THE PALM OIL STORY

Facts and Figures

EUROPEAN PALM OIL ALLIANCE

Palm oil offers a good balance between the nutritional composition and taste and texture of a product. In this brochure you will find information and references on the nutritional composition, value and effect of palm oil in the diet. It also explains how palm oil is sourced from palm fruit; stresses the importance of sustainable production, and explains how palm oil can be used in different food products.

CONTENTS

WHAT IS PALM OIL?

Palm oil is the most widely-used vegetable oil in the world. Palm fruit oil, generally known as palm oil, is produced from the pulp of the fruit of the oil palm tree (Elaeis Guineensis). This tropical fruit is reddish in colour because of a high beta-carotene content. The fruit is about the size of a large olive. The fruit has a single seed or kernel, which is used to produce palm kernel oil. Each palm fruit contains about 30-35 per cent oil. Palm fruit oil and palm kernel oil differ significantly in their fatty acid composition, but have the same botanical origin.

Provided by nature

The oil palm tree grows in regions around the equator. It is a tropical tree with leaves about 5 metres long. Originally found in West africa, the oil palm tree is now mostly cultivated in Indonesia and Malaysia, the world's largest palm oil producing nations.

From a tropical climate

Nature plays a big part in the palm oil story. What the tree loves above all, is sun and humidity. It thrives on plenty of sunshine, temperatures ranging between 24 and 32 degrees centigrade and rainfall evenly distributed throughout the year. Therefore, the most suitable areas for cultivation are located between ten degrees north and south from the equator. Apart from Indonesia and Malaysia there is an increase in palm oil production in other parts of the world including South and Central America, Thailand and Western Africa.

DID YOU KNOW?

Palm oil and palm kernel oil represent 40 per cent of the global vegetable oil production

73 million tons of palm oil is produced annually

One palm tree produces 40 kilogrammes of palm oil every year

One hectare of oil palm trees can produce 3.8 tons of oil each year

Oil palm accounts for 7 per cent of all the cultivated land for vegetable oils globally, but has the highest output, producing 40 per cent of all oils and fats

Indonesia and Malaysia supply 84 per cent of the palm oil used globally but more and more palm oil is imported from Latin America

In Indonesia and Malaysia together, approximately 4.5 million people earn a living from palm oil

The use of palm oil in human nutrition dates back many thousands of years

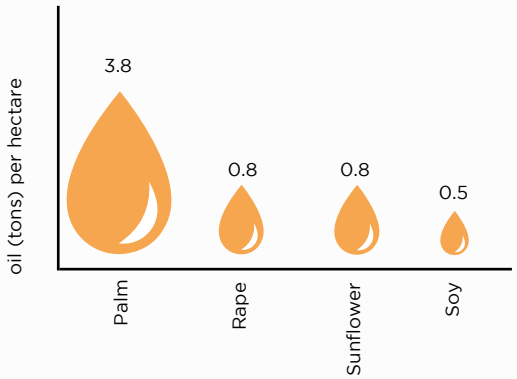
PALM OIL PRODUCTION

The oil palm tree is the most efficient oil crop in terms of land use. It has the highest yield compared to other oil crops per hectare of land. When the oil palm trees are three to four years old the fruits are harvested.

Global palm oil production has increased from 15.2 million tons in 1995 to 72.8 million tons in 2018. This is the highest production volume of all vegetable oils, exceeding the second biggest oilseed crop by more than 10 million tons. This volume is mainly produced by Indonesia (57 per cent) and Malaysia (27 per cent). There has also been a marked increase in palm oil production in other parts of the world. Most of the additional volume is generated in South and Central America (4.5 million tons), Thailand (2.8 million tons) and Western Africa (2.7 million tons).

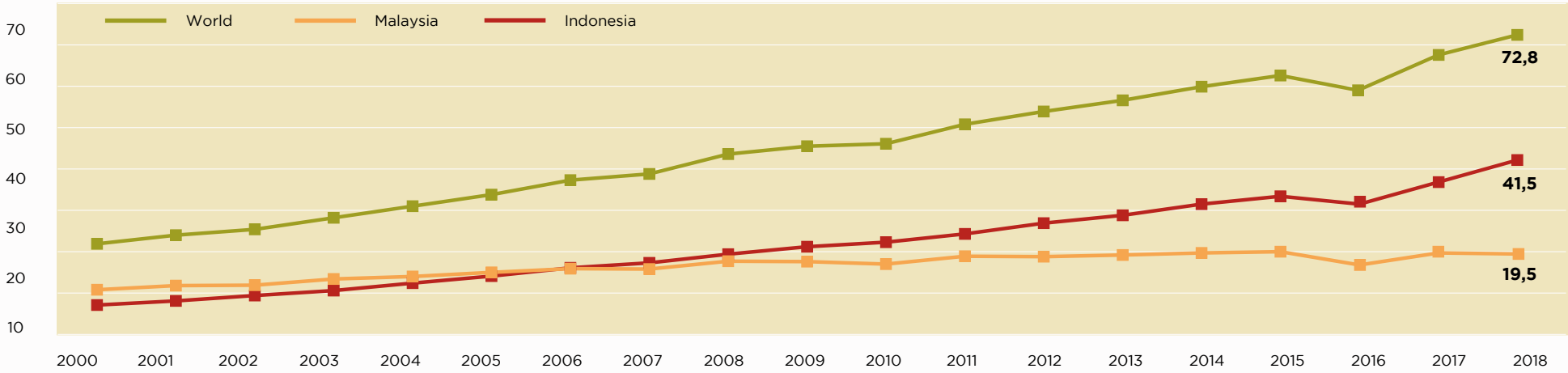
A highly efficient crop (Oil World 2019)

