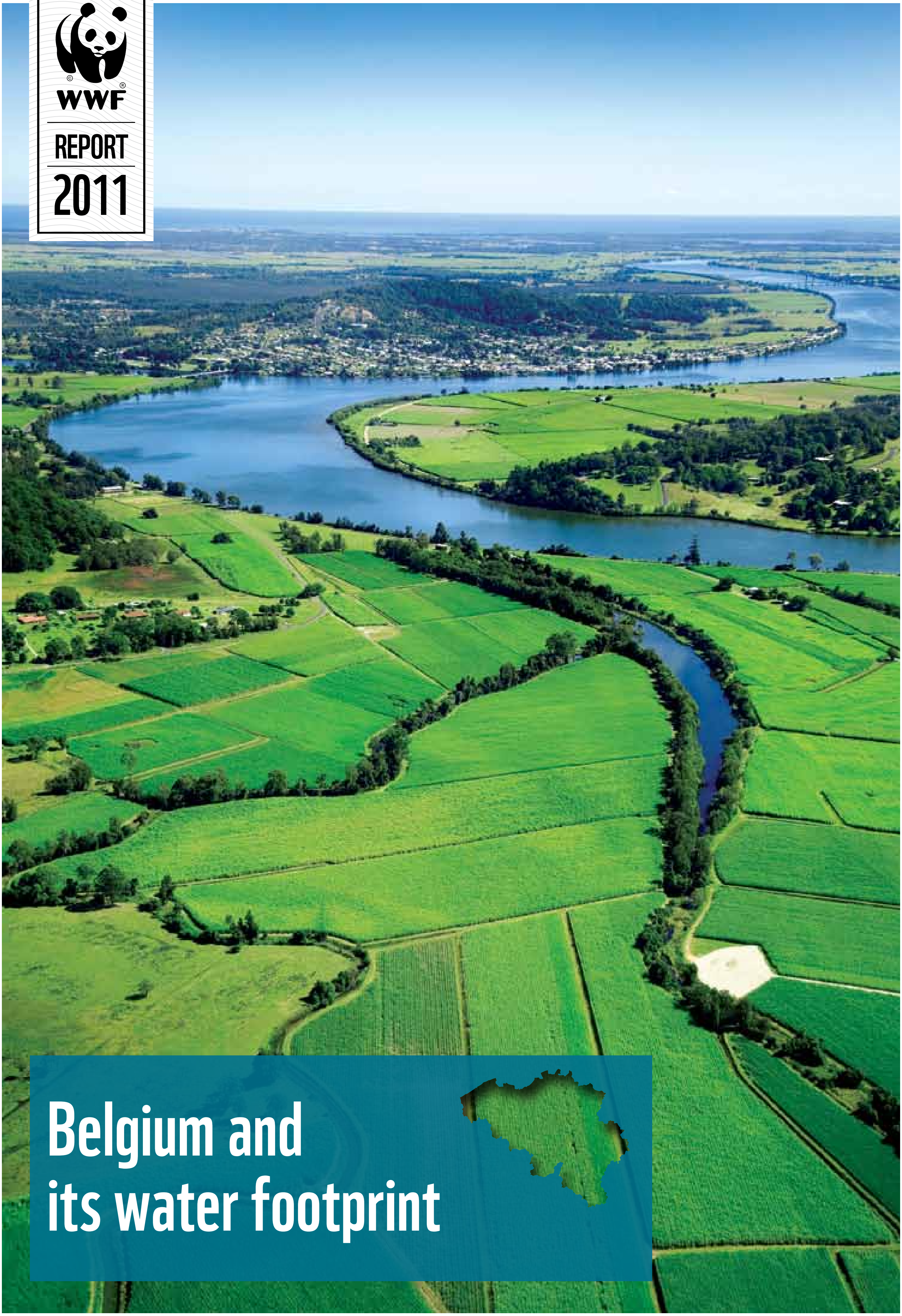
WWF

REPORT

2011



Belgium and its water footprint

Responsible editor: Damien Vincent, WWF-Belgium,
Boulevard Émile Jacqmain 90, 1000 Brussels

Editors: Anne-Kirstine de Caritat, Stijn Bruers,
Ashok Chapagain.

Contributors: Philippe Weiler, Aurélie Laurent.

Translation: Brantra SPRL

Coordination: Anne-Kirstine de Caritat

Page layout and printing: inextremis.be

Data: unless indicated to the contrary, water footprint data derive from the Water Footprint Network and Ecolife.

TABLE OF CONTENTS

	SUMMARY	5
	INTRODUCTION	6
1.	WHY HAVE A WATER FOOTPRINT?	8
	The production water footprint	9
	The consumption water footprint	10
2.	BELGIUM'S WATER FOOTPRINT	11
	Overall results	11
	Agriculture's large water footprint	13
	Large-scale imports of agricultural products	15
	Text box: The data used to calculate the water footprint	16
3.	THE IMPACT OF BELGIUM'S WATER FOOTPRINT ON OTHER COUNTRIES	17
	The example of cotton	18
	The example of sugar	19
	The example of Pakistan	21
4.	TOWARDS SOME SOLUTIONS...	22
	For companies	22
	Alpro	22
	The Coca-Cola Company	24
	SABMiller	25
	For the government	27
	CONCLUSIONS	29
	REFERENCES	30

SUMMARY

In this report, WWF-Belgium wishes to show that the water footprint is a useful indicator for:

- Revealing the hidden water in our consumption of goods and services;
- Bringing to light our dependence on other countries (our external water footprint);
- Linking our external water footprint to specific countries or geographical areas;
- Identifying and implementing courses of action to reduce impacts on water resources.

The results for Belgium show that the average Belgian's water footprint is very large. Our lifestyle and consumption of goods and services involve water consumption that far exceeds our own resources, and therefore depends to a great extent on the water resources of other countries. Supply chains can be clearly traced, and the external impacts pinpointed in the producing countries.

WWF-Belgium encourages public actors and businesses to take account of water footprints and the sustainable management of water in their management practices and their policies. The concrete examples that we give here may serve as sources of inspiration for action.

INTRODUCTION

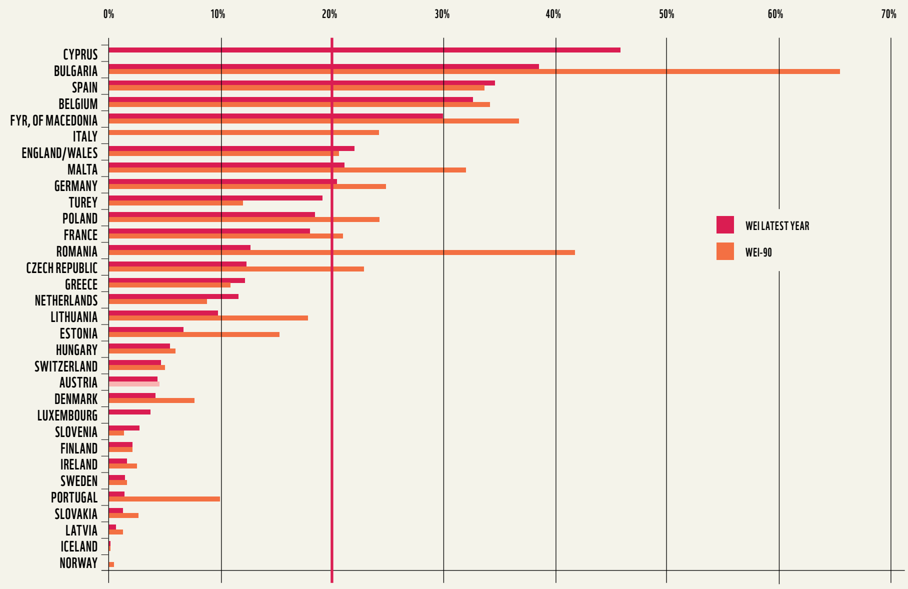
This analysis of Belgium's water footprint is a first. By means of this report WWF wishes to draw attention to this resource which is so often taken for granted, especially in a country like our own. Nonetheless, availability of fresh water is not self-evident – not today, and still less tomorrow.

