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EUROPEAN COMMISSION ON AGRICULTURE

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Agenda Item 5

Agri- Food Systems for Better Nutrition in Europe and Central Asia

Executive Summary

This work describes the distribution of the predominant malnutrition issues throughout the region in the context of the so-called “nutrition transition” in Europe and Central Asia. The burden of malnutrition is then compared by risk factor throughout the region. Finally, a number of policies that may be used to improve the nutrition impact of food systems in the region are discussed.

Guidance Sought

The ECA is invited to review and comment on the suggested policies to allow food systems in Europe and Central Asia (ECA) to do better in fulfilling their important role to ensure healthy and well-nourished citizens as outlined in paragraph. 15 - 33.

The ECA is requested to endorse that future work of FAO in the region should focus primarily on promotion of consumer policies as outlined in paragraph 24 - 33 and supporting countries in the formulation of such policies.

1. The interrelation between food systems and nutrition has lately come to the attention of development organizations. In 2012 the International Food Policy Research Institute (IFPRI) published a book based on a conference entitled “Reshaping agriculture for nutrition and health” (Fan and Panya-Lorch, 2012). The Food and Agriculture Organization of the UN (FAO) published its annual report in 2013 on the State of Food and Agriculture on the issue of “Food Systems for Better Nutrition” (FAO, 2013). Finally, the FAO Regional Office for Europe and Central Asia recently commissioned a study on “Agri-food Systems for Better Nutrition in Europe and Central Asia” (Mazzocchi, et al., 2012, 2014). These studies explore interventions available to policy makers to improve human nutrition in the development process.

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2. The purpose of this study is to consider how food systems in Europe and Central Asia (ECA) can do better in fulfilling their important role to ensure healthy and well-nourished citizens. We follow SOFA 2013 in defining “food systems” as covering three value chain elements (1) from production to the farm gate, through (2) the post-harvest supply chain (from the farm gate to retailer) to (3) the consumer (SOFA 2013). In this work we first describe the distribution of the predominant malnutrition issues throughout the region in the context of the so-called “nutrition transition” in Europe and Central Asia. We then compare the burden of malnutrition by risk factor throughout the region. Lastly, we discuss the types of policies that may be used to improve the nutrition impact of food systems in the region.

A. Clustering of Europe and Central Asian countries by predominant malnutrition issues

3. In order to get a better overview of the nutrition picture in Europe and Central Asia we may cluster countries by their predominant nutrition issues.¹ There are three main malnutrition problems in the Europe and Central Asian region—undernutrition, micronutrient deficiencies and overnutrition. Each problem is present in each country to some degree, but the nutrition transition paradigm explains how the mixture of problems to change as incomes increase.

4. In order to cluster countries by their predominant nutrition issues we first need to provide measures of the three main malnutrition issues in the region. However, there is no one ready measure of each of the nutrition issues. Rather, there are multiple indicators of the three nutrition problems. Therefore, we first create synthetic indicators (linear combinations of a group of indicators) that reflect the three nutrition problems.² This means that for each country in our sample we have three synthetic indicators which capture the degree of undernutrition, micronutrient deficiencies and overnutrition in the country. We then use cluster analysis to separate the countries into groups based on a ranking of these synthetic indicators. This statistical methodology gave us four groups of countries, each of which has an identifiable nutrition problem profile: (1) Primarily undernutrition and micronutrient deficiencies, (2) triple burden of all three problems (undernutrition, micronutrient deficiencies and overnutrition), (3) primarily overnutrition and (4) countries where nutrition problems are of less concern.

5. The country clusters may be plotted on a map (**Figure 1**) which shows that undernutrition and micronutrient deficiency countries are located in Central Asia and the Caucasus. Kazakhstan, Ukraine and the Balkan countries suffer from the triple burden of malnutrition, while about half of Western Europe is afflicted primarily by overnutrition issues. The other half of Western European countries fall into the category of less concern. However, obesity is an issue even in countries of less concern. Over 20 percent of people suffer from this malnutrition malady.

