international/regional institutes that conduct cocoa research and support knowledge development and knowledge exchanges. For example, the Consultative Group on International Agricultural Research (CGIAR) supports a number of regional research groups that are actively involved in the cocoa sector: the International Institute of Tropical Agriculture (IITA, based in Nigeria),<sup>66</sup> the World Agroforestry Centre (ICRAF, based in Kenya),<sup>67</sup> the Centre for International Forestry research (CIFOR, based in Indonesia),<sup>68</sup> and the International Food Policy Research Institute (IFPRI, based in Washington).<sup>69</sup> The IITA works closely together with the Sustainable Tree Crop Programme (STCP) (see chapter 4). Within STCP approaches, such as farmer field schools and participatory video, institutional arrangements have been developed for providing training to cocoa farmers in Cameroon, Ivory Coast, Ghana, Liberia, and Nigeria.<sup>70</sup>

There are also other notable European research centres and universities, such as CIRAD - *La recherche agronomique pour le développement* (Agricultural Research for Development) in France and the Cocoa Research Association in the UK. Both institutes work closely with national research institutes in producing countries.

Within CIRAD there are seven research units that work on the cocoa supply chain:

- Biology and Genetics of Plant-Pathogen Interactions (UMR BGPI),
- Controlling Pests and Diseases in Tree Crops (UPR),
- Innovation and Development in Agriculture and the Agrifoods Sector (UMR Innovation),
- Integrated Food Quality System (UMR QUALISUD),
- Markets, Organisations, Institutions, and Operator Strategies (UMR MOISA),
- Performance of Tree Crop Based Systems (UPR), and
- Plant Development and Genetic Improvement (UMR DAP).

The next section will give insights in the long tradition of cocoa research in the UK.

<sup>65</sup> [http://www.iccri.net/index.php?option=com\\_content&view=article&id=94&Itemid=8](http://www.iccri.net/index.php?option=com_content&view=article&id=94&Itemid=8) (accessed 21 June 2010).

<sup>66</sup> <http://www.iita.org/> (accessed 22 June 2010).

<sup>67</sup> <http://www.icraf.org/> (accessed 22 June 2010).

<sup>68</sup> <http://www.cifor.cgiar.org/> (accessed 22 June 2010).

<sup>69</sup> <http://www.ifpri.org/> (accessed 22 June 2010).

<sup>70</sup> <http://www.iita.org/horticulture-and-tree-systems> (accessed 22 June 2010).

### Cocoa research in the UK

In the UK, there has been a strong interest in cocoa research for over 70 years. Much of this pre-competitive work has been supported by chocolate manufacturers and the cocoa trade, either individually or through their trade associations, together with support from the public sector and international sources. The research has either taken place within producing countries but funded/managed within the UK or has actually been undertaken by scientists (both UK and from cocoa producing countries) in British research institutes and universities.

One of the most important cocoa research groups is based at the University of Reading. This group has been active for over twenty five years and has specialised in research that cannot be easily conducted in producing countries. Reading has strong international links, including a number of research institutes in cocoa growing countries, such as CRU (Trinidad), CRIG (Ghana) and CRIN (Nigeria). Reading has close ties also with other research institutes within the UK, for example with University of Aberystwyth, University of Greenwich, Imperial College London (IPARC) and CABI, and also with research institutes outside of the UK, such as CIRAD and USDA. The University of Reading has received funding for cocoa research from industry associations such as CRA Ltd (formerly BCCCA, supported by Cadbury/Kraft, Mars Inc. and NYSE Liffe<sup>71</sup>) and CR (UK) Ltd (managing the UK Bufferstock Fund) and individual chocolate companies as well as from the CFC, USDA and the governments of Ghana and Malaysia Ltd. The Dutch (former) Ministry of LNV, through its Bufferstock, has been an important sponsor of cocoa related research at this university.

Reading's main research themes and areas of expertise are

- 1 Genetic resources (e.g., understanding and conservation of genetic diversity, cataloguing and dissemination of information, safe distribution of germplasm including associated work on some of the major diseases of cocoa, and security and preservation of Germplasm through *in vitro* techniques and cryopreservation);
- 2 Physiology in connection with the environment (e.g., Genotypic characteristics under different environmental regimes – climate change, productivity and sustainability under stress, plasticity and stability of responses, genomic and epigenetic interactions with environment).<sup>72</sup>

Chocolate manufacturers in the UK have a long history of supporting cocoa research. Much of this work was carried out on behalf of the industry by its trade

<sup>71</sup> NYSE Liffe runs futures and options markets.  
<http://www.euronext.com/landing/liffeLanding-12601-EN.html>  
 (accessed 10 September 2010).

<sup>72</sup> Another recent and interesting area of research is health. The University of Reading conducts research on flavonoid-rich foods and their health impact. An important question is to assess whether high cocoa intake reduces blood pressure.

association, the Biscuit, Cake, Chocolate and Confectionery Association (BCCCA) and its predecessors, which administered contributions from some UK chocolate manufactures to support a cocoa research programme for over 60 years. The programme was complemented by research funded by two trust funds set up by the Cadbury family in the 1970's which were administered on behalf of the cocoa industry by BCCCA's cocoa research committee. One of these, The Ghana Cocoa Growing Research Association Ltd. (GCGRA), was set up to support research which would primarily benefit cocoa growing in Ghana and West Africa whilst the other one, The Cocoa Research Association Ltd. (CRA Ltd.) was focussed on supporting research at the Cocoa Research Unit (CRU) in the University of the West Indies, Trinidad, which would benefit cocoa growing worldwide.

At the end of 2007, the members of BCCCA decided to wind-up that association and to transfer most of its activities to a sector group within the UK Food and Drink Federation (FDF). However, it was agreed that the cocoa research programme would be transferred to CRA Ltd., since CRA Ltd had been administered by BCCCA for many years and shared its cocoa research objectives. CRA took over BCCCA's existing cocoa research commitments and now administers the contributions from UK cocoa manufacturers, NYSE Liffe and other sources to support this ongoing research and future projects.

