

Transforming European food and drink policies for cardiovascular health

September 2017

SUMMARY



fighting heart disease
and stroke
european heart network

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European Heart Network

The European Heart Network (EHN) is a Brussels-based alliance of heart foundations and like-minded non-governmental organisations throughout Europe, with member organisations in 25 countries. EHN plays a leading role in the prevention and reduction of cardiovascular diseases, in particular heart disease and stroke, through advocacy, networking, capacity-building and patient support, so that they are no longer a major cause of premature death and disability throughout Europe.

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Turkish Heart Foundation

Acknowledgements

The European Heart Network would like to thank the contributing experts, EHN's Nutrition Expert Group and EHN member organisations for their invaluable input into this paper.

CONTRIBUTING EXPERTS

This summary paper is adapted from a full-length paper, which includes a number of papers contributed by subject experts. The papers are available in the full-length report and for download individually. These papers have been adapted to produce the relevant sections in this summary paper. EHN is most grateful to the following experts for their contributions to the full-length version:

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Executive summary

Despite considerable progress in tackling cardiovascular disease (CVD), it remains the leading cause of death and a major cause of illness and disability for men and women in Europe. Dietary risks are responsible for around half of the death and disability caused by CVD at an estimated cost of €102 billion in the European Union (EU) alone (Chapter 1).

Since the European Heart Network (EHN) published its last paper on *Diet, Physical Activity and Cardiovascular Disease Prevention in Europe* in 2011, there have been many major developments in both the scientific arena and the policy landscape.

A review of the recent scientific developments and an in-depth look at some of the recent media reports of ‘controversies’ on diet and health show that, generally speaking, the evidence on the links between diet and CVD has strengthened, rather than weakened, in the last few years (Chapter 2). This paper presents a set of population goals, revised to take the new evidence into account (Annex 1); the goals provide clear pointers towards a cardiovascular health-promoting diet for Europe.

Taken together, these population goals should translate to a cardiovascular health-promoting diet that has a low energy density;ⁱ this is important for weight maintenance, and for the prevention of overweight and obesity. A cardiovascular health-promoting diet means a shift from an animal-based diet to a more plant-based diet. It includes vegetables, fruit and berries in abundance. Whole grain products, nuts and seeds, fish, pulses, low-fat dairy products are also important, as are non-tropical vegetable oils in modest amounts. This dietary pattern limits consumption of red meat, processed meat products and foods or drinks which are low in vitamins, minerals and dietary fibre and/or high in free sugars, saturated/trans fats or salt. A diverse and balanced diet covers the need for nutrients, and food supplements are

rarely needed. It now falls to governments to translate these population goals into clear guidance about foods, taking into account the typical diet in the country.

In a perfect world, people would buy and eat different foods to reflect this evidence and advice, and markets would respond to the changes in demand (Chapter 3). In today’s complex food systems, however, the ‘market’ does not function perfectly and there are many other forces – often powerful – driving the food supply in addition to consumer demand. Major economic and policy drivers determine what food is produced, what is imported and how foods are marketed. Many of these global and external factors are well beyond the reach of individual governments, posing real challenges for policymakers. The complex picture also means, however, that there are many different points along the food chain where policymakers can take action to improve diets.

In the six years since EHN’s last paper was published, there is more recognition of how important it is for governments to take action to improve the food supply and food environments. While some countries have adopted binding or voluntary measures, a great deal more progress is urgently needed to implement effective food and drink policies for preventing diet-related CVD (Chapter 4).

To that end, three overarching recommendations and three clusters of specific recommendations are proposed (see figure on facing page).

EHN calls for rapid and full implementation of these recommendations in order to realise the vision for every European – irrespective of the place or socio-economic circumstances into which they are born – to be able to live free from avoidable diet-related CVD, and thus be able to have a productive working life and many years of active retirement free from cardiovascular ill-health or disability.

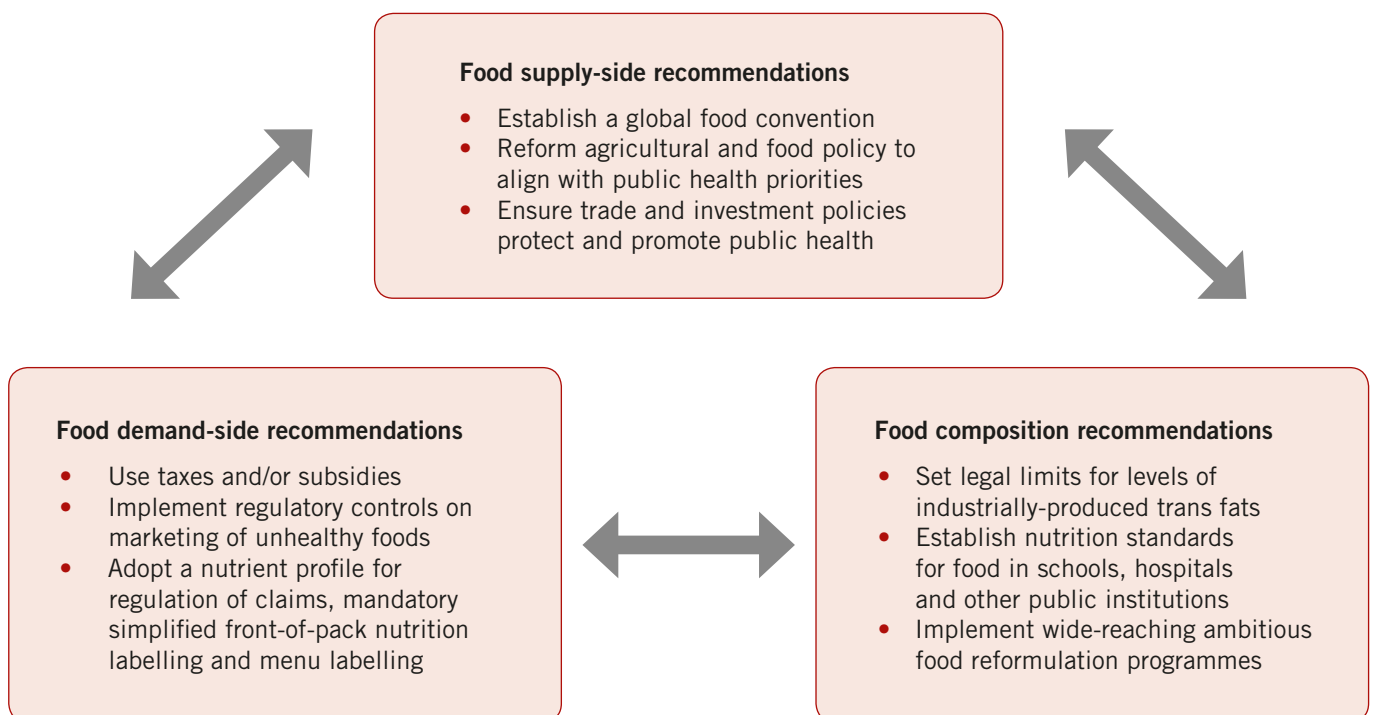
i Energy density is the amount of energy (calories) per gram of food.

EHN recommendations for food and drink policies for cardiovascular health

Implement policies to tackle cardiovascular health inequalities in Europe

Ensure that robust mechanisms for nutrition governance are in place and fit-for-purpose

Develop an integrated health and environment approach to food systems and promote health-environment win-wins in food-based dietary guidelines



Introduction

Despite dramatic progress in tackling premature deaths from heart disease and stroke in recent decades, cardiovascular disease (CVD) remains a leading cause of death and ill-health in Europe. Unhealthy diets, overweight and obesity are major contributors to heart disease and stroke – accounting for around half of the burden of deaths and disability due to CVD.

The good news is that most CVD can be prevented and dietary risk factors are avoidable. Policies and actions to reduce exposure to dietary risk factors can, and do, work. Cardiovascular death rates dropped, for example, after legal limits on the amount of trans fats in foods were introduced in Denmark. Government-led salt reduction campaigns have been followed by reductions in average salt intakes and in blood pressure levels. The case for investing in prevention is compelling.

In the years since the European Heart Network (EHN) published *Diet, Physical Activity and Cardiovascular Disease Prevention in Europe* in 2011, there has been greater global recognition of the urgency of tackling non-communicable diseases (NCDs) and of improving diets. There is better understanding of the need for government action to improve the food supply and food environments, as well as to inform and educate about healthy diets. Political and public acceptance of government measures – such as taxes on sugary drinks or restrictions on the advertising of unhealthy foods to children – appears to have grown.

Nonetheless, much more progress is necessary. If current trends continue, many European countries will miss agreed global targets to halt the rise in obesity or diabetes, reduce salt intakes, increase breastfeeding or reduce physical inactivity by 2025. One in three 11 year olds in the European region is overweight. Breastfeeding rates are among the lowest in the world. Ten years on from the introduction of the first ‘ban’ on trans fats in Denmark – and despite clear evidence of real health gains – very few countries have introduced similar laws, and the European Commission is only now considering an EU-wide measure. Few Europeans see clear

colour-coded nutrition information on the front of food packs, more than a quarter of a century after health and consumer advocates first called for such labels. Voluntary action by food manufacturers to lower salt levels in foods tends to be under-ambitious and there is little progress on reducing fats and sugar in foods. Millions of European children continue to be exposed to advertising for unhealthyⁱⁱ foods through television (despite widespread introduction of voluntary restrictions), online marketing and social media. While many countries have introduced some standards for school food, too many children are still able to access unhealthy meals and snacks at school. Similarly, hospitals often continue to serve or sell foods that can contribute to ill health.

Moreover, European countries and institutions are also being challenged by broader issues, such as how to ensure that healthy diets are also sustainable, or how to protect and promote them when trade agreements are in place.

EHN believes that every European has a right to a life free from avoidable CVD, including a productive working life *and* many years of healthy, active retirement. The specific vision for this paper is:

Every European – irrespective of the place or socio-economic circumstances into which they are born – has a right to a life free from avoidable diet-related cardiovascular disease.

The purpose of this paper, therefore, is to:

- Define a cardiovascular health-promoting diet, in the current European context, and set out specific population goals to help achieve that diet;
- Identify key areas for policy action to enable and support adoption of a cardiovascular health-promoting diet and, ultimately, achieve the vision outlined above.

This paper is a summary of a detailed report and the full-length version is available from <http://www.ehnheart.org/publications-and-papers/publications.html>

ii ‘Unhealthy’ relates to foods high in fat, sugars or salt, also referred to as HFSS foods.

1 Diet and cardiovascular disease – why action is needed

Key Messages

- Despite recent progress, CVD remains the leading cause of death for men and women in Europeⁱⁱⁱ and a leading cause of illness and disability. It accounts for 45% of all deaths and 23% of the years lost to death or disability across the region.
- More than 85 million people across Europe live with CVD and, in the EU alone, almost 49 million people live with CVD.
- In addition to the human loss and suffering, this burden brings devastating social and economic costs – costing the EU economy €210 billion a year in healthcare, lost productivity and informal care costs.
- Across Europe retirement ages are rising, but in many countries average healthy life expectancy – how long people can expect to live without any disability – is lower than these new or proposed statutory retirement ages.
- Dietary risks are a major contributor to CVD, responsible for 56% of all the years lost to disability or death from CVD in the European region. In the EU, dietary risks are responsible for 49% of the CVD burden^{iv}, at an estimated annual cost of €102 billion.
- The burden of death and disability due to CVD is very unevenly spread, both between and within countries in the European region.

1.1 A leading cause of premature death in Europe

Despite considerable progress in tackling CVD, it remains the leading cause of death for men and women in Europe^v and a leading cause of illness and disability. Every year, CVD accounts for 3.9 million deaths (45% of all deaths) in the European region, of which 1.8 million deaths (37%) are in the EU. The two most common forms of CVD – heart disease and stroke – are, respectively, the most common and second most common causes of death in both the European region and the EU.

This extraordinary burden is not, as some might say, an inevitable result of Europeans living longer than ever before. CVD is a leading cause of death in people who have yet to reach, or have recently reached, retirement age. For men, CVD is the main cause of death before the age of 65 in Europe, responsible for 31% of deaths. In women under 65, CVD is the second largest cause of death and accounts for 26% of all deaths.

Over the past 30 years, death rates from CVD have been declining in most northern and western European countries in both men and women. The trends in central and eastern countries have been less consistent, but CVD death rates have been falling since around 2000–2005.

1.1.1 A huge burden of illness and disability

For the 85 million people who live with CVD in Europe, this means living with illness for a long time. Popular belief is often that heart attack and stroke result in quick and painless deaths, but CVD is a major cause of years lived with disability.

In 2015, 64.7 million years were lost to death or disability^{vi} from CVD across Europe, 23% of the total (Figure 1). In the EU, CVD accounted for 26 million years (19%) of the years lost (Figure 2).

1.1.1.1 *The economic cost of cardiovascular disease*

In addition to the human loss and suffering, there are also devastating social and economic costs. Overall, CVD is estimated to cost the EU economy almost €210 billion per year – of this, just over half (€111 billion) is due to direct health care costs, over a quarter (€54 billion) to productivity losses and the remainder (€45 billion) to the informal care of people with CVD (Table 1).

iii Unless otherwise stated, all figures and graphics are from the following source: Wilkins E, Wilson L, Wickramasinghe K, Bhatnagar P, Leal J, Luengo-Fernandez R, Burns R, Rayner M, Townsend N (2017). European Cardiovascular Disease Statistics 2017, <http://www.ehnheart.org/cvd-statistics/cvd-statistics-2017.html>. European Heart Network, Brussels

iv Data from the Global Burden of Disease database (2015) <https://vizhub.healthdata.org/gbd-compare/>

v This report covers the European region, as defined by the World Health Organization. References to the European region or Europe, therefore, refer to the 53 countries in the wider European region. Where possible, figures are given for both the European region and the European Union.

vi Measured as Disability-Adjusted Life Years (DALYs), a method of calculating the overall burden of diseases.

