



EXECUTIVE SUMMARY

Future diets

Implications for agriculture and food prices

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Key messages

- Over one third of all adults across the world – 1.46 billion people – are obese or overweight. Between 1980 and 2008, the numbers of people affected in the developing world more than tripled, from 250 million to 904 million. In high-income countries the numbers increased by 1.7 times over the same period.
- Diets are changing wherever incomes are rising in the developing world, with a marked shift from cereals and tubers to meat, fats and sugar, as well as fruit and vegetables.
- While the forces of globalisation have led to a creeping homogenisation in diets, their continued variation suggests that there is still scope for policies that can influence the food choices that people make.
- Future diets that are rich in animal products, especially meat, will push up prices for meat, but surprisingly, not for grains. This suggests that future diets may matter more for public health than for agriculture.
- There seems to be little will among public and leaders to take the determined action that is needed to influence future diets, but that may change in the face of the serious health implications. Combinations of moderate measures in education, prices and regulation may achieve far more than drastic action of any one type.

Issues and concerns

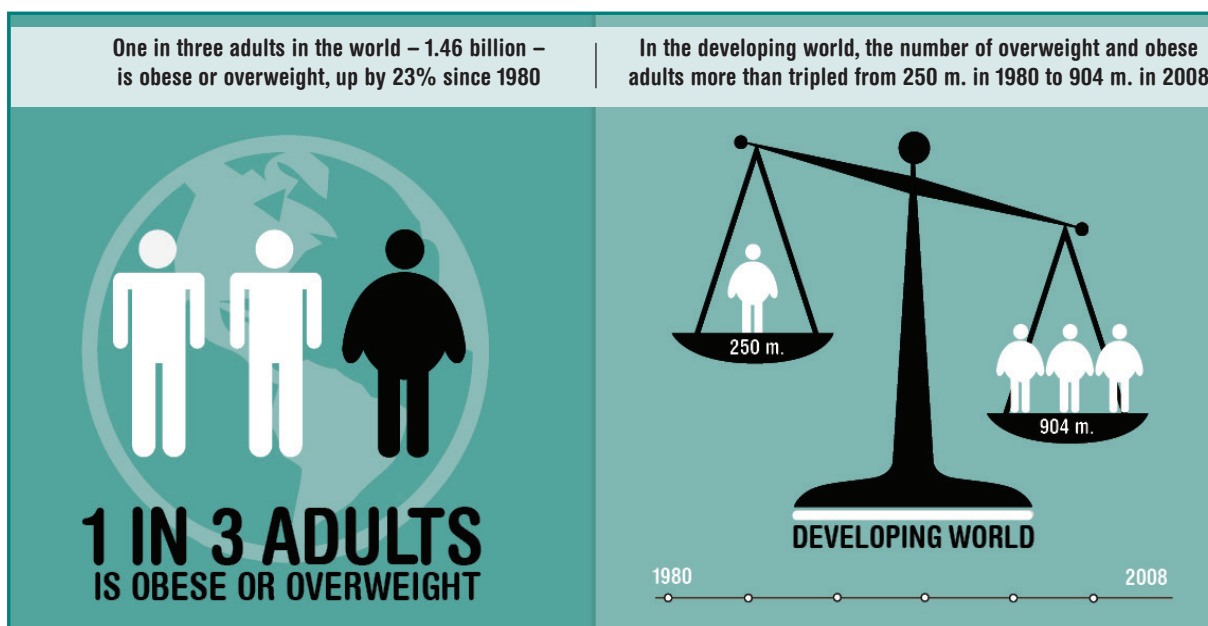
Diets are increasingly important in a world of economic growth and rising incomes. And two concerns, in particular, are emerging: the effect of diet on health; and the demands made by changing diets on agriculture. The impact is most marked in the developing world, where we now see both the fastest acceleration in over-consumption and the greatest continuing toll of under-consumption.

The over-consumption of food, coupled with lives that are increasingly sedentary, is producing large numbers of people who are overweight and obese – primarily in high-income countries, but also in emerging middle-income countries. Indeed, the world has seen an explosion in overweight and obesity in the past 30 years (Figure 1). Globally the percentage of adults who were overweight or obese grew from 23% in 1980 to 34% in 2008, with the vast majority of this increase seen in the developing world. Here, the numbers of people affected more than tripled, from around 250 million people in 1980 to 904 million in 2008. By contrast, the number of people who were overweight or obese in high-income countries increased 1.7 times over the same period.

The evidence is well-established: obesity, together with excessive consumption of fat and salt, is linked to the rising global incidence of non-communicable diseases including some cancers, diabetes, heart disease and strokes. What has changed is that the majority of people who are overweight or obese today can be found in the developing, rather than the developed, world.

