Economic & Social Affairs

United Nations expert group meeting on population, food security, nutrition and sustainable development

New York, 16-17 September 2019

Report of the Meeting

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Department of Economic and Social Affairs
Population Division

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The Department of Economic and Social Affairs of the United Nations Secretariat is a vital interface between global policies in the economic, social and environmental spheres and national action. The Department works in three main interlinked areas: (i) it compiles, generates and analyses a wide range of economic, social and environmental data and information on which States Members of the United Nations draw to review common problems and take stock of policy options; (ii) it facilitates the negotiations of Member States in many intergovernmental bodies on joint courses of action to address ongoing or emerging global challenges; and (iii) it advises interested Governments on the ways and means of translating policy frameworks developed in United Nations conferences and summits into programmes at the country level and, through technical assistance, helps build national capacities.

The Population Division of the Department of Economic and Social Affairs provides the international community with timely and accessible population data and analysis of population trends and development outcomes for all countries and areas of the world. To this end, the Division undertakes regular studies of population size and characteristics and of all three components of population change (fertility, mortality and migration). Founded in 1946, the Population Division provides substantive support on population and development issues to the United Nations General Assembly, the Economic and Social Council and the Commission on Population and Development. It also leads or participates in various interagency coordination mechanisms of the United Nations system. The work of the Division also contributes to strengthening the capacity of Member States to monitor population trends and to address current and emerging population issues.

Notes

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1. BACKGROUND AND SCOPE OF THE MEETING

The question of how to feed a growing global population has been central to discussions around population and development for many decades. While the Programme of Action of the 1994 International Conference on Population and Development (ICPD) highlighted the problem of undernutrition, today's discussion of malnutrition is broader and includes stunting, wasting, overweight and obesity, as well as micronutrient deficiencies. Moreover, there is an increasing recognition of the challenges to food security posed by factors such as climate change, conflict and economic downturns. Recognizing the importance and timeliness of these topics, the United Nations Commission on Population and Development decided in 2018 that the thematic focus of its fifty-third session in 2020 would be "Population, food security, nutrition and sustainable development." In preparation for the upcoming session, the Population Division of United nations Department of Economic and Social Affairs (UN DESA) convened an expert group meeting on those topics in New York on 16 and 17 September 2019.

The purpose of the expert group meeting was to examine new evidence and analysis regarding relationships between population change, food security, nutrition and sustainable development. To that end, the meeting convened experts from around the world, including representatives of key international organizations that focus on those issues.

This report summarizes the presentations and discussions that took place within each substantive session of the meeting and highlights cross-cutting themes and recommendations. The experts' presentations and background notes prepared for the meeting contain a wealth of detailed information and conclusions beyond the brief summaries provided in the present report. Materials from the expert group meeting can be accessed on the Population Division website at:
www.un.org/en/development/desa/population/events/expert-group/30/index.asp.

2. SUMMARY OF SESSIONS

A. OPENING OF THE MEETING

Mr. John Wilmoth, Director of the Population Division, opened the meeting, welcoming the participants and providing an overview of the Population Division's work and its role in supporting the Commission on Population and Development. The Commission's primary mandate was to monitor, review and assess the implementation of the Programme of Action of the International Conference on Population and Development, adopted in Cairo in 1994. In 2016, the Economic and Social Council decided that the Commission on Population and Development would contribute to the follow-up of the 2030 Agenda, including the review of progress toward the Sustainable Development Goals, within its existing mandate focused on the Cairo conference.

At its fifty-third session in 2020, the Commission would address the theme of "Population, food security, nutrition and sustainable development." To support the Commission's deliberations, the Population Division would prepare a report of the Secretary General to provide a broad overview of those topics, highlighting major trends and key challenges. The United Nations Population Fund (UNFPA) would prepare a companion report on relevant evidence-based programmes and policy interventions. Mr. Wilmoth noted that the Commission had not focused specifically on food security and nutrition since the Cairo conference in 1994, although it had considered related topics in its discussions of population and the environment in 2001, of health, morbidity and mortality in 2010, and of population issues in the context of sustainable development in 2015. The topics of hunger and nutrition were outside the core work programme of the Population Division, which focused mostly on the documentation and analysis of major population trends and on policies that could influence those trends. The Division was therefore seeking input and advice from the invited experts, including experts from research institutes and from relevant UN entities working in the areas of food security, nutrition, food systems modelling, food policy, rural development, sustainable agriculture, and environmental sustainability, including climate change.

It would not be feasible to address all possible aspects of food security and nutrition in the reports that the Population Division and UNFPA would prepare, which had strict length limitations. Therefore, the Division proposed to highlight four domains of the broader topic. Thus, the first part of the expert meeting would examine linkages between population and food security by focusing on two key issues: the interaction between the growth in population and consumption and the sustainability of global food production; and interrelationships between food security, agricultural development, population movements and settlement patterns. In its second part, the meeting would examine food security, nutrition and population health from the perspective of population health, considering issues related to hunger and undernutrition on the one hand, and to obesity and overweight on the other, highlighting major changes that had taken place since the Cairo conference in 1994.

B. SETTING THE STAGE: TRENDS, CONCEPTS, DEFINITIONS, AND DATA SOURCES

Mr. Sandile Simelane of UNFPA moderated the first session, which focussed on major trends, concepts, definitions and data sources.

Presentations

Ms. Nancy Aburto of the Food and Agriculture Organization (FAO) provided an overview of food security and nutrition concepts, trends and data sources. FAO defined food security as "a situation that

exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life." FAO monitored hunger and malnutrition in all its forms, including both under- and over-nutrition. A healthy diet required both an adequate, but not excessive, number of calories and a balanced composition of nutrients, including micronutrients – vitamins and minerals. FAO issued an annual flagship report on hunger and nutrition, in collaboration with other relevant organizations.[1] Ms. Aburto described the data sources and procedures involved in producing two indicators for monitoring progress towards eliminating hunger under SDG 2. The prevalence of undernourishment – the number of people lacking access to enough dietary energy for a healthy, active life (SDG indicator 2.1.1) – was based on FAO's annually-updated data on the amount of food available for human consumption and surveys that showed inequalities in food availability across households within countries. FAO's estimates also took into account the caloric needs of different demographic groups. For the first time, in 2019 FAO provided, in collaboration with other agencies, a complementary indicator of the prevalence of both moderate and severe food insecurity using a different measurement approach: the Food Insecurity Experience Scale (FIES) (SDG indicator 2.1.2). Persons classified as experiencing severe food insecurity had typically run out of food at some time during the year and might have gone without eating for a day or more. Those with moderate food insecurity had been forced to compromise on the quantity and/or quality of food consumed, due to lack of money or other resources.

The world was not on track towards meeting the SDG goal of eliminating hunger. The latest data showed that, after decades of progress towards reducing undernourishment, the global proportion undernourished increased slightly after 2015 and since then had remained at a little under 11 per cent of the world's population, while the number of people undernourished had grown along with total population numbers. As of 2018 an estimated 821.6 million people were undernourished. Most of the undernourished lived in Asia (63 per cent) or Africa (31 per cent). Most major areas, or regions within them, had experienced either a stagnation of earlier downward trends or recent increases in prevalence and numbers undernourished. In sub-Saharan Africa, over 20 per cent of the total population was currently undernourished. The new FIES measure of food insecurity showed that approximately 704 million people had recently experienced severe food insecurity and an additional 1.3 billion, or 17 per cent of the global population, had experienced moderate food insecurity. Together, over one fourth of the world population suffered from severe or moderate food insecurity, including 8 per cent of the population of Europe and Northern America.

Dr. Ruben Grajeda Toledo of the Pan American Health Organization (PAHO/WHO) spoke via video link on "Nutrition indicators: trends and data sources." He reviewed the World Health Organization (WHO) and SDG targets concerning nutrition and diet-related non-communicable diseases. Manifestations of malnutrition included stunting, wasting and underweight, especially among young children; micronutrient deficiencies; overweight and obesity; and associated chronic conditions such as diabetes, cardiovascular disease and some cancers. One or more of those conditions affected an estimated one third of the world population. Although there had been progress on reducing the prevalence of some aspects of undernutrition and nutrition-related health outcomes, in general progress was too slow to meet the WHO targets for 2025 or the SDG targets for 2030. For instance, there had been little progress in reducing the incidence of underweight births (a problem that was associated with anaemia and underweight in mothers), and progress in reducing stunting among young children had

[1] FAO, IFAD, UNICEF, WFP and WHO (2019). *The State of Food Security and Nutrition in the World 2019. Safeguarding against economic slowdowns and downturns.* Rome, FAO.

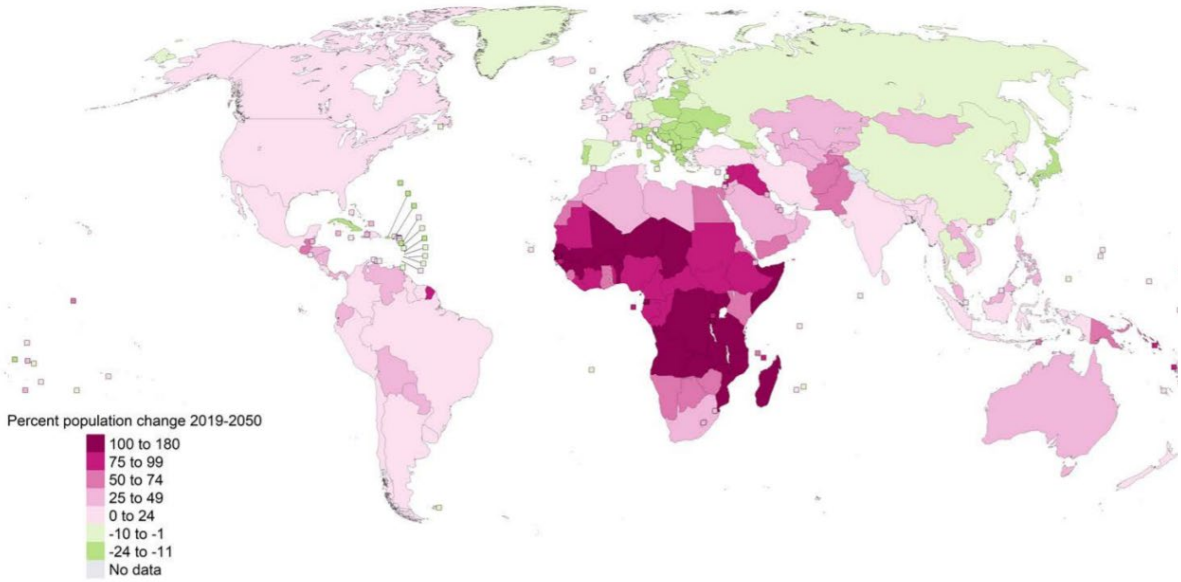
been too slow to reach the targets. Furthermore, some nutrition-related indicators were moving in the wrong direction. For instance, around one third of women of reproductive age were anaemic, and the prevalence of anaemia rose between 2012 and 2016. Overweight and obesity were increasing in all age groups and all world regions, with particularly rapid increases in adults, adolescents and school-age children. By 2016, the global number of obese people had surpassed the number undernourished.

