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Conference report

Improving diet and nutrition: challenges for global food, agricultural and land use policies

Monday 23 – Wednesday 25 April 2012 | WP1157

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More than a decade into the 21st century, around a billion people still suffer from under nutrition. The same number are affected by overweight, obesity and diet-related ill-health. As governments, the international community, and civil society organisations continue to grapple with global food security, diet is frequently listed among the factors likely to affect it in the coming years. In spite of this, the role of nutrition is often neglected in food security and agricultural policies. How can the Food and Agriculture Organization's definition of food security – which states that “food security exists when all people, at all times, have access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life” – be realised in practice? This conference explored a variety of diet and nutrition-related themes in relation to agricultural production.

Key points from the discussion:

- Food security has tended to be concerned with producing more food but not necessarily more nutritious food.
- The double burden of under and over nutrition needs to be at the centre of national and international policy agendas. Addressing it requires complex responses and political leadership.
- There is an under and over supply of calories in different parts of the world, including within the same countries. Overweight, obesity and diet-related non-communicable diseases are now found alongside under nutrition. Even when calorie intake is high, the foods consumed may lack essential micronutrients.
- Addressing micronutrient deficiencies is complex and research on how to implement programmes required. Food fortification is one approach, although this neither addresses the full needs of children, nor does it necessarily reach the poorest groups, as they may not consume the fortified products.
- Nutrition needs to be protected and promoted throughout the supply chain¹ from primary production to food provision, such as institutional food and food aid.
- Producers, including smallholders, governments, civil society, private sector investment, technology and improved infrastructure are all required to improve diet and nutrition.
- Nutrition, agriculture and gender equality are keys to, rather than outcomes of, development. Countries cannot develop with malnourished populations. The social and economic returns that follow investment in nutrition need to be highlighted.
- Female smallholders' contribution to food production is often under-valued. Yet, they play a key role in growing food, feeding others, and improving nutritional outcomes.

- In low-income countries agriculture should be run as a business, not a development programme. Conditions need to be created in which farmers around the world can be confident they have a future.
- To improve diet and nutrition, coordination between government departments (for example, agriculture, health, trade), across sectors, and with external actors is critical. As are clearly defined responsibilities, strong accountability mechanisms, and pre-determined criteria against which success can be measured. Policy successes have been observed where government activity is led by an inter-ministerial body.
- Government policies, their implementation and delivery need to be tailored to local circumstances (cultural, national, rural, urban).
- The emerging concept of sustainable diets can help to guide policy direction and development.

Introduction

Global challenges

1. In late 2011 the world population reached 7 billion. It is projected to increase by a further billion by 2025, adding 500 million people to African and Asian populations respectively.
2. The world's urban population exceeded the rural for the first time in 2010. This trend is set to continue, as the billion additional people are likely to be located in around 1000 cities of 500,000 people in Africa, and about 500 cities of one million people in Asia.
3. In spite of ongoing poverty, many people are becoming more prosperous which, combined with trends in population growth and urbanisation, means demand for agricultural products, fresh water and energy will continue to rise.
4. The world is experiencing a double burden of nutritional outcomes and diet-related ill-health. According to the Food and Agriculture Organization (FAO), 1.02 billion people went hungry in 2009. In 2010 the World Health Organization (WHO) estimated that 1.3 billion people were overweight, almost 0.5 billion of whom were obese.
5. The path of climate change in the next 15–20 years will be determined by greenhouse gases already in the atmosphere. Current practices cannot be maintained if disastrous greenhouse gas levels are to be avoided.
6. Timescales for addressing these challenges are short and require new approaches. In the twentieth century solutions would have involved ploughing up more grassland and cutting down forests to generate arable land, and exploiting fish stocks, among others. Today, however, it is understood that the world needs to produce significantly more food that is of high nutritional quality, using the same amount of land and fewer inputs.
7. The challenge is to move from a system not meeting current needs to one which produces enough food and does so sustainably. There is no single solution to this challenge. Small farmers, technology, improved infrastructure, recognition of the importance of biodiversity, government involvement, and private sector investment will all be required.