B. The Socio-Economic Burden of Disease and Malnutrition

6. Understanding the distribution of malnutrition-related disease in Europe and Central Asia is a first step in designing appropriate health policy interventions for the region. However, in order to focus policies on the most detrimental health problems policy makers need a common measure of the burden of disease. Such a measure can help them to decide whether their interventions should be directed toward fighting heart disease, malaria or preventing alcohol abuse, for example. All three diseases result in a social burden, but which of the three result in a higher burden?

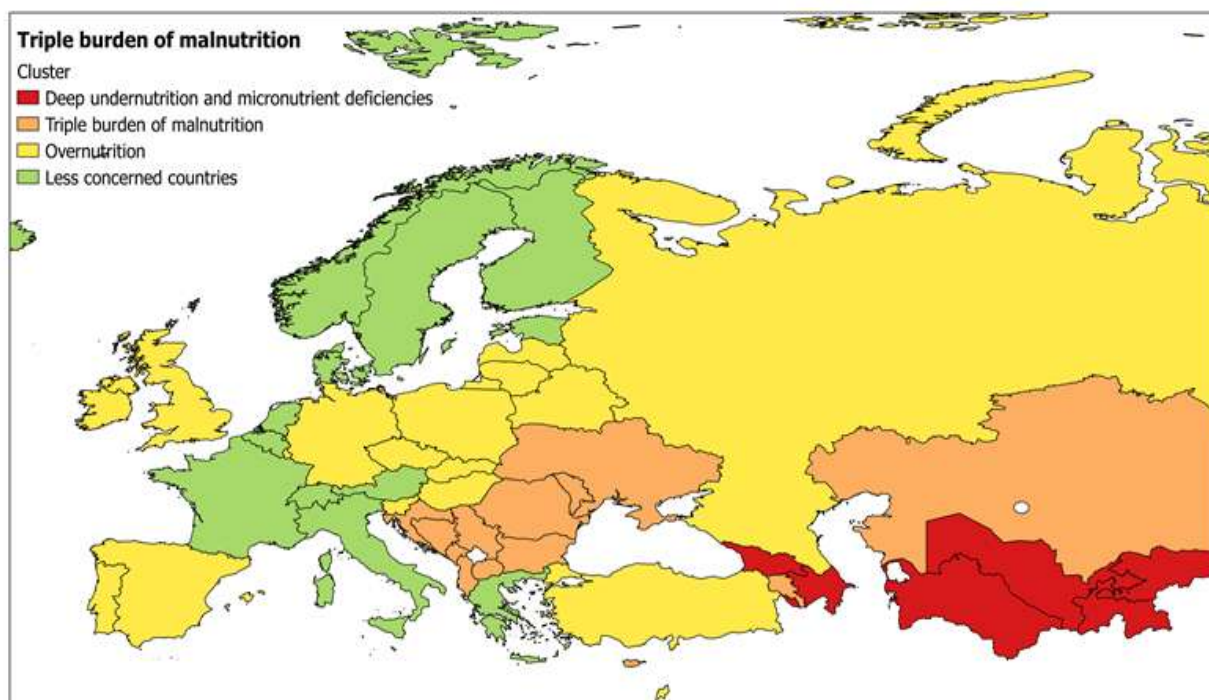
7. We can use the results of the Global Burden of Disease (GBD) Project pioneered by the World Bank and now headed by the Institute for Health Metrics and Evaluation at the University of Washington to define the burden of disease. The Global Burden of Disease approach quantifies the comparative magnitude of health loss due to diseases, injuries, and risk factors by country and by year

¹ In the discussion that follows (including Tables 1-4) the Europe and Central Asian region is that defined by the membership of FAO in Europe and Central Asia. For a complete list of countries covered see Mazzocchi, et al., 2014, Annex A.

² The statistical methodology of creating these indicators that minimizes the loss of variability associated with the reduction of the original variables into one indicator is described in Capacci, et al., 2013.

