

Ellen Cecilie Andresen and
Anne Hatløy

Nutrition efforts in Norwegian development cooperation



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Abbreviations

Abbreviation	Full name	Norwegian
BFHI	Baby-Friendly Hospital Initiative	Mor-barn-vennlig initiativ
BMI	Body Mass Index	Kroppsmasseindeks
CFS	Committee on World Food Security	Komiteen for matsikkerhet
CGIAR	The Consultative Group on International Agricultural Research	Den konsultative gruppen for internasjonal landbruksforskning
FAO	Food and Agriculture Organization of the United Nations	FNs jordbruksorganisasjon
FIES	The Food Insecurity Experience Scale	
FN	The United Nations (UN)	De forente nasjoner
IFAD	International Fund for Agricultural Development	Det internasjonale fond for landbruksutvikling
ILO	International Labor Organization	Den internasjonale arbeidsorganisasjonen
IPCC	The Intergovernmental Panel on Climate Change	FNs klimapanel
MAM	Moderate Acute Malnutrition	Moderat akutt feilernæring
MUAC	Mid-upper-arm circumference	Overarmsomkrets
NCD	Non-communicable diseases	Ikke-smittsomme sykdommer
SAM	Severe Acute Malnutrition	Alvorlig akutt feilernæring

SOFI	The State of Food Security and Nutrition in the World	
UNICEF	United Nations Children's Fund	FNs barnefond
UNSCN	United Nations System Standing Committee on Nutrition	FNs faste utvalg for ernæring
WB	World Bank	Verdensbanken
WFP	World Food Programme	Verdens matvareprogram
WHA	World Health Assembly	
WHO	World Health Organization	Verdens helseorganisasjon

Preface

Approximately 20 years ago, the *Government Commission on Nutrition and Physical Activity* published a report with the title *Nutritional Considerations in Norwegian Development Cooperation*, penned by Siri Damman and Liv Elin Torheim. In association with the government's *'Food, People and the Environment. The Government's action plan on sustainable food systems in the context of Norwegian foreign and development policy 2019–2023*, the Ministry of Foreign Affairs asked Fafo to update the old report. Given the changes that have occurred in this area over the last 20 years, the updated report has become a completely new report, but one that draws inspiration from its predecessor. We wish to thank the Ministry of Foreign Affairs for the opportunities that this assignment has entailed.

Professor Liv Elin Torheim at Oslo Metropolitan University, professor Ingunn M. S. Engebretsen at the Centre of International Health at the University of Bergen and researcher Svein Erik Stave at Fafo have formed the reference group for this report. They have provided good and useful input during the process. In addition, Svein Erik Stave has provided internal quality assurance. We would also like to thank Bente Bakken at Fafo's information department.

Ellen Cecile Andresen has been mainly responsible for the writing of the report. Anne Hatløy has served as project manager and contributed to some of the writing, as well as to discussions of the content.

Oslo, December 2019

Ellen Cecilie Andresen and Anne Hatløy

Summary

The world is facing major challenges in terms of nutrition, with millions of people who are starving or malnourished. In recent years, there has been an increase in the number of people who suffer from starvation or have no access to food. The UN has estimated that in 2017, a total of 821 million people had insufficient access to food. Children are especially affected by malnutrition: 149 million children under the age of five – 22 per cent of all the world’s children – suffer from stunting, and 49 million from wasting. Two billion children and adults suffer from a deficiency of one or more micronutrients. Meanwhile, obesity is a growing problem in all countries. Forty million children under the age of five are overweight, and more than one in eight adults in the world are obese. The result is a rapid increase in non-communicable diseases such as cardiovascular disease, diabetes and certain types of cancer. The burden of these diseases is increasing especially rapidly in low- and medium-income countries.

The consequences of malnutrition

Malnutrition and unbalanced diets entail major economic, human and environmental consequences: malnutrition is a prominent cause of child mortality and early death among adults, and unhealthy diets are currently the largest risk factor for the global burden of disease. Moreover, today’s food systems and diet choices exert a high pressure on the environment, in the form of greenhouse gas emissions and loss of natural resources and biological diversity. Food production accounts for up to 30 per cent of global greenhouse gas emissions and 70 per cent of all freshwater consumption and occupies approximately 40 per cent of the entire world’s land mass. Global challenges related to food and nutrition need to be addressed as part of the efforts to achieve sustainable development.

Agenda 2030

Agenda 2030 establishes a new framework for international collaboration, with sustainable development goals that focus on global challenges and global responsibilities. Sustainable Development Goal 2 aims to end hunger and all forms of malnutrition by 2030. Further, the goal seeks to ensure that

all people have access to safe and nutritious food all year round. An adequate nutritional status is a prerequisite for many of the sustainable development goals, including eradication of poverty, better health, education and gender equality. The launch of the sustainable development goals also marked the start of the UN Decade of Action on Nutrition (2016–2025). During this decade, all UN member states and other actors are encouraged to increase their investments in nutrition and implement measures and programmes to eradicate hunger and malnutrition, and ensure universal access to healthy and sustainable diets. In combination, these provide an extra impetus to take action on nutrition today and in the years to come.

Climate change

According to the UN, climate change and more extreme weather phenomena, in combination with conflicts, are the main reasons why we have seen an increase in the number of people living with insufficient access to food in recent years. Climate change affects all dimensions of food security as well as other underlying causes of malnutrition related to provision of care for children, health and childhood environment. The consequences of climate change imply reduced variation and nutritional quality of the food which is produced and eaten. Increasing temperatures and drought affect the quantity and quality of water available for food production, energy production and human consumption. Precipitation and temperature play a key role in the outbreak and spread of many diseases. Extreme weather phenomena, such as cyclones and floods, can also directly affect the quality and availability of food. Health services can also be affected if land areas, infrastructure and buildings are damaged.

The first 1000 days

Children, adolescents and adults in all countries of the world consume too much processed food and too many sugary beverages, and eat too little fruit, vegetables, legumes and whole grains, irrespective of their socioeconomic status. This produces parallel problems of underweight/malnutrition and overweight/obesity. The groups that are most exposed to malnutrition include children and pregnant and lactating women. A woman's nutrition before and during pregnancy is crucial for foetal weight and development. The child's birthweight and nutrition during the two first years of life affect the child's development and health both during childhood and later as an adult. The first 1000 days – from conception until the child's second birthday – are crucial for how the child will fare in life. Adequate nutrition helps build a

strong immune system and promotes cognitive and physical development, meaning that more children can achieve their full potential. Adequate nutrition is thus not only a right that the child enjoys; it also benefits society as a whole.

The need for interventions

To eradicate hunger and combat all forms of malnutrition there is a need for interventions that focus on improving nutrition in individuals while ensuring sustainable social and economic development. Malnutrition can only be met through nutrition-specific interventions that target the immediate causes of malnutrition, including improved food and nutritional intake, and the prevention and treatment of infectious diseases, or through nutrition-sensitive interventions that address the underlying causes of malnutrition, including food security, water and sanitation, social protection and education. Nutritional aspects of health-related interventions and activities produce ample synergy effects. Inclusion of nutrition in interventions that target both early childhood and schoolchildren would have an effect on the development and school performance of children and adolescents.

Nutrition in all parts of the food system

Concerns for nutrition should also be incorporated into all aspects of a sustainable food system, ranging from fertile soils to improve the quality of crops, through food security and enrichment at the processing stage, safe transport and storage, to preparation and intake of nutritious food in families and by individuals. Measures that target agriculture and strengthen the role of women may be effective ways to ensure better incomes, food security and the quality of diets in vulnerable households and individuals. Agricultural and fishery projects should strengthen their focus on production of nutritious foods. Industrial development should be sustainable and nutrition-sensitive when it comes to processing, transporting and storing food items. Appropriate processing is important to ensure a long shelf-life, more stable access to and less wastage of nutritious food such as fruit, vegetables and dairy products. Nutritional information to promote variety in diets may also have a positive effect.

Norway's contribution

Through an increased focus on nutrition, Norway has an opportunity to help achieve Sustainable Development Goal no. 2, which aims to end hunger and all forms of malnutrition by 2030. Adequate nutrition in the population is

also crucial for achieving a number of the other Sustainable Development Goals, including eradication of poverty, good health, education, gender equality, economic growth and peace. Norway should support governments, civil society, and national/local efforts that engage in nutrition-specific interventions to reduce all forms of malnutrition, as well as organisations and processes that promote nutrition-sensitivity through all parts of the food system to ensure better access to varied, healthy and sustainable food for more people.

Sammendrag (Norwegian)

Verden står overfor store ernæringsutfordringer, med millioner av mennesker som sulter eller lider av feilernæring. Det har de senere år vært en økning i antall mennesker som sulter eller ikke har tilgang til nok mat. FN har beregnet at i 2017 var det 821 millioner mennesker som ikke hadde tilgang til nok mat. Særlig barn rammes av underernæring: 149 millioner barn under fem år – 22 prosent av alle verdens barn – er rammet av veksthemming, og 49 millioner er rammet av avmagring. To milliarder barn og voksne lider av mangel på ett eller flere mikronæringsstoffer. Samtidig er fedme et økende problem i alle land. Førte millioner barn under fem år lider av overvekt, og mer enn én av åtte voksne i verden er rammet av fedme. Resultatet er en rask økning i ikke-smittsomme sykdommer som hjerte- og karsykdommer, diabetes og enkelte kreftformer. Sykdomsbyrden av disse øker raskest i lav- og middelinntektsland.

Feilernæringens konsekvenser

Feilernæring og ubalansert kosthold har store økonomiske, menneskelige og økologiske konsekvenser: feilernæring er en viktig årsak til både barnedødelighet og tidlig død blant voksne, og usunt kosthold utgjør i dag den største risikofaktoren for den globale sykdomsbyrden. I tillegg bidrar dagens mat-systemer og kostholdsvalg til økt press på miljøet, på grunn av klimagassutslipp og tap av naturressurser og biologisk mangfold. Matproduksjon bidrar med opptil 30 prosent av globale klimagassutslipp, 70 prosent av all ferskvannsbruk og okkuperer omtrent 40 prosent av verdens landarealer. De globale mat- og ernæringsutfordringene må løses som en del av arbeidet med bærekraftig utvikling.

Agenda 2030

Agenda 2030 setter nye rammer for internasjonalt samarbeid, med bærekraftsmål som fokuserer på globale utfordringer med et globalt ansvar. Bærekraftsmål 2 tar sikte på å utrydde sult og alle former for feilernæring innen 2030. Videre ønsker man å sikre alle mennesker tilgang til nok mat som er trygg og ernæringsmessig fullgod, gjennom hele året. God ernæringsstatus

er en forutsetning for flere bærekraftsmål, inkludert utrydding av fattigdom, bedre helse, utdanning og likestilling. Samme år som bærekraftsmålene ble lansert, startet FNs tiår for ernæring (2016–2025). I tiåret for ernæring oppfordres FNs medlemsland og andre aktører til å øke investeringer i ernæring og gjennomføre tiltak og programmer for å utrydde sult og feilernæring, og til å sikre universell tilgang til et sunt og bærekraftig kosthold. Sammen gir disse et ekstra driv for å satse på ernæring i dag og i kommende år.

Klimaendringer

Ifølge FN er klimaendringer og økning i mer intense værphenomen, sammen med konflikt, hovedårsakene til at vi de senere år har sett en økning i antall mennesker som lever uten tilgang til nok mat. Klimaendringene påvirker alle dimensjoner av matsikkerhet, og også andre underliggende årsaker til feilernæring relatert til omsorg for barn, helse og oppvekstmiljø. Konsekvensene av klimaendringer fører til redusert variasjon og næringskvalitet i maten som blir produsert og spist. Økte temperaturer og tørke påvirker kvantitet og kvalitet på tilgjengelig vann for matproduksjon, energiproduksjon og konsum. Nedbør og temperatur har en viktig rolle i utbrudd og spredning av mange sykdommer. Ekstreme værphenomen som sykloner og flom kan også direkte påvirke kvaliteten på og tilgangen til mat – samt helsetjenester dersom landområder, infrastruktur og bygninger blir ødelagt.

De første 1000 dager

Barn, ungdom og voksne spiser for mye bearbeidet mat og sukkerholdig drikke, og for lite frukt, grønnsaker, belgvekster og fullkorn, i alle verdens land, uavhengig av sosioøkonomisk status. Dette bidrar både til underernæring og overvekt/fedme. De mest utsatte gruppene for feilernæring er barn, gravide og ammende kvinner. Kvinnens ernæring før og under graviditeten er viktig for fosterets vekst og utvikling. Barnets fødselsvekt og ernæring de første to årene i livet påvirker barnets utvikling og helse både i barndom og som voksen. De første 1000 dager – fra unnfangelse til barnets andre fødselsdag – er avgjørende for barnets skjebne. God ernæring bidrar til et sterkt immunforsvar og kognitiv og fysisk utvikling, og gjør at flere barn kan nå sitt fulle potensial. God ernæring hos barn er ikke bare en rettighet barnet har, men også et gode for hele samfunnet.

Behov for tiltak

For å utrydde sult og bekjempe alle former for feilernæring, er det behov for tiltak som fokuserer på bedre ernæring hos individer samtidig som en økonomisk, sosial og økologisk bærekraftig utvikling finner sted. Feilernæring kan bekjempes gjennom ernæringsspesifikke tiltak som påvirker de umiddelbare årsakene til feilernæring, inkludert bedre mat- og næringsinntak, og forebygging og behandling av infeksjonssykdommer, eller gjennom ernæringssensitive tiltak som retter seg mot de underliggende årsakene til feilernæring, inkludert matsikkerhet, vann og sanitære forhold, sosial beskyttelse og utdanning. Ernæringshensyn i helsetiltak og -aktiviteter gir gode synergieffekter. Inkludering av ernæring både i tiltak rettet mot tidlig barndom og mot barn i skolen vil kunne påvirke barn og unges utvikling og skoleprestasjoner.