The policy context

Policy thinking about food production

8. Policy thinking continues to be dominated by the 'productionist' paradigm, which is based on the idea that if more food is produced prices will fall. It has been highly successful at feeding increasing numbers of people and at widening diets for some. But today the model is under stress, falling short according to the interconnected environmental, health and social criteria by which it is now being judged.

Food and nutrition governance

9. Policies concerning food and nutrition often fall under the remit of different, national government departments (such as agriculture, health, trade), and their objectives may be mal-aligned. This can result in conflicting policies emanating from within the same government.
10. In countries experiencing both under and over nutrition, these are often viewed as separate issues to be addressed by different arms of government.
11. Determining where nutrition best sits within government is, to some extent, country-specific. But nutritional outcomes have tended to improve where inter-ministerial bodies have been created to address food and nutrition, such as in Brazil and Botswana.
12. Divisions in governance occur at international level too, as agencies work on food and nutrition with different emphases (for example, production, health, social protection). These splits in governance at national and international levels can mean that nutrition falls between policy stools becoming “everyone’s business and no one’s responsibility”.
13. Regardless of the level of governance, cross-sectoral communication, political advocacy, and attempts to combine different policy perspectives are critical.

Raising nutrition’s policy profile

14. The importance of good nutrition has been understood for a long time. But how to ensure that this knowledge is translated into effective policy mechanisms is less clear.
15. The Copenhagen Consensus 2008² ranked food fortification first on its list of global priorities. This has helped to provide an economic incentive to invest in nutrition and to raise its profile on policy agendas.
16. One of the key challenges is to make nutrition matter to governments, as they tend to act when the cost of not doing so becomes evident.
17. Nutrition needs to be promoted and protected throughout the supply chain. This requires understanding the perspectives and motivations of the different actors in the chain and finding ways for them to work together. Business and motivational cases are required.

Food security through the lens of nutrition: challenges and policy successes in tackling hunger, under nutrition and micro-nutrient deficiencies

18. Food security has tended to be concerned with producing more food but not necessarily more nutritious food. While there is still no unified voice on how to improve nutritional security, a policy context which links questions of production with consumption has started to emerge in some parts of the world. Recent successful examples can be found in Brazil and parts of Africa.
19. Fome Zero (Zero Hunger) was launched in 2003. A Federal Government strategy, it aims to promote food and nutritional security, assist in eradicating poverty, and ensure that the human right to adequate food is realised, including among the most vulnerable populations.

Brazil’s Fome Zero Programme

20. The programme has four main foci: food access (provision of school meals, workplace canteens, food banks, food for targeted populations, and food and nutrition education); strengthening family agriculture (financing small-scale farms which then supply the domestic market, for example 30 per cent of state-school food is purchased directly from smallholders); income generation (cash transfers, micro-credit mechanisms); and

social mobilisation (citizenship education, partnerships with businesses).

21. *Fome Zero*, which is viewed as an investment, costs around R\$40 billion per year (0.5 per cent of Brazil's GDP). Brazil saw its poverty levels fall by 9 per cent in the five years following the programme's launch and continues to build on its successes.
22. Lessons learnt from *Fome Zero* include:
 - Rural growth does not necessarily eliminate hunger.
 - Political leadership is vital in the fight against hunger.
 - Clear objectives and definitions are required.
 - Income transfers reduce hunger.
 - Coordination among programmes is essential, including where they are multi-sectoral.
 - Both civil society and the private sector need to be involved.
 - Different approaches are required in rural and urban areas.
 - The fundamental causes of food insecurity need to be investigated and understood.
 - Registration systems, such as of households, and mechanisms to monitor and evaluate progress are essential.

