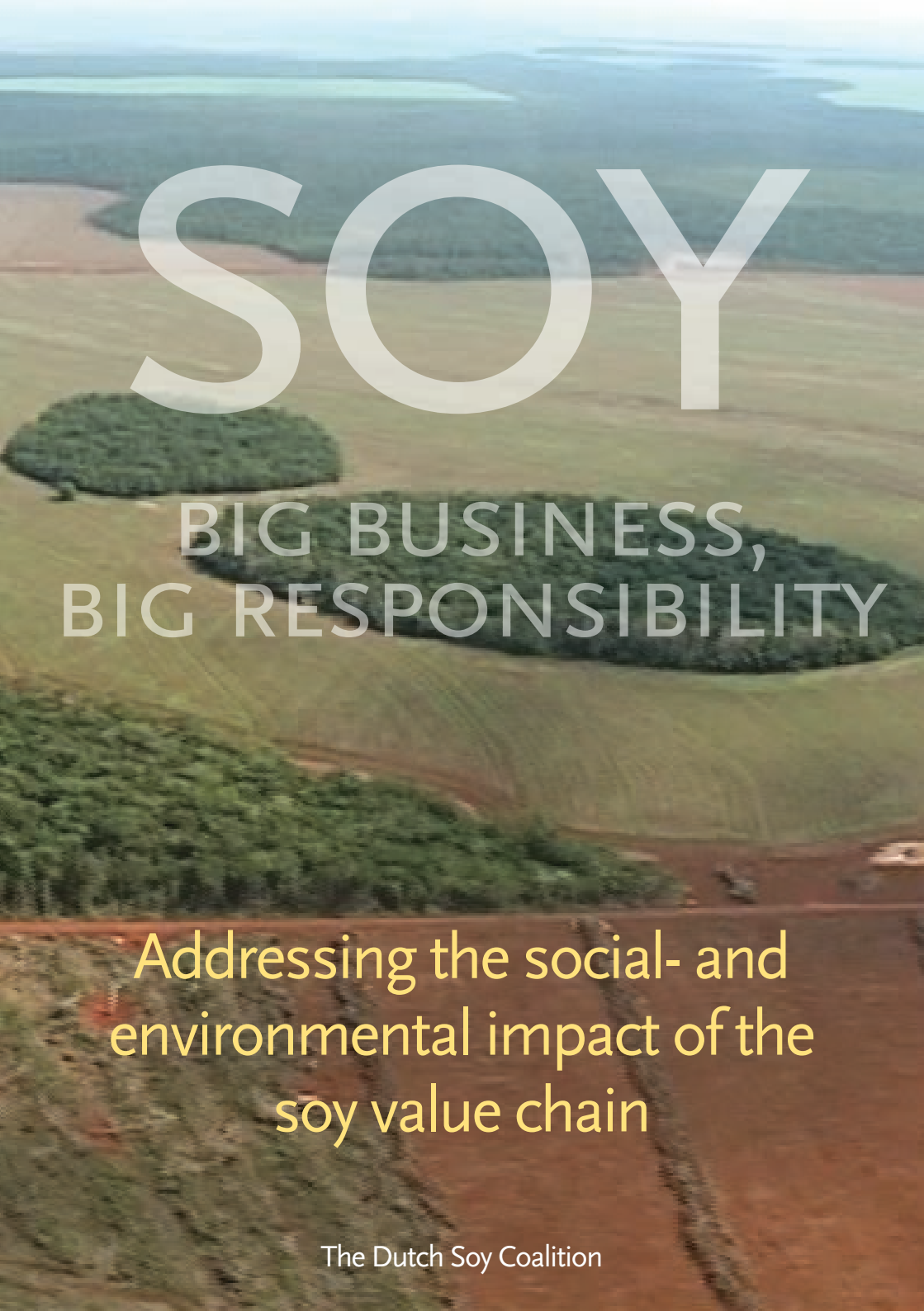

SOY

BIG BUSINESS, BIG RESPONSIBILITY

Addressing the social- and environmental impact of the soy value chain

The Dutch Soy Coalition

Soy – big business, big responsibility

Addressing the social- and environmental impact of the soy value chain

The Dutch Soy Coalition

We'd like to thank

This publication was written by the Dutch Soy Coalition and was made possible with the support of the Netherlands Ministry of Housing, Social Planning and the Environment, through its subsidy plan for social- and environmental organisations. The Dutch Soy Coalition would like to thank all our photographers and Google Earth for making its images available to us, The Netherlands Society for Nature and Environment, NEVEDI, ASEED, and the Dutch Agriculture Union, Jacques Seegers and everybody else who has contributed to this document.

Editorial

Text: The Dutch Soy Coalition, AIDEnvironment
Design: Ruparo (Ivo Sikkema)
Printing: Ruparo, Amsterdam
Translation: Karin Engelbrecht

Updated in February 2008
ISBN: 978-90-77648-09-4

Printed on FSC certified paper.

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Foreword

Most people associate soy with Asian cooking or with meat replacement products, but what few realise is that soy is used in the production of 60-70% of all supermarket products – from sauces and snacks to meat and dairy. In fact, soy is one of the most cultivated crops in the world, after rice, wheat and corn, and production is rising fast. Most people aren't aware that soy production in South America is contributing to large-scale deforestation and all kinds of problems for the local population. The Dutch Soy Coalition was created to help find solutions to these problems.

Soy is not the only 'problem plant' in our globalising world. In South America, and elsewhere, similar problems can be found in the production of sugar, paper pulp, cotton, palm oil and other raw materials that are produced to feed the world's growing hunger for food, animal feed, fibre and energy.

The Netherlands plays a central role in the soy sector as the second largest importer and central distribution point for Western Europe, and therefore has a duty to act responsibly. The Dutch Soy Coalition would like to use this publication to show why soy production, -trade and -processing has to change. The negative impact in South American production countries are too large to ignore. Moreover, there are ways to diminish the harmful effects, but all involved parties – from soy field to supermarket – would have to take some responsibility for this to happen. The Soy Coalition is currently working with organisations in South America, Europe, the US, India and China, because of the international nature of the soy problem. We are in contact with small and large soy producers, indigenous people who have been displaced as a result of increasing soy cultivation, with organisations that want to implement international agricultural reforms and with organisations that are focused on the discussion surrounding gentech soy.

The Soy Coalition would like to ask producers, consumers, companies and politicians to help fight the negative effects of the production, transportation, processing and consumption of soy, by insisting on responsible production and a sustainable soy value chain on the one hand, and by starting a discussion about the role of factory farming and the effects of our meat consumption on the other.

The Dutch Soy Coalition

Both ENDS Environment and Development Service · ICCO Partner van ondernemende mensen · Natuur en Milieu · Cordaid · fairfood · Solidaridad · IUCN Netherlands Committee The World Conservation Union · www.kerkinactie.nl · Milieu Defensie · WWF

1

SOY AND THE SOY VALUE CHAIN

1. Soy and the soy value chain

What does soy look like, where does it grow and how is it cultivated? How does it end up in the Netherlands and what is it used for? This chapter will address these questions and will investigate meat consumption in the Netherlands and the various links in the soy value chain: from farm to fork. What is soy?

What is soy?

Soy is an annual crop that produces an edible bean with a high protein- and oil content. Modern varieties are about a metre high and have a growth season of 90 to 120 days, resulting in a yield of between one and a half to three tons per hectare. The price of soybeans f uctuates around 300 dollars a ton. Nowadays, soy is produced by both small-scale family operations and large-scale factory farming companies. The harvested soybeans are centrally stored in large silos, where the various soy varieties from many farmers are mixed. This mixing process creates a bulk product, which means that the identities of the soy varieties and growers are lost early on in the soy value chain. Soy produces more protein per hectare than any other plant: approximately 1,000 kilos. Soy comes from Northeast China, and was originally only cultivated in moderate climates, but selective breeding has made it possible to grow soy in sub-tropical and tropical areas too. Soy plants can take nitrogen from the air and fix it in the

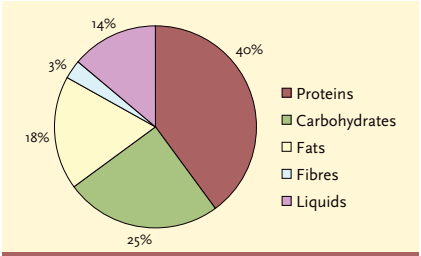


Figure 1.1 Composition of soybean.

Figure 1.2 The soy plant (Glycine max, soy pods and soybeans).

soil through a symbiotic relationship with the *Rhizobium* bacteria, which means that soy plants need very little nitrogen fertilisation.

What is soy used for?

Due to its high protein content and favourable amino-acid composition, soy is an excellent source of protein for human consumption, e.g. as a meat replacement. Asian cooking uses a lot of soy – especially tofu, tempeh and soy sauce. Soybean oil enjoys the highest consumption worldwide of any vegetable oil. However, the bulk of the global soy production is used for animal feed.

Soy consumption has risen sharply over the past decade, from roughly 100 million tons in 1990 to 215 ton in the 2005-2006 season, largely due to increasing global consumption of meat and the growing use of soy in animal feed, especially in Europe and Asia.

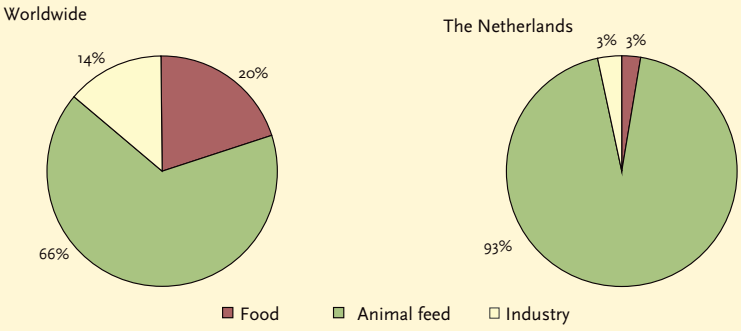


Figure 1.3 Use of soy – in the Netherlands and worldwide. ***Source: ISTA Mielke***

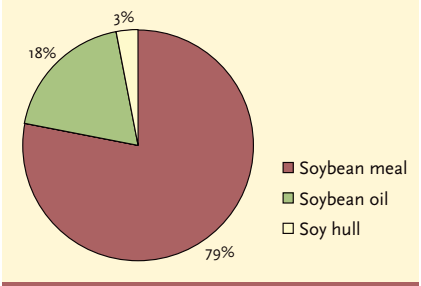


Figure 1.4 Soybean crush products.

Their high protein content make soybean meal and roasted soybeans ideally suited as a component in animal feed for chickens, pigs, calves and dairy cattle. The demand for soy increased sharply when bone meal was banned as an animal feed component, after the outbreak of mad cow disease in the Nineties.

Other contributing factors to the rise in the demand for soy include population growth and increasing wealth. The world's population doubled between 1950 and 2000, while meat production quintupled. It is estimated that there will be nine billion people on the planet by 2050, and that the current meat production of 233 billion kilo per year will double again. The trend to eat more meat can be seen in fast-growing economies like China, where meat consumption has risen by more than 85% in six years. The result: ten years ago China was a soy exporter. Now it's the biggest soy importer. Most of Europe's soy import is processed into animal feed. Roughly half of the import consists of soybeans and the other half of soybean meal (also called pellets). The majority of the soybeans are crushed – crushing produces 79% soybean meal, 18% raw soybean oil and 3% fibres (hulls). Refining the raw soybean oil in turn produces soybean oil and lecithin, a much-used emulsifier.