Ernæring i alle ledd av matsystemet

Hensynet til ernæring bør videre inkorporeres i alle aspekter av et bærekraftig matsystem, fra et næringsrikt jordsmonn for å bedre kvaliteten på avlinger, via mattrygghet og berikning i bearbeidingsleddet, trygg transport og lagring, til tilberedning og inntak av næringsrik mat i familier og av enkeltindivider. Tiltak innen landbruk, samt styrking av kvinnens rolle, kan være effektivt for å sikre bedre inntekt, matsikkerhet og kvalitet på kostholdet hos utsatte hushold og individer. Prosjekter innen landbruk og fiske bør ha økt oppmerksomhet på produksjon av næringsrike matprodukter. Næringsutvikling bør være bærekraftig og ernæringssensitiv med tanke på foredling, transport og lagring av matprodukter. Riktig bearbeiding er viktig for å sikre bedre holdbarhet, mer stabil tilgang til og mindre matsvinn fra næringsrike matvarer som frukt, grønt og meieriprodukter. Ernæringsopplysning for å bidra til økt variasjon i kostholdet kan også ha god effekt.

Norges bidrag

Gjennom økt innsats på ernæring har Norge en mulighet til å bidra til å oppnå bærekraftsmål 2 som tar sikte på å utrydde sult og alle former for feilernæring innen 2030. God ernæring i befolkningen er også viktig for oppnåelsen av en rekke andre bærekraftsmål, inkludert fattigdoms bekjempelse, god helse, utdanning, kjønnslikestilling, økonomisk vekst og fred. Norge bør støtte regjeringer, sivilsamfunn og nasjonale og lokale innsatser som jobber med ernæringsspesifikke tiltak for å redusere alle former for feilernæring, samt organisasjoner og prosesser som fremmer ernæringssensitivitet gjennom hele matsystemet for å sikre økt tilgang til variert, sunn og bærekraftig mat for flere.

1 Nutrition in light of Agenda 2030 and the SDGs

Agenda 2030 defines a new framework for international collaboration, with Sustainable Development Goals (SDGs) that focus on global challenges and global responsibilities. SDG 2 aims to eradicate hunger and all forms of malnutrition by 2030. Furthermore, the aim is to ensure that the entire population has sufficient, safe and nutritious food throughout the year. Good nutritional status is a prerequisite for many of the SDGs, including eradication of poverty, better health, education and gender equality. The year when the SDGs were launched also marked the start of the UN Decade of Action on Nutrition (2016–2025). During this decade, all UN member states, and other actors are encouraged to increase their investments in nutrition and implement measures and programmes to eradicate hunger and malnutrition and ensure universal access to a healthy and sustainable diet. Together, the SDGs and the UN Decade of Action on Nutrition provide an extra impetus to prioritise nutrition today and in the years to come.

1.1 Nutrition as part of sustainable development

Good nutrition is a fundamental precondition for life and health. Malnutrition and poor diet entail large financial, human and ecological consequences, and malnutrition is a major cause of both child mortality and early death among adults (Black et al., 2013). Unhealthy diets are currently the largest risk factor for the global burden of disease (GBD 2017 Diet Collaborators, 2019). In parallel, existing food systems and dietary choices put added pressure on the environment as a result of greenhouse gas emissions and loss of natural resources and biological diversity (Willett et al., 2019).

The world is facing major nutritional challenges, with millions of people suffering from starvation or malnutrition. Recent years have seen an increase in the number of people who are starving or have insufficient

access to food, and progress towards the global nutrition targets¹ is too slow (FAO, IFAD, UNICEF, WFP, & WHO, 2018). According to the UN, 821 million people had insecure or limited access to food² in 2017 (FAO et al., 2018). Children are especially affected by malnutrition: 149 million children under five – 22 per cent of all the world’s children under the age of five – are affected by stunting³, and 49 million by wasting⁴ (UNICEF, WHO, & World Bank Group, 2019). Two billion children and adults are deficient in one or more micronutrients (FAO et al., 2018). In parallel, obesity is becoming a problem in all countries worldwide (NCD Risk Factor Collaboration, 2017). Forty million children under the age of five are overweight or obese (UNICEF et al., 2019), and more than one in every eight adults in the world are obese (FAO et al., 2018). The result is a rapid increase in non-communicable diseases such as cardiovascular disease, diabetes and some types of cancer, and the burden of these diseases is increasing especially rapidly in low- and middle-income countries (GBD 2017 Causes of Death Collaborators, 2018).

Hunger and malnutrition are the result of a number of causal factors. The nutrition situation can rapidly become critical, such as in humanitarian crises where access to food, health services and appropriate sanitary facilities is often hindered. Moreover, uncontrolled social and economic crises can give rise to unemployment and loss of income, and inflation can erode purchasing power. Drought, floods or other extreme weather conditions can cause crop failure and a consequent food shortage. The situation may also be of a chronic nature, preventing people from obtaining sufficient amounts of high-quality, nutritious food for years to come. This can lead to undernutrition and overweight/obesity.

According to the UN, war, conflict and climate change are the main reasons for the increase in the number of people living with insufficient access to food in recent years (FAO et al., 2018). Climate change affects all dimensions of food security, as well as other underlying causes of malnutrition related to care for children, health and childhood environment. Nutrition is especially vulnerable, since many of the consequences of climate change and extreme weather conditions entail reduced nutritional

¹The global nutrition targets are six objectives for maternal and infant nutrition adopted by the World Health Assembly, and used as indicators of SDG 2. The global nutrition targets are described in the next chapter.

²Often referred to as ‘undernourishment’.

³Stunting: low height for age in children under the age of five.

⁴Wasting: low weight for height in children under the age of five.

quality and variation in the food that is produced and consumed. Moreover, modern day crises are increasingly of a long-term nature, and acute malnutrition therefore needs to be treated in parallel with the development of sustainable food systems that promote good nutrition.

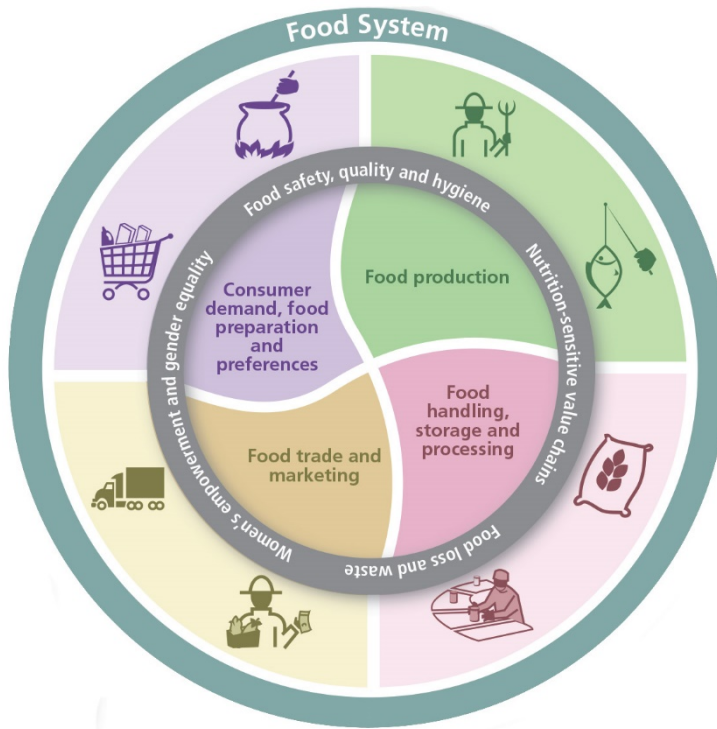
In 2015, the UN unanimously agreed on the Agenda 2030 for Sustainable Development, with a vision of a more sustainable future for all – economically, socially and environmentally (United Nations, 2015). Eradicating hunger and all forms of malnutrition is a key goal of Agenda 2030 and the SDGs. The UN Decade of Action on Nutrition (2016–2025) draws further political attention to nutrition (United Nations, n.d.).

Sufficient investment in nutrition, both directly and as an element in programmes to promote sustainable food systems, is a key component of the work on sustainable development and a prerequisite for achieving the SDGs.

1.2 Nutrition as an element of sustainable food systems

A *food system* has been described as the aggregate of all elements (climate, environment, people, physical input factors, processes, infrastructure, institutions etc.) and activities related to the production, processing, distribution, sale and consumption of food, as well as the benefits and the socioeconomic and environmental impact of such activities (see Figure 1) (CFS, 2017). *Sustainable* food systems aim to provide food security and good nutrition for all, whilst safeguarding the economic, social and environmental foundation for future generations (FAO, 2018b).

Figure 1 Food system (taken from FAO 2017)



The increasing prevalence of food insecurity and the continuing high levels of malnutrition are signs that something is amiss with today's food systems. In essence, food systems cover the entire process from the field/sea to the consumer's plate, and include food production, handling, storage and processing, trade and marketing, as well as consumer demand, preparation and preferences. Food production is the largest contributor to climate change, accounting for up to 30 per cent of global greenhouse gas emissions, 70 per cent of all freshwater consumption and occupying 40 per cent of the world's land area – at the expense of, for example, rainforests (Vermeulen, Campbell, & Ingram, 2012; Willett et al., 2019). The environmental impact of food production also includes marine systems – around 60 per cent of the world's fish stocks are fully exploited and more than 33 per cent are already overexploited (FAO, 2018a). In addition, a rapidly growing aquaculture industry may affect coastal habitats and freshwater systems (Willett et al., 2019). Furthermore, the expected increase in population and prosperity will require more varied

foods and higher-quality diets, including more meat and other animal products. The competition for arable land, water and energy is likely to intensify, and the effects of climate change will become increasingly evident (Nasjonalt råd for ernæring, 2017). Conflicts, persistent crises and unfair distribution of resources represent further strains on the global food system.

The co-occurrence of all forms of malnutrition that is seen today is a result of a nutrition transition (Popkin, 2006). In particular, urbanisation and economic growth in low- and middle-income countries have given rise to changes in food systems, lifestyles and dietary habits. We are seeing an increase in the intake of ultra-processed foods and 'fast food', often high in fat, sugar and salt and low in fibre and nutrients. Such changes lead to new forms of malnutrition, especially overweight/obesity and micronutrient deficiencies, as well as dietary-related illnesses. Different forms of malnutrition can coexist within the same country, the same population group, the same household and even the same individual. For example, a person who is suffering from overweight or obesity may also be deficient in micronutrients, and a child may be stunted, overweight and deficient in micronutrients at the same time. This multiple burden of malnutrition⁵ is more common in low- and middle-income countries and concentrated in poor population groups (FAO et al., 2018).

It has been shown that a healthy diet also tends to be a sustainable diet. A healthy and sustainable diet consists of a broad and varied selection of foods, with a focus on plant-based and locally sourced products, in just the right amount to meet energy and nutritional needs. According to the UN Food and Agriculture Organization (FAO), a sustainable diet is a diet that has a minor environmental impact and helps ensure food and nutritional security and a healthy life for present and future generations. A sustainable diet also protects biological diversity and ecosystems, is culturally acceptable, accessible, economically fair, safe and healthy, and ensures optimal use of resources (Burlingame & Dernini, 2012). Exactly what kinds of food are encompassed by a sustainable diet will vary somewhat across countries, but a healthy and sustainable diet will need to include substantial amounts of vegetables, fruit, wholegrain cereals, legumes, nuts and vegetable oils, moderate amounts of sustainable fish and crustaceans, white meat and dairy products, and limited

⁵The concept 'multiple burden of malnutrition' implies that several forms of malnutrition occur simultaneously in individuals, households or societies/countries. This term is also known as the 'double burden of malnutrition' if undernourishment and overweight occur in parallel, or as the 'triple burden of malnutrition' if undernourishment, overweight/obesity and micronutrient deficiencies occur in parallel.

amounts of red meat, processed meat products and other processed foods with a high content of sugar, fat and salt (WHO, 2018; Willett et al., 2019).

Diet-induced and lifestyle diseases, such as type 2 diabetes and cardiovascular disease, are increasing in prevalence worldwide, and mostly in low- and middle-income countries. These diseases are gradually turning into an insurmountable burden on the health budgets of many low- and middle-income countries, and this can impact on the provision of health services to marginalised groups. No country has yet been able to reverse this trend. A Lancet commission has suggested that the reasons may include ‘political inertia’, i.e. weak political leadership⁶, opposition to government intervention from strong commercial interests and absence of a demand for political initiatives from the population (Swinburn et al., 2019).

Young children have special nutritional needs because of their rapid growth and development. A high intake of ultra-processed foods is often observed in this age group in many low- and middle-income countries (Pries et al., 2017). This can cause both obesity and stunting (Swinburn et al., 2019). In a sustainability perspective, emphasis is often placed on reducing the consumption of meat. Although this may be relevant in high-income countries where meat intake is high, children in many low- and middle-income countries in particular often have an insufficient intake of animal products with essential nutrients such as protein, iron and vitamin B. This group may therefore need to increase their intake of meat and other animal products.

Breast milk is an environmental, sustainable and natural source of nutrition for infants and young children. Breast milk substitutes on the other hand, contribute to greenhouse gas emissions during production, transport and preparation. A study from 2019 found that the carbon footprint from intake of breast milk substitutes the first six months of life was nearly twice as high as the footprint from breast milk. (Karlsson, Garnett, Rollins, & Rööös, 2019). Promotion of breastfeeding should therefore be part of a sustainable diet.