Examples of successful approaches in Africa

23. As in Brazil, political commitment is required to alleviate hunger and under nutrition. But this has to translate into tangible steps and programmes, as observed in the following countries.
24. **Botswana** has implemented people-focussed policies underpinned by good governance. It has an inter-ministerial task force with strong lines of reporting, which meets regularly. National resources are ploughed back into social protection policies and in 2007/08 smallholder farmers, including women, were subsidised.
25. **Ghana** has enjoyed political commitment to food and agriculture. This has focussed on resources such as fish and nutritious crops that grow well locally, as well as on export commodities such as cocoa.
26. **Mozambique** has also benefited from political commitment and financial investment. It has good surveillance systems and strong inter-sectoral coordination, which takes place outside a line ministry and is heavily monitored.
27. **Uganda** has diversified its agricultural systems and grows a range of commodities. This means it was not affected by the 2007/08 food price spikes. There is a champion for agriculture, food security and nutrition, and policies are being implemented across sectors and successful initiatives scaled up.

Nutrition, agriculture and gender equality as keys to – rather than outcomes of – development in Africa

28. Nutrition needs to be seen as critical to, rather than an outcome of, development. Countries cannot develop with malnourished populations.
29. African agriculture also needs to be reconceptualised as a business, not a development programme. As long as it is viewed as the latter, it will continue to compete for resources with other issues. If agriculture is run along business lines, people will be encouraged to stay in the sector and young people attracted to it.
30. Women have a key role to play in improving food and nutritional security, as they not only grow food but are also largely responsible for preparing it and feeding families. Yet, food grown by female smallholders tends to be under-valued, unlike comparable

endeavours by men.

31. Africa is endowed with the natural resources to feed itself but there are difficulties moving food from one region to another due to poor infrastructure and trade restrictions. If markets can be created at national level, integrated regionally, and goods allowed to move freely that would go some way to solving nutritional issues.
32. Investment needs to be made in roads, transport and storage facilities. In Kenya, for example, surpluses and famine often occur concurrently, as there are few roads linking the different regions. Similarly in Ethiopia, some of the areas with the largest surpluses also have the highest levels of stunting. The relationship between surpluses and malnutrition depends on which crops are being produced, where they are destined, and waste caused by storage and transport limitations. Counter-intuitively, some countries that are not well-suited to producing food have lower malnutrition rates than others which are.
33. There are still countries without food and nutrition security policies. To make progress in this area partnerships and private sector involvement are required. Programmes tend to be most successful when they are measured against pre-determined criteria. Accountability and surveillance mechanisms, as well as early warning systems, also need to be in place. Indigenous knowledge about producing food also needs to be valued, not ignored.

Micronutrient deficiencies: evaluating the success of policy interventions

34. Micronutrient deficiencies can be both overt and hidden. They can affect outcomes in pregnancy, cognitive function in adults, lead to health, growth and behavioural issues in children, and are also associated with certain diseases.
35. There is a lot of evidence about the importance of micronutrients but its quality varies. The best evidence tends to come from programmes that take an individual, therapeutic, medical-model approach. They usually focus on one micronutrient (for example Vitamin A supplementation in children) and a single outcome, and are well-suited to randomised controlled trials, meaning that generating evidence is fairly straightforward. Such programmes also tend to require little in the way of behaviour change.
36. Similar initiatives target certain groups, such as pregnant women, and also lead to good evidence.
37. However, these types of programme are not designed to address the overall problem of inadequate diets and can lead to complacency among governments, NGOs and academics, who may believe that the problem of micronutrient deficiencies has been addressed.
38. Other types of intervention are aimed at whole populations such as nutrition education and food fortification (for example wheat fortified with folic acid and, in the case of Guatemala, Vitamin A added to sugar). There are two main disadvantages to this approach. First, even when successful in the general population, the needs of the 1000 Days³ will not be met, as the density of micronutrients required by children cannot be given to the general population. Second, population approaches do not necessarily reach the poorest sectors, as they may not consume the food which has been fortified. It is often unclear what the poorest groups eat,⁴ so difficult to determine what products to fortify. Also, evidence of the success of population-wide interventions tends to come from small-scale studies.
39. The Scaling Up Nutrition (SUN)⁵ movement distinguishes between interventions, like those described above, which are nutrition-specific, and those that are nutrition-sensitive. Examples the of latter include home garden schemes and conditional transfer programmes, such as where parents receive money if they comply to certain conditions (for example Mexico's Oportunidades programme, previously Progresa).