Water is a precious natural resource that is used on a massive scale in agriculture, and in the production of our food, of animal feed and of textile fibres, not to mention biofuel. Freshwater ecosystems provide this resource, and play such vital roles as regulation of water flow, water purification, climate regulation, protection against storms, protection against erosion, etc.

Belgium is a small country which is densely populated and economically developed. It is also characterised by a Western lifestyle, and in particular a high-meat diet. There is therefore a lot of pressure on the environment in this country, and in particular on water resources. Belgium is among the European countries that draw the most heavily on their own resources (see Figure 1). Despite the rather rainy climate, there is less water available per person than in most other European countries. Large areas of ground are impermeable (built-up areas, roads, etc.) making it very difficult for water to penetrate into the soil. Moreover, a large proportion of surface and subterranean water is highly polluted, making it less usable.

FIGURE 1:
TOTAL ANNUAL ABSTRACTION OF WATER AS A PROPORTION OF AVAILABLE RESOURCES (LATEST YEAR AVAILABLE, BETWEEN 1997 AND 2005, ACCORDING TO COUNTRY) (IN %)

SOURCE: EUROPEAN ENVIRONMENT AGENCY



WEI...

A country's water exploitation index or WEI is defined as the ratio between the total annual abstraction of fresh water and average long-term freshwater resources. It describes the pressure that the total abstraction puts on water resources.
The alarm threshold is set at 20% (Alcamo et al., 2000), and this separates those regions or countries where resources are not under stress from those where there is acute competition for water.
It should be noted that the indicator includes water used for cooling, which in certain countries with a high level of nuclear power production accounts for a large proportion of the fresh water abstracted.

However, the pressure is not just internal. The country's water footprint, as we will see in this report, turns out to be heavily dependent on other countries. And this importing of water from other countries, sometimes distant ones, has its consequences (see 'Belgium's water footprint', page 11).
Unfortunately, the picture that emerges for the years ahead is not very encouraging. Worldwide, agriculture today uses 70% of water resources (UNESCO-WWAP, 2003). This is necessary to satisfy most of our needs in terms of food, clothing, building materials, etc. Between now and 2050, the world population will grow from six billion to nine billion people, but demand per person for agricultural products will roughly double, due to increased purchasing power and greater demand for meat and meat-derived products (IWMI, 2007). The pressure on the share of water used for agriculture will therefore increase enormously.

Another way of representing these challenges is to perform the following simple calculation. Today, six billion people consume six billion consumption units (an arbitrary unit) (6 x 1 = 6 billion consumption units). According to projections by the UN and the World Bank, we can expect a world population of nine billion people in 2050, and a level of consumption that has roughly doubled (with local variations such as a sharp rise in developing countries). The equation thus becomes 9 x 2 = 18 billion consumption units, which is a tripling of demand. If these projections turn out to be correct, the impact on the environment and on agriculture will be huge, and it is urgent to take this into account.

In addition, growing urbanisation and the effects of climate change further increase the threats to the planet's water resources.
WWF Belgium has several goals for this report. The first is to gain an understanding of our water consumption and usage, and to present the country's first water footprint results. Next, we wish to analyse and discuss the figures and their implications, especially with regard to agricultural products, their origins, the producing countries, and the impact in terms of dependence and responsibility.
Going further, the report then presents several concrete initiatives that have been taken by companies that are using the water footprint as an awareness-raising and management tool, with the aim of reducing their impact on water resources without harming their economic profitability.
Finally, WWF-Belgium proposes a number of courses of action for both economic and political actors to reduce the negative ecological, economic and social consequences associated with a large water footprint, taking a global view of the issues.

1. WHY HAVE A WATER FOOTPRINT?

The issues at stake in connection with fresh water are crucial for the planet as a whole, but no less so in a country like Belgium with a temperate maritime climate. Countries, regions, companies and other entities consume and make goods whose production requires water. It is the need to take account of the overall supply and demand of water that explains the development and use of a specific indicator: the water footprint.

The water footprint (Hoekstra, 2003) measures the direct and indirect use of fresh water by a consumer or producer. Among other things, it reveals the pressures on local water resources. In this sense, it is a geographically explicit indicator: it enables the volumes of water that are used and polluted to be measured, but also to be located. In this way, it takes account in particular of the impact of a country's imports (for example of agricultural produce).

The water footprint is measured in units of volume, and is calculated either from the point of view of the producer (the production water footprint), or from the point of view of the consumer (the consumption water footprint).

The production water footprint

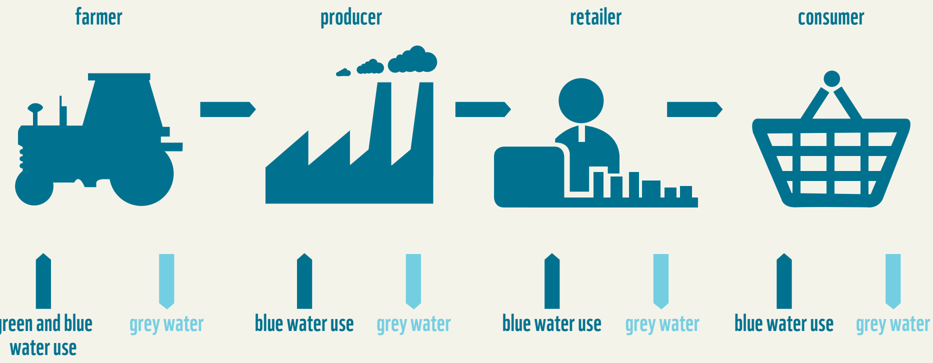
The water footprint of a good or service is the total volume of fresh water necessary for its production, over the entire production process.

This volume breaks down into three elements (Hoekstra, 2003), which correspond to the water that is consumed, evaporated and polluted (Figure 2):

- The 'green' water footprint is the volume of rainwater held in the soil as moisture which is necessary for crops to grow (and is lost in the form of water evaporation)
- The 'blue' water footprint is the volume of fresh water captured in blue water resources (surface water and groundwater), for domestic, industrial or agricultural use (in this last case, for irrigation).
- The 'grey' water footprint (also known as the 'return flow') is the volume of water which is polluted during production processes: the volume of water required to dilute the pollutants to a sufficient degree for the quality of the water to meet the accepted standards.

The production water footprint is geographically explicit, indicating not only the how much water is used, but also the places where it is used.

FIGURE 2:
THE WATER FOOTPRINT OF A PRODUCT

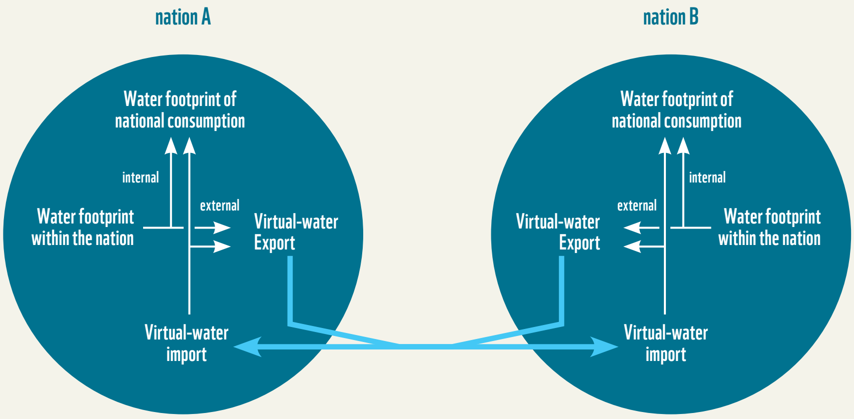


The consumption water footprint

The consumption water footprint is defined as the total volume of fresh water used to produce the goods and services consumed by a country, town or individual, or by the entire human population.

The water footprint of national consumption is the sum of the volume of water used directly in that country (the internal water footprint) and the virtual water import (the external water footprint, i.e. the water used in other countries to produce the goods and services consumed in the country in question), minus the virtual water export (i.e. the water used in that country to produce the goods and services consumed in other countries) (see Figure 3).