Dr. Grajeda said that unhealthy diets were a major factor impeding progress towards nutrition-related health goals. Although many diets were deficient in particular vitamins or minerals, often because of low consumption of fruits and vegetables, many diets also included too much of some micronutrients, especially salt. WHO had developed guidelines on healthy diets.[2] Dr. Grajeda highlighted the rapid increase of overweight and obesity in Latin America and the association of those trends with increased marketing and consumption of sugary beverages and ultra-processed foods, which tended to be calorie-dense but low in nutritional content. Such foods were often available at lower cost than healthier options such as fresh fruits and vegetables. Combating those trends posed a major challenge for policies and programmes. Dr. Grajeda concluded that tackling all forms of malnutrition would require multisectoral actions involving health, food, education, social protection, planning and economic policy sectors.

Mr. Frank Swiaczny of the Population Division/DESA presented an overview of demographic megatrends and population growth. He discussed trends in four areas that were central to the Population Division's work programme: population growth; ageing; international migration; and urbanization. He noted that the Population Division issued updates of its estimates and projections of population every two years. According to the medium-variant projection of the 2019 revision, the world population would increase from 7.7 billion in 2019 to 10.9 billion in 2100. The projections indicated that global population could stop growing by 2100, but there was a wide range of uncertainty around the numbers for 2100, with a 95 per cent prediction interval for that year ranging from 9.4 billion to 12.7 billion. All projection variants indicated that the world population would still be growing by mid-century, to 9.7 billion in 2050 according to the medium-variant projection. Sub-Saharan Africa was likely to account for over half of total population growth between 2019 and 2100, while populations of several other regions might be decreasing or be nearly stable by the end of the century. Continued rapid population growth presented challenges for sustainable development, especially in the 47 Least Developed Countries, whose population was projected to increase from 1 billion in 2019 to 1.9 billion in 2050. Populations of many sub-Saharan African countries were projected to more than double in size by 2050 (see the figure).

[2] See www.who.int/nutrition/publications/nutrientrequirements/healthydiet_factsheet/en/

Population change, 2019-2050



Source: F. Swiaczny presentation at the United Nations Expert Group Meeting on Population, Food Security, Nutrition and Sustainable Development, 16-17 September 2019, New York; reprinted from United Nations, Department of Economic and Social Affairs, Population Division (2019). *World Population Prospects 2019: Data Booklet* (ST/ESA/SER.A/424)

Note: The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

Regarding other population mega-trends, Mr. Swiaczny first presented an overview of changes in population age structures. The world population was ageing. Among broad age groups, the population aged 65 years or over would see the largest increase until the end of the century. The working-age population (ages 25-64 years) would also continue to grow, while numbers of children (ages 0-14 years) and youth (ages 15-24 years) would remain almost constant at the global level. However, those trends varied considerably by region. For instance, sub-Saharan Africa's population aged under 25 years was likely to continue growing through at least 2050, while in some other regions, including Europe and Northern America and Eastern and South-eastern Asia, that age group was already decreasing in size. However, the population aged 65 years or over would increase substantially in all regions.

The world population was also becoming more urbanized. In 2018, 55 per cent of the world's population lived in urban areas, and that was projected to increase to 68 per cent by 2050. Sub-Saharan Africa and Asia were the regions projected to experience the most rapid urbanization up to 2050, and the number of large cities (one million or more) was also projected to grow substantially in those regions.

Net international migration had increased since the 1980s, though the volume for years 2010-2020 was projected to be somewhat lower than for the decade 2000-2010. Most countries experiencing net in-migration were in Europe or Northern America, while the main regions of origin were Central and Southern Asia, followed by Eastern and South-Eastern Asia and Latin America and the Caribbean. The total numbers

who migrated into or out of particular countries greatly exceeded the volume of net migration, which was the difference between in- and out-migration. Most international in- and out-migrants moved between countries in the same region.

Mr. Swiaczny also described basic features of the methods the Population Division used in developing the population projections. The calculations employed a cohort-component approach. Assumptions about future trends of fertility and mortality were derived primarily from past trends for a given country but were also informed by theories of demographic change and by historical experience of other countries. Alternative future trends had traditionally been described using low, medium and high variants and scenarios based on alternative assumptions about future changes in fertility. Recently, the Division had also projected future trends using a probabilistic model, which was calibrated for each country using a procedure that relied primarily on data for that country. Data for other countries influenced projections, especially for countries in which the transition to low fertility and mortality was less complete (see https://population.un.org/wpp/Methodology/). Examination of past revisions of the population projections showed that the medium-variant projections generally had a good record of anticipating actual growth of the world population.

Discussion

In the discussion, Ms. Aburto responded to several questions regarding nutrition. She agreed that it was important to understand dietary choices and risks beyond just questions of adequate caloric and micronutrient availability. Detailed individual-level data about actual diets was currently quite limited. However, FAO and WHO were collaborating to build a platform for compiling and sharing of individual-level data about diets in different countries. Another question concerned metabolic adaptation to deprivation. Ms. Aburto said that there had been numerous follow-up studies focusing on persons subject to deprivation at the fetal stage or as young children; a smaller number studied adults subjected to starvation. In both cases, the studies found that, once the period of deprivation had passed, deprived persons tended to put on more weight than others; this was also linked to later health problems such as diabetes.

One question concerned how the Population Division's projections compared to the population projections by the International Institute for Applied Systems Analysis (IIASA) and the Wittgenstein Centre in Vienna. Mr. Wilmoth and Mr. Swiaczny noted that there was little difference between the two sets of projections through 2050, and even for 2100 there was considerable overlap in the ranges of the scenarios included in the two sets of projections. Moreover, within the timeframe of the Sustainable Development Goals, the main messages about population growth were similar.

Regarding international migration as a means of bolstering the labour force and social security systems in countries where population ageing was already advanced, Mr. Swiaczny noted that migration would not bring a halt to population ageing, which was propelled primarily by sustained low fertility, and that migrants would themselves grow older. Mr. Wilmoth noted that migration was the least predictable and the most volatile of the components of population change. For the projections, the Population Division had adopted the simplest approach possible, by assuming that recent levels and trends of migration in each country would continue over the next several decades and that levels of net migration would gradually decline to zero in the long run.

C. FOOD SECURITY AND POPULATION CHANGE

1. Food security, growth, consumption and sustainability

Ms. Aisha Dasgupta (UNPD) moderated the first part of the session on food security, growth, consumption and sustainability.

Presentations

Mr. Lorenzo Bellù (FAO) gave the session's first presentation, on "Growth and consumption trends: projections of food and agriculture." The central question was whether global food and agricultural systems would be able to feed humanity sustainably and satisfactorily in the future, while also accommodating additional non-food agricultural demand. Ten challenges all needed to be met to achieve that goal (see the box).

Ten challenges for food systems

Challenges for food stability and availability

1. Sustainably improving agricultural productivity to meet increasing demand

2. Ensuring a sustainable natural resource base

3. Addressing climate change and intensification of natural hazards

4. Preventing transboundary and emerging agriculture and food system threats

Challenges for access and utilization

5. Eradicating extreme poverty and reducing inequality

6. Ending hunger and all forms of malnutrition

7. Improving income earning opportunities in rural areas and addressing the root causes of migration

8. Building resilience to protracted crises, disasters and conflicts

Systemic challenges

9. Making food systems more efficient, inclusive and resilient

10. Addressing the need for coherent and effective national and international governance

FAO had addressed those issues in a comprehensive foresight exercise that examined three possible scenarios of how agricultural and economic trends might develop up to 2050.[3] Before turning to the scenarios, Mr. Bellù briefly reviewed past trends in the two main drivers of demand for agricultural production and food: population growth and economic growth. With the exception of China, there had been little or no convergence in income levels between the high-income countries and middle- and lower-income countries. The average gross domestic product (GDP) per capita in all such countries (excluding China) in 2015 was under 10 per cent, and in Southern Asia and sub-Saharan Africa only about 5 per cent, of the average GDP per capita of the high-income countries.[4] The persistence of such large economic gaps between poorer and richer countries was one of the major factors that could impede progress towards reaching the international goals for nutrition and sustainable agriculture.

One of FAO's scenarios, "business as usual" (BAU), traced likely developments in food, nutrition, and the environmental impacts of increased agricultural production, under the assumption that the world would

[3] FAO (2018). *The future of food and agriculture – alternative pathways to 2050.* Rome. Available at www.fao.org/publications/fofa.

[4] The statistics refer to GDP measured in international dollars.

continue along its current developmental path, and with population growth in accordance with the medium-variant United Nations population projections. A second scenario, "towards sustainability" (TSS), envisioned a pathway whereby gaps in GDP per capita between countries would narrow, poverty and income inequality within countries would be reduced, and access to basic social services would become nearly universal. In addition, improved governance would lead to fewer unresolved conflicts, greenhouse gas (GHG) emissions would be limited, and expansion of agricultural land and water use would be limited, as enabled by improved technology due to investment in agricultural research and development. The third scenario, "stratified societies" (SSS), envisioned a developmental pathway that would lead to an even more unsustainable future than under BAU.

Mr. Bellù showed some of the outcomes from the three scenarios. Agricultural output would grow substantially under all scenarios – by about 50 per cent under BAU – but would be highest under SSS and lowest under TSS. Under TSS it would be possible to feed the world's population with lower total agricultural output because diets in high-income countries would gradually shift towards greater reliance on protein from plants and away from heavy reliance on meat, and because TSS assumed stronger efforts to reduce food loss and waste. Food prices would increase under all three scenarios but would rise soonest under TSS, posing a challenge for ensuring that the poor had enough to eat; social protection programmes might be needed to address their needs. Prevalence of undernourishment would fall from the baseline level of 11 per cent of world population to about 3 per cent in 2030 under TSS but only to around 7 per cent under BAU and would be 12 per cent under SSS. GHG emissions would fall over time under TSS but would rise under BAU and be highest under SSS. Only with the "towards sustainability" scenario would it be possible to feed the world in 2050 without a major expansion of agriculture into currently uncultivated land, including forests. Mr. Bellù also noted that there were now several years of new observations since the baseline year of the scenario projections, and that prevalence of undernutrition was following the path of the worst-case scenario, SSS. He concluded that "business as usual" was no longer an option. While a more sustainable future was attainable, getting there would require significant investments and trade-offs. The food and agriculture sectors were key but were no longer enough on their own to ensure equitable and sustainable access to food.