Highest yield

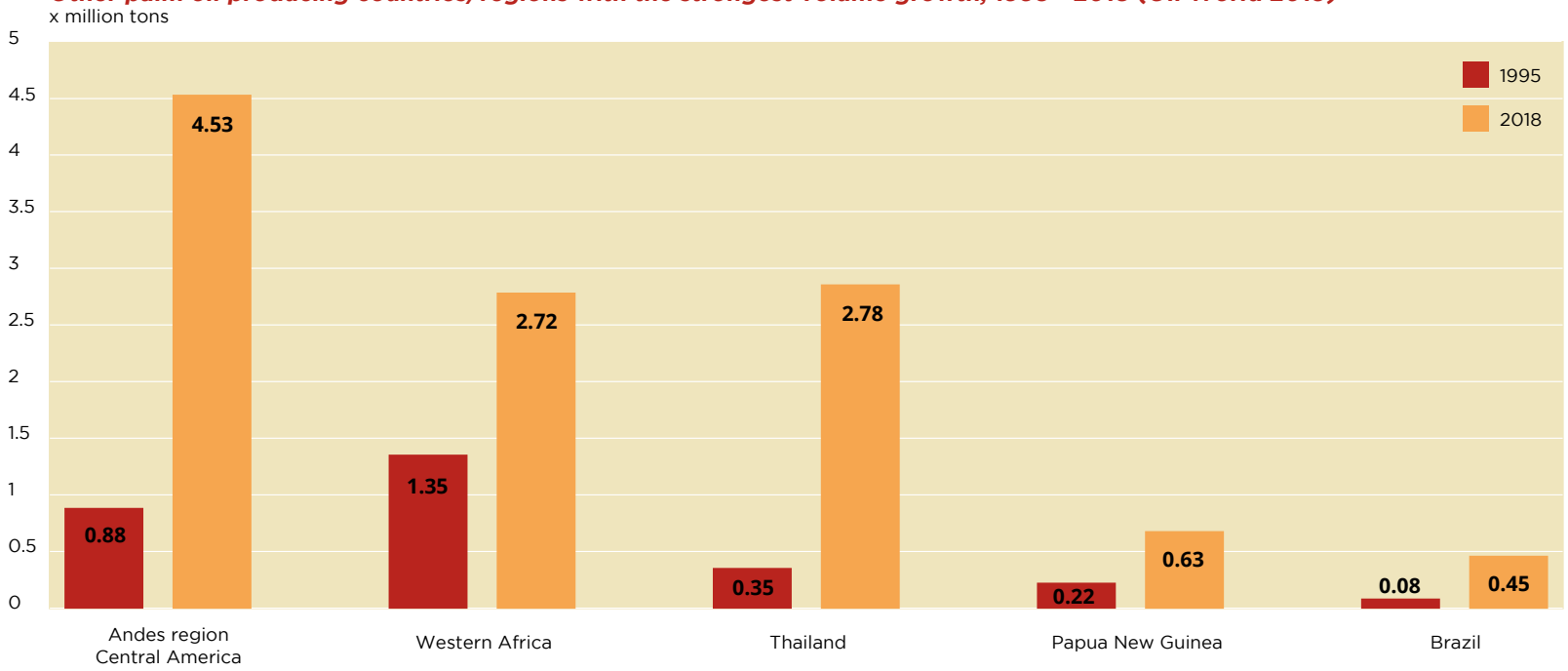


Global production and major origins of palm oil, 2000 - 2018 (Oil World 2019)

x million tons



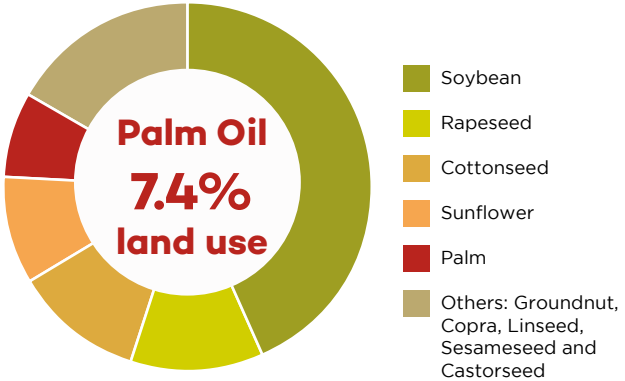
Other palm oil producing countries/regions with the strongest volume growth, 1995 - 2018 (Oil World 2019)



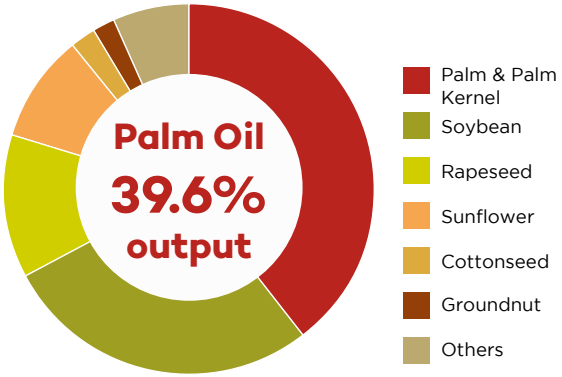
Among major oilseed crops, oil palm accounts for the smallest percentage (7.4 per cent) of all the cultivated land for oils and fats globally, but produces the largest percentage (39.6 per cent) of total output. It uses less than half the land required by other crops (such as sunflower, soybean or rapeseed) to produce the same amount of oil.

Despite these advantages, the impact of oil palms growing on High Conservation Values Areas, peat land, and former tropical forests, are issues that need to be adequately addressed. Production and use of sustainable palm oil will help to maintain or enhance biological, ecological and social values in the countries of origin.