FIGURE 3:
THE WATER FOOTPRINT OF NATIONAL CONSUMPTION AND THE RELATIONSHIP (SIMPLIFIED) BETWEEN TWO TRADING NATIONS

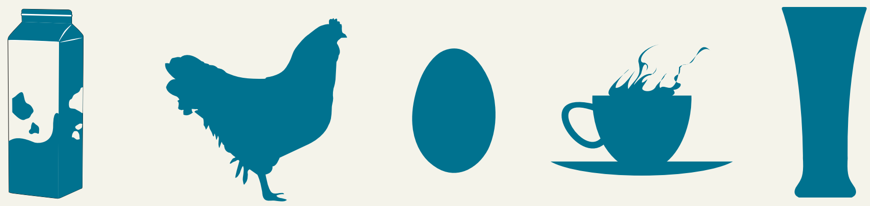


AFTER HOEKSTRA ET AL., 2009

Using this general analytical framework, it can be seen that certain countries may be largely dependent on imported goods and services which have been produced in other countries, and whose production required water (virtual water).

The calculation of a country's water footprint is therefore a way of making visible the total quantity of water actually used, while also showing its geographical origin.

Among other benefits, the analysis of a country's water footprint enables it to focus its efforts on reducing its impact on regions experiencing water stress and on places where water management is poor.



These figures are based on global averages. Regional data can show considerable variation, for example due to differences in climate (Chapagain & Hoekstra, 2004).

2. BELGIUM'S WATER FOOTPRINT

Overall results

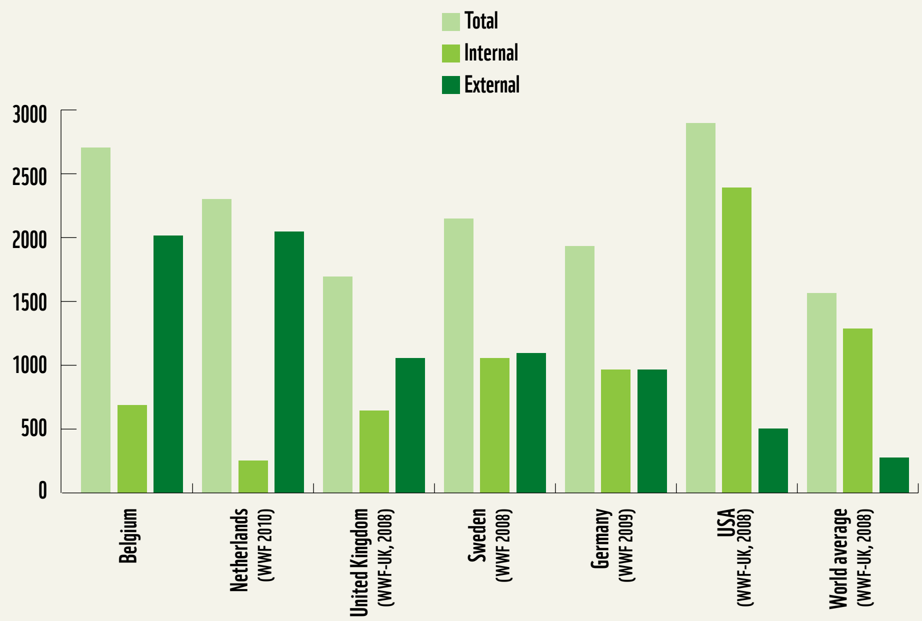
To calculate Belgium's water footprint, WWF analysed, in conjunction with ECOLIFE (see also De Clerck, 2009), the water requirements of all agricultural products consumed, on the basis of production and sales data provided by PC-TAS (ITC, 2006). These include 503 different crops (e.g. cotton, foodstuffs, flowers) and 141 livestock products. The methodology used is explained in the Water Footprint Manual (Hoekstra et al., 2009).

The method for calculating the water footprint of industrial products is complex, and is still being refined. These products include chemical products, machinery and other manufactured goods, whose water footprint is based on the industrial added value per product per unit of water used.

The first finding is that Belgium's total water footprint is 28 billion m³ (Gm³) of water per year: this represents around 2 700 m³ per person, or 7 400 litres per person per day, which is about ninety bath-tubs.

This is double the global average (see Figure 4) and is more than that of our neighbours (Netherlands: 2 300 m³/year/inhabitant; United Kingdom: 1 700 m³/year/inhabitant). The first observation to be made, therefore, is that Belgium's water footprint is very high.

FIGURE 4:
WATER FOOTPRINT (TOTAL, INTERNAL AND EXTERNAL) FOR SEVERAL COUNTRIES M³/PERSON/YEAR)



Secondly, a breakdown of Belgium's water footprint (Table 1) reveals that the internal water footprint represents 25% of the total. This represents the extent to which the country supplies its own needs. Conversely, the external water footprint represents 75%. This means that three-quarters of the country's water footprint is associated with virtual water imports from elsewhere. Most of the imports in question are of agricultural products such as cotton, coffee and wheat, and these are often grown in parts of the world where water resources are already under great pressure. Later in this report (page 17), we look at the implications of this external water footprint for the importing countries, and the responsibilities that arise from it.

The third observation (Table 1) is that a very high proportion of the water footprint is associated with agricultural products (26.09 billion m^3/year, or 93.6%). This means that of the 7 406 litres of water used per day by the average Belgian, 6 931 litres relate to the consumption of plant or animal products. The water consumption associated with industrial products is 258 litres (3.5%), although this figure should be treated with caution, as further research is still needed. The average volume of actual tap water used is 218 litres per day per inhabitant, and this figure includes the water used by the public services.

TABLE 1: BREAKDOWN OF BELGIUM'S WATER FOOTPRINT (IN GM^3/YEAR)

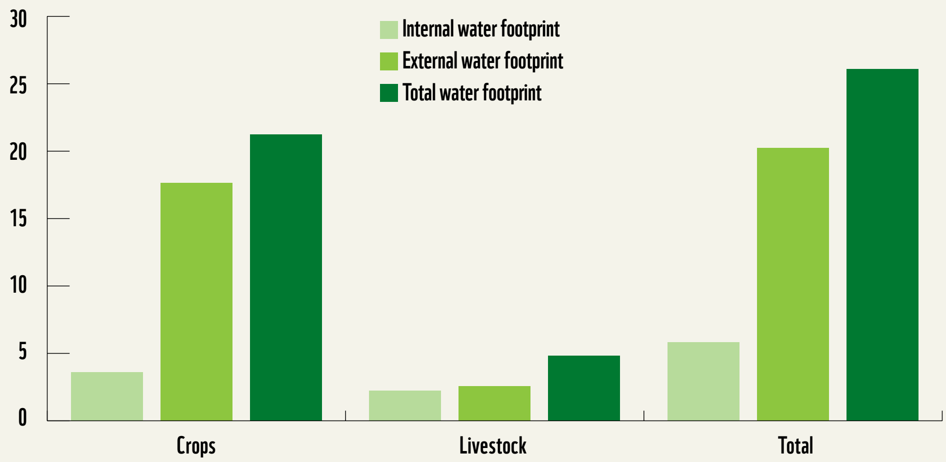
	Internal	External	Total	% of total
Agricultural products	5,85	20,24	26,09	93,6 %
Industrial products	0,40	0,57	0,97	3,5 %
Domestic use	0,82	-	0,82	2,9 %
Total (Gm^3/year)	7,07	20,81	27,88	100,0 %
% du total	25 %	75 %	100,0 %	

Agriculture's large water footprint

Analysing in more detail the proportion of the water footprint associated with agricultural products, we find (Figure 5) that it results mainly from growing crops (81%), and to a lesser degree from raising livestock (19%). It is important to note that many crops are used as animal feed, and that this is not taken into account in the latter figure. The figure for livestock includes grass, drinking water, and water used for service purposes (such as the cleaning out of stables), and underestimates the real impact of raising livestock.