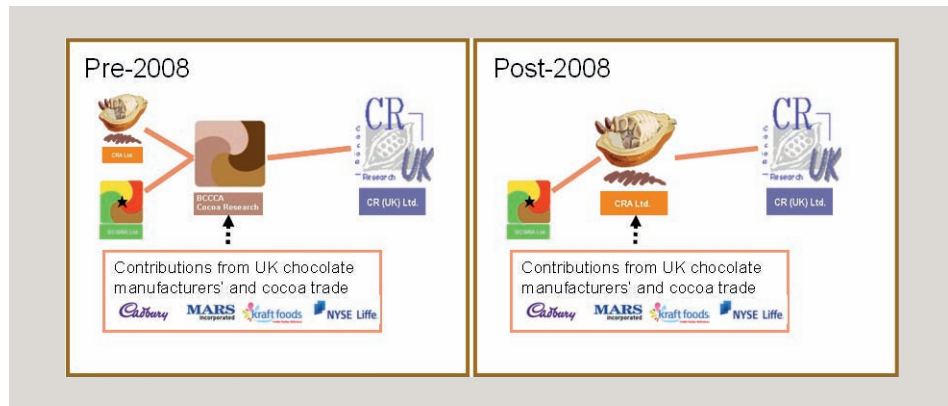
Cocoa Research (UK) Ltd. (CRUK Ltd.) was established in 1996 to promote UK based research on cocoa that can benefit the cocoa community as a whole. The UK Ministry of Agriculture, Fisheries and Food (MAFF) endowed £2.2 million to a trust fund on the dissolution of the ICCO buffer stock. The income from this fund supports research that is primarily conducted at British universities and institutions, but which benefits the cocoa sector (productivity, quality, etc). The fund was managed by representatives of the UK chocolate industry and of the cocoa trade, with additional assistance from the UK government Department for Environment, Food and Rural Affairs (DEFRA). The research programme of the CRUK is closely aligned with the efforts of CRA Ltd. (BCCCA) and GCGRA Ltd.

All these UK organisations have been very grateful to receive co-financing from the LNV Dutch Buffer Stock Fund towards the jointly funded projects<sup>73</sup> (see also table 3.1).

<sup>73</sup> LNV/CRA Ltd (BCCCA)/CRU project entitled "Safeguarding the International Cocoa Genebank, Trinidad: a global resource for the cocoa industry" LNV/CRA Ltd (BCCCA)/CRIG/University of Reading on "An Investigation in to the Effects of Vegetative Propagation and Juvenility on Cocoa Vigour and Implications for Breeding Strategies, Nursery Management and Distribution of Genetic Resources" LNV/GCGRA Ltd./CRIG project entitled 'Selecting High Yielding Clones in the Presence of *Phytophthora megakarya*' with CRIG in Ghana. LNV/CRUK/ University of Aberystwyth on "Proteomic Analysis of Witches Broom Disease of Cocoa" LNV/CRUK/Universities of Reading and Aberystwyth on "Understanding Seasonal Variability in Quality, Yield and Disease Resistance".

The organisation of research towards sustainable cocoa in the UK is visualized in the next figure.

**Figure 5.1: Research towards sustainable cocoa in the UK**



Source: M. End, Cocoa Research Association (CRA), 2010.

Research towards sustainable cocoa in the UK is largely fundamental research on technical issues. But within this research cluster there are also examples of more application focused research. For example, IPARC is involved in joint research with CRUK and CRIG on improved pesticide application techniques. In this research, the focus is very much on the delivery system and understanding application efficiency which will be applicable for biocontrol agents as well as conventional pesticides. The University of Greenwich is involved in closely linked projects with CRIG to investigate the potential of pheromones to control mirids and other insect pests. Another example is CABI, a not-for-profit science based development and information organisation, which focuses on applying scientific expertise to solve problems in agriculture and the environment and improving access to agricultural and environmental scientific knowledge.<sup>74</sup> Applying research, together with investing in awareness raising on issues such as the importance of good agricultural practices and safe pesticide use, is regarded as urgent, both by industry and by the research community.<sup>75</sup>

<sup>74</sup> CABI has led two Dutch Buffer Stock Funded projects which were co-funded by CAOIBISCO/ECA, namely a project to characterize, evaluate and inform on the status of cadmium and other heavy metals in the cocoa plant and the soils it grows in and a project to help West African cocoa farmers adapt to the new EU pesticide residue regulations.

<sup>75</sup> See also the presentation 'UK Industry Funded Cocoa Research' M. End, 2007, which she gave during Round Table on a Sustainable World Cocoa Economy, October 2007. At that time Dr. End was BCCCA's Technical and Research co-Director.



## Observations

In this first part the existing knowledge on sustainable cocoa production and consumption was presented. Two observations can be made. First, foreign research institutes, such as the cluster of research institutes in the UK, but also CIRAD and research institutes in producing countries have a more solid knowledge base on cocoa than the Dutch. In the UK this solid base results partly from the strong and long-term ties between research and industry, also the coordination of cocoa research is an asset. In other cases (and countries), the strong knowledge base is strongly linked to presence in cocoa producing countries. Second, there is a difference in type of knowledge generated in the Netherlands, comparing to abroad. In the Netherlands 'cocoa' is not an area of research as such, and consequently research on cocoa is more fragmented. However, what is an asset is that in the Netherlands a variety of actors is involved in knowledge development and dissemination. This has contributed to the development of other types of research than purely technical. The next section of this chapters aims to grasp the different kinds of knowledge.

## A framework for knowledge development

The framework presented in this chapter will make a distinction between four basic forms of knowledge which contribute to sustainable cocoa consumption and cocoa production: *theoretical*, *practical*, *contextual* and *integral*. For each forms there is a unique set of actors – gatekeepers of knowledge or knowledge partners.