(Murray and Lopez, 2013). Policy makers can then compare the social burden of diseases in order to decide on which diseases to focus policy interventions. The Global Burden of Disease Project has developed a single measurement, disability-adjusted life years (DALYs), to quantify the number of years of life lost as a result of premature death and disability (caused by disease, for example). One DALY equals one lost year of healthy life, and decision-makers can use them to compare the social burden caused by conditions such as cancer versus depression using a comparable metric.

Figure 1. Map of Europe and Central Asia based on the Three Dimensions of Malnutrition



Source: Mazzocchi, et al., 2014.

8. Health policy should aim at preventing illness, not just addressing the consequences of illness. In public health each disease is associated with various *risk factors*. For instance, overnutrition and obesity are risk factors for diabetes and heart disease, while childhood undernutrition, suboptimal breastfeeding, child underweight and zinc deficiencies are among risk factors for lower respiratory infections. The Global Burden of Disease Project provides standardized data on potentially preventable risk factors for diseases ((IHME and HDNWB, 2013) in a way that facilitates comparison of the burden (in DALYs) of various risk factors. Using this approach, we can compare the number of DALYs lost from risk factors, such as unhealthy diet, tobacco and alcohol use, lack of exercise and air pollution.

The burden of malnutrition in ECA countries

9. The top five risk factors for disease in 2010 were (in order of importance) (1) dietary risks, (2) high blood pressure, (3) tobacco, (4) alcohol use, and (5) high body mass index (Mazzocchi, et al., 2014). Thus, three out of the top five risk factors for disease in the ECA region in 2010 were malnutrition-related. Though neither high blood pressure nor high body mass are always related to malnutrition, they often are. So, three out of the top 5 risk factors are, in fact related to malnutrition in part or whole. **Table 1** presents an analysis of the lost DALYs attributable to the top risk factors in the ECA Region in 2010, arranged by country group. The table first lists the malnutrition-related risk factors (in part or whole) as well as two major risk factors unrelated to malnutrition—alcohol and smoking—for comparison.

10. Five issues are important to note in this table. First, the undernutrition cluster stands apart from the others in the importance of child and maternal undernutrition-related risk factors. The average DALYs lost to child and maternal undernutrition (which includes micronutrient deficiencies) in the ECA

region is only 384 (**Table 1, line 2a**), which is far less than the other risk factors shown in the table. However, if one considers the undernutrition cluster (Azerbaijan, Georgia, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan), the burden from child and maternal undernutrition-related risks is almost six times higher, with 2,174 DALYs lost per year, a figure comparable to losses ascribed to high body mass index or tobacco, and well above those of alcohol. Most of the DALYs lost to child and maternal malnutrition issues are due to improper breast feeding and micronutrient deficiencies, not child underweight.

11. Second, the ECA undernutrition cluster, while remaining the sub-region of most concern in the region, differs from an average developing country in other regions. In developing countries the burden per 100,000 population of child undernutrition is three times the burden from high BMI (calculated from GBD 2010 data). This is consistent with the predominant attention given to issues of undernutrition in the developing world. However, in the undernutrition cluster of the ECA region the burden per 100,000 population of child undernutrition is only 0.86 of the burden from high BMI (Table 1, undernutrition country group, lines 2a and 2b). This difference is partly due to major results in tackling undernutrition (including underweight), as shown by the rapid decrease in DALYs lost to child and maternal undernutrition (-5.7% per year between 1990 and 2010, Table 2, line 2). A nearly 6 percent decrease in the total burden of child and maternal undernutrition per year over 20 years is a phenomenal achievement, for it translates into a 69% decrease in the health and social consequences of undernutrition over the period! This decrease was accompanied by a rapid growth in the total burden of overnutrition of +1.6% per year or +37% in total (Table 2, line 3). This “nutrition transition” sets the undernutrition cluster from this region apart from the typical nutrition profile of a developing country.

Table 1. DALYs Attributable to Malnutrition-Related Risk Factors in 2010 in Europe and Central Asia (DALYs lost) per 100,000 population.