40. Nutrition-sensitive interventions seek to address the overall problem of inadequate diets but are particularly difficult to assess. Evidence therefore tends to be weak or lacking. It cannot be assumed that increases in income will result in better nutrition or that food grown in gardens will be given to children at the critical time. In some cultures there is no tradition of giving special food to babies, which meant that in Mexico, for example, supplementary food intended for them was given to all the children in the family. Behaviour change is key but this is notoriously difficult to achieve.
41. In order to make progress in tackling micronutrient deficiencies the following are required: research on how to implement programmes; process and impact evaluations; better information regarding nutritional needs; the inclusion of nutritional security within food security policies; and the willingness to proceed in the absence of perfect evidence and information.

The dual challenge of tackling under nutrition and overweight/obesity

42. The world is facing dual diet-related challenges with around one billion people still going hungry, around two billion lacking essential micronutrients, and a further billion who are overweight or obese, many of whom suffer from non-communicable diseases (NCDs) such as cardio-vascular problems and type 2 diabetes. A Mexican study, undertaken during the recent swine flu outbreak, found that obese people are also more susceptible to infectious diseases.
43. Often referred to as a double burden of under and over nutrition, the term over nutrition requires some unpicking. While weight gain occurs if more calories are consumed than energy expended, some people who are obese, particularly in the developed world, may also be nutritionally poor, i.e. lacking in micronutrients. In many high-income countries there is an association between poverty and obesity. In middle- and low-income countries, obesity tends to occur with relative affluence, although there is much country and regional variation.
44. Under and over nutrition are found concurrently in middle-income countries in particular, as they experience a steep rise in the prevalence of overweight and obesity, alongside ongoing under nutrition. The two outcomes can also coexist within the same regions, households and families.
45. The two conditions are inter-connected, as women who are poorly nourished tend to give birth to low-weight babies which are not only prone to diseases but can often become stunted as children. Stunted children tend to be at greater risk of infections, reduced cognitive function, and, under certain conditions, have a tendency to become overweight.
46. Models used to explain changes in nutritional outcomes include genetics, metabolic and physiological mechanisms, economic development, technological change, cultural change, psycho-social factors, obesogenic environments, and the nutrition transition. The latter refers to changes from traditional to more processed, Western-style diets, which tend to be higher in fat, salt and sugar, and lower in fibre. Such dietary transitions occur with, or are preceded by, other demographic, epidemiological and social changes.
47. Social changes include the increased availability of soft drinks, snacks, baked goods and dairy products; rising incomes and the desire for more varied diets; changing cultural perceptions that can lead to the substitution of indigenous foods for seemingly prestigious, new ones; increasing numbers of women working outside the home and relying on more processed products to save preparation time; and lower levels of energy being expended as jobs and leisure activities become more sedentary and car use increases.

Policy approaches to address the double burden

48. Tackling the double burden of nutritional outcomes needs to be at the centre of policy agendas and requires complex responses and political commitment.
49. Policy measures need to start early. The first 1000 days of a child's life, for example, could focus not only on under nutrition but on the prevention of overweight and non-communicable diseases. Programmes to follow the 1000 Days also need consideration. Educating children about food and nutrition is important and would have long-term benefits.
50. The whole value chain from primary production to the provision of institutional food and food aid needs to be involved in addressing under and over nutrition. Demand needs to be addressed by customer information and economic tools, such as price mechanisms and income transfers.
51. Policies need to be adapted to local circumstances and legislation, incentives for key players, and accountability systems in place to support policy implementation.