Mr. Hugo Valin (IIASA) gave the next presentation, on future food demand drivers and pathways towards sustainability. He began by noting that, although food prices often fluctuated around the longer-term trend line, average inflation-adjusted food prices had been declining for decades. Another remarkable trend was that, since 1961, cereal production had increased more rapidly than population without substantially expanding the amount of land used to grow those crops; this had been possible because of increases in crop yields. However, there would be challenges in continuing such trends into the future without incurring unsustainable environmental costs.

Although population growth was regarded as the main driver of increased agricultural production, it was not the only factor. Growth in per capita income was a major driver of agricultural demand and would become a relatively more important factor as rates of population growth declined. As incomes rose above subsistence level, people could afford, and generally preferred, a higher-calorie diet that relied less on starchy crops and contained larger amounts of meat and seafood, dairy and eggs, fats and oils. At high income levels the demand for calories levelled off, but diets included more expensive "luxury" foods. Diets high in animal products had a particularly high environmental impact. Cultural as well as economic factors could influence those developments; for example, in India there were strong cultural traditions favouring a vegetarian diet. Another driver of agricultural production was

changing population age structure, since caloric needs are higher for adolescents and working-age adults than for young children or older persons. Urbanization could also affect requirements, since urban dwellers tended to have a more sedentary lifestyle. Economic inequalities within countries and policies targeting access to the poor could also have an important impact on how much agricultural production would need to expand in order to provide access to a healthy diet for all.

Mr. Valin next turned to IIASA's work on modelling future food and environmental trade-offs. IIASA was part of a community of researchers examining those questions using "integrated assessment models" (IAMs). As did others in that research community, IIASA structured its work around the Shared Socio-economic Pathways (SSPs) developed by the Intergovernmental Panel on Climate Change (IPPC) as a means of examining environmental outcomes under alternative assumptions about possible paths of change along various demographic, social and economic dimensions. As part of its modelling work, IIASA employed the GLOBIOM model of land-use change. Mr. Valin presented results of projections of cropland, pastureland, crop production and calories per capita for three of the SSPs, along with comparable results from models employed by other research groups. He noted that, although the various IAMs all adopted, for each of the SSPs, the same assumptions about population growth and economic modelling, other assumptions varied. The models did not always agree in their estimates of the relative importance of specific drivers of changes in, for instance, cropland; harmonizing the models was still a work in progress. The main point, however, was to use the models as a way of understanding how different social and economic pathways might affect GHG emissions, and thus to have a way of foreseeing the magnitude of mitigation efforts that would be needed to keep the global temperature rise well below 2°C, as spelled out in the 2015 Paris Agreement. A major conclusion from the various models was that even if the world were to follow the most sustainable of the pathways, SSP1, this would not be enough on its own to prevent global temperatures from rising above 2°C; that pathway would also fall short of meeting some of the SDG targets for 2030, such as for biodiversity conservation. Mr. Valin referred to a new report from the Food and Land Use Coalition[5] that employed IIASA's land-use modelling to explore scenarios towards a more sustainable future.

Mr. Marco Springmann of Oxford University spoke about the health, nutritional, and environmental aspects of sustainable diets. The presentation focused on the findings of the EAT-Lancet Commission on Healthy Diets from Sustainable Food Systems, which outlined strategies to achieve healthy diets and sustainable food systems by 2050.[6] Mr. Springmann cited studies showing that the current food system was unsustainable. It was a major driver of climate change, contributing roughly 25 per cent of GHG emissions. It also drove land-use change and biodiversity loss, accounted for roughly 70 per cent of global freshwater withdrawals and was a major polluter of terrestrial and aquatic systems through fertilizer and other chemical runoff. While over 280 million people were currently undernourished, the food system was also increasingly supplying unhealthy diets that contributed to the rising epidemic of obesity, with increased risks of illness and premature death.

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5 Global Consultation Report of the Food and Land Use Coalition (2019). *Growing Better: Ten Critical Transitions to Transform Food and Land Use*.

6 W. Willett, and others (2019). Food in the Anthropocene: The EAT-Lancet Commission on healthy diets from sustainable food systems, *Lancet*, vol. 393, No. 10170.

Substantial research showed that eating processed meat and red meat increased risks of stroke and cardiovascular disease, diabetes and colorectal cancer, while a diet high in whole grains, fruits and vegetables, nuts and legumes was associated with reduced morbidity and mortality from major non-communicable diseases, including cardiovascular disease and cancer. The EAT-Lancet Commission developed a reference diet with recommended ranges of intake of different food groups. The reference guidelines were developed with the joint aims of providing a nutritionally sound diet and of minimizing the environmental impacts of feeding the global population. Such a diet would have a substantially lower environmental impact than diets following other international guidelines, including those developed by WHO and the World Cancer Research Fund.[7] The EAT-Lancet diet was primarily plant-based but was flexible enough to allow for a range of dietary choices. The diet could be tailored to the preferences of various populations, and was compatible with flexitarian,[8] pescatarian, vegetarian, and vegan diets. (Entirely plant-based diets might need some vitamin and mineral supplementation; Mr. Springmann noted that the evidence base for requirements of specific micronutrients was not very strong.) Following such a diet could substantially reduce risks of premature morbidity and mortality. In fact, Mr. Springmann and colleagues estimated that the dietary changes plus the associated reductions in non-communicable diseases and under- and over-nutrition could reduce premature mortality by about 20 per cent. Moving to such a diet would imply higher food costs for low-income populations but lower costs than current diets in high-income countries. Adopting such a diet would require a radical change in most people's eating habits, including substantially reduced consumption of meat (especially red meat), sugar, dairy and eggs in high-income countries, and increased consumption of fish, fruits, vegetables, legumes and nuts. Inducing people to change to such a diet would be a challenge. Media and education campaigns emphasizing health and environmental benefits, nutritional labelling and consumer information, economic measures such as taxation and subsidies, school and workplace approaches, and updating national dietary guidelines could all help.

The EAT-Lancet Commission also concluded that, although changes in dietary composition could help reduce the impact of agriculture on the environment, major changes in agricultural systems would also be needed by 2050 in order to feed the world's population with a diet that was both healthy and sustainable. Major investments in technology and infrastructure, increased incentives to farmers to employ best practices, and better environmental regulation would be needed in order to reduce food loss and waste, improve water management, improve efficiency of fertilizer use and increase crop yields where they were below achievable and sustainable levels. Mr. Springmann also noted that lower population growth would help and could be encouraged with improved access to reproductive health care and other health services as well as increased investments in education, especially for women.

Discussion

Some comments concerned the problem of communicating results from so many models and scenarios to policymakers. Mr. Bellù suggested that researchers should try to distil the results from various scenarios and models into a set of conclusions that could be presented to policymakers in a qualitative way, when various scenarios and models converged around a consistent message. In fact, from the presentations at the present meeting, many messages were broadly convergent. Mr. Valin added that there was an informal community of researchers who worked on integrated assessment models of climate issues, and they

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7 M. Springmann and others (2018). Options for keeping the food system within environmental limits, *Nature*, vol. 562, pp. 519–525.

8 A flexitarian diet is predominantly plant-based but allows for occasional consumption of meat and other animal products.

communicated frequently to compare and discuss results of different models. That process could, over time, contribute to harmonizing the models.

Participants also observed that the group had heard a lot about where the world needed to go but it was less clear how to get there. For instance, various attempts to introduce climate-smart agricultural practices in low-income settings had had low uptake. Policy recommendations needed to be realistic about what could be accomplished. In this regard, Mr. Valin noted that the report of the Food and Land Use Commission tried to identify areas where progress could be made and included estimates of the costs of addressing selected problems.[5]

Mr Bellù also clarified that FAO used the same medium-variant United Nations population projections for all scenarios and noted that using other scenarios could significantly change results. The income assumptions varied by scenario, following the assumptions of the particular IPCC SSPs used for developing the scenarios. In response to a question about food transport, Mr. Bellù said that assumptions about food transport were included in the FAO projection models. Food transport and trade needed to be part of a sustainable system, since areas varied in their suitability for growing various types of crops. Of course, transport was currently fossil-fuel based and added to GHG emissions. This was part of a larger set of problems in moving towards sustainability, in that we knew where there were problems but didn't yet have a solution; there was a need to invest in research to find answers. Mr. Springmann added that the emissions directly from food transport were a relatively minor proportion of total GHG emissions from food systems. On another point, Mr. Bellù noted that discussions of the need to reduce "yield gaps" were tricky, because it was not always clear what the goal for yields should be. Indeed, in its "towards stability" scenario, FAO assumed that yields would decline by 20 per cent in some countries, because current yields were not sustainable.

One question concerned whether shifting to a more-optimal diet would have as large an effect on mortality as Mr. Springmann's presentation showed. Mr. Springmann said that different estimation approaches might produce somewhat different results, but that analyses based on various data sources indicated that diet and diet-related problems such as obesity were some of the main drivers of premature mortality.

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Presentations on agenda item III.a, on food security, growth, consumption and sustainability, continued in the afternoon, moderated by Ms. Astra Bonini, Division for Sustainable Development Goals/DESA.

Presentations

Mr. Pierre Boileau of the United Nations Environment Programme (UNEP) gave a presentation on "Environmental and health impacts of food systems: assessment by the sixth Global Environment Outlook (GEO6)." He noted that population growth was among the major drivers of environmental change and that 50 per cent more food would be needed by 2050 to feed the world population. The GEO6 report[9] identified

[9] UNEP (2019). *Global Environment Outlook – GEO-6: Healthy Planet, Healthy People.* Cambridge University Press, Cambridge, UK. Available at www.unenvironment.org/global-environment-outlook.

three major challenges involving food systems: (1) food waste; (2) diminishing land and water resources; and (3) health and environmental impacts.

Mr. Boileau said that an estimated one third of food was wasted. The causes of food loss and waste varied by region. For example, in sub-Saharan Africa most of the loss occurred during food production, handling and storage, while in Northern America most of the loss occurred at the retail and consumption stages. Food loss and waste contributed about 10 per cent of global GHG emissions.

The food system contributed to climate change through GHG emissions, but it was also affected by climate change, as land was lost to desertification, and as more frequent droughts decreased available freshwater. Agriculture was estimated to produce about 25 per cent of anthropogenic GHG emissions; livestock production alone was responsible for 9 per cent of emissions. The greatest impact of livestock was from ruminant animals – mainly cattle, sheep and goats – because they produced methane as part of their digestive process. Meat production also used over 75 per cent of agricultural land, including pasture and grazing land and farmland used for growing animal feed. Another serious issue was that inappropriate use of antibiotics on farm animals was contributing to the growing problem of bacterial antibiotic resistance, with potentially deadly effects on human health. In addition, some farming practices were making food production unsustainable; these included overuse and unmanaged use of chemicals, fertilizers and pharmaceuticals and some intensive farming practices. About one quarter of Earth's ice-free land area showed human-induced degradation, especially soil erosion from agricultural fields. Conversion of forest and other natural land for agriculture was also a major cause of biodiversity loss. Overexploitation of fish stocks was estimated to have grown from 10 per cent in 1975 to 33 per cent in 2015. Essentially all increase in the supply of fish since the 1980s had come from aquaculture.