A small percentage of the European soy import is meant for human consumption, mostly soybean oil. On a global scale, soybean oil accounts for about a quarter of the total consumption of all vegetable oil in the world. Lecithin is used as an emulsifier in chocolate, sauces, margarine and snacks.

The origin of soy

While soy originally comes from Asia, the US became the world's largest producer of soy after the Second World War. Soy production has been growing in South America since the 1960's, and rather explosively over the last decade, in response to the growing demand for meat and eggs in Europe and East Asia. In the meantime, Brazil and Argentina have become serious contenders for the US' market leader position. Expected soy production for the 2006-2007 season is 235 million tons.

After the soybean harvest, 83% of the global crop is crushed, using mechanical and chemical processes to process the soybeans into soybean oil and soybean meal. Soybean meal is the main product, both in volume (79%) and in economic value (70%). Crushing mainly takes place in the production countries, but there are two large crush factories in Rotterdam and Amsterdam, with a combined capacity of 2,7 million tons per year.

Most of the South American soy production is exported, mainly to Europe and China. From October 2005 to September 2006, Argentina exported 91% of its total

soy production, 80% of which was in the form of soybean meal and -oil. In the same period, Brazil exported 72% of its total soy production, of which 37% consisted of soybean meal. The Netherlands is the biggest importer in Europe, with 13 million tons, of which 3 million tons was processed in the Netherlands.

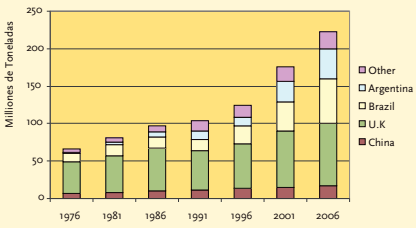


Figure 1.5 Soy production worldwide.
Source: FAO and ISTA Mielke

The rise of soy as export crop

Soy farming in Argentina and Brazil, the two key soy producing countries in South America, began in the Sixties. Small-scale soy farming can be found in the Northern provinces of Argentina. In Brazil, it's mainly in the Southern states of Rio Grande do Sul, Santa Catarina and Paraná. Soy farming used to take place in a rotation system with other crops here.

Demand for oil- and protein-rich plants started increasing at the beginning of the Seventies, mainly as a result of the bad peanut harvests in the Sahel countries, the shrinking US soy crops and an increased demand for soy in the Soviet Union. The soy price rose by 150% within six months in 1973.

As a result, the governments of Brazil and Argentina started to encourage their farmers to grow soy, which resulted in a rise from 6,8 million hectares used for soy farming in 1976 to 36,7 million ha in 2005 – ten times the size of the Netherlands. Paraguay and Bolivia also saw soy as a huge opportunity for growth. Demand continued and within fifteen years soy became these four countries' most important

Figure 1.6 Soy is used to produce a large number of products, from meat to paint, from margarine to detergent, and from salad dressing to cake.
© Friends of the Earth Netherlands & AIDEnvironment

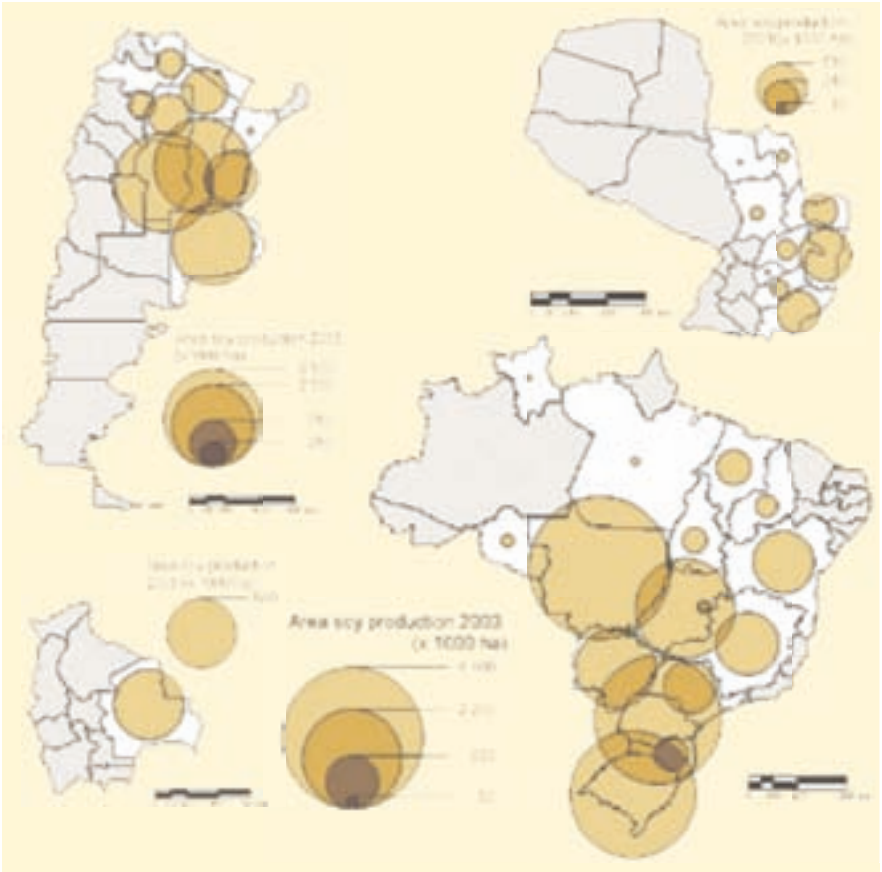


Figure 1.7 Soy farming in Argentina, Paraguay, Bolivia en Brazil in 2003.
© AIDEnvironment

agricultural export product.

Increasing soy production and -export requires a good infrastructure to transport the soybeans to well-equipped harbours, factories for processing, storage and enormous ships to transport the soy to Europe and Asia.

In addition to the investment in infrastructure, soy farmers were given access to easier credit, to finance machines, seed, fertiliser and pesticides. Mechanised soy farming quickly developed into one of the most important sectors of South American farming, with large agricultural companies, trade and money rolling in due to the increasing demand from abroad. Investment in selective breeding increased the yield per hectare and enabled the sub-tropical soybean to adapt to a tropical climate and -soil conditions, so that the soy growth area could expand to the tropical areas of Bolivia and Brazil.

The introduction of a mechanised soy monoculture impacted smaller family farms in Southern Brazil – negatively. After a short financial boom, over-production set in and the prices went down. This meant that many farmers couldn't afford to pay back the loans they received to go into soy farming. By specialising in soy farming, the farmers didn't have enough capital to survive a low period. Many had to sell their land and move to the cities or to settlements on the rim of the Amazon rainforest and in Paraguay to eke out a new existence, often under terrible circumstances.

A new chapter in the large-scale production of soy came with the introduction of genetically manipulated soy (also known as gentech soy) in 1996 in Argentina, when Monsanto, a multinational agricultural biotechnology corporation, introduced its so-called RoundUpReady Soy, which is resistant to Monsanto's RoundUp herbicide (glyphosate). Because this gentech soy is resistant to a herbicide that kills all weeds, farmers can weed much less often, or not at all. In the meantime, almost all of Argentina's soy production is now genetically modified.

An economic crisis broke out in South America at the end of the last century. As a result, South American countries had to choose an agrarian export model that would pay off their huge foreign debts, partly under pressure from the International Monetary Fund (IMF) and the World Bank. Soy played an important role in this.

Soy and biofuel

Soybean oil's composition makes it an excellent raw material for making biodiesel, but it was too expensive for large-scale application in 2007-2008. Only heavy subsidisation would make soy-diesel economically viable. High blending objectives in Europe and the US could force diesel distributors to buy in expensive biodiesel and pass the cost on to consumers. The demand for biofuels is also indirectly contributing to soy expansion – the US is using more and more corn to make ethanol, which means they're producing less soy, causing greater demand for South American soy. Moreover, the increasing expansion of sugar planta-

Financing soy infrastructure

Roads, harbours and soy crushers are financed by banks, governments and companies in the soy value chain. One of the largest infrastructure initiatives is IIRSA (Initiative for the Integration of Regional Infrastructure in South America), supported by Latin-American governments, the Inter-American Development Bank and national development banks in the region. One of IIRSA's projects is the Paraguay-Paraná waterway, along which more than 400 million dollars is being invested in harbours. In addition, Cargill, one of the four largest soy crushers, invested 200 million dollars to build a soy processing plant and an associated harbour in the Argentinean province Sante Fé, which will be the largest harbour along this river system. This infrastructure will only be profitable if Argentina boosts its grain- and soy production to 100 million tons per year.

tions for ethanol in South- and Central Brazil, Argentina and Paraguay is pushing soy cultivation further into the Chaco, Cerrado and Amazon areas.

Soy and international trade agreements

The demand for soy in Europe is stimulated by a number of trade agreements that were signed under pressure from the United States, which aim to guarantee American soy trade with the European market. The first agreement was the so-called Zero Tariff binding for EC oilseed imports, which includes soy. This trade agreement stipulates that no import tariffs have to be paid on soy imports, as opposed to other agrarian products like sugar, which means that soy is a cheap alternative to expensive European grains. The second trade agreement, the Blair House Agreement, limits Europe's ability to produce enough oilseeds to satisfy its own demand. The former EC promised that subsidised European oilseed production would be limited to a growth area of five million hectares. Moreover, a maximum oilseed production volume of fifteen million ton was instituted, which is much less than Europe uses.

Both trade agreements have greatly inf uenced European oilseed production. These agreements have kept the price of soy low, and have limited the possibility to replace soy. Where Europe is self-sufficient in grain, sugar and milk, it is dependent on imports for vegetable oils and proteins. These imports increasingly come from South America, not from the US.

The market players and the production process

Soy is a classic commodity. In other words, it is sold as a bulk product to a global market, in which pricing is determined based on certain measurable product qualities (like protein content). The price is determined on the Chicago Board of Trade (CBOT). Only a limited number of 'qualities' can be traded (in order to guarantee sufficient volume). This means that things like sustainability and many quality aspects are indiscernable. This is the case with many other bulk raw materials or commodities.

Soy production, -trade and -processing form a chain with many links. Many players are involved, but there is a high concentration of players within a few links on the chain, where a small number of companies control a large part of the 'soy stream'. The soy market chain has an hourglass structure, both for food- and industrial products and for meat- and dairy products. There is a broad top part of many agrarian soy producers, a small middle bit consisting of a few multinational trade companies, a few dominant supermarket chains and manufacturers in the food- and cosmetics industries, and a broad base of millions of consumers. In the animal feed chain, the middle segment contains chicken- and pig breeders. They get their soy from a small number of animal feed producers and they deliver to a limited number of dairy cooperatives and meat processors. We can conclude that the trading companies, processors and supermarkets have a lot of 'chain power'. If they were to change their policies, the

rest of the chain would have to follow.

A short description of the most important players in the soy value chain:

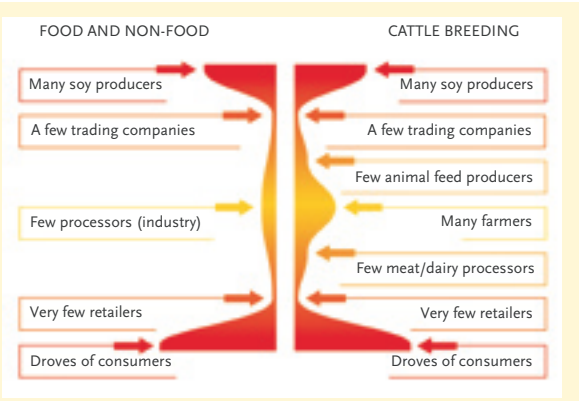


Figure 1.8 The soy value chain hourglass shows how many players are active in the various parts of the soy value chain for the food & non-food and the livestock segments.