Figure 1 Disability-adjusted life years lost by cause, 2015, European region

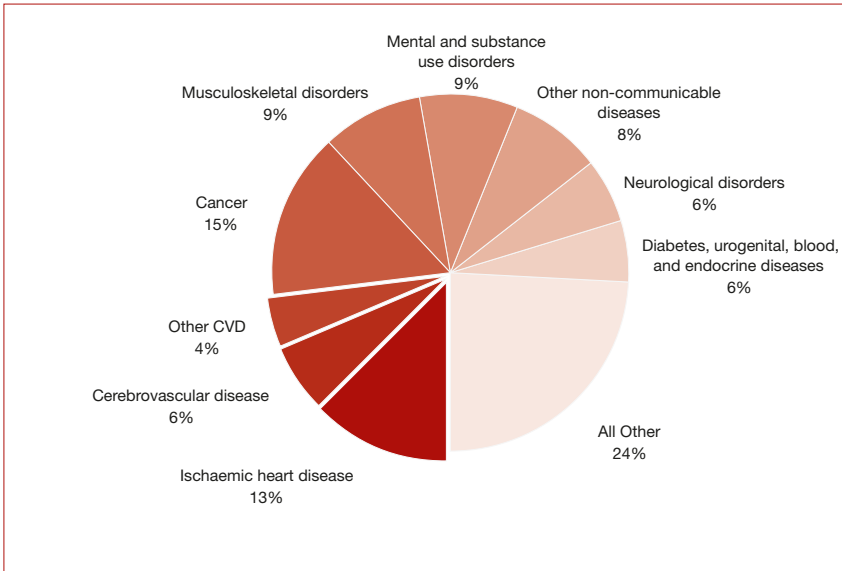


Figure 2 Disability-adjusted life years lost by cause, 2015, European Union

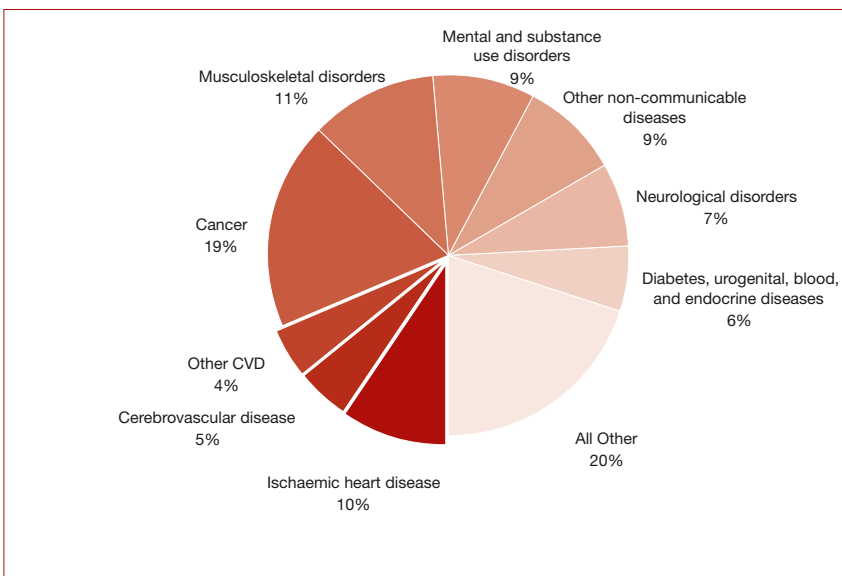


Table 1 Total cost of CVD, heart disease and stroke, 2015, European Union

| | CVD | | Heart disease | | Stroke | |
|------------------------------------|---------------|------------|---------------|------------|--------------|------------|
| | € billions | % of total | € billions | % of total | € billions | % of total |
| Direct healthcare costs | €110.9 | 53% | €18.9 | 32% | €20.1 | 44% |
| Productivity loss due to mortality | €31.6 | 15% | €13.8 | 23% | €5.4 | 12% |
| Productivity loss due to morbidity | €22.6 | 11% | €6.0 | 10% | €4.0 | 9% |
| Informal care costs | €45.1 | 21% | €20.6 | 35% | €15.9 | 35% |
| TOTAL | €210.2 | | €59.3 | | €45.4 | |

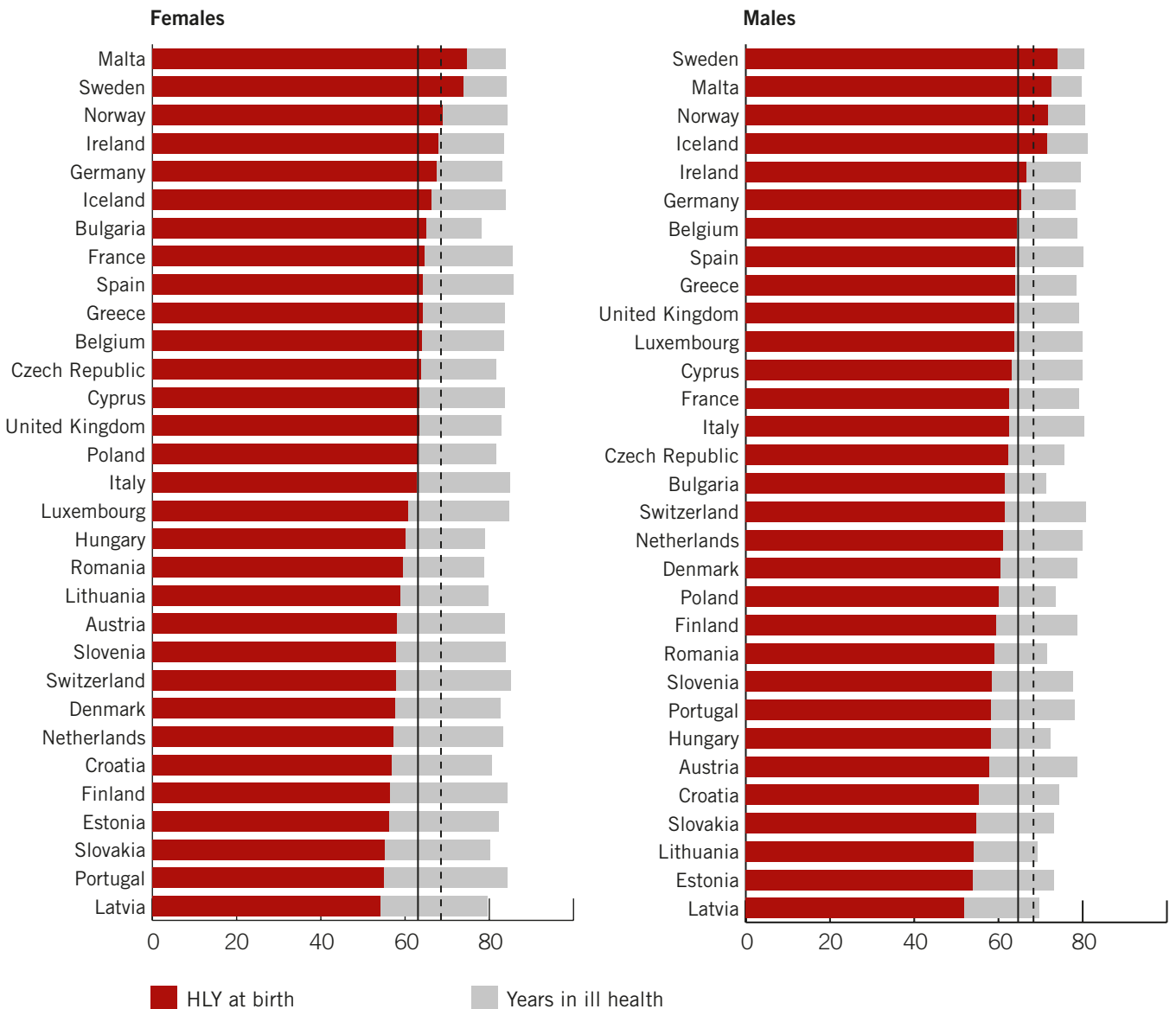
Note: The total CVD column includes heart disease and stroke as well as other forms of CVD.

1.1.1.2 Social implications of cardiovascular disease

The true social implications of the CVD burden reach beyond the human and economic costs. In order to pay for the pensions and care needs of Europe's ageing populations, many governments are raising retirement ages, yet many people already have some disability at these new or proposed retirement ages. In many European countries average

healthy life expectancy – how long people can expect to live without any disability – is less than 70 years and for some countries it is less than 60 years (Figure 3). Yet, the average retirement age was 65.5 for OECD countries in 2015 and in many countries this will increase to 67 or 68 years in the next 10 years.¹ Furthermore, given the health inequalities between richer and poorer people throughout Europe (see Chapter 1.1.2), these average figures probably hide an even worse picture in poorer groups.

Figure 3 Healthy life expectancy (HLY), years lived in ill health and current and future retirement ages in some European countries



Notes:

- Average retirement age for OECD countries in 2014 was 64 years for men and 63 for women (see solid lines). Retirement ages for people entering the labour market at 20 are rising to 67 or older for both men and women (dotted lines).²
- Healthy life expectancy and years in ill health data from: EUROSTAT, 2015, and retirement ages from OECD.
- Due to no data being available for Switzerland in 2015, data from 2014 has been used.

1.1.2 Inequalities across the European region

Across Europe, both between and within countries, wealthier people live longer, healthier lives than poorer Europeans. This is seen with CVD where the burden of death and disability is very unevenly spread (Figures 4 and 5). There is a difference of at least 11 years between the lowest and highest average life expectancies in countries across the region³ and the situation in Central and Eastern Europe is particularly worrying.

Figure 4 Age-standardised death rates from heart disease, men, latest available year, European region

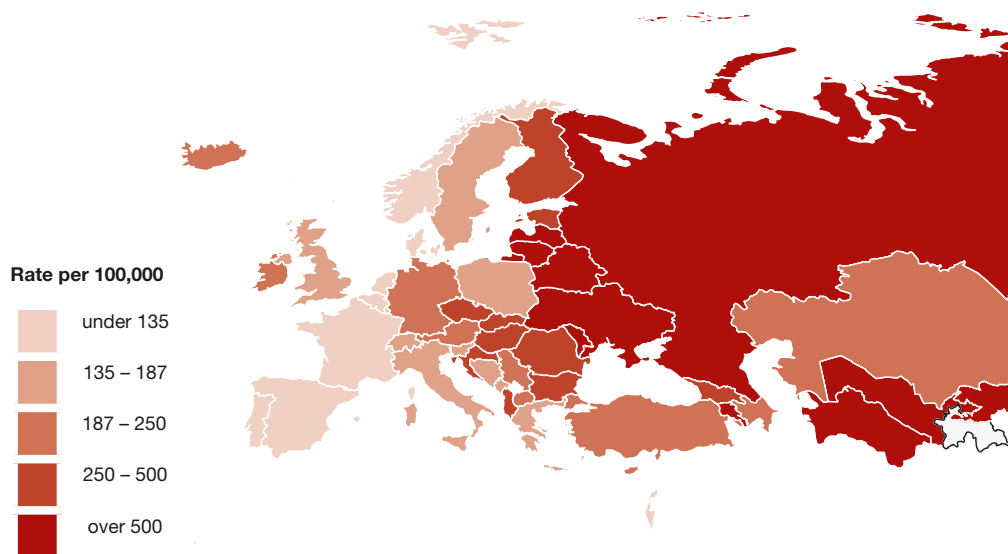
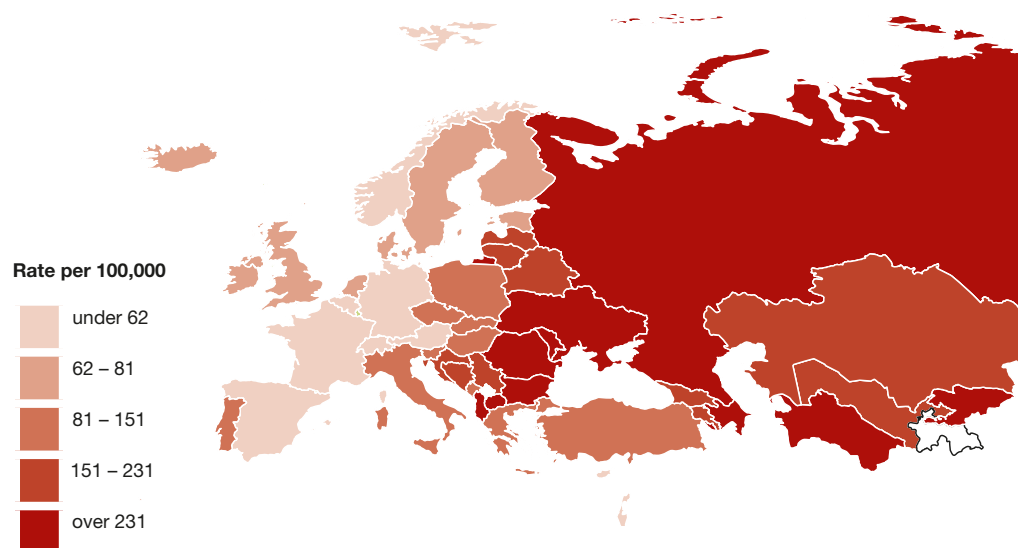


Figure 5 Age-standardised death rates from stroke women, latest available year, European region



1.2 Dietary contribution to the burden of cardiovascular disease in Europe

Poor diet is a leading contributor to ill-health/disease and early death. Dietary risks^{vii} account for over half of deaths in men and over 40% of deaths in women in both the European region and the EU. When ill-health is also included, dietary risk factors are the greatest contributor to the burden of death and disability, both in Europe as a whole and in the EU.

Of all the risk factors related to behaviour that contribute to CVD, dietary factors are by far the largest. Dietary risks are responsible for 56% and 49% of all the years lost to cardiovascular death or disability (men and women combined) in the European region and EU respectively.^{viii}

1.3 Clear case for investing in prevention

Cardiovascular disease is to a large extent preventable and, given the suffering it causes and the social and economic burden that it presents, the potential gains for society are enormous.

In the EU, CVD is estimated to cost €210 billion.⁴ Dietary factors account for 49% of the burden of CVD in the EU. The total economic cost of the burden of diet-related CVD is, therefore, estimated to be 49% of the total yearly costs of CVD in the EU, equivalent to €102 billion.

Reducing dietary risks, therefore, offers great potential to reduce the €102 billion in annual costs to the EU of diet-related CVD.

A population-based approach – which aims to reduce the whole population's exposure to risk factors rather than only targeting people who are at particularly high-risk – offers the greatest promise.⁵ Most interventions to improve diets are good value for money and some actually result in net cost savings.^{6,7} The economic costs of implementing, for example, taxes on unhealthy foods⁷ or measures to reduce salt levels in processed foods⁶ are outweighed by the resulting economic benefits. It pays in both health and economic terms to take preventive measures.

vii The cluster of dietary risks defined by the Global Burden of Disease study includes: high sodium; low fruit; low whole grains; low vegetables; low nuts and seeds; high processed meat; low fibre; low omega-3; low polyunsaturated fatty acids; high trans fat; suboptimal calcium; low milk; high red meat and high sweetened beverages.

viii Data from the Global Burden of Disease database (2015) <https://vizhub.healthdata.org/gbd-compare/>

2 Food, drink and cardiovascular disease: the science

Key messages

- The scientific evidence base for recommending a cardiovascular health-promoting diet has generally strengthened in the last six years.
- A cardiovascular health-promoting diet means a shift from an animal-based diet to a more plant-based diet. It includes vegetables, fruit and berries in abundance. Whole grain products, nuts and seeds, fish, pulses, low-fat dairy products are also important, as are non-tropical vegetable oils in modest amounts. This everyday dietary pattern also limits consumption of red meat, processed meat products and foods or drinks with low content of vitamins, minerals and dietary fibre and/or a high content of free sugars, saturated/trans fats or salt.
- Apparent controversies about dietary recommendations often stem from a limited understanding, or misrepresentation, of the science or methodological issues. Careful unpicking of two apparent controversies – relating to salt and saturated fat – reveals that there is still robust evidence for the messages to limit salt consumption and to replace saturated fat with unsaturated fats or fibre-rich complex carbohydrates.
- There is growing evidence about the importance of nutrition early in life – before and during pregnancy, infancy and early childhood – on later health outcomes.