The GEO6 report concluded that, if recent policies and trends continued, the world would experience further degradation in nearly all environmental areas, including climate change, biodiversity loss, water scarcity, land degradation and ocean acidification. Failure to act now would lead to ongoing and potentially irreversible impacts on the environment and human health. Transforming food and energy systems was central to moving towards environmental sustainability, and incremental policies would not be enough. Mr. Boileau outlined policy approaches for moving towards sustainability. Environmental concerns should be integrated into all policy sectors at all levels in order to deal with possible trade-offs. However, there would be more synergies than trade-offs – e.g., phasing out fossil fuels would help achieve air pollution, climate and human health goals. Policies should aim at building consensus through dialogue and should support local and national governments to develop their own integrated food and agriculture policies, including fiscal reform to reward good practices rather than perpetuate bad ones. Policies should also consider the reorientation of finance to support sustainable agriculture and land use and should recognize the need for a shift to more sustainable plant-based diets and for a major reduction in food loss and waste.

Ms. Cynthia Rosenzweig of the NASA Goddard Institute for Space Studies presented "Food security findings from the IPCC Special Report on Climate Change and Land." She noted that the report[10] had adopted a "food systems" approach as the organizing principle; this meant considering not just agricultural production, but also processing, marketing and consumption. Estimates of the proportion of anthropogenic

[10] IPCC (2019). *Climate Change and Land.* Available at www.ipcc.ch/report/srccl/.

GHG emissions that were due to the food system range from 21-37 per cent, projected to increase by 30-40 per cent by 2050. GHG-induced climate change also added to the stresses on food systems; the average temperature had already increased by 1°C above preindustrial levels, and if global temperatures rose to 2°C the risk of food system instability would be very high, with an increased frequency of extreme events such as droughts and flooding. There were already clear signs of climate-induced stress in some areas. Climate models were in broad agreement that yields of major grain crops were likely to decline in tropical areas as atmospheric CO_2 levels rose, including in much of Africa and Latin America and southern parts of Asia and the Pacific. There could be small benefits for yields in northern temperate latitudes if temperatures rose by 1-3°C. However, recent research showed that some crops, such as rice and wheat, had lower protein content and lower levels of some micronutrients when grown under higher CO_2 conditions.

Ms. Rosenzweig emphasized the potential environmental and health benefits that could result from switching to a predominantly plant-based diet, and that there was a large potential for reducing food loss and waste. When making recommendations regarding diet and shifts away from animal products, it was important also to consider how such transitions could be brought about and how these would affect rural livelihoods. For instance, ruminant livestock had long been central to many herding and smallholder farming systems. The IPCC report emphasized the need for "just transitions"; however, experts did not currently have a clear understanding of how to bring about such transitions. Measures also needed to be adapted to local cultural as well as agricultural and environmental conditions.

The IPCC also examined the potential for using land for mitigating climate change through carbon capture by reforestation and feedstocks for biofuel production. The potential for such measures was context-specific, but there could be environmental benefits if such measures were applied in a sustainable manner on a limited share of land. However, some policies favouring large-scale biofuel production could increase pressures for land conversion with adverse effects on desertification, land degradation and food security.

Mr. Prajal Pradhan of the Potsdam Institute for Climate Research spoke on the topic of climate change and food security, highlighting the urban food system and regional specificity. Mr. Pradhan focused on the role that urban and peri-urban populations could play not just as consumers but also as producers of food. Intensifying food production in urban and peri-urban areas had the potential to help meet the demand for food for growing urban populations, and it could help shorten the food chain, thus reducing food transport costs and associated GHG emissions. Globally, it had been estimated that, as of 2010, urban and peri-urban areas had the potential to feed about 30 per cent of the urban population with current farming practices. In some regions, such as Southern and South-eastern Asia, large amounts of peri-urban land were already under cultivation. However, with continued urbanization and growth of large cities, it was inevitable that more of the urban food supply would come from beyond the peri-urban area. Still, there could be substantial transport savings if most food could be supplied from within the same region where it was consumed, rather than through importing food from outside the region. Mr. Pradhan estimated that regionalization of urban food systems could halve the GHG emissions that were due to food transport. Changing to a more regionalized system would also require more diversity in the crops that were grown within each region, shifting away from a focus on monoculture, so that people could be provided with a diverse and balanced diet.

Mr. Pradhan then turned to the nutritional situation in Southern Asia, a region that had long suffered from high levels of undernourishment. Prevalence of undernourishment had been decreasing in the

region, primarily through increased food production, although some countries were also net importers of food. Despite those improvements, undernourishment remained a serious problem. At the same time, prevalence of overweight and obesity was increasing rapidly. Diets in the region tended to be relatively heavy in carbohydrates, and fell short of recommended amounts of fruits and vegetables.

Discussion

Responding to a question about how to make progress on moving towards a more sustainable food system and healthier diets, Ms. Rosenzweig said that it was important to help national policymakers to draw links between their climate-change policies and health costs. This would help build support for national action by making it clear that climate-related policies would not just help the natural environment but would also have direct benefits for people's health. To a question about how the GEO report addressed issues of land heterogeneity and whether specific crops were grown in the areas best suited for them, Mr. Boileau replied that the report emphasized the need for change in financial incentives and regulations governing food production. Almost all countries had financial incentives that favoured monoculture production. Growers responded to regulations and financial incentives, so the problem was largely one of aligning policies towards better and more sustainable use of the land; international policy consultations could help support this. Responding to a question about the sustainability of water use in agriculture, Mr. Boileau said that an earlier UNEP study had looked at that question and concluded reducing meat consumption could have a major effect, because a substantial amount of water was used for growing animal feed. Regarding fisheries, Mr. Boileau said that aquaculture was replacing the wild catch largely because of overfishing. It was possible to develop systems for sustainable wild fish harvesting, but such systems had been successfully implemented in very few places. Regarding practical measures to reduce food waste, Mr. Boileau said that in high-income countries there was a large amount of waste at the retail level, including such settings as hotel buffets, where much of the prepared food ended up being discarded. He thought there was a potential for substantially reducing waste at the retail stage, but there was a need for policies and regulations to encourage this.

Mr. Pradhan was asked about one figure in his presentation showing that prevalence of both underweight and overweight was higher among women than men in Southern Asian countries. Mr. Pradhan said that cultural norms that confined women close to home and restricted their physical activity might contribute to the greater prevalence of overweight among women. He also noted that one problem contributing to unhealthy diets in urban areas was that local markets often did not provide people with ready access to a range of healthy foods.

2. Food security, population movements and settlement patterns

Ms. Clare Menozzi from the Population Division moderated the session on food security, population movements and settlement patterns.

Ms. Sara Savastano of the International Fund for Agricultural Development (IFAD) spoke on "Rural transformation and creating opportunities for rural youth."[11] She focused on the challenges facing young people (aged 15-24 years) in rural areas, and the importance of supporting them with the resources they needed to become active and productive adults. The largest numbers of rural youth lived in developing

[11] IFAD (2019). *Creating Opportunities for Rural Youth.* Available at www.ifad.org/ruraldevelopmentreport/.

countries of Asia and sub-Saharan Africa, and in Africa their numbers were increasing rapidly. Rapid technological changes, including the digital revolution, meant that today's rural youth faced challenges and opportunities that did not exist for earlier generations, and such changes had created new aspirations among today's youth. For a successful transition from a dependent childhood to adulthood, young people needed the education and access to resources that would enable them to be productive; they needed to be connected to markets, information and service networks; and they needed to be in charge of the decisions that would shape their future. Policies for educating and supporting rural youth should be tailored to the setting in each country. Around three-fourths of rural youth lived in countries where the agricultural sector employed a high fraction of the total population, and most of those were low-income countries with a high poverty rate. Most rural youth lived in countries with a high agricultural potential but with varying degrees of access to markets and to opportunities outside agriculture. Surveys showed that almost all youth in farming households worked on the family farm or for farm wages, while rural youth from households with more diversified and non-agricultural occupations rarely did agricultural work. Compared to those living in urban areas, rural youth generally faced greater challenges in accessing education and training that could open greater opportunities. They usually had limited access to finance and to land, and young men and, especially, young women were subject to social constraints that hindered their ability to make choices that were crucial for their future welfare and productivity. Those constraints needed to be addressed simultaneously, and it was important that governments' rural development policies include a focus on expanding opportunities for rural youth.

Ms. Savastano noted that adolescence and early adulthood were periods of rapid biological as well as economic and social development, and good nutrition was vital if young people were to reach their potential. Adolescence was a period when young people made choices about diets that would have long-lasting effects on their health. Many factors influenced those choices, including socio-economic status, social and cultural norms, and preferences shaped by exposure to technology and the media. Increasingly, those choices were resulting in unbalanced nutrition, overweight and obesity and related non-communicable diseases. In many countries, rising levels of obesity coexisted with high prevalence of under-nutrition among rural youth. The prevalence of underweight was relatively high among rural teenage boys, whose caloric needs were especially high. Since adolescence was a period when there was a potential for "catch-up" growth to compensate for nutritional deficits earlier in life, national nutrition policies needed to pay particular attention to adolescents' nutrition.

Mr. Lorenzo Bellù (FAO) spoke on "Population dynamics, rural transformation, rural employment and rural-urban linkages." He noted that the development literature had long viewed agricultural growth as an engine of urbanization and overall development, based on what happened in the past in Western high-income countries. Improvements in agricultural productivity had allowed the agricultural sector to produce a surplus to feed the urban industrial workers who were released from farm labour. Rising productivity also enabled increased exports to pay for industrial investments and enhanced the domestic market for industrial products. Incomes rose in both urban and rural areas. However, recent history raised questions about the applicability of those dynamics in today's low-income countries, especially in sub-Saharan Africa.

The proportion of the population living in urban areas had increased everywhere, and the countries with the lowest incomes were also generally the least urbanized. However, the relationship between urbanization and poverty was complex. In some regions, including Southern, Eastern and South-eastern Asia, proportions living in poverty had declined substantially over time in both rural and urban areas, but in sub-Saharan Africa such trends were much less evident. In sub-Saharan Africa, both those

in rural and those in urban areas were much more likely to be poor than were their counterparts in other regions. In high-income countries the agricultural transformation had involved increases in average farm size and decreases in the number of farms, but that was not what was happening in many low- and middle-income countries. In some countries there were large farms that mainly grew crops for export, but the average farm size had been decreasing since 1980 in low- and middle-income countries.