Under and over nutrition: the case of China

52. Child underweight prevalence in China is 8.6 per cent for boys and 4.1 per cent for girls in urban areas. For rural children, it is 9.3 and 5.9 per cent for boys and girls respectively. Regarding stunting, rates are 12 per cent for both boys and girls in urban areas, and 15 per cent (boys) and 13 per cent (girls) in rural areas.
53. It is estimated that over 60 million people in China are obese. Obesity prevalence rates are 7.1 per cent among adults and 8 per cent among children. In addition, 160 million people suffer from hypertension, the same number from dyslipidemia, and 20 million from diabetes.
54. Changes to diet between 1989 and 2009 include increases in pork, beef, poultry and fish consumption across all income groups and provinces; an increase in edible oil consumption, especially in cities; and a 20 per cent decline in cereal consumption among both rural and urban populations.
55. Policy approaches being taken and considered in China include:
 - Improving child nutrition in rural areas through the provision of school meals. Piloting of this initiative began in autumn 2011.
 - Food and nutrition labelling to assist consumer choices (2008).
 - Attempts to improve food, nutrition and health across all populations through both a Food and Nutrition Development Outline (2001-2010) and the Eleventh Five-Year National Social and Economic Development Plan (2011).
 - Proposed nutrition legislation to promote national and local nutrition policies. Proposals were submitted to the Ministry of Health in 2006 but have yet to be implemented.
 - Dietary guidelines for the whole population with supplementary advice for specific groups. Issued in 2007, the guidelines take account of traditional eating habits and are depicted on the Food Guide Pagoda for Chinese People. Foods that are good for health are shown near the bottom and widest parts of the pagoda, and those which should be consumed in moderation appear at the top.
 - The Snack Consumption Guidelines for Chinese Children and Adolescents are also depicted visually as a colour-coded fan. Green denotes healthy snacks, yellow moderately healthy ones, and red the least healthy.
 - Food fortification such as of salt (iodine) and soy sauce (iron).
 - The National Health Lifestyle Action to enhance health awareness and ultimately prevent NCDs.

- The School Lunch Programme (1998) with sanitary and nutritional guidelines but no legal mechanisms to enforce them.
- The National Student Milk Plan (2000) which seeks to improve pupils' nutritional status, to promote milk consumption and production, and to increase incomes for farmers.

The re-emergence of food and nutritional insecurity in high-income countries

56. In the UK and other parts of Europe, the USA,⁶ Canada and Australia many people have inadequate diets.
57. In the current global economic climate there is an increased reliance on food banks by people from different social groups, as food insecurity has re-emerged. Higher food prices affect poorer households the most, as they spend a greater proportion of their income on food than other groups. Average household expenditure on food in the UK is 11.5 per cent of income. But, 16.1 per cent among the poorest fifth of the population. Food tends to be the area where cuts are made (i.e. by buying cheaper, less nutritious food), as other expenses such as rent cannot be reduced. Poorer populations often have little diversity in their diets and very few choices. There is a distinction to be made between reducing consumption as a lifestyle choice and not having choices at all.
58. Low-income households, which have seen their incomes stagnate in recent years, also tend to receive high fuel bills due to badly insulated housing. They may therefore choose to consume fast food to avoid using further fuel for cooking at home. Low-income women tend to be particularly affected as they often work part-time. Questions of how much people need to live on in a particular society have re-emerged. Having to admit to being unable to feed oneself and one's family is a great cause of shame. Governments are urged to be realistic about the cost of living.
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Linking nutrition with agriculture

Fork to farm: food cultures, consumers and producers

60. Food is known to be about identity, social values and pleasure, as well as survival. People in some parts of the world have become accustomed to wider, more enjoyable diets, while in others choice is limited or non-existent.
61. Since the 1970s, notions of consumer choice have dominated policy in developed countries, where consumption patterns have become unsustainable. Consumers are seen as both part of the problem and the solution, but governments tend to be reluctant to intervene in consumerism.
62. Consumers in the developed world have become largely disconnected from how their food is produced, as most have not worked on the land for several generations. This has been compounded by a loss of food preparation and cooking skills. If customers were better informed about food production, it is suggested, they might be more inclined to pressure governments for good quality food.
63. Farmers are keen to re-connect with consumers, welcome interest in food and its production, and need to be involved in discussions about food and nutritional security. They are concerned that some messages given to customers are confusing. For example, there are significant differences in the production of intensively-reared beef and that farmed on uplands.