2.1 Summary of latest science on foods, nutrients and cardiovascular disease

EHN proposed a series of population goals on foods and nutrients in its 2011 paper, *Diet, Physical Activity and Cardiovascular Disease Prevention in Europe*. For this paper, EHN's Nutrition Expert Group, supported by special advisers,

reviewed the previous population goals on the basis of major evidence that has emerged in the last few years.

In general, the scientific evidence base for recommending a cardiovascular health-promoting diet has strengthened in the last six years. Table 2 summarises EHN's proposed revised intermediate and long-term population goals for foods, BMI, nutrients and other components. See Annex 1 for more detail and explanation.

Table 2 Summary of revised population goals

| FOODS AND OTHER RELATED GOALS | |
|--------------------------------|---|
| Fruit and vegetables | <ul style="list-style-type: none"> • Intermediate: More than 400 g per day • Long-term: More than 600 g per day |
| Sugar-sweetened drinks | <ul style="list-style-type: none"> • Intermediate: Decrease as much as possible • Long-term: Virtually zero |
| Body mass index (BMI) | <ul style="list-style-type: none"> • Intermediate: Average BMI of less than 23 for adults • Long-term: Average BMI of 21 for adults |
| NUTRIENTS AND OTHER COMPONENTS | |
| Saturated fat | <ul style="list-style-type: none"> • Intermediate goal: Less than 10% of calories for the general population and less than 7% of calories for a population at a high risk for heart disease; should be less than one-third of total fat • Long-term goal: 7% of calories, and less than one-third of total fat • Replaced with unsaturated fats, particularly polyunsaturated fats, and fibre-rich complex carbohydrates |
| Trans fats | <ul style="list-style-type: none"> • Not more than 0.5% of calories from trans fats, of which 0% should be from industrially-produced trans fats |
| Total fat | <ul style="list-style-type: none"> • About 25% of calories |
| Total carbohydrate | <ul style="list-style-type: none"> • Intermediate: More than 55% of calories • Long-term: Up to 65% of calories |
| Free sugars | <ul style="list-style-type: none"> • Intermediate: Less than 10% of calories • Long-term: Not more than 5% of calories |
| Fibre | <ul style="list-style-type: none"> • At least 12.6 g dietary fibre per 1000 kcal (3 g per MJ energy) |
| Salt | <ul style="list-style-type: none"> • Less than 5 g of salt (2 g of sodium) per day |

These goals represent a recommended average intake or level for the population as a whole; they are not dietary guidelines for individuals. Their main purpose is to help policymakers to identify the gaps between actual and recommended diets, inform the setting of policy priorities and enable progress to be monitored. The goals take into account that many Europeans are overweight or obese, physically inactive, and/or eat too many calories.

The choice of foods with which to replace particular foods or nutrients is also important, and dietary guidelines and policy options need to take this into account.

Controversies about dietary advice and the science of diet and health

Apparent controversies about dietary recommendations are often due to a limited understanding, or misrepresentation, of the science of associations between diet and health outcomes.

The strongest evidence comes from systematic reviews of well-conducted randomised controlled trials (RCTs), in which the direct effects of replacing one dietary component with another have been assessed. Other types of studies – these can include non-randomised RCTs, cohort studies, case-control studies and cross-sectional studies – are (in descending order) weaker and involve less direct evidence.

Studies that compare health outcomes between groups of people with different diets (observational studies) can only suggest an association, and not a causal relationship. Such studies cannot take into account the genetic differences between people, which affect how their bodies respond to dietary factors. Nonetheless, these studies are important for creating hypotheses that can then be tested with further research.

Another problematic area relates to the many challenges in measuring food intakes and diets. Finally, it can be difficult for long-term studies to assess the role of diet when, more generally, populations are getting healthier or at lower risk (e.g. if fewer people are smoking or more people are using cholesterol- or blood pressure-lowering drugs) or less healthy (e.g. much lower levels of physical activity).

Diet and health topics continue to make the news regularly and some nutrition ‘controversies’ have hit the headlines in recent years. EHN commissioned expert reviews on three issues that have been particularly subject to media attention. This included careful unpicking of two apparent controversies – on salt and saturated fat – and an update on the evidence relating to sugars and sugary drinks. The in-depth reviews on each of these issues are included in the full-length version of this paper and are also available for download separately from <http://www.ehnheart.org/publications-and-papers/publications.html>. The following sections are adapted from those reviews.

2.1.1 Sugars and sugar-sweetened drinks

Dietary sugars are defined as glycaemic carbohydrates and consist of all mono- and disaccharides. The main dietary sugars are glucose and fructose (both monosaccharides) and sucrose and lactose (both disaccharides). Sucrose consists of fructose and glucose, and lactose is made up of glucose and galactose. In this paper the term ‘total sugars’ is used for all mono- and disaccharides combined. Sugars can occur naturally in foods or can be added.

The goals in this paper reflect the World Health Organization’s use of the term ‘free sugars’ rather than ‘added sugars’.⁸ Free sugars include monosaccharides and disaccharides added to foods and drinks by the manufacturer, cook or consumer *and* sugars naturally present in honey, syrups, fruit juices and fruit juice concentrates. Sugary drinks (often referred to as sugar-sweetened beverages) contain added caloric sweeteners, such as sucrose (mainly cane or beet sugar) or high-fructose corn syrup (HFCS).

Potential association between consumption of sugars and CVD risk

Over the past six years a lot of new information has become available on the potential association between consumption of sugars and the risk of CVD and its risk factors, especially on the possible contribution of sugary drinks.^{9–55} There has also been publication of new dietary recommendations in many European countries^{9,56–59} and the United States.⁶⁰ In addition, WHO published a guideline for sugar intake in 2015 and the American Heart Association published a scientific statement about consumption of sugars in children and adolescents in 2016.⁶¹

The health effects of sugars appear to be most evident when sugars are consumed in excess, i.e. when accompanied by weight gain. However, there may also be some effects that are not related to weight gain. Evidence suggests that the increased risk is mainly associated with fructose-containing sugars – in other words, fructose, sucrose (cane or beet sugar) and HFCS. There has been less research, however, on the role of sugars that do not contain fructose.

Although study results are not always consistent, most studies suggest that there is a relationship between sugars intake and risk of CVD, and that the more sugars consumed the greater the risk. It is possible, however, that other aspects of a Western diet may affect results, even though studies are generally designed to control for such factors. Well-controlled studies on the effects of reducing the intake of sugars on cardiovascular risk are relatively scarce. Our review found that evidence is strongest, first, for the benefits of reducing sugary drink consumption on child overweight and, second, for some lowering of blood pressure. Limiting the consumption of free or added sugars, and especially sugary drinks, is likely to have positive effects on body weight, although the effect will be moderate. Our review concludes, therefore, that limiting free sugars consumption may have a beneficial, although small, impact on cardiovascular health of populations.

Because there is a straight linear relationship between intakes and apparent effects, the recommendation should be to limit free sugars consumption as much as possible in order to obtain the largest benefits. Major contributors to free sugars consumption are sugary drinks (including fruit juices and dairy products with added sugars), sweets, candies, cakes and cookies. Limiting consumption of these products as much as possible should be recommended, especially in people struggling to maintain a healthy weight. **EHN recommends that, as an intermediate goal, free sugars should provide less than 10% of total calories (energy) and that in the longer term the goal should be for sugars to provide not more than 5% of calories (Annex 1, Table II). Consumption of sugar-sweetened drinks should be limited as much as possible in the interim, with a view to a long-term goal of virtually no consumption (Annex 1, Table I). Both goals are particularly important in people struggling to maintain a healthy weight and are marker goals for an ideal diet for cardiovascular health.**

2.1.2 Dietary fat and cardiovascular disease

Recently, there has been some debate about the role of dietary fat – both the total amount of fat and the type of fat – in the prevention and treatment of diseases, especially heart disease. Some major studies that pooled results of many similar studies (meta-analyses) have confirmed that decreasing the intake of saturated fats is of benefit,⁶² whereas some controversial meta-analyses show no benefit with regard to the prevention of heart disease.⁶³ These controversies have attracted a lot of media attention and the credibility of current dietary recommendations has even been questioned in some journals.

Total fat intakes – the amount of fat and energy density

The evidence suggests that total fat intake is not directly associated with the risk of heart disease. Our review considered the impact of total fat on obesity and diabetes through its role on body weight.

It concluded that data on the linear relationship between fat intake and tendency to gain weight⁶⁴ suggest that a fat intake of 25% (accompanied by a diet that derives at least 60% of its calories from fibre-rich carbohydrates and includes over 400 g/day of vegetables and fruit) is advisable. Such a diet should reduce the risk of weight gain and diabetes, and, therefore, the risk of heart disease in the long term. This should also reduce the energy density^{ix} of the diet, and this is important for people who have been obese and have to maintain their reduced weight in the long term.^{65,66}

EHN proposes, therefore, a population goal of about 25% of calories from total fat as a marker goal for an ideal cardiovascular health-promoting diet (Annex 1, Table II).

Quality of fat – intakes of saturated, unsaturated and trans fats

There is convincing evidence that replacing saturated fat in the diet with unsaturated fat, especially polyunsaturated fats, and complex carbohydrates decreases the concentrations of both total and harmful LDL-cholesterol in blood and, thus, the risk of heart disease.^{17,62,67–75} Replacing saturated fats with simple carbohydrates (e.g. sugars) has unfavourable effects.^{17,76}

Based on experimental trials and many observational studies, a high intake of trans fats has a negative impact on lipids in the blood and the risk of heart disease.^{77–82}

To reduce harmful levels of cholesterol, and thus the risk of heart disease, dietary recommendations are to limit intakes of saturated fats, by replacing with unsaturated fats, and minimise intakes of trans fats (partly through eliminating industrially-produced trans fats).^{57,83,84} Our expert review supports these recommendations, which should be incorporated as part of a healthy diet that includes fibre-rich carbohydrates.

EHN proposes an interim population goal for less than 10% of calories from saturated fat for the general population, and less than 7% of calories for people at high risk of heart disease. In the longer term, the goal should be for 7% of calories from saturated fat. Saturated fats should be replaced with unsaturated fats, particularly polyunsaturated fats, and fibre-rich complex carbohydrates and should constitute less than a third of the total fat intake. In addition, trans fats should not provide more than 0.5% of calories and, of this, 0% should be from industrially-produced trans fats (Annex 1, Table II).

2.1.3 Salt – update on evidence on population salt reduction

Since 2011, when EHN's previous paper was published, there have been numerous research and policy publications on salt (sodium chloride)^x intake and health.^{85–144} In addition, WHO has issued a new global guideline that sodium intakes should be less than 5 g of salt (2 g of sodium) per day.¹⁴⁵ Despite the high degree of general scientific consensus, dissenting voices from industry and from some members of the scientific community have created a 'controversy'. The main criticisms are: a) a low salt intake may not lower blood pressure in everyone; b) a lower salt intake, as suggested by guidelines, may cause harm by increasing cardiovascular mortality; c) there is not sufficient evidence to justify current policies.

An updated review of the scientific literature revealed the following key points:

- Salt is causally related to blood pressure: the higher the salt intake, the higher the blood pressure and this is an effect which can be seen from birth.⁸⁹

ix Energy density is the amount of energy (calories) per gram of food.

x In this document salt (NaCl sodium chloride) and sodium are used to refer to sodium intake. Please note the following conversion: 2.5 g (2,500mg) of salt = 1.0 (1 000mg) of sodium.

- A sustained reduction in salt intake (up to 50% of current intakes) causes a fall in blood pressure in almost everyone across the whole range of blood pressure.^{90,91,146–150,92} Some individuals will respond more or less, depending on factors such as age, ethnicity, initial levels of blood pressure and body weight.^{151,152,153–155}
- High blood pressure contributes to strokes and heart attacks, and reducing blood pressure is associated with a drop in incidence of stroke and heart attacks – a bigger fall in blood pressure leads to a bigger effect.^{91,142,156,157}
- It is logical to consider, therefore, that reducing salt intakes will, by reducing blood pressure, lead to a fall in the incidence of strokes and some reduction in heart attacks.
- Natural experiments in different countries, direct experiments in primates, migration studies in humans, results from most prospective cohort studies in human populations and some randomised clinical trials support this concept.^{142,156,158}

Specific methodology issues in studies on salt and CVD

In addition to the general methodological challenges for assessing associations between diet and health (See Box on **Controversies about dietary advice and the science of diet and health**, page 17), there are some specific challenges for assessing salt consumption and health outcomes.⁹³ Salt intakes are difficult to measure because levels in food vary greatly and different amounts of salt can be added at the table or in cooking. The gold standard for measuring salt intakes is to collect an individual's urine over a 24-hour period and analyse it for sodium (excreted from the body). Ideally, this process should be repeated four times and any incomplete urine collections should be excluded.¹²² This method is, however, relatively expensive and cumbersome. Many studies, therefore, are based on only one or two 24-hour collections or on overnight or one-off 'spot' urine collections. Other studies may use a single dietary record or one-day food record to estimate salt consumed in foods. The risks of errors – which could give completely different results – are higher in all these cases.

Another issue is when studies are conducted on groups of patients who are already sick or on populations that include people with existing CVD. There is a lower risk of error if the sample is recruited from the general population and people with pre-existing CVD are excluded.

A more detailed description of all the methodological issues and a critique of the individual studies are available in the full-length paper or the separate salt paper available for download from <http://www.ehnheart.org/publications-and-papers/publications.html>

At the root of the apparent controversy about salt, some studies observing differences between populations have suggested that lower salt intake might be associated with an *increased* risk of CVD events.^{94,107,112,114,115,124,159,160} These studies, however, tended to suffer from measurement errors that lead to biased results and, therefore, erroneous conclusions.^{93,120,121}

Our expert review concluded that well-conducted prospective studies – with enough samples/measurements to be able to generate reliable statistics (referred to as sufficient statistical power), accurate measurements of sodium excretion and exclusion from the study of people who are already unwell – support a clear relationship between salt intake and deaths from CVD as well as overall death rates (all cause mortality).

EHN proposes a population goal of less than 5 g of salt (2 g of sodium) per day (Annex 1, Table II).

2.2 What do EHN proposed population goals mean for food and drink patterns?

It is extremely important that national policymakers translate nutrition goals into dietary guidelines based on foods (rather than nutrients), taking into account eating habits and food systems in the country.