Producers

Approximately 80% of global soy production originates from only three countries: The US, Brazil and Argentina. The largest part of South American production comes from large agriculture companies. The average size of a soy company in Argentina or Central Brazil is 1,000 ha, but there are also companies with 50,000 ha. In Brazil, Bolivia, India and China soy is grown in small family farms of 2 to 50 ha, often in combination with other crops.

International trade

Multinational companies play a big role in soy trade. The American trading companies Archer Daniels Midland (ADM), Bunge and Cargill and the French company Dreyfuss control a large part of the production- and processing chains in the exporting and the importing countries. They're also known as 'the ABCD', after their initials, or as the 'big four' in the soy value chain. These companies are some of the biggest in the world. Cargill has a turnover of $88 billion. They offer producers advances in the form of credit, seeds, fertiliser and pesticides. The linked selling chain means that these companies have a lot of control over the soy value chain. A small number of multinational companies therefore determine what will be sown, who will produce what, where it will be produced and how. Supply and demand are no longer separated and the inf uence of third parties (politics and consumers) on the chain is reduced.

The food- and animal feed industry

The animal feed industry processes soybean meal into animal feed for European cattle. Nutreco, Cehave and Provimi are the largest Dutch players in this market. They supply to farmers, who in turn supply their products (meat, milk, eggs) via meat processors like Vion and Plukon and dairy companies like Friesland Foods and Campina. Soybean oil is used by the food industry and by various other industries in all kinds of products like margarine, mayonnaise, snacks, detergents, cosmetics and

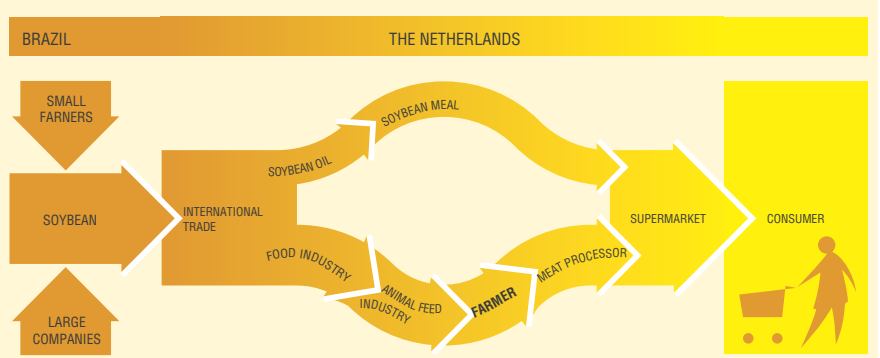


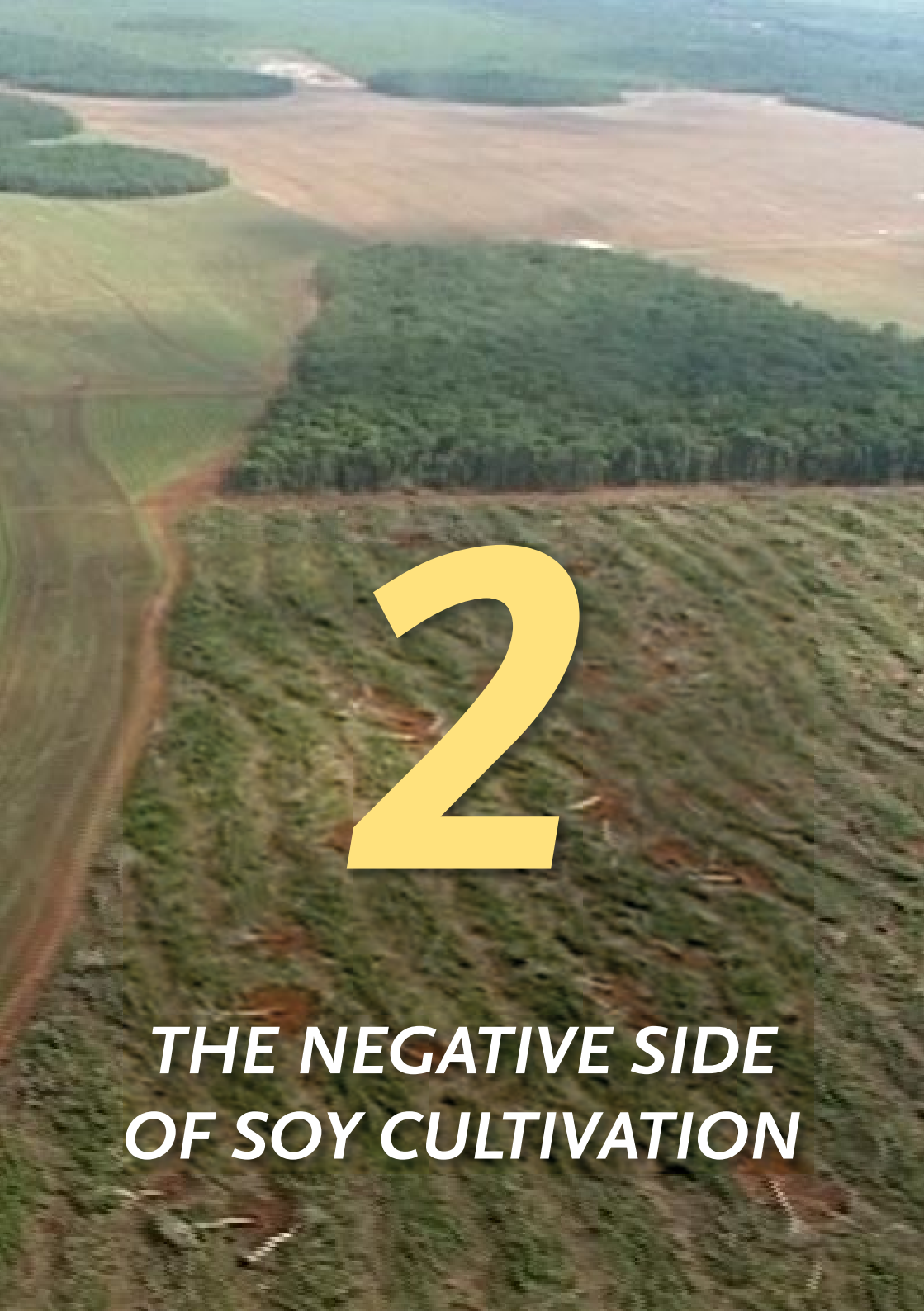
Figure 1.9 The long road from the soy field to the consumer. © *Solidaridad*

paint. There are also a few dominant players in the food- and cosmetics industries, such as Unilever, Procter and Gamble, Kraft and Nestlé.

Supermarkets
Most food products reach the consumer via the supermarket. Supermarket chains are operating on an increasingly international scale, and are improving their positions of power in the chain. The two largest supermarket chains in the Netherlands, Ahold and Laurus (part of the French holding company, Casino) dominate the market.

Consumers
Soy eventually reaches our plates in the form of, say, a chop, your salad dressing or the bon-bon you're having with your coffee. Soy is used in the production of 60-70% of all the products in the supermarket.

The financial sector
Banks also play an important role in soy production. Large-scale mechanised cultivation requires investment in land, machines, fertiliser and pesticides. Banks offer credit to producers and trading companies. The export value of soy is the surety for the loans. In the Netherlands, banks like Rabobank, Fortis Bank, ABN AMRO and ING Bank finance soy companies. Development banks also offer these kinds of loans. Because interest on the international capital market is lower than the high domestic interest rates in countries like Brazil and Argentina, it's often cheaper to get foreign loans for export. After all, soy is sold to Europe and paid for in dollars.



2

THE NEGATIVE SIDE OF SOY CULTIVATION

2. *The negative side of soy cultivation*

Introduction

The large scale production of soy and its expansion to South America has had large economic- and social consequences. Soy contributes to the South American trade surplus and to the global supply of vegetable oil and -protein for food and animal feed. Soy also causes serious social and ecological problems. In this chapter we will highlight the various negative effects of soy cultivation.

Land	Surface area (million ha)	Forest area, 2000		Deforestation 1990-2000	
		Total	%	milion ha / annum	% per annum
Argentina	274	35	13	0,28	0,8
Bolivia	108	53	49	0,16	0,3
Brazil	846	544	64	2,31	0,4
Paraguay	40	23	59	1,23	0,5
South America	**1.755**	**886**	**51**	**3,71**	**0,4**
World	**13.064**	**3.869**	**30**	**9,39**	**0,2**

Table 2.1 Deforestation in South America. *Source: FAO, Global Forest Resources Assessment, 2005.*

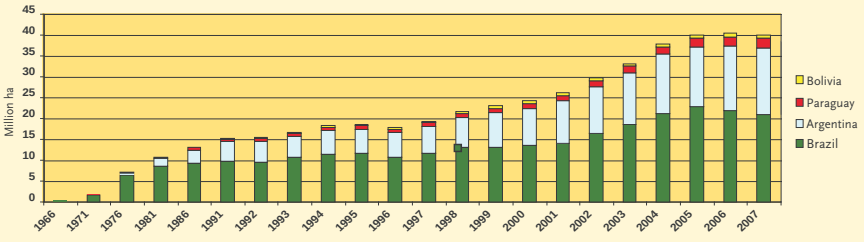


Figure 2.1 Soy growth area in South America. (1966-2007)
© AIDEnvironment

Environmental problems

Deforestation and loss of biodiversity

Deforestation is one of the main causes of biodiversity loss. In South America, deforestation is twice as high as the global average, and soy producing countries show even higher rates. Approximately 3,7 million ha of forests disappear yearly in Argentina, Bolivia, Brazil and Paraguay – the surface area of the Netherlands.

The soy growth area in South America grew from 18 million ha in 1996 to 38 million ha in 2004. Since 2000 the soy cultivation growth area has grown by more than 10% a year in Argentina, Brazil and Paraguay. This growth has gone at the expensive of valuable forests and savannas. Sometimes damage is caused indirectly. Wherever soy farming expands in existing agricultural- and livestock areas it causes the regular farming areas to shift to the surrounding forests. The most endangered areas are the Cerrado (forest savanna)

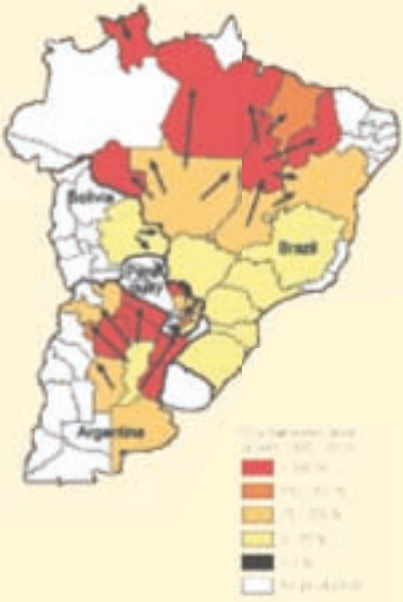


Figure 2.2 The expansion of the soy growth area in South America from 1995 to 2003. The arrows show the expected growth direction.
© AIDEnvironment.

The Cerrado (figure 2.3) is a forest savanna with very high biodiversity. This eco-system offers habitat to half of Brazil's bird species and up to 40% of Brazil's mammal-, reptile-, and fish species. There are over ten thousand plant species in the Cerrado, most of which are unique to this area. Less than 2% of the Cerrado is protected, and according to estimates only 20% is still in its virgin state.

