



PBL Netherlands Environmental  
Assessment Agency

# SUSTAINABILITY OF INTERNATIONAL DUTCH SUPPLY CHAINS

Progress, effects and perspectives





# **Sustainability of international Dutch supply chains**

## Progress, effects and perspectives

PBL

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# Foreword

Dutch businesses are taking an increasing amount of responsibility for the sustainability of their supply chains. Therefore, the availability of sustainable products found in supermarkets is also increasing, as evidenced by certification labels such as MSC for sustainably harvested fish, and Max Havelaar for sustainably produced coffee and cacao. Businesses have also agreed to use sustainability labels for raw materials such as soya and palm oil. This is a reflection of an energetic society in which businesses and citizens take responsibility for their environment and attempt to improve it.

The widespread use of certification labels by businesses, organisations and citizens is an expression of a promise to improve the living and working conditions of farmers and workers in developing countries; and it also expresses a promise to use the environment and nature more responsibly. However, the extent to which voluntary sustainability initiatives will actually contribute to these public goals remains to be seen.

Some positive effects of these initiatives are already known. They are, however, limited in scale and do not occur every time or everywhere. If we are to build on the efforts that already have been made by businesses, social organisations, consumers and government, we need more knowledge about the effects already achieved — both positive and negative — including the conditions under which these have developed.

The government can also provide further incentives to make supply chains more sustainable. The question is if the government's current facilitative and supportive role will sufficiently convince more businesses and organisations to join in these efforts. Many potential users remain confronted with too many obstacles, such as the high costs that accompany certification. Setting appropriate and motivating targets, learning from experience, and encouraging more transparency regarding supply chains and the effects achieved should have a more prominent place on the policy agenda.

Professor Maarten Hajer  
Director-general

# Sustainability of international Dutch supply chains

## Summary

Dutch trade has become ever more sustainable, over the last years. A number of imported natural resources and products, such as coffee, timber, palm oil, cacao, fish and soya, more and more often carry a sustainability label. The sustainable market share was able to soar, also because of the efforts by social organisations, consumers and the business community. Dutch market parties voluntarily have been contributing to the certification of sustainable production and trade, using widely supported voluntary sustainability standards. The government has been playing a facilitating role by supporting these initiatives financially, by their own purchasing policy, and by entering into declarations of intent with the various market parties. In this respect, the Netherlands is one of the frontrunners in the European Union.

Do all these voluntary initiatives, however, also lead to true improvements in the various fields of production? There is a lack of information about the consequences of the certification process for social objectives, such as the social circumstances of employees, farm incomes, improvements to environmental circumstances and biodiversity conservation.

All sorts of local positive effects are known, such as on farm incomes and working conditions for forestry workers. However, these do not occur every time or everywhere. The effects are not always properly investigated at all production locations. More attention must be given to monitoring, investigating and reporting, in order to more clearly demonstrate the added value of making supply chains sustainable through voluntary certification, and to construct a knowledge base for targeted improvements.

Even though voluntary initiatives have effectuated a considerable sustainable market share, it is unlikely that these alone will be able to further expand the sustainable market share and the desired sustainability effects, because of the number of obstacles



in the way, such as the certification costs for companies, the lack of knowledge on sustainable production among local farmers, their limited access to financial means, and the absence of a level playing field for all market parties.

If the Netherlands aspires to increase the sustainability of production and trade, the government will need to take on a more forceful role. For example, companies can be required to provide more transparency on their resource chains, or obligatory minimum standards could be set for imported products and resources, such as currently apply in the legal requirements for imported timber. This would be the only way of combining sustainable consumption here and sustainable economic development elsewhere.

## Main Findings

### **Dutch companies and social organisations are taking the initiative to make the trade in natural resources more sustainable**

The Netherlands has a relatively open economy, and, for many natural resources, it depends on imports. A multitude of initiatives have been started over the past years to achieve a more sustainable international trade in natural resources, such as timber and soya. Various companies and social organisations, together, have set market standards according to criteria for sustainable production and trade. These standards have been widely implemented and, following verification, products may carry such a sustainability label. These criteria include a wide variety of sustainability issues, in commercial, social and environmental contexts. Sustainability labels, thus, exist among other things for coffee, cacao, timber, fish, soya and palm oil. The parties involved strive to contribute to global sustainability goals, such as to halt biodiversity loss, eradicate extreme poverty and encourage sustainable economic development.

Market shares of sustainably produced products and resources have increased. Shares on the Dutch market for several traded resources and products that have been certified according to a certain sustainability standard (in short, ‘sustainable market shares’) have increased substantially in recent years. However, there are still large differences between these products and resources, also depending on the number of years that sustainable alternatives have been available. Coffee and timber, for example, have been certified for the Dutch market since the early 1990s. In 2011, their shares in Dutch consumption, thus, had increased to 40% and 66%, respectively. For wild fish catches, 40% of consumption carries a sustainability label. At this time, no data is available on the share of sustainably produced cacao in total sustainable consumption.

Sustainability standards for several other natural resources have only recently become available. The use of sustainable soya and palm oil sometimes takes place outside public view, as these products are used in dairy and meat products (soya), snacks, biscuits and cosmetics (palm oil). The share of sustainable palm oil in industrial uses has increased rapidly, in the Netherlands, since the introduction of the RSPO (*Roundtable on*

Sustainable Palm Oil) production standard, and in 2012 was 41%. For sustainable soya, the 7% share in industrial use lagged behind in 2011, but purchases of RTRS (*Round Table on Responsible Soy Association*) certified soya doubled in 2012. The share of cultured fish in consumption is increasing, but the process of its certification has only just begun. The various sectoral organisations and social parties report on sustainable shares in consumption in varying ways. Netherlands Statistics (CBS), together with branch organisations, currently is working on a more uniform reporting method.

### **The Netherlands is one of the EU's frontrunners; presenting opportunities for scaling up**

With respect to making international supply chains more sustainable, the Netherlands is one of the frontrunners, together with the United Kingdom, Germany, Denmark and Sweden. For certain natural resources, these countries have similar sustainable market shares, or have set up comparable initiatives to encourage the development and use of standards for sustainable production. Reporting on 'sustainable' market shares takes place in a variety of ways, within the EU. A full comparison between countries, therefore, is difficult.

The Netherlands has an operational infrastructure to supply the market with sustainably produced products and resources. This has required large investments in knowledge and information systems to develop, implement and verify production standards and the use of sustainable natural resources. The Dutch Government also has set sustainability criteria for its own purchasing policy. Such an infrastructure constitutes a sound basis to make supply chains more sustainable, also on a European scale.

### **Substantial amounts of sustainable products and natural resources are traded on Western markets**

The sustainable market shares in the Netherlands are relatively large. The consumption level of sustainable coffee, for example, was around 40% in 2010, whereas worldwide sustainable production at that time was only 16%. This difference is even larger for tropical timber; close to 40% of Dutch consumption was sustainable in 2011, against only 6% of the production area in the tropics. Worldwide demand for sustainable products currently is still below supply levels; more resources and products are being produced in a sustainable manner than are being sold, globally, under a certain certification label. This is mostly due to the fact that certified products are sold on Western markets, in particular. Awareness of sustainable trade is still low in so-called emerging economies. This fact limits the scope and possibilities for scaling up sustainable production and trade.

### **Too little is known about the impacts of sustainable production and trade in production regions of natural resources**

Various sustainability initiatives, branch organisations and companies report on their achieved 'sustainable market shares'. There is a lot less clarity on the consequences of these activities; about what has actually changed within the supply chains, particularly

in the production regions of natural resources. Reliable impact assessments and transparency on certification processes are required to demonstrate the added value of certification systems, and to ensure credibility in the eyes of buyers and consumers. Availability of public information on the changes implemented in certification processes is limited.

However, an increasing amount of research is being done into the impact of certification and standards in production regions, but the results from these studies are insufficiently presented in the public domain. Moreover, the methodological set up of many of the impact studies lacks rigour. Often, the starting points for production locations are not presented clearly enough, a uniform assessment framework is absent, and the impacts of certification are traced back in time over insufficient periods. Many impact studies use only qualitative methods, instead of also quantitative ones. One of the main obstructions to a wider implementation is the high level of costs involved in impact assessment. It is therefore also important to enable the set up and execution of less expensive impact measurements.

### **Various positive impacts of certification have been proven, so far, although not always and not in all countries**

Multiple studies, particularly on coffee, bananas and timber, have pointed to positive impacts of certification for production regions. Such positive impacts, for example, relate to improvements in farm incomes and market positions, the safety of forest workers, and biodiversity in forestry areas. However, there have also been studies indicating negative impacts, such as the exclusion of unorganised or poor farmers who cannot meet the sustainability criteria or provide the desired quality. In certain cases, the costs of certification outweigh the higher prices of certified goods, causing income effects to be only minimal or even absent.

The reasons for the diversity in study outcomes are partly related to the differences in local circumstances and in differences in starting points between studies. Differences relate to, for example, national legislation and enforcement. Scale may also play a role; local positive impacts can have a very different effect on a larger scale. For example, harvests are low in the sustainable management of natural forests, which means that more forest area is needed to meet the demand. Thus can be concluded that there are positive impacts, but not in each supply chain and in each country, and not at all scales.

### **What are the preconditions to ensure that positive impacts occur?**

Local contexts partly determine whether and to which degree positive impacts occur in production areas. If certain preconditions are being met, the chances of certification and positive impacts increase. For instance, the transfer of knowledge on local agricultural methods plays a role, as does the level of market access for farmers and products. Also important is the availability of investment capital, a good infrastructure, supporting institutions, and good and reliable management. More insight into these preconditions is required, in order to implement supportive policies in production regions – with a role

for both government and the business community. Additional attention must be paid to the wider impact of sustainability initiatives on the scale of production regions.

### **If sustainable market share are to increase, a number of barriers must be overcome**

Certain barriers appear to prevent the increase in sustainable market shares and the realisation of positive impacts, both in production regions and on markets. These barriers call for joint solutions by businesses, social parties and government. This relates to the high costs for farmers and other producers to achieve certification and implement necessary improvements in order to meet production standards, the lack of sufficient global demand for sustainably produced goods and resources, and the lack of a level playing field for all market parties. Among consumers and producers alike, there is some confusion about the content and requirements for certificates, the credibility of those certificates, and the reliability of verification, especially in production regions with a weak governance system.

### **More coercive measures will be required in order to mobilise followers and those who trail behind**

Scaling up sustainable production calls for measures that encourage followers and laggards who trail behind to also switch to sustainable alternatives, following the market frontrunners. This will gradually require a more coercive government role; businesses and sectors that generally follow rather than lead are less easy to mobilise. In order to do this, various policy instruments may be used: education and providing information, subsidy schemes, tighter criteria for government purchases, harmonisation of standards and certification, uniform regulation for transparent sector and business reports (e.g. on sustainable market shares and the origins of resource), binding declarations of intent that include quantitative targets (e.g. on impact results), and the application of taxation and legislation on import.

Expectations within the European Union are high about setting legal requirements for timber. All imported timber must comply with forestry regulations in the producing country. This will create a level playing field on the European market. The EU supports producing countries to improve their forestry regulations and related enforcement. This approach may be a first step towards a fully sustainable production, and may serve as an example for other supply chains.

Possibilities of implementing more coercive tools are partly determined by international trade agreements. Currently, sustainability criteria are not structurally applied in trade regulation, but rather used by the World Trade Organization (WTO) on a case-by-case basis. This issue could be addressed within the European context.

### **Differentiation of certificates may persuade more companies**

A differentiation of criteria for sustainable production may persuade more companies to produce in a more sustainable manner. Some supply chains already have several types

of certificates and production standards of various ambition levels, which better address the various barriers and motivations of companies. For example, for coffee, there is a standard with a low starting threshold and a continuous improvement process connected to it. Recently, standards were introduced for timber trade, which are mainly focused on meeting the legal requirements, as a common minimum standard for the entire market. Such differentiation of certificates may fit the various possibilities and ambitions of companies, but for real change and to achieve certain impacts, a continuous improvement process must take place (stepping up).

### **Sustainability objectives cannot be realised only through voluntary initiatives and certification**

In the Netherlands and other Western countries, strategies to realise improvements in production regions are based on voluntary market initiatives. There is a limit to what such an approach can achieve, causing international sustainability goals to stay out of reach.

It remains to be seen whether sustainable supply chains will be able to contribute to a country's wider economic development, instead of just to the development of the producers and farmers directly involved. One of the objectives of sustainable trade is to guarantee a better income for farmers. However, the poorest farmers often are not involved in certification initiatives, as they have insufficient funds and knowledge to participate.

Another international goal is that of reducing deforestation. Production standards for sustainable forestry and those of the Roundtables include criteria to prevent deforestation. These standards however cannot prevent all agricultural activities that may lead to deforestation. In emerging economies with growing consumption levels, such as in China and India, the awareness of environmental impacts of supply chains to date has been low. A substantial flow of traded or locally used resources, therefore, is not within the scope of sustainability criteria.

### **Perspectives for more sustainable supply chains**

How could supply chains be made more sustainable? The barriers mentioned above could be overcome, in part, by policies already in place. However, as indicated above, certain limitations imply that it would not be sufficient for the government to only encourage voluntary market initiatives. Below, four governance perspectives are indicated, which may be characterised as: strengthen, standardise, extend and expand. These perspectives complement each other – they are not each other's alternatives. Certifying supply chains can play a role in various perspectives; it forms a soft infrastructure, as it were, which may be used in various approaches.

#### **Governance perspective 1: Strengthening of voluntary sustainability initiatives**

Voluntary sustainability initiatives may be strengthened further, in order to address a number of barriers to sustainability, such as the confusion about the content and

reliability of certificates. Here, the present role of social parties and government may be taken as a starting point. They could harmonise standards and certification, work towards a process of continual improvement, support market initiatives by creating the right conditions, and to ensure greater transparency about results and impacts. Such an approach could be communicated to other EU Member States, in order to reach the large volume of the European market.

### **Governance perspective 2: Sustainable production as the new standard**

According to this perspective, sustainable trade will become the new norm in the Netherlands. This seems to require a larger government role, particularly in creating a level playing field for companies and coupling criteria to more binding obligations. A uniform and European purchasing policy also seems appropriate, as does obligatory transparency and expansion of monitoring and reporting activities. Government could enforce a minimum sustainability level for the entire market to comply with, starting with a legal level.

### **Governance perspective 3: Expand sustainable production elsewhere**

This perspective focuses on the desired changes in production regions themselves. The emphasis here should be more on improving the possibilities of farmers and producers to apply sustainability methods, and less on the certification of trade flows. The professionalisation of the farmers involved would be an important starting point, and includes the improvement of their knowledge and their access to trade markets. Government may support this type of change by improving financing options, education, local legislation and its enforcement. The Dutch Government could play a supporting role here, in collaboration with local government. Creating synergy between different sustainability initiatives to realise goals that encompass the whole production landscape is also part of this prospect.

### **Governance perspective 4: Sustainable trade as part of a wider approach to sustainable production and consumption**

There is a need for a wider approach to sustainable production and consumption. Where this currently is aimed particularly on reducing impacts for production elsewhere through certification of supply chains, attention must also be paid to increasing resource efficiency, searching for alternative resources with less environmental pressure, and changes in consumption patterns. This broad view originates from the growing awareness about global resource scarcity, shifting global markets, and limits to the globally available environmental space as expressed by increasing ecological footprints. Government could formulate a concrete vision on sustainable production and consumption, with long-term objectives that provide direction for collaborations between companies, social parties, consumers and government.



# Introduction

International trade throughout the world has increased tremendously, over recent decades – both in the amounts of traded goods and in their value. This includes the Netherlands, which has also been importing an increasing amount of raw materials and products from far away production regions. This development has radically increased the distance between the locations of production and consumption. Dutch consumers, therefore, are hardly aware of the locations from which these raw materials originally were imported, and they have lost sight of the human and environmental impacts of the production processes.

In recent years, more attention has been given to the origin of products and raw materials. An increasing number of people have become aware of the vast size of the Dutch footprint abroad (Van Oorschot et al., 2012), and of the undesirable consequences their consumption has for socioeconomic conditions and the environment (Hertwich, 2012; Kamphuis et al., 2011; Lenzen et al., 2012). Being a trading and importing nation, the Netherlands is in a position to contribute to reducing the environmental burden and social abuses elsewhere. Supply chains present the most logical pathways along which production could be made more sustainable; involving all actors, such as the producers, merchants and workers as well as retailers and consumers (Figure 1).

Making international supply chains sustainable has the interest of businesses, social organisations and citizens. This interest is consistent with the image of an ‘energetic society’ (Hajer, 2001) in which social parties are willing to contribute to sustainability. To an increasing degree, the government is also regarding supply chains as a promising point of intervention for international sustainability policy (BuZa, 2013; EZ et al., 2013; IenM and EL&I, 2011; LNV et al., 2008).

This study focuses on the voluntary initiatives of businesses and social organisations to contribute to the sustainability of international supply chains. Initiatives involve promoting a more responsible production of raw materials and products elsewhere in the world, as well as a more conscientious consumption of sustainably produced products at home (in the Netherlands). For this study, specifically the supply chains of coffee, cacao, wood, fish, palm oil, and soya were examined.



The goal of improving the sustainability of supply chains is to reduce the negative impacts from production processes on social and environmental conditions. In many of the current initiatives, certain market standards have been implemented for sustainable production. These standards are then used to verify whether production is taking place according to the agreed principles and criteria for the various domains of sustainability. Raw materials or products can be certified and receive a certification label if they meet the required production standards. These criteria have been established by organisations that develop and manage certification labels, such as the Marine and Forest Stewardship Councils (MSC and FSC, respectively), and the Roundtable on Sustainable Palm Oil (RSPO) and the Round Table for Responsible Soy (RTRS). Production standards comprise criteria and production requirements that are usually more stringent than the minimum requirements as laid down in a country's existing legislation and regulation.

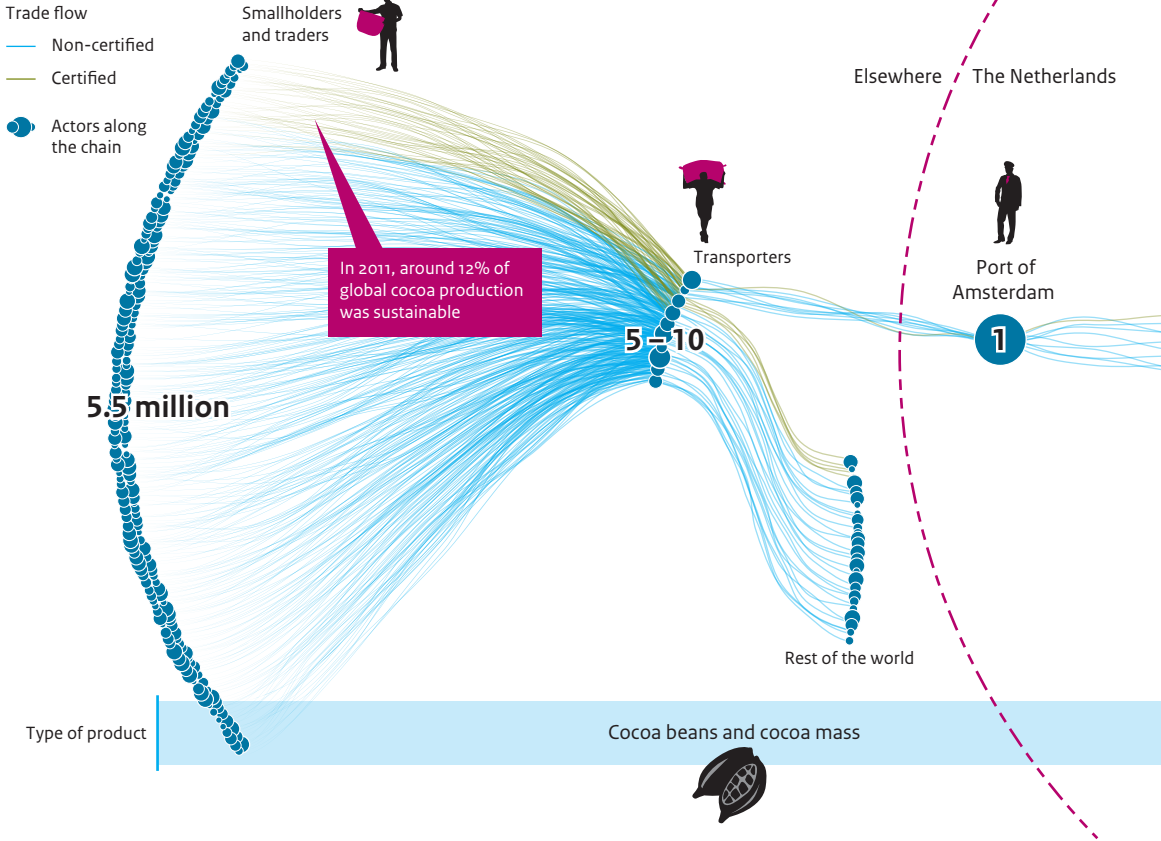
This study examines voluntary certification initiatives for making supply chains sustainable with the aim to determine how they impact societal objectives on the environment, nature, development, and poverty reduction. This study looks back on the role played by Dutch businesses, social organisations, and the government in making supply chains sustainable. It also looks ahead, at the future role they could have in the further promotion of sustainability. This study does not address other solution strategies for sustainable consumption and production, such as those of processing raw materials more efficiently or altering consumption patterns (Van Oorschot et al., 2012; Westhoek et al., 2013).

This study focuses on the following questions:

- What progress have Dutch and global markets made regarding their shares of sustainably produced raw materials and products, namely coffee, cacao, wood, fish, palm oil, and soya?
- What do voluntary initiatives for sustainable supply chains contribute to the improvement of the quality of nature and the environment and on socioeconomic development elsewhere?
- What has the Dutch Government done to stimulate the voluntary efforts of making supply chains more sustainable?
- What are the obstacles for making supply chains even more sustainable, and what are the limitations of the current approach?
- What perspectives are there for the government and other actors along the supply chain to promote sustainable supply chains, both here and elsewhere?