In discussions of migration in the context of urbanization, the focus was usually on net migration from rural to urban areas, but many more people moved back and forth between urban and rural areas, between different rural areas or between different cities. In sub-Saharan Africa over 75 per cent of all internal population movements took place within rural areas. With respect to international migration, Mr Bellù presented survey results from several low- and lower-middle-income countries showing that most migrants moved for work-related reasons. He observed that the motivation for moving internationally in hopes of higher earnings in a wealthier country was likely to remain strong so long as income gaps between countries remained as large as they currently were. The development literature created an expectation that the income gaps between early- and late-industrializing countries would close over time, but apart from some notable exceptions such as China, that was not what had been happening.

FAO had examined possible ways that small and mid-sized cities could help advance rural development. Smaller cities tended to be the ones that were growing most rapidly, and they had closer ties to rural areas than did larger cities. There was a large potential for agro-development around many smaller cities, for instance by building improved storage facilities and factories for food processing. Governments could help provide support for such investments, which were especially needed in "late-transforming" countries where much of the population relied on agricultural work, and where better access to storage and processing facilities could greatly reduce food loss and waste.

In concluding, Mr. Bellù returned to the point that the development literature's conventional models of development did not adequately account for actual trends over recent decades, and those models did not provide a clear roadmap for achieving the SDG goals. The SDG goals provided a vision for the future. However, reaching that future would require rethinking and shifting the development paradigm. In considering what it would take to achieve the SDG goals, it was important to consider the entire set of goals, including goals of common responsibility and partnerships (goal 17); solid institutions, justice and peace as preconditions for development (goal 16); environmental sustainability (goals 13, 14, 15); shifting towards responsible consumption and production (goal 12); and reducing inequality within and among countries (goal 10). Prospects for achieving the goals of eliminating poverty and hunger (goals 1 and 2) were likely to depend on progress towards achieving the broader set of SDG goals.

In the final presentation of the session, Mr. Alan de Brauw of the International Food Policy Research Institute (IFPRI) spoke about relationships between migration and food security. He said that issues of food security were likely to affect within-country migration more than international migration. He noted that the research literatures on migration and on food security barely overlapped, but there were some migration studies based on household-level data that also touched on food security issues, and his presentation summarized results of those studies. He noted that the studies reviewed dealt with voluntary migration and did not focus on groups fleeing conflict or natural disasters. He also

noted that it was difficult to establish causality in these studies, and that the decision to migrate usually involved multiple considerations.

The literature showed that those who migrated, including internal migrants, tended to benefit economically. Some studies had examined whether agricultural production in farming households declined after a household member migrated; it might, because the household would have fewer people to farm the land. However, migrants often sent remittances back, which would enable the household to hire other workers or make productive investments. In general, studies found that migration from rural areas did not reduce agricultural production in the sending area. In China, agricultural production and productivity rose substantially even though many farmers left for urban areas and many of those who remained in rural areas shifted to non-agricultural work. A study in Viet Nam showed that production in migrant-sending households shifted to more land-intensive crops, while one in the Philippines showed a null effect of out-migration on farm production. Another issue had to do with migration in relation to household risk. Economists had seen migration as a factor that could help farming households manage risks – for example, if a crop failed, remittances from a family member working elsewhere could help tide the household over. However, potential migrants in poor households might be deterred from leaving because migration also carried risks – moving involved costs, and hopes for a better job might not materialize. Since international migration involved much higher expenditures than moving a short distance, food-insecure households were especially unlikely to be able to afford an international move by a household member. One study in Bangladesh showed that the poorest households were the least likely to have sent an international migrant.

Another question was whether migration affected nutrition of young children. Theoretically, there could be positive effects from a household member's migrating, if the migrant sent income back to help support children, but there could also be negative effects if the remaining adults had less time available for childcare. Migration also tended to increase the probability of divorce, which could have a negative effect on child nutrition, because single-parent households tended to be relatively poor. Findings were mixed, suggesting that effects on children depended on the local context. A study in rural China found that children in migrant-sending households were relatively less likely to be underweight. A study in Guatemala showed that children were taller in households that sent an international migrant, while a study in Tonga found the opposite effect. There was also the question of how the diets of migrants themselves changed after they moved. One study of migrants from rural Ethiopia found that they consumed a more varied diet after moving to the city. However, the situation might not be the same everywhere, and there was not much evidence available. Mr. de Brauw concluded by noting that it would be valuable to have more research attention to the effects of migration on food security. He said the effect was probably positive, given what was known about how migration affects income, but few studies had explicitly shown this. It would also be valuable to know more about the extent to which food-insecure households were constrained by poverty from sending migrants.

Discussion

Several comments related to food insecurity in relation to involuntary migration due to conflict situations and extreme climate events. Mr. de Brauw agreed that food security was a grave concern for the refugees themselves, and he had alluded to this but not addressed the issue in detail, noting that a large majority of migrants moved voluntarily. The role of extreme events deserved more attention, given that such events are likely to become more frequent.

Mr. Bellù recalled results presented earlier showing that climate change was likely to improve growing conditions in northern latitudes but worsen them in the tropics. This would represent a huge transfer of wealth from areas where incomes were relatively low to northern countries that were already better off, and this should be considered in future discussions of migration and migration policy, as well as in a broader reconsideration of the whole development paradigm.

In response to a question about policies that would work for rural youth, Ms. Savastano said it was easier to say what didn't work. It was clear, for instance, that traditional vocational education was not meeting the needs of rural youth.

D. NUTRITION AND POPULATION HEALTH

1. Hunger and undernutrition

Ms. Karoline Schmid of the Population Division served as moderator for the session on hunger and undernutrition.

Presentations

Mr. Mawuli Sablah from the United Nations Children's Fund (UNICEF) made the first presentation, on causes and impacts of undernutrition over the life course. The need for adequate nutrition began before a child was born. Women's nutrition was vital for their own health and also for the health of their children, since maternal undernutrition contributed to fetal growth restriction, neonatal deaths and child stunting. Those problems were compounded by poor feeding practices such as too-early weaning and inadequate diets, and by bouts of illness. Thus, malnutrition can span generations, as poorly nourished girls develop into stunted and malnourished women whose children also face elevated nutrition-related risks.

The immediate causes of child undernutrition were inadequate food intake and disease. Those problems were influenced by intermediate and more basic causes, including food insecurity, lack of adequate care – including medical care – for women and children, unsanitary conditions, inadequate education, poverty and gender inequality. Children and adults had different dietary needs. UNICEF, in collaboration with WHO and others, had developed guidelines for appropriate diets at successively higher ages from birth through adolescence. Exclusive breast milk was the best food for children for the first 6 months of life, and sub-optimal breastfeeding increased mortality risks in the first 2 years of life. Dietary preferences developed during childhood, so it was critical that the diet offered to children was a healthy one. Diets should include not only enough calories, but also essential micronutrients. Programmes to add micronutrient fortification to the diet could bring about large benefits. One example was the provision of iodized salt in areas where iodine deficiency had led to development of goitre and cretinism.

Although the prevalence of stunting among young children had decreased during the past two decades, it remained high in Southern Asia and sub-Saharan Africa. Childhood stunting led to shorter adult stature, and stunted children had a high risk of becoming overweight or obese as adults. Stunting was also associated with lower economic productivity and earning capacity, poorer pregnancy outcomes, metabolic and cardiovascular diseases and lower overall IQ and cognitive capacity.

Women often confronted a range of obstacles in ensuring that children were well fed and cared for. Women often had little time left after taking care of labour-force and household work, and they often lacked

access to labour-saving technologies. Inadequate maternity leave policies and lack of effective social protection schemes often made it hard for women to care for young children, and women sometimes lacked information about good nutrition. Reproductive health was also related to nutrition; for instance, short maternal stature was associated with poor fetal growth and preterm birth.

UNICEF's goal was to promote diets, practices and services that supported optimal nutrition, growth and development for children, adolescents and women. While the food sector was central for providing adequate nutrition, the health system, water and sanitation systems, education and social protection systems also needed to be engaged. Children's nutrition should be a central focus of government policy. Policies should include standard-setting and enforcement, promoting nutrition information and education, food labelling, marketing restrictions, incentives to encourage food suppliers to provide healthy foods, and support for working mothers and families, among other things. There was also a need for better data for monitoring progress on child and adolescent nutrition.

Ms. Anneka Knutsson (UNFPA) gave the next presentation, on sexual and reproductive health and nutrition. She noted that 2019 marked the 25th anniversary of the adoption of the ICPD Programme of Action, which recognized that individual human rights and dignity, including the equal rights of women and girls and universal access to sexual and reproductive health and reproductive rights, were a precondition for sustainable development. The agreed definition of reproductive health was "a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity, in all matters relating to the reproductive system and to its functions and processes." UNFPA's priorities for achieving SDG goals and targets for 2030 were to reduce preventable maternal deaths to zero, reduce unmet need for family planning to zero and reduce gender-based violence and harmful traditional practices to zero.

Ms. Knutsson focused on the importance of good nutrition for maternal and newborn health and for adolescent health. There had been little or no progress towards several of WHO's nutrition-related targets for 2025, including targets for maternal anaemia and for overweight and obesity and diabetes among adults. A few countries had lowered their prevalence of anaemia in women of reproductive age, but most had not. In most cases the problem was due to dietary iron deficiency, but sometimes other factors were involved. Haemorrhage was the single most common cause of maternal mortality, and anaemia increased the risk of women's dying of haemorrhage during childbirth. Anaemia also increased the incidence of low birthweight. Maternal short stature and underweight were associated with fetal growth restriction, neonatal mortality and the incidence of obstructed labour, also leading to maternal deaths. Maternal overweight and obesity were also associated with maternal morbidity, preterm birth, and increased infant mortality.

As Mr. Sablah had also stressed, breastfeeding provided the best nourishment in the months after birth. It also helped protect older infants and young children, and it facilitated emotional bonding between mother and child. It was estimated that increasing exclusive breastfeeding to near-universal levels could save more than 800,000 lives annually. The evidence compiled by the Lancet Series on Maternal and Child Nutrition[12] had strengthened the evidence base for focusing on the period from pre-conception through the first two years of life as crucial for later health and development . The

[12] See www.thelancet.com/series/maternal-and-child-nutrition.

series identified ten nutrition-specific interventions across the life cycle to address undernutrition and micronutrient deficiencies and estimated that if those ten interventions were scaled-up from the current population coverage to 90 per cent, this could save 900,000 lives in the 34 countries with the highest nutrition burden. Prevalence of stunting could be reduced by 20 per cent and that of severe wasting by 60 per cent, at a cost of US$ 9.6 billion.