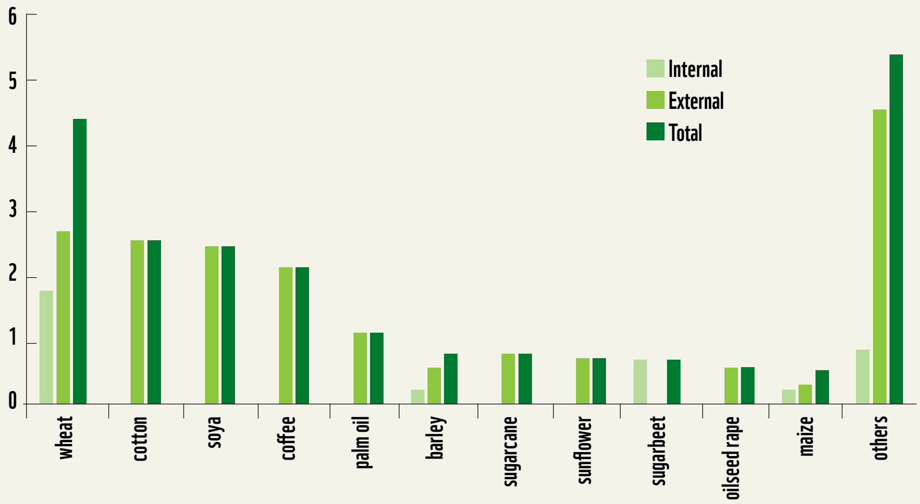
The water footprint connected with crop-growing is largely external (83%), i.e. associated with imports. For livestock, the internal water footprint is slightly smaller than the external water footprint (54%).

FIGURE 5: BREAKDOWN OF THE WATER FOOTPRINT OF AGRICULTURAL PRODUCTS (GM³/YEAR)



The crops that contribute to the water footprint are mainly (Figure 6) wheat, cotton, soya and coffee, some of which are of tropical or subtropical origin. These four crops alone make up more than 50% of our external crop water footprint. The only crops with a significant internal water footprint are those that are grown in our own country: wheat, sugarbeet, barley and maize.

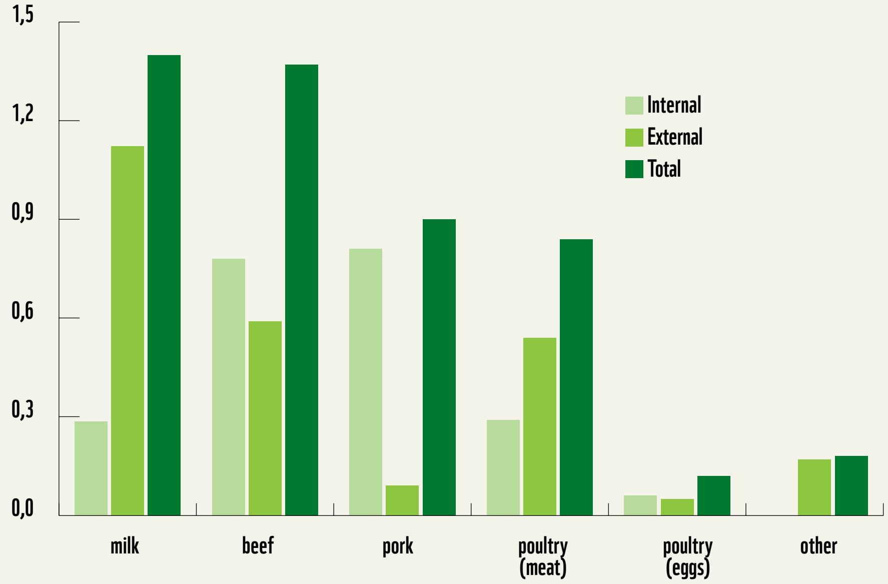
FIGURE 6:
MAIN CROPS ASSOCIATED WITH THE CROP WATER FOOTPRINT IN BELGIUM (IN GM³/YEAR)



The water footprint for agricultural products consumed in Belgium also results from livestock products (Figure 7).

The largest water footprint for these products is that associated with milk production, closely followed by beef, and then by pork and poultry. More than half (54%) of these products are imported. Those products produced on the largest scale in Belgium are beef and pork, while those which are the most extensively imported are milk and poultry (meat).

FIGURE 7:
MAIN PRODUCTS ASSOCIATED WITH THE LIVESTOCK WATER FOOTPRINT IN BELGIUM (IN GM³/YEAR)

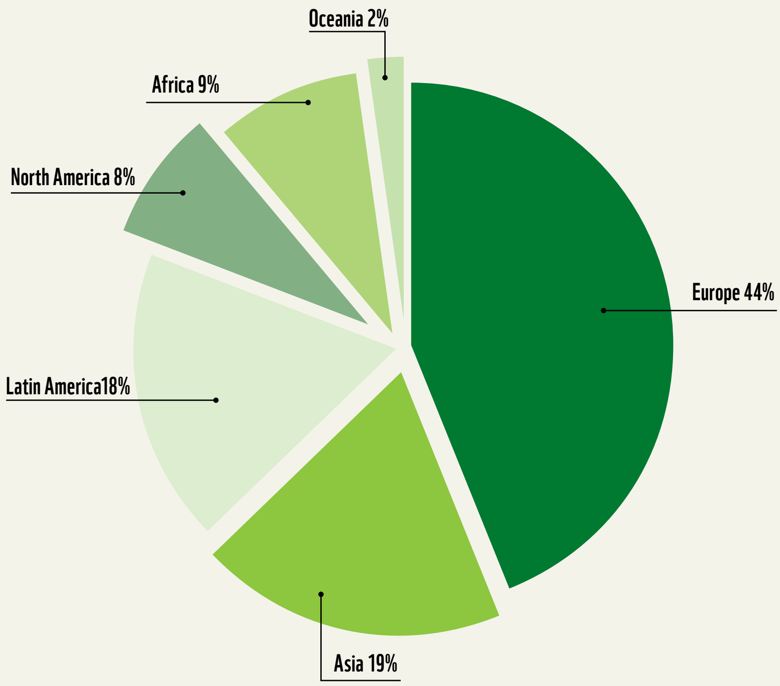


To summarise, the water footprint for agricultural products consumed in Belgium has a significant internal component consisting of livestock products and crops such as wheat, sugarbeet, maize and barley. It is primarily external in the case of cotton, soya and coffee.

Large-scale imports of agricultural products

Analysing the data for the external water footprint enables us to identify the countries of origin of imports. For agricultural products (see Figure 8), imports into Belgium come firstly from Europe (especially France, Germany and the Netherlands), then from Asia (especially Indonesia, India and Pakistan) and Latin America (Brazil and Argentina).

FIGURE 8: GEOGRAPHICAL DISTRIBUTION OF BELGIUM'S EXTERNAL AGRICULTURAL WATER FOOTPRINT (IN %)



Wheat is the import that contributes most to the external water footprint. France is Belgium's main supplier, followed by Germany and Canada. The second biggest contributor is cotton, which comes from India, Turkey, Uzbekistan and Pakistan. In third place we find soya, which is mainly imported from Brazil, the United States and Argentina. Finally, the coffee drunk by Belgians is mainly grown in Brazil, Colombia and Uganda.

The impact of imports on the countries of origin is discussed later on (see page 17).

The data used to calculate the water footprint

It comes as no surprise to learn that Belgium has a large agricultural water footprint and is highly dependent on other countries. With its small size and temperate climate, Belgium is necessarily dependent on other countries and sub-tropical and tropical crops. Only a few crops and livestock products have an internal footprint, i.e. are produced and consumed locally.

Broadly speaking, water footprinting leads to powerful conclusions and enables appropriate general recommendations to be drawn up (see page 22).