64. Producers also need to be confident that they can invest for the future. High prices are good for farmers and they respond to market signals. Governments need to provide the conditions in which producers can build businesses but without interfering in markets or using subsidies, as these can create vulnerabilities at farm level if political direction is changed.
65. Culture plays a key role in understandings of and approaches to agriculture, food and what constitutes good nutrition. When seeking to improve nutritional outcomes, culture and different levels of knowledge and education need to be taken into account. It is difficult to devise policy frameworks that lead to changes in cultural behaviour. The focus in the developed world tends to be on non-regulatory, population-based approaches, such as labelling and consumer information, but these can be incoherent.

Examples of non-regulatory approaches in the UK

66. The UK's Food Standards Agency (FSA)⁷ has led campaigns on banning advertisements of certain foods to children, calorie labelling in restaurants and cafés, and salt reduction. Retailers and manufacturers have responded by reducing salt levels in some of their products.
67. The FSA also seeks to reduce food-borne illness and has devised a Food Hygiene Rating Scheme⁸ to this end. Food shops and catering establishments now display their hygiene ratings, which not only serve to inform customers but act as an incentive to businesses to improve and maintain standards.⁹
68. Another example is the Soil Association's Food for Life Catering Mark, which promotes healthy and environmentally-friendly menus. The scheme is independently verified and promotes fresh, local and organic ingredients, reductions in salt and meat consumption, the removal of certain additives and trans fats, high animal welfare standards, and staff training, among others. Points are awarded for compliance with these criteria.¹⁰

Context-specific needs and challenges

69. The types of scheme discussed above highlight some of the very different challenges faced around the world. As some countries continue to struggle to supply their populations with food, others, in which supplies are plentiful, grapple with notions of appropriate food (according to health, environmental, ethical and social criteria) and its provision.
70. Points of food waste in the supply chain differ too. According to the FAO, 1.3 billion tonnes of food is lost annually. The losses tend to occur at the production end in developing countries due to poor infrastructure for storage and transportation. In the developed world food is wasted at different points in chain. For example when only blemish-free products are selected for retail, and at home where food is often thrown out prematurely due to poor understandings of shelf life and freshness.
71. The use of technology also needs to be adapted to local contexts. In the poorest regions 70–80 per cent of the population relies on agriculture for its food and livelihoods. Investment and appropriate technology are critical to enable smallholders, including women, to contribute to improvements in nutrition, as well as to increase yields. They also need to be able to produce a wider variety of products to eat and sell.
72. Finally, as developing countries often tend to follow the trajectories of the more developed, they are prone to repeat mistakes. Policy thinking in developed countries may have moved on, just as poorer countries are starting to adopt certain practices.