At the same time, under-consumption of dietary energy, protein and micronutrients is still a problem for hundreds of millions of people. Again, most of them are in the developing world, where the greatest concern is the

Figure 1: The world has seen an explosion in the number of overweight and obese adults between 1980 and 2008



SOURCE: Data from Stevens et al. (2012).

inadequate nutrition for infants that impairs their mental and physical development and puts them at a life-long disadvantage. Progress on reducing the incidence of stunting amongst children has been slow: it is still thought that up to one-third of infants in the developing world are stunted. Increasingly, however, the wider concern is less about macro-nutrition and more about micro-nutrition: the lack of key minerals and vitamins – particularly iron, iodine, vitamin A and zinc – that affects an estimated two billion or more people.

Diets also matter for future demand for food. It should be easier to feed the expected global population of 8 billion in 2030, and 9 billion in 2050, if diets are moderate rather than high in livestock consumption. Any additional production of meat and dairy will probably have to come, in large part, from feed grains, with less energy consumed from grain and more from meat and milk. High demands for feed grains in the future will put pressure on land, water and fertiliser supplies, drive up costs of agricultural production, and make it more difficult for those on low incomes to afford an adequate diet.

Given this scenario, this report addresses three sets of questions.

- How far do diets vary between countries? What is known about the reasons for the marked differences seen in diets? How far can the differences be attributed to income?

- Are there examples of public policies that have had a real impact on choice of diet, and if so, which policies have been most effective and under what conditions?
- How big will the gap be between the food available and the food that is needed in the future, if diets shift to match those recommended by nutritionists, rather than converging to resemble the diets seen in North America or Western Europe? And what are the implications for the prices of staple foods?

These have been addressed by reviewing the existing literature and by analysing data and statistics on food consumption worldwide, by major region, and for five middle-income countries selected to show how diets have changed over the past 50 years as a result of economic growth and urbanisation.

Diets and their determinants

The world has seen appreciable increases in the amount of food available per person over the past half century, across all food groups. For people on high incomes, food has become so abundant that they can choose their diet with few concerns over cost. As economic growth, rising incomes and urbanisation have taken place, diets have tended to follow. Typically, they shift from the heavy consumption of grains and starchy staples to meet people's

daily energy needs at a minimum cost, to the partial replacement of staples by more fruit and vegetables, but above all by more animal produce, oils, fat and sugar.

While such general patterns are evident, there is still plenty of variation among countries – a reflection of national food cultures and preferences – and there is further variation within countries by economic and social group and by district.

When we compare current diets to those recommended for healthy and active living, we find that diets across the world have more than enough grains, but are usually low in dairy and fruit. In high-income countries, such as the US, the consumption of oil, fat and sugar is well above recommended levels. At the other end of the scale, the world's least-developed countries have average diets that fall far short of the recommended levels of fruit, vegetables, dairy and other protein-rich foods such as fish and meat.

Many factors influence a person's diet. They can be grouped in half a dozen categories: human biology and physiological needs; the costs of food and level of income; preferences formed by culture, religion, information and advertising; social changes in work patterns and gender roles; and globalisation and its influences through trade, investment and information; and public policy.

Perhaps the most interesting question here is the extent to which growing incomes and globalisation are leading to the convergence of diets on some international norm or, conversely, the extent to which diets remain heterogeneous by country, social group and individual. It would be perverse to deny that rising incomes and urbanisation tend to lead to diets rich in animal produce, fat, salt and sugar, or that the various influences of globalisation, including advertising and media, can have significant impact on diets. Yet it seems that national diets are not necessarily converging on a single international norm. In fact, income may be becoming a weaker determinant of diet over time. The welcome implication is that there may be considerable scope for public policy to have a real influence on diets.

Types of policy

Many policies and public investments influence diets indirectly – above all by affecting the price of food – through, for example, policies that promote agricultural development, or public investments in roads and ports that support improved logistics and lower unit costs for food distribution.

The focus here, however, is on specific measures that have specific dietary objectives.

Policies for diets can be categorised by the means used, dividing them into: information designed to affect individual choice of foods; price incentives to change the cost of all or specific foods, plus income measures to make foods more affordable; and restrictions and rules on food processing, advertising and retailing.

One example of using persuasion to influence diets can be seen in South Korea's efforts to preserve healthy elements of the country's traditional diet in the face of a nutrition transition. Public campaigns and education, including the large-scale training of women in the preparation of traditional low-fat, high-vegetable meals, has led to Korean diets that resulted in the consumption of more of these meals than might be predicted, given the country's relatively high average incomes. An example of stronger regulation can be seen in Denmark's 2004 ban on trans-fatty acids (TFA), which are useful in food manufacturing but considered to carry high risks for cardiovascular disease – a move that has reduced the country's prevalence of heart disease.

A second division can be made between those measures that seek to remedy the undernutrition that is still concentrated in the developing world and those that try to encourage the consumption of healthy alternatives to reduce the consumption of foods that can, when consumed to excess, lead to obesity and illness.

Projections of future needs for food

The rather surprising result of modelling by the International Food Policy Research Institute (IFPRI) is that varying the projected future levels of meat consumption has only a modest effect on the amount of feed grain required, and next to no effect on staple grain prices – even if it does have a strong effect on the amount of meat produced and on meat prices. This is all the more surprising, given that IFPRI's low-meat scenarios envisage that high-income countries plus Brazil and China will cut their meat consumption to half of the levels expected in the future (even below current levels). In other words, these scenarios assume strong and effective public policy, beyond what may seem feasible in the near future.