Indicator		Country Groups				
		<i>Under nutrition</i>	<i>Triple burden</i>	<i>Over nutrition</i>	<i>Less concerned</i>	<i>Total ECA</i>
1	TOTAL DALYs lost (per 100,000 pop) to disease	33,925	38,996	33,156	26,912	32,574
2	Malnutrition-related risk factors					
a	Child and maternal undernutrition-related risk factors	2,174	471	294	48	384
	---Childhood underweight	298	22	8	2	27
	---Suboptimal breastfeeding	1,033	74	20	0	88
	---Micronutrient deficiencies*	843	375	266	46	268
b	High body mass index (BMI)	2,535	4,452	3,788	2,186	3,431
c	Dietary risk factors**	5,602	9,515	6,236	3,304	5,972
d	High blood pressure	4,256	8,425	5,092	2,573	4,916
e	High Total Cholesterol	899	2,390	1,877	886	1,657
3	Alcohol use	1,582	5,425	4,161	1,095	3,465
4	Tobacco smoking	2,769	5,089	4,251	2,793	3,936

*The GBD 2010 data-set does not include an aggregate estimate for micronutrient deficiencies. Our estimate is the simple difference between total DALYs lost to child and maternal undernutrition and DALYs lost to childhood underweight and suboptimal breastfeeding. This figure may be an underestimate of the actual burden, because childhood underweight and suboptimal breastfeeding are likely to be associated with micronutrient deficiencies. Note: weighted averages using country populations as weights.

**Dietary risk factors include a diet low in the following foods: fruit, vegetable, fiber, polyunsaturated fatty acids, calcium, whole grains, nuts and seeds, seafood omega-3 fatty acids and milk. Dietary risk factors also include a diet high in the following foods: sodium, processed meat, trans fatty acids, sugar-sweetened beverages and red meat (Mazzocchi, et al., 2014, p. 42).

Source: Processing of GBD 2010 data, Mazzocchi, et al., 2014.

12. Third, DALYs lost due to micronutrient deficiencies are much higher in the poorest group of countries and their decline (-0.4% per year, **Table 2**) is also relatively slow compared to the cluster affected by the triple burden of malnutrition. Clearly, here is an important area for improvement in the undernutrition cluster where the Triple Burden countries have achieved some success.

13. Fourth, the triple burden countries (Kazakhstan, Ukraine and the Balkan countries) have the highest social burden from high BMI, even though their overweight rates are lower than those for the overnutrition cluster (55% vs. 60%). This seeming inconsistency can be explained by looking at health expenditure, which is significantly higher per capita in the overnutrition cluster of countries (Table 3, line 1). Better health care mitigates the adverse health effect of malnutrition, and countries with a less developed health care system are also those suffering the highest loss.

Table 2. Annual change in DALYs lost to risk factors, Europe and Central Asia, 1990-2010 (%)

Indicator		Country Groups				
		1	2	3	4	
		<i>Under nutrition</i>	<i>Triple burden</i>	<i>Over nutrition</i>	<i>Less concerned</i>	<i>Total ECA</i>
1	Total disease	-1.4	0.2	-0.4	-0.4	-0.4
2	Child and maternal undernutrition	-5.7	-2.9	-4.0	-0.5	-4.3
3	High body mass index	1.6	1.5	0.8	0.0	0.8
4	Micronutrient deficiencies	-0.4	-1.1	-0.7	-0.4	-0.7
5	Dietary risk factors	0.4	0.9	-0.5	-1.6	-0.4

Source: Processing of GBD 1990 and 2010 data, Mazzocchi, et al., 2014.

14. Fifth, based on the trends of the past 20 years, the undernutrition cluster is set to transition into the triple burden category, with DALYs from high body mass growing more rapidly than in any other cluster and those from child and maternal undernutrition decreasing more than in the other clusters (**Table 2, lines 2 and 3**). As these countries transition to the triple burden category health expenditures will need to rise quite rapidly. Though health expenditures are already rising quickly, because of their low level the changes in health expenditures required to raise life expectancy in the undernutrition and triple burden clusters are immense (**Table 3, line 7**). At present, a 99% increase in health expenditures is required to gain one year of life expectancy at birth in the undernutrition cluster, and a 144% increase is required in the triple burden countries. Contrast this with the overnutrition and less-concerned countries where a rise of only 37% and 24% are required to raise the life expectancy at birth by one year. In short, bridging the health and life expectancy gap is going to be extremely difficult and relatively expensive for countries already suffering from undernutrition, and the envisaged dynamic in obesity, also fuelled by economic growth, can be expected to be very costly for countries in the first two clusters.