## Theoretical knowledge

The knowledge partners seen in the first quadrant generate and exchange knowledge on technical issues that improve the quantity and quality of cocoa production and chocolate products, and the overall production process (i.e., fundamental research on issues such as new planting materials, prevention of contamination, or fully biodegradable foil for chocolate bars). This kind of technical know-how is embedded within private companies, which often work together with universities or consultants. Dutch universities very rarely conduct fundamental research. Technical expertise has become scarce in the Netherlands and most research centres are located abroad. One of the international frontrunners is the University of Reading in the UK, which is an important knowledge partner in this quadrant. There are a few local research institutes (such as CRIG in Ghana) that are also conducting research in this area.

### Practical knowledge

The second quadrant represents knowledge partners that are involved in translating scientific knowledge to make it suitable for local application. The growing importance of applied research, which is increasingly gaining recognition in the pursuit of sustainable cocoa chains, has prompted the participation of several types of actors: the chocolate industry, local cocoa research institutes, and public-private partnerships (e.g., the Sustainable Tree Crop Programme uses Farmer Field Schools to bring knowledge on good farm practices to the cocoa farmers). The private sector is also involved in the development or application of practical knowledge through their subcontractors, by requesting that they deliver services that are for example environmentally friendly. There are also examples where private companies make use of techniques normally used in other sectors.

A number of Dutch knowledge institutes (such as TNO and NIZO) play a role in this quadrant, for example, by developing knowledge that can be used for improved practices for drying cocoa (and other commodities) or by implementing pilot projects that examine new ways of eradicating vermin at cocoa storage facilities. For this purpose partnerships with the private sector, for example between the Committee Cocoa Warehouses of ORAM and TNO, have been set up.

### Contextual knowledge

The third quadrant represents another group of experts that develop institutional knowledge that is generally not developed specifically for the cocoa sector but can be applied in it. The knowledge institutes involved in this quadrant have extensive know-how on pertinent issues: value chain development, climate change, farmer organisation, value chain finance, governance issues, and so forth. This type of knowledge is essential for sustainable development of the cocoa chain and is embedded in a number of universities and knowledge centres (including NGOs, banks, and consultants). The Netherlands is well represented in this quadrant. For example, Wageningen University develops knowledge on sustainable production, food security and climate change; its 'Cluster International' has worked on governance issues in the cocoa chain through its thematic research on Markets, Trade and Sustainable Rural Development. The Royal Tropical Institute is involved in action research and advisory work on sustainable economic development, focusing on value chains and innovation. For example, the Van Hall Larenstein University of Applied Sciences and the Maastricht School

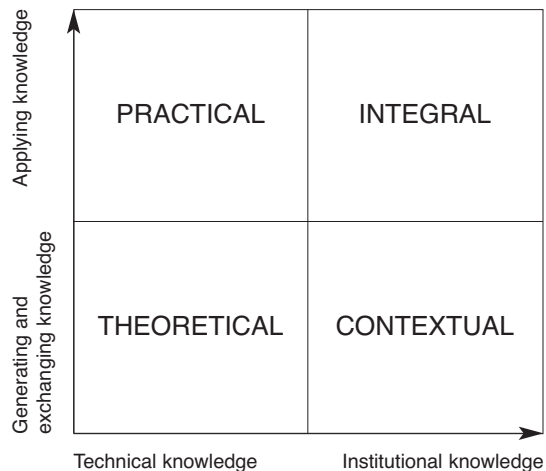
of Management use the value chain approach in their curricula to educate international students. Value chain development is also the expertise of a number of consultancy firms, for example Triodos Facet,<sup>76</sup> Hans Posthumus Consultancy,<sup>77</sup> Aidenvironment,<sup>78</sup> and CREM<sup>79</sup> (CREM has extensive knowledge on cocoa related issues). A number of NGOs are also involved in knowledge development and assist the private sector in making their activities more sustainable. For example, Fairfood supports brand owners in making their brand product more sustainable.<sup>80</sup> Oxfam-Novib has played an important role in developing knowledge on social issues in the cocoa sector for the RSCE1. Also banks are another important knowledge partner. The Rabobank has extensive knowledge on cooperative development and access to financing.

### Integral knowledge

The fourth quadrant contains a relatively new area of knowledge which combines applied research with institutional knowledge. In addition to translating scientific research locally (e.g., in training manuals), the institutional component ensures that future challenges and the research context are taken into consideration, which is important for applying knowledge. In this quadrant knowledge is primarily developed through new partnerships between public and private actors, local and global actors, and between actors from different scientific backgrounds. In this quadrant there is also considerable room for Dutch knowledge partners to claim a role. Due to the existence of a vibrant Dutch multistakeholder community, there is already a strong basis upon which new partnerships can be built.

The different quadrants are summarised in the next figure (5.2).

**Figure 5.2: The knowledge framework**



<sup>76</sup> Triodos Facet (part of Triodos Group) has expertise on Sustainability (SUS) & Corporate Social Responsibility (CSR), Entrepreneurship Development Programme (EDP), Diversified Financial Services (DFS) for SME's, and Business Development Services (BDS). Triodos Facet Web page, <http://www.triodosfacet.nl/content/view/65/32/lang,en/>

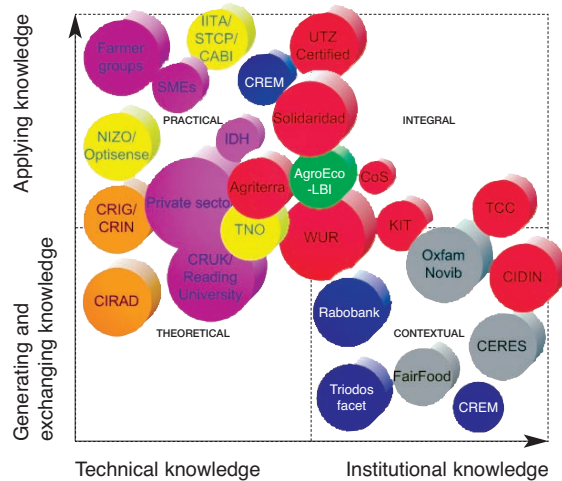
(accessed 10 August 2010).