The role of the private sector in improving diet and nutrition

73. The private sector is involved throughout the value chain from farm inputs to food retail. It comprises small and medium-sized enterprises in the formal and informal sectors, as well as the large multinationals.
74. Opportunities to improve nutrition exist all along the value chain. But much more could be done at the production end in particular. Bio- and food fortification, crop diversification, nutrition-sensitive transportation, packaging and branding, reduced milling times (for example a 3 per cent reduction in rice milling helps to preserve micronutrients, as well as lower production costs), and the promotion of good nutrition at the retail and consumption end, all have a role to play.
75. Private sector investment needs to include the bottom sector of society¹¹ in developing countries. A group, which is not only diverse, but has traditionally been regarded as high-risk by business, meaning that international retailers are unlikely to enter this sector. But manufacturers do so and build brand loyalty by producing products for this market in very small quantities.
76. Questions relating to private sector investment include: How much can the private sector afford to lose in the short term for longer-term gains? To what extent is it prepared to reduce its margins? How can risk be reduced to attract investment to the poorest sectors? How can private-sector interests be aligned to bring nutritious foods to those without purchasing power? How much can be expected of the private sector? And, to what extent can it be relied upon?
77. Developments tend to occur more quickly in business than in governments. Unilever, for example, has launched a Sustainable Living Plan¹² with three objectives: to help improve the health of more than a billion people, to halve the environmental impact of its products, and to source all its agricultural materials sustainably.
78. Corporate Social Responsibility (CSR) in food retail and manufacturing is likely to become the norm in the coming years and involve cross-sectoral partnerships, such as with NGOs, governments and universities.
79. The retail and manufacturing sectors can undertake a range of initiatives to improve diet and health such as: providing healthy food at good prices; reducing levels of trans fats in processed foods; producing ranges aimed at children (for example containing 'hidden' vegetables); providing clear information on packaging; managing activities in the supply chain such as the reformulation of recipes and product development; and applying technology to provide customers with information about where food is grown.
80. Motivations for the retail sector to act responsibly include reputation, as there are loyalty benefits if staff and customers feel good about where they work and shop; the need to ensure the medium and long-term resilience of supply chains; and, the desire to be consistent across the company, including globally, as it is hard to have a socially-responsible brand within an organisation that is irresponsible.
81. One of the challenges for retailers is how to balance providing customers with what they want and what is good for them. There can be a tension between consumer choice and choice-editing by retailers and manufacturers. One aspect of choice-editing is its potential to take steps in a variety of areas such as health, carbon emissions, water use, and so on.
82. Retailers and manufacturers do not just wish to respond to demand but seek to create it by pre-empting trends. When it comes to creating dietary change, if they are expected to collaborate with each other, they need to be protected from accusations of being anti-competitive.

The role of biological innovation in improving nutrition and health

83. Biological innovation can affect nutrition and health by improving both the quantities of food produced and its quality. Foods can also be altered to enhance levels of beneficial compounds and micronutrients. Beneforte¹³ broccoli is a recent plant-breeding example.
84. Broccoli contains the micronutrient glucoraphanin, which is converted in the gut to a compound called sulforaphane. Evidence suggests that sulforaphane is likely to reduce inflammation, lower rates of heart disease, prevent cell division associated with the early stages of cancer, and induce antioxidant enzymes. But, in order to receive the benefits, large amounts of broccoli would have to be consumed.
85. For this reason, Beneforte broccoli was bred to contain high levels of glucoraphanin. Research, soon to be published, shows that consuming several hundred gram portions of Beneforte a week for a 12-week period has positive effects on blood pressure, 'bad' cholesterol, and other cardiovascular indicators. However, although extensive evidence regarding the benefits of glucoraphanin already exists, claims that can be made on Beneforte packaging are extremely limited. This is because glucoraphanin is not yet a nutrient with an approved recommended daily allowance (RDA).
86. Another example of innovation is a transgenic (genetically modified) wheat developed in Spain. All the genes encoding proteins that cause Celiac Disease – an autoimmune allergic reaction to certain gluten proteins in wheat – have been selected and shut down.
87. This new wheat has proved successful both in the field and bread-making processes. However, it is unlikely to be available to consumers for another eight to ten years, as it needs to be crossbred into the most up-to-date varieties (four to five years) if it is to be acceptable to growers. It would then have to be submitted for regulatory approval, which takes up to four years. Extensive collaboration throughout the supply chain would subsequently be required to prevent contamination with regular wheat.
88. Given the complexities of changing dietary behaviour, the benefits of altering the composition of some, commonly-eaten foods are clear. However, the lengthy processes involved – proof of concept, product development, raising investment, securing industry commitment, supply chain partnering, regulatory compliance and communication to consumers, coupled with the fact that this kind of long-term research tends not to be facilitated by current funding regimes – mean that the benefits of such innovations are a long way from being reaped.