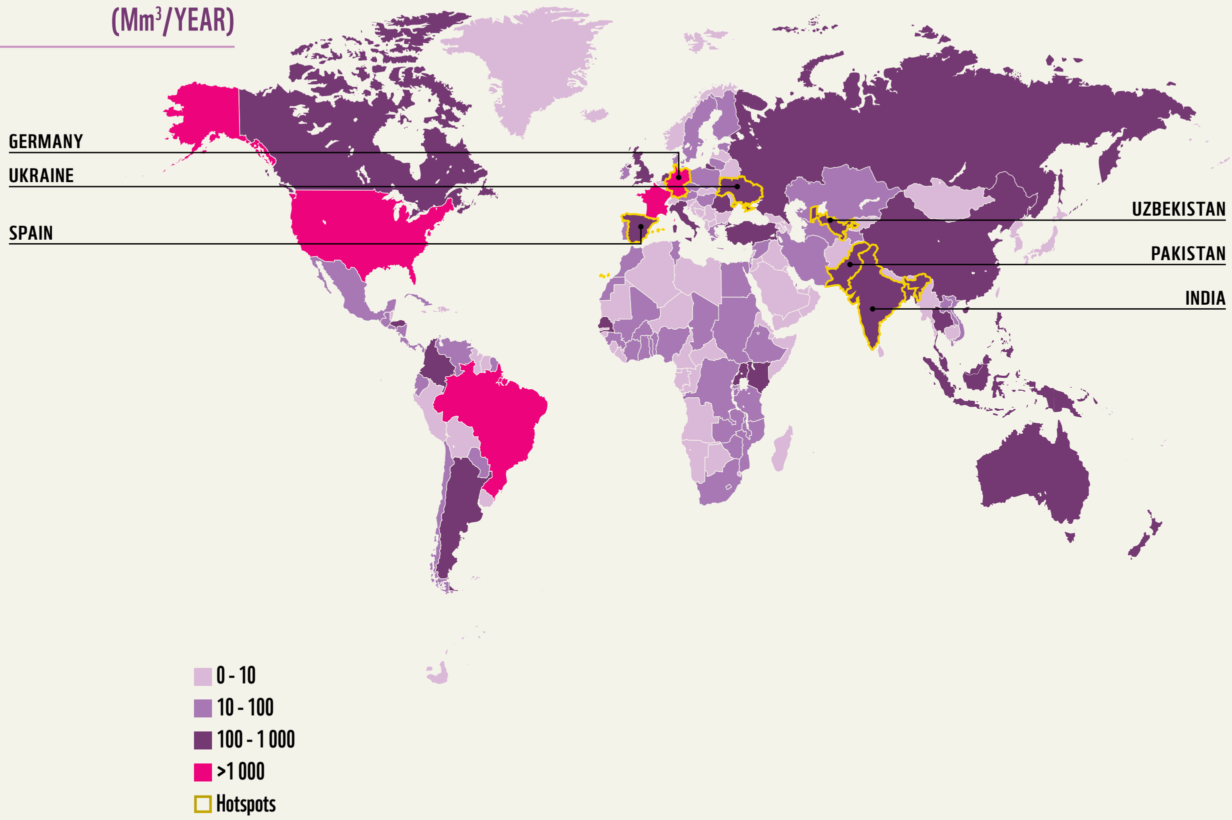
The science behind water footprinting is recent (the indicator was only created in 2003) and it should be remembered that the method for calculating water footprints is still under development. Different methodologies give rise to different results. The quality of the data is another factor which affects the results, and there is undoubtedly room to improve the calculations and refine the data further.

3. THE IMPACT OF BELGIUM'S WATER FOOTPRINT ON OTHER COUNTRIES

The impact of Belgium's water footprint on other countries depends both on the quantity of water used to produce imported goods and services, and on its quality. The quantity of water is measured by the external water footprint, which indicates the volume of water used. Its quality is expressed using the Water Stress Indicator or WSI (Smakhtin et al., 2004), which measures the scarcity of water available for human activities, taking into account the water needs of ecosystems. Hence if the indicator is higher than 100% for any given country, this means that more water is abstracted than is available for human needs. A value over 60% indicates heavy use of resources, between 30% and 60% indicates moderate use, and lower than 30% indicates light use.

In order to evaluate the impacts on other countries of Belgium's water footprint, (Figure 9 for the external agricultural water footprint), we mainly need to look firstly at countries where Belgium has a large external water footprint, and secondly at those where water stress is high.

FIGURE 9:
EXTERNAL AGRICULTURAL WATER FOOTPRINT (Mm^3/YEAR)



This group of countries includes Germany (wheat, milk), India (mainly cotton), Spain (olives, rice, and almonds), Pakistan (cotton, sugarcane) and Uzbekistan (cotton). These, therefore, are countries which can be affected (positively or negatively) by changes to Belgian lifestyles and consumption of the products imported from them (see the examples outlined below).

We can see this more clearly in the three examples given below: cotton, sugar, and the case of Pakistan. These cases have been chosen because of their importance in Belgium's external agricultural water footprint, and because they are the object of international and multi-stakeholder initiatives in which WWF is participating.

The example of cotton

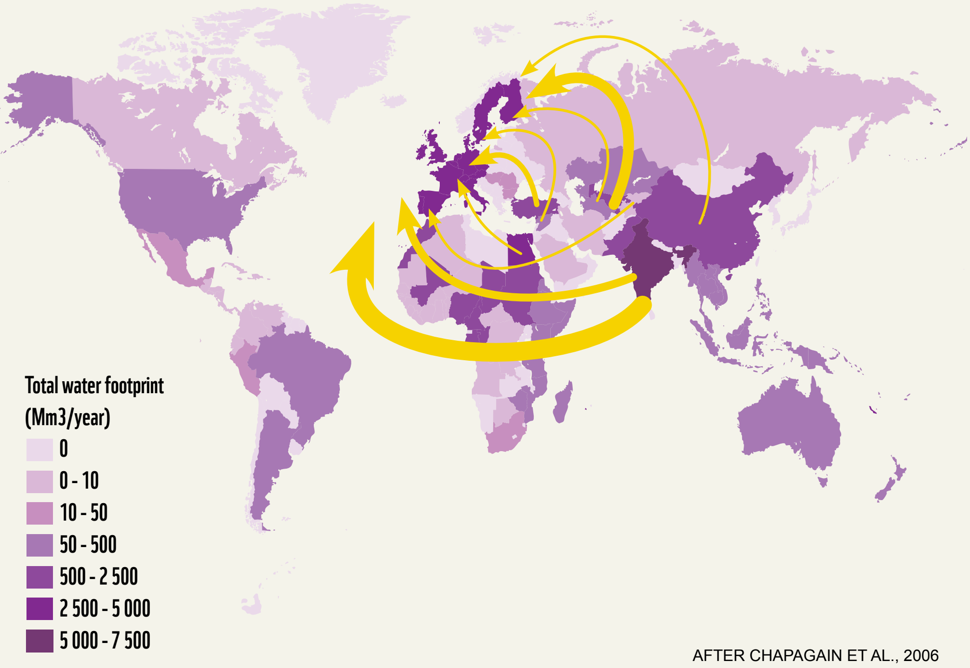
Cotton is the prime example of a crop that is imported on a huge scale by European countries, as well as being one of the highest water-consuming crops throughout its production chain.

Worldwide, almost 73% of cotton crops are irrigated (Soth et al., 1999) because they are grown in arid regions.

It has been estimated that on average 11 000 litres of water are needed to produce a kilo of cotton (Chapagain et al., 2006). This is a huge figure, of which Western consumers only see a tiny fraction. For the EU-25 countries, 84% of the water footprint for cotton production is located outside their own territory. The impact of growing and processing cotton takes three forms: the evaporation of rainwater found in the soil and needed for the growing of cotton (green water), the use of subterranean or surface water for irrigation purposes (blue water) and, finally, water pollution that occurs during the growing or processing of cotton (grey water).

The main impacts for the EU-25 are located in India, Uzbekistan, Pakistan, Turkey and China (see Figure 10). The water resources of two of these countries (Uzbekistan and Pakistan) are already overexploited to a high degree (WSIs of 165% and 105% respectively).

FIGURE 10:
TOTAL IMPACT OF THE CONSUMPTION OF COTTON PRODUCTS BY THE EU-25 ON GLOBAL WATER RESOURCES (MM³/YEAR, FOR THE PERIOD 1997-2001)



AFTER CHAPAGAIN ET AL., 2006

WWF is a partner of the Better Cotton Initiative (BCI), a voluntary programme which aims to encourage cotton farming that uses less water and chemicals. This is an important step towards making cotton production more sustainable. WWF works with farmers, governmental bodies, buyers and investors at key stages in the process – from the field to the clothes shop – in a joint effort aimed at promoting sustainable cotton which has less impact on the environment, is economically viable, and is socially acceptable.

www.bettercotton.org

The example of sugar

Sugar is one of the commonest ingredients in our diet. More than a hundred countries produce sugar, and 60-70% of sugar is made from sugarcane grown mostly in the tropical and subtropical zones of the Southern hemisphere. The remainder of the sugar produced comes from sugarbeet, which is mainly grown in the temperate zones of the Northern hemisphere (North-Western Europe, Eastern Europe, Northern Japan and certain areas of the United States).