The Brazilian Amazon basin covers about five million square metres. Scientists estimate that there are about five million plant and animals species in the Amazon rainforest (figure 2.4). Many of these species haven't been discovered yet. More than half of the world's total rainforest area is situated in the Amazon basin. In addition, there is more plant diversity in the Amazon forest than anywhere else on earth.

The Atlantic forests of South America are one of the tropical rainforests in the world with the most diversity. Many plant- and animal species can only be found here. The biggest continuous piece of Atlantic forest is in the Argentinean province of Missiones. The remaining forest in Brazil and Paraguay has been largely fragmented.

The Chaco (figure 2.5) is made up of wet and dry savannas. This ecosystem covers seventy million ha of Central- and Northern Argentina and large parts of Bolivia and Paraguay. Just like the Cerrado, the Chaco isn't really protected and it is severely threatened by encroaching farming.

Figure 2.6 A much used method for deforestation: dragging a long metal chain between two bulldozers. © *Ulrike Bickel*

in Central Brazil, the rim of the Brazilian Amazon forest, the Atlantic rainforests of Northern Argentina and Paraguay and the Chaco (savanna) in Argentina, Bolivia and Paraguay. These areas have high biological diversity and fulfil an important role in the water cycle and regulation of the climate. Only small parts of these areas are officially protected.

The unstructured nature of soy farming expansion endangers South America's biodiversity, because it causes fragmentation of the remaining nature reserves. Moreover, the soy farmers are massively breaking the regulations governing the conservation of forest reservations and the natural river flows in their own territories. If soy farming keeps growing at this rate, over twenty million ha of forest and savanna will be lost in South America by 2020.

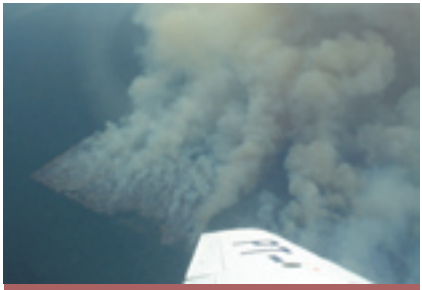


Figure 2.7 Forest fires are used in preparation for the creation of a soy plantation in Brazil. © *Brent Millikan*

Erosion and soil degradation

Natural ecosystems, such as bush and savanna, fix water to the vegetation and the soil. Without vegetation, the balance is disturbed and erosion takes hold, which quickly leads to infertile soil. Deforestation and the subsequent planting of soy causes four times more water to evapo-

Figure 2.8 Erosion along a soy field in degenerating Cerrado, Brazil.
© AIDEnvironment

rate than with virgin vegetation. Moreover, bare soil warms up faster and dries out quicker, which leads to lower humidity and higher temperatures locally, and eventually to lower ground water levels and the drying out of water springs. This, in turn, makes irrigation necessary, which leads to even lower ground water levels.

The farmers who don't use environmentally sound farming techniques, such as not ploughing (zero-tillage) or contour ploughing, only make things worse. For every kilo of soy, six to ten kilos of soil is lost. Rivers and reservoirs silt up as a result of the mud that is carried along by the water. This has a negative effect on water life, hydro-electric power stations and the navigability of the rivers. Along with the rainwater, plant protection products (like herbicides and pesticides) enter the rivers. This endangers water life and the health of people and animals downstream.

The effects of large-scale deforestation don't only affect the local area, but the whole region. Desertification poses a serious threat to these areas, which already have to cope with a long dry season. The large-scale deforestation, erosion and pollution make it almost impossible for degenerating land to recover.

Social problems

Land conf icts and human rights violations

The search for new agricultural land for soy cultivation has often led to violent conf icts with local communities or indigenous people, sometimes resulting in death. Large farms and factory farms will try anything to grab land, often by illegally clearing land and using falsified property contracts, so-called *grilagem*.

Government institutions have very few means to control land usage. Soy producers can therefore also encroach on nature reserves and reserves for indigenous people. Tenants and communities often find it hard to stand up for their rights when speculators or big landowners claim land for soy cultivation, whether they have formal land ownership papers or not.

The number of land conf icts in Brazil has risen by 10% between 1997 and 2005. In Maranhão, where soy cultivation has expanded rapidly within the same period, the number of conf icts rose by 424% (with 89 land conf icts in 2005). The number of

Violence in Paraguay

A farming community in the Vaqueria district, Caaguazú Department in Paraguay, were forcibly removed from their land by the police in June 2005. Two people died and 140 people were arrested. More than fifty homes were destroyed and most of this community lost all their possessions.

Figure 2.9 Land conflicts often result in threats and violence, like here in Brazil.
© CPT

Grilagem

'Grilagem' is a Brazilian term used for the practise of forging property documents. Falsified contracts are put in a shoe box with one or more live crickets (grilos). After a while the documents start to look old and authentic.

violent incidents rose even more sharply, from 19 incidents in 1997 to 146 in 2005.

Slavery

The labour conditions for the workers who clear land for new soy fields are terrible. Workers are paid very low wages, their lodgings are lousy and they receive no medical care. Modern slavery also takes place here. Workers are forced to work for free in order to pay back 'advances' in the form of transport, food, clothing, liquor and cigarettes. Deserters are severely punished and even shot. The number of registered cases of slavery in Brazil has increased from 19 to 276 from 1997 to 2005, in which 872 and 8,585 people were freed respectively. In total, 18,000 people were freed from slavery at 14,000 farming companies between 1996 and 2005. Of these farming companies, 13 were soy companies, where at least 565 people were freed from slavery. Hundreds of reports of slavery at soy companies are currently being investigated by the Brazilian Ministry of Labour.

Employment opportunity

Fewer and fewer farmers worldwide are now farming more and more farmland – caused by extensive mechanisation and the Green Revolution. In Brazil, the rural population decreased from 41 million people in 1970 to 33 million people in 1996, while the total population almost doubled.

This agricultural model places a strong emphasis on high production of a limited

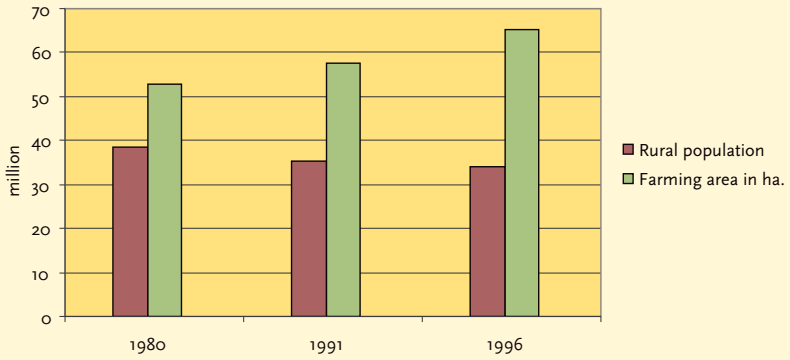


Figure 2.10 A decrease in the rural population and an increase in the farming area in Brazil, from 1980 to 1996. ***Source: IPEA en IBGE***

number of crops in monoculture, with decreasing cultural- and (agro-)biological diversity as a result. Soy is a classic example of this. A modern soy company takes up 1,000 to 10,000 ha, with some even comprising 50,000 ha. The larger the area, the smaller the costs per hectare (because so few farm workers are needed). Driving the combines and flying the planes for spraying only create one or two jobs per 400 ha, compared to small-scale farming where the same 400 ha in Northern Brazil would create enough work for 80 people. In addition, soy replaces products that require a lot of labour, like cotton and sugar cane. Because soy is exported as a raw material, the sector generates very little employment in the processing industry, and because export crops (in Brazil) aren't taxed, local councils don't benefit from soy either.

False promises about work

Mechanised soy farming only needs one employee for every 200 ha. When Bunge, a multinational, built a soy factory in the Brazilian town of Uruçuí, it promised 500 direct and 10,000 indirect jobs. In reality, it only became seventy, mostly for engineers and technicians who were flown in from other parts of the country. The local population could only find temporary unschooled work during the land clearing phase.

Figure 2.11 Extensive mechanisation means that there are very few employment opportunities in the large-scale soy cultivation industry.
© www.koeller.com

This means that there are fewer jobs in areas where soy cultivation is popular. Out of work farmers and farm workers mostly move to the big cities, causing depopulation of the countryside. There isn't much work in the growing cities for these unschooled migrants. Where there is a lot of poverty and unemployment, criminality and prostitution increase. The explosive growth of soy production hasn't led to a decrease in poverty. In fact, the number of people living under the poverty line has risen from 5% to 51% in Argentina from 1970 to 2002.

Food security and hunger

Soy isn't only being cultivated in newly deforested areas, but also in places where food for the domestic market used to be grown. More and more family farmers are renting or selling their farmland to soy producers – sometimes forced, sometimes not. This endangers the local food supply. In Argentina, the soy growth area increased by 141% between 1995 and 2004, while the corn, rice, oats and bean growth areas decreased by 16%, 19%, 27% and 52% respectively. While people are eating more and more pork elsewhere in the world, the percentage of undernourished Argentinean children has risen from 11% to 17% in the last decade.

Solidarity soy as food relief

In reaction to Argentina's economic crisis, soy was presented in 2002 as the solution to hunger. The Argentinean (soy) farmers association (AAPRESID), of which mainly large-scale producers are members, launched a campaign called 'solidarity soy'. Of every ton of soy produced for export, one kilo was donated to feed the hungry population, especially children. They didn't mention that this was genetically modified soy – the type that's used only for cattle feed in Europe, but they did advise that it shouldn't be given to children under five years of age. This proved to be a difficult rule to follow, seeing that this age group needed it the most. Preparing soy for human consumption isn't easy – it has to be soaked, boiled or cooked for a long time. The people weren't used to cooking it, and therefore it often was not prepared in the right way. Moreover, soy alone does not constitute a balanced diet. It could only be used to solve a hunger crisis in combination with other food products.

Figure 2.12 In the name of food relief, Argentinean children were fed gentech soy that was actually destined for European cattle. *© ICARO producciónes*

The long arm of Monsanto

The American corporate giant Monsanto has developed soy with an extra gene that protects it from the company's herbicide RoundUp (glyphosate), which is meant to kill all the weeds in a field, while the soy just keeps growing. Since the introduction of gentech soy in Argentina, the sales of RoundUp have grown spectacularly from 0,8 million kilos in 1997 to 45,9 million kilos in 2004. The gentech soy seeds are patented and the company is vigilant in protecting its patent rights with farmers. In fact, Monsanto has 75 full-time lawyers available just for this. Even farmers who don't grow Monsanto crops have been sued. One farmer was convicted for having Monsanto gentech rapeseed growing on his land, which had reached it via cross-pollination from a nearby field.

Figure 2.13 Gentech soy (RoundUp Ready soy) in Rio Grande do Sul, Brazil.
© Greenpeace/Baléia

Genetic manipulation, dominance of agri-multinationals and use of pesticides

Genetically manipulated soy (gentech soy) has grown explosively over the last ten years in South America, especially the gentech variety that is resistant to RoundUp herbicide.

Genetic manipulation is a technique that is still in its infancy. Its long-term effects on health and biodiversity are still largely unknown. It's therefore crucial to use the precautionary principle, in other words to make sure that it's not introduced until it's certain that there are no risks involved.

Consumers and food manufactures therefore tend to prefer gentech free food. But, seeing as there is no watertight system to keep gentech soy and conventional soy separate, consumers and farmers have little freedom of choice.