The way forward: rethinking policy frameworks around the notion of sustainable diets

89. In many developing countries food has become too expensive. In other parts of the world it is sold below its true costs, which are borne elsewhere in environmental terms and by cheap labour.
90. There is a lack of unified policy direction at present, which could in future centre around the emerging concept of sustainable diets. For this to happen, agreement is required on what constitutes sustainable production and consumption.
91. In November 2010, the FAO's International Scientific Symposium on Biodiversity and Sustainable Diets¹⁴ agreed the following definition of sustainable diets:

“Sustainable Diets are those diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources”.
92. The concept would help to create changes in policy frameworks, leading to

sustainable land use, and consumption patterns which prioritise food needs over wants. It would also help to set new challenges for integrated sciences, resolve splits in nutrition between the life sciences, social and eco-nutrition, and help shape institutional reform.

93. Sustainable diets would be based on common principles but would vary in how they are operationalised and delivered in different parts of the world.
94. Steps to move towards more sustainable modes of production and consumption include: recognition of the current blockages for producers, consumers and in policy; the creation of an intergovernmental panel on sustainable diets; further research on changing consumer behaviour; the refinement of policy messages for politicians; the building of interdisciplinary alliances; and consideration of what would be done in the event of crises.

Conclusions and policy recommendations

A number of policy recommendations were made were made throughout the conference:

The policy agenda

- Tackling the double burden of under and over nutrition needs to be at the centre of policy agendas.
- Nutrition, agriculture and gender equality are keys to, rather than outcomes of, development. Countries cannot develop with malnourished populations.
- Agriculture needs to be viewed as a business and not a development programme.
- Women smallholders have a key role to play in improving nutrition.
- Children and adolescents need to be educated about food and nutrition, and programmes to follow the first 1000 Days considered.
- Developed country governments need to be realistic about living costs and the fact that increases in food and fuel prices disproportionately affect those on the lowest incomes.
- The concept of sustainable diets can help to guide new policy frameworks.

Policy formulation and implementation

- Nutrition has to be promoted and protected throughout the supply chain.
- Policies need to be adapted to local circumstances and formed in a consultative way.
- Coordination between government departments, across sectors, and with external actors (such as donors) is critical.
- Communication and linguistic barriers between sectors and academic disciplines need to be broken down.
- Clearly defined responsibilities and strong accountability and monitoring mechanisms are required.
- The case for the social and economic returns that follow investment in diet and nutrition needs to be articulated.

Scaling up diet and nutrition programmes

- Evidence of effective initiatives has to be sought but it may be necessary to proceed without it.
- Processes not just outcomes need to be evaluated.
- Good planning is essential and requires defining the problem, understanding the

cultural environment, and identifying key agents for change. These will vary with context and are likely to be governments in some of the poorest countries.

- A wide range of actors at different levels need to be engaged and ways found to combine initiatives, so that they do not compete with each other.

Samantha Pearce

Wilton Park | May 2012

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¹ The terms supply and value chain have been used interchangeably.

² <http://www.copenhagenconsensus.com/Home.aspx>

³ The 1000 Days refers to those between pregnancy and a child's second birthday, during which nutrition has a profound effect on child development, both cognitive and physical, and the longer-term ability to escape poverty. <http://www.thousanddays.org>

⁴ This data will soon be available for Ethiopia following its recent National Food Consumption Survey.

⁵ <http://www.scalingupnutrition.org/>

⁶ In the USA, 17.2 million people received Food Stamps in the year 2000, as part of the Supplemental Nutrition Assistance Program. By 2011 the number of recipients had increased to 45 million. See 'Alleviating Poverty in the United States: The Critical Role of SNAP Benefits' <http://www.ers.usda.gov/publications/err132/>

⁷ <http://www.food.gov.uk/>

⁸ <http://www.sacert.org/catering>

⁹ The scheme has been adopted by 555,000 establishments.

¹⁰ Twenty per cent of schools in England now serve Food for Life meals.

¹¹ See Rangan et al (2011) <http://hbr.org/2011/06/the-globe-segmenting-the-base-of-the-pyramid/ar/1>

¹² <http://www.unilever.com/sustainable-living/uslp/>

¹³ See Institute of Food Research <http://www.ifr.ac.uk/>

¹⁴ For the report see <http://www.fao.org/ag/humannutrition/28506-0efe4aed57af34e2dbb8dc578d465df8b.pdf>