During the period 2000-2004, global production of sugar crops was more than 1.5 billion tonnes per year. Brazil is the top producer (24%), followed by India (18%), China (6%), Thailand (4%), the United States (4%) and Pakistan (4%). Currently, 69% of sugar produced in the world is consumed in the country of origin, and the remainder is sold on the world markets.

The cultivation of sugarcane often requires irrigation. By contrast, sugarbeet is mainly grown in rainy areas, with little or no additional irrigation. The average production water footprint is 809 litres per kilo of unrefined product for beet sugar, and 1 427 litres per kilo of unrefined product for cane sugar (Hoekstra & Chapagain, 2008).

In Belgium, the consumption water footprint for sugar is 1 412 Mm^3/year, or 375 litres/day/inhabitant (out of the total of 7 400 litres) (see Table 3). This footprint is 53% external, and relates to sugarcane imports, mostly from Pakistan, but also from Cuba and Swaziland.

TABLE 3:
CONSUMPTION WATER FOOTPRINT FOR SUGAR IN BELGIUM (Mm^3/YEAR)

(Mm^3/year)	*Internal*	*External*	**Total water footprint**
Cane sugar	0	745	745
Beet sugar	663	4	667
Total	663	749	1 412

It can be seen that these products, which are both consumed by the Belgian population, have totally different impacts as regards their water footprint: sugarcane is produced exclusively in other countries (its internal water footprint is equal to zero), while sugarbeet is produced almost exclusively in Belgium.

The value of water footprinting is very clear here: it raises awareness of the issue, and throws light, among other things, on a complex question of this kind, relating to the choice of a common consumer product. In the case of sugar, other factors to do with water are also relevant, such as water stress in the country of production, or the quantity and origin of any water needed for cultivation (the production water footprint).

In concrete terms, this means that of the 745 Mm^3/year, 224 comes from Pakistan, 83 from Cuba and 44 from Swaziland. Pakistan has a very high water stress indicator (WSI = 108%, compared with 31% and 25% for the two other countries respectively) which means that Belgian consumption of sugarcane has a direct negative impact on the water resources of that country (see the discussion of the example of Pakistan below).

WWF is participating in the *Better Sugarcane Initiative* (BONSUCRO™), in which sugar retailers, investors, traders, producers, and NGOs are working together to promote sustainable sugar. The aim of the BSI is to bring about a measurable reduction in the impact of sugarcane production on the environment, while also contributing to social and economic benefits for sugar producers and all other actors in the chain.

WWF works with farmers on field projects focusing on better farming practices, in particular in Pakistan. In some producing countries, WWF is working to make institutional players and private individuals aware of the sustainability of these initiatives. Hence it works with companies such as Coca-Cola towards the more sustainable management of natural resources (see page 24).

www.bonsucro.com

The example of Pakistan

Pakistan is an important example for Belgium, since it is a major exporter of both sugarcane and cotton. Pakistan is currently in a state of water stress, although it has traditionally had a surplus of water. However, varying rainfall totals and drought have had devastating effects on agriculture, livestock grazing, wetlands, and the human populations that depend on these resources.

WWF contributes to various projects in Pakistan. These include the Pakistan Wetlands Programme, which aims to promote the sustainable conservation of both freshwater and marine wetlands, and the biodiversity of global importance that is associated with them.

WWF also supports the Pakistan Sustainable Cotton Initiative, whose aim is to develop and promote optimal management practices for sustainable cotton production. This includes better water management practices and a significant reduction in the quantities of pesticides and fertilisers used in cotton production, without significant changes to crop yields.

WWF is also helping improve the management of the catchment areas in Ayubia National Park, where it runs awareness-raising campaigns on environmental conservation. Ayubia National Park covers an area of around 3 312 hectares, and is located in the Western Himalayas. This region is crucially important, since it receives 70-80% of the melt water from the snow and glaciers which end up supplying the entire Indus delta.

Finally, WWF Pakistan has launched a project entitled Better Management Practices for Water Thirsty Crops to ensure sustainable sources of fresh water to support poor communities in Pakistan. This project will create a mechanism to increase the availability of water and reduce pollution by decreasing the amount of water and pesticides used in the production of sugarcane and cotton.

4. TOWARDS SOME SOLUTIONS...

The results and examples given above show why it is worth looking closely at Belgium's water footprint, for at least three reasons:

1. Firstly, because of its direct relationship with the long-term viability of water resources.

2. Secondly, because of the need to raise awareness among companies and consumers about their water consumption and the important questions that it raises in terms of the security of our food supply and the availability of resources.

3. Finally, as a means of challenging public and political actors to consider their approach to governance, in particular with regard to their role in development aid policy, as water is a global issue of worldwide importance.

A number of solutions and courses of action have been pursued by these actors, in collaboration with WWF. Some examples are listed below.

For companies

Companies have a key role to play in improving the management of water resources and reducing the risk of environmental damage. They can ensure that water is used rationally. Water footprinting enables them to put figures to this, not only with regard to their own activities, but also, and above all, for the entire supply chain, making good water management a standard component in their contracts with their suppliers. It is also in companies' strategic interest to know their total footprint, so that they can analyse the risks that they are taking. The challenge then is to develop strategies to reduce these impacts, and hence the risks associated with them.

The Water Footprint Network (WFN)[1] and the Water Centre of the University of Twente in the Netherlands are developing scientific methods to enable companies and other bodies to calculate their water footprint. More than 120 companies and institutions currently belong to the WFN.

WWF, which is a member of the WFN, works with companies and their producers to reduce the use of water for agricultural products in the country of origin. We give three examples of this collaboration.

Alpro

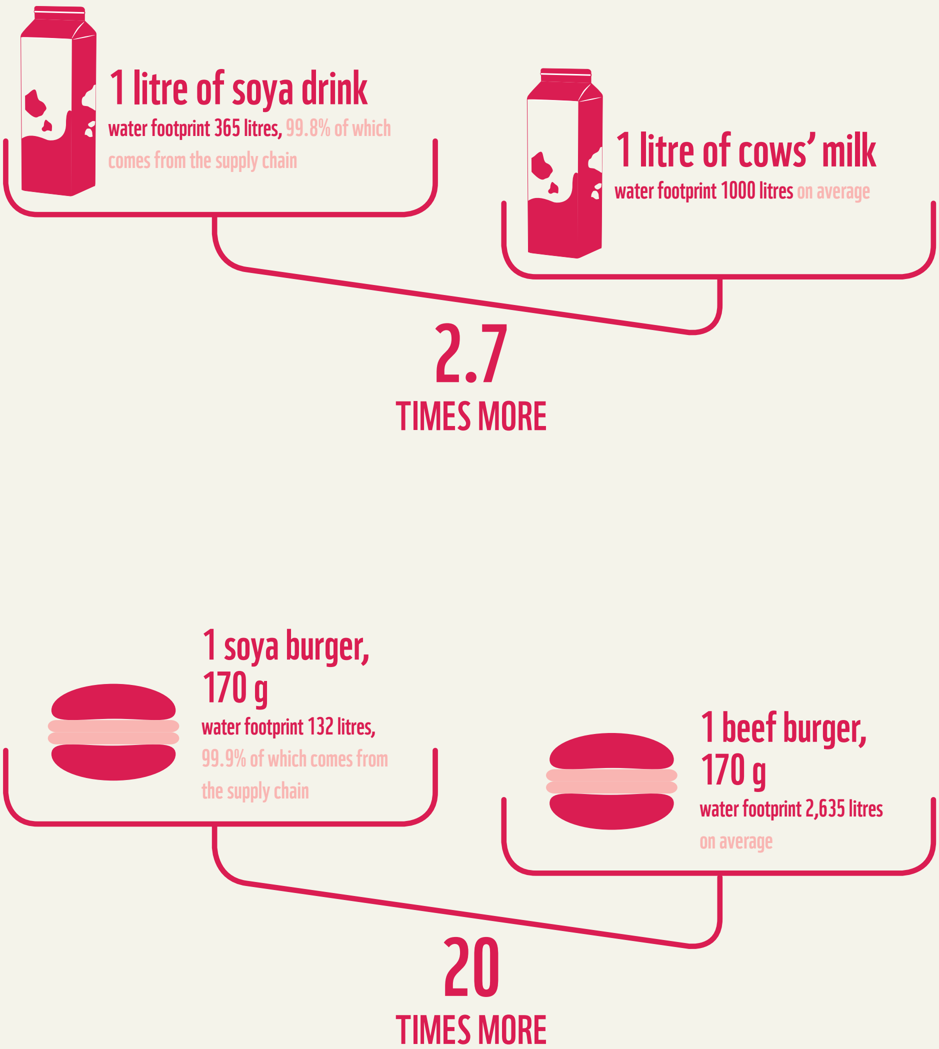
In Belgium, Alpro, working jointly with WWF and the Water Centre of Twente University has calculated the water footprint of two of its leading products: a soya drink and a soya burger.