Table 3. Health expenditure, Europe and Central Asia, 2010

Indicator		Country Groups				
		1	2	3	4	
		<i>Under nutrition</i>	<i>Triple burden</i>	<i>Over nutrition</i>	<i>Less concerned</i>	<i>Total ECA</i>
1	Health expenditure per capita, PPP (2005 international dollars) (2010)	252	730	2,257	3,817	2,275
2	Health expenditure, public (% of total health expenditure) (2010)	42	62	71	77	69
3	Health expenditure, total (% of GDP) (2010)	5.8	7.2	8.2	10.6	8.5
4	Life expectancy at birth (years) (2010)	69	72	75	81	76
5	Change in life expectancy (total years gained) (1990-2010)	2.6	1.5	4.2	4.6	3.8
6	Annual change in real per capita health expenditure (1995-2010) (% per year)	8.8	8.0	6.5	5.1	6.0
7	Change in health expenditures per year of life expectancy gained (1995-2010) (%)	99	144	37	24	36

Source: Mazzocchi, et al., 2014.

C. Policies to address malnutrition in Europe and Central Asia

15. We have mapped the countries of the region by dominant nutritional issues, and discussed a metric for viewing the social burden of malnutrition-related risks. Taking these facts into account, we now answer the question as to how policies can be used in the region to address malnutrition. We adopt the SOFA 2013 (FAO, 2013) framework for classifying policies related to agriculture and food by segments in the food value chains: (1) agricultural policies (covering issues up to the farmgate), (2) post-harvest policies (farmgate to retail) and (3) healthy food policies (consumer policy). The following policy descriptions are necessarily brief. A fuller and richer discussion can be found in Mazzocchi, et al. (2014).

1. Agricultural Policies

Market price support policies (primarily overnutrition and less-concerned clusters)

16. Market price support (MPS) refers to a set of policies that create a wedge between domestic and international prices. As such, they include domestic market intervention, price administration and trade measures such as import tariffs, quotas and export taxes. In the typical case, MPS enables prices received by domestic producers to be maintained above international prices.

17. Several researchers and commentators, particularly those from the public health community, have in the past implicated agricultural policy in the EU in the deterioration of diets and worsening of risk for non-communicable disease. However, a closer look taken by economists at the impacts of EU agricultural policies on prices faced by consumers in these countries paints a different picture. Schmidhuber (2007) notes that the traditional instrument for producer support in the CAP, price support, *raised* the price of foods produced in the EU above international prices, and thus amounted to a tax on EU consumers. Also, he finds that the largest gaps between EU and world prices created by the CAP were for commodities most associated with overnutrition: sugar, beef and milk. Thus, by increasing the prices of sugar, beef and milk more than for other foods, market price support seems to have discouraged, not encouraged, unhealthy diets.

Agricultural Research and Development policy: Biofortification (undernutrition cluster)

18. While the micronutrient deficiency problems of some parts of the region have been recognised and prioritised in action by governments and international agencies before, previous ‘nutrition-specific’ interventions have typically taken the form of micronutrient supplementation and food fortification. For example, the Asian Development Bank and UNICEF formed a partnership with the governments of the Central Asian nations as well as private sector entities to deliver major programmes of salt iodisation and iron fortification of wheat flour in the 2000s. These programmes have helped achieve near universal salt iodisation, although the production and consumption of fortified wheat remains low in the region (ADB, 2010).