There is a need for measures that focus on improving the nutrition of individuals in parallel with economic, social and ecological sustainable development. To reduce malnutrition through sustainable food systems, concerns for nutrition should be incorporated into all aspects of a food system, ranging

⁶ The commission interprets this as a result of either massive pressure from the industry or a belief in neoliberalism, with its emphasis on individual choice. So far, the latter has failed to slow down or reverse the increase in overweight and obesity in the population.

from fertile soils to ensure better crop quality, via food security and enrichment in the processing chain, safe transport and storage, to preparation and intake of nutritious food in households and by individuals. Processing may be necessary to ensure a longer shelf life, more stable access and less wastage of nutritious foods such as fruit, vegetables and dairy products. Nutrition education to increase variety in diets may also have a good effect (CFS, 2017; FAO, 2017).

1.3 The impact of climate change on nutrition

Climate change and extreme weather affect nutrition in terms of the food we eat, preconditions for good health and our social environment. Our food intake is affected by availability, quality, economic accessibility and how our bodies can make use of the food.

Climate change and extreme weather phenomena affect food production in areas that are exposed to storms, floods, drought, erosion, rising temperatures and rising sea levels. Global warming will particularly reduce crop yields in tropical areas with reduced soil fertility, reduced crop volumes and reduced production from animal husbandry (CFS, 2017). Climate change will also affect fishery and aquaculture, especially because fish stocks tend to migrate towards colder waters (Willett et al., 2019).

Moreover, the quality of foodstuffs may also be affected by climate change. For example, an increased concentration of CO₂ in the air will be associated with a lower content of zinc, iron and protein in wheat, rice, peas and soybeans (Myers et al., 2014). In addition, food security can be affected by rising temperatures and extreme weather that create a breeding ground for food-borne pathogenic microorganisms such as campylobacter and salmonella (Tirado, Clarke, Jaykus, McQuatters-Gollop, & Frank, 2010). Rising temperatures and drought will affect the quantity and quality of water available for food production, energy generation and consumption (washing, cooking and drinking) (Turrall, Burke, & Faurès, 2011).

The sum of these changes is likely to cause rising food prices, which in turn can lead to undernutrition and micronutrient deficiencies in the population groups that are most vulnerable to food insecurity (Springmann et al., 2016).

Precipitation and temperature play a key role in the outbreak and spread of many parasitic, viral and bacterial diseases, including malaria, dengue fever and cholera (Kelly-Hope & Thomson, 2008). The prevalence of plant and animal diseases is also expected to change as a result of climate change. Extreme weather phenomena such as cyclones and floods can directly affect the

quality and accessibility of health services if buildings and infrastructure are damaged.

Economic models also indicate that climate change will affect time use among people who are engaged in climate-sensitive sectors such as agriculture. (Zivin & Neidell, 2014; Ulrichs, Cannon, Newsham, Naess, & Marshall, 2015). We know, for example, that the amount of time that needs to be spent on agricultural activities severely reduces the time available to provide care for young children, and this in turn can impact the nutritional status of children under the age of five (Paolisso, Hallman, Haddad, & Regmi, 2002). Improvements in health observed over the last 50 years may be reversed by 2050 as a result of climate change (Watts et al., 2015). The UN Intergovernmental Panel on Climate Change (IPCC) assumes that the greatest health hazard to result from climate change will be increased undernutrition among vulnerable groups in low- and middle-income countries (IPCC, 2014). Estimates suggest that long-term climate change may lead to an increase in the prevalence of stunting in children. In all regions where stunting already is widespread, it has been estimated that climate change may increase the prevalence of stunting by 30–50 per cent by 2050, when compared to a scenario without any further climate change (Lloyd, Kovats, & Chalabi, 2011). Rising temperatures also increase the risk of illness and death from non-communicable diseases (Friel et al., 2011).

2 International commitments related to nutrition

2.1 Commitments

Access to sufficient and nutritious food is a human right. Through human rights conventions, the countries of the world have committed to eliminating hunger and poverty. The right to food and health was established in 1948 in Article 25(1) of the World Declaration of Human Rights: ‘... everyone has the right to a standard of living adequate for the health and well-being of himself and his family, including food...’ (United Nations, 1948). After the adoption of the International Covenant on Economic, Social and Cultural Rights in 1966, the right to food changed from being a moral commitment to a binding obligation under international law (United Nations, 1966). The Convention on the Rights of the Child from 1989 mentions *nutrition* explicitly as a human right (United Nations, 1989).

In 2015, there was international agreement for the 2030 Agenda for Sustainable Development (United Nations, 2015). The Sustainable Development Goals (SDGs) are based on the human rights and apply in all countries. Development must take place within an ecological framework that ensures growth and prosperity also for future generations. SDG 2 aims to eradicate hunger and all forms of malnutrition by 2030. A further objective is to ensure universal access to safe, nutritious and sufficient food throughout the year. Good nutritional status is a prerequisite for achieving many of the other SDGs, including the eradication of poverty and improvements in health, education and gender equality (FAO et al., 2018).

In 2012, the World Health Assembly (WHA) adopted six global nutrition targets for children and women of reproductive age, to be achieved by 2025 (WHO, 2014a). These targets have subsequently been included as targets in the SDGs. To conform to Agenda 2030, UNICEF and WHO have extended the deadline for the global nutrition targets until 2030 and adjusted the level of ambition for these targets accordingly (WHO & UNICEF, 2018a). The current global nutrition targets for the period until 2030 are as follows:

- 50% reduction in the number of children under-5 who are stunted
- 50% reduction of anaemia in women of reproductive age
- 30% reduction in low birth weight
- Reduce and maintain childhood overweight to less than 3%
- Increase the rate of exclusive breastfeeding in the first six months up to at least 70%
- Reduce and maintain childhood wasting to less than 3%

The WHA has adopted one further nutrition target for adults as part of a framework for prevention and control of non-communicable diseases (WHO, 2013):

- No increase in adult obesity

In 2016, the WHA adopted the resolution ‘Ending inappropriate promotion of foods for infants and young children’ (World Health Organization, 2016), and in 2018 the resolution ‘Infant and young child feeding’ (World Health Organization, 2018). These resolutions confirm that breastfeeding has significant health benefits over breast milk substitutes, and in situations with, for example, lack of access to clean water, breastfeeding can be crucial for the survival, nutritional status and development of infants. The resolutions further confirm that promotion of breastfeeding saves lives in crisis situations, as well as contributes to achieving the SDGs. WHO member states, including Norway, are therefore encouraged to increase their investments in policies and programmes to promote breastfeeding, such as the Baby-Friendly Hospital Initiative (see the section on health under nutrition-sensitive measures, p.45), and to implement all necessary measures to end inappropriate marketing of food for infants and young children, including *The International Code of Marketing of Breast-milk Substitutes*.

The Second International Conference on Nutrition (ICN2) was held in Rome in 2014, organised by the World Health Organization (WHO) and the UN Food and Agriculture Organization (FAO). ICN2’s vision is to eradicate all forms of malnutrition, focusing on reforming food and healthcare systems for better nutrition (FAO & WHO, 2014b). The action plan from ICN2 gives recommendations on how this can be operationalised and encompasses various sectors such as food systems, healthcare systems, social protection and education (FAO & WHO, 2014a). A key decision made at this conference was to highlight all forms of malnutrition.

The UN Decade of Action on Nutrition was adopted by the UN General Assembly in April 2016 and runs from 2016 to 2025 (United Nations, n.d.). UN member states and other actors are encouraged to increase their investments

in nutrition and implement measures and programmes to eradicate hunger and malnutrition, and to ensure universal access to a healthy and sustainable diet. Six focus areas have been identified for the Decade of Action on Nutrition:

- Sustainable, resilient food systems for healthy diets.
- Aligned health systems providing universal coverage of essential nutrition actions.
- Social protection and nutrition education.
- Trade and investment for improved nutrition.
- Safe and supportive environments for nutrition at all ages.
- Strengthened governance and accountability for nutrition.

Norway acts in accordance with and supports the overarching international framework for the work on climate-adapted agriculture and food security (Finansdepartementet, 2018). This defines clear overarching goals and sets the framework for Norway's national and international commitments. These include the 2030 Agenda with the SDGs, the Paris Agreement on Climate Change, the Sendai Framework for Disaster Risk Reduction, the Addis Ababa Action Agenda on Financing for Development, human rights, as well as world summits on food security and conferences on nutrition.

2.2 Monitoring of the commitments

The food and nutrition situation can be monitored using indicators that measure nutritional status, food intake or access to food. The measurements can be undertaken at the individual or household level. The indicators can be used to monitor the development of individuals or households, or they can present the situation at group level.

UNICEF, WHO and the World Bank publish annual estimates of malnutrition among children: *Joint child malnutrition estimates*. These reports are based on data from national nutrition surveys or other relevant sources, and include estimates of stunting, overweight, underweight and wasting among children under the age of five. National nutrition surveys are undertaken by national health authorities, often in collaboration with UNICEF, WHO or other international agencies. The frequency of these studies depends on economic resources and implementation capacity.

The Global Nutrition Report is published annually and is a tool for monitoring the progress towards achieving the global nutrition targets, including exclusive breastfeeding of children in the first six months, stunting, wasting and overweight among children under the age of five, anaemia among

women of reproductive age and obesity in adults. The Global Nutrition Report is based on data from WHO and UNICEF, including the *Joint Child Malnutrition Estimates*, and the report itself is prepared by an independent group of experts.

The State of Food Security and Nutrition in the World (SOFI) is published annually by FAO, IFAD, UNICEF, WFP and WHO. This report monitors the indicators associated with SDG 2, including *undernourishment*, the *food insecurity experience scale (FIES)*, exclusive breastfeeding of children in the first six months, stunting, overweight and wasting in children under the age of five, anaemia in women of reproductive age and obesity in adults. SOFI is based on data from FAO, WHO and UNICEF, including the *Joint child malnutrition estimates*.

An overview of the indicators used in the global monitoring tools is provided in Appendix 2.

3 Global nutrition challenges

Many of the world's nutrition problems and the consequential human, social and economic problems could have been avoided if greater resources had been devoted to preventing malnutrition.

Malnutrition includes undernutrition, overweight/obesity and micronutrient deficiency. Undernutrition is a result of insufficient intake of nutritious food, often combined with infectious disease (which can increase the need for energy, reduce the appetite or reduce the ability to benefit from food intake). This may entail deficiency in one or more micronutrients, stunting and/or wasting in children and a low BMI in adults. Overweight and obesity tend to be a result of a diet rich in fat, sugar and salt, combined with little physical activity. Throughout the world, children, adolescents and adults in all socioeconomic groups eat too much processed food with a high content of sugar and salt, and too little fruit, vegetables, legumes and wholegrain cereals (Development Initiatives, 2018).

The groups that are most vulnerable to malnutrition are children and pregnant and lactating women. The mother's nutritional status before and during pregnancy is important for the growth and development of the foetus. Along with the child's nutritional status during the two first years of life, this will affect the child's growth and health both during childhood and as an adult. The first 1000 days – from conception to the child's second birthday – are crucial for the child's fate. Good nutrition helps build a strong immune system and promotes cognitive and physical development, enabling more children to reach their full potential. Good nutrition in children not only benefits the child, but also society as a whole. Suboptimal infant nutrition with insufficient breastfeeding and food low in nutrients represents a global challenge.

Malnutrition in all forms entail substantial economic costs. Estimates suggest that global costs related to undernutrition, overweight/obesity and micronutrient deficiency amount to nearly USD 3.5 billion annually (Development Initiatives, 2017).

3.1 Factors for good nutrition

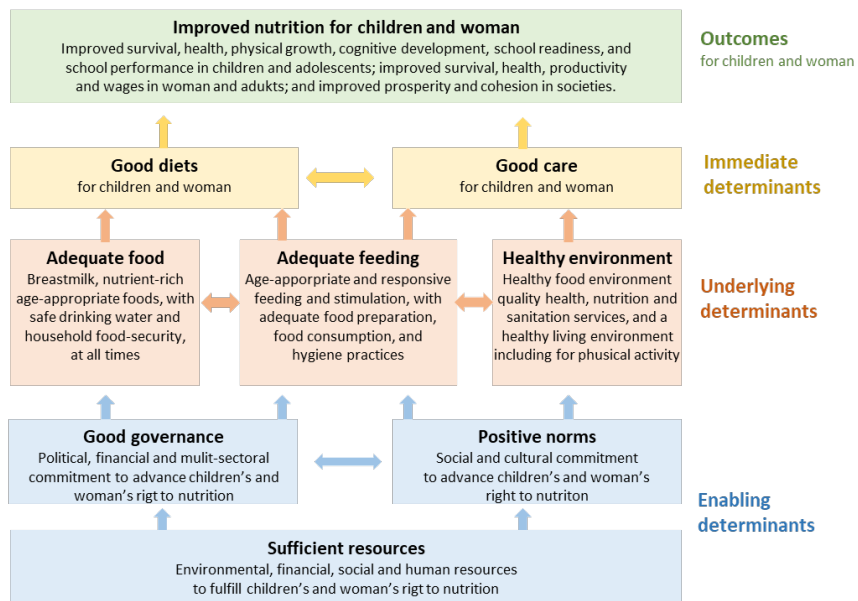
Good nutrition is a result of a number of processes at different levels, as described in the framework depicted in Figure 2, developed by UNICEF (UNICEF, 2019).