Taken together, EHN's proposed goals represent a cardiovascular health-promoting dietary pattern for present day Europe. In summary, the energy density^{xi} of such a diet for the current European population – which predominantly has low levels of physical activity – should be low, which is important for weight maintenance, and for prevention of overweight and obesity. A cardiovascular health-promoting diet means a shift from an animal-based diet to a more plant-based diet. It includes vegetables, fruit and berries in abundance. Whole grain products, nuts and seeds, fish, pulses as well as low-fat dairy products are also important, as are non-tropical vegetable oils in modest amounts. This everyday dietary pattern limits consumption of red meat, processed meat products, and foods or drinks with low content of vitamins, minerals and dietary fibre and/or a high content of free sugars, saturated/trans fats or salt. A cardiovascular health-promoting diet will include plentiful dietary fibre. Good alternatives to sugar-containing drinks are water and green or black tea.

There is emerging evidence on the importance of correctly distributing food intake throughout the day – by eating a generous breakfast and lunch and a light dinner – but there is not enough data to justify making any specific recommendation. A diverse and balanced diet covers the needs for nutrients – food supplements are, therefore, rarely needed.

xi Energy density is the amount of energy (calories) per gram of food.

Healthy dietary patterns

It is important to remember that foods and drinks are not consumed in isolation and the overall diet is, therefore, important. The different aspects of the diet relate to one another in a variety of ways and there could potentially be synergies and cumulative effects.

A few specific dietary patterns have been the subject of scientific investigation. The most well-known, and most frequently researched, is the Mediterranean diet, which is made up of high intakes of fruits, vegetables, pulses, wholegrain products, fish and unsaturated fatty acids (especially olive oil) and low consumption of (red) meat, dairy products and saturated fats. Research suggests that the Mediterranean diet is associated with less CVD, lower overall death rates, reduced cardiovascular deaths and reduced cardiovascular risk.^{161,162}

Other dietary patterns associated with cardiovascular health include the Dietary Approaches to Stop Hypertension (DASH) dietary pattern and the Healthy Nordic Diet. The DASH diet is high in vegetables, fruits, low-fat dairy products, whole grains, poultry, fish, beans and nuts and is low in fats, sweets, sugar-sweetened drinks and red meat. It is low in saturated fats and salt, and rich in potassium, calcium, magnesium, fibre and protein. Trials have found that the DASH diet can lower cardiovascular risk factors, such as blood pressure and harmful cholesterol levels, thus lowering CVD risk.^{163–165}

The Healthy Nordic Diet emphasises food items typical for the food culture in the Nordic countries. It includes natural fibre-rich foods such as vegetables (e.g. dark-green leaves, fresh peas and beans, cabbage, onions, root vegetables, and fruiting vegetables such as peppers, tomatoes or aubergines), pulses, fruits, berries, nuts, seeds and whole grains as well as fish and seafood, rapeseed oil, vegetable oil-based fat spreads, and fat-free or low-fat dairy products.⁵⁷ Intervention studies suggest that changing to the Healthy Nordic Diet is associated with cardiovascular benefits.⁵⁷

The US Dietary Guidelines for Americans 2015–2020 recommended a diet which includes a variety of vegetables from all the sub-groups (including pulses), fruits (especially whole fruits), grains (at least half of which are whole-grains), fat-free or low-fat dairy, a variety of protein foods (including seafood, lean meats, poultry, eggs, pulses), nuts, seeds, soy products and oils. This diet limits saturated and trans fats, added sugars and sodium.⁶⁰

2.2.1 Other dietary components and cardiovascular disease

There are a number of dietary components for which EHN does not propose a specific population goal.

2.2.1.1 Dietary cholesterol

There is some public confusion about cholesterol in foods (dietary cholesterol), as opposed to blood cholesterol levels, which in previous decades was a focus for dietary advice.

There is no need to include a specific recommendation for the population as a whole. This is because, first, the size of the effect of saturated fat is much greater than that of dietary cholesterol and, second, foods high in dietary cholesterol also tend to be high in saturated fats. Thus, diets lower in saturated fats will also be lower in dietary cholesterol. There are some foods – including egg yolks and some shellfish – that are higher in dietary cholesterol but not saturated fats. Eggs do contribute micronutrients to the diet, but they also have a negative impact on blood cholesterol;¹⁶⁶ therefore current average consumption of eggs and other foods rich in dietary cholesterol should not rise. It should also be noted that there are wide variations in how individuals respond to dietary cholesterol.

2.2.1.2 Red and processed meat

Media and public interest in the health effects of eating meat has surged, particularly after WHO's International Agency for Research in Cancer (IARC) classified red meat as *probably carcinogenic* and processed meat as *carcinogenic* in 2015.¹⁶⁷ Some European authorities have also recently recommended reducing intakes of red and processed meat.^{57,168–171}

Specifically in relation to CVD, meat is an important source of saturated fat and high intakes of saturated fat increase the risk of CVD. Much of the meat consumed in Europe is in the form of processed meat products (bacon, ham, sausages, ready meals, etc.) and this can lead to high salt intakes. Research suggests that the effects of red meat on the risk of heart disease vary depending on how much processed meat is consumed¹⁷², and that eating processed meat and, to a lesser extent, unprocessed red meat is associated with higher risk of stroke.¹⁷³ Research has also found that meat intakes are associated with higher overall death rates.¹⁷⁴

It seems likely, therefore, that the negative consequences of eating large amounts of meat in European countries outweigh the benefits. If meat products are eaten regularly, products that are lower in saturated fat and salt, e.g. lean, fresh meat rather than processed meat, are preferable for cardiovascular health. Furthermore, it is advisable to eat less red and processed meats and replace these (particularly in people who eat a lot of meat) with white and unprocessed meat products. It is also important to consider the impact of meat consumption on the health of the planet (See Chapter 3).

2.2.1.3 Nutrition in early life

There is growing evidence that nutrition during early life – before conception and during pregnancy, infancy and early childhood – impacts on later health outcomes, including cardiovascular risk factors.

If a woman has poor nutritional status before or during pregnancy it can change the way genes are expressed in the child (epigenetic programming) and how these genes respond to environmental factors later in life. If a woman is undernourished, her child has a higher risk of overweight or obesity if they later have access to plentiful food.¹⁷⁵ Maternal obesity – before or after conception – is associated with health problems for women and for their children; for the latter this means higher risk of obesity and other disorders later in life.¹⁷⁵ High-fat diet and excess energy intake during pregnancy may increase the child's risk of CVD, whether or not the mother is obese.¹⁷⁵ In addition a child's taste preferences can be affected by its mother's diet during pregnancy^{176,177} and a more varied diet during pregnancy or breastfeeding can increase children's acceptance of new foods or flavours.¹⁷⁸

Good infant and young child nutrition^{xii} is important for the prevention of CVD (through protection against risk factors such as overweight, obesity and diabetes) later in life.^{179,180}

xii WHO recommends early initiation of breastfeeding (within the first hour of birth), on-demand exclusive breastfeeding from birth until six months of age followed by timely introduction of appropriate complementary feeding and continued breastfeeding up to two years of age or beyond.

3 Sustainable food systems for cardiovascular health

Key points

- Today's food systems are intricate – with long food chains that involve many different actors – and powerful external factors influence what is produced, how it is sold and at what price (the 'food environment').
- This complexity presents both challenges and opportunities for policymakers. While many of the external drivers are beyond the control of national or regional authorities, there are many entry points along the food chain where policymakers can take action.
- The EU's Common Agricultural Policy (CAP) has helped shape current dietary patterns, and radical rethinking of the CAP could enable positive dietary changes.
- Trade and investment agreements can impact on the food environment and there is a need to take nutrition into account in trade negotiations.
- Current approaches to restricting marketing of unhealthy foods^{xiii} to children are inadequate, particularly given the shift towards online marketing, and decisive policy action is needed.
- Food system activities have considerable environmental impact, including on climate change, land use and water use. Climate change is likely to have a negative impact on diet-related health overall.
- There is considerable overlap between consuming healthier diets and achieving higher levels of sustainability, and an integrated health and environment approach to food systems is needed.
- Health-environment win-wins need to be promoted through dietary guidelines and broader policy approaches are also required.

In a perfect world, the goals outlined in this paper would be swiftly translated by governments into clear dietary guidelines, and then people would change their food choices to reflect the latest advice. This would increase demand for healthy products while demand for less healthy products would drop; markets would respond to these demand signals by producing more healthy and fewer unhealthy food products. Such changes in production would then lead to a drop in prices for healthier foods, while unhealthy foods would become more expensive.

In reality, however, the reasons why we eat what we eat are many and complex. In today's intricate food systems the market does not work perfectly and there are various forces driving the food supply, as well as consumer demand. The distance between production and consumption – the food chain – has been growing. Food chains that traditionally were short – bringing fresh foods from farms to tables – are now long, and involve many different actors, and often provide ultra-processed foods. In practice, the actions of large agri-food companies and, to a lesser extent, government policies and public sector investment have an important role in driving what is produced. Many factors on the supply side of the market – what is produced, how it is sold, and at what price – are powerful drivers of consumption. These aspects of the food system have an impact on the food environment, which, with individual food preferences, impacts on consumer decisions about what to eat. Figure 6 shows one way of illustrating the complexity of food systems and how they impact on diets.

This complexity presents significant challenges for policymakers. Many of the global and external drivers are well beyond the control of particular authorities, let alone individuals. Education and information campaigns alone will be unable to bring about the needed dietary changes.

What this complex picture also reveals, however, is that there are many points along the food chain where policymakers could take action to enable and encourage healthy, sustainable diets (Figure 7).

It is increasingly recognised that current food systems are flawed and fail to deliver affordable healthy diets to all. Food systems need to be transformed and governments have promised to take such action, particularly through the *European Food and Nutrition Action Plan*¹⁸³, the *Rome Declaration on Nutrition*¹⁸⁴ and the *UN Decade of Action on Nutrition*.¹⁸⁵ These aspects are also on the EU agenda.^{xiv,xv}

Tools are available to help policymakers and advocates assess gaps in food systems and identify appropriate opportunities for action.^{186,181} (See full-length paper at <http://www.ehnheart.org/publications-and-papers/publications.html>).

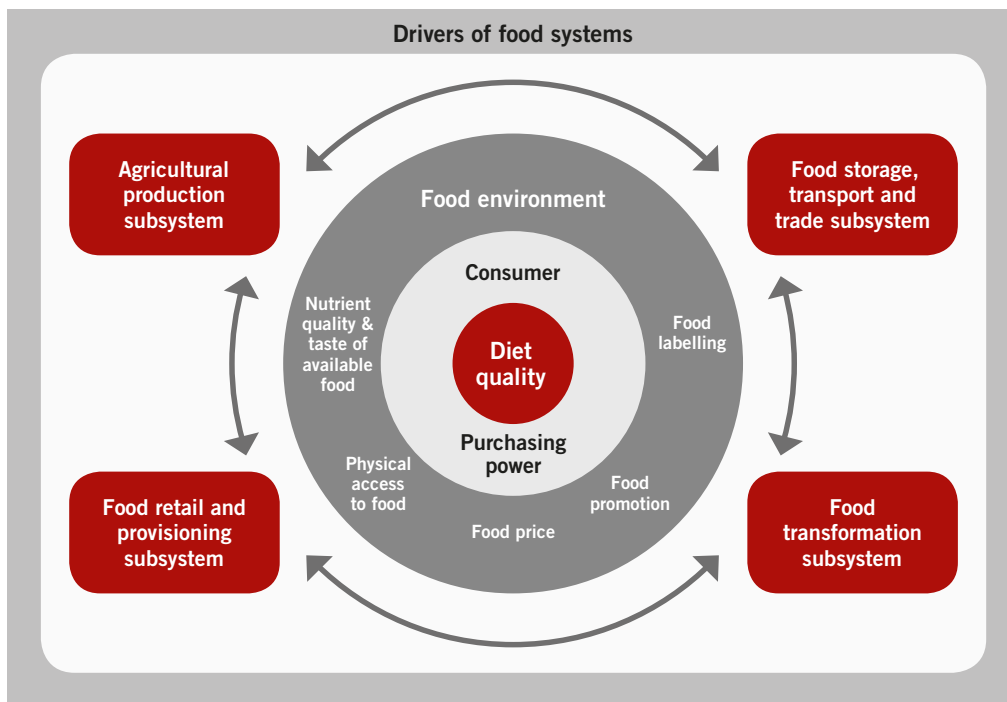
EHN commissioned expert reviews on four specific issues that are particularly relevant to the challenges of creating sustainable European food systems for cardiovascular health:

xiii 'Unhealthy' relates to foods high in fat, sugars or salt, also referred to as HFSS foods.

xiv See <https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/delivering-eu-food-safety-and-nutrition-2050-future-challenges-and-policy-preparedness>

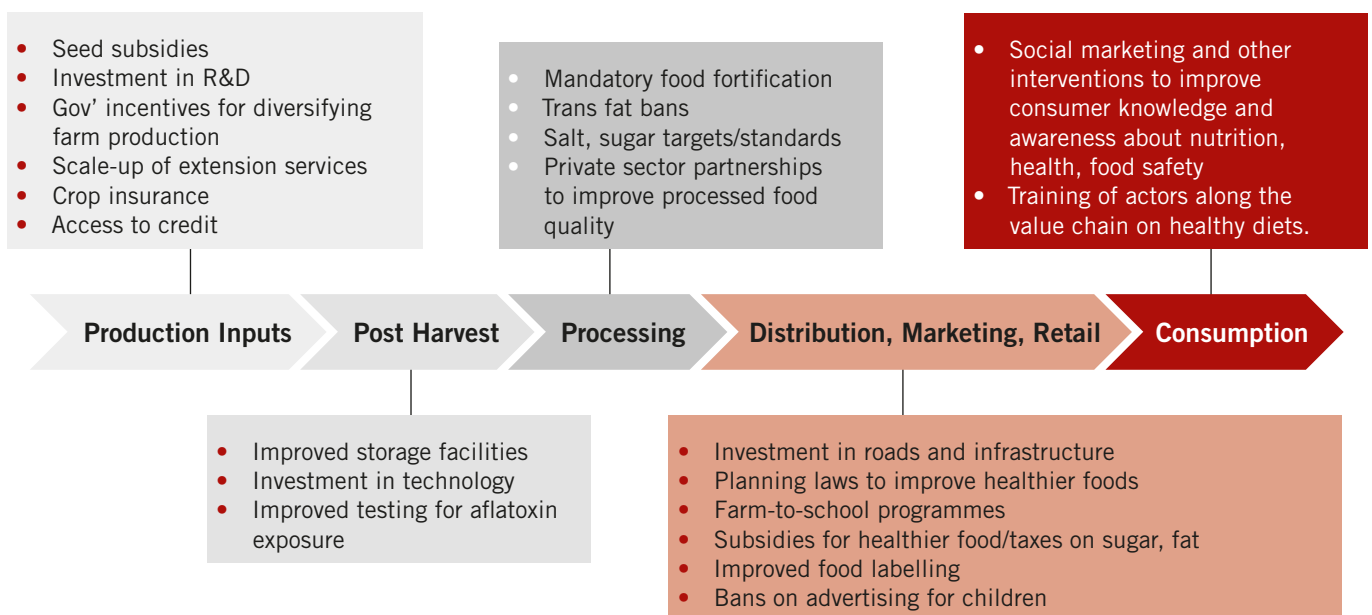
xv See https://ec.europa.eu/health/sites/health/files/nutrition_physical_activity/docs/ev_20170531_co02_en.pdf

Figure 6 Links between diet quality and food systems. Reproduced with kind permission from: Global Panel on Agriculture and Food Systems for Nutrition (2016).¹⁸¹



Agricultural production subsystem: primary production of foods and related inputs, including production of arable crops, horticulture, animals and fish. **Food storage, transport and trade subsystem:** system in which food is handled, treated, stored, packed, moved, transported and traded. **Food transformation subsystem:** foods are transformed into final products (including marketing). **Food retail and provisioning subsystem:** Moves products into the hand of the consumer (markets, informal retail, street vendors, supermarkets and small stores).