The calculation takes into account the operational footprint – the water directly used in the production of soya-based products – as well as the footprint of the supply chain – the water used indirectly to produce the raw materials, packaging and services consumed.

The figures obtained for these vegetable products are compared with those for similar products of animal origin (cows' milk and beef) (see Figure 11).

[1] www.waterfootprint.org

FIGURE 11:
SOYA DRINK
COMPARED TO OTHERS



These figures show very clearly that although it is important for companies to monitor their own use of water, the main problem lies elsewhere, in the supply chain. In this particular case, the detailed analysis of soya cultivation is essential to a proper understanding of the impact of its production chain on water resources.

In addition, these figures show how much more water animal-based products require than their vegetarian alternatives.

On the basis of these data, Alpro and WWF will develop an action plan to analyse, over the next few years, the real impact of Alpro products on water resources in the countries which supply the raw materials. This plan will be accompanied by educational projects.

www.alpro.be

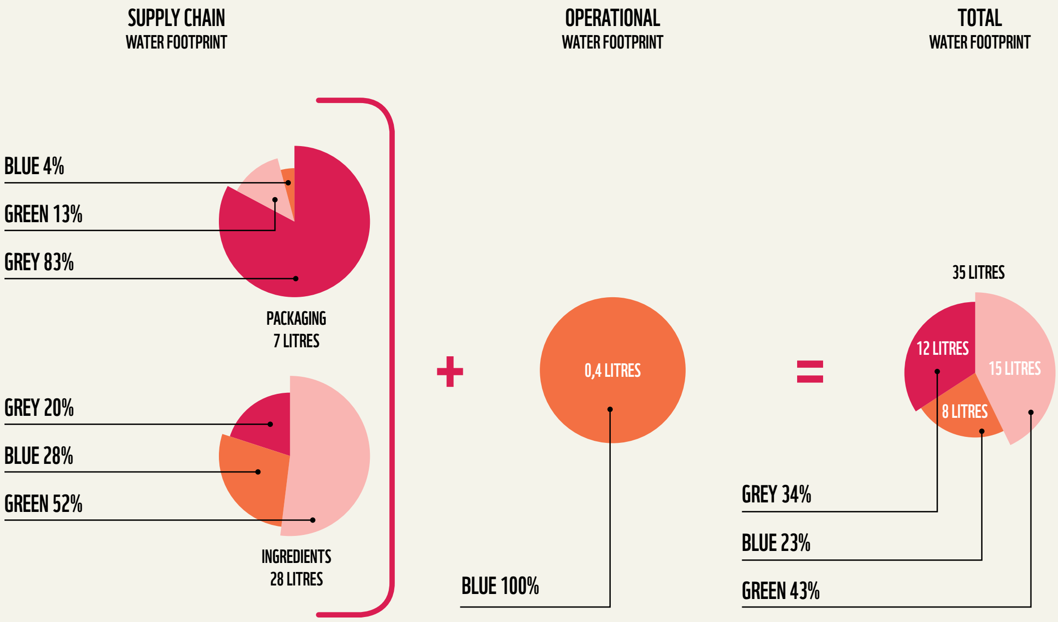
The Coca-Cola Company
WWF and the Coca-Cola Company have signed a global partnership with the following objectives:

- To help preserve seven important catchment areas, including that of the Danube;
- To improve bottling plants' water efficiency by 20% by 2012 (compared with the 2004 level)
- To encourage more efficient use of water throughout the supply chain, starting with sugar;
- To reduce CO_2 emissions and energy consumption to 2004 levels, and by an extra 5% in developing countries.

Within this overall framework, several local initiatives were started, one of them in the Netherlands.

In this country the company has calculated, in conjunction with The Water Footprint Network, the water footprint of half a litre of Coca-Cola manufactured in its local production unit (Figure 12).

FIGURE 12:
WATER FOOTPRINT OF A 0,5 LITRE OF COCA-COLA®
IN DONGEN, THE NETHERLANDS



The analysis has shown that the majority of this water footprint, associated with the cultivation of sugarbeet, is already very competitive, compared with the values for this crop in neighbouring countries. The possibilities for reducing the water footprint therefore seem to be limited, but the experience could be useful to other bottling sites within the company, particularly in improving understanding of the risks connected with the supply chain. The company will work with its sugar suppliers in Europe and elsewhere to draw up strategies to reduce the impact of water used in agriculture.

However, in many countries, the sugar used in the drink comes from sugarcane, which requires more water to grow. The end product therefore has a water footprint which is markedly higher. This is what has motivated the company to get involved in initiatives such as BONSUCRO (see ‘The example of sugar’, page 19).

The company has also calculated the water footprint for some of its orange-based drinks produced for the North American market (e.g. Minute Maid Original). The calculations show that the water footprint lies between 518 and 651 litres for one litre of drink, and is 99% linked to the growing of the oranges (in Florida, Brazil and Costa Rica). The company has taken on board the possible opportunities for improving yields and minimising the impact of orange-growing. In particular it intends to collaborate with the other parties involved in the sustainable management of the common resource of water.

www.coca-cola.com

SABMiller

The brewing group has been working with WWF to investigate the issues and risks connected with the water used in its business. Among other things, the water footprint of its products has been calculated for five beer production sites, in the Czech Republic, Peru, Tanzania, Ukraine and South Africa. Looking at the many figures in this analysis, it turns out that the beer’s water footprint is primarily (90%) linked to the growing of the cereals which are used as one of its ingredients. If two production sites are compared, it can be seen that a litre of beer in South Africa requires three times as much water for its production as its equivalent in the Czech Republic, and that this is mainly linked to the importing of cereals (largely grown using irrigation) from neighbouring countries.

FIGURE 13: PRODUCTION WATER FOOTPRINT OF ONE LITRE OF BEER

The brewing group recognises the usefulness of the water footprint as a management tool (even though it is still in need of refinement), since calculating it enables water use to be evaluated quantitatively, particularly in regions where water is scarce. These data are useful for evaluating the risks connected with this natural resource, and for taking adequate measures with respect to the functioning of the group's industrial sites, relations with local authorities, and environmental sustainability in general.

www.sabmiller.com

Some recommendations...

- Recognise the risks for the company: a shortage of water in the supply chain could disrupt production and increase transport and purchasing costs. The risks also concern the local population, and may develop in tense situations.

- Identify and reduce the water footprint: start by calculating the water footprint and by understanding its potential impacts in the local context. A reduction plan can then be set up.

- Share knowledge: companies can play a big part in the definition of standards for growing crops such as sugarcane, cotton or rice.

- Be transparent: the first step towards sustainable development. The organisation Global Reporting Initiative[2] provides guidelines on this subject.

- Contribute to water management: in a more general manner, companies can play a role in managing water resources in the country of origin. As private actors, they can make an important contribution to local debates and forums on integrated water management.