The factors that directly contribute to good nutrition in women and children are a good diets and care, often in combination. Insufficient food intake or food with low nutritional value can make the child more susceptible to diseases, and diseases can lead to reduced food intake or reduce the body's ability to benefit from food, while increasing the need for nutrients.

The underlying factors that promote good nutrition in women and children are appropriate and sufficient food in terms of quantity and quality, as well as a healthy and hygienic environment for the prevention of disease.

The fundamental preconditions for good nutrition depend on the ability to access, control and govern resources. A country may be rich in resources, but if it is poorly governed and the resources are unevenly distributed, population groups will nevertheless be exposed to increased risk of malnutrition.

Figure 2 Conceptual framework for crucial factors for maternal and child nutrition, adapted from UNICEF 2019



Nutrition and food security

Food security exists *'when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life'* (FAO, 1996). In other words, food security presupposes availability of different food from production and distribution, as well as economic access to this food. It is presumed that food should not only meet energy needs, but should also be nutritious, safe from pathogenic factors and culturally accepted. Finally, the availability of food should be stable throughout the year.

Food insecurity contributes to all forms of malnutrition. Extreme food insecurity often leads to insufficient food intake and subsequent undernutrition, while moderate food insecurity is more often related to a diet with food that is high in energy but low in nutritional value, leading to micronutrient deficiency and overweight/obesity (FAO et al., 2018). A diet with insufficient energy and nutrients will affect the growth and development of foeti, infants and young children. It has been shown that mothers who live under constant stress related to food insecurity feel more uncertain as caregivers, which may lead to less breastfeeding and poorer diets for infants and young children. (FAO et al., 2018).

The link between food insecurity and overweight/obesity is related to food prices, psychological stress and physiological adaptation (FAO et al., 2018). Fresh nutritious food, such as fruit, vegetables, meat and fish, are often more expensive than foods that are high in energy but low in nutritional value, such as oil and sugar.

3.2 Nutrition, growth and development throughout life

Malnutrition in mothers and children is a global problem, with consequences for survival, illness, development and economic productivity in individuals and societies (Black et al., 2013). Consequences for the undernourished child include a weakened immune system and reduced cognitive development, increased risk of morbidity and mortality, and reduced capacity for education and work later in life. Nearly half of all deaths in children under the age of five can be directly or indirectly related to undernourishment. Low birth

weight⁷, suboptimal breastfeeding⁸, stunting, wasting and deficiency of vitamin A and zinc have a particularly negative effect on the health and survival of children (Black et al., 2013). Stunting is the most important indicator of undernutrition in children due to its serious consequences for health and development. Stunting is also the most widespread type of malnutrition among children worldwide (Black et al., 2013).

Young, pregnant and lactating women

A mother's nutritional status during pregnancy has a major effect on the child's nutritional status at birth and its physical and cognitive development later in life.

Nutrition and growth during adolescence are important for girls' health and height as adults. Undernourishment during pregnancy increases the risk of maternal mortality⁹ and low birth weight in the child. A low BMI during pregnancy often leads to poor foetal growth and low birth weight in the child (Black et al., 2008). Pregnant women with a small stature are at greater risk of pregnancy complications, especially caesarean delivery (Black et al., 2013). In countries and regions with poor access to delivery services, including caesarean delivery, this may be fatal for both the mother and the child.

Overweight during pregnancy is also unfortunate and carries an increased risk of gestational diabetes, preeclampsia and delivery complications, as well as neonatal¹⁰ and infant mortality¹¹ (Black et al., 2013). If the mother is overweight during pregnancy, the risk of overweight in the child also increases.

Overweight women more often experience problems with breastfeeding (Black et al., 2013). However, contrary to popular opinion, a low BMI does not affect the ability to produce breast milk, except in cases where the BMI is extremely low. The content of micronutrients in the breast milk is, however, affected by the mother's intake, for example of vitamin A, iodine and vitamin B12 (Black et al., 2008).

⁷ Low birth weight: <2500 grams

⁸ WHO recommends breastfeeding to be initiated within one hour after delivery, exclusive breastfeeding for six months and continued breastfeeding combined with other types of food for two years or longer.

⁹ Maternal mortality: women who die during pregnancy, delivery or in the first month after the end of pregnancy.

¹⁰ Neonatal mortality: children who die during the first month after birth.

¹¹ Infant mortality: children who die during the first year after birth.

Neonates

A low birth weight increases the risk of death in neonates, since it increases the risk of mortality from infections, which are the cause of approximately 60 per cent of all neonatal mortalities (Black et al., 2008). Low birth weight is also associated with stunting, wasting and poor motor development in young children (Black et al., 2013). Moreover, poor growth during pregnancy and low birth weight increase the risk of overweight/obesity and non-communicable diseases later in life due to metabolic programming as a result of poor nutrition during pregnancy (Osmond & Barker, 2000).

Breastfeeding

Breast milk is one of the world's most important food resources. WHO recommends breastfeeding within one hour after delivery, exclusive breastfeeding¹² for six months and continued breastfeeding supplemented by other foods for two years or longer (WHO, n.d.). Breastfeeding within one hour after delivery protects the neonate against infections and reduces the neonatal mortality rate (Edmond et al., 2006). Exclusive breastfeeding for six months helps provide care, nourishment and energy for physical and cognitive development. For neonates and infants up to six months, breast milk is the optimal source of nourishment and provides all nutrition and fluids that the infant needs, even in hot climates. Beyond the first six months, breastfeeding helps provide important nourishment and care, which, when supplemented with nutritious food, prevents hunger, undernutrition and overweight in the child. Breast milk is also an important source of energy and nutrients during illness, and reduces mortality among undernourished children. In addition to its nutritional properties, breast milk has an antibacterial and immunising effect, and therefore helps prevent illness from the moment of birth. This is especially crucial in low- and middle-income countries.

Exclusive breastfeeding for six months and continued breastfeeding supplemented by other foods for two years or more have a number of advantages for the mother and child. Infants who are not breastfed have a higher risk of death from diarrhoea or other infections (Victora et al., 2016). Some studies have shown that breastfeeding can result in a higher IQ and better school performance, and is associated with higher incomes as adults. Children and adolescents who have been breastfed have a lower risk of overweight and obesity. Moreover, breastfeeding reduces the risk of breast cancer in the

¹² Exclusive breastfeeding: The child receives only breastmilk. No other liquids or solids are given, except vitamin supplements, minerals and medicines.

mother (Victora et al., 2016). If all children were to be breastfed in accordance with WHO's recommendations, more than 820 000 lives could be spared annually (Black et al., 2013).

Even though breast milk has a number of advantages, only 40 per cent of all infants are exclusively breastfed during their first six months of life (Victora et al., 2016). Breast milk is often replaced by cow's milk, thin porridge or infant formula, and in parts of the world where clean drinking water is a scarce resource, there is a high risk that the child will ingest unclean water. Moreover, there is a risk that the infant formula is diluted to save money, which will decrease its nutrient density.

One factor that affects the breastfeeding rate is the aggressive and unacceptable marketing of breast milk substitutes. This is common in many countries, and this marketing continuously finds new channels, such as social media and the internet, in addition to the more 'traditional' ones, such as maternity wards and child health clinics. Marketing is also increasing for breast milk substitutes for infants and young children, including 'follow-up formula' and 'growing-up' milk (IBFAN-ICDC, 2017). Unacceptable marketing of breast milk substitutes and commercial food products aimed at infants and young children can confuse and mislead parents into believing that breast milk and the family diet are insufficient for infants, making them dependent on often quite costly commercial products.

Children

Malnutrition in children, including undernutrition, overweight and micronutrient deficiency, increases the risk of death from infectious diseases, is a risk factor for poor cognitive and motor development and increases the risk of obesity and non-communicable diseases in adulthood (Black et al., 2013). Young children grow rapidly and it is important that they receive sufficient nutrients for their bodyweight and stomach volume. Undernourishment can result from a diet with little variation, low nutritional density or an insufficient number of meals (Bégin & Aguayo, 2017). Continued breastfeeding combined with the intake of animal products and enriched plant products is recommended for children under the age of two (Dewey, 2013).

Undernutrition in children under the age of five is measured using three indicators: stunting (low height for age), wasting (low weight for height) and underweight (low weight for age). Overweight in children under the age of five is indicated by high weight in relation to height. The weight and height of children are assessed in accordance with WHO's growth standards for the gender and age of the child in question. In 2006, WHO launched growth

standards based on healthy, well-nourished children from six different countries that represent all continents (WHO, 2006b). These measurements showed that children under the age of five grow at the same rate and have the same growth potential irrespective of ethnicity, provided they have access to a healthy diet and sufficient health services and hygiene.

Stunting is a measure of long-term undernourishment and is closely associated with poverty and socioeconomic conditions in a given country. For example, stunting is 2.5 times more common among poor children than among their wealthy peers (de Onis & Branca, 2016). Nearly all stunting is established during the first 1000 days from conception until the child's second birthday and is a result of poor nutrition at the foetal stage and in early childhood. Stunting is well-documented as a risk factor for reduced cognitive and motor development (Black et al., 2013). Stunted children are more apathetic and less active, playful and explorative. Stunting at the age of two is also associated with poor school performance in later childhood and adolescence, as well as lower income and economic productivity in adulthood. Children who are stunted during their two first years of life are especially prone to overweight and obesity later in life. Breastfeeding and a nutritious diet in the child's first two years of life reduce the risk of stunting, and zinc supplements have also been shown to have a protective effect (Black et al., 2013).

Wasting is a measure of acute undernourishment. Wasting is normally a consequence of a recent and rapid weight loss caused by insufficient food intake and/or infectious disease. Wasted children have an impaired immune system and an increased risk of death. These children need immediate nourishment, treatment and care to survive. Repeated episodes of wasting may affect growth and thereby lead to stunting and delayed development. Prevention and treatment of wasting thereby have a directly preventive effect on stunting.

Underweight is a general measure of low weight in relation to age, and can stem from both stunting and wasting. Underweight is frequently used when monitoring weight development in child health programmes, but is less used as a measure of undernutrition at the population level, since stunting and wasting are more specific.

Overweight increases the risk of type 2 diabetes, hypertension and asthma in children, and is strongly correlated with overweight and obesity in adulthood (Rokholm, Baker, & Sorensen, 2010). The prevalence of overweight children is increasing globally, and if the current trend persists, overweight children will outnumber underweight children in 2022 (NCD Risk Factor Collaboration, 2017). Three in every four overweight children live in low- or

middle-income countries (Black et al., 2013). The observed increase in the proportion of overweight children is most likely a consequence of changed lifestyles, with little physical activity and an unhealthy diet over time.

3.3 Micronutrient deficiency

Vitamin and mineral deficiency can have serious health consequences for children and adults. Micronutrient deficiency is often referred to as ‘hidden hunger’ because it is less visible to the naked eye than wasting and overweight. The consequences can be serious, however, and include reduced cognitive development in foeti and permanently impaired mental capacity in children, as well as increased risk of serious infectious diseases (Black et al., 2013).

Iron deficiency anaemia is very common among children and young or pregnant women in low- and middle-income countries (Black et al., 2013). Young children are especially vulnerable to iron deficiency anaemia because of their increased need for iron in periods of rapid growth (Black et al., 2008). Iron deficiency anaemia during pregnancy increases the risk of maternal death during childbirth and low birth weight in the neonate. Iron deficiency negatively affects brain development, and an infant with low iron reserves has poorer preconditions for growth and development during the first months of life (R. E. Black et al., 2013). These effects may be irreversible. The risk of low birth weight, neonatal and infant mortality is lower when the mother has taken iron supplements during pregnancy. A better iron status in the mother will also give her more physical and mental energy to take care of the child in a way that stimulates growth and development. WHO recommends daily iron supplements (in combination with folate) during pregnancy to prevent anaemia, low birth weight and premature birth (WHO, 2016b). WHO also recommends daily iron supplements to children and women of reproductive age in regions with a high prevalence of anaemia¹³ (WHO, 2016a, 2016b).

Poor **folate** status in the mother at the time of conception may lead to neural tube defects in the child, and it also increases the risk of preeclampsia and other negative pregnancy outcomes (Black et al., 2008). WHO recommends daily folate supplements for women of reproductive age who are trying to

¹³ In regions with a high prevalence of malaria, iron supplements should be administered in combination with measures to prevent, diagnose and treat malaria.

conceive, and further daily folate supplements in combination with iron during pregnancy to prevent anaemia, low birth weight and premature birth (WHO, 2016b).

Iodine deficiency has a large impact on growth and development and is the most common preventable cause of reduced mental capacity (Ma & Skeaff, 2017; WHO, 2007a). The consequences of iodine deficiency vary according to the degree of deficiency and at what point in the life course they occur. The first months of foetal life are an especially vulnerable phase, and iodine deficiency in pregnant women has negative consequences both for the course of the pregnancy / outcome of the pregnancy and the development of the foetus (Black et al., 2013). Severe iodine deficiency during pregnancy can lead to stillbirth, miscarriage and serious mental impairment. Even mild iodine deficiency entails an increased risk of miscarriage and poor motor and mental development in children (Abel et al., 2017; Black et al., 2008; Hynes, Otahal, Hay, & Burgess, 2013; Velasco, Bath, & Rayman, 2018). Iodine is required to regulate metabolic activity in all cells of the body and is essential for the development of the nervous system at the foetal stage. While severe iodine deficiency has become significantly less widespread in recent decades, mild to moderate iodine deficiency remains common. WHO recommends iodine enrichment of salt to prevent iodine deficiency in the population (WHO, 2014b). In countries where iodine-enriched salt is not commonly used, WHO recommends iodine supplements for pregnant women.