Figure 7 Opportunities to improve nutrition and diets along the food value chain. Reproduced with kind permission from: Fanzo et al, 2017.¹⁸²



- **Agriculture and supply side issues** – what are we producing in Europe?
- **Trade** – impact of trade and investment agreements on food and nutrition
- **Food promotion** as a driver of consumption patterns
- **Food-environment links** – matching cardiovascular health promotion with a sustainable food system

These reviews are included in the full-length version of this paper and are available to download separately from <http://www.ehnheart.org/publications-and-papers/publications.html>. Short summaries are included below.

3.1 Agriculture and supply side issues: what are we producing/importing?

A cornerstone of the then European Economic Community (EEC), the Common Agricultural Policy (CAP) was established to ensure food security and revitalise rural economies.¹⁸⁷ This followed a period immediately after the Second World War when there were widespread food shortages, as well as devastating poverty, poor housing and unemployment in Europe. The approach of fostering agriculture and food production had a specific bias towards boosting the supply of cheaper meat, milk, butter, fats and oils.

Throughout its lifetime, the CAP has been heavily criticised, mainly because of its significant financial cost relating to the farming industry and – since the mid-1980s – concern about its potential public health impact.^{188,189} Broadly speaking, the CAP can define which products are produced and promoted, with big retailers also having a major influence over which products finally reach consumers and at what price.¹⁹⁰ The web of the CAP's effects on dietary intake and development of CVD or other NCDs is not straightforward, as shown in Figure 8.

The current CAP is the outcome of a long historical process and various policy responses to different emerging problems, but focused mainly on markets. Despite all the reforms, CAP is still disconnected from nutrition and public health policies and often runs counter to other EU policies that deal with competition¹⁹¹ and consumer protection.¹⁹² CAP will distribute more than €150 billion across the EU countries between 2017 and 2020 to support the production of mostly livestock and industrial crops. This is clearly contrary to demands for a sustainable planet and public health.

A radical change in food consumption and production in Europe is essential if we are going to conform with the new global development agenda,¹⁹³ and meet Sustainable Development Goal 2 to end hunger, achieve food security and improved nutrition and promote sustainable agriculture.

CAP undoubtedly has shaped the current food environment and diets, both within and outside the EU. However, simply eliminating or completely removing CAP is not likely to solve all the problems faced by farmers, consumers and countries when it comes to nutrition. A collective effort from all

stakeholders is needed, along with strong systems to check compliance with other policies.

In conclusion, the CAP and other policies have a strong role in creating an environment conducive to positive dietary changes, which, in turn, promote cardiovascular health. There is a need to thoroughly assess the nutrition and health benefits of substantially reforming or abolishing the CAP, compared to the current – or a minimally modified – CAP. A radical rethink of the CAP could contribute greatly, for example, to the promotion of foods such as fruit and vegetables, known to protect against CVD and other NCDs. To get the most benefit from changes to the CAP, any changes should be accompanied by other relevant public health policies and food industry and retailers' policies.

3.2 Impact of trade and investment agreements on food and nutrition

Food represents a significant component of trade and Gross Domestic Product (GDP), and is, therefore, an economic as well as a health issue. The food supply chain in the EU, for example, generates around 15% of total EU employment and 7% of the EU's GDP.¹⁹⁴ This means that new regional trade and investment agreements, such as the Trans-Atlantic Trade and Investment Partnership (TTIP – currently suspended), can have substantial implications for the food environment.¹⁹⁵

Trade and investment agreements impact upon the food and nutrition environment relevant to CVD in two ways:

1. by directly influencing the **relative price and availability** of unhealthy foods; and
2. by restricting governments' abilities to implement strong public health nutrition policies (**constraining the policy space**).

First, trade and investment agreements affect the relative price and availability of unhealthy foods through reducing the costs and barriers to the supply, marketing and retail of highly processed foods.^{196,197} This can result in increased availability and affordability of such foods.

Second, trade and investment agreements affect the 'policy space' available to governments through constraining government policymaking on national issues. Policy space refers to the 'freedom, scope, and mechanisms that governments have to choose, design, and implement public policies to fulfil their aims'.¹⁹⁸ There is evidence that trade and investment agreements can constrain policy space for public health nutrition in three ways: direct constraints on available policy options; increasing the ways in which other stakeholders (e.g. industry) can influence policymaking; and new avenues for affected stakeholders to challenge policy decisions.

Trade and investment agreements can directly constrain the policy options available to governments. Although such agreements allow governments to implement policies to protect public health, they also require any such policies

settings in which children were tested) or because the adults altered their behaviour during the studies. There is evidence that, in real life, price promotions and retail displays increase purchases of high sugar foods.²²⁰⁻²²²

Promotion now takes place in both traditional broadcast and digital media. People are exposed to an excess of unhealthy food commercial promotion in most traditional platforms (e.g. television, events sponsorship, outdoor advertising, print media, point-of-sale) and, increasingly, via digital avenues (social media, websites). Television advertising produces strong brand awareness²²³ and remains relevant, even for children and adolescents,²²⁴ despite the emergence of digital marketing. Digital food promotion, however, now has the greatest promotional reach and impact – more generally, online advertising has now overtaken television to become the largest advertising medium in Europe.

Critically, digital marketing is often targeted mainly at children and adolescents, because they are so engaged with online media. New media marketing varies from traditional forms in several ways,²²⁵ and advertisers are better able to target and personalise marketing messages and facilitate peer endorsement of food and drink brands.²²⁶ Sophisticated methods unique to online marketing include contextual

advertising (tailoring food adverts to viewers' internet content) and online behavioural advertising (tailoring food adverts to users' individualised characters and online activity).²²⁷

Pressure from health advocates culminated in WHO issuing a *Set of recommendations on the marketing of foods and non-alcoholic beverages to children*²²⁸ and a framework to guide their implementation.²²⁹ Some European countries have introduced restrictions on unhealthy food promotion to children (e.g. UK and Ireland). Voluntary measures or industry self-regulation, however, are most common, even though these have been criticised for being narrow in scope and ineffective.²³⁰

So, it seems clear that current approaches are not doing enough to tackle commercial food promotion across the whole range of promotional techniques, including digital marketing. The balance of evidence currently sits too far in the direction of television, rather than digital, food advertising effects. While more research is warranted on the impact of digital marketing, there is already enough evidence of the combined impact of various forms of food marketing to justify decisive policy action to protect consumers from the ubiquitous marketing of unhealthy foods.

3.4 Food-environment links – matching cardiovascular health promotion with a sustainable food system

Global environmental change is both a driver and an outcome of food systems (Figure 9).

3.4.1 Impact of food systems on the environment

Food system activities, and particularly agriculture, have considerable impact on various aspects of the environment, including climate change, land use, water use and others.

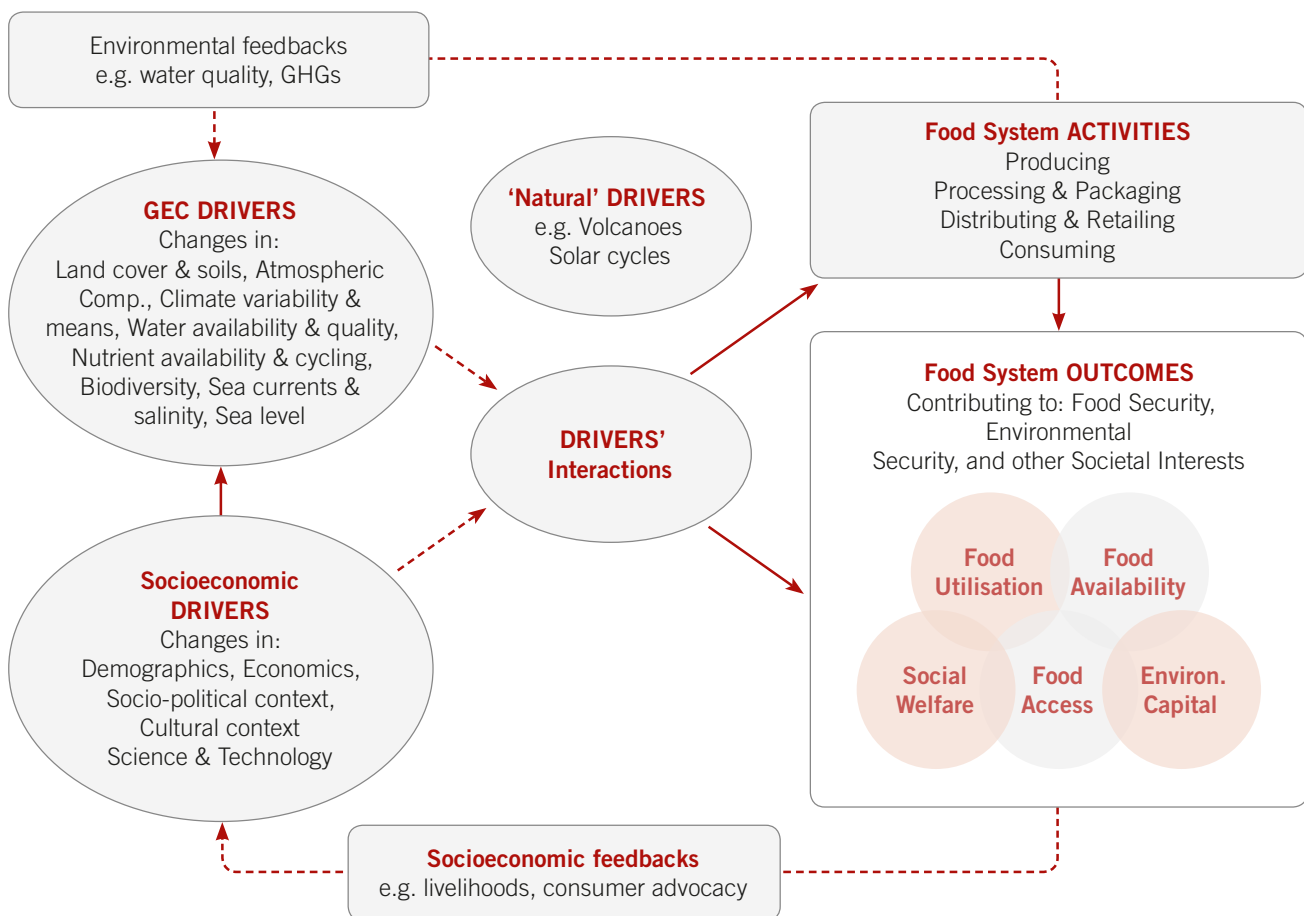
Food-based greenhouse gas (GHG) emissions contribute 19–29% of emissions globally, with agriculture responsible for the majority.²³² Given current global trends, this may increase by around 80% to 2050,²³³ making the already very challenging target of net zero GHG emissions by 2100 – as set out in the Paris Climate Change Agreement – even more difficult.

Trends globally are towards higher levels of meat and animal product consumption.^{233–235} Relative to plant-based foods, animal-based foods tend to have higher GHG emissions; this is because it is generally more resource efficient to eat plants than to have to feed plants to animals and then eat the animals.^{233,236} On the whole, animal-based foods also have higher water footprints than plant-based foods.^{237,238}

The impact of high water use depends on how scarce water is locally. Environmental impacts and other food system outcomes from animal rearing also depend on how animals are raised, and the local economic role of livestock. This suggests that *to a degree* the overall sustainability impact of animal-based foods varies from one place to another and depends on specific farming practices.

It is important that what we eat, particularly in Europe, becomes part of the debate around how to achieve our climate commitments.

Figure 9 Food systems, their drivers and feedbacks Reproduced with kind permission from: Ericksen, 2008.²³¹



Note: GEC=Global environmental change; GHG=greenhouse gas.

3.4.2 Impact of predicted environmental changes on diet and diet-related health

The impact of future environmental change on diets is extremely complex to predict, and will be strongly affected by future population, economic, trade and cultural change.^{239–241 242}

Beyond studies looking at changes to energy intake (calories) with climate change, there is very little research linking a changing climate to dietary impacts and even less examining how other aspects of environmental change might influence future diets.

However, modelling studies suggest that climate change will have negative implications for diet-related health overall, due to reductions in calorie intake for poorer populations and reductions in fruit and vegetable intakes for wealthier people.^{243,244}

3.4.3 Identification of ideal dietary patterns that are both healthy and sustainable

Encouragingly, there is considerable overlap between consuming healthier diets and achieving higher levels of sustainability, as defined by GHG emissions, land-use and water use.^{233,245,246,247}

Clear guidance is needed, though, on how to meet nutritional demands while achieving better sustainability outcomes; there is the potential for poorer sustainability outcomes when some dietary changes are made.^{248,249}

There is a lack of research on healthier, low-meat diets and wider indicators of environmental sustainability, such as biodiversity, nitrogen and phosphorous use, impact on bees, etc. There is also little research on what a low-meat and healthy diet means for socio-economic aspects, such as equity or impact on livelihoods.

3.4.4 Existing proposed policy solutions to health-environment issues

A few pioneering governments (e.g. Australia, Brazil, Germany, the Netherlands, the Nordic countries and, separately, Sweden) have issued healthy diet guidelines which include, to different degrees, environmental outcomes. But examples of policy solutions that bridge the health and environment impacts of food are still few and far between, and there is too much focus on passive information-based approaches to shift food behaviour.

Many different types of action will be needed to shift diets towards healthier and more sustainable outcomes, involving people, institutions, regions, economies and global political-economic regimes. Health-environment win-wins need to be promoted both through dietary guidelines, by many more countries than those currently doing so, and through broader policy approaches, which go beyond influencing individual choice.