<sup>77</sup> <http://www.hposthumus.nl/> (accessed 10 August 2010).

<sup>78</sup> <http://www.aidenvironment.org/Pagina/themes/agro-commodities.aspx> (accessed 10 August 2010).

<sup>79</sup> <http://www.crem.nl/menu.php?lang=en> (accessed 10 August 2010).

<sup>80</sup> <http://www.fairfood.org/companies/policy/what-can-fairfood-do-for-you/> (accessed 10 August 2010).

**Figure 5.3: Framing knowledge partners**

All four quadrants contribute to sustainable cocoa production and consumption. Some knowledge partners specialise in only one type of knowledge, while others combine different types. There is additional variety: Dutch knowledge partners build on knowledge developed at foreign institutes, and the private sector builds on knowledge generated at universities or consultancies. Sustainability requires the combining and transfer of different types of knowledge, for which not only transparency is necessary but also an active exchange of knowledge. An efficient knowledge management strategy needs to contain elements that enable it to function as catalyst for change.

Looking at the location of different knowledge partners within the framework, the following picture emerges (see figure 5.3).

Looking at the figure it is apparent that the private sector, including platforms and universities/institutes that have strong ties with industry, is predominantly present in the technical quadrants. The same holds true for research institutes that specifically focus on cocoa. Knowledge partners involved in developing institutional knowledge are not directly involved in the cocoa sector, but are



more active in the field of (sustainable) agricultural development. The knowledge developed by these knowledge partners can support the cocoa sector in its effort to realise sustainable cocoa production and consumption. However, in order for this to happen, the knowledge generated by these partners should be visible and understandable. Additionally, some knowledge partners combine the effort of making scientific knowledge accessible and understandable (e.g., to farmers) with the effort to understand and anticipate on the context in which the cocoa farmers are embedded. Knowledge partners in this quadrant often work in partnerships, combining different disciplines, sectors, and locations. Knowledge developed in this quadrant, where different types of knowledge partners actively interact, potentially plays an important role in realising a sustainable cocoa economy. In this quadrant, knowledge partners take up different challenges: they combine theory with practice, taking into consideration local and global interactions.

### Reflections

In the Netherlands, cocoa experts are scattered in multiple organisations and usually do not work exclusively on cocoa. Nevertheless, high level scientific research is being conducted in the Netherlands and it can contribute to sustainable cocoa production and consumption. The challenge is to make a stronger connection between the Dutch knowledge community and the private sector. However, it should not be forgotten that a sustainable cocoa sector involves a large number of different gatekeepers of knowledge: private sector actors, technical institutes, NGOs, and platforms. Moreover, important gatekeepers of knowledge are found outside the Netherlands. In the UK the strong interest in the cocoa sector has contributed to a strong knowledge base, with a focus on technical knowledge. The Dutch are frontrunners in other areas. The Dutch are strong in innovation, multistakeholder platforms, competence based learning, and participatory learning. These skills can be applied to the cocoa sector, but, as mentioned before, this requires matchmaking between those seeking and those supplying know-how.









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## 6 What do the Dutch know?

How can Dutch value chain stakeholders – notably the private sector – secure an adequate knowledge base and access to new knowledge? How can the various knowledge partners from the Netherlands play a meaningful role in knowledge development? What kinds of partnerships and platforms are suitable for creating synergy and contributing to sustainable cocoa consumption and cocoa production?

Pursuing sustainability in cocoa value chains requires a well-designed knowledge management strategy. Central to this strategy is value-chain-wide learning: a process of joint learning which demands the involvement of all parties and their commitment to share knowledge. In order to draft a successful knowledge management strategy, it is crucial to recognise the global character of the cocoa sector and the diversity of chain actors and chain supporters.

Value-chain-wide learning is challenging because it is difficult to bring together different stakeholders that are not accustomed to working with each other. They have to become better acquainted with each other and to recognise and value each other's role. Various stakeholders taking on new roles adds complexity to the cocoa chain. For example, Teun van der Keuken (*Tony's Chocolonely*), a journalist who explores how advertisers mislead consumers, developed his own chocolate brand. In another effort, cocoa processors have started to move away from their core business by becoming directly involved in organising and training farmer groups. Even though they are generally viewed with caution and scepticism, these shifts do create possibilities for new partnerships and learning.

In chapter 2 we presented some dilemmas regarding knowledge generation and knowledge sharing in value chains. The first dilemma was that these processes require a diverse set of actors (with diverse interests and priorities) to jointly agree about their intentions and ambitions. Specifically, is sustainable cocoa chain development a joint ambition? and, if so, do different actors have mutually agreed upon joint intentions?

Over the years, the Dutch actors involved in the cocoa sector have come together on a number of occasions: the RSCE 1 and RSCE 2, IDH and TCC meetings, and the National Cocoa Stakeholder Meetings. Clearly, there are a number of individuals and institutes in the Netherlands that are committed to making a contribution to sustainable cocoa consumption and cocoa production. There are initiatives where different actors have come to a joint agreement, for example, the signing of the 'Sustainable cocoa consumption and cocoa production' letter of intent.<sup>81</sup> There are also a number of initiatives based on public-private partnerships, such as the certification scheme of UTZ CERTIFIED. It is increasingly recognised that sustainable development of the cocoa chain requires cooperation among different stakeholders: governments, banks, research institutes, NGOs, and others.

Although there is an apparent agreement on the shared goals, there is no agreement on the preferred approach to reaching these goals. The Dutch multistakeholder community is vibrant and ripe with differences of opinion. Despite the different preferred routes to sustainability, the efforts to bring actors together have increased trust and the mutual understanding of the different roles played by actors and their added value. The Dutch multistakeholder community is rather unique. In the UK, for example, the government is quite hesitant to become involved in cocoa related issues (seeing them as the competence of the private sector and the research community). Also, industry players do not have strong links with British NGOs. Although multistakeholder approaches and 'innovation platforms' are yet to prove their value in terms of tangible results, their intrinsic value, namely their contribution to fostering ongoing dialogue between different actors, is recognised as crucial for making value chains sustainable.