Vitamin A deficiency is the leading cause of preventable blindness in children. Vitamin A is also important for strengthening the immune system, and deficiency in this vitamin increases the risk of illness and death from serious infections (Imdad, Mayo-Wilson, Herzer, & Bhutta, 2017). In pregnant women, vitamin A deficiency causes night blindness and can increase the risk of maternal mortality. Vitamin A deficiency is a public health problem in more than half of all countries in the world, especially among children and pregnant women in low-income countries in Africa and Southeast Asia (ibid.). WHO recommends high-dose vitamin A supplements every 4 to 6 months for children aged 6–59 months in areas where vitamin A deficiency is a public health challenge (WHO, 2011), and for pregnant women in areas where vitamin A deficiency is a serious public health challenge (WHO, 2016b).

Zinc plays a key role in a number of biological functions. Zinc deficiency during pregnancy is a likely risk factor for poor development, immune response and metabolism in children (Black et al., 2013). Zinc deficiency in children

has been associated with an increased risk of infections, especially diarrhoea, pneumonia and malaria (Black et al., 2008). WHO recommends zinc supplements to treat diarrhoea in children.

Vitamin D has an essential role in foetal development. Vitamin D deficiency during pregnancy can cause poor growth and bone mineralisation in the foetus (Black et al., 2008), and can increase the risk of premature birth and low birth weight (Black et al., 2013).

B12 deficiency in the mother can cause neural tube defects and other disturbances in the development of the brain and nervous system. Furthermore, if the mother has a low intake of B12 when breastfeeding, her breast milk will contain little B12, which is associated with low weight, poor cognitive function and delayed development in children (Black et al., 2008).

3.4 Nutrition and infection

A fully adequate diet can help protect against and fight infectious diseases. Deficiencies in any of the nutrients listed above can lead to an increased risk of infection since the mucous membranes and skin can no longer maintain the same barriers to infections. The infectious disease that most frequently affects children is diarrhoea, which can cause both wasting and stunting (Checkley et al., 2008). Moreover, there is a debate about how frequent and long-lasting diarrhoea by itself, so-called enteropathy, can change the intestinal flora and intestinal function and cause stunting and delayed development in children (McCormick & Lang, 2016). There are also synergy effects between undernutrition and infection, since infections can increase the need for nutrients and reduce the appetite, thus leading to undernutrition, while undernourished children need longer to recover from illness and more often die from diarrhoea and other infectious diseases than well-nourished children (Black et al., 2013). Malaria during pregnancy can impair foetal growth and increase the risk of neonatal death (Black et al., 2008). Malaria is especially dangerous in the later stages of pregnancy.

3.5 Nutrition during crises

Irrespective of the underlying causes of a humanitarian crisis, a high prevalence of acute undernutrition is frequently observed¹⁴ (UNHCR & WFP,

¹⁴ Acute undernutrition is identified in the same way as wasting, i.e. low weight-for-height or based on MUAC and/or bilateral pitting oedema. In crisis situations, the

2011). Accessing food and maintaining an adequate nutritional status are critical for survival in a crisis. Ensuring adequate access to food and water is frequently the main component of a humanitarian response.

Lack of food and health services and poor hygiene and sanitary conditions contribute to high mortality in crisis situations, also in the aftermath of a crisis. In addition to acute malnutrition, micronutrient deficiencies can easily develop or be exacerbated if access to food is reduced while the risk of diarrhoea and other infectious diseases increases. Refugees are often forced to live in cramped temporary settlements, with a high risk of escalation of infectious diseases, especially diarrhoea, malaria, measles and respiratory infections.

The prevalence of acute malnutrition among children is an indicator of the degree to which the population is affected by undernutrition, including reduced access to sufficient food and clean drinking water, as well as necessary health services. It is therefore common to measure the prevalence of acute malnutrition among children to identify the need for measures to prevent the situation from escalating and to treat the affected children. In a crisis situation, acute malnutrition is often initially measured on the basis of mid-upper arm circumference – MUAC¹⁵. The nutrition situation is subsequently classified by the prevalence of acute malnutrition in the population.

In such situations, nutrition-specific¹⁶ measures are required to prevent deaths, , including food rations for the entire population and treatment of acute malnutrition with nutritious food and nutritional supplements. Locally based interventions tend to be the most feasible and effective, combining ordinary local food with specific nutrition products. Different interventions can be relevant in acute crises or more protracted crisis situations. To prevent new cases of acute malnutrition and ensure adequate nutrition among children in humanitarian crises it is also important to focus on infant nutrition – breastfeeding is vital in humanitarian crises. Adequate infant nutrition in crisis situations includes active promotion of breastfeeding, access to safe and adequate complementary feeding, support to mothers and other caregivers and adequate measures for infants that are not breastfed.

expression acute undernutrition is often used to highlight that this undernutrition has arisen acutely as a result of the crisis.

¹⁵MUAC, mid-upper-arm circumference: the circumference of the child's upper arm is measured, and the child is classified as well-nourished or moderately or acutely undernourished on the basis of specific gradations in centimetres.

¹⁶For nutrition-specific measures, see Chapter 4 on strategies to prevent malnutrition.

Uncontrolled distribution of breast milk substitutes is a risk for both breastfed and non-breastfed infants (UNHCR, 2015). Donations are often used by mothers who would normally breastfeed. This reduces the infant's intake of breast milk, leading to an increased risk of infection. Moreover, donations often fail to include additional equipment and support needed by non-breastfed infants, such as cups/bottles and equipment for sterilisation and boiling. Infants that are not breastfed are at a higher risk of infectious diseases and undernutrition, and the availability of breast milk substitutes can be limited in crisis situations. Donations and uncontrolled distribution of breast milk substitutes should nevertheless be prevented, and adequate supplies should instead be provided by health personnel.

Infants that have no access to breast milk should always be referred to competent health personnel who can assist the caregiver with adequate feeding under hygienic conditions. The same applies to children showing signs of acute malnutrition during screening. Food is important to prevent poor health in everybody, but in certain contexts, specific nutritional measures is needed to treat acute malnutrition. Good cooperation between all actors engaged in nutrition and health is therefore vital.

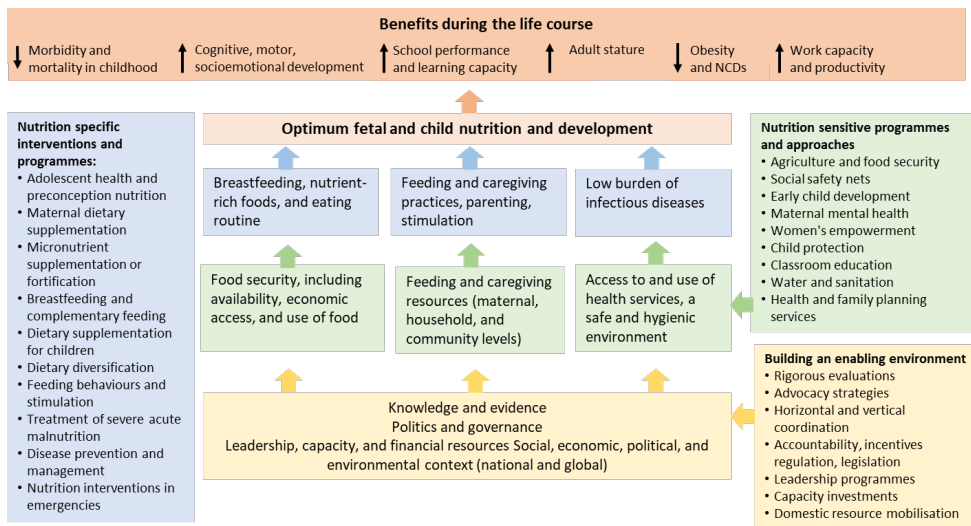
4 Interventions to reduce malnutrition

Because malnutrition is passed down through the generations from mother to child, it makes sense that the resources put into breaking this vicious circle focus on women and children. A balanced, healthy diet is essential. Poor nutrition must also be seen in the context of other factors that impact on growth and development. Interventions that include early childhood development and schools, an effective health service and women's empowerment are important for ensuring good growth and development.

4.1 Nutrition-specific and nutrition-sensitive interventions

Both nutrition-specific and nutrition-sensitive interventions are needed to combat malnutrition. **Nutrition-specific** interventions include measures that impact on the direct causes of malnutrition, including food and nutritional intake, the care that children receive, and the incidence of infectious diseases. **Nutrition-sensitive** interventions are aimed at the underlying determinants of malnutrition, including food security, water and sanitation, social protection, health and education. Incorporating specific nutrition targets and activities into interventions increases awareness around nutrition and the impact of the intervention on nutrition. This makes the intervention nutrition-sensitive (Ruel, Alderman, Maternal, & Child Nutrition Study, 2013).

Figure 3 Framework for optimum nutrition, based on Black 2013



Nutrition-specific interventions

The following interventions are known to reduce malnutrition: exclusive breastfeeding for six months and continued breastfeeding for up to two years or longer; proper introduction of appropriate complementary feeding at the age of six months; good hygiene; certain nutrient supplements for young women, pregnant women and young children; encouragement to eat a balanced nutritious diet; and the enrichment of key foodstuffs. A thorough review of nutrition-specific interventions has identified ten measures aimed at pregnant women, infants and young children with particularly good effects (Bhutta et al., 2013). The interventions are grouped into four categories:

- Ensure good nutrition in mothers during pregnancy, including micronutrient supplements for all pregnant women and energy-protein supplements for undernourished pregnant women.
- Promote optimal infant nutrition, including exclusive breastfeeding for the first six months and intake of varied and nutritious complementary feeding for young children.
- Ensure good nutritional status among children, including vitamin A and zinc supplements for children in populations at risk of nutrient deficiency.
- Treatment of moderate and severe wasting.

If these interventions reach 90 per cent of children in the 34 countries where 90 per cent of the world's undernourished children live, they will be able to reduce annual infant mortality by up to 900 000. They could also reduce stunting by around 20 per cent and severe wasting by more than 60 per cent (Bhutta et al., 2013). In addition, iodine enrichment of salt is recommended as an effective way of reaching the entire population (Vaivada, Gaffey, Das, & Bhutta, 2017).

Since 2013, there has been an increased focus on adolescents, and interventions aimed at improving adolescents' diet and nutrition can therefore be expected to receive more attention in the future (Weiss & Ferrand, 2019).

The aforementioned nutrition-specific interventions will most often be implemented as part of the health service, and will therefore be closely linked to healthcare programmes and/or healthcare service providers.

Other nutrition-specific interventions are more food-based. To increase the intake of nutrients from food, a balanced diet is recommended with lots of vegetables, fruits, legumes, animal products and healthy fat sources. For people who do not have a satisfactory diet, new foods may need to be introduced to achieve variation. Changes of this nature require knowledge of nutrition and the importance of introducing new foods, as well as knowledge of how these foods can be prepared. Evidence-based information is provided in national dietary guidelines on food intake and healthy diets to ensure good nutrition and promote good health among the population. Such dietary guidelines are useful for developing nutrition policies and serves as a useful public information tool (FAO, n.d.).

Other approaches to increasing nutrient intake where there is no access to a balanced diet include micronutrient supplements for vulnerable groups (as mentioned above), and fortification or biofortification of foods. Micronutrient supplements in the form of pills, capsules, liquids or powders are typically used when the nutrient deficiency is severe and limited to specific groups in the population (WHO, 2006a). Food fortification entails adding one or more micronutrients to the food in order to prevent deficiencies in the general population or in specific groups. Fortification is most often seen in staple foods or foods that are consumed regularly by a large proportion of the population, such as flour or salt. The most common fortification are iodine in salt, vitamin A in margarine and oil and iron in wheat or maize flour (WHO, 2006a). Biofortification is based on ordinary plant breeding, where species with a high content of certain micronutrients are crossed with species that have other favourable qualities, such as high crop yields and/or robustness against weather and climate change (FAO, 2017). Plant seeds for biofortified

crops, such as corn or rice, will be available to farmers through development programmes or for purchase at local markets. Biofortified plant species often have nutritional and economic benefits, but they require a shift in behaviour and acceptance of species that look or taste different. One of the challenges is that local knowledge and local markets may feel threatened, and new species therefore need to be introduced with care.

Nutrition-sensitive interventions

Nutrition-sensitive interventions can protect poor populations from the fallout from crises and global food insecurity that make them particularly vulnerable to malnutrition. Climate change and the expected increase in the frequency of droughts and floods are likely to reduce access to food and dietary variation, as well as increase the incidence of infectious diseases such as diarrhoea and malaria.

Agricultural interventions and women's empowerment can be effective in improving the incomes, food security and diet quality of vulnerable households and individuals (Ruel et al., 2013). Diseases and poor health conditions are closely linked to nutrition, and the inclusion of nutrition in health-related interventions and activities produce ample synergy effects between the nutrition and healthcare sectors. Including nutrition in early childhood programmes and in schools and the education sector may have an impact on the development and school performance of children and adolescents.

Agriculture and fisheries

The UN has suggested that policies promoting nutrition-sensitive agriculture, with a special focus on food security and good nutrition among children, young women and mothers, are needed to break the vicious circle of poor nutrition being passed from mother to child (FAO et al., 2018).

The agricultural industry, including farming, animal husbandry, fisheries and forestry – produces food, provides jobs and generates income. About 80 per cent of the world's poor make their living from agriculture, and the majority of those starving produce food for their own consumption. In many parts of the world, it is the women who perform this type of work – in Africa, 70 per cent of all agricultural work is done by women. Nutrition-sensitive agriculture can improve access to varied and nutritious food, push up incomes, promote women's status in society and improve public health.