Ms. Knutsson emphasized the importance of focusing on the health and nutrition of adolescent girls. Anaemia levels were high among adolescents in many countries. Approximately 16 million girls aged 15-19 years and 2.5 million aged under 16 years gave birth each year in the less-developed regions, and many girls married and became pregnant before they were physically mature. Chronic undernutrition could delay physical maturation and extend the adolescent growth period, which often overlapped with the first pregnancy. This usually meant inadequate nutrient availability for both mother and fetus, and it led to reduced adult stature of young mothers. At the same time, the prevalence of overweight and obesity had increased among adolescents by 120 per cent since 1990. This had many negative health implications, including for reproductive health. UNFPA's priorities for addressing nutrition-related problems among adolescents included dietary supplementation where needed, comprehensive sexuality education, delaying age at marriage through education and empowerment interventions, and delaying age at first pregnancy through the provision of quality sexual and reproductive health services. Ms. Knutsson stressed that addressing the constraints on all women's, but especially adolescents', choices related to health and nutrition also required addressing the broader gender inequalities within societies.

Discussion

One issue raised in the discussion was that, in efforts to ensure gender equality, it was important to involve men and boys, to sensitize them to the issues, but also to engage them in caregiving to relieve the burden on women.

Several comments dealt with breastfeeding. There was a need to take care that policies on breastfeeding did not undermine healthy traditional practices. For instance, some countries had started providing secluded corners or rooms where women who were in a public place could go to breastfeed in private. In settings where breastfeeding in public was traditional and widely accepted, this might be viewed as suggesting that breastfeeding was something shameful that needed to be kept private. The presenters agreed and further observed that the images of women put forth by the entertainment industry and media could and often did implicitly undermine breastfeeding, because women worried about possible impacts on their appearance. It was a challenge for policy to deal with those forces, and there was a need to involve the private sector in reaching a solution. Another comment concerned the lack of guidance around alternative feeding methods, when breastfeeding was not possible. For example, some women faced problems of breastfeeding and child nutrition in conflict and refugee situations. What could be done to help women who had already stopped breastfeeding and suddenly lacked access to special infant foods? Ms. Knutsson said that UNFPA's approach in refugee situations was to try to provide a comprehensive service that included support for breastfeeding and for young children's nutrition. Those who were actively fleeing conflict or natural disasters lacked access to services, and this remained a challenge.

Some comments concerned how to ensure that policies and programmes were appropriately addressing micronutrient deficiencies. For instance, in Ethiopia iron supplementation was still provided even after it became clear that most anaemia there was not due to dietary iron deficiency. There was also a question about how to ensure that some of the diets discussed in earlier sessions, including the EAT-Lancet diets,

would ensure adequate micronutrient intake. For instance, would a flexitarian diet include enough iron and calcium? Mr. Sablah said that, although meat-free and other diets low in animal products could in principle include adequate intake of micronutrients, diets as actually consumed might not, and this was something that needed more attention. He noted that some iron supplements did not contain the most bio-available forms of iron. It was important to ensure that supplementation programmes effectively addressed micronutrient deficiencies in each setting, and this sometimes required more research to understand the causes.

2. Obesity and overweight

Mr. Paul Skoczylas of the World Food Programme (WFP) moderated the discussions on obesity and overweight and on food systems, health and sustainable diets.

Presentations

Mr. Leendert Nederveen of PAHO/WHO made a presentation via video link on trends, causes, and consequences of overweight and obesity. He said that 6 per cent of children under 5 were currently overweight or obese. Overweight/obesity had been increasing everywhere and affected over 10 per cent of young children in Central Asia and in Northern and Southern Africa. Among children aged 5-19 years, 18 per cent were overweight or obese, as were 39 per cent of adults. Proportions obese had been increasing even more rapidly than proportions overweight, and levels were higher for women than for men. In many countries high levels of obesity coexisted with high levels of undernutrition. Those problems sometimes coexisted even within the same household. In high-income countries obesity levels were highest in the lower socio-economic groups, and that pattern was starting to emerge in some lower-income countries as well.

The immediate cause of rising prevalence of overweight and obesity was that more calories were being consumed than expended, but the underlying causes were complex and included a trend towards more sedentary lifestyles and a change from diets based on mostly unprocessed or minimally processed foods, with more whole grains, fruits and vegetables, to one that relied heavily on ultra-processed foods that were high in fats, sugar and salt. Heavy intake of ultra-processed foods was not confined to high-income countries but was increasingly common in middle- and lower-income countries too. Many ultra-processed foods were heavily marketed and were available at a relatively low price. The expansion of networks of fast-food restaurants had also contributed to higher consumption of such foods. Although children's diets mostly depended on what parents chose to offer, many ultra-processed foods were formulated and packaged to be especially appealing to children. Such foods were heavily promoted to children through the media and were sometimes offered at school. Marketing to children clearly influenced children's requests to parents, and children's requests influenced what parents bought. There was a clear relationship across countries between the availability of ultra-processed foods in the household and the level of obesity. Surveys conducted in a variety of countries from all world regions suggested that about 40 per cent of adolescents drank at least one sugar-sweetened beverage per day. Apart from diet, physical activity helped maintain a healthy weight. WHO recommended that adolescents engage in at least 60 minutes of moderate physical activity daily. However, surveys in a wide range of countries showed that only about 20 per cent of school-going adolescents (aged 11-17 years) got that much exercise; this was true in nearly all regions and in lower- as well as higher-income countries. In most regions, high proportions of adults were also insufficiently active, with the lowest levels of physical activity observed among women in Latin America and the Caribbean, Southern and Western Asia and Northern Africa, and in high-income countries as a group.

Childhood overweight and obesity impaired health during childhood and later in life. Overweight and obese children also tended to have lower self-esteem than others and were more likely to be bullied, had poorer school attendance and achievement, and had lower earnings as adults. Obesity contributed to rising prevalence of a variety of non-communicable diseases that added to health-care costs and led to loss of household income. Such problems made it harder for households to escape poverty, undermined national development and strained the health-care system. Mr. Nederveen concluded by reviewing recommendations from the Commission on Ending Childhood Obesity and of PAHO's Plan of Action for the Prevention of Obesity in Children and Adolescents.[13] Dealing with these problems would require actions across multiple sectors of society. Governments needed to take the lead, but civil society including private-sector organizations also need to be engaged.

Ms. Corinna Hawkes of the City University of London spoke by video link. Her presentation concerned policies and actions to address obesity, focusing mainly on food-related policies. Most actions to date aimed to implement national policy guidelines on unhealthy food environments. These generally were policies to make vegetables, fruits, whole grains and nuts more available, affordable, acceptable and appealing and to discourage excessive consumption of calories, saturated fats, trans fats, sugar and salt. The five main types of regulations and policies that countries had implemented concerned: (1) nutrition labels; (2) food in public institutions; (3) taxes on sugary drinks; (4) restrictions on marketing; and (5) targets for reformulating the mix of ingredients in food products.

Most countries had policies regarding nutritional labelling of food, but there was increasing recognition that consumers needed more help in interpreting the labels. Approximately 20 countries had introduced prominent labels, designed to be easy to interpret, to indicate which foods were the healthiest (or the least healthy) to consume. In most cases those were voluntary programmes. Approximately 55 countries had implemented voluntary or mandatory standards for food offered in schools. Such policies were most common in Europe. The number of countries implementing taxes on sugary drinks or (less frequently) "junk food" had been growing rapidly; currently, 49 countries had such policies, up from 29 the previous year. Fewer countries had implemented policies restricting marketing of unhealthy food. Chile had adopted the most comprehensive policy of that sort. Such policies mainly restricted advertising of unhealthy foods on TV and sometimes other venues. Policies urging reformulation of foods mostly focused on reducing salt, which is not specifically an obesity issue, but some policies were also aimed at reducing the amount of sugar. Sometimes, such as in South Africa, such policies were mandatory, but more often they were voluntary.

Evidence about the effectiveness of these policies was starting to accumulate. Food labelling could be effective, at least in some populations. The most consistent effect was that prominent labels such as "stop lights" to indicate unhealthy foods led manufacturers to reformulate foods in order to avoid the label. Policies to offer healthy food in schools could have positive effects, but those could be undermined by unhealthy food environments outside of schools. Numerous studies showed that taxes on unhealthy foods such as sugary beverages did reduce consumption, albeit by a modest amount. There was little evidence so far about the effects of restrictions on advertising unhealthy foods. Policies aiming at reformulating foods could also have an effect, at least on salt content of foods.

Most of the policies discussed above were implemented as individual policies rather than as part of a more comprehensive set. A few cities had tried to put in place more comprehensive programmes,

[13] See www.paho.org/hq/dmdocuments/2015/Obesity-Plan-Of-Action-Child-Eng-2015.pdf.

Amsterdam being the most prominent example. Obesity rates in children had recently been decreasing there, though it was not clear whether this was a result of the programme or specific aspects of it. Ms. Hawkes had been involved in trying to put in place a similar sort of programme in London.

It would be desirable to develop "double-duty" programmes that could address problems of food insecurity, undernutrition and overnutrition simultaneously. It might be possible to build upon existing programmes that aimed at combatting food insecurity and undernutrition through social safety nets, educational institutions, health services and agricultural development programmes. Incorporating into those programmes a more general emphasis on healthy diets might help combat obesity as well.

One scheduled presenter, Dr. Simón Barquera of the Instituto Nacional de Salud Pública (Mexico), was unable to attend but sent a background note and slides for a presentation on the topic of the double burden of obesity and undernutrition in Latin America.[14] Dr. Barquera's contribution reinforced the messages of other presentations on nutritional issues. He highlighted the situation of Mexico, where the prevalence of adult obesity was among the highest in world. Within Mexico, the economically less-developed regions had much higher incidence of obesity-related disease such as heart attacks and diabetes than did the more developed regions. There had been a steady decline in undernutrition among children over the past 30 years, but both under- and overnutrition remained relatively more common in the less-developed areas of the country. Dr. Barquera advocated looking beyond "double-duty" policies that would help with problems of both under- and overnutrition, to "triple-duty" policies than could reduce pressure on the environment at the same time. Such policies could include improved access to clean water and sanitation, promotion of breastfeeding, taxation of sugary drinks and junk food, prominent front-of-package labelling, marketing regulations, regulations to promote a healthy food environment in and around schools, and promotion of active transportation such as walking and bicycling. Mexico had already implemented some such policies and aimed to strengthen and refine them in future.

3. Food systems, health and sustainable diets

Ms. Nancy Aburto (FAO) spoke on "Food systems for sustainable and healthy diets." She noted that what we wanted from food systems was food security – sufficient, safe and nutritious food for everyone – and also environmental, economic and cultural sustainability of the system. FAO and WHO had convened an expert consultation earlier in 2019 to help develop guidance for countries in this area. The consultation had developed a definition of sustainable, healthy diets as "dietary patterns that promote all dimensions of individuals' health and wellbeing; have low environmental pressure and impact; are safe, accessible, affordable and equitable; and are culturally acceptable." In discussing how to move towards a world of sustainable, healthy diets, it was important to consider the different types of actors involved in producing, processing, trading and marketing food. Different groups had their own interests, priorities and perceptions about what needed to happen, and it was important to recognize that there would have to be trade-offs in moving towards sustainability. How to manage those trade-offs was a key question. In preparing for further discussions of such issues, FAO was working to compile a compendium of indicators for measuring different aspects of the food system.