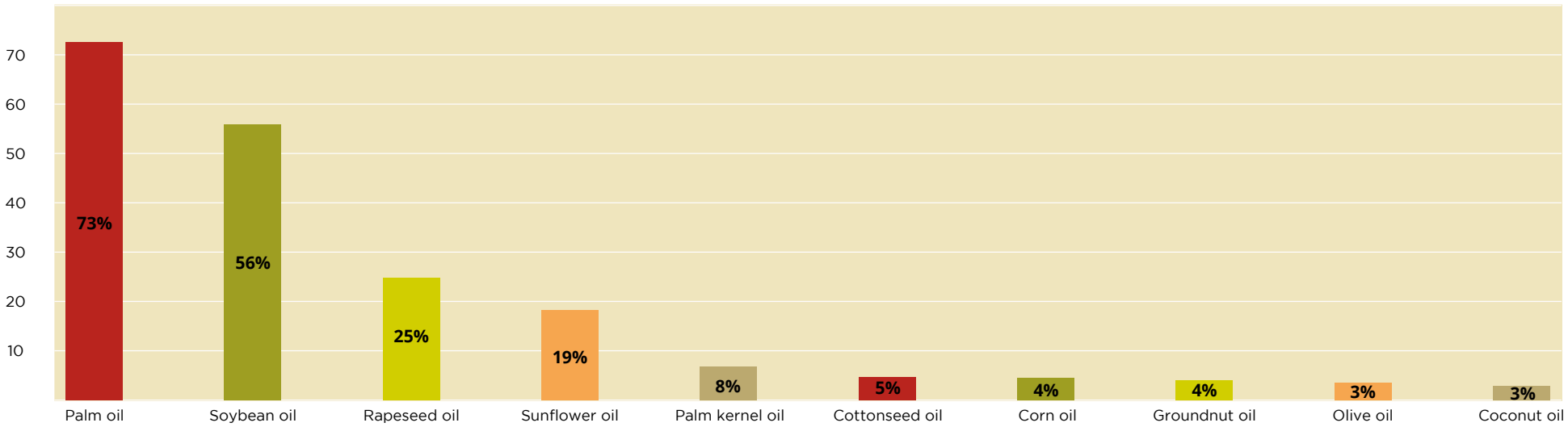
Major oilseeds: Area in 2018 (Total is 288.7 million hectares) (Oil World 2019)



Global production of oils and fats in 2018 (Total is 203.3 million tons) (Oil World 2019)



World production of major vegetable oils in 2018 (Total is 200.8 million tons) (Oil World 2019)



SUSTAINABLE PALM OIL

Oil palms are grown on both large-scale plantations and small-scale family farms. The challenge of their sustainable cultivation is two-fold: achieve the highest yields while impacting nature as little as possible. As a result of population and prosperity growth in countries such as China and India, the demand for palm oil continues to grow strongly. Palm oil production is expected to grow to a global level of more than 85 million tons by 2025. In most palm oil producing countries, palm oil trade has the potential to contribute significantly to economic growth and poverty reduction.

The long-term focus

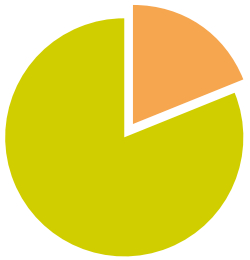
With this global rise in the demand for palm oil, the areas of land dedicated to palm oil cultivation has expanded rapidly. The challenge is to ensure that the expansion takes place sustainably, with respect for people and nature in countries with some of the most biodiverse regions of the planet. Deforestation and the decrease of carbon stocks (areas which retain a large amount of carbon) are serious issues. If not properly managed, large-scale palm oil productions can adversely affect valuable nature, cause infringements of the land rights of the local population and may lead to excessive use of pesticides.

Sustainable palm oil

In response to the urgent and pressing need to address these concerns and meet global demand for sustainably produced palm oil, a group of companies and NGOs joined forces in 2004. They established the first sustainability standard to certify the production and use of sustainable palm oil and founded the Roundtable on Sustainable Palm Oil (RSPO).

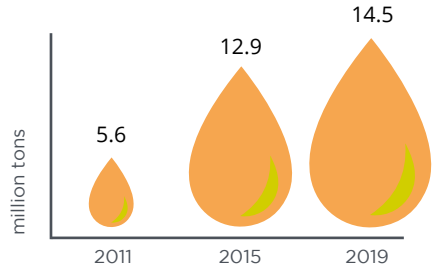
RSPO is a not-for-profit association that unites stakeholders from seven sectors of the palm oil industry: palm oil growers, palm oil processors or traders, consumer goods manufacturers, retailers, banks and investors, environmental and nature conservation NGOs and social or developmental NGOs. Other sustainability standards such as the International Sustainability & Carbon Certification (ISCC) also have a certification system for sustainable palm oil.

Indonesia and Malaysia have also developed their own standards for certified sustainable palm oil. The respective Indonesian Sustainable Palm Oil (ISPO) and Malaysian Sustainable Palm Oil (MSPO) are important steps towards a more sustainable palm oil supply chain.