It's noticeable that gentech soy doesn't deliver a higher yield than conventional soy. The only advantage is in the ease of cultivation, because gentech soy is resistant to herbicides. The use of such herbicides has increased sharply. Moreover, farmers are increasingly dependent on linked sales of gentech seeds and herbicides. Meanwhile, weeds are becoming more and more resistant to RoundUp, which forces farmers to use other herbicides anyway, which nullifies RoundUp's so-called environmental benefits. Gentech farming goes hand-in-hand with large-scale monocultures, which lead to soil fatigue and -degradation.

In Argentina, 98% of soy production is now genetically modified (GM). The share of gentech soy in the global harvest of 2005-2006 is estimated at 55%, especially in

Figure 2.14 Pollution caused by careless use of pesticides. *© Ulrike Bickel*

Argentina and the US. In Brazil, where gentech soy was banned until recently, almost 60% of the soy production is now GM.

A large part of the soy crop in Paraguay is now also GM. Approximately 58,6 million ha of GM soy was grown globally in 2006. Large quantities of herbicides are used in both conventional- and gentech soy production, as well as insecticides and fungicides. All of these plant protection products pollute the air and water, which can cause acute and chronic health problems in humans. Spraying done by airplanes causes these pesticides to land on nearby forests and family farmers' fields, where food crops are grown. It also pollutes rivers and creeks. There are reports of poisoning in soy growing areas almost weekly in Argentina, Brazil and Paraguay. The Brazilian farmers union FETAG-Piauí reported 65 cases of poisoning in the state of Piauí in 2005 alone, of which fifteen were deadly.

3

THE NETHERLANDS' ROLE

3. The Netherlands' role

Introduction

With its harbours in Rotterdam and Amsterdam and its strongly developed factory farming industry, the Netherlands is the centre of European soy import. Of all the soy that was imported into the EU in 2004 almost one third entered via the Netherlands. The soy that is processed in the Netherlands is used for margarine, animal feed, meat and eggs that are largely destined for export. This chapter will focus on the Netherlands' role and position in the international soy trade and -consumption, as well as the role of the consumer, companies and the government.

Soy in figures: Dutch import and consumption

The Netherlands imported about twelve million tons of soy in 2006: 6,1 million tons of soybeans and 6,3 million tons of soybean meal, almost half of the total European soy import. Of the twelve million tons of soy, almost 9,1 million ton is exported to other countries. The rest (3,3 million tons) is processed in the Netherlands – mainly in the animal feed industry. The surface area taken up by Dutch soy consumption is almost 1,5 million ha – 40% of the country's surface area.

The consumer

The average meat consumption per person is high in the Netherlands, which means that the indirect soy consumption is high too. The consumption of animal products rises with increasing wealth. The average Dutch person now eats almost double the amount of meat that they ate in 1960. Approximately six kilos of animal feed is needed to produce one kilo of meat.

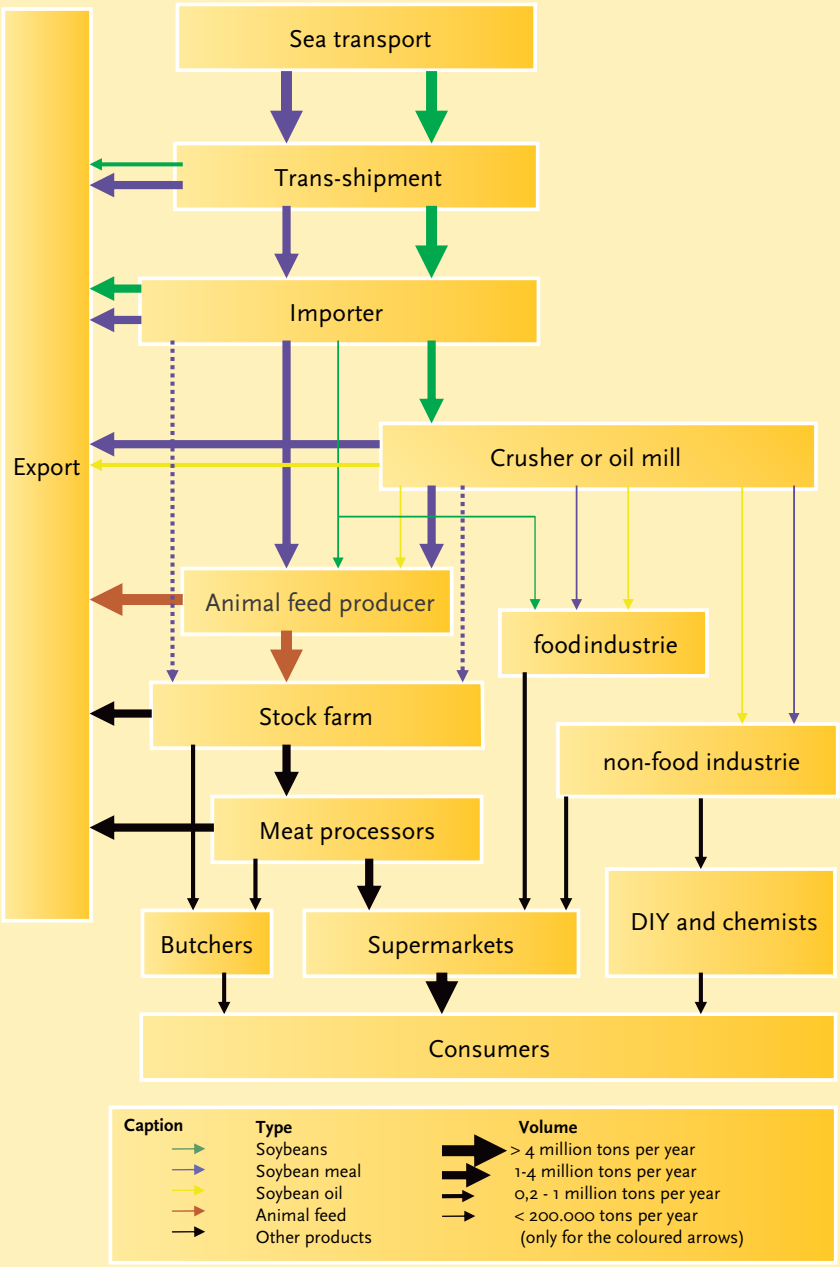


Figure 3.1 **Dutch soy import destinations. The dotted lines indicate estimations.**

Dutch companies and the soy value chain

The largest Holland-based soy importers are Cefetra, Cargill, Archer Daniels Midland (ADM), Bunge and Glencore. ADM and Cargill also crush soy beans. Important soy product processors are animal feed producers like Nutreco (including Hendrix UTD), Cehave, Schouten and Provimi, and food producers such as Unilever, Procter & Gamble, Mars and Remia. Unilever and Procter & Gamble also use soy in cosmetics and detergents.

Dutch animal feed manufacturers produce approximately eleven million tons of mixed fodder per year, of which it is estimated that half is exported. The other half ends up in the Dutch livestock sector, especially at pork and chicken factory farms, which then supply their meat and eggs to butchers and egg packing facilities. The pork chain is especially concentrated. Vion is the largest pork slaughterhouse in Europe and slaughters 80% of Dutch pigs. The chicken meat sector is also very concentrated. The five largest meat processors, Astenhof, Esbro, Plukon, Storteboom and Van den Bor, have a combined market share of approximately 50%.

Dutch factory farming

Most livestock are factory farmed. This industrialised form of livestock keeping is focused on producing a uniform product as efficiently as possible through scaling up, intensification, mechanisation and selective breeding. The animals are mostly broiler chicks, egg-laying battery hens, pigs for meat, fattening calves and -bull

Dutch meat consumption and the world food problem

The average Dutch person consumes 84, 5 kilos of meat, 182 eggs and 300 litres of milk a year. This places the Netherlands seventh on the list of the world's highest consumers of meat, eggs and dairy. To supply in the demand, 250 million animals are slaughtered every year, almost fifteen animals per person. The Dutch meat- and dairy industry needs a lot of space. In order to get the annual Dutch consumption on the table, a surface area of three million ha is needed, 91% of the country's total surface area. And, if we compare Holland's high meat consumption to the unfair distribution of food in the world, 852 million people suffer from chronic hunger and someone dies of the effects of undernourishment every five seconds. Simultaneously, more than one billion people are overweight, and half of the world's grain production and 70% of soy crops are destined for animal feed.

Figure 3.2 The Netherlands produces mostly pork- and poultry meat, largely destined for export.

calves. Industrialisation is also increasing in the dairy cattle sector. The farmers in this sector are caught between the cattle feed industry on the one hand and the meat processors and supermarket chains on the other. The margins are minimal and scaling up is often the only way to keep their heads above water financially.

The Dutch factory farming industry is increasingly under fire. The constant problems with animal welfare, recurring livestock diseases, manure problems, livestock farmers' weak financial position and increasing competition from Asia and South America have made the sector and policymakers realise that change is needed. The government has stimulated further scale increases in factory farming, such as agro-industrial production parks, known colloquially as 'pig- and cow f ats', but these extreme factory farming scale increases aren't solving the problems. The sector passes roughly two billion Euros worth of costs, caused by environmental damage, on to society annually. Part of this problem can be traced back to the availability of cheap import soy.

As we've mentioned, cheap soy has played a large role in the development of the Dutch and European factory farming industries. Animal feed makes up 40-50% of the total cost of running a meat or poultry farm. It is expected that animal feed will become even more expensive in the foreseeable future, due to increasing demand. A sixth of animal feed in the Netherlands is already made up of soy.

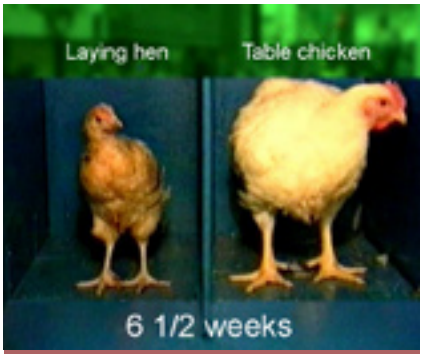


Figure 3.3 Broiler chick: grown to 2,5 kilo slaughter weight in six weeks.

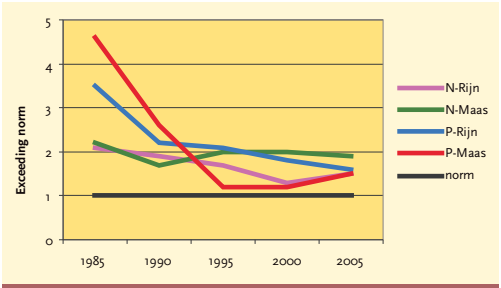


Figure 3.4 The concentration of nitrogen and phosphates in Dutch surface water shows a downward trend. The European standard still isn't reached in most cases. Source: RIVM

The large-scale import of soy also has serious environmental implications. One of the biggest problems is pollution caused by fertilisers. While South America uses fertilizer to make up for nutrient poor soil, the Netherlands is faced with a serious manure surplus.

The manure surplus

Dutch livestock produces 66 million tons of manure annually, more than nature can cope with. The surplus ammonia, nitrates and phosphates cause soil impoverishment and the eutrophication of soil, air and (ground)water. Many Dutch nature reserves are suffering because of this. Trees and plants become more susceptible to diseases, drying out and other damaging influences. The large amounts of released fertilizer can cause duckweed and algae to grow, which suffocate the surface water, leading to lower water quality and less biodiversity. Between 1950 and 1995 almost half of the plant species in the Netherlands have died out or have become endangered, partly due to soil impoverishment, eutrophication and desiccation. Measures have been taken to try and limit environmental damage, but these haven't reached European water quality regulations yet (see Figure 3.4). The Netherlands is under pressure to decrease its livestock numbers in order to reduce the harmful effects of nitrates.