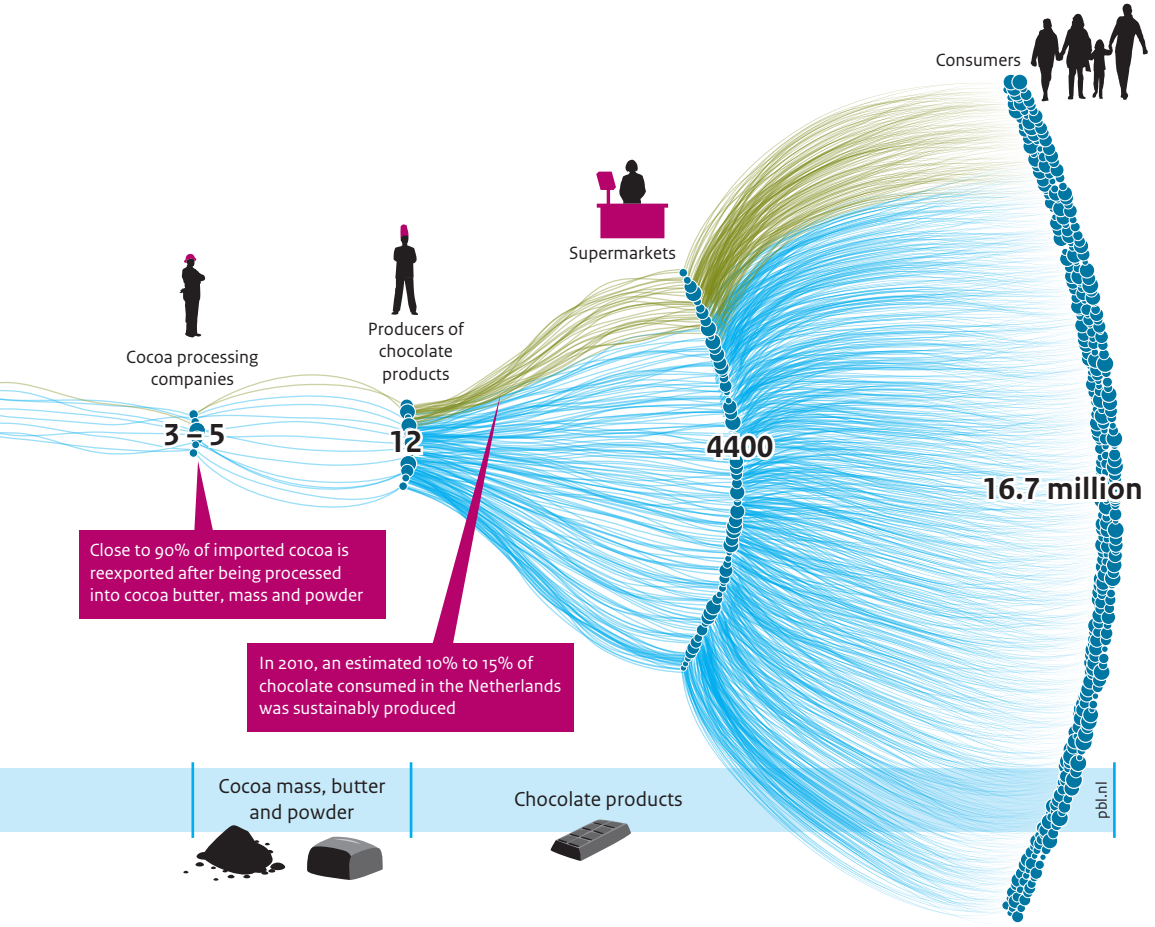
The market shares of sustainably produced goods are measured according to the amounts of such products or raw materials entering the market carrying a certification label. These are here referred to as 'sustainably produced raw materials' or 'sustainable market shares'.

Figure 1  
Cocoa supply chain



Source: IDH and CREM, 2010

The Netherlands is a major importer of cacao. There are many links in the supply chain between the primary producers of raw materials (e.g. cacao beans) and the consumer of its final products (e.g. chocolate bars). There also is a great physical distance between production and consumption locations. This keeps the conditions under which production takes place out of the consumers' field of vision. The Dutch Government has no direct influence on production conditions elsewhere. This puts Dutch businesses in a position to exercise a great deal of influence on the production conditions elsewhere through the supply chain.



# International sustainable development through supply chains

## Supply chains connect the Netherlands to sustainable development elsewhere

Sustainable development involves realising a society in which everyone has a good quality of life, without it being at the expense of the well-being of citizens elsewhere in the world or of future generations. Sustainable development, in this report, is defined in the broadest sense. It entails global improvements in the social, economic and environmental domains, and the tenability of these developments in the future. The realisation of sustainable development on a global level is an important goal for the Dutch Government.

The world is facing a number of major sustainability problems that are strongly interrelated. They include reducing poverty, improving development opportunities, ensuring global food security, reducing climate change, halting biodiversity loss, and securing the provision of natural resources for local populations (PBL, 2012). International trade is strongly related to these problems and can contribute to their solutions.

## Sustainable supply chains are part of the strategy for sustainable production and consumption

Solutions for making production and consumption more sustainable include various strategies that emerge from an awareness of the global scarcity of raw materials, the shifting global markets, and the limits to globally available production capacity (Van Oorschot et al., 2012; Westhoek et al., 2011; WWF, 2012). These solutions include:

- *More responsible production*  
This involves the production of raw materials in a way that takes local economic, social and ecological sustainability issues into consideration. External effects of production have to be limited.
- *Consumption of sustainable products*  
This refers to the consumption of products from regions where production takes place in a responsible and sustainable way, usually indicated by a certification label.



Recognisable certification labels simplify the identification of consumer products produced in a sustainable way.

- *Sustainable productivity increase*  
The increasing demand for food and all sorts of biotic consumption goods in the coming decades will require sustainable agricultural intensification.
- *Shifting consumption patterns*  
One step further than the consumption of sustainably produced products would be the shift towards the consumption of products with a lower environmental burden.
- *Sustainable use of ecosystems*  
Ecosystems have to be protected or used sustainably to maintain their production function. In tandem with this, it is equally relevant to maintain major ecosystem functions, such as water regulation, carbon capture and storage, and soil fertility; while simultaneously protecting biodiversity.
- *Resource efficiency*  
This entails achieving the same level of production while using fewer raw materials and less energy.

Dutch Government policy priority around the subject of ‘sustainable supply chains’ is primarily directed towards providing incentives for sustainable production elsewhere in the world, by increasing the demand for and consumption of sustainably produced raw materials in the Netherlands (Kamphorst, 2009; Van Oorschot et al., 2012). This study explores these two solution strategies, which are connected via the supply chains.

Our conceptualisation of ‘sustainable supply chains’ for this study includes the prevention, reduction and compensation of the effects of production processes outside the Netherlands (elsewhere) on the environment, nature, and biodiversity, as well as the improvement of the labour conditions related to this production. This approach and the goals of sustainable supply chains together cover more than the ecological perspective. The improvement of both labour and socioeconomic conditions also includes matters such as the land rights, incomes, and employment opportunities for local residents. Achieving sustainability has no absolute end point; it entails the constant pursuit of more sustainable forms of production.

**Text box 1****Product standards and certification**

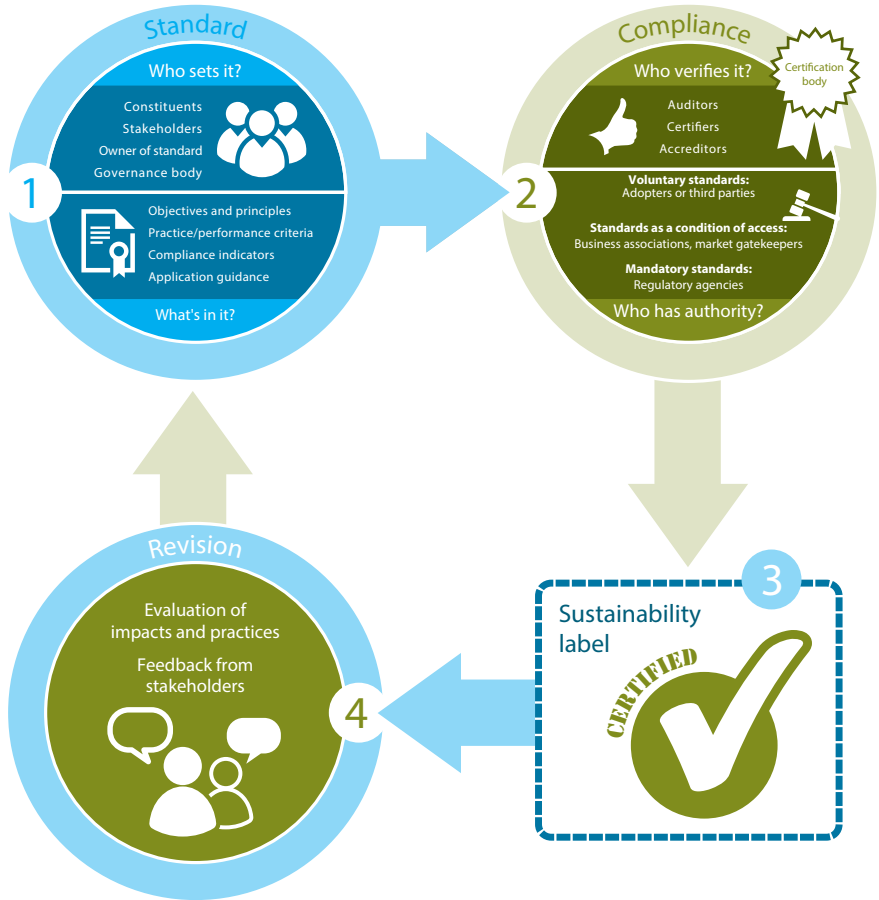
Over recent years, a variety of standards have been developed in order to assess whether raw materials are being produced in a sustainable manner. Market stakeholders and social organisations, collectively, have taken on the drafting, dissemination and application of these standards; partially in response to pressure from critical consumers and public debate. In some cases, this process has received organisational or financial government support; for example, in the form of subsidies awarded to establish Round Table discussion platforms on the criteria for sustainable production. The agreed upon production standards comprise sets of criteria for the sustainable production, processing and trade of raw materials (Vermeulen et al., 2010).

Certification plays an important role in the implementation of production standards, providing a means of verification as well as credibility to sustainability claims for the sales market (Figure 2). Certification distinguishes between the certification of the production process on the one hand, and chain of custody certification for the trade in sustainable raw materials and products (which traces their origins), on the other.

The businesses actively participating in a supply chain must be audited by an auditing agency. If they cannot meet the requirements of a standard, they will first have to improve their operation and production processes. The auditors themselves have to be accredited by the organisations that have developed the standards. The ISEAL Alliance (Alliance for International Social and Environmental Accreditation and Labelling) has developed good practice codes for the appropriate development, control and evaluation of standards (ISEAL, 2013). The ISEAL organisation and its codes provide a meta-level of governance, focused on enhancing the credibility and effectiveness of certification and production standards. There are also private standards, with which businesses audit themselves or each other, and there are also examples where certification is carried out by local stakeholders.

A few decades of development and application has created an extensive, 'soft' infrastructure of standards and certification, used by a large variety of market stakeholders and initiatives. Certification has taken on a dominant role within the current strategies that make supply chains sustainable. Businesses and governments are imposing certain requirements on suppliers (exporters, processors and producers) in their purchasing policies – sometimes even referring to specific standards and their certification labels (such as Fair Trade, UTZ Certified, MSC, FSC, see Table 3). The immediate costs of certification and improvement of manufacturing practices usually lie with the producers and suppliers. The potential benefits for producers are better prices, higher long-term profits, and more stable relationships with buyers, who, in some cases, actively assist producers with certification. Governments can also have a supportive role in the development and implementation of standards and certification procedures.

Figure 2  
**Certification process of sustainable production**



Source: Resolve, 2012

Production standards, certification procedures and sustainability labels are important tools for making supply chains sustainable. They are used for assessing sustainable production, tracing and guaranteeing the true origins of products, and for communication with the consumers. Certification is a cyclical process of assessing and improving operating processes until a standard is being met, and as such, until a business is qualified to carry a certification label, such as Max Havelaar or FSC. A production standard can be adapted or refined based on the evaluation of practical experiences.

## Strategies and roles for the government

Social organisations and market stakeholders have voluntarily developed several initiatives to make supply chains more sustainable. This, however, does not mean there is no role for government. The government may influence these initiatives using three strategies: 1) classic regulation underpinned with legislation and subsidies; 2) interactive network governance that relies on cooperation with social partners and on covenants; and 3) market governance whereby businesses support and manage self-regulation by imposing preconditions on market operations. Following the dynamics and initiatives within society, the Dutch Government in recent years has emphasised both network and market governance (Arnouts et al., 2012; Kamphorst, 2009; Vermeulen and Kok, 2012).

The Dutch Government is taking on various roles with regard to their policy on sustainable supply chains.

- *Lead customer and role model*  
The government's purchasing power can create a significant demand for products that are more sustainable; thus, providing incentives to businesses to produce in a more sustainable way (*lead customer*). This role is different for the various supply chains included in this study. The government has a large influence on, for example, the market for tropical hardwood, because of its use in civil engineering.
- *Opinion leader*  
The government has means of communication at its disposal to direct public attention towards sustainable supply chains, for example, through the *Milieukeur* Foundation (SMK), which issues a Dutch environmental quality label.
- *Compass needle or director*  
The government can assist businesses and NGOs by flagging relevant sustainable supply chains or by setting quantitative targets. The Biodiversity Policy Programme 2008-2011, accordingly, has given priority to a number of supply chains for which specific actions have been started (LNV et al., 2008). However, the government usually leaves it to public stakeholders to formulate such targets.
- *Referee*  
As a referee, the government can indicate what it considers sustainable forms of production, by clearly describing the requirements that products must comply with. The requirements for a large number of product categories have already been established in recent years in the government's Sustainable Procurement Policy. Examples of this are specific requirements for construction material and for the cultivation of bio-energy crops. Having the government function as a referee can also help establish standards for businesses, and with regard to business documentation and reporting, it can use already existing international standards, such as the Global Reporting Initiative (GRI) Index or the OECD Guidelines for Multinational Enterprises.
- *Financier and supporter*  
The government can assist in establishing or supporting certification initiatives using its political influence and through financing. Public-private partnership initiatives have already been launched as part of the Dutch Sustainable Trade Initiative (IDH), under the stipulation of co-financing. Other examples of government collaborations



consist of the declarations of intention that have been drafted jointly with social partners, and, more recently, the *Green Deals* closed in 2012 and 2013 to promote sustainable coffee and sustainable forestry.

- *Creator of legal framework*

Initiatives for voluntarily making supply chains sustainable benefit from a clear legal framework in which they can operate. An example is the EU policy that prevents the import of illegally harvested and traded timber, which has come into effect in 2013 (EU, 2010). These regulations apply to the whole EU market; accordingly, the government controls and enforces the minimum standards to which businesses must comply. This is another example of classic regulation as part of the government approach.

### Identification of priority supply chains depends on policy targets and history

The government has given priority to making a number of supply chains sustainable. On the one hand, the selection of these supply chains is based on the goals the Netherlands is attempting to realise with its domestic and foreign policies (Table 1), and on the other hand on recent policy history (Kamphorst, 2009). Those objectives fall within the ecological, economic and social domains. As a result, the policy for making supply chains sustainable interconnects various goals in the areas of trade, economy, and development.

A number of priority supply chains have emerged from recent policy history. The primary objectives of the Biodiversity Policy Programme 2008-2011 were to contribute to the reduction in global biodiversity loss and to stimulate sustainable use of ecosystems. These are in accordance with the objectives of the Convention on Biological Diversity. To give more focus to the Biodiversity Policy Programme, several supply chains were identified as priorities for further policy implementation, namely those for wood, palm oil, soya, biomass and peat, and fishery. The Dutch Cabinet's Sustainability Agenda (Ministries of IenM and EL&I, 2011) identified the policies for making supply chains sustainable as being important options for reducing the effects of the Dutch footprint elsewhere.

There are more objectives connected to supply-chains than just ecological ones. The Netherlands has specific policies for cooperating with a number of developing countries (the so-called partner countries; Ministry of Foreign Affairs, 2011). In general, trade may contribute to a developing country's economic growth and hence to its development. Agricultural raw materials form a major share of the exports from a number of those partner countries (Figure 3). Making these supply chains sustainable offers opportunities to directly contribute to increasing income and reducing poverty, specifically for smallholders. That applies to the coffee, cacao, and palm oil supply chains. The supply of these raw materials is also important as an input for the Dutch economy (Table 2 and Figure 4).

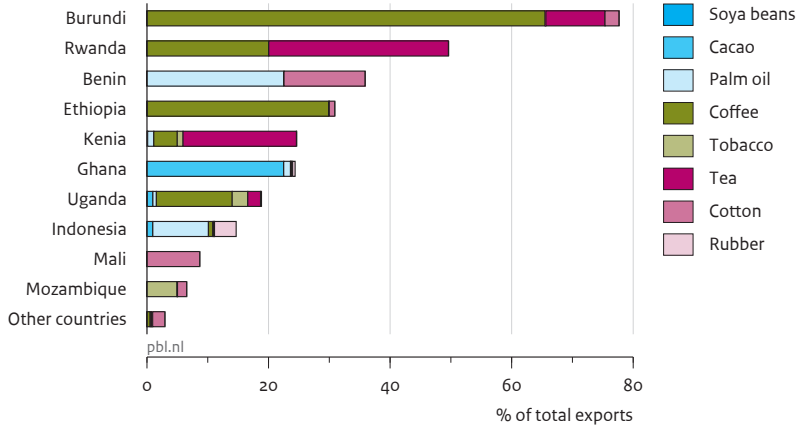
Table 1

**The criteria used by the Dutch Government to prioritise the international supply chains for sustainability policies**

Selection criterion	Relation to governmental goals	Policy document
Significant share of Dutch footprint (magnitude and/or effects) abroad	Limiting negative effects on the local environment and biodiversity in production regions	Biodiversity Policy Programme 2008-2011; Sustainability Agenda (2011)
Importance of biotic raw materials for the Dutch economy	Caring for natural capital elsewhere, as condition for continuity of raw material supply	Policy Document on Raw Materials (2011)
Relevant as source of protein in animal feed	Sustainable production of food	Policy Document on Sustainable Food (2009)
Relevance for economic development of countries of origin	Promoting the self-reliance of developing countries	Letter to the House of Representatives presenting the spearheads of development cooperation policy (2011); Policy document 'What the world deserves; agenda for aid, trade and investments' (2013)
Opportunity to contribute to the social position of farmers and labourers	Promoting fair working conditions and labour rights	Letter to the House of Representatives presenting the spearheads of development cooperation policy (2011); Policy document 'What the world deserves; agenda for aid, trade and investments' (2013)
Connect to existing sustainability initiatives in the Dutch market	Utilising the energy of societal actors; promote sustainable use of ecosystems	Biodiversity Policy Programme 2008-2011

*The Dutch Government has identified five priority supply chains in the Biodiversity Policy Programme 2008-2011: wood, palm oil, soya, biomass, peat, and fishery.*

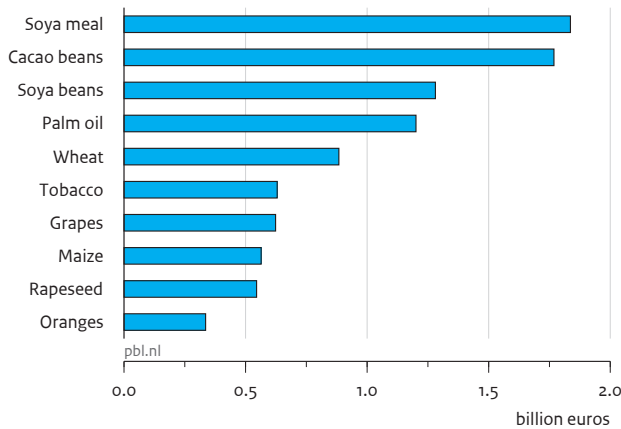
**Figure 3**  
**Share of agricultural commodities in total export value of Dutch trading partner countries, 2007 – 2009**



Source: FAO, 2012

The Netherlands has selected a number of developing countries for its foreign policy on development and cooperation. A number of these partner countries rely on agricultural raw materials for their exports. Making the supply chains of these raw materials sustainable provides these countries with opportunities for development.

**Figure 4**  
**Top 10 of agricultural commodities imported into the Netherlands, 2010**



Source: FAO, 2012

The most important (expressed in money) agricultural raw materials that the Netherlands imports are soya, palm oil and cacao.

Table 2

### Characteristics of various internationally traded raw materials analysed in this report

	Coffee	Cacao	Tropical wood
Production countries relevant to Dutch import	Brazil, Ethiopia, Colombia	Ivory Coast, Ghana	Brazil, Indonesia, Malaysia, and the Congo Basin
Share of Dutch import of world production (year?)	2%	19%	1.1% total and 0.6% tropical
Dutch import value in 2010	0.50 billion euros	2.1 billion euros	4.8 billion euros total and 0.80 billion euros tropical wood
Sustainability issues	Farm incomes, child labour, deforestation, soil degradation	Farm incomes, child labour, crop quality, deforestation, soil degradation	Forest degradation, illegal logging, deforestation in the tropics, working conditions, soil erosion
Employment, and number of related jobs	25 million farmers / 75 million dependents	5.5 million farmers / 14 million dependents	Estimated 13–17 million, 9 million of which in the tropics
Actor profile	Cooperatives and many smallholders	Many smallholders in production, large stakeholders in processing	Many small companies, large variety of end-products
The most important standards for the Netherlands	Fairtrade, UTZ Certified, Rainforest Alliance, 4C	Fairtrade, UTZ Certified, Rainforest Alliance	FSC, PEFC (MTCS for legal)

Sources and acronyms are listed at the end of this document

	<b>Fish and shellfish</b>	<b>Palm oil</b>	<b>Soya</b>
	Wild catch: North Sea and Atlantic Ocean / Aquaculture: Southeast Asia and Scandinavia	Indonesia, Malaysia	Brazil, Argentina, the United States
	0.5%, of which 15% from the tropics incl. China (mainly aquaculture)	6%	3%
	2 billion euros	1.3 billion euros	2.8 billion euros
	Overfishing, by-catch, conversion and pollution of coastal areas, fish food from the sea	Emissions from peat, land rights of the local population, social position of smallholders, environmental pollution	Deforestation, GMOs and pesticides, rights and income of labourers, environmental pollution
	38 million fishermen, and over 100 million in processing	3 million smallholders	1–5 million farmers
	Many small companies,; retailers have much power	Bulk products, limited visibility for consumers (B2B), many smallholders and large merchants	Bulk products, limited visibility for consumers (B2B), large production companies
	MSC, ASC, Naturland, FOS	RSPO, ISPO, MSPO	RTRS, Proterra

# Sustainable supply chains: progress and effects

What are the achievements, so far, of the various initiatives intended to make supply chains more sustainable? To answer that question, this chapter examines the criteria established in the standards for sustainable production; the design of various sustainability initiatives; the application of production standards both in the production regions and on the Dutch market; and the achieved effects that contribute to international sustainability goals. Finally, the government policies related to sustainable supply chains are described. More information about the various supply chains can be found in the ‘supply chains in focus’ section, directly following this chapter.

## 3.1 Progress with sustainable supply-chains on the Dutch market

### **Social organisations actively involved in making supply chains sustainable**

During the past decades, a number of businesses from various sectors have actively begun to address the sustainability aspects of the supply chains of among others coffee, wood, cacao, palm oil, soya, and fish. Private stakeholders have formulated basic principles for fostering sustainability and also implemented production standards and certification procedures for issuing certification labels. They have also supplied certified products to the Dutch market, created and promoted the demand for these products and their supply in the production regions. Market frontrunners and various social interest groups have been major initiators in establishing, disseminating and adopting standards for sustainable production. Table 3 (see pages 44-47) provides an overview of the scope, mission and structure of these voluntary standards.

The conscientious consumer is already aware of the availability of their preferred products; and it is these consumers who have been a major force in bringing about a market for these types of products. A number of progress reports and market barometers outlining the activities for different raw materials have been published by sector organisations as well as social interest groups (Oldenburger et al., 2013; Sustainable Palm Oil Task Force, 2011; TCC, 2012a,b; Van Gelder and Herder, 2012).

### **The volume of sustainably produced products and raw materials in the Dutch market has increased**

The most direct result of all of these efforts is that of the market shares that have been realised for certified, sustainably produced goods, the market share of sustainable products in the Netherlands has clearly increased over the past decades (see Figure 5). Since the year 2000, after a long period with only a marginal market share for products with an idealistic certification label (and that mainly served a niche market for the conscientious consumer), a number of certified products and raw materials have seen a substantial increase on the Dutch market since 2000. Since that year, the focus of sustainability has been on the quality of raw materials, and thus on the increasing efforts and commitment of the business community. From the sidelines, the government also has played a role in creating these markets (Vermeulen et al., 2010).

The reports on the achieved size of the market share vary with respect to their methods; some are about consumer take-up and others about industrial use. For example, for coffee the reported market shares cover consumption; in 2010 almost 40% of the total amount of coffee bought by consumers had a sustainability label (TCC, 2012b). With wood, the sustainable share of the net amount of consumed timber and wood products is being monitored; and in 2011, 66% had a sustainability certification label. The market share in consumption of harvested fish with a sustainability label, was 40% (MSC International, 2012a). Certification labels for cacao have been available for a longer time, but, as of yet, no data about the market share in total consumption are available.