19% of the global palm oil production is RSPO certified (2019)

Annual RSPO certified production



European initiatives for sustainable palm oil

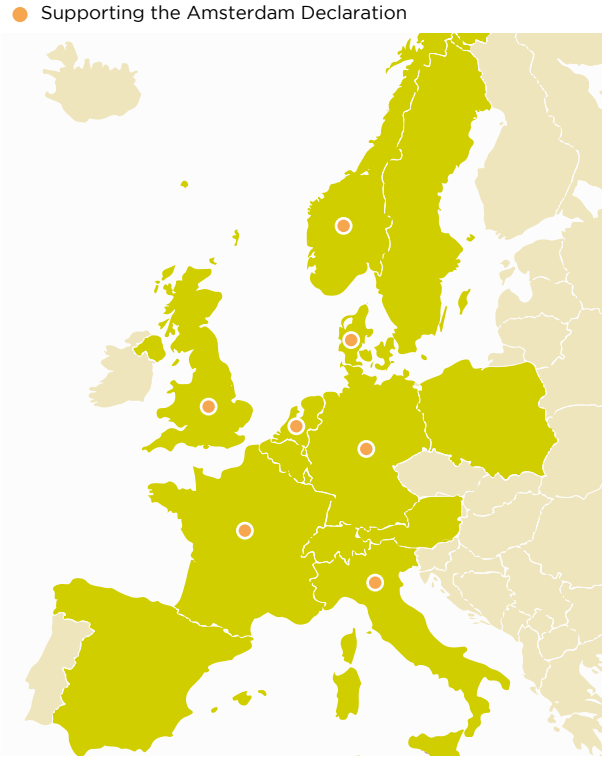
To increase the uptake of sustainable palm oil it is essential for industries in the palm oil supply chain to join forces. To this end, companies and sector associations are working together in 'national alliances on sustainable palm oil'. These alliances are now widespread in Europe, committing many companies and sectors to use sustainable palm oil. All national alliances have a commitment to use 100% certified sustainable palm oil, with many alliances also moving towards additional criteria and the continuous improvement of certification standards.

New Principles and Criteria RSPO 2018

- **No deforestation**
- **No new planting on peat**
- **Low pesticides usage**
- **Reinforced protection of human and labour rights**
- **Fire prevention**
- **Smallholder standard**

The commitment aims to increase and align the demand for sustainable palm oil in Europe by working together with the European sector associations organised in the European Sustainable Palm Oil Advocacy Group (ESPOAG) and certification standards such as the RSPO. The commitment is also supported by seven European governments in the Amsterdam Declaration in Support of a Fully Sustainable Palm Oil Supply Chain by 2020.

Current national initiatives for sustainable palm oil in Europe (in green)