[14] The notes and slides are available at www.un.org/en/development/desa/population/events/expert-group/30/index.asp.

Ms. Aburto gave two examples to help illuminate what a food-systems approach might entail. One example was from a programme to help improve nutrition in parts of Ecuador through the social protection scheme. The programme involved helping to support local growers and grocers in order to improve the variety and nutritional quality of foods that were available to consumers, and it provided nutrition education and preventive health services through the social protection programme. Outcomes included increased dietary diversity within households, improved knowledge about nutrition, and improved skills for local grocers. The second example was a programme in Chile that aimed at reducing obesity and overweight among children. A new law required specific labelling, using prominent "stop sign" labels to signal unhealthy foods. It also restricted marketing of unhealthy foods to children (for example, images of cartoon characters on packets of sugary cereals were banned), imposed taxes on sugary drinks, and included consumer education about the new labelling and about nutrition more generally. The labelling was popular with mothers, who reported that children understood the stop-sign labels too. Within two years, manufacturers had reformulated approximately 20 per cent of products in order to avoid their being labelled as unhealthy.

Those examples illustrated the kinds of multi-sector, multi-level actions that would be needed to move diets and food systems towards a healthy and sustainable future. Harmonized data and analyses were also needed for policy making and for monitoring progress of programmes. Policies needed to be coherent and not work at cross-purposes; this would require strengthened coordination among different ministries and departments. Governments must take the lead in formulating policies and standards, but all food system actors, including those in the private sector, need to be actively engaged. Ms. Aburto also warned of challenges and pitfalls. Moving to sustainability might result in food price increases. There would be trade-offs and push-back from different interest groups, and it was important to acknowledge this to all constituents. To make progress, it was also important to avoid villainizing the private sector, which had to be part of the solution. Consumers needed sound, evidence-based information about healthy and sustainable diets. In that regard, it was also important to avoid romanticizing the past; traditional diets were not always healthy, and populations of the past suffered from high levels of infectious disease and mortality.

Discussion

Several comments dealt with the role of the public and private sectors in trying to encourage healthier diets. The public sector played a key role in setting standards and guidelines, and in fashioning policy incentives that would encourage the development and marketing of healthy foods, while private-sector actors – including small farmers, large growers, and businesses that process, market, deliver and sell the food – all helped determine what consumers had available and what they ate. Policies to support better practices could potentially intervene at various points in this food chain, but it was essential to start with a sound understanding of the issues and constraints from the viewpoint of each of the groups of actors involved. All groups that might be affected should be engaged in helping to plan programmes to address specific problems. Changes in policy often encountered resistance from private-sector actors, and it was important to recognize that there would inevitably be losers as well as winners. However, the private sector was not monolithic – what many business owners most wanted from policymakers was a level playing field and clarity and consistency in policies, and they were able to respond effectively when such policies were in place.

Some participants gave examples of promising policies and programmes. In many African countries small farmers could benefit greatly from affordable access to safe facilities for storing grain

and other crops that, under current conditions, must be sold quickly or else they would spoil. This often meant that farmers had to sell when prices were low; safe storage facilities would reduce spoilage and would also boost farm income by enabling farmers to sell when they could get a better price. In a different policy area, Brazil had adopted a policy aimed at improving child nutrition through the school food programme by requiring that a significant proportion of the diet come from locally produced fresh foods. This would help support local growers at the same time as it provided a healthier diet.

Other comments highlighted the difficulty of designing programmes that worked. There were many examples of projects that failed, even though dedicated project staff had worked hard to design and implement interventions intended to help local producers adopt sustainable practices while also increasing farm incomes. In designing any such programme, it was important to look at what had previously been tried in countries in the same region, to avoid repeating past mistakes and to build on approaches that proved successful.

E. Regional perspectives

Mr. Jorge Bravo of the Population Division moderated the session on regional perspectives.

Ms. Namukolo Covic (IFPRI) spoke about food security and nutrition in Africa. Africa, in common with other developing regions, was facing a double burden of undernutrition and overnutrition. According to recent estimates, approximately 30 per cent of children under age five were stunted, with the highest levels occurring in Eastern Africa. The prevalence of stunting was decreasing, but not rapidly enough to reach the SDG target. Overweight and obesity currently affected 10 per cent of young children in Northern Africa and 14 per cent in Southern Africa. At older ages overweight and obesity were much more common and were increasing rapidly. The prevalence of overweight and obesity among adult women in Africa increased from 31 per cent in 2000 to 41 per cent in 2015. Dietary quality was also an issue. Surveys in various countries showed that, in general, well under half of children's diets met standards for a minimally acceptable diet or a minimally diverse one.

Africa faced many challenges related to agricultural production and nutrition. Agricultural policies had tended to emphasize production of staple foods, and people often lacked affordable access to nutrient-rich foods. Indeed, nutrient-rich foods had generally become less affordable over time. Food safety was also a serious problem. Lack of adequate processing and storage led to spoilage and contamination of the food supply with mycotoxins, including potent carcinogens such as aflatoxin. Residues of pesticides and other chemicals were a growing problem, as such compounds were often applied without adequate safety measures. Antibiotics were not yet heavily used in livestock production in most parts of Africa, but there were areas where antibiotic use was starting to develop; instead of applying best practices in order to minimize the development of resistant microbes, Africa might be on course to repeat others' mistakes of overusing antibiotics. Water quality was starting to suffer due to fertilizer runoff. Heavy reliance on rainfed agriculture meant that production was vulnerable to unpredictable fluctuations in rainfall. Greater use of irrigation could help improve stability of production, but care needed to be taken that this did not result in unsustainable extraction of groundwater. Another challenge was that part of the increased supply of some staple crops had come from increased food imports, which increased countries' exposure to price volatility on international markets.

One favourable trend was that the policy and programme environment had improved. At least 44 of the 54 African Union member states were implementing the Comprehensive Africa Agriculture Development Programme, contextualized to national conditions. A biennial review programme encouraged exchange of information about progress and problems of implementation. A continental food-safety index had been developed, with the aim of helping to identify and then address safety gaps in food systems. Many African countries had joined the Scaling Up Nutrition movement, and the African Leaders for Nutrition initiative, led by the African Development Bank, focused particularly on heads of state and finance ministers and aimed to increase budgetary and financial resources for improving nutrition. The African Development Bank had also developed a multisectorial action plan to ensure that nutrition issues received attention throughout its investment programmes. Some countries had conducted "cost of hunger" studies, which drew attention to the enormous economic costs of ill health and lost labour productivity that resulted from undernutrition; recognition of those costs could help galvanize political will to address the problems.

Implementing policies remained a challenge, and there was a need for more co-ordination to ensure that policies did not work at cross purposes; for example, subsidies that kept prices of cooking oil and sugar low for consumers might contribute to obesity. Initiatives needed to have adequate financing and capacity. Agriculture needed to be diversified, with emphasis on high-nutrient crops, including greater use of "biofortified" varieties. One problem in that regard was that many countries lacked well-functioning systems for providing farmers with access to high-quality seeds to boost yields and nutrient content. Agricultural intensification must be accompanied by adequate land and water management. Market forces and trade and fiscal policies must be managed prudently. Policies for regulating food marketing needed to be further developed, as did the infrastructure – such as refrigeration – for delivering fresh foods safely to marketplaces.

Dr. Sahar Fawzy Gad Elsonbaty of the Ministry of Health of Egypt gave the final presentation on population, nutrition and sustainable development in Egypt. She first described the 100 Million Wellness Campaign, a presidential initiative for the detection of non-communicable diseases that also aimed at eliminating hepatitis C. The initiative had screened almost 50 million citizens for high blood pressure, diabetes and overweight/obesity. The campaign also included a programme to treat health conditions related to malnutrition in children and a campaign to support women's health, including early detection and treatment of breast cancer and provision of reproductive health services. The screening programme found, among other things, that 39 per cent of Egyptians aged 30 years or over were obese, with higher levels of obesity among women than men. The prevalence of anaemia and obesity among school children was also high; 42 per cent were anaemic and 13 per cent obese.

Dr. Elsonbaty then discussed population and development issues in Egypt more broadly. She referred to the Programme of Action of the ICPD, highlighting its emphasis on the importance of access to comprehensive reproductive health care, and that it represented a new consensus on responding to population growth. She discussed Egypt's changing population age structure. Because of past fertility declines, the proportion of the population in the working ages was currently relatively high in Egypt and would remain so through 2030, providing a demographic situation that was favourable for economic development.

Current population-and-development challenges in Egypt included a recent increase in fertility, reversing the earlier trend; the unmet need for family planning also rose between 2008 and 2014. Infant

mortality rates showed little or no change between 2008 and 2017, while the proportion of the population living in poverty at the official poverty line increased from 17 per cent in 2000 to about one third in 2017. Unemployment rates had fallen recently, but many of the jobs paid poorly, and the unemployment rate remained much higher for women than for men. Egypt had succeeded in reducing maternal mortality since the early 1990s, although the pace of improvement had recently slowed. There had also been progress in decreasing the practice of female genital mutilation, and a decrease in the proportion of women marrying below age 18 and, especially, below age 15.

Egypt's policies aimed to reduce the population growth rate and to bring down its total fertility rate by improving reproductive health services, with explicit targets for increasing levels of contraceptive use and reducing the level of unmet need for family planning. The country also aimed to bring down infant mortality by 50 per cent and maternal mortality by 60 per cent between 2015 and 2030.

Discussion

In response to a request for clarification on simultaneously increasing poverty and decreasing unemployment in Egypt, Dr. Elsonbaty said that prices had risen recently much more than had wages. Regarding the very high level of obesity in the country, Dr. Elsonbaty observed that the typical Egyptian diet was high in unhealthy foods. The Government had begun a campaign to promote healthy lifestyles, with emphasis on diets. There were also efforts, assisted by UNICEF and UNFPA, to promote women's and children's health, with emphasis on breastfeeding and healthy diets.

Regarding prospects for increasing food production sustainably in sub-Saharan Africa, Ms. Covic thought that Africa had the possibility to feed itself, but there were many unresolved questions. Africa should avoid repeating past mistakes in agricultural development in high-income countries. African countries should try to draw on the latest and best practices for increasing production at the lowest environmental cost. Ms. Covic noted that in many parts of Africa livestock were traditionally regarded as a way for households to store wealth more than as a source of food. Since there was no ingrained habit of heavy meat consumption, adding protein to the diet as incomes rose might be done by concentrating on smaller animals such as poultry, which could be raised at a lower environmental cost than for ruminants.

Irrigation was mentioned as a possible means of increasing agricultural resilience to drought, but the degree to which irrigation could be increased without unsustainable extraction of groundwater was unclear, and it varied considerably across Africa. Ms. Covic suggested that it would be worth experimenting with drip irrigation in countries such as Kenya that were vulnerable to erratic rainfall.