"We import feed, we export pigs and we keep all the rubbish. That system is flawed," says Cees Veerman, former Minister of Agriculture, Nature and Food Quality, 2003.

4

MAKING THE SOY VALUE CHAIN MORE RESPONSIBLE: A PERSPECTIVE FOR PRODUCING COUNTRIES

4. Making the soy value chain more responsible: a perspective for producing countries

Introduction

The two previous chapters have shown that the cultivation and expansion of soy has had negative effects on both humans and the environment, some of which are irreversible. Sustainability can be defined as the ability to satisfy the needs of the current generation without endangering those of future generations. The situation right now is not sustainable. Meanwhile, there is a demand for soy, and no other type of crop delivers as much protein per hectare. Alternative protein sources would require even more space, although this wouldn't necessary lead to further (environmental) damage. We have to work towards decreasing the demand, and we have to use all our natural resources worldwide more sustainably. But, as long as consumption and demand keep growing, the reality is that even more soy will be produced in the future. That prompts the question; how and where? This chapter will focus on concrete and practical possibilities and measures for production countries. The next chapter will cover possibilities for the Netherlands.

Stopping the expansion of soy

Most of the problems in the soy value chain are caused by the fast and uncontrolled expansion of soy farming. There is an urgent need to stop further expansion of the soy growth area in forest areas. This would be possible by taking measures in the following ways:

- indicating protected areas where no farming activities may take place, starting with areas that have essential ecological or cultural functions (High Conservation Value Areas, HCVA's);

- developing sustainable management of forests and other natural resources in nature areas outside of the reservations and offering alternative means of income for the local people;
- allowing the expansion of soy cultivation only in already deforested and degraded areas, for example by putting conditions on agricultural credits or by using fiscal instruments.

Producers, companies and governments all have a responsibility to do this. The governments can implement special planning and maintenance projects, companies can help by not buying soy from areas that have been recently deforested, and producers can do their bit by sticking to the laws and criteria for responsible soy cultivation. Finally, these players in the chain can take measures together to halt the expansion of soy. Civil society organisations are already offering support to indigenous people and local governments and communities with the planning of land usage.

Concentrating soy farming in existing agricultural areas will also reduce the need for further land cultivation and prevents forest fragmentation. Almost 300 million ha of land is used extensively for cattle farming in Argentina and Brazil, of which a portion is fallow. Tens of millions of hectares could be used for soy or other crops.

Figure 4.2 Extensive cattle farming in Brazil. *© Jan Maarten Dros*

Participative planning and better management of the Xingu park surroundings.

The Xingú park, a nature reserve the size of Belgium in the north of Mato Grosso, is the last large intact piece of virgin forest in this Brazilian state. Almost 4,700 people, from fourteen indigenous communities, live in the park. The park is surrounded by large-scale livestock- and soy companies and colonies of (former) landless farmers. About 1,3 million ha of forest disappeared around the park between 2000 and 2003. An average of a million ha is deforested in the whole state every year. The indigenous people in the park are represented by the Associação Terra Indígena do Xingú (ATIX), which manages the park. ATIX guards strategic locations along roads and rivers to keep intruders (large land owners, but also landless small farmers) out. This approach is proving successful, but the forests outside the park are unregulated and they're quickly being transformed into farm fields.

Figure 4.1 A Xingu Park resident points out the extent of soy cultivation.
© Rosely Sanchez, Instituto Socioambiental

The Xingú River, the park's life blood is fed by countless small rivers and streams that stem from the livestock- and agricultural areas. Deforestation along riverbanks, erosion and agricultural chemicals cause desiccation and pollution of the river and endangers the lifestyle of its indigenous people, who are dependent on the river for their food, drinking water and household water. They're not alone – desiccation also affects the arable farmers around the park.

With the support of the Instituto Socioambiental (ISA), a Brazilian organisation that stimulates sustainable development, ATIX is trying to turn the tide of environmental degradation and degeneration. Local governments, soy farmers, cattle farmers, small farmers, unions and civil society organisations are also involved. It's a slow process, because they have such divergent interests. Governments, farmers and indigenous groups have determined that the reparation of forests along the rivers should be given priority. A number of experimental projects and a training programme have been started, in which NGOs and large-scale soy- and livestock farmers are working together on reforestation and the protection of water collection areas.

Better agricultural techniques

There are many ways to prevent the quality of farmland from degrading and becoming polluted by agricultural poisons. Not ploughing (zero tillage) can prevent or reduce soil fatigue and erosion. It prevents the soil from drying out and keeps the leaf mould levels on par. This keeps soil fertile and offers protection from erosion. Zero tillage also has its drawbacks – diseases, weeds and harmful insects can survive much easier in the plant remains. This can be prevented by applying crop rotation.

Zero tillage is used mainly for the large-scale cultivation of gentech soy in Argentina, but the benefits of zero tillage are cancelled out by the disadvantages of gentech cultivation.

The application of integrated plant protection or organic pesticides can reduce the effects of agricultural chemicals on workers and the environment. Moreover, these measures save farmers money immediately, because organic pesticides are cheaper than chemical ones. This compensates for the expense of weeding by hand or mechanically. In Brazil, the Associação de Plantio Direto no Cerrado (Zero Tillage Farmers' Association for the Cerrado Region) developed organic pesticides for its 5,000 members, who work a combined seven million ha of land.

Organic plant protection products in Bolivia

In Bolivia, soy is increasingly grown using organic pesticides. In fact, at the moment it's being used on 63,000 of the 600,000 ha. These plant protection products are cheaper, less harmful to the environment and they're developed in Bolivia itself, so that producers are less and less dependent on imported chemicals that have to be paid for in dollars. The transition from conventional to organic products is led by the independent Bolivian institute Probioma, which also educates people about environmental laws, forest management and –reparation and sustainable production methods.

Figure 4.3 **The Probioma laboratory (left); soy grown using organic pesticides.** © *Probioma*

Figure 4.4 Soy fields in a mosaic with Araucaria pine trees and grazing pastures for dairy cattle. Santa Catarina, Brazil. *© Jan Maarten Dros*

Crop rotation and the combination of agriculture and livestock farming within one company make the production process more sustainable on many levels. On one hand, rotation ensures that the soil stays fertile and that diseases and plagues remain under control. On the other hand, the diversity of crops and products offer protection from price fluctuations on the (international) market. By rotating soy farming and livestock farming in one system, the nitrates that have filtered into the soil from the soy are released for the cattle, which mean that more cattle can graze per hectare than in a soy-free system. Such systems do require more technical know-how and have to bridge cultural barriers, because cattle farmers have different traditions than arable farmers.

To prevent erosion and pollution it's important to protect natural plant growth on the banks along waterways, and to restore this growth where needed. On large farms it's also important to maintain sufficient ecological land bridges. Strips of forest, sometimes along waterways, make the migration of animals possible, help to keep rivers going, prevent erosion and offer a hiding place for predators of animal pests.

Agro-ecological farming

Despite high and increasing urbanisation, millions of farming families still live in the South American countryside. South American governments are slowly realising that viable rural communities are crucial. A million hectares have been allocated to landless farmers in Brazil in recent years, and a Ministry of Agricultural Development has been created.

Family farming is still the most important source of food for local and regional markets, because large-scale agriculture focuses on the cultivation of crops for export and animal feed. Family farming is responsible for almost two thirds of the Brazilian production of food crops for the domestic market.

According to the last tally (1996), the Brazilian family farming sector produced 85% of the country's cassava production, two thirds of its beans, 58% of its pork, half of its corn, wheat and milk and one third of its rice. The gross income per hectare was

Soy in family farming

The Brazilian Prediger family has a mixed farm of ten ha, where they grow fruit (grapes and bananas) and soy. They also have dairy cattle and they gather palm cabbage, honey and indigenous fruit from the forest reservation on their property. They used to only grow soy and corn, but they've been growing more and more fruit (now completely organically) since 1997. Their soy crops, which take up about a third of their farm, are organic. Their fruit is sold via the local market in the state of Paraná, and their organic soy is aimed at the export market and fetches a higher price than conventional soy. The production costs of organic soy are lower because it doesn't require chemical pesticides and fertiliser.

© Jan Maarten Dros

The Prediger family belongs to the Capanema farmers union, which created the regional organic market. By sharing machines and labour (the so-called mutirão system), even small farms can be used efficiently, and risks are spread because of the diversity of products and markets. And, the Prediger family now hardly ever has to buy food, because they're completely self-sufficient in meat, vegetables, corn and milk.

38% higher in the family farming sector than in the large-scale farming sector. Family farming also created far more employment than large-scale farming in 1996 – 12,5 vs.1,5 jobs per 100 ha. Mechanised soy farming is one of the most labour extensive types within the large-scale farming sector, with only one job per 200 to 400 ha. Switching to a monoculture of soy is risky for small producers. They can't compete with large producers volume-wise and they have insufficient financial reserves to survive years of bad harvests or low prices.

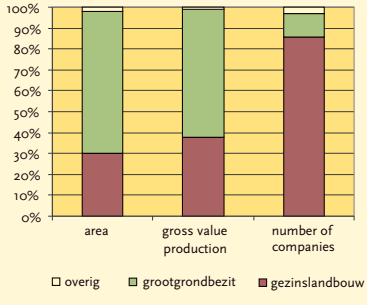


Figure 4.6 The ratio between family farming and large agricultural companies in Brazil in 1995/1996.
Bron: IBGE

Modern family farms now often grow a mix of food crops for the local market as well as cash crops like soy or coffee, they do dairy farming, and they process their own products. Of the 900,000 family farmers in the Southern states of Rio Grande do Sul, Santa Catarina and Paraná, almost 230,000 grow soy. Product diversity offers the smaller producers and the local markets food security. Farmers profit when commodity prices are temporarily high, like for soy in 2003, but it's not dependent on that. By spreading their risk and remaining relatively independent from credit this system is seen as the most ecologically- and economically sustainable form of soy cultivation. Farmers' organisations like Fetraf-Sul, the federation of family farmers in Southern Brazil, are stimulating the development of sustainable agricultural systems, the so-called Agro-ecologia. These systems use as little external inputs (fertilizers and pesticides) as possible and make the best possible use of available labour from within the family and the community.

Some family farming companies have crossed over to organic farming, which often pays better. More and more small-scale farmers are now producing organic soy and some cooperations have even specialised in it. Organic soy fetches prices of up to 30% higher, while production costs – after the transitional period – are lower than with conventional or gentech soy cultivation. Certified gentech-free soy also sells for higher prices and fair trade soy, produced on small-scale farms where the producers get a better price, is on the rise.

Access to credit and to domestic- and international markets are the most important preconditions for growth in the family farming sector.

5

MAKING THE SOY VALUE CHAIN MORE RESPONSIBLE: A PERSPECTIVE FOR THE NETHERLANDS AND EUROPE

5. *Making the soy value chain more responsible: a perspective for the Netherlands and Europe*

Introduction

Soy will only be produced responsibly when there is a demand for responsibly produced soy, and leading from that, for responsibly produced meat. As the largest soy importers and –processors, the Netherlands and Europe are partly responsible for the wrongs in the soy value chain. For European livestock farmers, sustainability means switching to sustainable import soy from South America, and then moving from import soy to regionally produced animal feed resources, which will complete ecological- and financial cycles. Simultaneously, European consumption patterns will have to change to a lower and more conscious consumption of meat and other animal proteins. To reduce, stop or counteract the negative effects of soy cultivation, it's important for the global soy sector, in collaboration with civil society organisations, to develop a sustainability standard. In this chapter we'll focus on the role of consumers, companies and the government.