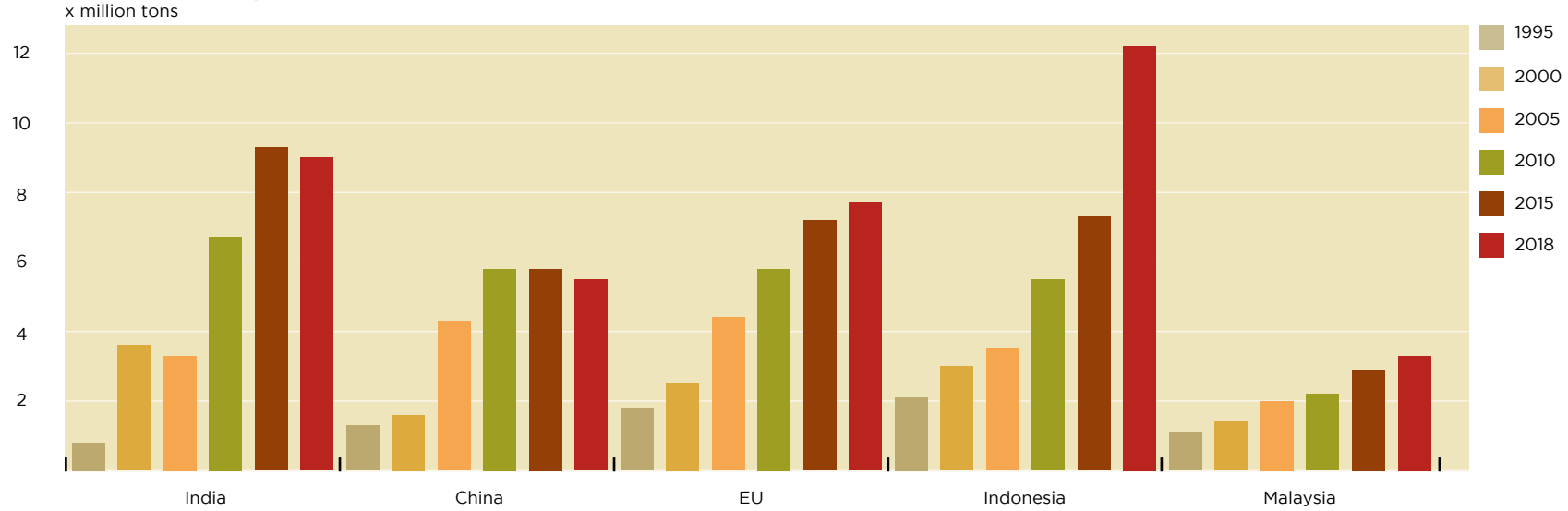


PALM OIL CONSUMPTION

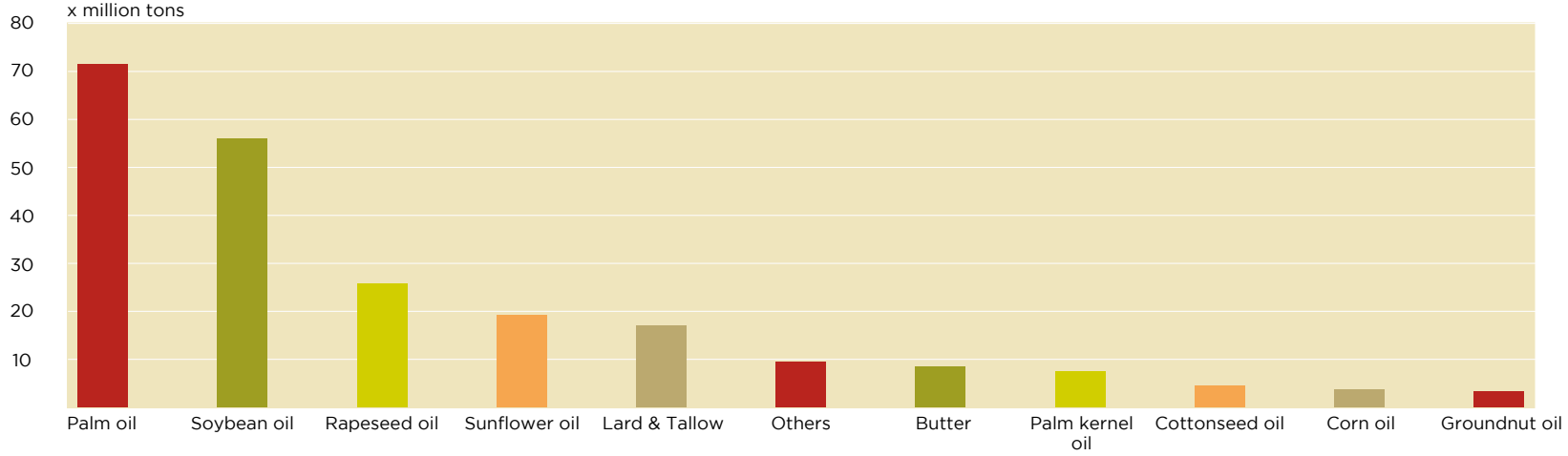
Global consumption rose from 14.6 million tons in 1995 to 70.5 million tons in 2018, making it the most consumed oil in the world.

The main consumers of palm oil are China, India, Indonesia and the European Union. India, China and the EU do not produce palm oil and their demand is entirely met by imports. In 2018, India, China and the EU accounted for 43.9 per cent of global imports.

Consumption major users of palm oil (Oil World 2019)



World consumption of oils and fats in 2018 (total 228.5 million tons) (Oil World 2019)



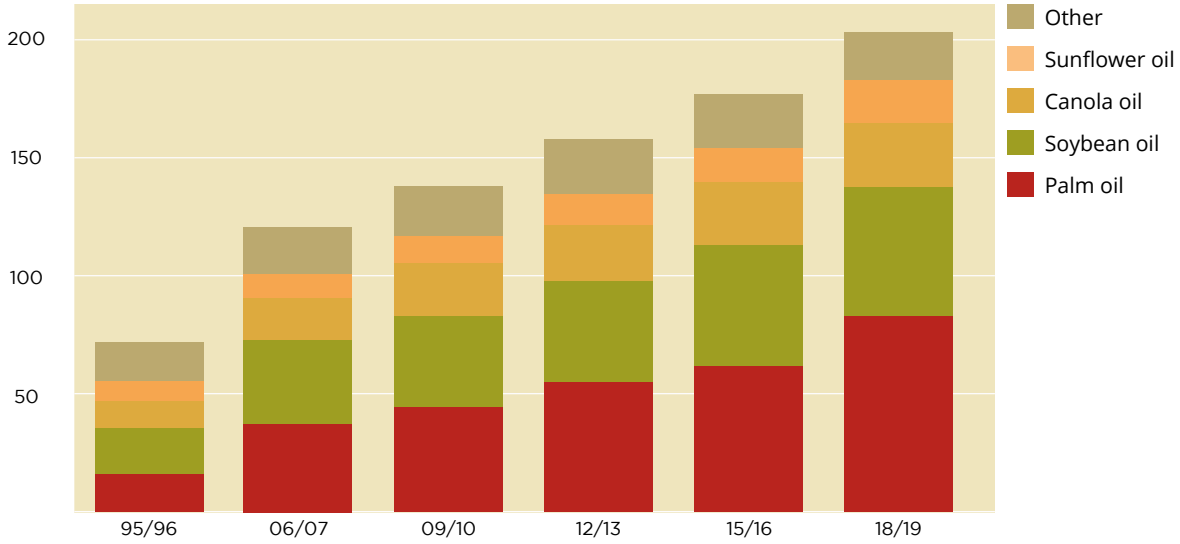
PALM OIL USES

Palm oil can be used both as a crude oil as well as in the refined form. Only one quarter of the palm oil and palm kernel oil worldwide is used as a crude oil. In Southeast Asia, Africa and parts of Brazil, crude palm oil is widely used for domestic cooking.

In Europe and the United States palm oil is mostly used in its refined form, which is odourless and pale yellow, making it a valuable ingredient providing texture and taste for a variety of products. Refined palm oil is used as an affordable ingredient in many food products, such as margarine, confectionery, chocolate, ice cream and bakery products. It is also widely used in non-food products such as soap, candles, and cosmetics.

Consumption vegetable oils worldwide (Oil World 2019)

x million metric tons



A VERSATILE INGREDIENT

Palm oil is widely used by food and non-food manufacturers because of its functional benefits, versatility and widespread availability. Palm oil has diverse functional properties. It provides a semi-solid consistency and long-term stability. It also performs well at high cooking temperatures. Its smooth and creamy texture and absence of smell make it a perfect and affordable ingredient in many recipes, supporting flavour and texture.

FATTY ACID COMPOSITION

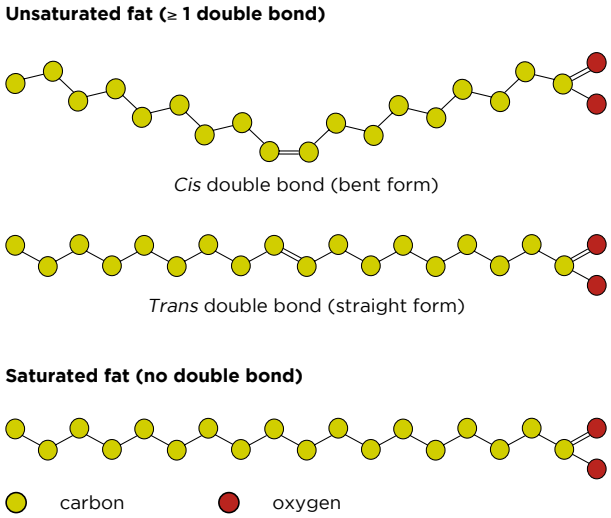
All oils and fats, irrespective of their origin, contain both saturated and unsaturated fatty acids. The ratio depends on the type of oil or fat. The term saturated fatty acid is often written in shorthand as SAFA. In a saturated fatty acid the carbon atoms are connected with only single bonds, which enables the fatty acids to pack closely together. Oils and fats which are rich in saturated fatty acids will have a higher melting point and a denser structure and thus will be more solid at room temperature.