4 Effective policies for promoting healthy dietary patterns

Key messages

- Recent years have seen significant global commitments on diet and nutrition, reflecting greater awareness of the need to tackle diet-related NCDs.
- Progress on policy to improve European diets, however, has been patchy and inadequate over the last six years.
- Within the EU, the lack of progress on nutrient profiles (for regulating use of health and nutrition claims) and food marketing to children is disappointing. There have been some promising initiatives at EU-level in relation to trans fats, reformulation and healthy procurement of food served in schools.
- Some European countries have made progress – on food taxes, reformulation, trans fats, labelling, food in schools and marketing to children – but much more government-led action is needed.
- Food and drink policy actions need to be underpinned by broader, structural change to tackle health inequalities if a heart-healthy Europe for all is ever to become a reality.
- EHN recommends rapid and full implementation of a package of measures to realise the vision of every European being able to live free from avoidable diet-related cardiovascular disease (CVD).

Given the burden of CVD, the gaps between the population goals set out in this paper and the current diets of Europeans, all governments in Europe should be taking action to improve diets for cardiovascular health.

4.1 Recent developments on food and drink policies for cardiovascular health

Significant new global commitments on healthy diet and nutrition show that governments are taking their responsibilities to tackle NCDs and malnutrition in all its forms (including obesity, overweight and diet-related NCDs) more seriously.

In Europe, there have been some welcome developments on the proposals in EHN's 2011, *Diet, Physical Activity and Cardiovascular Disease Prevention in Europe* (See Table 3, for more detail see Chapter 4.1 of the full-length version). Progress, however, remains patchy and inadequate.

At the EU level, progress on diet-related policy matters has been much slower than hoped for. There has been a disappointing lack of progress on nutrient profiles (for regulating use of health and nutrition claims) and marketing of unhealthy^{xvi} foods to children. There have been some promising initiatives in relation to trans fats, reformulation and healthy procurement of food served in schools.

For the European region, WHO has adopted a health policy framework²⁵⁰, the *Vienna Declaration* on nutrition and NCDs²⁵¹, a regional food and nutrition action plan¹⁸³ and two consecutive action plans on prevention and control of NCDs.^{252,253}

Some European countries have implemented their own initiatives, specifically in relation to food taxes, reformulation, trans fats, labelling, food in schools and marketing to children (Table 3). Much more widespread implementation of concrete, government-led action in these areas is needed.

Key global developments on nutrition and diet-related NCDs

| | |
|------|---|
| 2011 | <i>Political Declaration on the Prevention and Control of Noncommunicable Diseases</i> |
| 2011 | <i>WHO Global Action Plan for the Prevention and Control of Noncommunicable Diseases, 2013–2020</i> |
| 2014 | The <i>Rome Declaration on Nutrition</i> and its <i>Framework for Action</i> , adopted at the Second International Conference on Nutrition, address all forms of malnutrition including overweight, obesity and diet-related NCDs |
| 2015 | The UN announces a <i>UN Decade of Action on Nutrition, 2016–2025</i> |
| 2015 | Adoption of 17 global Sustainable Development Goals (SDGs), accompanied by 169 specific targets including many related to diet and health |
| 2016 | Final report of the <i>Commission on Ending Childhood Obesity</i> |
| 2017 | World Health Assembly endorses an updated Appendix 3 – effectively the ' <i>best buys</i> ' for NCD prevention – to the global NCD action plan |

xvi 'Unhealthy' relates to foods high in fat, sugars or salt, also referred to as HFSS foods.

Table 3 Summary of some recent developments in key policy areas in Europe

| Labelling | Trans fats | Salt reduction | Other reformulation |
|---|--|---|---|
| <p>EU: The Commission has not established the nutrient profiles required by the claims Directive to prevent health and nutrition claims on less healthy foods.</p> <p>Since 2014 the <i>Food Information to Consumers Regulation</i> allows member states (MS) to recommend additional forms of information (e.g. front of pack (FOP) nutrition labelling).</p> <p>UK, 2013: voluntary FOP traffic light labelling scheme recommended by government.</p> <p>Denmark, Iceland, Norway and Sweden: the voluntary Keyhole labelling scheme is in use.</p> <p>Finland: the Heart Symbol is used to endorse 'better-for-you' choices.</p> <p>Netherlands, 2016: the Dutch Health Minister stopped the industry-funded Choices programme.</p> <p>In March 2017, six multinational food companies came out in favour of a prominent on-pack nutrition colour-coded labelling scheme.</p> <p>France, 2017: Government announced intention to introduce a voluntary Nutri-Score FOP labelling scheme to indicate overall nutritional quality of foods.</p> | <p>EU, 2015: The Commission report concluded that a legal limit for industrially-produced trans fats (IPTFAs) would be the most effective measure. The European Parliament called on the Commission to establish a legal limit on IPTFAs as soon as possible and the Commission launched an impact assessment.</p> <p>Hungary, Iceland, Norway, Serbia, and Latvia have joined Austria and Denmark, introducing legislation to limit IPTFAs.</p> <p>Lithuania has informed the European Commission of a draft law on limiting trans fat levels in foods.</p> | <p>EU, 2010: The Council approved the <i>EU Framework for National Salt Reduction Initiatives</i> and adopted <i>Conclusions on Action to Reduce Population Salt Intake for Better Health</i>. There has been a disappointing level of participation in the Framework, which sets a relatively feeble goal (16%) for salt reduction.</p> <p>Voluntary salt reduction initiatives – often focusing on bread – have been introduced in:</p> <ul style="list-style-type: none"> • Austria • Belgium • Croatia • Czech Republic • France • Greece • Hungary • Ireland • Italy • Norway • Slovenia • Spain <p>Mandatory salt limits on bread are in place in:</p> <ul style="list-style-type: none"> • Belgium • Bulgaria • Greece • Netherlands • Portugal | <p>EU, 2011: EU MS agreed on an <i>EU Framework for National Initiatives on Selected Nutrients</i>. Then in 2016, under the Dutch Council Presidency, <i>Council Conclusions on food product improvement</i> and a roadmap for product improvement were developed. MS are requested to have national plans in place by the end of 2017.</p> <p>France: Government-led voluntary initiative aims to reduce total fat, saturated fat, sugar and salt, and to increase fibre.</p> <p>UK: Ongoing government-led voluntary initiative to reduce saturated fats, trans fats, calories and portion sizes.</p> <p>In the Netherlands, an <i>Accord Improving Product Composition</i> was agreed with industry to reformulate processed food for salt, saturated fats and calories.</p> |

| Marketing to children | Food in public institutions | Food taxation |
|--|--|--|
| <p>European Region, 2015: Publication of a WHO regional nutrient profile model specifically for restricting HFSS food marketing to children. In 2016, a tool for monitoring food marketing to children was published.</p> <p>EU, 2014: The Council called on the Commission and MS to promote actions to reduce children's exposure to HFSS food marketing.</p> <p>EU: Proposal to amend the <i>Audiovisual Media Services Directive</i> was adopted in 2016. EHN has repeated its call for a watershed for all marketing for HFSS food on television between 6am and 11pm.</p> <p>Ireland, 2013: Prohibited advertising of HFSS foods during children's TV and radio programmes and also limited HFSS food advertising to 25% of all advertising.</p> <p>Norway, 2013: Government supervised voluntary restrictions introduced across a wide range of media.</p> <p>Netherlands, 2015: Code updated to include nutritional criteria for 7–12 year old children.</p> <p>Poland and Spain: Regulated advertising in schools and pre-schools.</p> <p>UK, 2017: Existing rules extended to cover digital and online marketing and to cover brand advertising that has the effect of promoting a HFSS product.</p> | <p>EU, 2017: Report on <i>Public Procurement of Food for Health</i>, published under Malta's EU Presidency, to help MS to translate school nutrition standards into food procurement specifications for caterers.</p> <p>Legislation or codes to improve nutritional quality of food provided in schools and/or pre-schools introduced or updated in:</p> <ul style="list-style-type: none"> • Bulgaria • Hungary • Latvia • Lithuania • Netherlands • Poland • Slovenia • Sweden • England • Wales <p>Latvia: Limits introduced for salt in food served in hospitals and social care facilities.</p> <p>Finland: Rules setting out nutritional criteria for university catering to qualify for government subsidies were updated.</p> | <p>EU: A 2014 Commission paper found evidence that taxes reduce consumption of taxed products and found little evidence that they have an impact on profitability.</p> <p>Denmark: Evidence has mounted that the saturated tax fat, repealed in 2012, had brought about a decrease of 10–15% in fat consumption.</p> <p>France, 2012: Introduced taxes on sugar-sweetened and artificially-sweetened drinks.</p> <p>Hungary, 2011: The Public Health Product Tax has led to an estimated 20–35% decrease in consumption of taxed products.</p> <p>Taxes on soft drinks have been introduced or proposed in:</p> <ul style="list-style-type: none"> • Estonia • Belgium • Ireland • Portugal • Spain • UK <p>Finland, 2010: introduced a tax on ice cream and soft drinks, but, following challenge from the European Commission, later abolished it.</p> |

4.2 Recommendations for food and drink policies for cardiovascular health

In order to realise the vision of every European being able to live free from avoidable diet-related CVD, EHN calls for rapid and full implementation of a comprehensive package of recommendations. The package is underpinned by three **overarching recommendations**. It also includes three clusters of **specific recommendations** relating to policies to influence what food is supplied, to impact on consumer demand for foods and to alter the composition of foods (Figure 10).

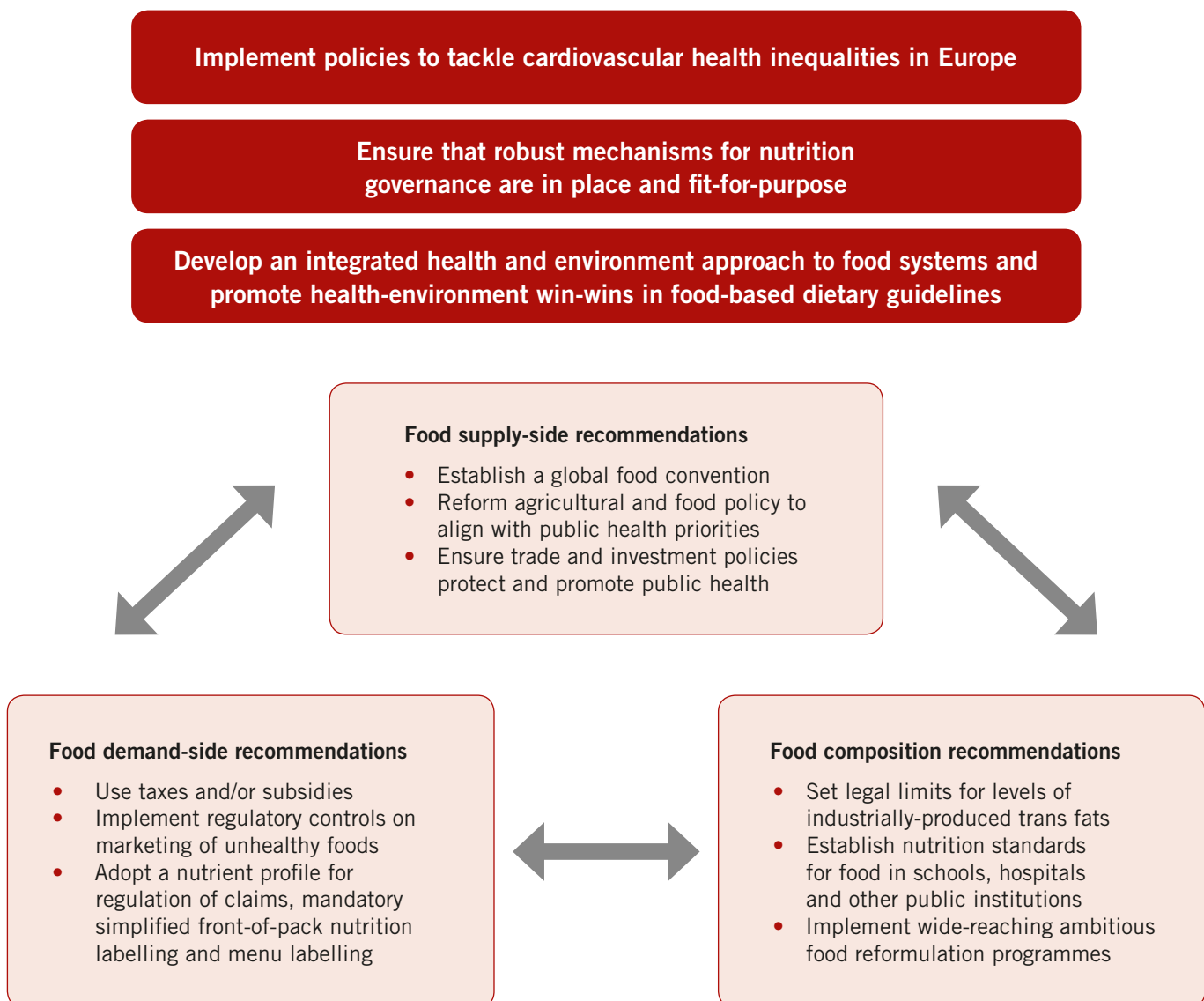
These recommendations, identified by EHN's Expert Group on Nutrition after an assessment of the different types of evidence available (Table 4), do not cover all the possible

areas for action. They were selected because of their potential to make meaningful changes to the diet of the population (or a substantial proportion of the population) and to reduce health inequalities; they are supported by EHN members.

For a cardiovascular health-promoting diet to become a reality across Europe some major forces that influence food systems need to be addressed. For this reason, the specific recommendations need to be underpinned by three overarching recommendations:

- Implement policies to tackle health inequalities in Europe
- Ensure that robust mechanisms for nutrition governance are in place and fit-for-purpose
- Develop an integrated health and environment approach to food systems and promote health-environment win-wins in food-based dietary guidelines

Figure 10 EHN's package of recommendations for food and nutrition policies for cardiovascular health



4.2.1 Implement policies to tackle health inequalities in Europe

Progress in improving cardiovascular health across Europe has not benefited Europe's disadvantaged populations to the same degree as more privileged population groups. There are still alarming differences in cardiovascular health between the continent's wealthiest and poorest groups. Given this backdrop, food and drink policy actions need to be underpinned by broader, structural change to tackle health inequalities if a heart-healthy Europe for all is ever to become a reality.

In its hugely influential global report in 2008, the WHO Commission on Social Determinants of Health recommended action to: improve daily living conditions; tackle the inequitable distribution of power, money and resources; and measure and understand the problem and assess the impact of action.²⁵⁴ Policies to narrow the gap across the whole of society and action to address the specific needs of particularly vulnerable groups are both needed.