Nutrition-sensitive agriculture is a concept used by organisations such as FAO and its partners. Nutrition-sensitive agriculture contributes to better nutrition through, for example, promoting a varied production of nutritious

foods and stimulating higher incomes, especially for smallholders (FAO, 2017).

Greater variation and sustainable intensification in farming have the potential to improve the availability, accessibility, stability and intake of a balanced diet, whilst also reducing greenhouse gas emissions and increasing the resistance to climate change. On a large scale, greater variation could improve the availability of more food groups and reduce the price of nutritious food. On a small scale, it could improve access to nutrients for poor smallholders, and focussing on horticulture in particular could increase the intake of fruits and vegetables.

Animal husbandry and fishing, including wild and farmed fish, contribute to production and intake of animal foods that are important sources of protein and various micronutrients. Fish in particular is a good source of healthy fatty acids. A nutrition-sensitive approach to the production and intake of animal products implies intake in line with dietary recommendations as well as sustainable catches and production. Animal husbandry can help improve the nutrition of individuals and families through consumption from own production or through increased incomes. Fish is the most traded commodity in the food sector from developing countries (FAO, 2017). Promoting sustainable fishing and aquaculture can therefore lead to good nutrition through intake and income. Small-scale aquaculture, such as aquaponics or integrated farming-aquaculture systems can also help improve dietary variation and nutrition.

Biodiversity is also a strategy for promoting dietary variation. Biodiversity between species – biological diversity – is important and well known, but biodiversity within species – genetic variation – is also important, as the nutritional content can vary considerably between the different varieties within a food group. Selection of species and variations for production should not solely be based on quantity in terms of amount of energy, but also on an optimal composition of nutrients. Political support for cultivating a nutrient-rich diversity is important for fostering good dietary nutrition. Although promotion of a varied, healthy and balanced diet is the most important long-term strategy for improving nutrition, biofortification is also a good way of increasing micronutrient intake through replacing a less nutritious staple food with a more nutritious variety.

As urbanisation increases, so too does the importance of towns and cities as markets for selling food produced in more rural areas. The urban markets

provide an opportunity to promote domestic food production as a way of improving the availability and access to a more balanced, healthy diet for the urban populations.

Health

Universal access to health services is an important prerequisite for a well-nourished population. Several of the most effective nutrition-specific interventions are implemented through the health service, including treatment of acute malnutrition, micronutrient supplements for pregnant women and young children, guidance on breastfeeding and appropriate diets for young children, as well as prevention and treatment of overweight and obesity. These interventions are not always well-implemented, often due to underfunding or a lack of expertise.

Healthcare personnel play a key role in the nutrition education offered to individuals. Due to their important role in the communication of public health matters, training and regularly updating healthcare personnel's knowledge on nutrition can prevent serious health problems in the population. In addition, relevant information and statutory regulations are needed to facilitate healthy dietary choices, such as marketing restrictions, taxes, charges and mandatory food labelling.

Infectious diseases are one of the leading causes of high infant mortality rates in developing countries. The spread of infectious diseases through unclean water is one of the main causes of disease and poor nutritional status in both children and adults, and of death in infants and children up to the age of five (Black et al., 2013). Public intervention to improve water quality in vulnerable areas could, therefore, have a major impact on the population's health and nutritional status. Both UNICEF and WHO have guidelines for immunisation and the control of diarrhoea and other infectious diseases. Measures to reduce vitamin and mineral deficiencies, including vitamin A, iron, zinc and iodine deficiencies, can prevent widespread human suffering, and programmes to prevent and treat nutritional deficiencies have been implemented in numerous countries. Such international interventions should form the framework for national strategies in the health sector.

Exclusive breastfeeding during the first months of life significantly reduces infant mortality rates. In order to achieve this, women must be empowered to initiate breastfeeding within one hour after delivery, to breastfeed exclusively for six months and continue breastfeeding into the second year of the baby's life. This may involve various interventions,

such as information to mothers about the benefits of exclusive and continued breastfeeding, support and guidance on breastfeeding, and government measures such as maternity leave, job security guarantee and the right to paid breastfeeding breaks in the workplace.

Launched by WHO and UNICEF in 1991, the Baby-Friendly Hospital Initiative (BFHI) is a worldwide initiative to promote breastfeeding (WHO & UNICEF, 2018b). The implementation of BFHI is a practical guide for healthcare personnel, and is particularly aimed at measures in delivery and maternity wards. The initiative was subsequently adopted in child health centres. BFHI increases breastfeeding rates in the population and is the most effective initiative for promoting breastfeeding (Perez-Escamilla, Martinez, & Segura-Perez, 2016).

Another initiative aimed at promoting breastfeeding involves protecting the population from inappropriate marketing of breast milk substitutes. The *International Code of Marketing of Breast-milk Substitutes* adopted by the World Health Assembly in 1981 provides guidelines on the marketing of breast milk substitutes (WHO, 1981). This code states that there should be no form of advertisement for breast milk substitutes and no distribution of free products to mothers, healthcare personnel, maternity clinics or child health centres, and that information should be provided about the potential risks and costs associated with using breast milk substitutes. In spite of this, the marketing of such products is aggressive and constantly increasing, especially in areas with limited resources in low- and middle-income countries. The consequences can be fatal.¹⁷

As part of a nutrition-related prevention intervention, a healthy balanced diet is promoted through national dietary guidelines and information campaigns. Treatment for obesity and measures to prevent overweight people developing obesity are carried out through the health care system. In order for society's poorest to benefit, primary health care must be free or affordable (WHO, 2013).

Education

Basic education can be a good investment in terms of health and food security and can improve living conditions for poor groups in the long term. In addition to strengthening people's skills and their opportunities to earn an acceptable income, education can provide guidance on how to improve diets

¹⁷ In areas with poor access to clean drinking water, there is an increased risk of contamination during food preparation and intake as well as bottle cleaning. Dependence on breast milk substitutes is also a financial burden for the family.

and counteract health problems. Education also has a long-term nutritional effect on the next generation – the likelihood of having a child with stunting decreases by 4–5 per cent for each year of a mother’s education (Semba et al., 2008).

It is not uncommon for children to drop out of school because their family cannot afford to pay the school fees. Free schooling can therefore improve attendance and ensure that more people get an adequate education. School food programmes are targeted social safety nets that provide educational and health benefits to the most vulnerable children in the form of increased school attendance and improved learning ability. The programmes also lead to better nutrition among the school children and their families (Bundy et al., 2009; World Bank, 2012).

For children whose food intake at home is insufficient, school meals can improve their learning ability as it can prevent their concentration levels dropping throughout the day due to hunger and a low blood sugar level. Studies have shown that the introduction of school meals goes some way to improving children’s learning ability (Kristjansson et al., 2007).

In times of crisis, the school can be an extremely important arena for providing food and nutrition security for school-aged children. This age group is often not included in other targeted interventions (Hatløy & Sommerfelt, 2017).

School-aged children often have little contact with the health service, which can have a negative impact on their health. One possible intervention is for healthcare personnel to be involved in regular health checks of the pupils and possibly in the teaching. If the dissemination of knowledge on health and nutrition is combined with the introduction of school health services, the children will be able to receive information on disease prevention and nutritional issues as well as health checks during an important period in their lives. A survey of schoolchildren’s nutritional status and access to food could reveal whether investing in school meals would be worthwhile.

Strategies and guidelines have been developed both internationally and nationally for the school as an arena for health promotion (Bundy et al., 2009). In 2006, WHO promoted the *Nutrition-Friendly School Initiative* to promote children’s health and nutrition through the school system, and in particular to address the multiple burden resulting from malnutrition – this initiative has been tested in Burkina Faso and Benin, among other places, and has shown some positive results (Elkhouri Edde, Delisle, Dabone, & Batal, 2019).

Interventions to improve the population's understanding of diet, health and hygiene are an important part of the efforts to combat malnutrition. To this end, curricula in teacher training colleges and primary and lower secondary schools, as well as for healthcare personnel, should be regularly updated and improved.

There should also be a sufficient number of people with a high level of expertise in nutrition in all countries. Higher education institutions' teaching and research capacity therefore needs to be increased to enable countries to meet future challenges and needs. In order for a country to secure the necessary expertise in nutrition, both in counselling and in nutrition policy work, the inhabitants should be given the opportunity to take a higher education in nutrition in their own country. If this is not possible, students could be offered to study abroad.

Early childhood development

Stunting and poor cognitive development in early childhood have several common features. A child's first 1000 days – from the onset of pregnancy to the child's second birthday – are critical to both its physical and cognitive development, and the risk factors are the same: a nutrient-deficient diet, inadequate care for the child and socio-economic factors such as poverty and poor maternal mental health (Walker et al., 2007; Walker et al., 2011).

Important interventions that combine nutrition and early childhood development include interventions that are specifically aimed at the synergy between nutrition, psychosocial stimuli and nurturing care, interventions that promote greater equality and women's empowerment, interventions to reduce the risk of depression and poor maternal mental health, and interventions to combat poverty and food insecurity in the population in general and in vulnerable groups in particular (M. M. Black et al., 2017; Walker et al., 2007).

Programmes that combine interventions to improve care and stimuli in early childhood through better nutrition lead to better long-term growth and development in children than programmes that solely focus on one area. For example, it has been shown that stunted children who receive stimuli in combination with food supplements have better growth *and* cognitive outcomes than stunted children who only received food supplements (Walker et al., 2007).

Integrated guidance on infant and young child nutrition and early childhood development also generates synergies. This guidance should be given

by competent healthcare personnel or someone else who has specialist training in this area. Guidance can be provided through child health centre initiatives, such as immunisation programmes and growth monitoring, and at postnatal groups and home visits. Breastfeeding has been shown to improve cognitive development (Victora et al., 2016). Breastfeeding and feeding young children gives mothers an opportunity to show their child warmth and love, and to communicate with them through singing, caressing and facial expressions – in addition to good nutrition.

Women's empowerment

The role of women in society and in the family is crucial to children's growth and development. Women are typically responsible for producing, buying, preparing and serving food. It is also usually the woman who has the primary care for the children and who is responsible for cleaning and hygiene in the home. Through her role as care provider, it is normally the woman who ensures that infants and young children get the food they need, that the children get regular health checks, are included in immunisation programmes and receive treatment when they are ill. Even where poverty leads to food insecurity and limited access to health services, good care can optimise the resources available for good nutrition. Breastfeeding is one example of care that provides food and health benefits and creates a bond (Engle, 1999).

If the woman has a low social status, this can reduce her control of time, resources and knowledge, and act as a barrier to her using these for the benefit of the family. Interventions that promote women's status and participation in society have positive effects on the health and nutrition of the entire population.

One important social initiative that is aimed at women to promote good nutritional status in young children is maternity leave. If the woman is at home with her child after giving birth, this facilitates breastfeeding and enables her to provide the child with good nutrition in the first crucial stage of life. The International Labour Organization (ILO) recommends 18 weeks of maternity leave for women, with 14 weeks as the minimum standard (ILO, 2014). However, only half of all countries adhere to the ILO's minimum standard. Maternity leave is particularly rare in countries in Asia and Africa, where the burden of undernutrition is greatest.

Business development

Business development encompasses income-generating activities in the formal and informal private sector. Productive investment is more important

than development aid for most countries. Facilitating investment boosts employment and tax revenues, both of which are fundamental to a country's development (Norad, n.d.-b). Industrial development can lead to better nutrition in the population through higher incomes and greater purchasing power in those engaged in commercial activity, or through the production, processing and distribution of nutritious foods.

Industrial development is an important development tool, but growth in food production and business related to increased production does not automatically lead to greater food security and development among marginalised groups. On the contrary, extensive experience with development aid has shown that a one-track focus on growth and business often exacerbates already skewed distribution mechanisms and further weakens marginalised groups, particularly in relation to a lack of rights to land, access to resources, and investment opportunities (Faf0 & ForUM, 2019). It is therefore important to supplement business ventures with efforts to ensure that marginalised groups are able to take part in the development and to benefit from the values created, for example in the form of access to capital, support for small producers and their organisations, and access to land and resources. It is particularly important that contextual knowledge of power structures and distribution mechanisms informs the choice of interventions, including in industrial development.

Support for business activities includes support for measures that directly contribute to higher productivity in the primary industries, manufacturing sector and service industries. Agriculture and other primary industries have a key role as a workplace and income base for a large proportion of the poorest parts of the population in low- and middle-income countries. However, an increasing share of the population is moving from rural areas to cities and larger urban centres. In order for the increases in income and purchasing power to have the greatest effect on the nutritional status of the population as a whole, support for industrial development should focus on vulnerable and marginalised groups – both in rural and urban areas.

Industrial development in food production has considerable potential to improve access to nutritious foods. Support measures for the production of more nutritious foods can be implemented in farming, animal husbandry and fishing. As noted above, nutrition-sensitive interventions in agriculture encompass the production of nutritious vegetables, fruits, berries and nuts, sustainable development of aquaculture with nutritious fish species and various forms of animal husbandry. Such foods also have a potentially higher market value, which will benefit the producer.

The fisheries and aquaculture sector contributes to food security by bringing fish to the market, creating jobs and generating income (Norad, n.d.-a). The fish trade also represents a significant source of export revenue for developing countries – in some cases more than half of the total export value. The harvesting of fish from the sea is approaching the maximum global yield limit, but the aquaculture sector in many developing countries represents substantial potential for industrial development, economic growth and food security. Fish farming both in the sea and in fresh water can help more people to put food on the table. It can also increase the revenue for local fish farmers and for the country as a whole.