For other raw materials, sustainability standards have only recently been drawn up. The use of soya and palm oil is not always obvious to consumers, as these raw materials are processed into, for example, dairy and meat (soya), or in snacks, biscuits and cosmetics (palm oil). Data on these raw materials are included in reports on the use of sustainable raw materials by the Dutch processing industry. The share of industrially used sustainable palm oil in the Netherlands has increased sharply, amounting to 41% in 2012 (Sustainable Palm Oil Task Force, 2013a). For sustainable soya, this lagged behind at approximately 7% in 2011 (Van Gelder and Herder, 2012); the purchase of sustainable soya doubled in 2012 (Round Table on Responsible Soy, 2013). The share of cultured fish in total fish consumption is becoming increasingly larger. Recently, a certification label has become available for aquaculture.

## **Text box 2**

### **Monitoring sustainability initiatives**

The workings and impact of the sustainable supply chains analysed here, to date, have not yet been monitored in a structural and uniform way (Kessler et al., 2012). Indicators are needed that cover the broad spectrum sustainability aspects, in order to enable proper assessment of the achieved effects. Potential indicators for monitoring the socio-economic effects are those of household income, working conditions, the management of natural capital and access to markets.

The achieved results of sustainability initiatives can be shown using an assessment framework that makes a systemic distinction between various result categories (see Figure 6). These categories include the starting points and criteria for sustainable production (*input*), structure and layout of standards and certification organisations (*output*), the immediate results (*outcome*), such as the market share of sustainably produced products, the number of sustainably operating businesses, and the effects of making the various sustainability domains more sustainable (*impact*) (Van Tulder, 2010). This distinction between results contributes towards more accurate measurement of and comparison between various efforts and outcomes, also because a number of initiatives have already been in existence for a long time, providing more time to show certain impacts and to contribute to social objectives. Efforts of more recent initiatives can sometimes only be assessed in terms of outcome.

This framework was applied to the six chosen supply chains to present what the various initiatives for making supply chains sustainable have achieved so far. This was done based on reviewing literature, analysis of how monitoring takes place, and interviews.

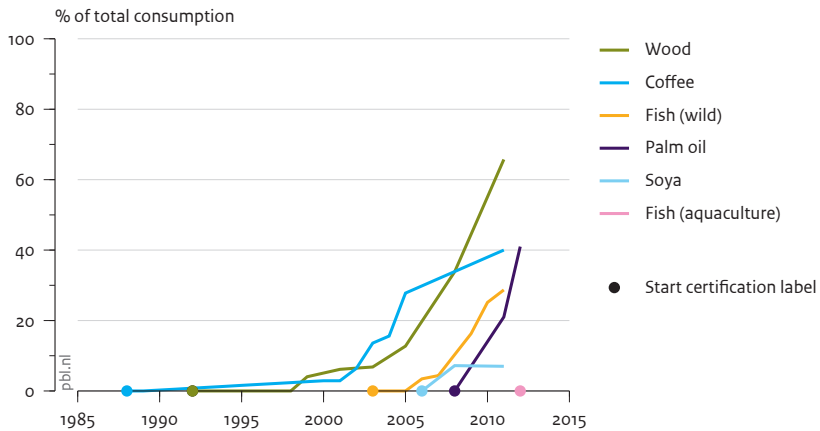
Together with trade associations, Statistics Netherlands (CBS) is working on the development of a consistent and more uniform method to performing inventories of the market share of sustainable products.

On a global level, the sustainable share of these natural raw materials is considerably smaller than that on the Dutch market (Figure 7). That is particularly true for the production of tropical wood, as certification applies to only 6% of the global land area used in forestry. The global land area used in sustainable soya production is only 4% of the total land used for soya cultivation (not including soya produced in the United States according to standards under US national regulation).

The global demand for sustainable raw materials (market uptake) lags behind their supply. Only a portion of the sustainably produced coffee, cocoa and palm oil that is sold on the global market carries a sustainability label (Figure 7). The gap in the market



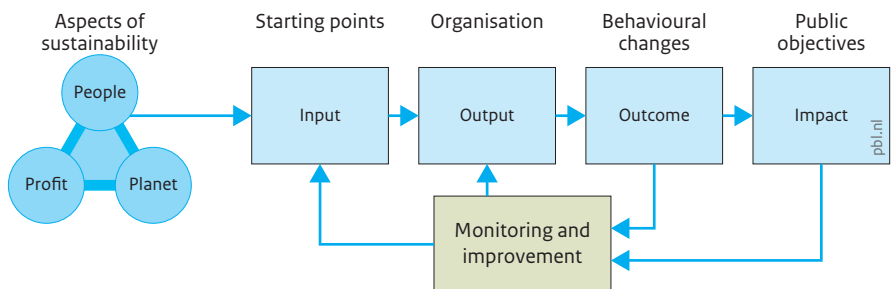
**Figure 5**  
**Market share of sustainably produced raw materials in Dutch consumption**



Source: Various sources; adaptation by PBL, 2013

The sustainable market share of Dutch consumption was marginal for a long time; examples of this are coffee and wood, for which certification labels have been available for decades. At first, Dutch sustainable consumption was a niche market for the conscientious consumer. Strong increases in the sustainable market share have only been seen since 2000. This is the case even for raw materials for which production standards have only recently been developed, such as for palm oil.

**Figure 6**  
**Assessment framework for the sustainable development of supply chains**



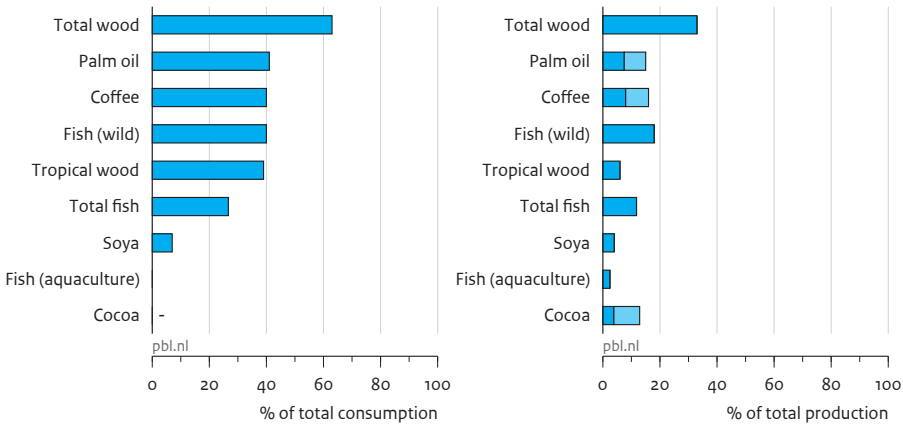
Source: Van Tulder, 2010; adaptation by PBL

The results achieved through voluntary initiatives for making supply chains sustainable can be presented in different ways. The ‘Input-Output-Outcome-Impact’ (IOOI) framework for a step-by-step evaluation connects the intentions of the initiatives for making supply chains sustainable (the input) all the way through to the social and environmental effects (the impacts).

Figure 7  
**Market share sustainably produced raw materials**

Dutch consumption

Global production



- With certification label for sustainable production
- Under sustainability criteria
- No data

All data relate to 2011, except for those on palm oil (2012), Dutch fish consumption (aquaculture) (2012), and global coffee production (2010)

Source: Various sources; adaptation by PBL, 2013

*In the Netherlands, the market share for a number of sustainably produced raw materials and products was around 40% or more in 2011, which is considerably more than their global market share. On a global level, more palm oil, coffee and cacao is being sustainably produced than can be sold with a certification label. An overview of the literature sources is provided at the end of this report.*

uptake of certified products, the consequence of limited willingness to pay for certified products, gives rise to identifying benefits for producers, as it appears difficult to obtain price premiums on the global market.

**The Netherlands is a frontrunner in the European Union with regard to the sustainability of international supply chains**

From an international perspective, the Netherlands is performing well with the sustainable market shares of imported raw materials, along with the United Kingdom, Germany and the Nordic countries. A partial explanation for the Netherlands concentrating so much on making international supply chains sustainable is that the Netherlands is dependent for its consumption on production regions elsewhere for a number of raw materials and products, for example wood and fodder. In addition, a number of tropical crops — cacao, soya and palm oil — are important for the Dutch agro-food sector (Van Oorschot et al., 2012).

The consumption of sustainable coffee in the United Kingdom is 30% (reference year 2010; TCC, 2012b); and the consumption of sustainable wood is even higher: 80% (reference year 2008; Moore, 2009). The percentage of sustainably harvested fish in the Dutch supermarkets is comparable with that of Germany and the Nordic countries (50% to 60%). The sustainable market shares are, however, difficult to ascertain for most of the EU Member States. This issue is barely or not at all monitored and documented in a structural way.

The Netherlands is also ahead of many other European countries in terms of institutional infrastructure and policy matters. To that end, the stakeholders have organised roundtables for production standards for soya and palm oil, and there are sectoral task forces that actively promote these standards. In addition to that, the government and businesses have closed declarations of intention and Green Deals with regard to future ambitions and actions to be pursued. For instance, the coffee sector aims to have three quarters of the coffee consumed in the Netherlands in 2015 to have a certification label.

The Dutch Government has also taken action to expand the sustainable market shares by encouraging public-private partnership through the Sustainable Trade Initiative (IDH). These types of initiatives contribute to the development of standards and actively implement them. The IDH has also spawned several specific collaborative ventures such as The Borneo Initiative, The Congo Basin Programme and The Amazon Alternative to simulate certified wood production and the ASC production standards for aquaculture. Foreign interest in this public-private partnership strategy is growing.

## 3.2 Effects of initiatives for sustainable supply chains

### 3.2.1 Methodological shortcomings of measuring effects

Production standards have the potential to contribute to the improvement of a number of sustainability issues. The effects of certification have been systematically discussed in several literature reviews, which have shown that only a few qualitatively good measurements of the effects of sustainability initiatives are available.

A number of reviews have outlined the effects for individual domains and raw materials. For example the socio-economic effects of certification (Blackman and Rivera, 2010) and Fairtrade in particular (Ruben, 2009); the ecological effects of certified agricultural resources (Milder et al., 2012), and the effects of sustainable wood production on forest biodiversity (Van Kuijk et al., 2009; Cashore and Auld, 2012). Overview studies are available on several supply chains (ITC, 2011a,b; Kessler et al., 2012; SCSKASC, 2012).

This multitude of studies proves that it is exceptionally difficult to express the realised effects of certified production in general terms. The scientific and grey literature present divergent overviews of those effects. There are few studies that meet sound scientific

requirements which would allow for general substantiated statements to be made (Blackman and Rivera, 2010). This does not imply that there are no effects; the findings from the literature are simply ambiguous.

The reviews are fairly uniform in their report on the shortcomings of many of the studies performed. Each of them has added their comments about the design and performance of impact studies.

- The initial situation at the start of the certification process differs for each case studied, and often is not even mentioned in the report.
- Comparative studies lack suitable reference situations that describe conventional practices (lacking *counterfactuals*).
- If impacts are measured, it is not immediately clear to what these can be attributed or if they are actually the result of certification.
- The measurement period has to be sufficiently long to establish if the effects are permanent or if there are possible long-term effects.
- When a sustainability label has been issued, it is not always clear exactly what improvements have been realised, and the changes implemented during the certification process are not always reported publicly and completely.

### 3.2.2 Effects on biodiversity

#### **The effects of certification on biodiversity differs locally and regionally**

Certification of the raw materials that the Netherlands imports can have a positive influence on the biodiversity in production regions.

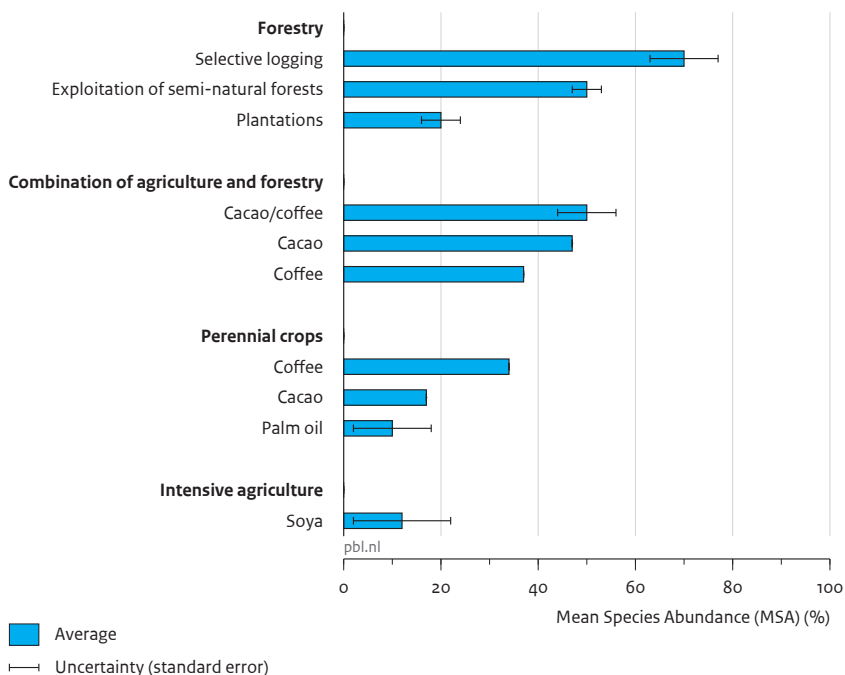
The presumption has to be that the production of raw materials will always have an effect on biodiversity. For a large part, the effects depend on the intensity of the production method used. In general, it can be said that the more intensive the management is, the lower local biodiversity levels are (Figure 8; Alkemade et al., 2009).

Production standards comprise several criteria that are relevant for biodiversity effects, such as desired or permitted cultivation and harvesting methods, their level of intensity, and the choice of location. These criteria differ for each raw material and production standard. They also depend on the targets pursued by the specific standards used and the crop in question. Therefore, dependent on these dynamics, the effects on local biodiversity vary.

Certification can, for instance, affect where in a particular region the production with a sustainability label is permitted to take place. Such criteria aim to reduce deforestation, reduce the conversion of natural ecosystems, and protect locations with a high nature conservation value. These three aspects affect biodiversity on a larger scale because they have an effect outside production sites. To illustrate these type of effects, one of the things we can examine is the rate of deforestation.

Reported effects of certification also depend on the scale that is being examined. A variety of indirect regional effects (*trade-offs*) may occur as a result of changes at the

**Figure 8**  
**Local biodiversity in production systems, compared to the natural reference**



Source: PBL, 2009.

*The intensity of the production methods used to produce raw materials has a great effect on the local biodiversity. The production process is linked with the use of energy, fertiliser and pesticides, all of which impact the environment. The biodiversity in regions where soya and palm oil are cultivated intensively has decreased greatly because a large portion of the original vegetation has disappeared and been replaced by monocultures. For an explanation about the MSA indicator, see Alkemade et al. (2009).*

local scale. For example, if certification causes a reduction in the local yield, this puts more pressure on other production regions to meet the demand.

Wood production has traditionally involved exploiting natural and semi-natural forest ecosystems. Sustainable exploitation means that logging intensity is not allowed to exceed the natural forest regeneration capacity. A similar situation exists for fish caught from the sea; certification requires a limitation of the amount harvested, expressed by the maximum sustainable yield.

For agriculture, the situation is different. The production of soya or palm oil has led to the conversion of natural ecosystems, which has resulted in the loss of most of the original biodiversity (Figure 8). An important part of certification of agricultural crop production focuses on the choice of location in the interest of deterring deforestation. Nowadays, an increasing amount of wood comes from intensively managed plantations, and more fish is being produced through aquaculture. The choice of location for such artificial production systems for timber and fish determines the effects these systems have on biodiversity.

And then there are the intercropping production systems, where crops, such as coffee and cacao, are grown in the undergrowth of semi-natural forest ecosystems. This practice of intercropping could replace monocultures. Although the latter provide higher yields, they put soil fertility at risk.

Certification can also stimulate intensification, which can result in improved product quality, higher yields and higher incomes for farmers, such as what happens with palm oil smallholders. The intensification of crop management causes a loss of local biodiversity, but the individual farmer no longer has to expand his farming activities.

The potential benefit of avoided conversion for biodiversity can, however, only occur through the implementation of additional spatial policy protecting unused natural ecosystems, which lies outside the scope and influence sphere of the certification process at the individual business level.

The effects of certification on the biodiversity in various crop ecosystems are described further below.

### **Effects on biodiversity with intensified cultivation of soya and palm oil**

In the past, expansion of the production region for soya and palm oil production resulted in large-scale conversion of tropical forest, with crop monocultures replacing the original vegetation (Hosonuma et al., 2012). The roundtables for soya and palm oil (RTRS and RSPO) have set criteria for deterring the conversion of primary, undisturbed ecosystems. The RSPO system does not permit the establishment of production locations in regions where primary forest stood before 2005; the same applies to the RTRS system, but it sets the year limit at 2009. There are also criteria for preventing the establishment of production sites, by excluding areas — of the production regions that are valuable for biodiversity — the *High Conservation Value Areas*.

High crop yields require intensive management, which often causes the local biodiversity to be very low (Figure 8). Theoretically, high yields can also be favourable for biodiversity because they reduce the need for further expansion of the production region and deforestation. More than 40% of the global production of palm oil originates from farmers operating at a small-scale level of production. Their yield is approximately one third lower than that of large-scale plantations. The increase in yield can contribute

to preventing the expansion of the production region; however, in practice there is little proof that agrarian intensification results in this ‘sparing’ effect. Actually, the opposite is often the case and the profitable form of land usage has its undesirable effects. Higher productivity that leads to a better income provides more farmers with the incentive to follow these practices. This ultimately results in an expansion of the production (Perfecto and Vandermeer, 2010). Currently the demand for soya and palm oil by a growing and prospering world population is also increasing.

### **Effects of coffee and cacao production on biodiversity**

The expansion of cacao and coffee production in the past resulted in a great deal of deforestation. This is why certification systems for coffee and cacao comprise obligatory criteria for producers with regard to the prevention of deforestation. Farmers can also become certified if they allow other trees to grow along with the coffee and cacao plants. These plants are called ‘shade grown’ and ‘organic’. These intercropping production systems have relatively higher biodiversity values than monocultures (Figure 8).

These systems (also known as agri-forestry) also provide the possibility for low intensity forestry, which can serve as a supplemental source of income. Smallholder farmers, however, often lack the knowledge and capital needed to adjust their cultivating methods.

### **Effects on biodiversity of the exploitation of natural systems: forestry and wild fish harvest**

Forestry as well as fish harvesting exploit natural ecosystems. Production standards for forestry and fish harvesting provide incentives for the implementation of all sorts of techniques and production methods that have less negative effects on species and their populations (Beukers and Harms, 2012; Van Kuijk et al., 2009). An example of such production methods is the use of fish nets that limit the amount of by-catch, or well-planned and guided logging techniques that prevent damage to the surrounding trees. It is still unsure to what extent this approach — which has a local positive effect — will also contribute to more biodiversity at a higher regional scale or over the long term because of the indirect effects mentioned above. An important principle for the certification in these systems is that the annual crops or fish harvests stay within the sustainable and recovery capacity of the ecosystems. Criteria for *maximum sustainable yields* prevent overexploitation and degradation of ecosystems, which is positive for the local biodiversity. This usually means a reduction in the harvested quantities per hectare or per fish population. An indirect effect of this is that expansion of the production region will take place elsewhere, in order to meet the total demand. That expansion falls outside the scope of certification of the activities of a specific business.

## **Global deforestation has been curbed over the past decade, but large regional differences remain**

An important goal of promoting sustainable forestry worldwide is to curb deforestation. Sustainably managed global forest acreage has increased substantially; from 70 million hectares in 2000 to approximately 390 million hectares in 2012 (FSC, 2013; PEFC, 2013). That is approximately 30% of the forest that is used primarily for production (FAO, 2010). Deforestation has also decreased. In the last decade 50 million hectares of forest were lost. Prior to that in 1990 and 2000 the loss was at 80 million hectares (FAO, 2010). Despite this positive development, deforestation is still widespread, and that is partly related to logging — including illegal logging — as well as conversion to arable land (Hosonuma et al., 2012). Deforestation mainly occurs in tropical regions — Brazil, Southeast Asia, West Africa and Central Africa. A number of countries in these tropical regions have seen increased growth in certified forest acreage, but the portion is still relatively limited.

Certification in tropical counties generally lags behind certification in countries from the moderate and boreal world regions (Figure 9; from SCSKASC, 2012). In 2012, a total of 6% of the production forest in the tropics was certified for wood production. In the moderate and boreal zones, the certified production area is 52% and 44%, respectively. A properly functioning governance system is a prerequisite for successful certification (Cashore and Auld, 2012). A study by Greenpeace indicates the failing of wood certification in certain regions of the Congo that have a weak governance system (Greenpeace, 2013).

The significance of certification and the potential influence it has on processes such as deforestation depends on the global demand for and trade in certified wood. An approximate estimate of one third of forest conversions can be attributed to trade, and only 10% of that is intended for consumption in the European Union (EU, 2013).

### **3.2.3 Socio-economic effects of certification**

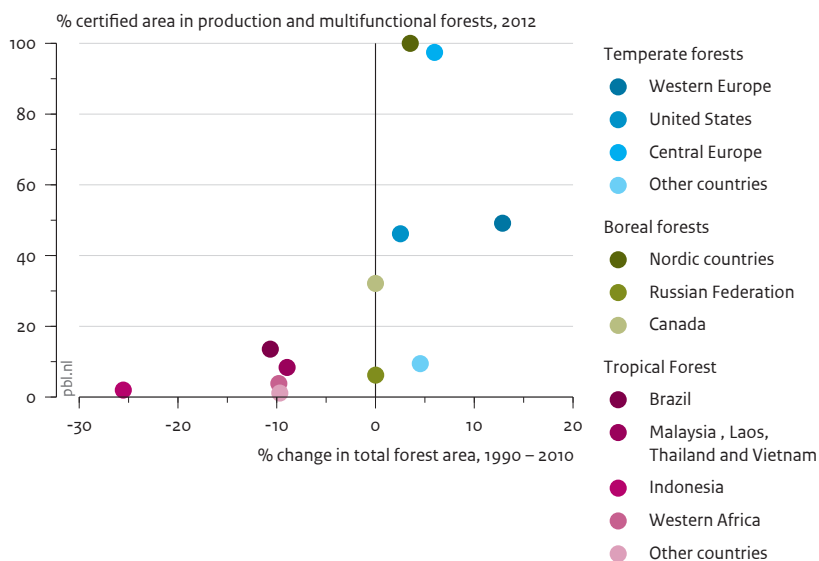
The following five aspects are important with regard to the effects of certification on the socio-economic development of primary producers (Kessler et al., 2012).

- net household income
- market position of the producer
- working conditions labourers and farmers involved
- community development
- land rights of farmers.

It is not so simple to make general statements regarding the socio-economic effects of certification. The differences in local contexts and institutional conditions are too great between regions and between raw materials. Most of the published impact studies concern certification systems that have been in effect for a long time, such as those for bananas, coffee and cacao (specifically for Fairtrade certification; Ruben, 2009). Scientific literature — mainly on coffee, cacao, bananas, cotton — reports different,



Figure 9  
**Relationship between changes in forest area and the share of certified forests**



Source: FAO/FSC/PEFC, 2012; adaptation by PBL

*Certification of sustainable forestry primarily exists in countries and regions with an effective level of governance, where laws and their enforcement are in order. These regions — mostly the moderate and boreal regions — no longer permit much, if any, deforestation; instead, the forest area is expanding. In tropical countries, forest certification is still relatively limited.*

neutral, positive, and negative effects of certification for the above-mentioned aspects. The positive effects mentioned the most are those of higher incomes and improved market positions.

Below, results from overview studies by Kessler and Pelders (2012) and Waarts et al. (2013) are concisely presented, per aspect. It is impossible to systematically address all these aspects for each raw material; to date, the literature does not provide a sufficiently complete picture.