Unsaturated fatty acids can be either mono-unsaturated (MUFA) or poly-unsaturated (PUFA). Unsaturated fatty acids contain one or more double bonds in their carbon chain. The double bond introduces a kink in the carbon chain, which makes it more difficult for the fatty acids to pack tightly. Oils which are rich in mono- or poly-unsaturated fatty acids are therefore often liquid at room temperature, like cooking oils.

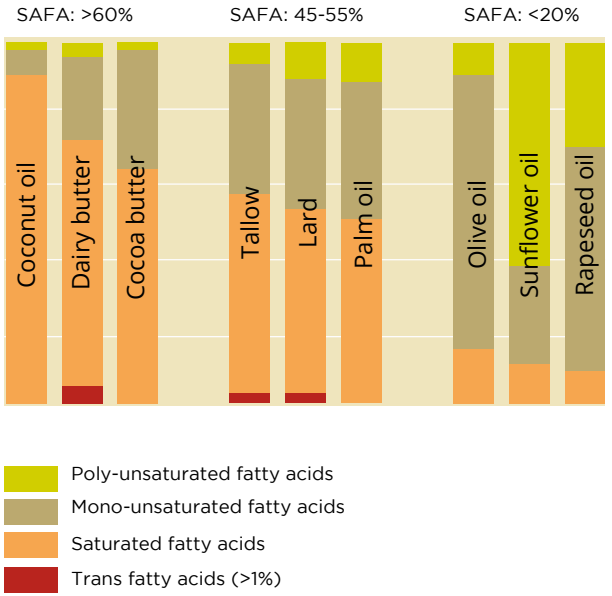
Trans fatty acids (or TFA) are unsaturated fatty acids in which the carbon chain extends from opposite sides of the double bond. This results in a straight molecular structure with similar functional properties as SAFA.

On average, palm oil has almost equal amounts of saturated and unsaturated fatty acids. The proportion of saturated fatty acids is lower than the saturated fatty acids content of other fats of similar application, such as coconut oil, butter and cocoa butter. Palm oil only contains very little amounts of trans fatty acids (<1 per cent of the total fat content). Because of its plant origin, variability in fatty acid composition may occur due to geographical factors, for example soil, weather and the type of oil palm tree.

Molecule stucture fatty acids



Fatty acid content in different fats and oils



Fatty acid content in palm oil

BENEFITS OF USING PALM OIL

Oils and fats serve many functions in the food we eat. In food products, palm oil is often combined with other oils and fats, which together determine the fatty acid composition and functionality of the end product. Palm oil offers versatile and functional benefits.

- **Stability at high cooking temperatures:** palm oil maintains its characteristics even under high temperatures. It performs better at high temperatures than some other oils and fats.
- **Stability over time:** palm oil is very suitable for use in products with a long self life. Products containing palm oil maintain their flavours and structure – such as crispiness or crunch – for a longer period of time.
- **Neutral taste and smell:** palm oil can be used in many different foods without affecting their taste or smell.
- **Solid or semi-solid state at room temperature:** a higher solid content, as a result of the presence of saturated fat, is needed for the physical and chemical properties of certain food products; for example, margarine without saturated fat would be liquid at room temperature.
- **Smooth and creamy texture:** palm oil is a very suitable solution for increasing solidity and improving the consistency of the product. Food products with palm oil have an excellent mouth feel fulfilling specific characteristics needed in different products. For example, palm oil is responsible for the smooth and creamy texture and spreadability in margarine and chocolate spreads and the crispiness and crunch in biscuits and croissants.

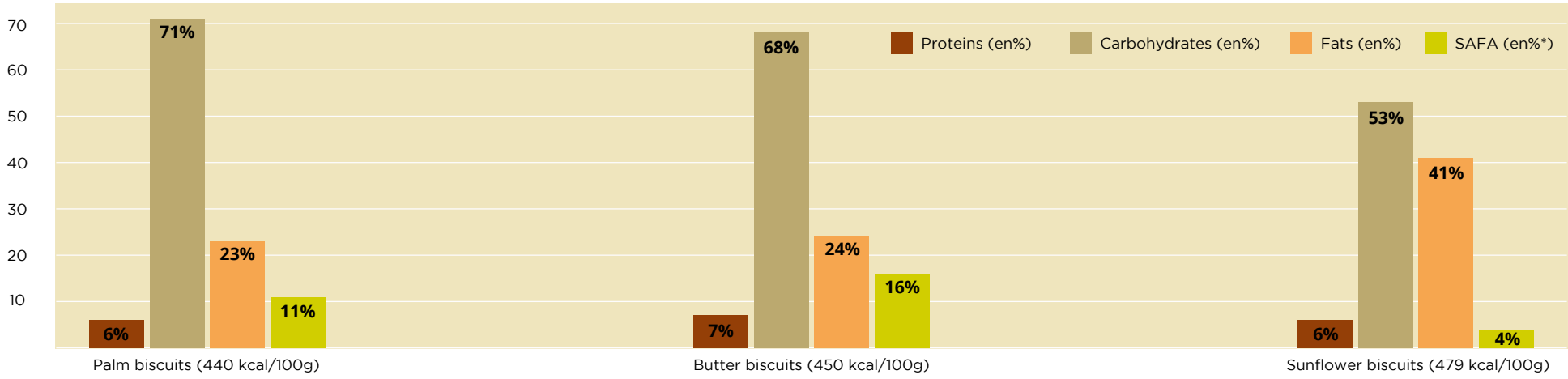
ALTERNATIVE TO TRANS FAT

One of the reasons for the increase in palm oil use in the food industry in the nineties is the move away from using unhealthy trans fats. Because palm oil is naturally smooth and stable, it is a good replacement for partially-hydrogenated fat containing trans fatty acids.