Processing methods that preserve the nutrient content and/or increase the shelf life of food will facilitate a stable intake of micronutrients all year round, even in populations that do not have direct access to fresh produce (FAO, 2017).

Processing includes everything from the preservation (freezing, dehydrating, canning) of whole foods, to the processing of products such as cheese, juice, meat and baby food.

Industrial development in the transport sector can also promote the intake of more nutritious food. If infrastructure or the distribution network is improved, more food products can reach more areas – and thus more people. Refrigerated transport will increase the shelf life of foods, especially in warmer climates (FAO, 2017).

It is important for nutrition-sensitive industrial development to consider the impact on nutrition at all stages of production, storage, transport, processing, marketing and sales. Consideration should be given to, for example, how to minimise food waste at all stages, and efforts should be made to find ways of optimising the preservation of micronutrients throughout the food chain.

5 Opportunities for increasing nutrition efforts in Norwegian development policy

5.1 Challenges and commitments

The number of people who are starving or do not have access to enough food has increased every year since 2014. The number of undernourished children and malnourished women of reproductive age is still too high, and the number of adults and children who are overweight or obese is increasing. The overweight and obesity rate and the burden of disease brought about by these two conditions are growing fastest in low- and middle-income countries.

A key challenge is climate change. Climate change affects all dimensions of food security as well as other underlying causes of malnutrition related to the care that children receive, health and childhood environment. Climate change and extreme weather affect the quality and quantity of food production. This increases the risk of undernutrition and micronutrient deficiency in the most vulnerable groups. At the same time, today's food systems and diet choices exacerbate global warming and exert pressure on the environment in the form of greenhouse gas emissions and loss of natural resources and biological diversity. Climate change is believed to have the greatest negative impact on nutrition in areas that are already vulnerable in terms of food security and nutrition.

The global increase in hunger and obesity reflects the weaknesses in today's food systems. Sustainable food systems aim to provide food security and good nutrition for all, whilst safeguarding the economic, social and environmental foundation for future generations. Measures are needed to improve the nutrition of individuals whilst simultaneously strengthening food systems as a basis for economic, social and ecological development.

To be free of hunger and poverty is a basic human right. Under the *2030 Agenda for Sustainable Development*, the countries of the world have pledged to eradicate hunger and poverty. Nutrition is explicitly highlighted

in Sustainable Development Goal 2. This goal aims to eradicate hunger and all forms of malnutrition by 2030. Nutrition is also important to achieve Sustainable Development Goal 3 to ensure good health and well-being for all. Good nutrition is important for reducing overweight, obesity and non-communicable diseases, and for reducing maternal and child mortality rates. These Sustainable Development Goals generally focus on improving living conditions for all – and good nutrition is central to achieving many of the other goals. The interdependence of the Sustainable Development Goals requires a coherent approach to goal achievement.

In addition to this, Norway adheres to and supports international frameworks for improving nutrition, including WHO's nutrition targets and the work programme for the United Nations Decade of Action on Nutrition (2016–2025), which calls for increased investment in nutrition through, for example, sustainable food systems for a healthy diet.

5.2 How can Norway increase its nutrition efforts?

In June 2019, the Norwegian government launched 'Food, People and the Environment. The Government's action plan on sustainable food systems in the context of Norwegian foreign and development policy'. The main objective of the action plan is to improve food security through sustainable food systems. Nutrition and diet is one of four main thematic initiatives to facilitate 'improved nutrition and sustainable consumption patterns due to improved knowledge and access to healthy and varied diets, safe food and clean drinking water'. The action plan emphasises the importance of good nutrition in early childhood and the intake of healthy foods such as fish, fruits, vegetables, legumes and nuts as a way of fostering growth and development and preventing nutrition-related non-communicable diseases. The action plan also presents a ten-year nutrition programme (2019–2028).

The action plan sets out eight targets that the Government wants to achieve:

- 1 The knowledge and technology needed for sustainable and climate-resilient food production has been developed, made accessible, is applied and scaled up.
- 2 Biodiversity in food production has increased.
- 3 Food production has become more sustainable and climate-smart.
- 4 Food producers and their local communities are better equipped to deal with natural disasters and other adverse impacts of climate change.

- 5 Sustainable value chains from source to market have been developed and strengthened.
- 6 Food safety, and animal and plant health in partner countries have been improved.
- 7 Information and guidance on maternal and child health have been enhanced, and measures to improve nutrition for schoolchildren, young people and adults have been implemented.
- 8 Global and regional frameworks for sustainable food systems, as well as national policies and governance structures for these systems, have been developed and strengthened.

The seventh target of the action plan addresses nutrition specifically and emphasises that efforts should be aimed at children under the age of five. It also encompasses the dissemination of knowledge about maternal health, breastfeeding and nutritious diets. Nutrition interventions are also to be more closely linked to measures in food production, health and education. The objectives of the action plan and the associated action points can help eradicate hunger and all forms of malnutrition if they are achieved using a nutrition-sensitive approach, by including *explicit nutrition targets* and associated *measures to achieve the targets* and the use of *nutrition indicators to measure the attainment of those targets*. However, being able to contribute to this depends on how the targets are to be achieved and how the action points are to be implemented in practice. Points that should be considered in this regard are as follows:

- Under each point in the action plan, the nutrition targets should be explicitly specified.
- It should be established which actors are available in Norway, which can actively contribute – civil society organisations, researchers, businesses and politicians – and also the position that Norway holds on the board of various UN agencies and other international forums.
- The expertise held in different research communities in Norway must be mapped.
- The scale of efforts must be clarified.

Based on these points, consideration should be given to where the greatest challenges are, and where Norway can make a difference, both through its own efforts and in partnership with other countries and organisations.

The dissemination of knowledge is important, but experience has shown that this is not enough to combat malnutrition. In the efforts to reduce hun-

ger, malnutrition, overweight, obesity and non-communicable diseases, institution building and competence enhancement are prerequisites for good political governance which ensures that the population has access to sufficient amounts of healthy food, as well as access to appropriate health services. Norway can increase its nutrition efforts through **international political advocacy, knowledge transfer** and by **supporting** the key actors in nutrition.

International political advocacy

In its action plan for sustainable food systems, the Government stipulates that Norway will use its expertise under international leadership to promote sustainable food systems. This is in line with the work programme for the United Nations Decade of Action on Nutrition that Norway has signed up to. Norway has already shown leadership by being the first country to establish an *action network* under the UN's work programme: *The Global Action Network on Sustainable Food from the Oceans and Inland Waters for Food Security and Nutrition*.¹⁸ In this initiative, Norway should draw on relevant expertise from Norwegian civil society organisations, academia and business.

In addition, Norway sits on the board of many UN agencies, and through these positions should help to raise awareness of nutrition in the agencies' work. Norway has extensive expertise in the management and regulation of fisheries, agriculture and forestry, which is important for safeguarding both income and good nutrition for vulnerable groups. This expertise should be used in relevant international forums where Norway can exert influence.

Knowledge transfer

There is a great deal of knowledge and expertise on nutrition in Norwegian nutrition, food and health institutions, civil society organisations, academia and business. In order to have the greatest impact, Norway should **identify which actors are available, what type of knowledge they have, and how this knowledge can best be used in Norway's development work**. This applies to the expertise of the institutions individually and how their expertise can be combined to create synergies.

Norway can work in various channels to enhance know-how on maternal health, breastfeeding and nutritional diets at various levels – among politicians, business, healthcare personnel and consumers. For example, Norway can actively contribute by sharing knowledge about **the building of relevant**

¹⁸ <https://nettsteder.regjeringen.no/foodfromtheocean/>

institutions, such as national food inspectorates or health directorates. Norway can also help in the preparation of **national dietary guidelines** to promote good health and nutrition in the population of Norway's partner countries. Support to develop a **national nutrition policy** is also a possibility, including regulations on the marketing of unhealthy foods, and the introduction of taxes and subsidies to promote a healthy diet. Norway can also play a role by encouraging public and private actors to enter into letters of intent to facilitate a healthier diet in the population, modelled on the agreement between the health authorities and the food industry in Norway.¹⁹ Because the food industry generates income and provides jobs, nutritional aspects of health-related interventions can easily come into conflict with economic interests. Thus, in order for countries to initiative interventions that protect nutrition interests, politicians and other policymakers need to be made aware of the factors involved.

One of the express goals of the action plan is to increase knowledge about maternal health and breastfeeding, and to strengthen the coordination between the different health services. It is therefore necessary to ensure that nutrition-interventions address all forms of malnutrition – undernutrition, micronutrient deficiency and overweight/obesity. Overweight, obesity and non-communicable diseases are on the rise in many low- and middle-income countries, and measures aimed at this should go beyond providing information. Efforts should promote political engagement and governance in Norway's partner countries to prevent overweight, obesity and non-communicable diseases. There also needs to be active prevention and treatment of these conditions through the health service.

In addition to the priority areas stipulated in the Government's action plan, there are numerous ways that **the nutrition efforts in Norad's ongoing work in various sectors can be strengthened** by utilising the expertise in Norwegian research communities to promote nutrition considerations throughout the food system.

Support for important actors

In order for interventions to target the right areas, the support must go through channels that have sufficient expertise and capacity. These can include Norwegian contributors as mentioned above, but a number of important actors in the field of nutrition can also play a role.

¹⁹<https://www.helsedirektoratet.no/tema/kosthold-og-ernaering/matbransje-serveringsmarked-og-arbeidsliv/intensjonsavtalen-for-et-sunnere-kosthold>

Several UN agencies are key to the work in nutrition. Based on UNICEF's framework (Figure 2), various UN agencies have overarching responsibility for different areas. The **Food and Agriculture Organization of the United Nations** (FAO) aims to ensure *sufficient amounts of food* from sustainable food systems. The **World Health Organization** (WHO) has a greater responsibility in *good health*, and develops knowledge-based guidelines on healthy diet, nutrition interventions and nutrition policy. The **United Nations Children's Fund** (UNICEF) has targeted its efforts at *improving nutrition for mothers and children* by promoting children's rights in health, education and protection. The **International Fund for Agricultural Development** (IFAD) is a UN agency and international financial institution working to secure *sufficient resources* to strengthen food and nutrition security in poor rural areas.

In order to prevent silo thinking, there are several bodies that coordinate the activities across the established agencies. One such example is the **United Nations System Standing Committee on Nutrition** (UNSCN), which is a forum for food and nutrition whose mandate is to ensure cooperation between UN agencies and partners in international work with a view to improving nutrition. The **Committee on World Food Security** (CFS) is another example, and this is an intergovernmental platform where member states work with a range of actors (UN agencies, civil society and the private sector) to develop food security and nutrition policies.

There are also a number of other non-governmental and intergovernmental organisations working in the field of nutrition. The **World Bank** focuses on nutrition, food security and climate-smart agriculture through inclusive, sustainable and economic development. A number of different research institutions within the **CGIAR** system focus on reducing poverty, fostering food and nutrition security and improving the use of natural resources and ecosystems. **Scaling Up Nutrition** (SUN) is a movement that includes 61 states, civil society, the UN (UNSCN), donors, businesses and researchers. SUN works on the premise that everyone has the right to enough food and good nutrition, and aims to eradicate all forms of malnutrition by 2030. The most important organisations are listed in Appendix 3.

An assessment of which channels should be supported should primarily be based on the specific goals that are to be achieved. Channels should be chosen based on which actor is best suited to implementing measures to achieve the goals. Core and non-earmarked Norwegian aid allocations to multilateral channels could be optimised by using executive powers to promote the food and nutrition perspective.

The Norwegian authorities should ensure that the various channels and actors used to implement the action plan are in agreement and that their efforts to achieve the goals in the plan complement each other. This also entails considering how actors who do not work directly with food and nutrition can play a role in achieving the goals. For example, food security is closely linked to efforts in political organisation and rights, particularly when it comes to reaching the weakest groups in many countries.

5.3 Follow-up and learning

Doing everything right from the start when planning new interventions is difficult in terms of choosing channels, priority areas and specific measures. It is therefore important that systems are established to monitor how efforts are progressing in terms of the objectives of the action plan. The focus should be on continuously acquiring knowledge that can be used for learning and improvement, rather than primarily documenting results. Some of the components that should be included in such systems are as follows:

- Follow-up of the channels' and the individual actors' contributions
- Identifying barriers to achieving goals and opportunities for improvement
- Measuring the overall effect of the interventions
- Coherence, lack of coherence, and opportunities for synergies with measures in other development aid and policy areas

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Appendix 1 Definitions and explanations of terms

Anthropometric indicators: Physical measurements (height, weight and mid-upper arm circumference (MUAC)) are combined into indices (weight-for-height, height-for-age, weight-for-age, BMI) or are used on their own (MUAC) to function as nutritional status indicators. The values measured for individuals in a given group are compared with standard threshold values for malnutrition.

Complementary feeding: This is when extra food is given to young children when breast milk alone is not sufficient to meet the child's nutritional needs. Complementary feeding is introduced gradually as increasing amounts of food are given in addition to breast milk, mostly commonly for children aged between 6 and 24 months.

Exclusive breastfeeding: This is when a child only receives breast milk. No other liquids or solids are given, except vitamin supplements, minerals or medicines.

Food security: Food security is 'when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life' (FAO, 1996).

Food system: A *food system* has been described as the aggregate of all elements (climate, environment, people, physical input factors, processes, infrastructure, institutions, etc.) and activities related to the production, processing, distribution, sale and consumption of food, as well as the benefits and the socioeconomic and environmental impact of such activities (CFS, 2017).

Low birth weight: A birth weight of less than 2500 grams.