### **Net income: positive effects are known, but not always**

Certification can have an effect on income through several mechanisms; a farmer can benefit from a higher price for a certified product, the yield can be higher, and the quality of the certified product can be better. It is difficult to generalise exactly what the effects of certification is on all farmers' incomes because certification can influence it in so many different ways. Moreover, the local situation and the global market prices also affect their income. Fluctuations in global market prices cause, for example, varying outcomes for certified sales markets that operate with fixed prices, premiums or

minimum prices. A higher income may also be the result of the fact that farmers who participate in a certification programme are on average older or have a higher education level than the non-certified farmers. Meta-studies provide many different results on the effects of certification on global incomes; for example, 54% of the case studies show a positive effect on incomes, 38% of them show no effect, and 8% of the studies observe a negative effect (Waarts et al., 2013).

Whenever higher incomes are observed, this often involves only a slight increase. Price premiums for certified products are often small, or even absent. A higher profit is often accompanied by higher costs, which limits the effect on the net income.

#### **Market position: certification contributes to accessing new markets**

The term 'market position' means the sales market opportunities of producers and their access to export markets. The available reviews report that the improvement of market access is an important added value of certification. This is possible in direct ways, such as when a producer gains access to specific niche markets that were not accessible in the past; but it is also possible in indirect ways, such as through gaining improved access to market information or better marketing.

#### **Working conditions: improvement at the legislative level**

Certification has improved the working conditions of labourers in a number of cases. The aspects of working conditions that are examined include the health and safety of the working environment, job security, and if oppression and child labour are acted upon.

Research on forestry shows that FSC certification has positively influenced working conditions and the sector now complies with local legislation more frequently. This does not claim that certification has any supplemental statutory value, but it does contribute to the enforcement of national laws. For instance, since the certification label has been implemented for the production of Fair Trade jobs in Ecuador, labourers have more job security.

#### **Development at community level: varying results**

The positive effects of certification may have a positive impact not only on a producer's income, but also on the local community. Members of certified cooperatives invest more in education and housing, and can ensure that higher incomes resulting from certification flow back into the local communities. Other studies mention that the added costs of certification can lead to the improvement of the living conditions in local communities, such as improved access to medical facilities. One study that reports a neutral impact on community development showed how the added costs of certification were only being used to improve labourers' prosperity levels and that they were not invested in the local community.

### **Land rights: potentially inflammatory issues addressed**

Agreements to guarantee the land rights of local communities were made during the roundtable negotiations for palm oil (RSPO). Producers regularly try to claim the ground that belongs to the local population. As an example for solving conflicts between both parties, a *Dispute Settlement* facility was created in Indonesia where local communities can present their case. Local communities and NGOs contest many RSPO certificates because there are conflicts between the producers and the local communities regarding land rights. For the first time, now that the Dispute Settlement facility has been established, these types of conflicts are being addressed.

Land rights are not sufficiently guaranteed in some certification systems. This issue led to many discussions about recognising the MTCS system for wood from Malaysia for use in the Dutch Sustainable Procurement Policy. Some authors conclude that individual land rights should be implemented more quickly in order to prevent farmers from being discouraged from investing in sustainability, out of fear of losing their land (Both ENDS, 2012).

## **3.3 Dutch policy on creating sustainable supply chains through market initiatives**

### **The government is using several instruments to provide incentives for making supply chains sustainable**

The Dutch Government is providing incentives through support and it facilitates market stakeholders to participate in making supply chains sustainable (Vermeulen et al., 2010). The government has developed its Sustainable Procurement Policy whereby they only purchase products with a sustainability label. In collaboration with businesses, government has also drawn up declarations of intention — and more recently, Green Deals — with which businesses or social organisations receive governmental support for making their business operations sustainable. The government also collaborates on drawing up public-private partnership initiatives, such as the Sustainable Trade Initiative (IDH). The activities of the IDH aim to expand the production of certified raw materials in production regions elsewhere in the world, and to develop new standards for a number of raw materials in sectors where they are lacking, as is the case with aquaculture.

### **The government leaves it up to the market to formulate quantitative goals**

On a strategic level, the Dutch Government considers it an important issue to make trade more sustainable, but it provides no indication of the related aspired ambition level. Setting quantitative goals — for example, on the size of the sustainably produced share of products in a specific supply chain, or a measurable transition towards more sustainable production methods — are left to market stakeholders (Kamphorst, 2009). Exceptions have been certain goals in the Biodiversity Policy Programme, such as 50%

of the wood on the Dutch market having to be sustainably produced by 2011, and 40% of the Dutch bottom trawling fleet having to use sustainable harvesting methods. In some cases, objectives of social organisations are documented in declarations of intention, with the government as co-signatory.

### **Emphasis on communicative and supportive instruments**

The instruments that the government uses to provide incentives for a further sustainability of supply chains are focused on exerting indirect rather than direct influence, because of the cross-border character of supply chains. This for example may involve transparency obligations, communication directed at buyers regarding the content and function of certification labels, and the political and financial support for setting up private networks and initiatives.

### **Specific policy developed for wood and palm oil**

With regard to increasing the sustainability of wood and palm oil production, the government pursues a more deliberate policy. For wood, the main concern is about the rate and consequences of worldwide deforestation. The Netherlands has formulated its own minimum requirements for sustainable forestry, and uses these requirements as a standard for sustainable procurement by the government (VROM, 2008). Palm oil mainly receives attention because of the role of expanding plantations in deforestation and drainage of peatlands, which both cause high levels of greenhouse gas emissions. There are also concerns about the risk that obligations for making biomass part of the energy mix will encourage more land use for palm oil production. This risk also applies to other biofuels, and the European Commission is working on standards to reduce this risk. Standards with lower or more restrictive requirements can hinder the further development and uptake of RSPO and RTRS standards.

### **Sustainable procurement and the facilitation of public-private partnerships are currently the most important Dutch instruments**

The most prominent instruments the Dutch Government has at its disposal to provide incentives for making supply chains sustainable are the Sustainable Trade Initiative (IDH) and the Sustainable Procurement Programme. These instruments affect almost 20 sectors and supply chains, including wood, palm oil, tea, soya, cotton, aquaculture, and fish harvest. The IDH initiatives focus on raw material supply chains and, as yet, not so much on end-products. The Sustainable Procurement Programme focuses on the sustainable procurement of all products purchased by the government, for purposes such as building, clothing and catering.

### **Effect of sustainable procurement on making supply chains more sustainable**

Through the Sustainable Procurement Programme, the government can stimulate sustainable supply chains in different ways. First of all, the magnitude of governmental procurements (7% of the GNP; DHV, 2009) and the formulation of its own sustainability requirements contribute to the development of the market. Businesses for which the government is a large customer may decide to make their entire supply of products

sustainable. Although the government purchases relatively little biotic agrarian raw materials, it is a relevant market stakeholder for the purchase of tropical wood that is used in civil engineering (DHV, 2009).

Sustainable procurement budgets are reported, but the volumes of sustainably produced raw materials are not. The 2010 Sustainable Procurement Monitor (KPMG, 2010) reports that a large portion (an average of 94%) of government expenditure is on products that meet sustainability requirements. Up to now, sustainable purchasing primarily has its effect on environmental aspects; social aspects, to date, have not been monitored very frequently.

The sustainable purchase in catering was 99% of its budget, and for paper this was 77%. There are no separate figures reported on the sustainability of timber used in public construction projects. Friends of the Earth Netherlands (*Milieudefensie*) has examined governmental construction projects, and established that even though sustainable construction materials are prescribed, this is by no means always put into practice. Compliance checks are often lacking (Van Baalen et al., 2012; Van Benthem et al., 2011).

**Table 3**  
**Certification labels on the Dutch market**

<b>Abbreviation</b>	<b>FLO</b>	<b>RA-San</b>
Name	Fairtrade Labelling Organisations, previously Max Havelaar	Rainforest Alliance/ Sustainable Agriculture Network
Certification label or standard actively on the market since	1988	1992
Products or raw materials	Several agriculture products, including coffee, bananas, cacao	Several forestry and agriculture products
Mission and purpose	More prosperity for developing countries	Encourage sustainable tropical agriculture and forestry
Accents	Improved trade position for producers	Focus on tropical biodiversity and living conditions for farmers. Use of FSC
Initiators	NGO (Solidaridad)	NGO
Composition of stewardship (social/businesses/government in %)	65/25/10	40/60/0
ISEAL member	Yes	Yes
Cut-off date for conversion to agriculture, plantations and aquaculture	In accordance with national laws	Agriculture: 2005 – mitigation needed between 1999 and 2005 / Forestry: see FSC
Using GMOs (genetically modified organisms)	Not permitted	Not permitted
Using international standards and conventions	ISO, ILO	ILO, ISO, WHO, CITES, CBD
Implementation certification and monitoring	Independent (by FLO-CERT)	Own certification; independent evaluation

Source: several sources, compilation by PBL Netherlands Environmental Assessment Agency 2013

FSC	PEFC	MSC
Forest Stewardship Council	Programme for the Endorsement of Forest Certification	Marine Stewardship Council
1994	1999	1999
Forestry products: wood, paper and various end products	Forestry products: wood and paper	Harvested fish, shellfish, crustaceans
Sustainable management and use of forests	Sustainable management and use of forests	Encourage methods for sustainable fishery in oceans
Specify general principles in national FSC standards	Acknowledge national standards. Comprehensive system	Separate standard for each species
NGO and businesses (including WWF)	Businesses – link to national standards	NGO and businesses (WWF and Unilever)
75/25/0	40/50/10	25/25/50
Yes	No	Yes
	1994 Not permitted, no year mentioned	n/a
Not permitted	Not permitted	n/a
ILO, ISO, WTO, CITES, CBD	ISO, ILO, CITES	General reference to international treaties
3rd party, accredited	3rd party, accredited	3rd party, accredited

Table 3 (continued)

**Certification labels on the Dutch market**

Abbreviation	UTZ Certified	4C Association
Name		Association for a Common Code for the Coffee Community
Certification label or standard actively on the market since	2002	2006
Products or raw materials	Several agriculture products, including coffee, cacao and tea	Coffee
Mission and purpose	Broad application of sustainable production methods. Professionalisation of farmers is central	Offer basic sustainability criteria, with gradual improvements of production practices
Accents	Professionalisation of farmers. Increasing quality	Bottom-line for acceptable practices
Initiators	Businesses (AH, among other businesses)	Businesses and government
Composition of stewardship (social/businesses/government in %)	50/50/0	25/75/0
ISEAL member	Yes	Yes
Cut-off date for conversion to agriculture, plantations and aquaculture	2 years prior to association with UTZ	5 years prior to association with 4C
Using GMOs (genetically modified organisms)	In accordance with national laws	No viewpoint
Using international standards and conventions	ILO	ILO, WHO
Implementation certification and monitoring	3rd party, accredited	3rd party, accredited



Proterra	RSPO	RTRS	ASC
Proterra Foundation	Round Table on Sustainable Palm Oil	Round Table on Responsible Soy Association	Aquaculture Stewardship Council
2006	2008	2011	2012
Soya and soya by-products	Palm oil (separate standard for use as biofuel)	Soya	Cultured fish, shellfish, crustaceans
Support industry by striving towards sustainable food production system	Sustainable palm oil becomes the standard	Encourage responsible production of soya, focused on reducing social and environmental impacts	Enhance the role of sustainable aquaculture in food provision
Focus on offering non-GMO soya	Smallholder programme and land rights	Constant-improvement model	Separate standard for each species
Drawn up from certification organisation Cert-ID	NGO and businesses (WWF and Unilever, among other businesses)	NGO and businesses (WWF and Cargill, among other businesses)	NGO and PP partnership (WWF and IDH)
No data	25/75/0	45/55/0	No data
No	Yes	No	Yes
2004	2005	2009	1999 (wetland conversion)
Not permitted	No viewpoint	GMO soya permitted conditionally	Not permitted. Transparency about use of GMO fish food
ILO, Basel criteria, GLOBAL-GAP	ILO, CBD, UN indigenous human rights	ILO, WHO, CBD	ILO, WHO
Certification by way of Cert-ID	3rd party, accredited	3rd party, accredited	3rd party, accredited

# Six supply chains in focus

This section critically examines six supply chains and answers the following questions: Where do the imported raw materials originate from, and what are the sustainability problems related to their production? What sustainability initiatives are on the market, what is their market share, and what are the effects of the use of standards for sustainability targets? What are the obstacles for taking the next step in the process of sustainable development?

## Coffee and cacao

Coffee and cacao beans are produced by farmers in Africa, Asia and Latin America. Most farms are small scale, but there are also a limited number of large plantations, such as in Indonesia. Problems of poverty, inequality of rights, child labour, working conditions, environment, and market accessibility are persistent.

For coffee and cacao there are different certification systems which issue market labels that have the advantage of broad familiarity among consumers. Fairtrade and Max Havelaar focus on improving farmers' socio-economic circumstances; Organic (IFOAM standard) and Rainforest Alliance promote organic production and environmental protection; UTz Certified and the 4C Association place a stronger accent on the improvement of production efficiency and quality (also see Table 3).

Up to 2010, the share of global sustainable production, in accordance with various standards, grew to 16% for coffee (TCC, 2012b), and around 13% for cacao (reference year 2011; TCC, 2012a). The global production of sustainably produced coffee and cacao is greater than the demand, such that only part of the certified product is sold under a certification label; 50% for coffee and 30% to 50% for cacao.

The Dutch market share of sustainably produced coffee is approximately 40% (2011, see Figure 10; KNVKT, 2013). A complete overview of the sale of sustainably produced cacao



*Cacao is produced in the undergrowth of tropical forests. The Netherlands is a major importer and processor of cacao.*

on the Dutch market is not available at this moment. An estimate based on the expected business demand in 2010 (IDH and CREM, 2010) comes to between 10% and 15%. Covenants and intentions of the business community and sector organisations aim for 100% of certified cacao consumed in the Netherlands by 2025, and by 2015 for 75% of the consumed coffee.

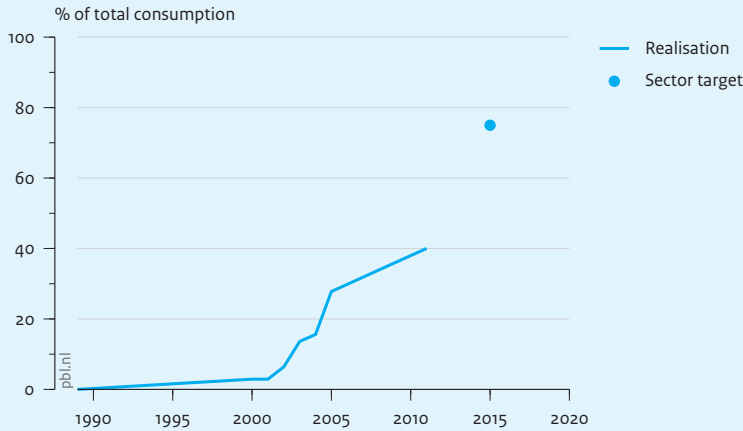
Sustainability initiatives along the coffee chains have been in existence for more than 20 years. Nevertheless, analysis of the impact certified production has in production regions has been only limited (Blackman and Rivera, 2010; Ruben, 2009). Monitoring of impacts in a more systematic way is needed to clarify the effects of the efforts certification and voluntary initiatives have had.

All sorts of positive effects have been reported, but these cannot be generalised. Contributions to improving incomes and alleviating poverty are modest at best and depend on the structure of the certification system. The premium price for sustainable coffee, such as was introduced by Fairtrade in a period of low market prices, may plummet if world market prices are high.

Producers of certified products can get a higher price for good quality products. The certification labels give them better access to markets. In addition, individual farmers and farmer associations receive support from governments and sustainability initiatives through, for example, establishing cooperatives or becoming associated with one. Organising farmers has turned out to be important in improving incomes, in the long term.

Little is known about the effects of certification on land rights. This also applies to the impact on environmental conditions and nature, compared to what we know about the socio-economic impact. Cacao and coffee crops can be effectively combined with low-intensity forestry (agri-forestry), and in that way contribute to broader regional environmental goals (Kessler et al., 2012; Waarts et al., 2013).

Figure 10  
**Dutch consumption of sustainably produced coffee**



Source: TCC, UTZ Certified, FLO/Max Havelaar, Statistics Netherlands

*After a long period of only having marginal shares, the market share of sustainable coffee is approaching almost half of the total consumption. The large increase after 2000 was primarily caused by the increased sale of coffee under the UTZ Certified label. The organisations involved in the coffee sector have drawn up a declaration of intention for three quarters of the coffee consumption to have a sustainability label by 2015.*

Further scaling up of sustainable production is difficult, in particular, due to the circumstances of primary producers. Certification of their production costs money; their operational costs may exceed their earnings from selling certified products. The international markets are not always easily accessible for smallholders and acquiring knowledge and capital is difficult. Market conditions in production regions can undermine the possibility of acquiring a higher income, and the investment climate is usually unfavourable. Supportive programmes that focus on local conditions are needed to reach smallholders and to make certification a broad success.

## Wood

At the global level, there are a number of problems in the area of forest management, namely deforestation, forest degradation, and loss of ecosystem services. Standards for sustainable forestry, such as FSC and PEFC, are attempts to solve part of these problems. They have built up 20 years of experience with standards for sustainable forestry.

Some 400 million hectares of forest in the world are managed in accordance with these sustainability standards (2012). These forests provide approximately one third of the



*Harvest of tropical hardwood in a mixed forest. Hardwood is primarily used in construction and for making garden furniture.*

global production of industrially used wood. The size of the certified acreage in the tropics, where deforestation problems are the greatest, lags behind the certified acreage in other regions (Blaser et al., 2011; PWC and IDH, 2012).

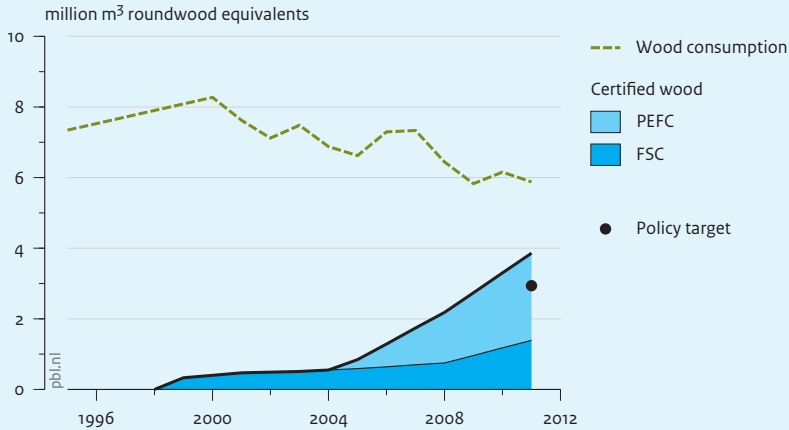
A large part of the construction timber that the Netherlands imports and uses is verifiably sustainable (66%; see Figure 11), and mostly consists of softwood from world regions with a temperate climate. The sustainable shares are lower for tropical hardwood and, specifically, for hardwood from temperate regions (39% and 23% in 2011, respectively). The certified tropical wood trade on the Dutch market has seen progress in recent years; for example, in 2008, the share for tropical wood was only 16% (Oldenburger et al., 2013). Dutch wood merchant organisation has set a target for 2015 whereby 50% of the hardwood and 85% of all wood import must be sustainably produced (VVNH, 2012).

The government did not reach its target to exclusively use sustainable wood for its civil engineering projects by 2010 (Van Baalen et al., 2011). The control of whether the purchased wood is actually in accordance with the prescribed procurement criteria does not always take place (Van Benthem et al., 2011).

With regard to the socio-economic effects, production standards have positive effects on the working conditions and the training of forestry labourers (Kessler et al., 2012). In experimental comparisons, the various management methods that are stimulated by sustainable forestry have positive effects on the local biodiversity in production regions (Van Kuijk et al., 2009). The question remains as to how these local effects can contribute to the reduction of biodiversity loss and deforestation on a higher spatial level.

The improvements realised during certification processes to correct for observed deviations from the standard provide insight into the added value of certification in practice (Peña-Claros et al., 2009), but this type of information is not always made public by companies in sufficient detail (Jansen and Van Benthem, 2009). Sufficient and well-thought-out effect measurements for forestry certification are lacking, which makes it difficult to create an accurate overview of the improvements and adjustments

Figure 11  
**Dutch consumption of sustainably produced timber**



Source: Probos, 2013; FSC, 2013; PEFC, 2013

The Dutch consumption of verified sustainably produced wood has risen to more than 60%, exceeding the 50% policy goal set for 2011. The sustainable share of tropical wood is almost 40% (not including wood with the Malaysian Timber Certification Scheme (MTCS) label), which does not conform with the government criteria according to the TPAC assessment committee (Oldenburger et al., 2013).

needed to enhance the effects of that certification. Broad measurement programs are under development.

Market stakeholders do not fully report on the tropical regions of provenance either, which keeps priority regions for monitoring or improving policy issues out of sight. The EU legislation on wood import (EU, 2010) that came into effect in 2013 may change this. An important aspect of this regulation is that market stakeholders are required to demonstrate the legal origin of wood, especially when the wood originates from potentially risky regions (*due diligence obligation*).

The costs of certification and the implementation of sustainable forestry are a well-known obstacle for further scaling up of sustainable forestry (PWC and IDH, 2012). The low-hanging fruit seems to have already been picked; in other words, certification has focused on wood from temperate and boreal regions where forestry legislation is already in order for the most part, but that is also where the added value of certification is limited (Cashore and Auld, 2012; Gullison, 2003). The premium prices available on the market seem to insufficiently cover the additional costs of sustainable management methods, which are relatively high, particularly in the tropics. The financial benefits from logging could even decline if sustainable forestry criteria lead to lower annual wood harvest (PWC and IDH, 2012).

The Dutch Government has been administering policies for the maintenance and sustainable use of tropical forests since 1991. The government goal of having a market share of wood that is 50% verifiably, sustainably produced wood by 2011 was reached, mainly because of the efforts made by businesses. The government recently closed a Green Deal with several market stakeholders to further promote the demand for sustainable wood on the Dutch market. The government strives to control the public purchasing process for wood more consistently.

The tropics are a priority region for Dutch policy frameworks because the global progress with certification in these regions is limited. The government-financed forestry programmes in the Sustainable Trade Initiative (IDH) provide incentives for the certification of forestry in the three tropical regions. The government is making efforts to organise a global roundtable on providing incentives for sustainable forestry.

The EU legality requirement that came into effect in 2013 — stating that no illegal activities may take place for any wood that is being brought on the European market — provides a level playing field for the market stakeholders. The requirements for legality overlap somewhat with the requirements for sustainable production. A portion of the costs for becoming sustainable could be covered by the legislative requirements. This overlap might make the additional step towards sustainable wood production relatively small (PWC and IDH, 2012). The question then is if the wood trade is going to focus on the minimum level of legality, or immediately make the transition to a sustainable production standard.

In addition to providing incentives for an increase in the demand for and supply of sustainably produced wood, it is also necessary to implement supportive policies — in cooperation with local governments — for production regions in developing countries. This could be made possible through bilateral agreements – the EU Voluntary Partnership Agreements – which were drawn up to assist production countries formulate their legislative policies (Pearce, 2012).

An example of that is having national forestry regulations include voluntary market standards, which would also give the already realised results a more permanent character. This would require implementing standards that are in harmony with what is regarded as sustainable practices in a specific region.

## Fish

The increasing pressure on global fish stocks caused by current fishery practices leads to overexploitation of many fish populations. Approximately 30% of the fish populations were overfished or exhausted in 2009, and more than 57% of the commercially fished stocks were exploited to the maximum (FAO, 2012).