Role of citizens and consumers

Consumers play a key role. Conscious consumption stimulates companies and producers to produce more sustainable products. Consumers can also put pressure on companies and governments to tackle the problems in the soy value chain, with or without help from civil society organisations.

Animal feed criteria for pigs and chickens	Certified trademarks and free-range meat		
	Biodynamic (Demeter)	Organic (EKO)	Free-range
% Organic raw materials?	100%	90%	No criteria
Origin of animal feed?	50% should be sourced from the same farmer that is producing the meat	No criteria	No criteria
Gentech soy allowed?	no	no	yes

Table 5.1 Animal feed criteria for the various certified trademarks and for free-range meat. *Sources: www.skal.nl; www.demeter-bd.nl; www.scharrelvlees.net*

Buying sustainable products

Consumers can check certified trademarks on products that contain soy, or where soy has been used as a raw material, like meat. At the moment this applies to EKO (organic) and Demeter (a biodynamic agricultural method). Table 5.1 shows how much of the total animal feed has to be organic and whether any conditions are placed on its origin (for both certified trademarks and for free-range meat).

Free range meat offers no guarantees regarding the sustainability of soy in its animal feed. Biodynamic meat (Demeter) does offer a guarantee because the soy used has been organically grown. Meat with the EKO certified trademark can be produced with a maximum of 10% non-organic (but 100% gentech-free) soy. Both certified trademarks also offer benefits in the areas of animal welfare and the environment.

Reducing meat consumption

Consumers can choose to eat less or no meat. Lower consumption of pork and chicken in particular will contribute to a lower demand for soy. Everybody doesn't have to become vegetarian – simply eating less meat will make a big difference. Despite the fact that many meat replacement products also contain soy, the demand for soy will decrease sharply if people eat meat replacement products more often. This is because less soy is used to make meat replacement products than to produce meat. The Ministry of Housing, Spatial Planning and the Environment has stated that:

- meat is the most environmentally damaging part of the Dutch consumer's diet;
- meat replacement products are more sustainable than meat, even when meat is organic.

Social pressure
Consumers can also let their voices be heard by voting. Companies and governments only act when there is social- and political pressure to do so. This can be achieved by supporting the campaigns of environmental- and development organisations and working with them, writing to companies and getting the attention of politicians, the media, but also the shareholders of companies. And, of course, it also helps to inform friends, family and colleagues and make them aware of these problems and the need for responsible production and -consumption. As long as there are no alternative products, citizens and consumers should ask for them. At the end of the day, the client is always right, even where it comes to responsible products.

Citizen initiative
At the end of 2007, the Dutch Second Chamber debated a citizen initiative to change livestock farming for the better. This was the first citizen initiative in the Netherlands' parliamentary history. It was initiated by Milieudefensie (Friends of the Earth Netherlands) and Jongeren Milieu Actief (Young Friends of the Earth Netherlands). Approximately 106,975 Dutch citizens supported the proposal. Together, they asked their Members of Parliament to create legislation for livestock farming without animal suffering, environmental pollution and without the import of soy for animal feed, which harms both people and nature in production countries. The majority of Parliament didn't want to take any concrete steps (yet), but the citizen initiative did help to give this problem a prominent place on the political agenda. In a speech, given at the beginning of 2008, about his vision for the future of livestock farming, Minister Verburg, The Netherlands' Minister of Agriculture, said that the EU should only be importing sustainably produced soy. The Minister felt that small-scale soy producers should be helped to reach certification requirements. In her vision of the future she also suggested that regional alternatives for soy should be stimulated in order to encourage the cycle of animal feed and manure at a European level.

Role of companies

Every company in the soy value chain should act in a socially responsible way. Companies should no longer let society pay for the damage it causes as a result of the production and processing of soy. The sector should prevent damage and the costs that are involved should be included in the price of their products, creating an honest price for honest food. Producers, processors, traders, banks and supermarkets should extend this sense of social responsibility to the production, trade and processing of soy products and these processes should become more transparent.

Buying criteria for responsible soy
Companies that want to do business responsibly have to have certain buying criteria for the soy they buy in order to reduce the negative effects of soy production. Even banks and shareholders can demand certain sustainability criteria from the compa-

nies they lend credit to. The buying policy of supermarkets and food manufacturers can stimulate producers and suppliers to supply responsible soy. The demand for non-sustainably produced soy would then decrease.

A broad alliance between Brazilian organisations has set criteria for soy production that will be less harmful for humans and the environment: 'Social Responsibility Criteria for Companies that Purchase Soy and Soy Products'. These criteria are:

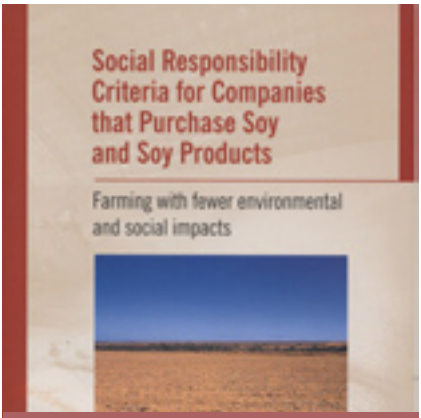


Fig 5.1 The Brazilian minimum criteria for soy.
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- the soy is produced in line with local legislation in terms of land ownership, labour rights, the environment and freedom to organise;
- soy production and transport doesn't damage ecologically valuable areas, such as tropical rainforests, savannas or swamps;
- the soy production is in line with international and domestic legislation and agreements on the usage and management of water and soil;

Supplying responsible soy

The Brazilian soy producer, IMCOPA, supplies roughly 2,5 million tons of Pro-Terra certified soy that complies with the 'Basel Criteria' out of Southern Brazil. This guarantees that the soy has not been grown on deforested land and that good employment conditions prevail. Meanwhile, the Brazilian company CARAMURÚ now also supplies Pro-Terra soybean meal and -oil. Agrenco, an export company supplies non-GM Grünpass soy.

FETRAF-SUL, the farmers union in Southern Brazilian, rallies small-scale producers of sustainable soy together to gain access to the European market. By pooling production- and marketing resources, these producers can get a better price for their sustainably produced soy, which they're currently selling to the local middleman at low prices. The soy that these family farmers supply to the chain adds a social dimension to soy production that is lacking in the large-scale production of certified soy.

- the soy is produced on farms no larger than 200 ha, in order to protect biodiversity and to prevent erosion;
- the soy may not be grown on land that was recently deforested;
- part of the soy should come from small-scale producers;
- the soy hasn't been genetically modified.

After these criteria, proposals for other criteria followed, such as the so-called 'Basel Criteria for Responsible Soy Production', compiled on the initiative of the Swiss supermarket chain COOP in collaboration with the World Wildlife Fund. A certification company called Cert-ID developed the Pro-Terra trademark, specifically for these Basel criteria, in 2006. These criteria focus on good management of agricultural land, forest management, good labour conditions and gentech-free soy production. The Basel criteria also fall under the Grünpass certified trademark (as long as it's also non-GM certified). Grünpass was developed by TUV Rheinland and IQS. Existing certification systems within the private sector could offer a starting point for taking sustainability criteria on board, as long as companies make sure that they don't create market barriers for family farmers and other small-scale producers.

The leaders of the pack where it comes to sourcing sustainable soy in the Netherlands are: Campina (a dairy cooperative), Guliker, Roodbol BV and Kwetters BV (egg producers) and De Hoeve (an association of pork producers) in collaboration with Keurslagers (a butchers association). Alpro, a Belgian food manufacturer, also uses responsible soy in its products, which are available on the Dutch market. In total, this comes to 35,000 tons of soy per year, approximately 1% of the Dutch consumption, if you consider the total import. These examples show that using responsible soy is possible within many different chains.

Transparency and traceability

Dutch and European companies that import and/or process soy, often have no direct involvement in its production. This doesn't mean that they have no power in the process. They can demand that certain soy production criteria are met. The customer is king.

In order to be able to control and guarantee that soy complies with the criteria demanded, information about the origin of products is crucial. Consumers often have no clue. When companies and their suppliers are transparent about the origin of ingredients, consumers can take informed decisions. Transparency is also important to banks and investors, who invest in this sector. When the origin of raw materials used by a company are known, it's easier to evaluate an investment's risks relating to the environment and the investor's reputation.

Guaranteeing transparency in the production chain isn't always easy. Firstly, soy is a bulk product. It is produced, stored and traded in large quantities and there are hardly any differences between the soy of one producer and another. Soy is collected

in large silos and is shipped from there. The second challenge for transparency is that soy is present in so many different products that it's almost invisible to the consumer. These obstacles are not insurmountable. Initiatives from other sectors, like the coffee sector, show that the origin of products can be guaranteed. So, for instance, you can trace the plantation of a pack of Perla coffee with the Utz certified trademark via its barcode. Labelling requirements for gentech ingredients and allergy information mean that soy is already ahead of many other ingredients. Companies can take the initiative to make their production chain transparent themselves, without waiting for governments to make this mandatory.

Dialogue between companies, governments and civil society organisations

It's important that clear commitments and environmental agreements are made between the various business players, aside from those mandated by legislation. The problem, however, is that most companies can't or won't take the initiative to comply with sustainability criteria alone, because they'll price themselves out of the market. Still, more and more companies now see the importance of sustainability for the sector as a whole, either from their own sense of social responsibility or because of consumer- or governmental pressure. This is why a growing number of companies are now voluntarily taking part in rounds of dialogue and negotiations, to which as many possible players in the chain are invited. The goal of these discussion rounds, also called multi-stakeholder discussions, is to come to binding agreements about better and more sustainable soy production and -trade. Next to the processing industry, crushers and financial organisations, large- and small-scale producers, governments, NGOs and research institutes take part. They're often initiated by civil society organisations, but if all goes well, they are led by companies, because they're responsible for the production chain, after all.

To be effective, it's important for the aforementioned sustainability criteria to be internationally accepted and adopted. COOP and the World Wildlife Fund (WWF), who created the Basel Criteria, also took part in the international Round Table on Responsible Soy, which was organised by WWF in 2005. This process could be an important starting point for companies around the world to commit to responsible soy production. Dutch companies like Unilever and Nutreco are also involved in the coordination of this process. Without broadly accepted international agreements it would be a hopeless task to tackle the problems and to halt the expansion of soy, with so many producers and buyers globally. Once a standard is developed, mechanisms have to be created to control compliance and to act against offenders.

There is criticism of the Round Table process. It's often a long slow process. Some companies also hide behind it ('We're participating aren't we?') and then neglect to take the actual steps they need to. More fundamental criticism comes from farmers- and civil society movements in Argentina, Brazil and Paraguay. They say that agreements with or between companies will never solve problems like the size of growth scale and the inequality between large and small producers. According to them, these agreements work counterproductively, because they legitimise

this form of cultivation. From the perspective of the small or landless farmers that is rather understandable. For them, the apportionment of land and wealth is a priority and they don't profit (much) from export soy.

Aside from the international Round Table, dialogues are being held between civil society organisations, companies, governments and research institutes in various European and South American countries. In the Netherlands, the members of the Soy Coalition are working together to stimulate companies in the soy value chain to develop concrete solutions. Pressure from civil society organisations can also lead to agreements with companies. In 2006, Greenpeace's 'Amazon campaign' led to an agreement with ABIOVE, which represents the Brazilian crushing industry, to place a two year moratorium on the processing of soy from the Amazon.