19. Some disadvantages of food fortification programmes are that they are dependent on continuing sources of funding, encounter coverage problems in rural areas, and benefits are confined to the region in which they implemented (Bouis and Islam, 2012). Biofortification, involving the use of breeding techniques to increase the micronutrient content of crops, produces a continuing stream of nutritional returns to initial investment and spillover benefits from the spread of the technology to surrounding regions growing the same crop (Bouis and Islam, 2012). Wheat loses micronutrient content in the process of milling and additionally contains antinutritional components such as phytic acid that reduce the bioavailability of these nutrients (Cakmak et al., 2010). Policy action to support a programme of biofortification is thus recommended in deficient countries in the region. This is particularly relevant to the Caucasus and Central Asia, where cereals supply more than 50% of dietary energy and per capita consumption of meat and/or milk is relatively low (Bruinsma, 2012).

20. Given the largely wheat-focussed diets and production systems of the micronutrient deficient region of REU, as well as the portfolio of experience available via the HarvestPlus (see Box 1) and local CIMMYT programs, there is merit in investing in strong regional programmes for breeding iron and zinc fortified wheat. For regional policymakers, some of the priority actions in this area would be to allocate more research and development funding to biofortification and to facilitate national agricultural research services to collaborate with international organisations such as CIMMYT, ICARDA and FAO.

BOX 1 - HarvestPlus: Breeding crops for improved micronutrient content

HarvestPlus is a research and development programme for breeding and disseminating new varieties of crops with enhanced micronutrient content, with special focus on iron, zinc and vitamin A. It is part of the Consultative Group for International Agricultural Research’s (CGIAR) Agriculture for Nutrition and Health (A4NH) programme. By making micronutrient-dense new varieties of key crops widely available and consumed, the programme aims to help lower the burden of micronutrient malnutrition in the developing world. HarvestPlus’ portfolio currently consists of iron-fortified beans and pearl millet, vitamin-A fortified cassava, maize and sweet potato, and zinc-fortified rice and wheat.

Source: www.harvestplus.org

2. Post-harvest policies***Food reformulation (all clusters)***

21. Convenience foods can contain high levels of ‘unhealthy’ nutrients such as salt, trans and saturated fats, and sugar. Although nutrition labelling supports informed choice for processed foods, consumers are frequently unaware of the overall nutritional composition of their meals (Mayer, 2008). Product reformulations to reduce levels of specified nutrients in processed foods can be achieved through legislation, e.g. the banning of trans fats in Denmark (Capacci et al., 2012) or, more commonly,

through voluntary collaboration between industry and governments towards reducing the proportion and amount of less healthy nutrients in processed food products (e.g. the Responsibility Deal in the UK, and initiatives in Spain, France and several other European countries). Limits to reformulation are established by consumer acceptance, food safety, technological challenges and food regulation issues.

22. Voluntary reformulation combined with information campaigns has contributed to a 10% reduction in salt intake in the UK (Shankar et al., 2013), but there are continuing concerns, in some Eastern European countries such as Poland about the levels of salt and trans fats in certain processed and take-away foods (European Heart Network, 2011). There is a potential conflict between aims to control salt intake and the desire to counteract iodine deficiency through the use of iodized salt. This problem may easily be overcome by increasing iodine concentrations in table salt and encouraging (or requiring) the use of iodized salt in processed food.

Food fortification (primarily undernutrition cluster)

23. Efforts by the Asian Development Bank and UNICEF in Central Asia to provide widespread fortification of salt and wheat flour in Central Asia have already been discussed in a previous section. Along with iodisation of salt (required in Turkey, Kyrgyzstan--for children--, Armenia, and, as a proposal, in Ukraine), vitamin D in milk and a range of micronutrients in enriched flour are common in the US and some other high income countries. Vitamin A enriched sugar has been successfully used in Costa Rica and Guatemala, and many other vehicles are feasible including flour, milk, vegetable oils and margarine (Miller and Welch, 2013). It is important that fortification channels are consistent with country-specific consumption patterns, and they can only be effective where the relevant processed foods are consumed, which may limit their use for some rural communities. It is also self-evident that mandatory fortification requires government resources for monitoring and that the costs will be passed through to consumers.