*A great deal of fish is being cultivated in the tropics. Tilapia is one of the fish species imported into the Netherlands.*

The Dutch consumption of fish is increasing, steadily; for a large part, this involves imported fish from Western countries as well as developing countries. The sustainability certification labels that the Netherlands considers the most important are the MSC for wild fish caught from the sea, and the ASC (Aquaculture Stewardship Council) for cultured fish. The MSC label focuses primarily on ecology: prohibit overfishing, minimum impact on the ecosystem, and an effective fishery stewardship. The ASC uses environmental as well as socio-economic criteria. Traceability of the origin and sustainability of the harvest or production are the priorities for both of these certification labels (Beukers and Harms, 2012).

The Dutch consumption of MSC-certified harvested fish has substantially increased in recent years from approximately 1,000 tonnes in 2006 to 26,000 tonnes in 2011 (Figure 12). The share of MSC-certified wild caught fish was 40% at the end of 2011.

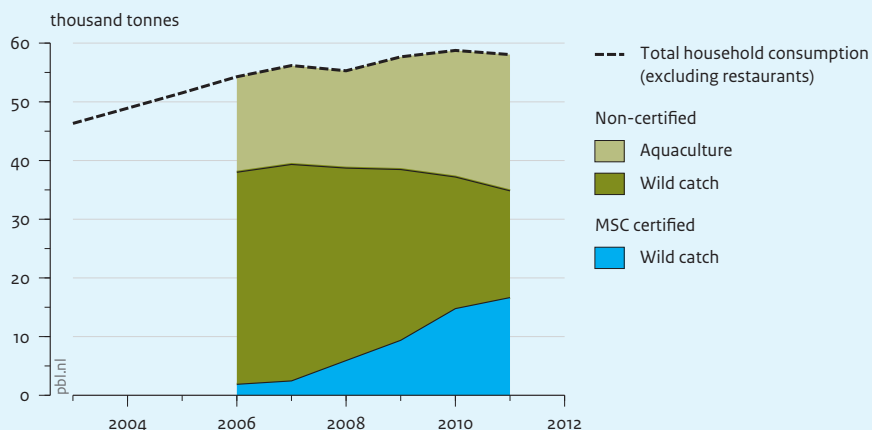
The share of aquaculture in the total consumption is gradually increasing, with a large part of that originating from developing countries (Beukers and Harms, 2012).

So far, more large aquaculture businesses exist than small ones, mainly because large businesses produce to export their products and are faced with the demand for certified products from non-domestic markets. Larger businesses also have more influence with their suppliers and obtain more information about the feed and cultivation material they receive from them. This type of information is more difficult to access for small cultivators, which makes it more difficult for them to comply with the standards.

Furthermore, certification has to provide the cultivators a guarantee that they can recuperate the costs of certification; for instance, because they receive a higher price for the fish, gain better access to the market, or have their production operate more efficiently.



Figure 12  
Dutch consumption of fish



Source: MSC International, 2012

The consumption of fish in the Netherlands is increasing, and that is primarily thanks to the increasing amount of aquaculture. The share of the MSC certification label in the consumption of wild caught fish has risen to 40%. A sustainability label for aquaculture has only recently been introduced to the Dutch market.

The effectiveness of MSC certification for sustainability issues has been under debate. Effects are difficult to measure, partially because of the lack of comparative information (pre- and post-certification). It is difficult to determine the extent to which certification has attributed to any improvements that have occurred, or whether any other causes could have led to those improvements (Beukers and Harms, 2012).

Comparative studies show that certified fish stocks are generally healthier and are managed better (Gutiérrez et al., 2012). MSC certification has a positive effect of curbing the amount of by-catch. What makes this effect modest is that the fisheries that successfully completed the certification procedure were already managing the fish stocks reasonably well even prior to receiving their certificate (Cambridge et al., 2011). The large group of fisheries that operate further outside the range of sustainable production standards need to be provided incentives to become certified, if biodiversity is to be seriously maintained. However, a recent overview of MSC-certified fisheries shows that an increasing amount of businesses with lower initial scores are now also being included in the programme (MSC International, 2013).

Improved access to markets and advantageous prices are additional positive economic impacts for MSC-certified businesses. A negative aspect is that the costs of certification can be potentially too high for small-scale fisheries, which could result in limited access to the markets for certified fish (Kessler and Pelders, 2012).

The ASC certification label for aquaculture has not been in existence for very long; the ASC only started auditing and certifying in 2012. The ASC criteria focus largely on socio-economic aspects. Therefore, cultivators who want to become certified are expected to be interested in contributing to improvements with regard to social aspects such as working conditions, and health and safety measures (Kessler and Pelders, 2012).

MSC-certified fish stocks are primarily found in the Western world. Different tiers of standards could be implemented to provide incentives for certification of fisheries in developing countries. Producers who do not have the means to improve their practices to the highest level could possibly meet lower standards of improvement (Pérez-Ramírez et al., 2012). The introduction of tiered standards, however, conflicts with the need for clarity; as it is, consumers are confused about the different certification labels that are already on the market. Such standards would have to be in conjunction with an continuous improvement model (see Text box 3). The government and certification agencies jointly would have to provide information on the reliability of the differences between the tiers of certification labels in order to educate the consumers.

Despite the improved market developments of sustainably harvested fish and aquaculture, the government still has a major role primarily because the oceans are common property with no exclusive property rights. To protect marine biodiversity government policies are also needed to set quotas, protect against by-catch, and establish protected regions prohibiting fishing. It is advisable to thoroughly integrate all the different policy tracks focused on sustainable fishing. The Dutch fishery policy is part of the Common Fisheries Policy (CFP) of the European Union.

Making fish catches and production sustainable can be seen as part of a broader strategy. In order for the fish industry to be more sustainable, the market needs to introduce a wider variety of species; for example, providing incentives for a shift from consuming carnivorous fish to more omnivorous fish, or to fish from regions that are not overfished (Westhoek et al., 2013).

## Palm oil

Palm oil is the most widely used vegetable oil in the world; yields are high and it is widely used in food, fodder, and as an additive in all sorts of cosmetic products. Palm oil is used in chips, biscuits and soap, and can also be used as fuel.

The global production of palm oil tripled between 1995 and 2010, and future demand for it is expected to strongly increase. Causes for the increasing demand are the global population growth, the growing prosperity in countries such as India and China, and more recently, the use of palm oil as biofuel.



The palm oil processed in the Netherlands is used in all sorts of products, such as biscuits, chips, lipstick, and biodiesel.

Deforestation for expansion of production regions is one of the most salient sustainability problems for this sector, along with guaranteeing the land rights of smallholders in production countries. Approximately 85% of the world production of palm oil originates from Indonesia and Malaysia; expansion is taking place in Africa and Latin America (Sustainable Palm Oil Task Force, 2011; WWF, 2013).

The RSPO was established in 2004 to make provisions for sustainably produced palm oil. Several stakeholders from the industry, nature and environmental organisations, and development-related NGOs are represented in the RSPO. The RSPO certification label agreed upon by the members guarantees sustainable production, along with criteria for clean production methods, protection of nature, and respect for the rights of labourers and local populations. An important facility of the RSPO is the possibility to address conflicts over land rights through the *Dispute Settlement Facility*.

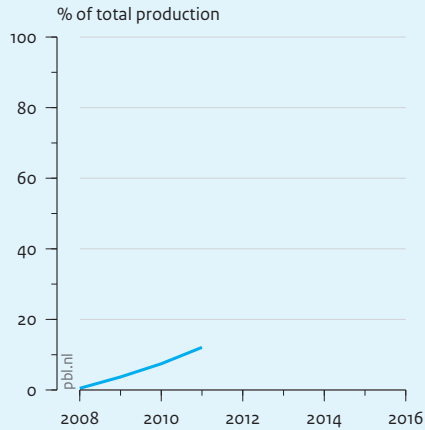
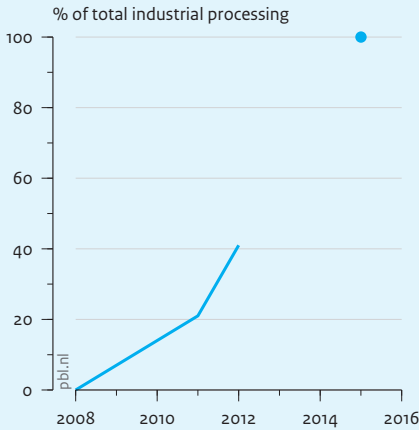
So far, 14% of global palm oil production is RSPO certified and this percentage has remained stable with the growing production in recent years (RSPO, 2013). Not all sustainably produced palm oil on the market is sold with a certification label, the market uptake is approximately 50%. As much as 41% of the palm oil used in the Dutch industry in 2012 was RSPO certified palm oil; double the amount it used in 2011 (Sustainable Palm Oil Task Force, 2013b). Dutch industry has adopted the target for 2015 of 100% sustainable palm oil usage set by the Sustainable Palm Oil Task Force (Figure 13).

It is plausible that production conforming to the RSPO criteria would have a favourable effect on nature, the environment, and the working conditions of smallholders and labourers. However, there are up to now hardly any robust scientific studies on the social and economic effects of sustainability initiatives related to palm oil. Part of the reason for this is that practically none of the smallholders produce under the RSPO certification label. That is due to lack of expertise, a shortage of agricultural necessities, and problems with obtaining financial credit.

Figure 13  
**Market share of sustainably produced palm oil**

Dutch processing with RSPO certificate

Global production



— Realisation  
 ● Sector target

Source: RSPO, 2013 ; Taskforce Palmolie, 2013

*The Dutch market share of sustainably produced palm oil has sharply increased since 2008. On a global scale, growth levels are substantially lower. The demand for sustainable palm oil in sales markets such as China and India is still low.*

The global demand for palm oil is increasing, particularly because of the growing markets in China and India. There are signals of recent production expansion taking place at the expense of natural regions that have high biodiversity value, such as in the Congo Basin in Africa (Rainforest Foundation UK, 2013).

A broad and integrated strategy is needed — in production as well as consumption countries — in order to realise a scaling up of sustainable palm oil production. In the production countries, suitable monitoring is needed to verify compliance with the RSPO sustainability criteria. Supportive policies are needed in the area of land planning, maintaining protected regions, guaranteeing land rights of smallholders, and reliable governance (Both ENDS, 2012; World Bank/IFC, 2011).

A clear in production countries is to increase the yield, especially for the group of producers operating on a small scale (*smallholders*). The productivity of smallholders is as much as approximately 40% lower than that of large-scale plantations, but they do produce more than 30% of the total. Training in best practices (harvest techniques, use of seedlings, fertiliser, replanting techniques), and programmes for technical assistance



*Harvest of soya in Mato Grosso, Brazil. Soya is imported to the Netherlands and used as fodder for cows and poultry, among other uses.*

could have a favourable impact on the reduction in environmental problems and on increases in production as well as income. In this way, also the environmental problems of non-sustainable production methods can be addressed (Molenaar et al., 2011). The presence of a number of supplemental institutional conditions is also needed: access to financing, sales market, land, and a good physical infrastructure.

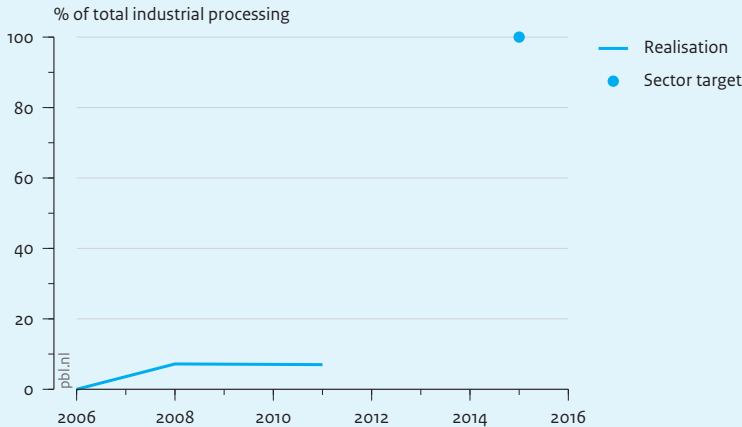
Smallholders do not comprise a uniform, homogenous group. Some smallholders are connected to plantations; others are independent or organised in cooperatives. Reaching these separate groups requires a specific small-scale strategy, which is why the WNF, RSPO, and Solidaridad developed the Palm Oil Support Initiative, which supports 15,000 smallholders on their way towards certified RSPO production. The Ministry of Foreign Affairs is a major financier of this programme (Dros, 2011).

Current demand for sustainable palm oil, predominantly, comes from the United States and Europe. The demand for RSPO palm oil in China and India is still relatively small and could be stimulated further. To increase the demand in consumption countries, and especially to expand new markets, it is important to increase awareness particularly within businesses, because palm oil is a product that is incorporated into a large number of end products and, as such, it is relatively invisible to consumers.

## Soya

The acreage of soya crops in the world has expanded by one third in the past decade because of a global increase in the demand for meat and dairy. Much of the soya originates from Brazil, Argentina, Paraguay and the United States. The sharp rise in soya production is causing problems of deforestation, fragmentation of protected regions, large-scale erosion, desertification, pesticide use, and disrupted water balance (Kamphuis et al., 2011). Labour rights, land conflicts, and reaching small-scale producers (*smallholder inclusion*) are important social issues for soya production (Kessler and Pelders, 2012). The risks involved in using genetically modified foods (GMOs) are also a much debated topic (Van der Sterren, 2009).

Figure 14  
Share of sustainably produced soya in Dutch processing



Source: Nederlandse sojacoalitie, 2012

Certification of responsibly produced soya started in 2006, and since then, the sustainable market share of Dutch consumption has risen to 7% — three quarters of which are RTRS certified soya. The purchase of RTRS soya in the Dutch processing industry has doubled between 2011 and 2012.

Approximately 3% of the world production of soya beans is processed in the Netherlands for Dutch consumption or for export products. Market stakeholders in the Netherlands have taken the initiative to use more certified soya. In 2011, major stakeholders in the animal fodder and animal husbandry supply chain, and various supermarkets agreed that by 2015, 100% of the soya they buy for the production of meat, dairy, eggs, and other foodstuffs in the Netherlands will be responsibly produced (Dutch Foundation for Chain Transition Responsible Soy, 2013).

The share of certified soya in total global soya production has increased to almost 4%. That does not include the soya produced in the United States under national legislation, the recognition of which is currently being sought for inclusion in the EU Renewable Energy Directive (*sustainability pledge*). By far, most of the worldwide certified soya is GMO-free soya that meets the Proterra criteria, which is a certification label that has been around for almost ten years (estimate based on the RTRS and Proterra websites, and Van Gelder and Herder, 2012).

The production standards established by the RTRS only came into effect in 2010. The share of global soya production in accordance with the RTRS has reached almost 0.4% in a bit more than a year. The RTRS certified soya is more commonly used in the Netherlands and Belgium currently. The impact of RTRS soya can expand when other European countries also shift towards using certified soya. This soya is relatively

expensive because it is transported and traded separately (*segregated*), also because the trade cannot yet profit from economies of scale. The solution to this is to implement a system of *mass balance* or certification trade (*book and claim*).

The market share of certified soya is higher in the Netherlands than the global average. According to the soya barometer in 2011 (Van Gelder and Herder, 2012), approximately 7% of the soya processed in the Netherlands was certified (Figure 14), three quarters of which met the RTRS criteria. The market share of certified soya may be somewhat higher because it is not easy to establish the total use.

In 2012, Dutch businesses purchased more than 280,000 tonnes of responsible soya with RTRS certification; double the amount purchased in 2011. By 2015, 100% of purchased soya must be responsibly produced in accordance with the RTRS — or comparable — label (Dutch Foundation for Chain Transition Responsible Soy, 2013).

Not much is known about the effects of certified soya production, partially because the RTRS system has only been in existence for a brief period. Documentation on the progress of making this industry sustainable could still see some improvement. Public audit reports contain little information on the degree to which the objectives have been reached, the sustainable development of businesses, or the implemented improvements associated with the RTRS improvement model (Freeze, 2012).

The government is cooperating with businesses, social organisations, and knowledge institutes through the Sustainable Trade Initiative (IDH). The government has mainly focused on supporting sustainable production in countries of origin, and offering legal and financial support for sustainability initiatives in the soya supply chain, for example, by bearing half the investment costs. As is the case with the palm oil industry, there is an initiative for the soya industry that strives to make certification accessible for small businesses; the RTRS cooperates with Solidaridad in what is called the Soy Producer Support Initiative (SOYPSI). The goal is to have 25,000 farmers produce in accordance with the RTRS criteria in 2012.

# Making supply chains sustainable: obstacles and limitations

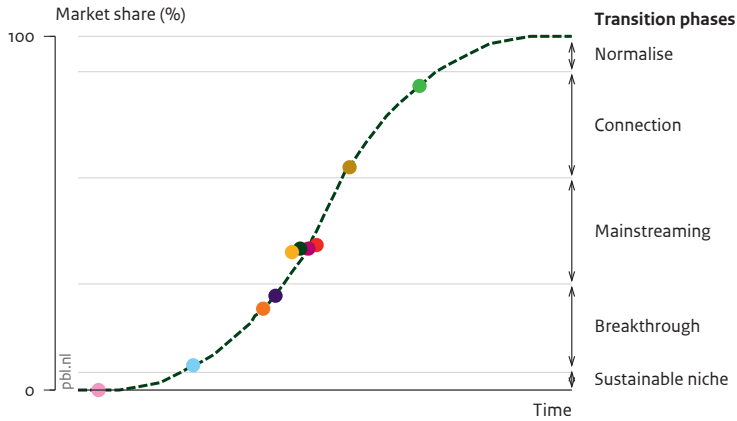
The different supply chains are confronted with a number of obstacles in the process of becoming sustainable. Limitations to the scope of the voluntary initiatives for standards and certification are also present. This chapter addresses the obstacles and limitations of becoming more sustainable through certification, including the strengths and weaknesses of the current role of government policy. The information in this chapter is followed through in the next chapter, which presents four prospects for action.

## 4.1 Obstacles to scaling up sustainable supply chains

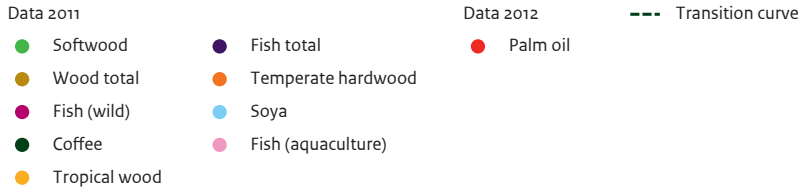
Producers, traders, and governments are confronted with a number of mutually interrelated obstacles in their attempts to make different supply chains more sustainable (OECD, 2013; SCSKASC, 2012). These obstacles the supply chains come across partially depend on the phases of the transition process towards sustainability. The phase in which a supply chain finds itself can be identified by the Dutch market shares that have a certification label for sustainable production (Figure 15). The societal challenge is to encourage the consumption of sustainably produced raw materials here, and to provide incentives for the sustainable production of raw materials elsewhere. That does not necessarily have to be solely and absolutely via certification. As the sustainable share increases, it is no longer necessary for the raw material to carry a certification label to provide a distinguishing market signal.



Figure 15  
**Market transition towards sustainably produced products**



Dutch consumption of sustainably produced products



Source: Various sources; adaptation by PBL, 2013

The supply chains are in different phases of the transition process towards becoming sustainable. The nature of the obstacles and the required strategy for dealing with them differ per phase. The consumption of fish from sustainable aquaculture, for example, is still in its initial phase. Raising consumer awareness about sustainability problems and familiarising consumers with the certification label are important for generating demand. A large part of softwood consumption is already sustainable. The question is how those business that lag behind on the market can be included — perhaps through legislation.

### Higher costs of certified production

One of the obstacles identified in many supply chains is that of the higher costs of certified production, which relate to the certification process itself, as well as to adaptations and improvements in production regions to comply with the standards. Timber producers, soya and cacao farmers, for example, have to lay out considerable costs to meet the legal requirements in their supply chains (ICC et al., 2013; KPMG, 2012; PWC and IDH, 2012). They cannot recuperate these costs so easily just by asking for higher prices because not all of the standards will guarantee a higher price or a premium. Consumers also have a limit to their willingness to pay more for a sustainable product. Setting a common lower limit to the sustainability criteria with which producers have to comply is a potential option to partially reduce the cost barrier. The

European Union is currently implementing regulations for the import of wood. These regulations require that extraction of wood occurs within the legal framework of the country of origin. This also creates a level playing field in the market.

### **Demand for sustainably produced products is lower than their current supply and production**

For a number of sustainably produced raw materials, global production is greater than global demand. This applies to coffee, cacao, and palm oil (Figure 7). Further scaling up and implementation of product standards is difficult when demand lags behind supply. The causes of low demand in each of the supply chains need to be thoroughly investigated; for example, by determining whether sustainable products are of a lesser quality than their 'traditional' variants, or if their supply has increased in such a drastic way over only a short period of time that the sales markets have not yet been able to handle the increased flow (TCC, 2012a, b).

Western markets are leaders in the demand for and sales of certified products. Social organisations and conscientious consumers have played a major role in the acceptance of sustainable certification labels and in providing incentives for the market to supply sustainable products (Vermeulen et al., 2010). The conscious consumers are already aware of the availability of their preferred products; the rest can best be reached by offering products which have guaranteed sustainability but are not actively marketed as such ('certification labels that are moved from the front of the packaging to the back of it'). The role of wholesalers and retailers is crucial for sustainable products to take the lead in the rest of the Western market. Up-and-coming economies such as those of China and India scarcely contribute to the global demand for sustainable products. Sustainability and certification barely has a place in the local markets of production regions either.

### **The multitude of certification labels confuses consumers and producers**

Consumer as well as producers prove to have difficulty with the differences among the multitude of certification labels and certification systems. Coffee, for example, has these major certification labels: Fair Trade, UTZ, 4C, and Rainforest Alliance (see Text box 3). The lack of clarity over what these certification labels mean results in less understanding or acceptance by buyers and consumers. In addition to this, the different requirements which producers must fulfil lead to additional costs for certification.

Simultaneously though, positive mutual effects between the different certification labels and certification systems exist: standards can have a beneficial effect on each other and lead to expansion and improvement (Vermeulen et al., 2010). Broader, more generally accepted standards for certification reduce the costs associated with the certification process. The recognition and acceptance of locally established production standards by international production standards that service sales markets can simplify the sustainability process and/or make it more uniform. In the past, several different national standards for sustainable wood were brought under one collective umbrella called the PEFC.

**A level playing field is needed to also include those that lag behind**

Many supply chains have nothing like a level playing field for all farmers, producers, and traders. The lack of such a level playing field is seen as an obstacle primarily in the supply chains that already have a large share of sustainable production, such as the coffee and wood supply chains (Vermeulen et al., 2010). This discourages producers who have not yet made the transition over to sustainable methods from doing so; they certainly will not make this transition when they are confronted with the higher efforts and costs accompanying the further certification procedure (ICC et al., 2013; PWC and IDH, 2012).

As mentioned above, the process of creating a level playing field in the European wood sector is currently being worked out by establishing generally valid minimum requirements for the entire European market. Legal origins and legal harvesting methods are required in the case of wood. This concept can possibly be applied to other supply chains, such as soya and palm oil. Arranging this at the European level would require a sufficient support base with the traders and buyers, and even with that, it seems it would be a strategy that could only be implemented in later phases of the transition.

**Involving smallholders and poor farmers is difficult because of a shortage of knowledge and capital, and vague land rights**

A large share of the production in the coffee, cacao and palm oil supply chains takes place on small-scale farms. It is not easy getting these small-scale and often unorganised farmers involved in the sustainability process (Molenaar et al., 2011), while these farmers are exactly the ones who would profit most from this. The increased production and the improvement of the quality of their products offer them a future perspective on further development and improved income.