Low height-for-age (H/A): Where a child's height is at least 2 Z-scores below the median value for healthy, adequately nourished children of the same sex and age. A low height-for-age is a sign of stunting.

Low weight-for-age (W/A): When a child's weight is at least 2 Z-scores below the median value for healthy, adequately nourished children of the same sex and age. A low weight-for-age is a sign of general undernourishment/underweight.

Low weight-for-height (W/H): When a child's weight is at least 2 Z-scores below the median value for healthy, adequately nourished children of the same sex and height. A low weight-for-height is a sign of wasting.

Malnutrition: Malnutrition refers to a condition that results from too low, too high or an unbalanced intake of energy and/or micronutrients. Malnutrition includes undernourishment (stunting, wasting and underweight), micronutrient deficiency and overweight/obesity.

MAM: Moderate acute malnutrition – defined as a weight-for-height < -2 and ≥ -3 Z-scores for children aged between 6 and 59 months, or a mid-upper arm circumference (MUAC) < 125 mm and ≥ 115 mm for this age group.

MUAC: Mid-upper arm circumference. The circumference of the mid-upper arm measured halfway between the shoulder joint and the elbow of the left arm. MUAC is used as an indicator of moderate and severe acute undernutrition.

Non-communicable diseases: Includes cardiovascular disease, diabetes, cancer and chronic pulmonary diseases. Another term that is sometimes used is 'lifestyle disease', because many of these diseases are often a consequence of unhealthy lifestyles with a high energy intake, physical inactivity and smoking.

Nutrition transition: Nutrition transition refers to dietary changes as a result of demographic shifts, urbanisation and economic growth in a population group. A gradual transition takes place from the consumption of local foods that are not highly processed to a diet with more animal products and industrially processed high-energy foods with a high fat and sugar content, in parallel with a reduction in physical activity (CFS, 2017).

Overweight/obesity: Children below the age of 5: high weight-for-height in relation to the median value for healthy, adequately nourished children of the same sex and height. Children and adolescents aged 5 to 20 years: BMI-for-age. Adults: BMI. Being overweight or obese increases the risk of nutrition-related non-communicable diseases such as high blood pressure, diabetes, cardiovascular disease and certain types of cancer.

SAM: Severe acute malnutrition – defined as weight-for-height < -3 Z-score for children aged between 6 and 59 months, or children in this age group with a mid-upper arm circumference (MUAC) < 115 mm or bilateral pitting oedema (where an indentation persists after the release of pressure).

Stunting: See *low height-for-age*. Reflects a process in which an individual does not reach their growth potential as a result of inadequate nutrition, repeated episodes of infectious disease and/or unsatisfactory psychosocial stimuli.

Sustainable food system: *Sustainable food systems* aim to provide food security and good nutrition for all, whilst safeguarding the economic, social and environmental foundation for future generations (FAO, 2018b).

Undernutrition: An umbrella term for the various types of malnutrition related to the inadequate consumption of energy in relation to needs, including wasting, underweight and stunting.

Underweight: See *low weight-for-age*. Underweight is a general measure of undernutrition and can be due to low height-for-age, low weight-for-height or a combination of these.

Wasting: See *low weight-for-height*. Reflects recent or current weight loss, normally as a consequence of insufficient food intake and/or infectious disease.

Z-score: The deviation of an individual's value (relative to various measurements) from the reference population's median value, divided by the standard deviation (SD) of the reference population. For height-for-age, weight-for-height, and weight-for-age, -2 Z-scores are usually used as the threshold for undernutrition.

Appendix 2 Food and nutrition monitoring

The table describes the indicators used in global monitoring tools, in national nutrition surveys or nutrition monitoring, and in projects and interventions.

Indicator	Level	Measurement	Calculation at group level
Nutrition of infants and young children (ref. WHO 2008)			
Early initiation of breastfeeding	Individual	Whether the child was breastfed within an hour of birth	Percentage of children born in the last 24 hours who were breastfed within an hour of birth
Exclusive breastfeeding for 6 months	Individual	Whether the child received only breast milk and no other liquids or solids in the first 6 months	Percentage of children aged 0-5 months who are exclusively breastfed
Still breastfeeding at 1 year	Individual	Whether the child is being breastfed when it is 1 year old	Percentage of children aged 12-15 months who are breastfed
Introduction of solids	Individual	Whether the child receives solids when it is 6 months old	Percentage of children aged 6-8 months who receive solids
Minimum dietary diversity	Individual	Whether the child aged 6-23 months has eaten from a minimum of 4 out of 7 predefined food groups in the last 24 hours	Percentage of children aged 6-23 months who eat from ≥ 4 food groups
Minimum meal frequency	Individual	Whether the child aged 6-23 months eats a minimum number of meals per day ²⁰	Percentage of children aged 6-23 months who eat a minimum number of meals per day
Minimum acceptable diet	Individual	Combination of minimum dietary diversity and minimum meal frequency in children aged 6-23 months	Percentage of children aged 6-23 months with a minimum acceptable diet

²⁰ The minimum number of meals per day varies depending on the age of the child and whether it is breastfed or not.

Nutrition indicators for children aged 6-59 months (WHO, 2006b)

Stunting	Individual	Height-for-age <-2 Z-score	Percentage of children aged 6-59 months with height-for-age <-2 Z-score
Wasting	Individual	Weight-for-height <-2 Z-score	Percentage of children aged 6-59 months with weight-for-height <-2 Z-score
Underweight	Individual	Weight-for-age <-2 Z-score	Percentage of children aged 6-59 months with weight-for-age <-2 Z-score
Overweight	Individual	Weight-for-height >2 Z-score	Percentage of children aged 6-59 months with weight-for-height >2 Z-score
Anaemia	Individual	Hb <11 g/dl	Percentage of children aged 6-59 months with Hb <11 g/dl

Nutrition indicators for older children (WHO, 2007b)

Stunting 5-19 years	Individual	Height-for-age <-2 Z-score	Percentage of children aged 5-19 years with height-for-age <-2 Z-score
Underweight 5-10 years	Individual	Weight-for-age <-2 Z-score	Percentage of children aged 5-10 years with weight-for-age <-2 Z-score
Overweight 5-19 years	Individual	BMI-for-age >2 Z-score from median	Percentage of children aged 5-19 years with BMI-for-age >2 Z-score from median
Anaemia 5-14 years	Individual	5-11 years: Hb <11.5 g/dl 12-14 years: Hb <12 g/dl	Percentage of children aged 5-14 years with Hb below threshold value

Nutrition indicators for adults

Overweight	Individual	BMI \geq 25	Percentage of adults with BMI \geq 25
Obesity	Individual	BMI \geq 30	Percentage of adults with BMI \geq 30
Underweight	Individual	BMI <18.5	
Anaemia in women of reproductive age	Individual	Hb <12 g/dl	Percentage of women with Hb <12 g/dl
Anaemia in pregnant women	Individual	Hb <11 g/dl	Percentage of pregnant women with Hb <11 g/dl

Diet indicators (FANTA, 2006; FAO & FANTA, 2016)

Household dietary diversity score (HDDS)	Household	No. of food groups (from a predefined list of 12) one or more in household has eaten in the last 24 hours	Average no. of food groups consumed in households included
Minimum dietary diversity women (MDD-W)	Individual	Whether the woman has eaten from a minimum of 5 out of 10 predefined food groups in the last 24 hours	Percentage of women who eat from ≥ 5 food groups

Hunger and food security (FAO et al., 2018)

Prevalence of undernourishment (PoU)	Country		Percentage of the population that does not regularly have enough energy for a healthy, active life
Food insecurity experience scale (FIES)	Individual or Household	Eight questions on food insecurity experienced	Percentage of the population that has experienced mild, moderate or severe food insecurity

Appendix 3 International actors in nutrition

UN agencies and UN-related actors		
CODEX Alimentarius		Founded by FAO and WHO to develop common international standards for food security, food quality and fair practices in food trade.
FAO	Food and Agriculture Organization of the United Nations	Aims to ensure sufficient amounts of nutritious food from sustainable food systems for the entire population. In terms of nutrition efforts, FAO is working to increase the focus on nutrition in food production, including agriculture, forestry and fisheries, and the development of dietary and nutrition guidelines. FAO publishes annual reports on the food security and nutrition situation globally, the State of Food Insecurity (SOFI), which is used to monitor the progress towards the attainment of Sustainable Development Goal 2. Together with WHO, FAO is responsible for leading the follow-up of ICN2 and the United Nations Decade of Action on Nutrition.
IFAD	International Fund for Agricultural Development	A UN agency and international financial institution working to strengthen food and nutrition security among poor people in rural areas through increased income and more robustness in agriculture.
UNICEF	United Nations Children's Fund	Works for children's rights in health, education and protection. UNICEF has extensive experience with nutrition work aimed at children, both in crisis situations and development work. UNICEF has a large presence at the country level and a focus on programme implementation.
UNSCN	United Nations System Standing Committee on Nutrition	The UN's coordination forum for food and nutrition. Its mandate is to ensure cooperation between UN agencies and partners in international work to improve nutrition.

WFP	United Nations World Food Programme	Aims to protect and save lives in acute crises, prevent hunger and undernutrition in disasters, rebuild living conditions in post-conflict situations, and strengthen countries' capacity to reduce hunger and undernutrition. WFP provides food aid and support in developing countries and in crisis situations, such as famines and natural disasters.
WHO	World Health Organization	Draws up evidence-based guidelines on nutrition and provides guidelines on healthy diet, nutrition interventions and nutrition policies. WHO monitors which nutritional interventions are implemented at the country level and gathers information on the incidence of malnutrition. Together with FAO, WHO is responsible for leading the follow-up of ICN2 and the United Nations Decade of Action on Nutrition. The World Health Assembly (WHA) is WHO's supreme governing authority where all member countries meet annually and adopt resolutions and give their support for international interventions to improve nutrition.

Non-governmental and intergovernmental organisations

CFS	Committee on World Food Security	An intergovernmental platform where member states work with a range of actors (UN agencies, civil society and the private sector) to develop food security and nutrition policies.
CGIAR	Consultative Group of International Agricultural Research	Works to reduce poverty, improve food and nutrition security, and improve the use of natural resources and ecosystems.
ENN	Emergency Nutrition Network	Aims to strengthen knowledge on effective nutrition interventions in crisis-prone areas with high levels of malnutrition.
GAIN	Global Alliance for Improved Nutrition	Works to make healthier food choices more affordable, more accessible and more desirable. GAIN's objective is to improve nutritional status by increasing the consumption of healthy and safe foods among the most vulnerable groups.
IBFAN	International Baby Food Action Network	Works to improve the health and well-being of infants and young children by encouraging and promoting breastfeeding and optimum diets.
IFPRI	International Food Policy Research Institute	Part of CGIAR – aims to provide research-based solutions to reduce poverty, and to eradicate hunger and malnutrition.

N4G	Nutrition for Growth	A partnership between the UK, Brazil and Japan that will bring actors together to set specific goals to end all forms of malnutrition by 2030.
PON	Power of Nutrition	An independent charitable foundation that builds partnerships and invests in large-scale nutrition programmes.
SUN	Scaling Up Nutrition	A movement based on the principle that everyone has the right to food and good nutrition. It includes states, civil society, the UN, donors, businesses and researchers.
WB	The World Bank	Aims to eradicate extreme poverty by 2030 and increase the financial situation of 40 per cent of the world's poor. The World Bank focuses on nutrition, food security and climate-smart agriculture through accelerating inclusive, sustainable and economic development, developing resilience to shocks and threats, innovation, infrastructure and resources.

Civil society organisations

ABM	Academy of Breastfeeding Medicine	A worldwide organisation of doctors working to promote, protect and support breastfeeding.
BMGF	Bill & Melinda Gates Foundation	Invests in new approaches to improving nutrition, particularly in relation to the first 1000 days, breastfeeding, complementary feeding, food enrichment and dietary supplements.
FEWS Net	Famine Early Warning System Networks	System for the early warning and analysis of acute food insecurity.
FIAN	Food First Information and Action Network	An independent, international human rights organisation working to promote the right to sufficient food. Works with individual cases at the grassroots level and through information work.
FSC	Food Security Cluster	Part of the humanitarian reform process to ensure an effective response to crises. The goal of the FSC is to coordinate the food security response in humanitarian crises.
GNC	Global Nutrition Cluster	Part of the humanitarian reform process to ensure an effective response to crises. The goal of GNC is to safeguard and improve the nutritional status of affected populations in a crisis situation.

Nutrition efforts in Norwegian development cooperation

The world is facing major nutritional challenges, with millions of people suffering from starvation or malnutrition. Recent years have seen an increase in the number of people who are starving or have insufficient access to food. Children are especially affected by malnutrition: 149 million children under five are affected by stunting, and 49 million by wasting. Two billion children and adults are deficient in one or more micronutrients.

In parallel with this, obesity is a growing problem in all countries worldwide. Forty million children under the age of five are overweight and more than one in every eight adults in the world are obese. The result is a rapid increase in non-communicable diseases such as cardiovascular disease, diabetes and some types of cancer. The burden of these diseases is increasing especially rapidly in low- and middle-income countries.

Through increasing its nutrition efforts, Norway can help achieve Sustainable Development Goal 2, which aims to eradicate hunger and all forms of malnutrition by 2030. Good nutrition is also important to achieve a number of other Sustainable Development Goals to eradicate poverty and ensure good health, good-quality education, gender equality, economic growth and peace. Norway should support governments, civil society, and national/local efforts that engage in nutrition-specific interventions to reduce all forms of malnutrition, as well as organisations and processes that promote nutritional sensitivity through all parts of the food system to ensure better access to varied, healthy and sustainable food for more people.



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