The second dilemma pertains to knowledge sharing among companies, which tend to safeguard their knowledge as a trade secret. Companies are the main knowledge keepers on related cocoa issues, and, as knowledge is a strategic ingredient of their profile, they do not always share it broadly across the value chain. The restricted flow of information from the private sector makes it difficult for other players to fully understand the available options for improvement and to build upon already existing knowledge. In other words, the lack of transparency obstructs wider learning. However, the pursuit of sustainable cocoa consumption and cocoa production is bringing positive changes. Not only have companies become more transparent regarding their business practices (and are increasingly

<sup>81</sup> In this particular case some actors withdrew from signing this letter, citing different reasons. For some the letter of intent did not go far enough, while others did not feel comfortable to sign a Dutch agreement while operating at the global level ([www.duurzamehandel.com/site/getfile.php?id=82](http://www.duurzamehandel.com/site/getfile.php?id=82) [accessed 9 September 2010]).

under consumer pressure to improve transparency), but also they have recognised that private companies are not the only gatekeepers of knowledge. New partnerships have been established, both between chain actors (e.g., processors and manufacturers, or processors and farmer groups) and between private sector and public entities (including NGOs and knowledge institutes).

The third dilemma concerns the kind of knowledge needed for pursuing sustainable value chains in a setting where different actors have different notions of what sustainability actually entails. For example, James Hallworth of the Port of Amsterdam presented a rather holistic vision of sustainable cocoa – taking into consideration both production, processing, and logistics operations. Others clearly prioritise sustainable sourcing and have not yet considered segments further up the chain. Because sustainable development is such a complex concept, there is a risk that some aspects of sustainability will not make it on the knowledge agenda because they are not backed by a significant group of actors in a chain. Looking closely at value-chain-wide learning in the cocoa chain, we see that the learning agenda is dominated by the main drivers of the chain, which emphasise the risk of supplier failure. Although this is a valid concern and a priority to be addressed, building sustainable cocoa chains is much more than addressing supplier failure.

Finally, there is a fourth dilemma: How can useful knowledge be shared with large numbers of farmers, companies and their employees, and in the end consumers? Sharing knowledge on chain-wide sustainability issues is a key challenge: it requires a process of identifying good practice at each step of the value chain and sharing this knowledge. But often it is not sufficient to simply bring knowledge to its potential users. For example, farmers need training and access to financing before they can invest in new pest management methods. Local banks have to be convinced that providing loans to rural entrepreneurs does not bring excessive risks. Due to the need to overcome these potential hurdles, more attention should be devoted to adapting knowledge to local circumstances, thus making it easily applicable.

The four dilemmas presented in this concluding chapter highlight both the strengths that can provide a good base to build upon as well as weaknesses that need to be addressed in order to design an effective knowledge management strategy. Taking into consideration the global character of the cocoa chain, the

main question that remains to be answered is 'What can the involved Dutch actors add to knowledge development in order to promote the construction of a sustainable cocoa chain?'

The analysis made a distinction between four types of knowledge, one of which was 'theoretical' or technical knowledge. The Dutch are not frontrunners in technical knowledge, which primarily focuses on fundamental cocoa research. The lack of knowledge development in this segment is not necessarily a problem: there are numerous knowledge partners outside the Netherlands which develop this know-how (e.g., the University of Reading, CIRAD, and local cocoa research institutes). Moreover, private sector companies develop this kind of expertise within their research units. The added value of the Dutch knowledge partners can be found in the other 'quadrants', which place more emphasis on applying knowledge locally ('practical knowledge') and on developing knowledge that can contribute to understanding the context in which the cocoa sectors are embedded ('contextual knowledge'). Moreover, the 'learning by doing' culture of private companies has developed a new area of expertise on issues such as certification and different ways of organising and training large groups of farmers. These learning processes put a strong emphasis on multistakeholder approaches, which greatly contribute to strengthening the position of Dutch stakeholders in the last quadrant ('integral knowledge').

Integral knowledge is particularly relevant for developing knowledge that contributes to building a sustainable cocoa chain, because it meets two basic requirements: (1) this type of knowledge reaches the target group, and (2) this type of knowledge takes into account the context in which particular problems are embedded. In the Netherlands there are some examples of knowledge partners that work on developing integral knowledge: UTZ CERTIFIED, IDH, and TCC. The actors participating in these networks are a diverse group and are linked to different groups of actors in and outside the Netherlands. For example, TCC actively collaborates with cocoa producer organisations and NGOs in cocoa producing countries – by creating local cocoa platforms and enabling their presence in international cocoa meetings (e.g., RSCE1 and RSCE2) – in turn providing them with a stronger voice in the knowledge agenda.



The development of integral knowledge requires new partnerships that can bring together a variety of actors and different disciplines, in turn also crossing borders and combining long-term goals with short-term results. This integration of people, skills, location, and moments in time can create an exciting environment where sustainability can flourish. This requires, first and foremost, providing actors with clear incentives to join these kinds of partnerships and platforms and also encouraging them to play a proactive role. Still, platforms and multistakeholder partnerships are not the only vehicle for integral knowledge development. This kind of knowledge also requires matchmaking – between private sector and non-traditional knowledge partners, and between theory and practice.

The existence of a vibrant Dutch multistakeholder community is a positive feature, but it is not the only Dutch asset; there are other contributions to knowledge development in promoting sustainable cocoa consumption and production. Having a cluster of economic activities in the Port of Amsterdam is a clear asset. This has contributed to the emergence of a culture of close ties and trust, where different professionals work together to address challenges. Looking at the three knowledge themes, the issue of supplier failure is taken up by a number of prominent companies and skilled individuals based in the Netherlands. Jointly with other actors, they work together on issues such as certification, organising farmers, and providing farmers with training. But, as emphasised earlier, building a sustainable cocoa chain is not only a matter of securing supply. Sustainable processing and transport of cocoa products, sustainable manufacturing of chocolate, and the establishment of adequate waste management policies are also important features of sustainable cocoa chains. Sustainability is part of the overall policy goals of Port of Amsterdam and the competitive environment further stimulates innovation in this area. Also, Dutch regulation – which is fairly strict – and the availability of several funding options for project that promote sustainability have contributed to this climate of innovation. The Dutch policy climate and the strong clustering of cocoa activities in the Netherlands also contributed to an environment where remarkable sustainability initiatives can flourish. This is very important as these kinds of initiatives push the boundaries and demand other actors in cocoa sector to reflect on their policies (e.g., sustainable sourcing) and remain sharp.