3. Consumer policies

Fiscal measures applying to the population at large (primarily overnutrition and less concerned countries)

24. Fiscal measures are taxes or subsidies designed to change the relative prices of foods or nutrients depending on their healthiness (Wang et al., 2012). Such interventions have recently been introduced in Denmark, Hungary, Finland and France. While their real-world effectiveness has yet to be fully assessed, simulation studies using the responsiveness of consumers to changes in food prices suggest a small but cost-effective response to raising the price of certain foods or nutrients (e.g. Cecchini et al., 2010). Although the financial consequences of fiscal measures are regressive (their financial impact is proportionally greater for the poor), the health benefits are progressive, i.e. they are greatest for the poor, since low income groups are more responsive to price changes and their initial consumption levels are 'worse' (e.g. Smed et al., 2007; Allais et al., 2010). Furthermore, even if moderate levels of taxation have only a modest effect on diet or health, they can generate large revenues for national governments, which could fund other healthy eating programmes. On this basis EATWELL recommended such taxes for EU countries with the stipulation that the fiscal revenues should be ring-fenced for use in other cost-effective healthy eating policies.

25. Any taxation of foods in low- or medium-income countries would need careful selection of target foods or nutrients to avoid harming those who can not afford enough to eat. Rather than the sort of tax introduced in Denmark, Hungary and Finland on saturated fats and sugars in foods, there may be the potential to tax fast foods and soft drinks (France has done the latter). Even this should only be attempted with extreme caution—these industries generate important employment (and income) within the country and may (there is no evidence) provide cheap nutrients that contribute to the alleviation of undernutrition.

26. Subsidisation of foods to the population at large (e.g. fruit and vegetables in rich countries or grains in lower income countries) would be hugely and unrealistically expensive.

Public health information campaigns (all clusters, but particularly the undernutrition and triple burden clusters)

27. Along with nutrition education in schools, public health information campaigns are the most common type of nutrition intervention employed in high income countries to promote healthy eating (Capacci et al., 2012). They do not impose direct restrictions or direct costs on the food industry and are viewed as being less intrusive than other measures, which may account for their widespread popularity. Intervention policies developed to address obesity are common, but an increasing number of campaigns have been targeted at specific foods or nutrients, such as fruit and vegetables, seafood or salt (e.g. fruit and veg campaigns in many countries; Sid the slug salt awareness campaign in the UK etc). Where the effects of such campaigns on behaviour and consumption have been tracked (Capacci and Mazzocchi, 2011; Shankar et al., 2013) they show modest and positive effects on diet and are considered cost-effective in high income countries.

28. Public information campaigns are intended both to educate and persuade. As such, they should be combined with other nutrition education measures (e.g. in schools) and measures to control the flow of misleading information (e.g. controlling marketing measures of certain foods targeted at children). Both these measures are discussed below. In countries with micronutrient deficiencies the target messages may also encourage consumption of (voluntarily) fortified foods, in which case, of course, information would have to be accompanied by measures to ensure the availability of such foods.

Nutrition education (all clusters)

29. The main goal of nutrition education is to inform people as to what constitutes a healthy, balanced diet, as well as how to improve their diet and lifestyle. Interventions aimed at children in schools are widespread throughout the EU but, to a lesser extent, adults in the workplace may also be targeted. At present nutrition education is not compulsory in most EU countries, nor in other ECA countries except the Russian Federation, though in most countries there is some level of nutrition education to some children. Nutrition education is vital for informed choice and should be a compulsory component of the school curriculum in all countries. As suggested by SOFA 2013 (FAO, 2013, p. 55), another particular educational target should be mothers of young children.

Advertising controls (all clusters)

30. Modern multinationals use a range of sophisticated marketing techniques, many of them targeted at children. Foods are advertised heavily on television, especially foods that are high in fat, salt and sugar (HFSS). Children are a particularly vulnerable target group and existing regulatory measures across the EU, as well as voluntary initiatives by major food and beverage companies, have concentrated on restricting the advertising of HFSS foods to minors (e.g. Ofcom, 2010). Evidence suggests that partially restrictive policies, covering only certain children's channels or programmes, have had a negligible effect on diet, partly because children are targeted by a wide range of other sources (Adams et al., 2012; Huang and Yang, 2012). A broader approach is needed encompassing all TV channels, as well as social media (e.g. *Facebook*, *Twitter*) and other media and, potentially, other marketing activities such as sports sponsorship, though there is no hard evidence on the effectiveness of such measures. It is noted that WHO members have already endorsed recommendations on marketing HFSS foods and drinks to children (WHO, 2010).