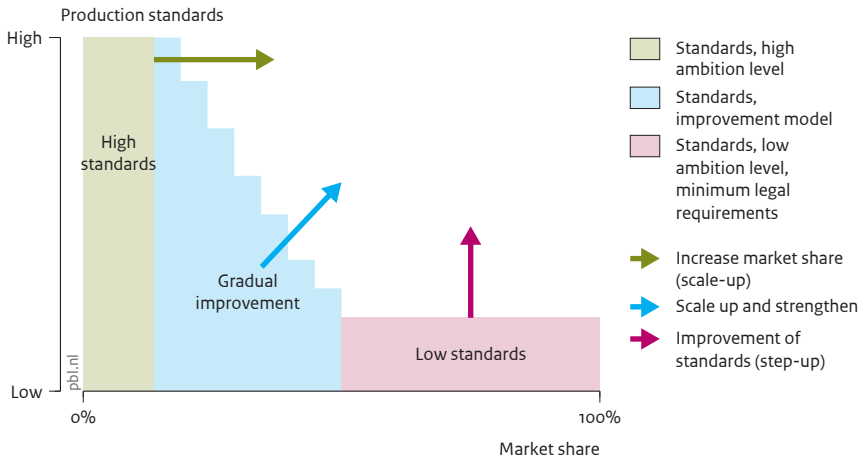
Several factors complicate the transition to voluntary certification for these smallholders. They often lack the necessary knowledge, and they have limited access to sustainable and profitable production methods. They also have less of a tendency to invest because they have insufficient capital that is required for production improvement, and they are unsure about their land rights.

Credibility of certificates and certification labels is often debated

In recent years the media have published reports on abuse carried out by certified businesses. The criteria in specific production regions — even in certification systems that have existed for a long time — were not complied with correctly (SOMO, 2013). Some earlier issued certificates were retracted or suspended, such as was the case with the mackerel fishery in the North Sea, and the production of sustainable wood in natural forests in Guyana (FSC-Watch, 2009; MSC International, 2012b). This type of media report threatens the credibility of certifications and certification labels. The question remains whether these are incidents or structural shortcomings of assurance procedures.

Figure 16

### Contribution of various production standards to more sustainable production



Source: Resolve, 2012; adaptation by PBL

*A differentiation in standards may serve different market segments and groups of businesses; however, the different ambitions of these standards also have different effects on societal goals. These contributions to public targets can be enhanced by operating with a continuous improvement plan and scaling-up process. This combination of improvement and scale up is a refinement of the 'lowest' standards, step-by-step improvements in standards with a growth model, and the expansion of the market share of the 'highest' standards (from SCSKASC, 2012).*

Different sources point to the fact that, as certification permeates into regions with limited functioning governance, such as with wood production in the Congo Basin, the risks of inadequate monitoring and compliance — and as such potential abuse — become greater (Greenpeace, 2013; Tropenbos International, 2013). The level of governance would have to first be in order in such regions before starting to work towards certification. The FSC system recently introduced a criterion that focuses on dealing with and managing the risks of illegally harvested wood (Preconditions and Safeguards, FSC, 2013).

The credibility of certification labels could also improve if the certification organisations were to be more transparent in their publications regarding their monitoring practices and the corrections they implement, and also reporting on if and when they retract issued certificates.

#### Absence of reports on achieved impacts

Several supply chains generally lack sufficient, well-designed impact measurements (Kessler and Pelders, 2012). Designing proper impact studies is complex and also very expensive. The lack of insight into the added value of certification makes businesses,

**Text box 3****Differentiation of certification labels can serve a large share of the market**

Some raw materials have different certification labels available to them, each with their own production standards and requirements. Such a differentiation of standards has the potential to attract different groups of businesses and consumers, which therefore contribute to the transition towards completely sustainable supply chains. However, there is a need for a continuous improvement process in order to achieve the social goals.

The supply chain for coffee has these certifications available to it: Fair Trade, UTZ Certified, Organic, Rainforest Alliance and 4C. Fair Trade traditionally focuses on supporting poor farmers, Rainforest Alliance and Organic aim to maintain biodiversity, and UTZ Certified concentrates on a higher quality of raw materials and higher productivity. The 4C certification provides a growth model with a lower threshold for businesses that find the step towards more strict sustainability requirements too large because of the investments needed to make that shift (Arnouts et al., 2012).

The 'stricter' or 'more fair' sustainability standards are more difficult to implement. Strict criteria have a limited amount of acceptability on the production side as well as the consumption side. Products with such standards only reach the niche markets for 'fair' products. Standards that focus more on higher productivity and quality for cacao and coffee appeal more to the needs of buyers and as such have opportunities to realise a larger market share (Ruben and Zuniga, 2010). Acceptance of these standards is greater on the production side, too.

There are also standards and certification labels that provide a minimum level that applies to the whole market. Recently, a compulsory lower limit at the level of legal production was established for wood trade. These standards will reach a group of businesses that cannot be mobilised on a voluntary basis. Simultaneously, the general lower limit can make it easy for businesses that use high standards to distinguish themselves on their market. Legal production, however, is not equivalent to sustainable production; the level of sustainability depends on the local legislation.

This variation of objectives these certification labels have puts the achievement of environmental and socio-economic goals at risk (Ruben and Zuniga, 2010). Contribution to these common public goals is only possible by operating with a continuous improvement process by the lower standards (stepping up), in combination with expanding the market shares of higher standards (scaling-up; Figure 16).

sectors, and certification systems vulnerable to critique. This limits credibility and it limits possibilities for evaluation and improvement of these systems. Designing, for example, an effective monitoring and enforcement apparatus via *remote sensing* has its high costs. That makes it necessary to identify and promote the most suitable and affordable production methods available (Milder et al., 2012).

Audit reports on certification procedures can be a valuable source of information for research on the efficacy of certification (Cambridge et al., 2011; Peña-Claros et al., 2009). Summaries and audit reports are often publically available, but the underlying, more detailed report are not. The sales market as well as consumers demand products that are produced in a verifiably sustainable way; they are not always interested in reports on the improvements achieved. This can also be seen as a fundamental shortcoming of self-governance, with many different certification systems competing for market shares.

## 4.2 Limits to the voluntary initiatives strategy

Providing incentives for sustainable production via certification of producers and traders is based on voluntary efforts made by market stakeholders. Even though this can contribute to solving sustainability problems with issues of developing prosperity, nature and environment, there are limits to this strategy — geographical limits, financial limits, and institutional limits.

### **A large portion of global production falls outside the sphere of influence of sustainable international markets**

The sustainably produced raw materials are for a large part destined for Western markets, which have the largest demand. The rest of production is destined for local and regional use, or for the up-and-coming export markets — such as China and India — where there is a limited demand for sustainable production and certified products. Further ways of providing incentives for certification in the up-and-coming markets, and methods of how local and regional markets could better be reached, are currently being explored.

### **Certification is only successful with enough effective governance at the local level**

The success of certification is dependent on effective local preconditions (*the enabling environment*), including effective governance, legislation and enforcement (along with taking action against corruption). These preconditions, thus, shape governance boundaries for the successful functioning of certification.

The certification of wood production, as an example, has advanced far in regions with relatively good and reliable governance, and well-developed and enforced forestry legislation (Janssen and Van Benthem, 2010). In recent years, a number of certification programmes have focused on regions (Congo, Borneo) where these preconditions have not been met. According to NGOs, this effort has its risks (Greenpeace, 2013). The

recently initiated partnership agreements between European Union countries and production countries (included in the Voluntary Partnership Agreements) to comply with the EU policy for legal timber trade, were established to create a better legal system and governance environment.

### **Poor farmers are not always reached via certification**

Some sectors, such as cacao and coffee, have many farmers functioning on a small scale. These farmers should be able to earn more were they able to improve their yield and the quality of their product. Certification could help with that, but the smallholders often lack the needed agronomic knowledge and capital to adjust their cultivation methods. This makes smallholders, who are poorly educated and work on their own, and their local communities difficult to reach.

Additional financing and focused support are then needed to involve these groups in the sustainability process. Some sustainability initiatives and businesses are already doing this explicitly (see the section on 'Six supply chains in focus' on the POPSI initiative and the SOYPSI initiative). Even with such additional support, not all poor farmers can be reached.

### **Sustainable production and consumption requires more than making supply chains sustainable**

The policy of making supply chains sustainable primarily means providing incentives for production in accordance with certification standards for sustainable production. Increasing the demand for sustainable products is necessary to upscale the production. This strategy fails to take other sustainability issues into account that relate to the global scale. In the future, the amount of productive land and water available in the world will not be able to provide the world population with enough food and raw materials, while at the same time maintaining biodiversity, if we continue using the same methods we use today (WWF, 2012).

Focusing on only more responsible production of raw materials is probably insufficient to meet higher future needs. Sustainable standards are aimed at the allowed maximum annual yield for logging trees and harvesting fish (maximum sustainable yield). In so doing, the actual yield may be reduced in an attempt to prevent overexploitation of ecosystems. With regard to the production of agricultural raw materials, implementation of improved agrarian techniques can actually increase yield (sustainable intensification). The question still remains, though, if that will sufficiently provide room for the expected future demand.

That is one reason why a broader strategy of sustainable production and consumption is recommended; the burgeoning global competition for raw materials is another. This puts additional options on the table such as processing raw materials more efficiently and altering consumption patterns (Van Oorschot et al., 2012; Westhoek et al., 2013; WWF, 2012).

Table 4

**The government's various styles of governance to effectuate sustainability**

	Classical regulation
The role of government	Directive role of government. Comprised of the traditional government-instruments of legislation, financial stimuli and communication
Examples of instruments	<ul style="list-style-type: none"> <li>• Legislation on the production of organic products</li> <li>• Prohibiting illegal logging, in compliance with the legislation in production countries</li> </ul>
Strengths	<ul style="list-style-type: none"> <li>• Mobilising knowledge and establishing long-term perspective based on values and normative precepts</li> <li>• Taking a coordinating role in international contexts</li> <li>• Orientating towards a total effect at the national and supranational scales</li> </ul>
Weaknesses	<ul style="list-style-type: none"> <li>• Limited by sovereignty of other countries and trade agreements</li> <li>• No strong supranational authority</li> <li>• Needs political support base</li> <li>• Deficient enforcement</li> </ul>

*The government can choose various styles of influence to improve the sustainability of international supply chains, each of which with its own strengths and weaknesses. The current style can best be described as a mixed network- and market-driven strategy (Arnouts et al., 2012; Vermeulen et al., 2010).*

### 4.3 Reflection on the government's strategy

#### **Network and market regulation currently dominates, with government mainly having an encouraging and supporting role**

Businesses and social organisations have been the predominant actors in taking the initiative towards sustainable supply chains, in recent years. The government has taken the position as a source of encouragement and support (Kamphorst, 2009; Vermeulen et al., 2010). This development of social actors and businesses playing a greater role is exemplary for developments in public stewardship in which a shift is taking place from 'government' to 'governance'. The government increasingly more often utilises the efforts and energy of social stakeholders. Initiatives that have come into existence as



Network-driven - Interactive regulation	Market-driven - Supporting self-regulation
Government relies strongly on partnership with target groups, voluntary agreements of organisations, subsidising or financing organisations, providing information, and capacity building to reach a goal	Government supports, provides incentives and poses limits, and hence creates the preconditions within which market parties and social stakeholders can make supply chains more sustainable themselves
<ul style="list-style-type: none"> <li>• Closing voluntary covenants and Green Deals with sectors</li> <li>• Furnishing context and support for socially responsible endeavours</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Posing requirements with which certification labels must comply</li> <li>• Financing new initiatives (roundtables for soya and palm oil)</li> <li>• Fostering transparency and substantive business reports</li> </ul>
<ul style="list-style-type: none"> <li>• Using the efforts and methods of different stakeholders optimally</li> <li>• Providing shrinking government a good network</li> <li>• Involving stakeholders in the production standards (support base)</li> </ul>	<ul style="list-style-type: none"> <li>• Influencing its own supply chain stakeholders successfully</li> <li>• Using market power</li> <li>• Using practical expertise</li> <li>• Stimulating innovation forces and cost reduction</li> <li>• Mobilising self-interest</li> </ul>
<ul style="list-style-type: none"> <li>• Networks have limited means and mutually weak coordination</li> <li>• Different objectives of the stakeholders involved</li> <li>• No direct influence on final objectives, including public ones</li> </ul>	<ul style="list-style-type: none"> <li>• Freedom to choose goals and perspectives, can lead to pliable rules</li> <li>• Focused on sustainability frontrunners, other groups more difficult to reach</li> <li>• Own objectives prioritised. No overall impression of the biggest problems, demand-driven</li> <li>• No motivation for reducing consumption</li> <li>• No motivation for collective learning</li> </ul>

such can often rely on a more supportive base, and the solidarity among stakeholders is stronger. The learning capacity of the initiative takers is capitalised because the government establishes preconditions, but it does not set specific rules (Hajer, 2011).

The government can use network-driven and market-driven governance styles to further scale up and reinforce sustainable supply chains, but it must then bear in mind the strengths and weaknesses of this strategy (see Table 4). The growing role of businesses and social organisations in making supply chains sustainable provides the government opportunities to support these voluntary initiatives, and as such, contributing to achieving public goals. The activities of voluntary initiatives have resulted in widely accepted standards and certification labels, which could provide a

basis for the definition and development of public standards which might otherwise not be able to garner a political support base. The social initiatives are also attractive to government because they create a new dynamic: the national sovereignty of countries remains respected and the market fulfils a central role. Market initiatives offer the government practical experience and information, and supplement the increased concerns about sustainability and working conditions elsewhere (SCSKASC, 2012).

There is, however, also criticism of having government strongly relying on network-driven and market-driven strategies for reaching its goals. This choice might be the path of least resistance (regulation demands difficult debates, for example regarding sovereignty and trade rules), or be the result of a lack of political support for alternative or additional regulating instruments (SCSKASC, 2012). There are also concerns if a market strategy is actually able to provide a large-scale contribution to the socio-economic development in production regions and to the protection of nature and environment, specifically where it involves the most vulnerable groups and most vulnerable regions. If making supply chains sustainable is left to the market, this means that the priorities and objectives of the market apply whereby the interests of businesses are paramount, such as ensuring the supply of raw materials, and not readily realising societal goals. Production chains pressured by consumers or NGOs will make the transition to sustainability sooner than production chains that do not receive pressure. However, this does not guarantee that the major supply chains for worldwide sustainable development will also receive the most attention.



# Prospects for making supply chains more sustainable

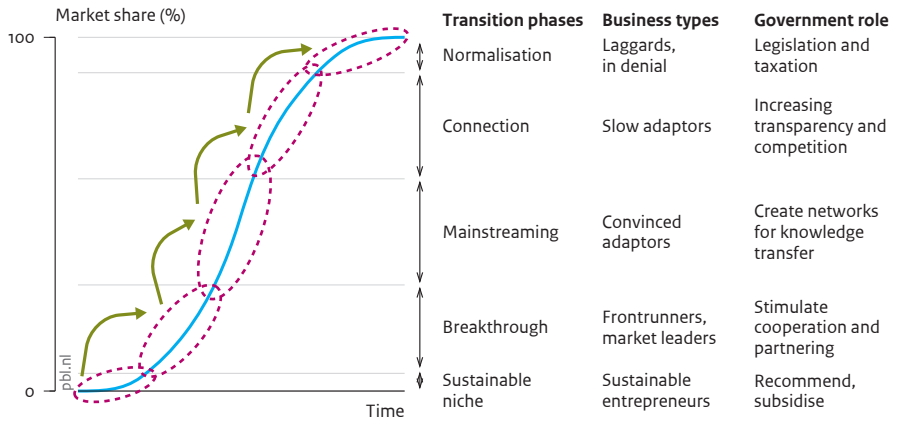
How can the different supply chains become more sustainable? This chapter outlines four prospects for action to strengthen and upscale the process of making supply chains sustainable. The prospects for action are established for Dutch Government policy and other stakeholders involved in making supply chains sustainable. The goal of these prospects for action is to prevent, reduce and compensate for the negative effects of production processes on the environment, nature, and biodiversity; and to improve the socio-economic conditions of the farmers and local populations in production regions. These prospects for action build upon what has been realised in the past years through the voluntary initiatives businesses and social stakeholders have developed. Public and private governance and initiatives can reinforce each other on many issues.

Before delving into the prospects for action, we first examine the phases of the transition process towards sustainable supply chains, and the ways to provide incentives for businesses to participate in the transition towards sustainability.

## 5.1 Phases in the transition process and incentives for scaling up

The transition towards a market for sustainably produced raw materials can be generally categorised in five phases. Different groups of companies join in on this transition, because of their different problem perceptions and motivations. We distinguish a start-up phase where a few businesses mainly focus on niche markets for sustainable products; a breakthrough phase where the market leaders and frontrunners

Figure 17  
**Transition of the market towards more sustainably produced products**



Source: PBL, 2013

*Different types of businesses are active in the different phases of the transition process towards the use of sustainably produced raw materials. The government can provide the different businesses incentives and mobilise them towards further sustainability. Every type of business requires a different strategy and role in order to accomplish that.*

gain a sustainable market share; a broadening and an adaption phase in which scaling up is central (mainstreaming) and more and more businesses connect, and a phase of normalisation in which the businesses lagging behind conform to a more sustainable way of trading (Figure 17).

Businesses are faced with different obstacles during different phases. The government or other stakeholders might be able to do something about these obstacles by attempting to eliminate them or by providing the businesses incentives to persist in their efforts towards sustainability. It may be necessary to implement a more coercive set of instruments for the businesses that do not participate. For each phase, Table 5 shows the initial opportunities and obstacles that businesses may be confronted with, leverage points for removing the obstacles (transition mechanism), and suitable roles for the government.

Table 5

### Opportunities and obstacles for businesses and suitable roles for the government during the sustainability process

Phase	Opportunities for businesses	Obstacles
1. Sustainable niches	<ul style="list-style-type: none"> <li>enthusiasm</li> <li>practical idealism</li> <li>creative, innovative</li> </ul>	<ul style="list-style-type: none"> <li>limited support base</li> <li>biased consumer</li> <li>high price</li> <li>limited access to finances</li> <li>problems with scaling up, because soft and hard infrastructure is lacking</li> </ul>
2. Breakthrough	<ul style="list-style-type: none"> <li>give sustainable products a competitive advantage at the sales market (strategic chance)</li> <li>access to finances</li> <li>low costs</li> <li>economy of scale</li> <li>large consumer group</li> <li>first hand in shaping systems</li> </ul>	<ul style="list-style-type: none"> <li>credibility</li> <li>of claims</li> <li>cooperation needed for</li> <li>effective turnover in market</li> </ul>
3. Mainstreaming	<ul style="list-style-type: none"> <li>mainly strategic risk management</li> <li>easy to start using proven practices</li> <li>make use of infrastructure</li> <li>software and orgware now available</li> </ul>	<ul style="list-style-type: none"> <li>business case not immediately evident</li> <li>no distinguishing capacity compared to other businesses</li> <li>credibility of effectiveness</li> <li>(risk areas)</li> <li>lagging supply with greater demand</li> <li>costs of certification</li> </ul>
4. Connection	<ul style="list-style-type: none"> <li>mainly tactical opportunities</li> <li>sustainable supply along with conventional supply</li> </ul>	<ul style="list-style-type: none"> <li>business case unclear</li> <li>no significant demand any more</li> <li>limited supply</li> </ul>
5. Normalisation	<ul style="list-style-type: none"> <li>prevention of compliance problems</li> </ul>	<ul style="list-style-type: none"> <li>no business case</li> <li>no self-motivation, evasive behaviour probable</li> </ul>

*Understanding the motivation of businesses is important in order to upscale the market for sustainable raw materials and products: why would they want to undertake becoming sustainable, and what obstacles are they experiencing? Subsequent to this, the government can attempt to provide these businesses with an impulse by implementing different instruments.*

Transition mechanisms towards next phase	Suitable role of government and a set of instruments
<ul style="list-style-type: none"> <li>• greater acceptance</li> <li>• making efficiency and expansion possible</li> <li>• reinforce consumer support base</li> </ul>	<ul style="list-style-type: none"> <li>• recommend standards; communication</li> <li>• exemplary role; own purchasing policy</li> <li>• knowledge development of supply chain organisation</li> <li>• provide incentives for market leaders</li> </ul>
<ul style="list-style-type: none"> <li>• cooperation in market</li> <li>• guarantee credibility</li> <li>• making successes visible</li> </ul>	<ul style="list-style-type: none"> <li>• strengthen purchasing power</li> <li>• support cooperation</li> <li>• transfer of knowledge on successful methods</li> <li>• initiate / support of quality benchmark</li> <li>• support monitoring and evaluation and transfer of knowledge</li> </ul>
<ul style="list-style-type: none"> <li>• sharp market breakthrough visible</li> <li>• peer pressure</li> <li>• reduce or spread costs</li> </ul>	<ul style="list-style-type: none"> <li>• support active benchmarking and success measurements</li> <li>• working on sector-wide agreements; covenants and Green Deals</li> <li>• establish minimum requirements</li> <li>• active quality assurance private standards</li> <li>• share costs; financial instruments</li> </ul>
<ul style="list-style-type: none"> <li>• with lack of market-driven motives only with effective coercion</li> </ul>	<ul style="list-style-type: none"> <li>• where possible via legislative path: requirements of valid legality with import; regulation and punitive measures</li> <li>• financial instruments</li> </ul>
	<ul style="list-style-type: none"> <li>• the same as the previous phase</li> </ul>

## 5.2 Prospects for action

What can market stakeholders and governments do to make production and consumption more sustainable? This section presents four mutually reinforcing, complementary prospects for action. They should not be regarded as mutually exclusive alternatives.

The first perspective ‘Reinforcement of voluntary sustainability initiatives’ is very similar to the current strategy which centres around voluntary market initiatives. By increasing the demand on the Dutch sales market, incentives are created, via the supply chain, for production regions to operate in accordance with sustainable production standards.

The previous chapter addresses obstacles and limitations to making supply chains sustainable through voluntarily means, stating how this strategy would not sufficiently realise the social goals in the area of sustainable consumption and production. If sustainable production has to become the new norm, the government cannot leave sustainability up to the market initiatives alone. It will have to take on more responsibility, which is the impetus for the second prospect for action ‘Sustainable production chains as the new norm’.

With the assumption that certification is a means rather than a goal, the third prospect for action focuses directly on production regions from where the Netherlands imports its raw materials; hence, ‘Strengthening and expanding sustainable production elsewhere’.

The fourth prospect for action is ‘Sustainable supply chains as part of a broad strategy for sustainable production and consumption’. Bearing the global environmental operating space in mind and future growth in population and welfare, implementation of only a strategy for making supply chains sustainable would obviously not be enough.



### **Prospect for action 1: Reinforcement of voluntary sustainability initiatives**

This prospect builds upon market and social initiatives, and the government’s facilitative and incentive-providing role for voluntary initiatives in recent years. The use of certification and production standards remains dominant in this prospect. It does, however, give more attention to other potential voluntary initiatives, such as the initiatives taken by individual businesses that want to apply the principles of social responsibility or that want to implement the international reporting standards such as those instituted by the ISO or the GRI.



Certification will be more effective with the elimination of a number of obstacles (see Chapter 4) — such as confusion for the consumer because of the amount of certification labels, or the complicated accessibility and expensive certification process for smallholders. Intelligent government policies attempt to make efficient use of the voluntary initiatives and intervene to provide support or assist with persistent barriers that the market is unable to solve. The market parties also acknowledges these obstacles. Various international and private initiatives exist that focus on solutions, and the government could help to strengthen them.

- **Expansion and improvement of impact measurements**

Good impact measurements are crucial for the effectiveness of certification labels and production standards. Impact measurements are needed to evaluate the effectiveness of sustainability initiatives on the income of farmers, or the effect on the environment and the biodiversity in production regions. That knowledge can be the basis for adapting the criteria and standards, which can improve upon their effectiveness. The mutual comparison of impact measurements (among organisations) can further contribute to this, but this is only infrequently being done. Information on the achieved impacts is also important for maintaining the credibility of making supply chains sustainable. It is important to know what these initiatives are achieving. Many NGOs, businesses and governments have begun to realise this and take action to implement impact measurements.