The Netherlands does provide a fruitful climate for knowledge development, but in terms of sustainability there is room for improvement. As long as the economic driver for sustainability remains strong, private actors will act and knowledge will be developed. But, what will happen if the private sector fulfils its key goals and mitigates its gravest risks? Will it still be driven to continue working towards sustainability with the same vigour? Building a sustainable cocoa chain requires long-term commitment, and knowledge management strategies should consider long-term perspectives and create the appropriate incentives.

## 7 Recommendations

This final chapter will provide two sets of recommendations: (1) suggestions on how to improve knowledge development in the Netherlands so that it can better contribute to sustainable cocoa consumption and production; and (2) advice on how the Dutch can position themselves internationally as knowledge partners on sustainable cocoa.

### **Building a Dutch knowledge base**

Building a sustainable cocoa chain requires a process of continuous improvement. How can the Dutch develop the right knowledge at the right moment and in particular assure that the available knowledge is used effectively by the people who need it the most? How can we address weaknesses and further develop strong points?

### **Brokering Knowledge**

Due to the great variety of actors involved in knowledge development on cocoa and sustainable value chains, knowledge on cocoa is fragmented and not always easily accessible. This is not only ineffective (knowledge partners tend to reinvent the wheel) but it also hinders learning and innovation. It is difficult to foster effective cooperation between knowledge partners, especially between partners that traditionally do not work together.

Several Dutch actors have indicated that it would be beneficial to have a 'knowledge broker' which could act as an intermediary a 'knowledge coordination point'. However, an intermediary could play this role only if sufficiently embedded in and financed (at least partly) by the cocoa sector. At the same time, a knowledge broker has to have a sufficient level of independence, which can be the source of tension.

Obviously, brokering knowledge does not have to be centralised in a particular committee or group. Alternatively (or simultaneously) it can be organised in func-

tional ways on issues that are deemed as priority, around which so-called communities of practices for collective learning can be built. It is essential to have strong mutual trust and mutual engagement in these communities. It is also important that a variety of knowledge partners participate in these communities, to ensure learning and thinking outside of the box. Structures that are already in place, such as IDH and the National Cocoa Stakeholders Meetings, can function as platforms for these communities.

### **Matchmaking**

Most of the readers will recognise the commercial for the Senseo coffee machine where matchmaking takes place between a coffee brand and a coffee machine designer. This kind of matchmaking is also applicable for improving the sustainability of value chains. It can involve different private partners, but it can also connect the private sector to non-traditional (less technical) knowledge partners and NGOs. A knowledge broker – or communities of practice – can foster this matchmaking, but building a sustainable cocoa chain is more than connecting people or connecting knowledge: it is also about bringing knowledge to people.

There are different experiences to build upon – for example, peer-to-peer learning between logistics experts working in the Port of Amsterdam and Ghanaian experts working in the port of Tema or Takoradi. The Dutch knowledge on the cooperative movement is another example of knowledge that can be shared between Dutch experts and representatives of farmer organisations in producing countries.

Bringing knowledge to large groups of organised farmers remains a challenge. Already a number of actors in the cocoa sector are involved in this effort and, in order to build on their experiences, it is recommended to adequately document and exchange these efforts of bringing knowledge to farmers.

### **Continuity**

Sustainable chain development is a continuous process of improvement. It requires continuous knowledge development, but also continuity in the commitment of the various actors to invest money and energy in achieving sustainable cocoa consumption and production. Furthermore, it demands a clear long-term vision on sustainable consumption and production processes in the sector. This study has showed that subsidies provide clear incentives for research, for



adapting new practices, and for knowledge exchange. However, subsidies do not guarantee 'continuity': often the end of the subsidy means also the end of a particular research project, or the end of a pilot project (without follow-up). This is particularly worrisome considering the fact that subsidies are often terminated irrespective of the quality of the conducted research. To put it simply, funds for conducting research on these issues are necessary but very scarce.

The private sector could be more involved in co-funding such research (e.g., public private partnerships with 50% public and 50% private funds), and this would require building a stronger link between industry and the research community. There are also areas of research that are not necessarily of immediate interest for industry but are important for achieving improvements in other areas or have longer-term impact. The fact that they are not financed by private partners should not be a hurdle for these issues to be placed on the knowledge agenda and to receive support.

In addition to adequate stable financing, maintaining continuity requires persons or institutes that are able to identify and tackle the issues (this could also be the role of the knowledge broker or communities of practice). This requires a joint process and continuous dialogue. The actors committed to sustainable cocoa should have the willingness to invest in this process and to act (i.e. to look and think beyond the boundaries of their own company).

### Applying research

Promoting sustainable development does not only require investing in knowledge development. It is crucial to also make the knowledge accessible to the target group, and this is a two step effort: (1) knowledge has to be applied and validated in real-life situations and (2) the target group has to have access to the know-how and to understand how it works. In the Netherlands we have seen some interesting examples of research programmes which have applying research as an important component. For example, the Convergence of Sciences programme provides numerous benefits: better access to remunerative markets, inputs, knowledge, and credit; more value-added activities; security of tenure, better organised lobbying efforts; post-harvest activities that allow small farmers to jointly supply supermarkets; and securing political support for combating cheap imports.

There are also other examples where knowledge institutes work closely together with their target group. For example, AgroEco – LBI integrates practical knowledge and experiences in their projects, which enables them to give realistic advice grounded in the specific context. It is important that these kinds of experiences are well documented and made available to actors that can build on this knowledge.