In addition, more specific action is also needed to improve the availability and affordability of healthy diets:

- Tackle food poverty and make healthy foods more affordable
- Improve the accessibility of healthy foods and address the problem of 'food deserts' where access to fresh foods and healthy options is limited
- Reduce the relative accessibility and affordability of unhealthy foods
- Apply an 'inequalities lens' to all policy initiatives, to ensure that they are designed to narrow, rather than widen, the gap

The application of an 'inequalities lens' to potential interventions should assess the potential impact on different groups as fully as possible, including the health impact. This is important to stress because if impact assessments do not take health outcomes into account they could point to misleading results. Taxes on soft drinks, for example, may have a bigger *financial* impact on poorer people, but the *health* gains are also potentially greater for disadvantaged groups.²⁵⁵⁻²⁵⁷

4.2.2 Ensure that robust mechanisms for nutrition governance are in place and fit-for-purpose

Robust nutrition governance – including high-level political commitment and cross-government, multisectoral coordination mechanisms – is essential to implement policies to improve diets. Action is needed across many sectors of government and society. None of the recommended actions are the sole responsibility of health ministries – finance, trade, education, justice, media and industry ministries are all implicated, as are local authorities.

To underpin policy action that is based on evidence, and to be able to report on progress, a strong infrastructure for research and surveillance – such as tools to collect data on

food intakes and up-to-date data on the nutrient content of foods – is also important.

In order to hold governments to account on their progress towards improving diets, monitoring and surveillance are important. As part of the UN Decade of Action on Nutrition¹⁸⁵, WHO and FAO are supporting countries to set country-specific SMART – specific, measurable, achievable, relevant and time-bound – commitments to track their progress in improving nutrition. EHN urges European countries to set SMART commitments, appropriate to their national context, for implementing all of the specific recommendations presented here.

4.2.3 Develop an integrated health and environment approach to food systems and promote health-environment win-wins in food-based dietary guidelines

Global environmental change is both a driver and an outcome of food systems and associated health outcomes. There is potentially considerable overlap between diets becoming both healthier and more sustainable, in terms of GHG emissions, land-use, water use and other aspects (see Chapter 3).

To be able to achieve the needed changes to food systems, further research and analysis will be required to better understand how health and environment aspects interact and what needs to be done to shift towards sustainable healthy diets. In the shorter term, governments should promote the health-environment changes that we already know are 'win-wins' in national food-based dietary guidelines.

4.2.4 EHN's recommendations – three clusters of specific recommendations

Three clusters of specific recommendations are proposed and there is a clear evidence base for these proposals (see Table 4). It is important to understand that much of the evidence on the relationships between diet and cardiovascular outcomes and on the effectiveness of preventive action is indirect rather than direct. Policymakers should recognise that it is not always necessary or desirable to wait for irrefutable conclusive evidence before deciding to implement an action. In other fields – such as economics – major policy decisions are taken on the basis of logical thinking about the processes involved and theoretical modelling of potential scenarios. So in order to take action sooner rather than later, policymakers need to scrutinise the best possible evidence available and use this as the basis for judgements, taken on the basis of clearly set out criteria and principles (See Annex 3 in the full-length paper for further explanation).

EHN calls for the rapid and full implementation of this package of recommendations in order to realise the vision of every European – irrespective of the place or socio-economic circumstances into which they are born – being able to live free from avoidable diet-related CVD, and thus able to have a productive working life and many years of active retirement free from cardiovascular ill-health or disability.

Table 4 EHN recommendations: Evidence base for three clusters of specific recommendations

| | EHN KEY SPECIFIC RECOMMENDATIONS | Target groups within the population | Evidence^{xvii} |
|---|---|--|--|
| FOOD SUPPLY-SIDE CLUSTER | Global food convention to establish global regulatory framework to protect healthy diets. | Everyone | Current regulatory arrangements are clearly inadequate. There is a strong case for a global convention to set a framework for national regulation, ensure that healthy diets are protected across borders and counteract trade agreements. |
| | Reform agriculture and food policy to align with public health policies and promote sustainable food production (including by radically reforming the CAP, measures to encourage shorter supply chains and improve the food supply through rural development and conservation). | Everyone | Modelling studies and natural experiments clearly demonstrate that design of agricultural policy (e.g. the CAP) has potential to change population food intakes. A systematic review of studies on agricultural policies that directly affect or could potentially direct food prices (in US, Netherlands and Egypt) found that such policies had an effect on weight and risk of diet-related NCDs. ²⁵⁸ |
| | Ensure that trade and investment policies protect and promote public health. | Everyone | Evidence exists to demonstrate that trade and investment policies can impact on the food supply/environment and nutrition value of the food chain and can restrict 'policy space' for governments to take regulatory action. |
| FOOD COMPOSITION RELATED CLUSTER | Mandatory maximum levels of industrially-produced trans fatty acids (IPTFAs) | All consumers of affected products. | International experience shows that national 'bans' virtually remove IPTFAs from the food supply. ²⁶² National and local laws limiting trans fats have been followed, respectively, by a drop in death rates ²⁶³ and hospitalisations. ²⁶⁴ Saturated fat in products did not generally increase as trans fats decreased. Local 'bans' have removed trans fats from food outlets. ²⁶² Some voluntary self-regulation has also reduced trans fat intakes. ^{262,265} |
| | Establish nutrition standards for food served or sold in schools, hospitals and other public institutions and issue guidelines for healthy public procurement. | People who eat in public institutions (childcare, schools, other educational establishments, hospitals, prisons, government offices and other publicly-funded facilities). | International evidence, mainly from schools, showing that healthy procurement can improve diet and health outcomes. ²⁶⁶⁻²⁶⁸ More specifically, there is evidence that school regulation – particularly restricting unhealthy foods – and procurement policies are effective. ²⁶⁹ |
| | Wide-ranging, ambitious food reformulation programmes to reduce levels of salt, saturated fat, free sugars, energy density and portion size in processed foods. | All consumers of affected products – programmes should first target foods that are widely consumed and make the biggest contribution to diet. | Strong and extensive evidence that salt reformulation programmes can lead to lower salt levels in foods and lower sodium intake. ²⁷² This experience should be transferable to other ingredients/nutrients. Research suggests that a mandatory approach is best. ²⁷³ |

xvii See Annex 2 of the full-length version of this paper for more detail on the different types of evidence available for each recommendation.

xviii This is not an exhaustive list of all policy implementation examples.

| Examples of implementation ^{xviii} | Who to do what |
|--|--|
| <p>Global regulatory frameworks exist for infant formula (International Code of Marketing of Breast-milk Substitutes) and tobacco (Framework Convention on Tobacco Control).</p> | <ul style="list-style-type: none"> • WHO, FAO, Codex, other UN bodies and their member states to negotiate a global convention. • National governments to advocate for a global convention. • Civil society to advocate for a global convention. |
| <p>Brazil's <i>Fome Zero</i> (Zero Hunger) strategy included a Food Acquisition Programme. This requires public institutions to spend 30% of federal school feeding budgets on food from family farmers, creating new markets for local farmers, especially those selling fruit and vegetables. Changes to agricultural subsidies in eastern European countries in the early 1990s changed the relative price of animal fats and vegetable oils, resulting in health benefits.²⁵⁹</p> | <ul style="list-style-type: none"> • EU to review and consider radical reform of the CAP, encourage shorter supply chains and improve the food supply through rural development and conservation. • Non-EU countries to reform agricultural policy, encourage shorter supply chains and improve the food supply through rural development and conservation. • Policymakers in public health and in agriculture/food/environment policy to collaborate on developing effective policies for a sustainable healthy food supply. |
| <p>There are rare examples of nutrition being taken into account in trade discussions. In Samoa, involvement of a nutritionist in the country's discussions on accession to the World Trade Organization (WTO) enabled a development of a strategy to mitigate potentially negative consequences for nutrition.²⁰⁴ There are also examples of countries, sometimes from countries not bound by WTO rules, (some Pacific Island states, Ghana, Mauritius and Iran) using trade policy instruments to try to reduce imports of particular high fat or high sugar products or to improve their quality.^{260,261}</p> | <ul style="list-style-type: none"> • EU and governments of non-EU member states to mandate targeted health impact assessments as part of trade and investment policy processes, to ensure coherence between nutrition and trade policy making. • EU and governments of non-EU member states negotiating trade deals to appoint a nutrition focal point to provide advice during trade policy negotiations. • Civil society to advocate for consideration of nutrition and health objectives in trade and investment policies. |
| <p>Austria, Denmark, Hungary, Latvia, Iceland, Norway and Switzerland have mandated the removal of IPTFAs in products. Lithuania has notified the European Commission that it intends to legislate.</p> | <ul style="list-style-type: none"> • EU to implement EU-wide legislation. • National governments in EU member states to legislate pending EU regulation. • Non-EU member states to legislate. • Civil society to advocate for effective comprehensive legislation on use of industrially-produced trans fatty acids. |
| <p>In 2008, New York City introduced mandatory nutrition standards for all food purchased or served in city entities, covering more than 3 000 sites and 260 million meals/snacks a year.²⁷⁰ Globally, 17 countries have banned vending machines in schools; Wales has standards for vending machines in hospitals/ health facilities. Bulgaria, Estonia, Finland, France, Hungary, Latvia, Lithuania, Poland, Romania, Sweden and the UK have mandatory nutrition standards for school food. A technical report, produced as part of Malta's EU Presidency, is available as a tool to support member states in ensuring healthy procurement of food served in schools.²⁷¹</p> | <ul style="list-style-type: none"> • EU to support member states in their efforts to introduce healthy procurement. • National and/or sub-national governments or local authorities, as appropriate, to introduce mandatory nutrition standards for all public institutions. • National and/or sub-national governments to issue guidelines on healthy food procurement. • Civil society to advocate for healthier food in public institution. |
| <p>Voluntary salt reduction programmes in place in Austria, Belgium, Croatia, Czech Republic, France, Greece, Hungary, Ireland, Italy, Norway, Slovenia and Spain. Mandatory limits on salt in some foods have been introduced, for example, in Belgium, Bulgaria, Greece, Hungary, Netherlands and Portugal. Voluntary reformulation programmes in France, Netherlands, Switzerland and the UK include other nutrients/ingredients (e.g. fats, sugars) and/or calories.</p> | <ul style="list-style-type: none"> • European Commission to produce a more ambitious comprehensive framework. • All governments to implement national programmes for reformulation including, where appropriate, mandatory standards. • Civil society to advocate for wide-ranging, ambitious reformulation programmes. |

| | EHN KEY SPECIFIC RECOMMENDATIONS | Target groups within the population | Evidence ^{xvii} |
|--------------------------|--|---|---|
| FOOD DEMAND-SIDE CLUSTER | Use of taxes and/or subsidies to promote consumption of healthy foods and reduce consumption of unhealthy foods. | Consumers of taxed or subsidised products. | There is convincing evidence from country experience and extensive modelling that fiscal policies can promote healthier diets. ^{274,275} Currently, the evidence is strongest that taxes on sugar-sweetened beverages reduce consumption and raise revenue. ^{255,275-277} There is also evidence on the effectiveness of fruit and vegetable subsidies ²⁷⁴ and of other targeted taxes (e.g. on foods high in saturated fats, trans fats, free sugars and/or salt) on consumption and as a driver of reformulation. ^{274,275,278} |
| | Regulatory controls to reduce the public health impact of marketing (including advertising and other forms of commercial promotion across all media) of HFSS foods. | Children in the short term; Whole population would benefit from wider restrictions applying to the whole society if introduced. | Convincing research that exposure to HFSS food marketing influences what and how much children eat. ^{218,222,279-281} Measures to restrict marketing <i>can</i> reduce children's exposure, but overall effectiveness depends on what age group, foods, media channels and marketing techniques are covered. ²⁸²⁻²⁸⁵ Mandatory restrictions are more effective than voluntary or self-regulatory approaches. ^{230,286} The evidence base to assess the impact of HFSS marketing on adults is less well developed, but there is recent evidence that price promotions influence adults' food purchasing. ²²² |
| | Adoption of nutrient profiles in the context of the EU regulation of health and nutrition claims; and of mandatory simplified front-of-pack nutrition labelling and menu labelling | All consumers of pre-packaged foods and those who eat out. | Clear evidence that consumers find front-of-pack labels more noticeable and easier to interpret. ²⁸⁷⁻²⁹⁰ There is also evidence that front-of-pack nutrition labelling drives product reformulation. ^{269,291-293} Some evidence that menu calorie labelling reduces the calorie content of meals selected, ²⁸⁵ but the evidence to date from real-life settings remains mixed. ^{230,286} |

| Examples of implementation ^{xviii} | Who to do what |
|---|--|
| <ul style="list-style-type: none"> • France, Spain, Estonia, Belgium, Hungary and the UK have all introduced, or announced plans to introduce, taxes on sugar-sweetened beverages. • Hungary's public health product tax also applies to other products including confectionery, salted snacks and ice cream. | <ul style="list-style-type: none"> • National governments to introduce a tax (equivalent to around 20% of price) on sugar-sweetened beverages. • National governments to introduce carefully modelled combination of taxes (e.g. on saturated fat) and/or subsidies (e.g. on fresh fruits and vegetables). • EU to respect member states' right to introduce tax/subsidy schemes (as long as they are not discriminatory). • Civil society to advocate for implementation of effective taxes and subsidies. |
| <ul style="list-style-type: none"> • Measures in Norway and Ireland concern children up to the age of 18. • Portugal's measures relate to audiences with 20% or more of children, compared to the more common 35% or 50% cut-off. • UK rules have been extended to cover digital marketing and brand marketing that, in effect, promotes HFSS foods. In other regions, far-reaching restrictions in Brazil and Chile cover all media (including internet and apps) and a wide range of marketing techniques. • Ireland has limited HFSS broadcasting advertising for the whole population (i.e. not specifically targeted at children) to 25% of total advertising time or one in four adverts. | <ul style="list-style-type: none"> • EU, through the EU <i>Audiovisual Media Services Directive</i>, to implement a 6am – 11pm watershed, during which HFSS food marketing cannot be shown. • All governments to introduce national mandatory restrictions to prevent exposure of children (up to 18) to advertising and other forms of commercial promotion of HFSS foods across <i>all</i> media. • Civil society to advocate for effective restrictions on HFSS marketing to children. • Public health policymakers and health advocates to develop the evidence base on the impact of HFSS marketing on population intakes (including adults). • The European Union and non-EU member states should adopt the <i>WHO European Region Nutrient Profile Model</i> to define HFSS foods. |
| <p><i>Front-of-pack:</i> The UK government published a recommended front of pack nutrition labelling scheme using green, amber and red 'traffic lights' in 2013. France intends to implement voluntary front-of-pack labelling with the Nutri-Score symbol. A few countries – including some Nordic countries, Finland and Netherlands – use symbols to indicate a healthier option and these are generally thought to be helpful.^{294,295}</p> <p><i>Menu labelling:</i> Many states and cities in the US introduced menu-labelling requirements and the Affordable Care Act introduced national requirements for some types of restaurant chain and vending machines. Other examples include South Korea, Taiwan, Singapore and some territories in Australia.</p> | <ul style="list-style-type: none"> • WHO to recommend a unified global scheme. • European Commission to set nutrient profiles to underpin nutrition and health claims as required by the EC regulation on nutrition and health claims (EC) No 1924/2006); EHN recommends a model which favours the 'best in class' products. • EU to adopt mandatory EU-wide simplified front-of-pack nutritional labelling. EHN continues to recommend a scheme which uses traffic light colours to indicate high, medium and low levels of fat, saturated fat, salt and (preferably added) sugar. EHN will follow developments in evidence for the most effective front of pack nutrition labelling scheme. • National governments must be able to recommend/endorse meaningful front of pack symbols in their countries in addition to any harmonised EU rules on front of pack nutrition labelling • Non-EU member states to legislate for mandatory front-of-pack nutrition labelling. • National governments are encouraged to adopt mandatory requirements to provide easy-to-understand information about the nutritional quality of foods served in chains with more than 10 outlets (menu labelling). • Civil society to advocate for clear front-of-pack and menu labelling. |