The government, thus far, has not contributed to nor coordinated any effect measurements. Arguments in favour of increasingly doing so are the public goals that may benefit from more sustainable supply chains. Obstacles to this are the complexity and the long-term costs — which are relatively high — that accompany such measurement programmes. Scientific study and scientific recommendations can also contribute to making evaluations more mutually comparable, and also to the analyses of preconditions that foster positive effects.

- **Reduction of confusion for consumers**

The diversity of certification labels confuses producers as well as consumers. It is often unclear what each certification label means, and which goal they are working towards. Examples of initiatives that keep track of that are mobile telephone applications that make it easier for consumers to distinguish between certification labels and sustainable goals.

- **Creating a framework for voluntary initiatives**

The Dutch Government and the European Union could create the basic conditions within which voluntary systems can be effective while still maintaining their distinct strengths. An example is the EU Unfair Commercial Practices Directive, which protects against misleading consumers, and which also can protect against certification labels from making false claims or dishonest claims about other certification labels. Monitoring and enforcing this directive for certification labels is, however, not

performed by the government. Sustainability labels can be accredited by the Dutch Accreditation Council. This Council does not verify the certification criteria, but it does verify the monitoring and organisation of certification labels. Few sustainability certification labels are currently accredited by this Council.

- **Providing incentives for constant improvement towards more sustainable systems**

Certification systems are ideally organised according to a process of constant improvement, which will sharpen the criteria over time. The three meta-standards established by the ISEAL Alliance (standard development, assuring compliance and effect measurements) could help with the realisation of the process that fosters constant learning and improvement. The government could support such procedures when necessary, or maybe direct its sustainable procurement towards sustainability initiatives that are affiliated with ISEAL and comply with their meta-standards.

- **Measuring and monitoring the market shares and demand for products that are produced more sustainably**

If there were more accessible publications on the market share of sustainable products and the effects achieved with their development, businesses and consumers would become more aware of sustainability. Information on this issue is also necessary for shaping national and international policy and selecting the appropriate instruments. Structural monitoring and benchmarking is not only lacking in the Netherlands, but also in Europe and throughout the world. This type of overview is an important source of information for businesses and for the national and international policy too, for example, for monitoring the goals from the Convention on Biological Diversity over sustainable production and consumption. Voluntary initiatives can also participate in monitoring and benchmarking by cooperation with national statistic agencies.

- **Generating cooperation in supply chains which have few or no voluntary initiatives**

In some supply chains, such as spices, fruits and vegetables, relatively few voluntary initiatives have emerged. The government can bring stakeholders in these sectors together, and facilitate and support partnerships among them. The Sustainable Trade Initiative, established and financed by the Dutch Government, focuses on such supply chains where sustainability has not made much headway, yet (IDH, 2013). New stakeholders can get involved, including harbour and transport businesses that are economically dependent on the import and transport of raw materials or the products made from them.

- **Export the experience with making supply chains sustainable to other countries**

Even though voluntary initiatives alone are unable to make all supply chains sustainable, they can still be encouraged in many more supply chains and countries than there are now. The Netherlands is one of the frontrunners with regard to making supply chains sustainable through voluntary initiatives and can disseminate its knowledge and experience, initially to other EU Member States and the European Commission. Examples of its experience are with the Sustainable Trade Initiative, sustainable procurement by the government, and the formulation of standards that have been partially initiated by Dutch NGOs.



**Prospect for action 2: Sustainable production as the new norm**

In addition to the reinforcement and further facilitation of voluntary sustainability initiatives, the government can also bring to bear a future in which sustainable production supply chains are the new norm. It is implausible to make supply chains completely sustainable through market stakeholders on a voluntary basis. Even though the supply chain for coffee has come very far, it can be argued that government needs to play a greater role to accomplish this more extensively. The government can create a level playing field that will bring on board those businesses that lag behind. Certification initiatives still have a significant place in this prospect for action. They manage and improve the production standards, and they monitor and control the independent certification processes. This creates the social support base for sustainable products upon which the government can further build upon.

- **More transparency from businesses: reporting and labelling**

Transparency is important for fostering sustainability as the new norm. Obligatory reporting on aspects such as the origin of raw materials, production methods implemented, the production conditions, and the impact of production, can provide incentives for businesses to make their production processing sustainable. More transparency can also strengthen the watchdog function of NGOs, and it places consumers in a position so that they may make informed decisions. In April 2013, the European Commission published a proposal for changing the accounting regulations for businesses. This aims to align national obligations to create a level playing field, and makes the requirements from existing regulations more concrete by requiring businesses to provide a minimum amount of information on their supply chains with regard to environment and human rights.

- **Maintaining and enforcing sustainable procurement**

The Dutch Government makes attempt to purchase its procurement needs in a sustainable way, which sends a signal to the market. The constancy and refinement of that ambition is also an important signal to the market, as are the criteria that the government has developed in which they specify what the minimum requirements are for sustainable products. Stricter monitoring of the formulated criteria seems most appropriate; much improvement is possible with regard to the purchase of wood, for example (Van Benthem et al., 2011). In addition, the Netherlands can contribute to the development and dissemination of the EU criteria for Green Public Procurement.

- **Prohibit the import of illegal products**

The recently adopted EU Timber Regulation prohibits bringing illegally logged wood on the common European Union market. Illegal in this case means wood that has been logged which does not comply with the legislation and regulations of the country of origin. This directive creates a level playing field for all businesses in the market, and the definition of legality functions as a norm for what is minimally acceptable. Such legislation can be an example for other supply chains, but implementation of it depends on where that supply chain is within the transition phases towards sustainability. Legislation in the United States is gaining influence and can serve as an example, such as the Dodd Frank Act, and the Lacey Act, which pose requirements on the origin of imported minerals and natural raw materials.

- **Product standards, minimum requirements and internalisation of external costs**

The lagging stakeholders in the market, who shift the costs of non-sustainable production on to society, could be coerced to improve their methods towards operating more sustainably through legislation, minimum requirements, and financial incentives. A next step after prohibiting illegal production is establishing minimum sustainability requirements for products on the market, or by providing incentives — perhaps financial — for more sustainable products. These instruments are regularly implemented for public health, but practically never for sustainability. An exception to this is the binding sustainability criteria for bio-energy under the EU biofuels directive, just as implementing *border-tax adjustments* for products from countries that dismiss climate policies. The execution of this type of measure is, nevertheless, complex. The requirements of certain standards can affect trade with a country and can lead to real or perceived ‘green’ protectionism.

- **Exploring the options within the international trade regime**

The Netherlands could take the lead more actively in exploring the options — within the international trade regime — for imposing sustainability requirements for imported products. The possibilities for imposing such requirements in trade agreements seem to be less limited than is often assumed (Davidson et al. 2009). However, they also quickly lead to complex issues because of the tensions that arise between a country’s ability to comply with its social and environmental obligations

and its ability to comply with its trade agreements with other countries. This is how the requirement by the United States that more sustainable harvesting methods should be used for shrimp, with the objective of preventing by-catch of sea turtles, led to a long-running trade dispute. The United States was allowed to impose this requirement, provided that all countries would be treated in the same way (WTO, 1998). In any case, it is undesirable for issues about cross-border sustainability and trade to be addressed on a *case-by-case* basis.



### **Prospect for action 3: Strengthening and expanding sustainable production elsewhere**

The expansion of the demand for products that are more sustainable in the Dutch or European sales market is not the final objective of making supply chains sustainable. Ultimately, the goal is to improve the production circumstances elsewhere, and to reduce the impact on people and the environment there. Consumer demand for sustainable products is an important condition for that: it creates a market. But there are all sorts of preconditions which must be met before producers can produce more sustainably. The presence of a good investment climate, a suitable physical and financial infrastructure, and clarity on land rights are, in general, important for expanding export-oriented products and for increasing productivity. Such preconditions can also help scale experience and knowledge with sustainable production up to a regional level. Moreover, the government can provide incentives to expand sustainable practices that already take place at the level of the production area towards sustainable development at a regional level (Waarts et al., 2013).

- **Improve the perspectives of sustainable production for producers**

A prerequisite for a more sustainable form of production is that producers have to be able to make the transition to operating their businesses in a sustainable and profitable way. In order to accomplish that, they need knowledge on sustainable production systems and the advantages these systems have to offer.

National services for agricultural research and support (extension services) can play an important role here. Furthermore, harmonisation and cooperation between certification systems can reduce the costs, and as such improve the profitability for producers. Examples of other matters that could help farmers are: tying in the sustainability production standards with quality improvements, such as has been done for coffee and cacao; access to agrarian inputs, such as high-quality seed and high-quality fertiliser; and more specific support for groups of producers that have not yet begun working with certification.



*The so-called farmer field schools are important for disseminating knowledge on sustainable production methods. That knowledge can contribute to increasing the productivity and income position of farmers.*

- **Improve the market position of products that are more sustainable**

Along with the opportunities for supporting individual producers, the expansion of sustainable production is also influenced by market developments. Examples of this are global market price reductions which make it impossible to recover investments in certification systems, or altered conditions in the sales markets.

In a number of cases, the current supply of sustainably produced products is greater than the volume that is sold on the market as a certified product (e.g. coffee, cocoa, and palm oil). This can be caused by a number of factors: it might reflect insufficient quality, there may be delays in the market's ability to adapt to the non-gradual expansion of certified production, or there may be producers (either subsidised or not) who are certified without there being enough demand.

One way for producers to deal with these obstacles is to collaborate in production organisations such as cooperatives. That can make certification more feasible and cost-effective for cooperating producers, simplify the exchange of knowledge, reduce costs of operation, and improve negotiation positions.

- **The Netherlands can support building and enforcing environment and labour legislation**

The improvement of local legislation is also an important step on the way to having production processes become more sustainable. National governments clearly have the task of dealing with matters in the area of property rights, spatial planning, and the development and enforcement of environment and labour legislation. The

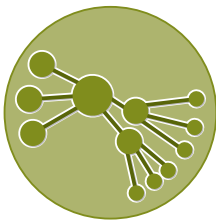
enforcement of existing legislation has often proven to be an area needing improvement. Government can also contribute to reducing the additional costs of certification and improvement by steering towards overlap between the requirements for legal and sustainable production. National governments can support each other in the development of legislation and enforcement thereof. In the context of the EU FLEGT directive for the import of legally logged wood, countries that have closed agreements with the European Union are supported for these tasks.

- **Global standards provide direction, ambition and stability**

Internationally established codes function as a reference point for sustainability initiatives as well as for national legislation. The ILO standards of the International Labour Organisation have been included as standards for certification labels, and they have been translated by many countries into their legislation. The Guidelines for Multinational Enterprises of the Organisation for Economic Co-operation and Development (OECD) offer a framework with which multinationals must comply. The Netherlands could link its financial instruments of trade, for example, to ambitious and specific sustainability guidelines. Broad supportive political support for international standards can be the prelude to implementation in national policy, whereby the role of voluntary certification would reduce over time.

- **More attention for the advantages of sustainable production at the level of landscapes and regions**

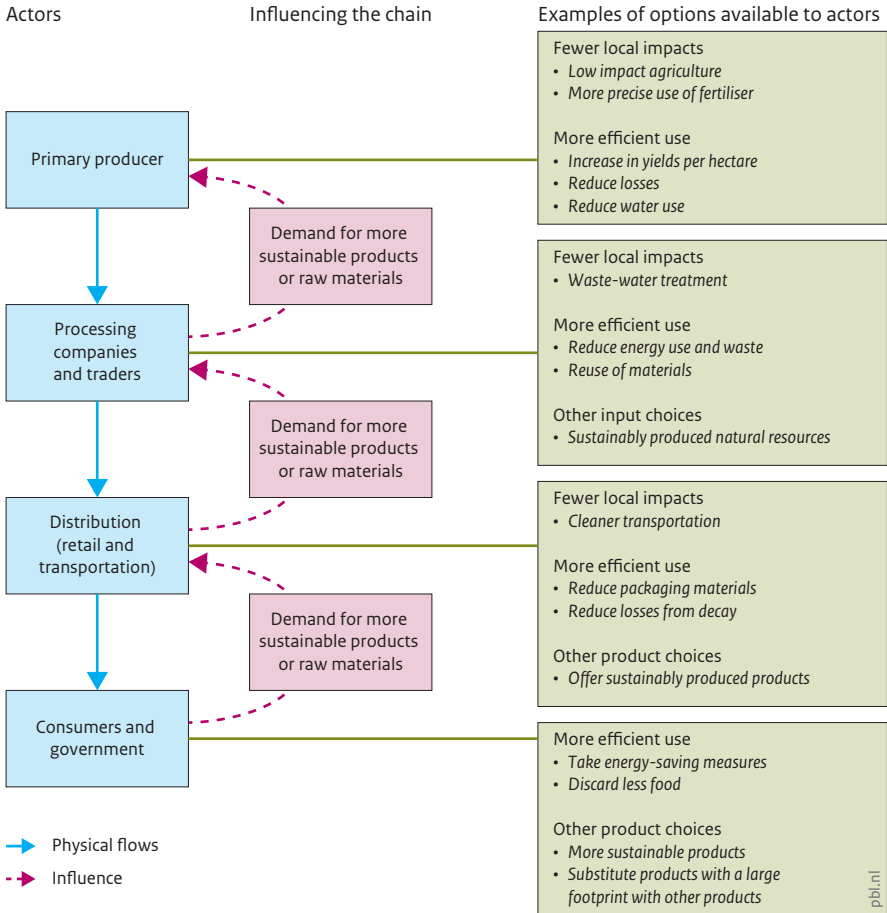
Making production sustainable can lead to advantages outside the certified production location, hence, more far-reaching than the directly involved producer. More research is needed on the preconditions for these additional, spill-over effects. More attention recently has also been given to the establishment of sustainable production landscapes, in which sustainability is not only judged from the perspective of a production location or specific production supply chain, but also on a larger spatial scale. The question is whether production countries have the capacity to organise synergy between different actors and their objectives in an integrated way. The expertise the Netherlands has with regard to spatial planning could be a possible form of support on this matter.



**Prospect for action 4: Sustainable supply chains as part of a broad strategy for sustainable production and consumption**

Making supply chains sustainable has to be part of a broad strategy of sustainable production and consumption. Making supply chains sustainable is currently focused primarily on reducing the effects of production elsewhere. However, other areas of the supply chain also need attention, specifically for increasing the resource efficiency,

Figure 18  
Options for making supply chains more sustainable



Source: PBL, 2012

A broad perspective on making supply chains sustainable — with the intention of reducing the footprint of consumption — comprises a broad pallet of options for the range of stakeholders involved in the supply chain. These options can be summarised as: a more responsible and careful production by the primary producer (with fewer local effects) at the start of the chain, more efficient processing of raw materials and waste, and the alteration of consumption patterns at the end of the chain. This implies that stakeholders have the opportunity to reduce any environmental impacts themselves, as well as possibilities to influence other stakeholders in the chain through the supply of raw materials and products (Van Oorschot et al., 2012).



searching for alternative raw materials with a lower impact on the environment, and adjustments in consumption patterns (Figure 18; Van Oorschot et al. 2012; Westhoek et al., 2013). It also seems that business and finance can determine the further success and expansion of the strategy for sustainable production and consumption.

- **Improve efficient use of raw materials in the supply chain**

Many production practices can be more efficiently designed, which means that the same or higher production can be achieved with less raw materials, energy, and capital. Examples of this are reduction of waste in production processes, less use of energy and water, and reusing and reclaiming biomass flows. The consumer can also reduce waste flows.

- **Changes in consumption and production patterns**

Consumers can choose for more sustainably produced products, and producers can also make the transition towards using other types of raw material or products. Consumers can for example replace their car that runs on petrol with an electric car, and completely or partially replace meat with other sources of protein.

- **Contributions by the financial sector to making supply chains sustainable**

The influence and possibilities of financing flows are currently not being sufficiently explored. The financial sector can make a significant contribution to making supply chains sustainable by implementing sustainability principles. Banks could potentially apply the principle of social responsibility and sustainable ventures when issuing loans; initiatives such as *Equator Principles* are an example of this. The system of production criteria and certification labels can become an applicable guideline for banks and investors when financing and issuing credit.

- **Long-term goals for sustainable production and consumption**

To make consumption and production sustainable using this broad strategy, the government must make a concrete perspective using long-term goals with regard to reducing the usage of raw materials, curbing food waste, reusing waste flows, and striving towards a more optimal utilisation of raw materials with a future perspective for a bio-based and circular economy. These possibilities help provide direction, encourage innovations, and promote partnerships between government, businesses and consumers.

# References

- Alkemade R, Van Oorschot M, Miles L, Nellemann C, Bakkenes M and Ten Brink B. (2009). 'GLO BIO3: A Framework to Investigate Options for Reducing Global Terrestrial Biodiversity Loss', *Ecosystems* 12 (3), pp. 374–390.
- Arnouts R, Kamphorst D, Arts B and Van Tatenhove J. (2012). *Innovatieve governance voor het groene domein [Innovative governance for the green domain (in Dutch)]*. WOt Working document 306: WUR.
- Beukers R and Harms B. (2012). *De meerwaarde van certificeringsschema's in visserij en aquacultuur om bij te dragen aan het behoud van biodiversiteit [The added value of certification schemes in the fishing industry and aquaculture in contribution to the maintenance of biodiversity (in Dutch)]*, WOt Working document 300, The Hague: LEI.
- Blackman A and Rivera J. (2010). 'The Evidence Base for Environmental and Socioeconomic Impacts of "Sustainable" Certification', RFF DP 10-1731p.
- Blaser J, Saarre A, Poore D and Johnson S. (2011). *Status of Tropical Forest Management 2011*. ITTO Technical Series No 38 Yokohama, Japan: ITTO, International Tropical Timber Organisation.
- Both ENDS (2012). *Policy research on regional sustainability and global production chains*, Amsterdam: Both ENDS.
- BuZa (2013). *What the world deserves. A new agenda for aid, trade and development*, The Hague, BuZa Ministry of Foreign Affairs.
- Cambridge T, Martin S, Nimmo F, Grieve C, Walmsley S, Huntington T, Cappell R and Agnew D. (2011). *Researching the Environmental Impacts of the MSC certification programme*, London: MRAG Ltd, Poseidon Ltd. and Meridian Ltd. Prime.
- Cashore B and Auld G. (2012). *Forestry review. Appendix F in: Toward sustainability. The roles and limitations of certification. Appendix F in: Steering Committee of the State-of-Knowledge Assessment of Standards and Certification. Towards sustainability: the roles and limitations of certification*, Washington DC: RESOLVE Inc.
- Davidson M, Bergsma GC, Backes C and Van den Bosschen P. (2009). *Economische instrumenten voor duurzaam geproduceerd hout [Economic instruments for sustainably produced wood (in Dutch)]*. A research publication no. 09.8611.07, Delft: CE Delft.
- Dutch Foundation for Chain Transition Responsible Soy Chain Transition (2013) <http://www.verantwoordesoja.nl/stichting-ketentransitie/>.
- DHV (2009). *De impact van duurzaam inkopen. Verkenning van de effecten op markt en milieu. [The impact of sustainable procurement. Investigation of the effects on the market and the environment (in Dutch)]*. MD-SU20090072, Amersfoort: DHV BV.
- Dros, JM. (2011). *Palm Oil Producer Support Initiative (POPSI), An RSPO smallholder support programme managed by the Solidaridad Network, Solidaridad and RSPO*.

- EU (2010) Regulation No 995/2010 of the European Parliament and of the Council of 20 October 2010 laying down the obligations of operators who place timber and timber products on the market, Brussels: European Union.
- EU (2013). The impact of EU consumption on deforestation: Comprehensive analysis of the impact of EU consumption on deforestation. Technical report 2013 - 063, Brussels: European Union.
- EZ, IenM and BuZa (2013). Uitvoeringsagenda Natuurlijk Kapitaal: behoud en duurzaam gebruik van biodiversiteit [Natural Capital Implementation Plan: maintenance and sustainable use of biodiversity (in Dutch)], The Hague, Ministry of Economic Affairs (EZ), Ministry of Infrastructure and the Environment (IenM), Ministry of Foreign Affairs (BuZa), and Development Cooperation.
- FAO (2010). Global forest resources assessment 2010. Main report. FAO Forestry paper no. 163, Rome: Food and Agriculture Organization of the United Nations (FAO).
- FAO (2012). The state of world fisheries and aquaculture 2012, Rome: FAO Fisheries and Aquaculture Department, Food and Agriculture Organization of the United Nations.
- FAOstat (2013). Trade statistics, <http://faostat.fao.org>.
- GM Freeze (2012). Roundtable on Responsible Soya - The certifying smoke screen, <http://www.gmfreeze.org/news-releases/192/>.
- FSC-Watch (2009). WWF pulls the plug on Barama, former FSC star performer.
- FSC (2013). Online certification database. <http://www.fsc.org>.
- Greenpeace (2013). Cut it out: illegal logging in the Democratic Republic of Congo (DRC), Kinshasa, Congo: Greenpeace Africa. [http://www.fsc-watch.org/archives/2009/01/15/WWF\\_pulls\\_the\\_plug\\_o](http://www.fsc-watch.org/archives/2009/01/15/WWF_pulls_the_plug_o).
- Gullison RE. (2003). 'Does forest certification conserve biodiversity?', *Oryx* 37 (02): 153–165.
- Gutiérrez N, Valencia S, Branch T, Agnew D, Baum J, Bianchi P, Cornejo-Donoso J, Costello C, Defeo O, Essington T, Hilborn R, Hoggarth D, Larsen A, Ninnes C, Sainsbury K, Selden R, Sistla S, Smith A, Stern-Pirlot A, Teck S, Thorson J and Williams N. (2012). 'Eco-Label Conveys Reliable Information on Fish Stock Health to Seafood Consumers', *PLoS ONE* 7 (8): e43765.
- Hajer M. (2011). The energetic society. In search of a governance philosophy for a clean economy. The Hague: PBL Netherlands Environmental Assessment Agency.
- Hertwich E. (2012). 'Biodiversity: Remote responsibility', *Nature* 486 (7401): 36–37.
- Hosonuma N, Herold M, De Sy V, De Fries R, Brockhaus M, Verchot L, Angelsen A & Romijn E (2012). 'An assessment of deforestation and forest degradation drivers in developing countries', *Environmental Research Letters* 7 (4): 044009.
- IenM, BuZa and EL&I (2011). Agenda duurzaamheid: agenda voor een groene groei-strategie voor Nederland [Sustainability agenda: a green growth strategy for the Netherlands (in Dutch)], The Hague, Ministry of Infrastructure and the Environment, Ministry of Foreign Affairs, Ministry of Economic Affairs, Agriculture and Innovation.
- ICC, GBCC and KPMG (2013). Study on the costs, advantages and disadvantages of cocoa certification, London: ICC International Cocoa Council, GBCC Global Business Consulting Company, KPMG.