In many food applications, the use of palm oil and palm oil fractions has been instrumental in lowering trans fat levels. The successful reduction of trans fatty acids in margarine for example, has been predominantly the result of using specific combinations of palm oil and liquid oils.

The choice of fats and oils influences the nutritional composition (energy percentage) of commercially available plain biscuit

Energy % in final products



PART OF A BALANCED DIET

Everyone needs fat in their diet. Fat is a source of energy and some of its fatty acids provide essential building blocks for the cells in the body. Fats also help the body absorb the vitamins A, D, E and K. Not all fat that is stored in the body originates from fat in the diet. It can also be produced by the body itself.

FAT RECOMMENDATIONS

Fats are a major energy source for the body, along with carbohydrates and proteins. To achieve a healthy diet, the European Food Safety Authority (EFSA) advises that a minimum of 20 per cent and a maximum of 35 per cent of daily energy intake should come from fat (EFSA 2010, 2017). Similar recommendations are provided by the 2010 guidelines of the Food and Agriculture Organization of the United Nations (FAO-WHO 2010), which recommends that a minimum of 15 per cent and maximum of 35 per cent of the daily energy intake should come from fat.

WHO Recommendations (WHO/FAO 2010)		
Dietary ingredient	Abbreviation	% of energy
Total fat		15 - 35
Saturated fatty acids	SAFA	< 10
Mono unsaturated fatty acids	MUFA	by difference
Poly unsaturated fatty acids	PUFA	6 - 11
• Omega-6 fatty acids	n-6 PUFA	2.5 - 9
• Omega-3 fatty acids	n-3 PUFA	0.5 - 2
Trans fatty acids	TFA	< 1

In 2019 the EU has issued a regulation maximizing the TFA content in consumer products at 2% on fat basis (as per 1st of April 2021).

SAFA recommendations

SAFA have important metabolic functions, but can be synthesized by the body and are not required in the diet. Reducing SAFA intake is a major focus of most dietary recommendations aiming to prevent chronic diseases including coronary heart disease (CHD). National and international dietary expert panels recommend that saturated fat consumption should not exceed 10 per cent (Germany, the Netherlands, the Nordic nations, FAO/WHO 2010) to 12 per cent (France) of the overall daily energy intake. EFSA advises SAFA intake should be as low as possible within the context of food based dietary guidelines (EFSA 2010). Despite the well-established guidelines, the SAFA intake is still beyond recommendations in many European countries (Harika 2013).

Replacing SAFA

Without paying attention to what SAFA is replaced with, SAFA reduction may not reduce chronic disease risks. Recent meta-analyses of prospective cohort studies indicate that consumption of SAFA in itself is not associated with increased risk of Cardiovascular disease (CVD) (Siri-Tarino 2010, Chowdhury 2014, de Souza 2015). However, modelled SAFA replacement by PUFA, is related to lower coronary risk (Jakobsen 2009).This has been confirmed by randomized controlled trials.
In 2015 a systematic review concluded that lowering SAFA reduced the risk of cardiovascular events by on average 17%. Replacing SAFA with PUFA appeared protective of cardiovascular events, while replacing with carbohydrates was not beneficial (Hooper 2015).
The FAO states that there is convincing evidence to conclude that replacing SAFA with PUFA decreases the risk of CHD. There is probable evidence that replacing SAFA with largely sugars and rapidly digested starches has no benefit on CHD, and may even increase the risk of coronary heart disease and favour metabolic syndrome development (FAO/WHO 2010).

Individual saturated fats

Individual Saturated Fatty Acids (SAFA) have specific effects on blood lipids (Mensink 2016). However, there are few studies that investigated the effect of individual SAFA on the risk of specific diseases. By nature, specific SAFA always occur as a mix and different fats and oils have a great variability in fatty acid composition. This makes it difficult to draw conclusions about the impact of specific fatty acids on health resulting in differences in dietary recommendations. In France recommendations on SAFA intake differentiate between the individual fatty acids (ANSES 2011). According to the Health Council of the Netherlands scientific knowledge is inadequate for establishing dietary reference intakes for all individual fatty acids separately (Health Council of the Netherlands 2001).

PALM OIL AND HEALTH

From a nutritional point of view, there is no indication that consumption of palm oil in a balanced diet is related to any specific health concern. The relation between nutrients and health must be considered within the whole diet and not in terms of single food items.

Compared to other fats and oils, palm oil has average levels of saturated fats. A meta-analysis on the effect of substituting palm oil with other fats and oils on validated biomarkers of heart disease, showed that substituting palm oil by other fats resulted in a mix of favorable and unfavorable changes in markers of CHD and CVD. Clear favorable changes occurred when palm oil replaced trans fatty acids (Fattore 2014).

Palm oil intake

In food products palm oil is often used in combination with other fats and oils which together determine the fatty acid composition of the product and eventually the effects on health. No Europe-wide data exists on palm oil consumption. In France, in 2013 palm oil consumption was 2.7 grams per day representing approximately 4 per cent of the total intake of the SAFA in adults (CREDOC 2014).