Nutrition labelling (all clusters)

31. Nutrition labelling seeks to inform consumers about the nutritional composition of food. It has a relatively long history and is heavily regulated in many high income countries, including the EU. The most widespread format used is the back-of-pack nutrition table (compulsory for packaged groceries in the EU), while visual information, typically guideline daily amounts (GDAs), is more commonly present on front-of-pack (Storcksdieck genannt Bonsmann et al., 2010). While nutrition labels allow healthier food choices, it is not clear whether they are effective in instigating behavioural change amongst consumers. Evidence from the EU project, FLABEL (Food Labelling to Advance Better Education for Life, www.flabel.org) suggests that attention is greater for front-of-pack labelling but is most used by already motivated consumers. Nutritional information, at first back of pack, would seem a basic requirement throughout the ECA region.

Food Assistance Policies (all clusters)

32. Some fiscal measures specifically target consumers on low incomes, providing a safety net through vouchers for food purchases for vulnerable populations, particularly pregnant women, new mothers and young children, e.g. the Supplementary Nutritional Assistance Program (SNAP) and Women, Infants and Children scheme (WIC), both in the US; and Healthy Start in the UK. The WIC scheme has been shown to be highly cost-effective in promoting the nutritional health of its recipients in the US (USDA, 2009), whilst SNAP has improved the diets of low income families and is also cost-effective. Such schemes have not been used in the EU (except Healthy Start in the UK), but EATWELL suggests EU Member States should recognise the benefits of these cost-effective programmes and examine how they could be incorporated within their existing welfare systems. In Kyrgyzstan, low income households are sold food from Government reserves at low prices.

33. Food assistance programs (FAPs) are relevant to undernourished segments of the populations of several countries in the ECA region, but particularly for countries battling widespread undernutrition and/or micronutrient deficiencies, such as Tajikistan, Turkmenistan, Armenia, Azerbaijan, Kyrgyzstan and Uzbekistan.

D. Conclusions

34. Analysis of the nutrition indicators of the countries of Europe and Central Asia shows that the dominant nutrition issue across countries in the region on average is overnutrition. Although there are a few countries where the dominant nutrition issues are undernutrition and micronutrient deficiencies, even these countries are not typical developing countries judging by nutrition indicators. Within the undernutrition cluster, the burden of high BMI is considerably higher compared to that of undernutrition than in an average developing country. Moreover, we have observed a very rapid fall in the burden of undernutrition and a rapid rise in the burden of high BMI in countries of the undernutrition cluster. This implies that, according to current trends, the undernutrition cluster of countries considered here will soon transition into looking more like the Triple Burden cluster of countries.

35. Countries in the undernutrition and Triple Burden clusters face two simultaneous challenges that have now effectively capped life expectancies in these countries at their current level--the need for improvements in health care and the growing burden of overnutrition and micronutrient deficiency-related disease. This conclusion is based on Table 3 data that show that the changes in health expenditures required to raise life expectancy in these two clusters are immense. At present, a 99% increase in health expenditures is required to gain one year of life expectancy at birth in the undernutrition cluster, and a 144% increase is required in the triple burden countries. Contrast this with the overnutrition and less-concerned countries where a rise of only 37% and 24% are required to raise the life expectancy at birth by one year.

36. Part C of this paper covered policies that can diminish nutrition problems. We encourage member countries to consider which policies are most relevant to their countries. Many of the Triple Burden countries have already implemented some of the policies here. This attention should be continued and expanded. Studies from Western European countries indicate that many policy measures designed to promote more healthy eating habits seem to be cost-effective in the sense that the resources required for funding them are more than offset by the modest, positive effects on diet.

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