It is clear that scientific knowledge does not automatically find its way to the people who need it the most. While this is not the primary goal of scientific knowledge, the research community should nevertheless take up the responsibility to make their knowledge work in practice. Simply put, more partnerships between researchers and practitioners are needed. In striving towards sustainability, knowledge should principally serve people, instead of primarily catering to business or research.

#### **Positioning the Dutch as knowledge partners**

The strengths of the Dutch as knowledge partners in the international cocoa chain lie in integral knowledge. The Netherlands has a strong comparative advantage due to the combination of its strong economic cluster and its vibrant multistakeholder community. The vibrant continuous dialogue in the Dutch cocoa sector creates opportunities for unconventional partnerships and room for innovation.

Thanks to their capacity to link different partners, different disciplines, and different types of knowledge, the Dutch are a strong partner in making knowledge work. In order to better position themselves in the international cocoa economy, the Dutch learning community should increase its visibility (e.g., at round table meetings and other international forums). This improved visibility would demonstrate that the chain actors further up the chain are also active in pursuing sustainability in the cocoa sector, thus eliminating the perception that only producing countries have to become more sustainable. It would require more active marketing of knowledge, which could be accomplished by a knowledge broker or communities of practice. Moreover, it should not be forgotten that striving towards a sustainable cocoa chain is a global process: Dutch knowledge should connect to and feed knowledge building elsewhere.

## Annex 1 Dutch actors involved in the cocoa chain

In the Dutch cocoa sector there are the chain actors, supporters, partners and platforms. Chain actors are traders, processors, manufacturers, wholesalers and retailers. Supporters of the supply chain are shipping companies, container companies, warehouses, transporters, quality control, machinery manufacturers and banks. Partners of the chain are governments, knowledge institutes, certifiers and NGOs. In platforms these stakeholders meet and take action together. This chapter presents the specific actors in every part of the cocoa chain in The Netherlands.

### Chain Actors

Producers and consumers are part of the chain as well. Producers however fall outside the scope of this study because cocoa not grown in The Netherlands; it is only being produced in tropical regions along the equator such as West Africa, South-East Asia and Latin America. Consumers are part of this analysis but play a minor role in the analysis of knowledge as their role is limited to decision-making on the basis of information.

### Traders

Traders in general act as middlemen between producers and processors, although there are traders that take up other roles as well and some even become chain managers. The largest trading companies are Theobroma, Huyser Möller, Continaf and Daarnhouwer, of which the latter are part of the Amtrada Holding B.V. Tradin Organic Agriculture B.V. is an international company that trades all kinds of organic commodities that was founded in The Netherlands.

### Processors

Processors convert cocoa beans into cocoa liquor, butter and powder. The biggest processors that operate in The Netherlands are ADM (Archer Daniels Midland Company), Dutch Cocoa (part of ECOM Agroindustrial Corporation) and Nederland Cargill. ADM also manufactures chocolate and Cargill is also active in trading. There is also Jan Schoemaker who processes cocoa materials that are unsuitable for the regular cocoa industry.

### **Manufacturers**

Manufacturers are the companies that produce chocolate, which include some Dutch ones, such as De Ruiters (part of Heinz) Droste and Verkade, some multinational cooperations that are active in The Netherlands, such as Barry Callebaut, Mars, Nestlé and Unilever. Moreover there are some chocolate makers that present themselves as exclusively sustainable: Choco Mundo (organic chocolate), Original Beans (chocolate and conservation) and Tony's Chocolonely (slave-free chocolate).

### **Wholesalers**

Wholesale is the resale (sale without transformation) of goods to retailers. Examples are De Kweker, Deli XL and Het Backershuis.

### **Retailers**

Retailers are those enterprises that sell goods to consumers and this group can be subdivided into three groups: supermarkets, out-of-home or non-supermarket retail and craftsmen like bakers, chefs and chocolatiers. The ten biggest supermarkets in The Netherlands are Albert Heijn (part of Ahold), Aldi, C1000 (part of Schuitema), Super de Boer (part of Super de Boer NV), Lidl, Plus (part of Sparwer) and Spar (also part of Sparwer). The biggest out-of-home retailers are Hema, Ikea, Jamin, Kruidvat and V&D.

### **Chain Supporters**

Supply chain supporters are those actors that do play a direct role in the chain, but are crucial for its functioning because they provide services such as transport, machinery or loans.

### **Shipping Companies**

Cocoa is transported from mainly Western Africa (Ivory Coast, Ghana, Nigeria and Cameroon) to Amsterdam by ship. It can be shipped in the form of mega bulk, when it is loosely dumped in the ship's hold, as bulk, when it is dumped in containers, or in jute bags. The biggest companies active on this line are the Dutch Nieuwland, the French Delmas/CMA CGM and the Italian Grimaldi Lines.

### **Container Companies and Warehouses**

These shipping companies drop off their loads at different ports in the Amsterdam



areas. The cocoa goes to warehouses, where it is being trans-shipped or stored, and the containers go back to container companies. The warehouses in the area are C. Steinweg Handelsveem, H.D. Cotterell, Sitos, Unicontrol Commodity, Unieveem and Vollers Holland. Examples of container companies are Container terminal De Vrede and Ter Haak Group.

### **Quality Control**

SGS Group is an example of an enterprise that controls the quality and amount of goods that are about to be shipped or that have just arrived in the harbour.

### **Transporters**

From the harbour cocoa is transported to cocoa-processing factories in The Netherlands and to other countries such as Belgium, France and Germany. An example of a Dutch enterprise that transports throughout Europe is Inverness Transport.

### **Machine Manufactures**

In order to process cocoa beans and convert them into cocoa liquor, butter and powder or chocolate, specific machinery is required. In The Netherlands Duyvis-Wiener is a company with great experience and expertise in this field.

### **Banks**

The Dutch cocoa trade is largely financed by banks such as ABN Amro, Fortis, ING and Rabobank.

### **Chain Partners**

Chain actors and chain supporters rely on a number of partners to for example improve enabling environments (governments), conduct research (knowledge institutes) or set up extension services for farmers (development organizations).