- IDH (2013). Annual Report 2012. Measuring impact and creating shared value, Utrecht: IDH The Sustainable Trade Initiative.
- IDH and CREM (2010). Sustainable Cocoa for the Dutch Market. Analysis of the Dutch cocoa sector, Utrecht/Amsterdam: IDH The Sustainable Trade Initiative and CREM Consultancy for Sustainable Development.
- ISEAL (2013). 10 years of ISEAL. Annual report 2012, London.
- ITC (2011a). The impacts of private standards on global value chains. Literature review series on the impacts of private standards - Part I, Genève: ITC International Trade Centre.
- ITC (2011b). The impacts of private standards on producers in developing countries. Literature review series on the impacts of private standards - Part II, Genève: ITC International Trade Centre.
- Jansen PAG and Van Benthem, MHA. (2009). Effecten van boscertificering op biodiversiteit [Effects of biocertification on biodiversity (in Dutch)], Wageningen: Probos Foundation.
- Kamphorst DA. (2009). Keuzes in het internationale biodiversiteitsbeleid: verkenning van de beleidstheorie achter de internationale aspecten van het Beleidsprogramma Biodiversiteit [Options for international biodiversity policy programme: an exploration of the policy theory behind the international Biodiversity Policy Programme (in Dutch)] (2008–2011), WOt Working document 126, Wageningen: WUR.
- Kessler JJ, Brons J, Braam L, Van Kuijk M and Pelders P. (2012). Social and economic effects of value chains of tropical agro-commodities and sustainability initiatives, Amsterdam: Aidenvironment.
- Kessler JJ and Pelders P. (2012). Social and economic effects of value chains of tropical agro-commodities and sustainability initiatives; Aquaculture and wild-capture fish, Amsterdam: Aidenvironment.
- KNVKT (2013). Koffie consumptie in beeld 2012 [Coffee consumption in perspective 2012 (in Dutch)], Rijswijk: KNVKT, The Royal Dutch Coffee and Tea Association.
- KPMG (2010). Inhoudelijke nalevingslasten Programma Duurzaam Inkopen Overheid: onderzoek naar 4 sectoren [Substantive Compliance costs for Sustainable Procurement by the Government: investigation in four sectors (in Dutch)], Amsterdam.
- KPMG (2012). Responsible soy. Cost/benefit analysis of RTRS certification in Brazil and Argentina. Commissioned by IDH, in partnership with IFS, WWF and FMO, Amsterdam: KPMG.
- Lenzen M, Moran D, Kanemoto K, Foran B, Lobefaro L and Geschke A. (2012). 'International trade drives biodiversity threats in developing nations', *Nature* 486 (7401): 109–112.
- LNV, OS and VROM (2008). Beleidsprogramma Biodiversiteit 2008-2011, Biodiversiteit werkt, voor natuur voor mensen voor altijd. Tweede Kamer, nr. DN.2008/881 [Biodiversity policy programme 2008-2011, Biodiversity works for nature, for people, forever. Dutch Lower House, no. DN.2008/881 (in Dutch)], The Hague, Ministry of Agriculture, Nature and Food Quality, Ministry of Developmental Cooperation, Ministry of Housing, Spatial Planning and the Environment.

- Milder JC, Gross LH and Class AM. (2012). Assessing the ecological impacts of agricultural eco-certification and standards. A global review of the science and practice, Washington: EcoAgriculture Partners.
- Ministry of Foreign Affairs (2011). Focusbrief Ontwikkelingssamenwerking [Developmental Cooperation focus document (in Dutch)], The Hague.
- Molenaar JW, Orth M, Lord S, Meekers P, Taylor C, Mansuetos D, Elson D and Longgena G. (2011). Analysis of the Agronomic and Institutional Constraints to Smallholder Yield Improvement in Indonesia, Amsterdam: Aidenvironment.
- Moore N. (2009). UK Timber Industry Certification, London: Timber Trade Federation.
- MSC International (2012a). <http://www.msc.org/>.
- MSC International (2012b). Makreel certificaten geschorst door certificeerders [Mackerel certificates suspended by certifiers (in Dutch)], MSC Marine Stewardship Council <http://www.msc.org/nieuws/nieuws/makreel-certificaten-geschorst-door-certificeerders>.
- MSC International (2013). Global Impacts Report 2013, London: Marine Stewardship Council.
- OECD (2013). Scaling-up Finance Mechanisms for Biodiversity, Paris: OECD.
- Oldenburger J, Winterink A and De Groot C. (2013). Duurzaam geproduceerd hout op de Nederlandse markt in 2011 [Sustainably produced wood in the Dutch market in 2011 (in Dutch)], Wageningen: Probos Foundation.
- PBL (2012). Roads from RIO+20. Pathways to achieve global sustainability goals by 2050. PBL Report 500213001, The Hague: PBL Netherlands Environmental Assessment Agency.
- Pearce F. (2012). Forest stands. How new EU trade laws help countries protect both forests and peoples, Brussels: FERN.
- PEFC (2013). Online certification database, <http://www.pefc.org>.
- Peña-Claros M, Blommerde S and Bongers F. (2009). Assessing the progress made: an evaluation of forest management certification in the tropics. 9789085856962, Wageningen: Wageningen UR.
- Pérez-Ramírez M, Phillips B, Lluch-Belda D and Lluch-Cota S. (2012). 'Perspectives for implementing fisheries certification in developing countries', Marine Policy 36 (1): 297–302.
- Perfecto I, and Vandermeer J. (2010). 'The agroecological matrix as alternative to the land-sparing/agriculture intensification model', Proceedings of the National Academy of Sciences 107 (13): 5786–5791.
- Probos Foundation (2011). Kerngegevens Bos en Hout in Nederland. november 2011 [Forest and Wood in the Netherlands, core data. November 2011 (in Dutch)], Wageningen Probos Foundation.
- PWC and IDH (2012). Mainstreaming sustainability in the tropical timber industry. Phase 1 and 2 public report, Utrecht: IDH The Sustainable Trade Initiative.
- Rainforest Foundation UK (2013). Seeds of Destruction. Expansion of industrial oil palm in the Congo Basin: Potential impacts on Forests and People.
- RSPO (2013). Market performance / Key Market Statistics, [http://www.rspo.org/en/key\\_statistics](http://www.rspo.org/en/key_statistics).

- Ruben R. (2009). *The impact of Fair Trade*, Wageningen: Wageningen Academic Publishers.
- Ruben R and Zuniga G. (2010). *How standards compete: comparative analysis of coffee certification in Northern Nicaragua*. Nijmegen: CIDIN, Centre for International Development Issues.
- SCSKASC (2012). *Toward sustainability: The roles and limitations of certification*, Washington, DC: Resolve Inc.
- SOMO (2013). *Controversial company cases*, <http://somo.nl/dossiers/bedrijven>.
- Stichting Ketentransitie Verantwoorde Soja (2013). *Verantwoorde soja in het nieuws [Responsible soy in the news (in Dutch)]*, Rotterdam: Foundation for Responsible Soy Chain Transition.
- Sustainable Palm Oil Task Force (2011). *Duurzaam geproduceerde palmolie: de norm in 2015 [Sustainably produced palm oil: the standard in 2015 (in Dutch)]*, <http://www.mvo.nl/Kernactiviteiten/Duurzaamheid/Grondstoffenvoorziening/Nieuws/17112011Factsheethelptbedrijvenbijoverstap/tabid/3343/language/nl-NL/Default.aspx>.
- Sustainable Palm oil Task Force (2013a). *Jaarrapportage 2012. 100% duurzame palmolie: de norm in 2015 [Annual report 2012. 100% sustainable palm oil: the standard in 2015 (in Dutch)]*, Zoetermeer: Commodity Board for Margarine, Fats and Oils.
- Sustainable Palm oil Task Force (2013b). *'Persbericht: 41 % van de palmolie in Nederland duurzaam' ['Press release: 41% of the palm oil in the Netherlands is sustainable' (in Dutch)]*. [http://www.taskforceduurzamepalmolie.nl/Portals/4/download/Persbericht\\_TaskForceDuurzamePalmolie-April\\_2013.pdf](http://www.taskforceduurzamepalmolie.nl/Portals/4/download/Persbericht_TaskForceDuurzamePalmolie-April_2013.pdf).
- TCC (2012a). *Cocoa Barometer 2012*, The Hague: TCC, Tropical Commodity Coalition.
- TCC (2012b). *Coffee barometer 2012*, The Hague: Tropical Commodity Coalition.
- Tropenbos International (2013). *Artisanal logging and legality verification in DRC: what are the options?*, Wageningen, Tropenbos International.
- Van Baalen A, Ankersmit C and Stofberg N. (2011). *Van Oerwoud naar Overheid. Een onderzoek naar duurzaam houtgebruik in bouwprojecten van de overheid [From the jungle to the government. A study on sustainable wood usage in governmental building projects (in Dutch)]*, Amsterdam: Milieudefensie (Friends of the Earth Netherlands).
- Van Benthem M, Oldenburger J and Winterink A. (2011). *Eindverslag projectevaluatie overheden in de bouw [Evaluation report governmental project evaluations of the construction industry (in Dutch)]*, Wageningen: Probos Foundation.
- Van der Sterren M. (2009). *'GM-soja. Bron van hoofd- en buikpijn' ['GM soya. Source of headache and abdominal pain' (in Dutch)]*, *De Molenaar* no. 1 (16 January): 8–11.
- Van Gelder J and Herder A. (2012). *Sojabarometer 2012 [Soya barometer 2012 (in Dutch)]*, Amsterdam: Profundo.
- Van Kuijk M, Putz F and Zagt R. (2009). *Effects of Forest Certification on Biodiversity*, Wageningen, the Netherlands: Tropenbos International.
- Van Oorschot M, Rood T, Vixseboxse E, Wilting H and Van der Esch S. (2013). *The Size and Impact of the Dutch footprint on the planet*. The Hague: PBL Netherlands Environmental Assessment Agency.

- Van Tulder R. (2010). The collaborative paradigm. Dealing with the increasing role of partnerships in sustainable development, Rotterdam: The Partnership Resource Centre, Rotterdam School of Management.
- Vermeulen WJV and Kok MTJ. (2012). 'Government interventions in sustainable supply chain governance: Experience in Dutch front-running cases', *Ecological Economics* 83 (0): 183–196.
- Vermeulen WJV, Uitenboogaart Y, Pesquiera, L, Metselaar, J and Kok, M (2010). Roles of Governments in Multi-Actor Sustainable Supply Chain Governance Systems and the effectiveness of their interventions. An Exploratory Study, The Hague: PBL Netherlands Environmental Assessment Agency.
- Ministry of Housing, Spatial Planning and the Environment (2008). *Duurzame ontwikkeling en beleid [Sustainable development and policy (in Dutch)]*, The Hague, Dutch House of Representatives, 30196, session 2007–2008.
- VVNH (2012). *Jaarverslag 2011 [Annual report 2011 (in Dutch)]*, Almere, VVNH Royal Dutch Timber Traders Association.
- Waarts Y, Judge L, Brons J, De Ruyter de Wildt M and Ingram V. (2013). Upscaling the impact of certification initiatives. Enabling conditions and policy recommendations for regional development, Wageningen/The Hague: LEI Agricultural Economics Research Institute.
- Westhoek H, Rood GA, Van den Berg M, Janse J, Nijdam D, Reudink M and Stehfest E. (2011). *The Protein Puzzle. The consumption and production of meat, dairy and fish in the European Union*, The Hague: PBL Netherlands Environmental Assessment Agency.
- Westhoek H, Rood GA, Van Eerdt M, Van Gelder M, Van Grinsven H, Reudink M, Van Zeijts H and Nijdam DS. (2013). *De macht van het menu. Opgaven en kansen voor duurzaam en gezond voedsel [The power of the menu. Specifications and opportunities for sustainable and healthy foods (in Dutch)]*. PBL 792, The Hague/Bilthoven: PBL Netherlands Environmental Assessment Agency.
- World Bank / IFC (2011). *Improving the Livelihoods of Palm Oil Smallholders: the Role of the Private Sector*.
- WTO (1998). India etc versus US: 'shrimp-turtle', [http://www.wto.org/english/tratop\\_e/envir\\_e/edis08\\_e.htm](http://www.wto.org/english/tratop_e/envir_e/edis08_e.htm), 15-9-2013.
- WWF (2012). *Living Planet Report 2012. Biodiversity, biocapacity and better choices*, Gland, Switzerland: WWF.
- WWF (2013). *Palm Oil Market and Sustainability in India*, <http://wwf.panda.org/?207421/PALM-OIL-MARKET-AND-SUSTAINABILITY-IN-INDIA>.

## Background information

The research on the effects of certification and the effects of governance aspects carried out in the context of this report were contracted out. PBL Netherlands Environmental Assessment Agency commissioned the following background studies.

### Effects of certification

- Van Kuijk M, Putz FE and Zagt R. (2009). Effects of Forest Certification on Biodiversity, Wageningen, the Netherlands: Tropenbos International.
- Jansen P and Van Benthem M. (2009). Effecten van boscertificering op biodiversiteit [Effects of forest certification on biodiversity (in Dutch)], Wageningen: Probos Foundation.
- Beukers R and Harms B. (2012). De meerwaarde van certificeringsschema's in visserij en aquacultuur om bij te dragen aan het behoud van biodiversiteit, [The added value of certification schemes in the fishing industry and aquaculture in contribution to the maintenance of biodiversity (in Dutch)], WOt Working document 300, The Hague: LEI.
- Kessler J, Brons J, Braam L, Van Kuijk M and Pelders P. (2012). Social and economic effects of value chains of tropical agro-commodities and sustainability initiatives, Amsterdam: Aidenvironment.
- Kessler J and Pelders P. (2012). Social and economic effects of value chains of tropical agro-commodities and sustainability initiatives; Aquaculture and wild-capture fish, Amsterdam: Aidenvironment.
- Waarts Y, Judge L, Brons J, De Ruyter de Wildt M and Ingram V. (2013). Upscaling the impact of certification initiatives. Enabling conditions and policy recommendations for regional development, LEI rapport 2013-046, Wageningen/The Hague: LEI Agricultural Economics Research Institute.

### Governance aspects

- Kamphorst D. (2009). Keuzes in het internationale biodiversiteitsbeleid: verkenning van de beleidstheorie achter de internationale aspecten van het Beleidsprogramma Biodiversiteit (2008-2011) [Options for international biodiversity policy programme: an exploration of the policy theory behind the international Biodiversity Policy Programme (2008–2011) (in Dutch)], WOt Working document 126, Wageningen: WUR.
- Vermeulen W, Uitenboogaart Y, Pesqueira L, Metselaar J and Kok M. (2010). Roles of Governments in Multi-Actor Sustainable Supply Chain Governance Systems and the effectiveness of their interventions. An Exploratory Study, Bilthoven: PBL Netherlands Environmental Assessment Agency.
- Both ENDS (2012). Policy research on regional sustainability and global production chains, Amsterdam: Both ENDS.
- Vermeulen W and Kok M. (2012). 'Government interventions in sustainable supply chain governance: Experience in Dutch front-running cases', *Ecological Economics* 83 (0): 183–196.



Selnes T, Kamphorst D, Arts B and Van Tatenhove J. (2013). Innovatieve governance-arrangementen. Op zoek naar vernieuwing in het groene domein [Innovative governance arrangements. Searching for renewal in the green domain (in Dutch)], WOt Working document 340, Wageningen: Wageningen UR.

Vermeulen W, Kamphuis S and Kok M. (2013). Analysis of standard systems, Utrecht: Copernicus Institute.

## Data sources for figures and tables

The following data and references were used to make overviews of import shares, sustainable market shares and trends for Table 2, and Figures 1, 6, 7 and 15.

### National

Coffee: TCC (2007, 2010, 2012b); CBS StatLine.

Coffee consumption: Max Havelaar/FLO UTZ Certified websites; KNVKT (2013).

Wood: Aidenvironment (2008); Oldenburger J and Leek N. (2006); Oldenburger et al. (2013); Oldenburger et al. (2010); Probos (2011).

Fish harvest: MSC International (2012); GfK Panel services; Beukers and Harms (2012).

Soya: Van Gelder JW and Herder A. (2012); Foundation for Responsible Soya Chain Transition (2013); Kamphuis et al. (2011).

Palm oil: Sustainable Palm Oil Task Force (2011, 2013a, b); Kamphuis et al. (2011).

Cacao: The estimate of 10% sustainability in Figure 1 is made on the basis of the publication of IDH and CREM (2010). The national demand (stated commitments of companies) is compared with global sustainable production. The assumption is that there is enough supply to meet the demands and realise the stated commitments.

### Global

International trade statistics: FAOSTAT (2013).

Coffee: TCC (2012b); UTZ Certified (2013).

Cacao: TCC (2012a); UTZ Certified (2013).

Wood: FAO (2010); FSC (2013); PEFC (2013).

Fish harvest: MSC International (2012); Washington S and Ababouch L. (2011); Beukers and Harms (2012).

Soya: CERT-ID (2013); Kessler et al. (2012); RTRS (2013); UN Comtrade online database.

Palm oil: RSPO (2013); UN Comtrade online database.

Aquaculture: Boyd C and McNevin A. (2012).

### References for the above-mentioned data sources:

Aidenvironment (2008). FSC Hout in de Nederlandse markt 2007. Beschikbaarheid van FSC-gecertificeerd hout op de Nederlandse markt in 2007 [FSC Wood in the Dutch market 2007. Availability of FSC-certified wood in the Dutch market in 2007 (in Dutch)] 1765 A, Amsterdam: Aidenvironment.

- Boyd C and McNevin A. (2012). An Early Assessment of the Effectiveness of Aquaculture Certification and Standards. In: Toward sustainability: The roles and limitations of certification (ed Steering Committee of the State-of-Knowledge Assessment of Standards and Certification), Washington, DC: RESOLVE, Inc.
- CERT ID (2013). [www.cert-id.com.br](http://www.cert-id.com.br).
- FAO (2010). Global forest resources assessment 2010. Main report. FAO Forestry paper nr 163, Rome: Food and Agriculture Organization of the United Nations (FAO).
- FSC (2013). Online certification database, [www.fsc.org](http://www.fsc.org).
- The Sustainable Trade Initiative and CREM (2010). Sustainable Cocoa for the Dutch Market. Analysis of the Dutch cocoa sector, Utrecht/Amsterdam: IDH The Sustainable Trade Initiative and CREM Consultancy for Sustainable Development.
- Kessler J, Brons J, Braam L, Van Kuijk M and Pelders P. (2012). Social and economic effects of value chains of tropical agro-commodities and sustainability initiatives, Amsterdam: Aidenvironment.
- Kamphuis B, Arets E, Verwer C, Van den Berg J, Van Berkum S and Harms B. (2011). Dutch trade and biodiversity. Biodiversity and socio-economic impacts of Dutch trade in soya, palm oil and timber. LEI report 2011-013, Alterra report 2155, The Hague: LEI - Wageningen UR.
- KNVKT (2013). Koffieconsumptie in beeld 2012 [Coffee consumption in perspective, 2012 (in Dutch)], Rijswijk, KNVKT, The Royal Dutch Coffee and Tea Association.
- MSC International (2012) <http://www.msc.org/>.
- Oldenburger J and Leek N. (2006). Duurzaam geproduceerd hout op de Nederlandse markt in 2005 [Sustainably produced wood in the Dutch market in 2005 (in Dutch)], Wageningen: Probos Foundation.
- Oldenburger J, Winterink A and De Groot C. (2013). Duurzaam geproduceerd hout op de Nederlandse markt in 2011 [Sustainably produced wood in the Dutch market in 2011 (in Dutch)], Wageningen: Probos Foundation.
- Oldenburger J, Winterink A and Leek N. (2010). Duurzaam geproduceerd hout op de Nederlandse markt in 2008 [Sustainably produced wood in the Dutch market in 2008 (in Dutch)], Wageningen: Probos Foundation.
- PEFC (2013). Online certification database, [www.pefc.org](http://www.pefc.org).
- Probos (2011). Kerngegevens Bos en Hout in Nederland. november 2011 [Forest and Wood in the Netherlands, core data. November 2011 (in Dutch)], Wageningen: Probos Foundation.
- RSPO (2013). Market performance / Key Market Statistics, [http://www.rspo.org/en/key\\_statistics](http://www.rspo.org/en/key_statistics).
- RTRS (2013). Online certification information [www.responsiblesoya.org](http://www.responsiblesoya.org).
- Foundation for Responsible Soya Chain Transition (2013). Verantwoorde soja in het nieuws [Responsible soya in the news (in Dutch)].
- Sustainable Palm Oil Task Force (2011). Duurzaam geproduceerde palmolie: de norm in 2015 [Sustainably produced palm oil: the standard in 2015 (in Dutch)], <http://www.mvo.nl/Portals/o/duurzaamheid/grondstoffenvoorziening/download/DuurzamePalmolie-factsheet.pdf>.

- Sustainable Palm oil Task Force (2013a). Jaarrapportage 2012. 100% duurzame palmolie: de norm in 2015 [Annual report 2012. 100% sustainable palm oil: the standard in 2015 (in Dutch)], Zoetermeer, Commodity Board for Margarine, Fats and Oils.
- Sustainable Palm oil Task Force (2013b). Persbericht: '41 % VAN DE PALMOLIE IN NEDERLAND DUURZAAM' [Press release: '41 % of palm oil in the Netherlands is sustainable' (in Dutch)], [http://www.taskforceduurzamepalmolie.nl/Portals/4/download/Persbericht\\_TaskForceDuurzamePalmolie-April\\_2013.pdf](http://www.taskforceduurzamepalmolie.nl/Portals/4/download/Persbericht_TaskForceDuurzamePalmolie-April_2013.pdf).
- TCC (2007). Coffee barometer 2006.
- TCC (2010). Coffee barometer 2009, The Hague: TCC, Tropical Commodity Coalition.
- TCC (2012a). Cocoa Barometer 2012, The Hague: Tropical Commodity Coalition.
- TCC (2012b). Coffee barometer 2012, The Hague: Tropical Commodity Coalition.
- UTZ Certified (2013). 10 Years in coffee, cocoa and tea. From good to better. UTZ Certified annual report 2012, Amsterdam.
- Van Gelder J and Herder A. (2012). Sojabarometer 2012 [Soya barometer 2012 (in Dutch)], Amsterdam: Profundo.
- Washington S and Ababouch L. (2011). Private standards and certification in fisheries and aquaculture; Current practice and emerging issues. Technical Paper 533, Rome: FAO.

# Acronyms

4C	Common Code for the Coffee Community
ASC	Aquaculture Stewardship Council
FOS	Friends of the Sea
FSC	Forest Stewardship Council
GRI	Global Reporting Initiative
GMO	Genetically Modified Organism
GVB	Gemeenschappelijk Visserijbeleid (Common Fisheries Policy, CFP)
IDH	Initiative for Sustainable Trade
IFOAM	International Federation of Organic Agriculture Movements
ISEAL	Alliance for International Social and Environmental Accreditation and Labelling
ILO	International Labour Organisation
ISO	International Organisation for Standardisation
ISPO	Indonesian Sustainable Palm Oil
MSC	Marine Stewardship Council
MSPO	Malaysian Sustainable Palm Oil
MTCC	Malaysian Timber Certification Council
MTCS	Malaysian Timber Certification Scheme
MVO	Corporate Social Responsibility
NGO	Non-governmental Organisation
OECD	Organisation for Economic Cooperation and Development
PEFC	Programme for the Endorsement of Forest Certification
REDD	Reducing Emissions from Deforestation and Forest Degradation
RSPO	Round Table on Sustainable Palm oil
RTRS	Round Table on Responsible Soy
SFI	Sustainable Forestry Initiative
TEEB	The Economics of Ecosystems and Biodiversity
TPAC	Timber Procurement Assessment Committee
VPA	Voluntary Partnership Agreement
VVNH	Royal Dutch Timber Traders Association
WWF	World Wildlife Fund for Nature

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Imported natural resources and products, such as coffee, timber, palm oil, cacao, fish and soya, increasingly more often carry a sustainability label, based on production process certification, following voluntary production standards. Applying these labels may contribute to a wide variety of global sustainability goals, such as halting biodiversity loss, eradicating extreme poverty and stimulating sustainable economic development.

Market shares of certified products have soared in the Netherlands over the past two decades, thanks to the collective action of market parties, social organisations and government. The Dutch Government has been playing a facilitating role through its purchasing policy and by supporting initiatives financially. The Netherlands is one of the EU frontrunners in this field.

It is unlikely that voluntary initiatives alone will be able to further expand the market for sustainable products. There are too many obstacles, such as high certification costs, lack of knowledge on sustainable methods, limited financial access, and the absence of a level playing field. If the Netherlands aspires to increase the sustainability of production and trade, the government must take on a more forceful role in the context of EU market policies. For example, companies could be required to provide more transparency about supply chains, the EU could formulate general minimum standards for imported products and resources, and member states could harmonise public procurement policies.

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