The risk of being overweight

Weight management is crucial for overall well-being and health. The risk of being overweight is one of the concerns associated with the total amount of fat in food. Reviews show that caloric restriction rather than specific macronutrient restriction is the key determinant of weight loss (Mozaffarian 2011).

The 2010 FAO/WHO Expert Consultation on Fats and fatty acids in Human Nutrition indicated that energy balance is critical to maintaining healthy body weight and ensuring optimal nutrient intakes, regardless of macronutrient distribution of energy as per cent total fat and per cent total carbohydrates (FAO/WHO 2010).

HEALTHY LIFESTYLE

In order to maintain good health, we need to focus on a healthy diet and lifestyle. Simply put, a healthy lifestyle is based on three elements: variation in foods and meals, a balanced energy intake and enough physical activity. A healthy diet includes ample fruits and vegetables, a balanced carbohydrate, fat and protein intake, and avoiding high intake of salt, refined carbohydrates, saturated fats and trans fats.

All in all

A healthy and balanced diet relies on variation and moderation. Foods high in saturated fats require moderate consumption. From a nutritional perspective, the replacement of palm oil with other fats and oils in food products may lead to both favorable and unfavorable effects. Current consumption levels of palm oil, as suggested by data from France should not raise a particular concern.

Substituting palm oil with other vegetable oils or animal fats will require the use of more land for equivalent tonnage. This may prove counterproductive for the environment. From the environmental perspective, it is important to focus on sustainable production of palm oil. If we manage to produce and source palm oil responsibly, palm oil may largely answer the anticipated growth in global demand for fats and oils.

A healthy lifestyle is based on three elements: variation in foods and meals, a balanced energy intake and enough physical activity

ABOUT EPOA

As a business initiative, the European Palm Oil Alliance (EPOA) has been committed to create a science based and balanced view on the nutritional and sustainability aspects of palm oil. EPOA communicates the full palm oil story and facilitates the European debate on palm oil.

In the face of environmental or social problems related to palm oil, we take our responsibility and cooperate throughout the supply chain to solve the problems instead of moving away. We encourage farmers, manufacturers and supermarkets to switch to sustainable palm oil. Our purpose is to make sustainable palm oil production – and consumption – a shared responsibility. Working with the private sector, NGOs and the government we lead the public debate on the role of palm oil in food and promote the importance of sustainable palm oil in achieving the UN Sustainable Development Goals. We all have to act to make sustainable palm oil the norm.

Current participants of the European Palm Oil Alliance are: Bunge Loders Croklaan, Cargill, Indonesian Palm Oil Association, Fedepalma, LIPSA, Malaysian Palm Oil Council, MVO - The Netherlands Oils and Fats Industry, Olenex, Sime Darby and Unigra.

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SCIENCE BASED

Our Scientific Advisory Panel

The European Palm Oil Alliance is supported by a Scientific Advisory Panel (SAP). The SAP was established in 2013 and provides independent insights, advice and guidance on nutrition issues and discussions related to palm oil. It is intended to safeguard the sound scientific base and ensure validity and reliability of communication and messaging.

The following European experts in nutrition and health participate in the SAP:

- Prof. dr. Jean Michel LeCerf (Institut Pasteur de Lille, France)
- Prof. dr. Sebastiano Banni (Universita degli Studi Cagliari, Italy)

REFERENCES

- ANSES. Actualisation des apports nutritionnels conseillés pour les acides gras. ANSES, May 2011
- CREDOC. Comportements et consommations alimentaires en France 2013. CREDOC operations for the French Alliance for Sustainable Palm Oil, October 2014
- Chowdhury R et al. Association of Dietary, Circulating, and Supplement Fatty Acids With Coronary Risk: A Systematic Review and Meta-analysis. Ann Intern Med. 2014;160(6):398-406
- De Souza RJ et al. Intake of saturated and trans unsaturated fatty acids and risk of all cause mortality cardiovascular disease, and type 2 diabetes: systematic review and meta-analysis of observational studies. BMJ. 2015;351:h3978
- FAO-WHO. Fats and fatty acids in human nutrition. Report of an Expert Consultation. FAO Food and Nutrition Paper 2010; 91, ISBN 978-92-5-106733-8
- Fattore E et al. Palm oil and blood lipid–related markers of cardiovascular disease: a systematic review and meta-analysis of dietary intervention trials. Am J Clin Nutr. 2014;99(6):1331-1350
- Harika RK et al. Intake of fatty acids in general populations worldwide does not meet dietary recommendations to prevent coronary heart disease: a systematic review of data from 40 countries. Ann Nutr Metab 2013;63(3):229-238
- Health Council of the Netherlands. Dietary Reference Intakes: energy, proteins, fats, and digestible carbohydrates. The Hague: Health Council of the Netherlands, 2001; publication no. 2001/19ER
- Hooper L et al. Reduction in saturated fat intake for cardiovascular disease. Cochrane Database Syst Rev. 2015;10(6):CD011737
- Jakobsen MU et al. Major types of dietary fat and risk of coronary heart disease: a pooled analysis of 11 cohort studies. Am J Clin Nutr. 2009;89(5):1425-32
- Mensink RP. Effects of saturated fatty acids on serum lipids and lipoproteins: a systematic review and regression analysis. Geneva: World Health Organization; 2016.
- Mozaffarian D et al. Components of a cardioprotective diet. New insights. Circulation 2011; 123(24):2870-2891
- Siri-Tarino PW et al. Meta-analysis of prospective cohort studies evaluating the association of saturated fat with cardiovascular diseases. Am J Clin Nutr 2010 91(3):535-546

- www.eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R0649&from=EN
- www.efsa.europa.eu/en/interactive-pages/drvs
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