Meeting needs for dietary diversity would require cross-border trade, since countries differed in their suitability for growing specific crops, and some countries were too arid to grow enough food to meet people's needs. Although there had been progress towards reducing trade barriers, trading relations within the continent needed further development. Concerns about food safety – such as risks of contamination with aflatoxin – often hindered trade across borders within Africa, and those concerns needed to be addressed. That was one of the motivations for developing the food safety index that Ms. Covic mentioned in her presentation.

Another area of uncertainty was the extent to which smallholder farming would persist in Africa. Historically, agricultural development in the West involved consolidation of small farms into much

larger ones, but this had so far happened only to a limited extent in Africa. In recent years some African countries had experienced large-scale purchases of agricultural land by foreign buyers. Ms. Covic said that African governments had sometimes permitted such sales at prices that greatly undervalued the longer-term potential of the land, and there was a need to develop improved policies and regulations regarding such purchases.

Regarding nutrition and health, there had been progress in reducing stunting among young children in sub-Saharan countries, but prevalence of undernutrition remained high. Anaemia was a serious problem and, except in South Africa recently, there was little sign of progress in reducing anaemia levels. In some cases, anaemia was not due to dietary iron deficiency, and finding solutions would require more research. Overweight and obesity were increasing throughout Africa, though with wide variation in levels reached so far. Both under- and over-nutrition undermined health and increased the prevalence of non-communicable disease. The growing burden of non-communicable disease was overwhelming health systems, which needed to cope with high levels of communicable disease as well.

F. Discussion and recommendations for key messages to the Commission on Population and Development

Mr. John Wilmoth of the Population Division moderated the session devoted to the participants' suggestions for key messages and recommendations that the Population Division could draw upon when preparing the report of the Secretary-General on the theme of "population, food security, nutrition and sustainable development," which the Commission on Population and Development would discuss at its fifty-third session.

In sum, the world is not on track to eliminate hunger, and the current food system is environmentally unsustainable. After decades of progress in reducing undernourishment, the number of undernourished persons has been rising slowly for several years. The world will need to produce substantially more food to meet the needs of a growing global population though 2030 and beyond, and this must be accomplished without incurring serious, possibly irreversible, damage to the environment. A more sustainable future is attainable, but major interventions will be needed to improve agricultural practices, reduce food loss and waste, ensure more equitable access to food and change the mix of foods towards diets that are both healthy and sustainable. Achieving healthy and sustainable diets would also help combat the epidemic of obesity and improve population health. Major changes are needed in all of these areas; small steps will not be enough. It is the role of Governments, with support from the international community, to take the lead in developing policies, regulations and programmes, but all actors in the food system must be involved in finding solutions.

Key messages emphasized in the discussion included:

- Importance of food security and nutrition for human capital development: The world's population must be well nourished and healthy in order to achieve the SDGs. Access to sufficient, affordable and nutritious food must be ensured throughout the life course to avoid the negative health and economic consequences of undernutrition and hunger or overweight and obesity. Current socio-economic and geographic inequalities in risks of exposure to food insecurity or malnutrition must be addressed as part of the commitment to ensure that no one is left behind.

- Impact of population growth on food consumption: Population growth is an important driver of increased food consumption. However, rising income and consumer demand will account for a larger share of the expected future growth in food consumption and production. Diet composition tends to change with income growth, resulting in less demand for starchy crops and more demand for animal products and seafood, dairy and eggs, and oils and fats.

- Changes in rural economies: The increased demand for food, especially in Africa and Asia, will require a transformation of agricultural and rural economies in those areas. Although future patterns of rural transformation may share some commonalities with historical ones, they may also be different from what was experienced even in recent decades. Technology is fundamentally changing farming methods, labour requirements and transaction costs. When designing policies and practices to achieve sustainable systems of food production, the livelihoods of persons currently employed in the agricultural sector must be taken into account.

- National and regional specificities: In addressing issues around population, food security and nutrition, there are no one-size-fits-all solutions. For example, the green revolution has been much less successful in Africa than in Asia. Policy interventions must take context into account.

- Food system as a driver of climate change: The global food system as currently organized is a major contributor to global climate change. Dietary changes resulting in increased consumption of plants and decreased consumption of animal products, especially in high-income countries, are an essential mitigation strategy. At the same time, climate change is likely to have impacts on the stability of food systems, with a potential for simultaneous failures in multiple regions. Resulting threats to food security and nutrition will be greatest among poorer populations living in areas closer to the equator.

- Links between healthy diets and sustainable food production: Efforts to address malnutrition through better dietary habits and initiatives to mitigate the food system's negative environmental impacts are often synergistic. A well-designed and well-managed food and nutrition system could bring both health benefits and environmental sustainability. For example, reducing red meat consumption in high-income countries would reduce greenhouse gas emissions and make possible a modest increase of meat consumption in low-income countries, with positive consequences for health in both settings. Economic development policies and programmes should take into account the food system, seeking to ensure sustainable land use and promoting good nutrition. Likewise, trade rules for food and agricultural products should take into consideration their social and environmental impacts.

- Addressing externalities in the food system: To make the food system more sustainable, market prices should include or reflect the environmental costs of production and consumption. This approach will drive up food prices. In order not to diminish access to food among poorer populations, income supplements to the poor and the promotion of equitable income distribution are crucial.

- Policies affecting food production and consumption: Food systems should be reoriented to encourage consumer choices to eat healthy foods that can be produced in a sustainable manner. Government policies can create market incentives to encourage shifts in production on the supply side, while also using education (e.g., school curricula) to affect consumption habits on the demand side. Dietary changes can ease the economic burden and other negative consequences of ill health, including from NCDs.

- Policy requirements beyond the food system: A systems approach to achieving better nutrition and health should include efforts to improve not only the food system and dietary habits, but also health care, water and sanitation, education, social protection and economic policies.

- Reducing the risk of malnutrition: "Double-duty" actions can simultaneously prevent or reduce the risks of both nutritional deficiencies associated with underweight, wasting and stunting and those leading to rising burdens of overweight and obesity.

- Advice on how to eat: Dietary guidelines should take into account the potential impacts on the environment and issues of sustainability.

- Building the food system of tomorrow: Investments should be directed toward seed systems for fruits and vegetables, not only for staple crops. Also, food fortification and biofortification are important tools. The future development of food systems should make use of plant diversity and increase the production of underutilized plant-based foods.

- Potential contributions to discussions about food security and nutrition: The upcoming CPD session, including the reports of the Secretary-General and the deliberations of Member States, can feed into other processes – including, for example, the draft voluntary guidelines on food systems and nutrition by the Committee on World Food Security – while recognizing that the main added value of the session will be its focus on connections to population processes.

G. CLOSING

In closing the meeting, Mr. Wilmoth thanked the participants for two days of highly interesting and informative discussions, which would greatly assist the Population Division in preparing for the upcoming session of the Commission on Population and Development.

ANNEX 1: ORGANIZATION OF WORK

16-17 September 2019

UNITED NATIONS EXPERT GROUP MEETING ON POPULATION, FOOD SECURITY, NUTRITION AND SUSTAINABLE DEVELOPMENT
Population Division
Department of Economic and Social Affairs
United Nations Secretariat, Conference Room 12
New York

ORGANIZATION OF WORK

Monday, 16 September 2019

10:00-10:15
Session I: Opening of the meeting

John Wilmoth, Director, Population Division/DESA

10:15-11:30
Session II: Setting the stage: Trends, concepts, definitions, and data sources

Moderator – Sandile Similane, UNFPA

Nancy Aburto, FAO - Overview of food security and nutrition concepts; hunger and food security indicators: trends and data sources
Ruben Grajeda, WHO AM/PAHO (video link) – Nutrition indicators: trends and data sources
Frank Swiaczny, Population Division/DESA – Demographic megatrends and global population growth

11:30-11:45 Break

11:45-1:00
Session III: Food security and population change

a. Food security, growth, consumption and sustainability

Moderator – Sara Hertog, Population Division/DESA

Lorenzo Bellu, FAO – Growth and consumption trends, projections of food and agriculture
Hugo Valin, IIASA– Pathways toward sustainable land use and food systems
Marco Springmann, Oxford University - Health and nutritional aspects of sustainable diet strategies and their association with environmental impacts

1:00-3:00 Lunch

3:00-4:15
III.a continued

Moderator – Astra Bonini, Division for Sustainable Development Goals/DESA

Pierre Boileau, UNEP –Environmental and health impacts of food systems: Assessment by the sixth Global Environment Outlook
Cynthia Rosenzweig, NASA Goddard Institute for Space Studies – Food security findings from the IPCC Special Report on Climate change and land
Prajal Pradhan, Potsdam Institute for Climate Research - Climate change and food security, highlighting urban food system and regional specificity

4:15-4:30 Break

4:30-6:00
b. Food security, population movements and settlement patterns

Moderator – Clare Menozzi, Population Division/DESA

Sara Savastano, IFAD – Rural transformation and creating opportunities for rural youth
Lorenzo Bellu, FAO - Population dynamics, rural transformation, rural employment, rural urban linkages
Alan de Brauw, IFPRI – Relationships between migration and food security

Tuesday, 17 September 2019

10:00-11:00
Session IV: Nutrition and population health

a. Hunger and undernutrition

Moderator – Karoline Schmid, Population Division/DESA

Mawuli Sablah, UNICEF – Causes and impacts of undernutrition over the life course
UNFPA – Nutrition and reproductive health

11:00-11:15 Break

11:15-1:00
b. Obesity and overweight

Moderator – Paul Skoczylas, WFP

Leendert Maarten Nederveen, WHO AM/ PAHO (video link) – Trends, causes, and consequences of overweight and obesity
Simon Barquera, Instituto Nacional de Salud Publica (Mexico) – Double burden of obesity and undernutrition in Latin America

Corinna Hawkes, City University of London (video link) – Policies and actions to address obesity

c. Food systems, health and sustainable diets

Nancy Aburto, FAO – Food systems, health and sustainable diets

1:00-3:00 Lunch

3:00-4:00
Session V: Regional perspectives

Moderator – Jorge Bravo, Population Division/DESA

Namukolo Covic, IFPRI – Food security and nutrition in Africa
Sahar fawzy Gad Elsonbaty, Ministry of Health, Egypt – Population, nutrition and sustainable development in Egypt

4:00-4:15 Break

4:15-5:30
Session VI: Discussion and recommendations for key messages to the CPD

5:30-5:45
Session VII:Closing

ANNEX 2: LIST OF PARTICIPANTS

16-17 September 2019

UNITED NATIONS EXPERT GROUP MEETING ON POPULATION, FOOD SECURITY, NUTRITION AND SUSTAINABLE DEVELOPMENT
Population Division
Department of Economic and Social Affairs
United Nations Secretariat, Conference Room 12
New York

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