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Annex: Proposed population goals

Table I Proposed population goals for foods and other related goals

| | POPULATION GOALS | EXPLANATORY COMMENT |
|-------------------------------|---|--|
| FOODS | | |
| Fruit and vegetables | <p>Intermediate: More than 400 g/day. Long-term: More than 600 g/day These are specific target goals.</p> | <p>The evidence that higher intakes of fruits and vegetables are protective against premature death²⁹⁶ and, more specifically, against cardiovascular deaths²⁹⁶ and the risk of stroke²⁹⁷ has strengthened in recent years. Increasing fruit and vegetable intakes is also important when replacing fat intakes.</p> <p>This includes processed fruit and vegetables, including frozen, canned, etc. Consumption of potatoes or fruit juice does not count towards the fruit and vegetable goal.</p> |
| Sugar-sweetened drinks | <p>Intermediate: Decrease as much as possible. Long-term: Virtually zero. These are marker goals for an optimal dietary pattern for cardiovascular health.</p> | <p>This relates to beverages containing added caloric sweeteners such as sucrose or high-fructose corn syrup. It does not relate to fruit juices, but to meet the goals for free sugars, consumption of fruit juices should also be low (See Chapter 2 and Sugars in Table II).</p> <p>Sugar-sweetened drinks are major contributors to free sugars consumption and limiting consumption as much as possible is recommended, especially in those struggling to maintain a healthy weight.</p> |
| OTHER RELATED GOALS | | |
| Body mass index (BMI) | <p>Intermediate: Average BMI of less than 23 for adults. Long-term: Average BMI of 21 for adults.</p> <p>These are marker goals of a healthy pattern of diet and lifestyle for cardiovascular health.</p> | <p>A healthy weight is recommended to reduce cardiovascular risk by preventing raised blood pressure and dyslipidaemia and reducing the risk of developing type 2 diabetes. These goals reflect average BMI for the whole population. Recommendations may be different for people with particular clinical conditions, such as heart failure. Optimal weight is higher in people over 70⁶⁷ and being underweight is associated with health risks in older people.</p> <p>BMI is only one measure of body composition or 'fatness'. The ratio of waist to hip circumference and simple waist circumference are also used. A waist circumference of ≥ 94 cm in men and ≥ 80 cm in women represents increased risk and ≥ 102 in men and ≥ 88 in women represents substantially increased risk.^{298,67} None of these anthropometric measures are able to give very precise estimates, but they are all moderately or strongly associated with CVD risk and they are valuable population markers of body composition.</p> <p>The relationship between smoking and body composition presents difficulties in interpretation of data on CVD. This makes it difficult to fully explain the complex interactions between body size, shape and composition, smoking and CVD risk.</p> |

Table II Proposed population goals for nutrients and other components

| POPULATION GOALS | | EXPLANATORY COMMENT |
|--|---|---|
| NUTRIENTS AND OTHER COMPONENTS | | |
| Saturated fat (SFA) | <p>Intermediate goal: Less than 10% of calories for the general population and less than 7% of calories for a population at a high risk for heart disease, less than one-third of total fat.</p> <p>Long-term goal: 7% of calories, and less than one-third of total fat.</p> <p>This is a target goal with a direct impact on CVD outcomes.</p> | <p>There is convincing evidence that partial replacement (PUFA) and complex carbohydrates, decreases the risk of heart disease. SFA should make up less than one-third of total fat intake. SFA should be at least two-thirds of total fat intake.</p> <p>Replacing SFA with simple carbohydrates has unfavourable consistent benefit. Saturated fats should be replaced with complex carbohydrates.</p> <p>There is general consensus that the intake of SFA should be reduced at high risk for heart disease.</p> |
| Trans fats (TFA) | <p>Not more than 0.5% of calories from TFA, of which 0% should be from industrially-produced TFA.</p> <p>This is a target goal with a direct impact on CVD outcomes.</p> | <p>Based on experimental and many observational studies, TFA induces a hazardous blood lipid profile and increases the risk of heart disease. Intake of TFA should be as low as possible.</p> <p>It is important that TFA are replaced with unsaturated fats.</p> |
| Total fat | <p>About 25% of calories.</p> <p>This is a marker goal for an optimal diet for cardiovascular health.</p> | <p>Reducing the total fat to 25% of calories – together with reducing consumption to more than 400 g/d – will substantially reduce the risk of heart disease. This goal is, therefore, based on the need to limit total fat intake and thus reduce the risk of weight gain and diabetes.</p> <p>Total fat should be partially replaced with fibre-rich, unsaturated fats (total of mono- and polyunsaturated fats). There is insufficient evidence to set a precise recommendation.</p> |
| Total carbohydrate | <p>Intermediate: More than 55% of calories</p> <p>Long-term: Up to 65% of calories</p> <p>This goal is a marker of a healthy dietary pattern for cardiovascular health.</p> | <p>The goal for total carbohydrate is obtained by calculating the difference between calories consumed according to the goals presented here.</p> <p>It is important that the carbohydrate be derived primarily from whole grains. Refined cereal products should be replaced with whole grains.</p> |
| Free sugars | <p>Intermediate: Less than 10% of calories.</p> <p>Long-term: Not more than 5% of calories.</p> <p>This is a marker goal for an optimal dietary pattern for cardiovascular health.</p> | <p>EHN's previous recommendation related to 'added sugars' was based on WHO. Importantly, this includes added sugars <i>plus</i> sugars in processed foods.</p> <p>The recommendation is to limit free sugars consumption to reduce the risk of healthy weight.</p> |
| Fibre* * Using the AOAC definition | <p>At least 12.6 g dietary fibre* per 1000 kcal (3 g per MJ energy).</p> <p>This is both a target goal, with a direct impact, <i>and</i> a marker goal for a healthy diet for cardiovascular health.</p> | <p>This goal refers to natural fibre-rich foods, including whole grains, fruits, and seeds.</p> <p>These goals are solely based on the AOAC definition of fibre (polysaccharides) (a different definition of fibre). Since EHN has simplified the goals by focusing on this definition.</p> |
| Salt | <p>Less than 5 g of salt (2 g of sodium) per day.</p> <p>This is a specific target goal, directly related to cardiovascular outcomes.</p> | <p>Sustained reduction in salt intake causes a fall in blood pressure, which is associated with a reduction in stroke and heart attack. There is a linear relationship between sodium intake and CVD risk. High salt intakes might be associated with increased risk of heart failure (See Chapter 2).</p> |

nt of saturated with unsaturated fat, especially polyunsaturated fats
concentrations of both total and LDL cholesterol and the risk of heart
total fat intake, while unsaturated fats (total of mono- and PUFA)

ourable effects, but lower fat, high-fibre diets are associated with
d with unsaturated fats, particularly PUFA, and fibre-rich complex

ould be less than 10% of calories and less than 7% for a population

dies, a high intake of TFA is considered very harmful, because it
s the risk of heart disease. There is general consensus that the intake

ed fats or fibre-rich complex carbohydrates.

with a lower free sugar intake and an increase in vegetable and fruit
ally reduce the energy density of the diet and help minimise weight
mit the energy density of the diet for inactive European populations
s and, in the long term, heart disease.

complex unrefined carbohydrates, rather than refined carbohydrates.
d fats) should be at least two-thirds of total fat intake. There is
on for the ratio of n-6 PUFA to n-3 PUFA.

ating the remaining portion of food energy, if total fat and protein are

ncipally from whole grain cereals, fruit, berries, vegetables and legumes.
ole grain products.

sugars', but this recommendation relates to 'free sugars', in line with
sugars in honey, syrups and fruit juices.

ption as much as possible, especially in those struggling to maintain a

g whole grain cereals, pulses, vegetables, fruits and berries, nuts and

of dietary fibre. EHN's previous goals included a goal for non-starch
ce the AOAC definition has been adopted by Codex and the EU, EHN
on.

lood pressure in almost everyone, and reducing blood pressure is
cks. Well-conducted prospective studies support a graded, positive and
deaths and overall death rates. Studies which had suggested that lower
of CVD events suffer from measurement errors and, hence, erroneous

Notes to tables:

Population goals: These goals represent a recommended average intake or level for the population as a whole; they are not dietary guidelines for individuals. The goals refer to a desirable everyday diet and should not be taken to mean that individuals should *never* deviate from them. These goals do not take account of genetic variations in how individuals respond to dietary risk factors or individual susceptibility to disease. There is growing evidence in this field and increasing scope for personalised clinical nutrition counselling services.

Furthermore, the process of defining population goals is, to some extent, a matter of judgement. The population goal seeks to identify a point where the risk of CVD is reduced, but which is also practical and acceptable in the contemporary European context.

Intermediate and long-term goals

In some cases, two different sets of population goals are proposed:

- **Intermediate targets** based on an assessment of current dietary patterns in Europe and including pragmatic considerations of what might realistically be aimed for in the next five to 10 years;
- **Ambitious longer-term goals** which highlight the levels we should ultimately be aiming for, if the pragmatic constraints that feed into the intermediate targets can be overcome.

In other cases, it is considered so important to start working towards the long-term goal immediately that no intermediate target is proposed.

Specific 'target' and 'marker' goals

For these reasons two distinct types of population goal are proposed:

- Specific **target goals** that have a *direct* impact on CVD outcomes, independently of other aspects of the diet.
- Other **marker goals** that have an *indirect* impact on CVD outcomes and are indicators of an ideal diet for cardiovascular health.

Physical activity: This paper does not cover the science and policy options relating to physical activity. The relationship between physical activity and nutrition is complex, and physical activity can influence what people eat, as well as how many calories they expend. These population goals are designed for current Europeans, who tend to be relatively inactive. As well as efforts to reduce calorie intake, measures to increase energy expenditure by enabling, supporting and promoting physical activity are needed.

Percentage of calories (energy): When the goals are expressed as a percentage of calories (food energy), this represents the proportion of the total calorie intake from all food and drink consumed **excluding alcohol**.

Protein: Although a goal for protein intakes is not necessary in relation to the prevention of CVD, WHO and FAO recommend from 10% up to 20% of total calories should come from protein of reasonable quality.

Total calorie intake should be adequate to support growth and development, as well as physical activities, and to reach and maintain desirable body weight and **micronutrient intakes** should be adequate to ensure health, according to existing recommendations for people of different age, gender, etc.

Saturated fat: There is considerable media interest in whether some types of saturated fat – such as dairy fat or coconut oil – are less 'unhealthy' than others. Although scientists have been exploring the associations between specific individual saturated fatty acids and health outcomes, there is not currently enough evidence to justify population goals for individual saturated fatty acids.

Breastfeeding: No population goal for breastmilk or breastfeeding is included in the table. WHO recommends exclusive breastfeeding for six months followed by complementary feeding and continued breastfeeding for up to two years or beyond, and countries in the European region have signed up to WHO's global target to increase rates of exclusive breastfeeding for six months up to at least 50% by 2025. Some national authorities in Europe advise that complementary feeding can sometimes be introduced at four months, while acknowledging the importance of ideally complying with the WHO guideline.

Water: The European Food Safety Authority has proposed that adequate total water intakes (from food and drinks) should be 2 litres for women and 2.5 litres for men. Requirements will be higher in hotter climates or for people involved in vigorous physical activity, and are more critical for children and older people. Given the contribution of sugary drinks to calorie intakes, it is important that supportive policies are in place to ensure easy access to drinking water.

Folate: No population goal is proposed for folate from food. EHN's Nutrition Expert Group considers that inclusion of any recommendations for particular foods specifically because of their folate content or for folic supplements is not warranted for CVD prevention. Folate intake should be adequate to ensure health, according to existing recommendations for different population groups. Optimal B-vitamin status can be achieved with a cardiovascular health-promoting diet that includes leafy green vegetables, whole grain foods, lean meat and low-fat dairy products.

Antioxidants and polyphenols: No population goal is proposed for antioxidants and polyphenols. EHN's Nutrition Expert Group considers that a cardiovascular health-promoting diet provides abundant antioxidants and that there is not enough evidence to justify making any public health recommendation for particular foods specifically because of their content of antioxidants or polyphenols. EHN does not recommend taking supplements because there is evidence of no benefit and at high levels there is evidence of harm. Supplements are no remedy for a poor diet.

Phytosterols (plant sterols and stanols): EHN does not propose a population goal for phytosterols (plant sterols and stanols), because these are only meant for people with high blood cholesterol levels.

Alcohol: The official definitions of how much alcohol is in a 'drink' or a 'unit' vary between countries. The definition in this paper is 10 g of alcohol (ethanol). Consumption of three or more alcoholic drinks per day is associated with increased CVD risk. Moderate alcohol consumption (one or two drinks per day) has been associated with a lower risk of CVD than in people who drink no alcohol at all, but the possibility that this is due to other factors cannot be excluded. Furthermore, recent research has shed doubt on this association (with non-drinkers having the lowest risks for cardiovascular outcomes). We cannot conclude from this that alcohol is protective and, therefore, cannot recommend that people consume alcohol for cardiovascular benefit.

Pulses: Regular consumption of dietary pulses (the dried seeds from the legume family such as beans, chickpeas, lentils and peas) is recommended by some authorities and pulses are a very important component of the diet for vegetarians and vegans. Pulses have a higher protein content than cereals, are rich in calcium, iron, zinc, folate and pro-vitamin A and are more affordable than meat and dairy protein sources. They are a significant source of dietary fibre and have a low glycaemic index. There is some emerging evidence that daily consumption of a 130 g serving of pulses can reduce LDL cholesterol levels and that higher pulse intakes are associated with lower risk of heart disease, reduced blood pressure and obesity.

Colonic flora: A cardiovascular health-promoting diet will include plentiful dietary fibre. While there is a lot of interest in microorganisms in the gut and the possible implications for nutrition, EHN's Nutrition Expert Group considers the emerging data is not yet complete enough to make any firm recommendations.

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