Discussion

Three key issues emerge from this study, even given imperfect evidence, with implications for public policy and especially for future agricultures and food costs.

First, diets and their influences are more varied than some may imagine. Yes, the combined forces of economic growth, rising incomes, urbanisation and globalisation are powerful, but we should not underestimate the extent of local variation. Bear in mind that it has not been possible in this review – for lack of readily available data and time – to look at diets at a level more detailed than national average consumption. It is known that even within national templates there are wide variations by income groups, by regions within countries, and by other social variables such as vegetarianism and culinary traditions. So, getting closer to the grain of reality would reinforce this message of variety and the limits to which growth and globalisation may lead to homogenous diets.

The implications are two-fold: that globalisation will not, in the medium term, place massive restrictions on the scope for policy action; and that policy needs to start where people are at present in terms of their diverse preferences and traditions. Trajectories are not pre-ordained; there is scope to influence the evolution of diet to get better outcomes for health and agriculture.

Second, IFPRI's modelling reveals some surprising results. Indeed, one of the reasons we run models is to check for such surprises. Meat consumption that seemed *a priori* to matter immensely for future agricultures in terms of demand for feed grains and, by extension, the cost of many foods, turns out to be less important in this regard than imagined. At the margin, of course, lower meat intakes in high-income and emerging economies would make it easier and cheaper to grow food in the future. It would almost certainly lead to a fairer world in that it would allow relatively low meat prices for people on low incomes in developing countries.

This implies that lower meat consumption does not matter quite so much from an agricultural point of view, nor from our original concern – the cost of staple foods. But that does not mean that meat consumption, and the consumption of dairy and some fish, does not have public importance. It means, in fact, that the more important public concerns probably lie with better health. Studies such as that of Cecchini et al. (2010) show large benefits compared

to costs from measures to influence people to adopt healthier diets. The prime concern of such measures relates to the intakes of fibre and fat, which may be linked only partly to animal-produce consumption, but they are certainly linked. There may also be good reasons to limit the livestock economy on environmental grounds, not least to restrict emissions of greenhouse gases; although we did not have the time to assess the growing literature on this consequence of diet.

Third, we can see a paradox of public policy. In general, there is little appetite amongst politicians or the public in high-income countries to take strong measures to influence future diets. Politicians are fearful of meddling with diets, and alienating farming and food-industry interests. It seems that this reflects public opinion, with many people seeing food choices as a matter of personal freedom. Most people hate to see regulation of their access to favoured foods, see taxation of unhealthy foods and ingredients as onerous and unfair, and acquiesce only in response to public information and education. Couple this with lobbying from food industries, and the political will to affect diets withers.

Yet against this we must set the growing scientific consensus that sees some aspects of diets in OECD countries – and above all the excessive consumption of fat, salt and sugar – as significant contributory factors to some cancers, cardio-vascular disease and diabetes. Tentative models of the benefits of better diets on public health show many advantages. Yet the continued lack of will to act on diet stands in marked contrast to the concerted – and largely effective – public actions that have been taken to limit smoking in OECD countries. Looking at the range of policies on offer, it seems that regulation and taxation are the most effective policies for diet, but these are precisely the policies that are least palatable to both the public and politicians.

In fact, policies on diets have been so timid to date that we simply do not know what might be achieved by a determined drive to reduce the consumption of calories, and particularly the consumption of fat, salt and sugar, in OECD countries. This has never been attempted, with the rare exception of the wartime rationing in Britain, which stands out as an unusual natural experiment that led to better health; but one that the British public were delighted to abandon once supplies had been restored after the Second World War.

While current policies and action on diets may be hesitant and timid, that does not mean that governments should always be so cautious, even if their caution reflects the public mood. When taking action to limit smoking, governments have often led the way, driven by the strong evidence from medical studies showing the harm caused by cigarettes. Although diet is a more diverse and complex issue than smoking, there may be scope for government to take more incremental measures, perhaps using measures in combination, to pave the way for public acceptance that something needs to be done if future health costs are to be contained.

At some point in the future there may well be an international debate over meat consumption and what fair shares of meat can be produced at relatively low cost and within the limits of environmental sustainability and greenhouse-gas emissions.

A final comment (and paradox): interest in diet has never been stronger in high-income countries as we obsess about our waistlines, worry about the social impacts of the marketing strategies of (very) large food retail chains, and enthuse over the culinary art and tradition shown in countless television programmes. Scientifically, a plethora of papers have been drafted in the past 10 years that ponder the rise of obesity worldwide and its implications.

It seems, then, that it is only a matter of time before people will accept and demand stronger and effective measures to influence diets. When that time comes, we will need the evidence – provided in a very preliminary way by this review – on the main problems of emerging diets, and which policies (and combinations of policies) will be most effective in addressing the emerging challenges.

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The full report is available from: www.odi.org/futurediets



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