[2] www.globalreporting.org

For the government

The potential impact of Belgium's water footprint depends entirely on where, in what quantity, when, and how water is abstracted. A significant water footprint in a region where water is in abundant supply is unlikely to have a negative effect on the local society or environment, but the same water footprint in a region where there is a shortage of water can give rise to serious problems, such as the drying up of rivers, the destruction of habitats and means of subsistence, and the extinction of species, as well as having an impact on agricultural prices, basic services and local economies.

What water sustainability basically implies is effective collective action by those who use water and depend on it for the supplies they need. This is an important area of action for the government. It plays a major role here in devising the rules for water use and developing a legal framework or methodology, as it is able to adopt an overall approach to water-related questions, notably through the goods that we import, which account for a major part of the water footprint of a country like Belgium.

The details of the water footprint given in this report show why it is in the government's interest to take freshwater resources into account in economic development, and in aid to developing countries. Such aid could, for example, include a component of sustainable water management in the countries concerned.

The question of water is also closely linked to that of climate, and questions to do with rainfall, the amount of water abstracted and the timing of its abstraction are among the challenges faced in the battle against climate change.

It is therefore essential for the government to understand the issues to do with water in their totality, and for the debate on water management to relate to both its domestic and its international aspects.

Some recommendations...

At international level

- Ratification by Belgium of the United Nations Convention on Watercourses[3]: this convention is especially important for countries which lack a legal framework for the management of transboundary river basins. Although this convention was developed in 1997, Belgium has still not ratified it, and this reduces the chances of its entering into force;

- Support international bodies (the EU, the World Bank, etc.) to take into account the water dimension into their aid and development programmes;

- Encourage other EU countries to implement the European Water Framework Directive and the Habitat Directive;

- Facilitate dialogue between companies and the government at Belgian and European level about the impact of production sites on water resources;

- Identify the geographical areas most affected by Belgium's water footprint;

- Help the countries concerned to implement measures for sustainable management of their water resources, and to rehabilitate and if necessary restore degraded wetland ecosystems;

- Make sustainable and integrated water management a key element in development aid strategy.

At national level

- Support the federated entities to take into account the water dimension into their aid programmes;

- Carry out a water audit of governmental programmes to avoid any negative impacts on water resources, in Belgium and elsewhere;

- Measure the quantity of water needed (internal and external) to ensure food security for Belgium, and take the resultant political measures;

- Improve the legal framework for water in Belgium, to ensure more sustainable management of this resource;

- Inform and educate the public about the concept of water footprinting (for example by developing measurement tools);

- Rehabilitate, and if necessary, restore degraded wetland ecosystems in Belgium.

[3] http://wwf.panda.org/what_we_do/how_we_work/policy/conventions/water_conventions/un_watercourses_convention/

5. CONCLUSIONS

In conclusion, several key points emerge.

The average Belgian's water footprint is very high in a general sense, and higher than that of the inhabitants of neighbouring countries.

The water footprint is mainly external: in other words, Belgium is heavily dependent with respect to water resources.

This external water footprint derives mainly from agricultural products, which are either consumed directly or used as animal feed. In this respect, the Belgian diet's effect on the water footprint is very clear. In addition, much of the water which is imported via these agricultural commodities comes from countries which suffer from a shortage of water.

The Belgian authorities need to measure their water footprint and adapt their development aid programmes so as to take account of this dimension in other countries.

As far as companies are concerned, so far there are not many that have analysed their water footprint and are using this indicator as a risk management tool for their activities.

And, last but least, citizens can help reduce their water footprint, not only by reducing their direct consumption of water, but also, for example, by reducing their food waste, adopting a diet with less meat, or by limiting their consumption of water-intensive goods or services.

6. REFERENCES

Alcamo, J., Henrich, T., Rösch, T. (2000). World Water in 2025 – Global modeling and scenario analysis for the World Commission on Water for the 21st Century. Report A0002, Centre for Environmental System Research, University of Kassel, Germany.

Allan, J. A. (1998). Virtual water: A strategic resource global solutions to regional deficits. Ground Water 36(4): 545-546.

Allan, J. A. (1999). Productive efficiency and allocative efficiency: why better water management may not solve the problem. Agricultural Water Management 40(1): 71-75.

Allan, J. A. (2001). The Middle East water question: Hydropolitics and the global economy. London, I.B. Tauris.

Chapagain, A. K. and A. Y. Hoekstra (2004). Water footprints of nations. Value of Water Research Report Series No. 16. Delft, the Netherlands, UNESCO-IHE.

Chapagain, A.K., Hoekstra, A.Y., Savenije, H.H.G. and Gautam, R. (2006) The water footprint of cotton consumption: An assessment of the impact of worldwide consumption of cotton products on the water resources in the cotton producing countries, Ecological Economics. 60(1): 186-203.

Chapagain, A.K. and S. Orr (2008). UK Water Footprint: the impact of the UK's food and fibre consumption on global water resources, WWF-UK, Godalming, UK.

De Clerck, E. (2009). Analyse van de globale impact van de Belgische waterconsumptie door de berekening van de waterfootafdruk. Master thesis, Centrum voor Milieusanering, Universiteit Gent.

EEA (2009), Water resources across Europe — confronting water scarcity and drought. Report No 2/2009.

EPRI (2002), Water & Sustainability, Vol 1-4.

Hoekstra, A.Y. (ed.) (2003) Virtual water trade: Proceedings of the International Expert Meeting on Virtual Water Trade, Delft, The Netherlands, 12-13 December 2002, Value of Water Research Report Series No.12, UNESCO-IHE, Delft, The Netherlands, www.waterfootprint.org/Reports/Report12.pdf.

Hoekstra, A. Y. and A. K. Chapagain (2008). Globalization of Water: Sharing the Planet's Freshwater Resources. Oxford, UK, Blackwell Publishing Ltd.

Hoekstra, A.Y., Chapagain, A.K., Aldaya, M.M. and Mekonnen, M.M. (2009) Water footprint manual: State of the art 2009, Water Footprint Network, Enschede, the Netherlands.

ITC (2006). PC-TAS version 2000-2004 in HS or SITC, CD-ROM. Geneva, International Trade Centre.

IWMI (2007). Water for Food, Water for Life: A Comprehensive Assessment of Water in Agriculture. London, Earthscan.

Smakhtin, V., C. Revenga and P. Döll (2004). Taking into account environmental water requirements in global-scale water resources assessments. Comprehensive Assessment Research Report 2. Colombo, Sri Lanka, Comprehensive Assessment Secretariat.

Soth, J., Grasser, C., Salerno, R. (1999). The Impact of Cotton on Fresh Water Resources and Ecosystems: A Preliminary Analysis. WWF, Gland, Switzerland.

TCCC and TNC, 2010. Product water footprint assessments: Practical application in corporate water stewardship, The Coca-Cola Company, Atlanta, USA / The Nature Conservancy, Arlington, USA.

UNESCO-WWAP (2003). Water for people, water for life – United Nations World Water Development Report. Paris, UNESCO Publishing.

USDA. (2004). “Cotton: World markets and trade.” Retrieved 4 August, 2004, from http://www.fas.usda.gov/cotton/circular/2004/07/CottonWMT.pdf.

Wackernagel, M. and W. Rees (1996). Our ecological footprint: Reducing human impact on the earth. Gabriola Island, B.C., Canada, New Society Publishers.

Wackernagel, M. and L. Jonathan (2001). Measuring sustainable development: Ecological footprints. Mexico, Centre for Sustainability Studies, Universidad Anahuac de Xalapa.

The water footprint in brief

THE WATER FOOTPRINT

The water footprint reveals the hidden water in our consumption of goods and services

THE WATER FOOTPRINT OF THE AVERAGE BELGIAN

It's very high: 7,400 litres per person per day, equivalent to around 90 bathtubs.

IMPACT ON OTHER COUNTRIES

75% of Belgium's water footprint is external: it is associated with (virtual) imported water from outside the country.

TOWARDS SOME SOLUTIONS

Solutions are presented for authorities, companies and the general public.

WWF

Why we are here

To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony and nature.

ecolife | Loterie Nationale créateur de chances