### **Governments**

Different governmental departments work together with the cocoa industry on improving its functioning in multiple ways. LNV (now EL&I) funded a number of mainly research projects by knowledge institutes and businesses to for example select cocoa varieties, improve farming methods or improve chocolate quality. The former Ministry of Economic affairs subsidised an online training course for

the cocoa industry and the Ministry of Foreign affairs is the financier of IDH. Then there is the Port of Amsterdam that facilitates harbour enterprises and promotes innovation and sustainability.

### **Certifiers**

There are four main certification schemes for cocoa in The Netherlands: Max Havelaar (Fair Trade), Rainforest Alliance, Skal (EKO) and UTZ Certified. These labels guarantee that their products are organic, fair trade or overall sustainable.

### **NGOs**

A whole number of NGOs has aligned itself with processors and manufactures, as well as other actors, to cooperate on making the cocoa chain more sustainable. Their contribution lies in training farmers, organising farmers, conducting research campaigning for sustainable chocolate, etc. These NGOs are Agro Eco – Louis Bolk Instituut, Both ENDS, CABI, CREM, Fairfood, Hivos, Oikos, Oxfam Novib, Solidaridad, SOMO and WWF.

### **Unions**

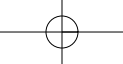
Organisations that represent the interests of their rank and file are Amsterdamse Ondernemingsvereniging ORAM for the warehouses, CNV Bedrijvenbond for enterprises, FNV Bondgenoten for workers and Vereniging voor de Bakkerij- en Zoetwarenindustrie VBZ for cocoa and chocolate businesses.

### **Knowledge Institutes**

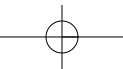
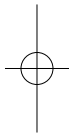
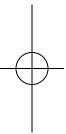
There are a few research institutes that work on topics related to sustainability in the cocoa chain. Those that focus on social and economic development in cocoa-producing countries are Centre for International Development Issues Nijmegen (CIDIN), Royal Tropical Institute (KIT) and Wageningen University and Research Centre (WUR). The latter also has expertise on agricultural practices. Then there NIZO that focuses on food quality improvement and TNO that has expertise in all kinds of technical fields (it is involved in a study on the eradication of vermin with ORAM).

### **Chain Platforms**

There are a number of networks, coalitions, partnerships and platforms where the abovementioned stakeholders come together to communicate and undertake



action together. Examples are the IDH and the ChocoWorkGroup, TCC and CHOCA. Other networks that work on sustainability are Food Policy NL, MVO (CSR) The Netherlands, National Sustainability Congress, NEVI (The Netherlands Association for Procurement) and SSZ (Study Centre for Snacks and Sweets Benelux).



## Annex 2 The Buffer Stock Fund projects Cocoa production

### **Pests, diseases, invasive species**

- Proteomic Analysis of Witches Broom Disease of Cocoa (University of Wales)
- Confronting the Threat of Cocoa Pod Borer (CPB) to Cocoa in Papua New Guinea (Cocoa Association of Asia and CABI International)
- Resistance to Cocoa Pod Borer (CPB) (ASEAN Cocoa Club and University of Reading in UK)
- Research and Development of Optical Biosensor Technology for on Site Detection of Mycotoxins in Cocoa (Optisense Ltd.)

### **Pollution**

- Sources and Prevention of PAH Contamination of Cocoa Beans in Cocoa Producing Countries (European Cocoa Association (ECA))
- Heavy Metals in Cocoa (European Cocoa Association (ECA), CAOBISCO and CABI)

### **Breeding, cultivation, harvesting**

- Sustainable Cocoa Production through Improved Understanding of Seasonal Variability in Quality, Yield and Disease Resistance (Cocoa Research Ltd.)
- Selecting High Yielding Clones in the Presence of *Phytophthora megakarya* (The Ghana Cocoa Growing Research Association (GCCGRA))
- A Re-interpretation of Hybrid Vigour in Cocoa (Biscuit Cake Chocolate & Confectionary Association (BCCCA))
- 'Phoenix', Cocoa Rehabilitation in the State of Bahia, Brazil (Cargill, Brazil)
- Establishment Ability of Cocoa in Nigeria (International Institute of Tropical Agriculture (IITA) and the Sustainable Tree Crop Program (STCP))

### **Rural development**

- Promotion of a Rural Sustainable Development Model Based on an Innovative Vocational Dual Training System for Both Youngsters and Adults (European Institute for Co-operation and Development (IECD) and the Dutch Cocoa Industry)



- Improving the Efficiency of Cocoa Agro Forestry Systems in Bahia, Brazil (Instituto Floresta Viva and Ceplac)
- Upgrading of the Upstream Cocoa Trade in Cameroon by Means of Sustainable Chain Management (ISCOM in co-operation with ADM and Masterfoods)

#### **Market access**

- Safe Cocoa, Sustainable Production (European Cocoa Association and Coabisco)

#### **Storage**

- To Eradicate Vermin at Cocoa Storage (ORAM, Amsterdam (Ondernemersvereniging Regio Amsterdam))

#### **Chocolate production/product quality**

- Stability of Cocoa Powders in Aqueous Environments (Barry Callebaut and NIZO)
- To Assess the Quality Attributes of the Imperial College Selection (The University of the West Indies in Trinidad)

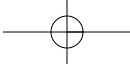
#### **Retail/marketing**

- Food and Chocolate (Association for Bakery and Sweets Industry in the Netherlands)

#### **Platforms**

- Roundtable for a Sustainable Cocoa Economy (International Cocoa Organisation (ICCO))
- Securing Future International Cocoa Quarantine (University of Reading and Biscuit Cake Chocolate & Confectionery Association (BCCCA))
- Safeguarding the International Cocoa Gene Bank, Trinidad (ICGT) (Cocoa Research Association (CRA) and Biscuit Cake Chocolate & Confectionery Association (BCCCA))





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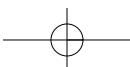
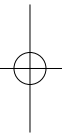
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