Role of government

The Dutch government's policy aims to stimulate sustainable production and consumption domestically and abroad and to protect the environment. The government also expressly holds consumers and companies responsible. It sees that legislation is necessary in areas where this responsibility isn't taken. The fundamental idea is that the social- and environmental costs of the whole chain should be ref ected in an honest price. The government could play a role in making the soy value chain more sustainable in the following five ways:

- Drawing up minimum criteria for responsible soy import, and stimulating the import and usage of already certified sustainable soy in the Netherlands (for instance using soy produced according to the aforementioned Basel criteria);
- Stimulating sustainable livestock farming;
- Guaranteeing consumers' and farmers' freedom of choice through education and legislation that creates transparency;
- Creating a dialogue with Latin-American governments and supporting capacity development;
- Active stimulation of agreements regarding the soy trade and –import at a European and international level.

Minimum criteria for soy import

In order to get rid of socially undesirable activities, such as modern forms of slavery, deforestation and the disappearance of local communities, the Netherlands can (in a EU context or not) place certain minimum demands on its soy import. This forces the laggers in the sector, who are often responsible for the most serious violations, to improve their behaviour, at the risk of losing market access. The principle of 'one size fits all' is extra important here, because in the real world only a few Dutch companies are capable of charging their clients more for sustainable soy. It will take a few more years before the international Round Table on Responsible Soy (RTRS) will come with criteria that can be broadly adopted, that all major players will adhere to, and of

Figure 5.2 Direct gentech soy usage has to be listed on food labelling, but this does not apply to meat and dairy from animals fed gentech soy.
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which the certification and the control are in order. Over 2,5 million tons of certified soy (the so-called Basel criteria soy) is already being produced in Brazil, which is almost enough for Dutch consumption. The Dutch government should stimulate the demand for this certified soy in the short term, so that it creates a positive incentive to expand the production of this type of soy

Stimulating sustainable livestock farming
Fast rising demand for soy, partly due to countries like China and Thailand, combined with the expected extra demand for biofuels, go hand in hand with the fast expansion of soy cultivation. Therefore, soy consumption has to be reduced and soy production has to become more sustainable. The government can play a role by making a strong case for transforming the factory farming industry into a more sustainable way of livestock farming. Reducing the number of Dutch livestock, stimulating lower meat consumption and using more regionally cultivated animal feed are important conditions. Various European regions are already financially supporting alternative protein crops.

Educating consumers and farmers about transparency
The government has to pay more attention to legislation for consumer education. Although soy is directly or indirectly present in 60-70% of all the products in the supermarket, it's almost invisible to the consumer. Because label legislation is f exible and voluntary ('vegetable oil' instead of 'soybean oil') consumers can't make

informed decisions. Only genetically modified ingredients have to be clearly marked on labels. However, the majority of the Dutch soy import isn't traceable due to mixing during transportation and storage. Gentech soy is mixed with gentech-free soy and comes to market as gentech animal feed.

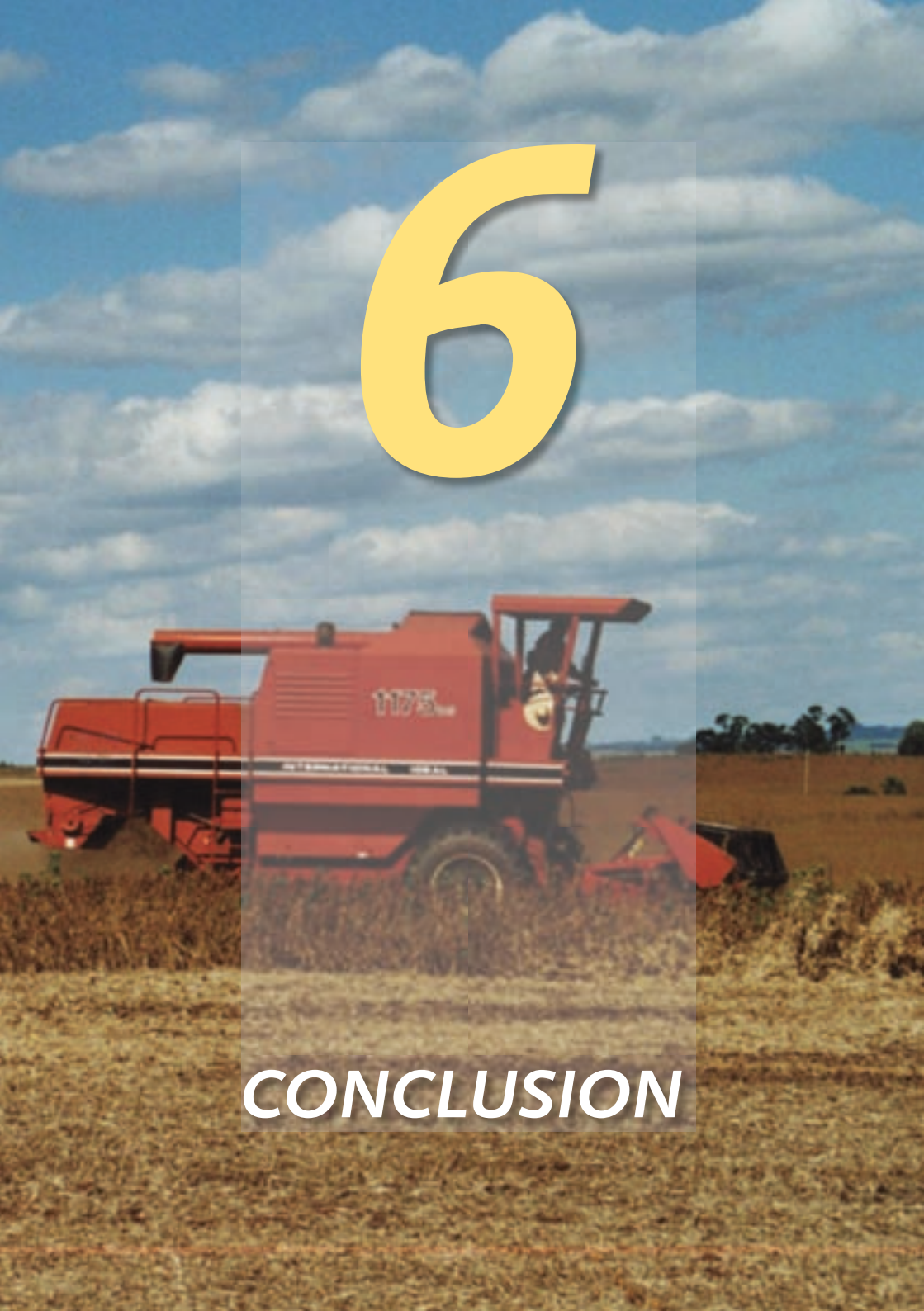
In order to give consumers freedom of choice where it comes to consuming gentech-free food, labelling of the use of gentech soy raw materials in animal end products, especially meat and dairy, is needed. Aside from labelling, legislation is crucial to ensure chain transparency. It will only be possible to test sustainability criteria and have reliable labelling when the stream of raw materials can be traced back to their exact production location.

Dialogue and capacity development

The Dutch government should open an intense political dialogue with the governments of soy producing countries, support their capacity development, demand that they increase their sustainable production methods and respect international legislation and regulations concerning human rights, labour and the environment (via the UN Human Rights Council and based on reports about human rights violations by special UN reporters). The Netherlands should insist that domestic environmental- and labour laws are kept, and that there is a crack-down on human rights violations, land reforms and land use planning. In addition, they can offer active capacity development support to local organisations and (government) institutes, aimed at sustainable land usage and the protection of nature and local communities.

International agreements

Most legislation and regulation concerning soy trade and –import happens at an international level. New rules for the trade in soy, amongst other things, are being drafted at the World Trade Organisation, and between the EU and the Mercosur (southern Latin American countries). While very few export subsidies are currently being granted to the factory farming industry, the sector is indirectly subsidised



6

CONCLUSION

6. Conclusion

It's hard to imagine a world without soy. Its high concentration of protein and oils makes it a ubiquitous ingredient in our food. Most soy is used as a raw material for animal feed, however. Because of global population growth and rising meat consumption, the demand for soy is growing. Most soy is grown in South America. The soy growth area there has increased sharply since the Seventies.

The strongly increasing soy production in South America poses a serious threat to the future of valuable tropical forests and indigenous people. The expansion of soy cultivation creates land conf icts, deforestation, a loss of biodiversity, pollution, human rights violations, unemployment and it gives agri-businesses more and more land and power. The use of genetically manipulated soy increases a number of these problems.

About 80% of South American soy is exported. To the Netherlands, for instance. After China, the Netherlands is the largest soy importer in the world and it plays a central role in soy processing in Europe. Soy is mainly used for animal feed in the Netherlands – for the factory farming industry in particular. Two thirds of the meat that is produced here is destined for export. The Netherlands itself faces a manure surplus, which pollutes the ground- and surface water, while South America has to cope with soil fatigue, necessitating fertilizer, which causes problems in turn. The current situation isn't sustainable. A number of urgent problems have to be tackled in the short term, while the underlying causes require fundamental changes in the areas of production, trade and consumption.

The distribution of power within the food sector has changed very quickly over the last few years. The big players in the middle of the food chain determine what is produced and how it's produced and consumed. Supermarket chains also operate more

and more internationally and can solidify their position of power in the chain. These companies organise the production of food according to purely financial principles, such as optimalisation, economies of scale and the reduction of production costs. Social- and ecological sustainability hardly come into play. Private- and public financial institutions also play an important role, by making investment capital available for soy farming, and by stimulating soy export in order to clear debts.

Measures to counteract the negative impact of large-scale soy production are urgently needed. Consumers can choose responsibly produced meat, or they can reduce their meat intake. Buyers and financiers can contribute to finding solutions for the problems in production countries by instituting certain minimum requirements and developing a sustainability standard. Sustainable production methods are available in these countries already, and increased demand will further stimulate this practice.

The approach to livestock farming in the Netherlands and Europe will have to change from quantity to quality based farming, and meat consumption and animal feed imports will have to be reduced. Where companies and consumers don't want to, or can't take the responsibility onto themselves, governments will have to step in (domestically and internationally). These governments will have to ensure that international raw material chains become more sustainable and they'll have to force companies to take responsibility – by not taking part in damaging practises, and by guaranteeing reliable product information to consumers.

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Soy – big business, big responsibility

Soy is healthy. Soy is for vegetarians. Soy... where do you buy it, actually? The answer: everywhere. Soy is a wonder bean, with superior proteins and fats. It's easy to produce and to process into food, animal feed, cosmetics and detergents. It's the invisible ingredient in 60-70% of all products in the supermarket.

Soybean oil makes up a quarter of all vegetable oil in the world. The European and Asian pig- and chicken factory farms are dependent on soy, because we eat more and more meat and therefore need more and more soy. The soy comes from South America, where millions of hectares of forest and savanna are sacrificed to plant even more soy, at the expense of indigenous people and farming communities who literally have to make way.

This publication aims to highlight the negative aspects of the production-, trade- and consumption of soy, and to offer possible ways that we can contribute to a solution. For example, by eating soy instead of meat. Placing stricter criteria on the soy that enters our country. And by having better farms with fewer animals.

Soy, it can and must become better!

Soy – big business, big responsibility is an initiative of the Dutch Soy Coalition

ISBN- 978-90-77648-09-4