

# Nutritional change is not a simple answer to non-communicable diseases

The United Nations high level meeting on non-communicable diseases is expected to include nutritional interventions among the suggested actions. **Derek Yach** warns that we should not underestimate the challenge of implementation, especially in developing countries, or ignore the vital role of agriculture

The United Nations high level meeting on non-communicable diseases in September is a once in a generation chance to chart a way forward to tackle these major threats to health. Among the many proposals being considered in the lead up to the UN meeting are nutrition based interventions such as reducing use of saturated fats and oils and salt consumption.<sup>1</sup> The success of these interventions in developed countries has been closely related to the presence of sophisticated government agencies, behaviour change within populations, and the actions of food companies. However, the proposals underestimate the complexity and societal costs of efforts needed to shift people, particularly in developing countries, towards healthier food options. Without this recognition, the suggested actions might not lead to the desired improvement in public health.

After years of working to promote public health in South Africa and prevent and control non-communicable diseases at the World Health Organization, the Rockefeller Foundation, and most recently at PepsiCo, I believe that the prevention of chronic diseases requires new ways of working across the development sectors and between players from government, industry, academia, and non-governmental organisations.

## Salty problem

Salt reduction is a good example. WHO and the US Institute of Medicine have highlighted its importance, and it has been cited as a “best buy” second only to tobacco control in terms of

## SALT REDUCTION IN THE UK

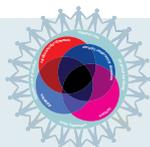
- The UK programme started with a major public education push by the Consensus Action on Salt and Health, a group of 22 experts on salt and blood pressure
- As a result, the Department of Health altered its stance on salt and empowered the Food Standards Agency (FSA) to develop a strategy to reduce salt intake nationwide
- The FSA set standards for the food industry to reduce the amount of salt added to foods by 40% and made labelling and other changes to encourage people to reduce the amount of salt they added to foods themselves from 1.4 g to 0.9 g a day (40% reduction)<sup>6</sup>
- All sectors of the food industry—retailers, manufacturers, trade associations, caterers, and suppliers to the catering industry—have responded positively and continue to be engaged
- UK salt intake decreased from 9.5 g/day in 2003-4 to 8.6 g/day in 2008



MARK HENLEY/PANOS

This month the United Nations will stage its first summit looking at the world epidemic of non-communicable diseases—in particular, cardiovascular disease, cancer, diabetes, and chronic obstructive disease (*BMJ* 2011;342:d3823). This article is part of the *BMJ*'s pre-summit coverage, looking at the risk factors linking these diseases.

See also **FEATURES**, p 449



its potential to prevent non-communicable diseases.<sup>2-4</sup> The *Lancet* reports that up to 8.5 million deaths could be averted in 23 high burden countries over 10 years if population-wide salt consumption is reduced by 15%.<sup>5</sup> “Simple changes in diet” are suggested to reduce salt intake, and the cost of intervention is calculated at \$0.4 (£0.24; €0.28) per person per year in low and lower middle income countries. These interventions are stated to be affordable in all countries.<sup>4</sup>

However, the reality is that salt reduction is not quite as simple as sometimes implied and the costs are rather more extensive. Indeed, the costs extend far beyond government, media campaigns, surveillance, and meetings (which formed the basis of WHO cost calculations)<sup>5</sup> and include costs for research, reformulation, marketing, new technology (all incurred by food manufacturers), and the costs of enforcement. A shared and balanced investment between the

public, private, and business sectors is vital for these interventions to be sustainable long term.

Although the UK, Japan, and Finland have had some success with national salt reduction programmes, it has required substantial effort and investment by both the public and private sectors.<sup>6</sup> The box summarises the UK experience, which is characterised by strong government health departments, effective non-governmental organisations with good media links, fully engaged consumers, and a means to convene and incrementally work with an organised food sector. It will be much more challenging to implement such programmes in developing countries.

Since the majority of food in developing countries is prepared at home, on the street, or by the informal food processing sector, even if manufacturers were to lower salt dramatically, the population's sodium burden would be only marginally affected. The 10 multinational companies comprising the International Food and Beverage Alliance (IFBA) sell only about 10% of all packaged foods in developing countries, so participation from small and medium sized enterprises is vital to success.<sup>7</sup> These smaller enterprises often do not have the resources or incentives to reformulate. Government has an important role here. For example, in the UK, bread contributes around 20% to dietary salt intake, and so the Food Standards Agency funded research to help the bread industry better understand how salt interacts with other elements in bread production.<sup>8</sup>

More often, however, publicly funded research into nutrition related health problems, including salt reduction, focuses on therapeutic rather than food based solutions—antihypertensive drugs rather than sodium lowering strategies, for example. Leading food companies invest in nutrition research, but for competitive reasons the results may not get disseminated to the numerous smaller companies with limited research budgets.

Several IFBA companies have set salt reduction targets for their global portfolio. PepsiCo pledged to reduce its salt levels in major food brands by 25% by 2015. Progress has been steady.<sup>9</sup> PepsiCo is also investigating ways to share its salt reduction technology and consumer insights with governments and food companies in developing countries in recognition of the challenges they face. A coalition of willing companies supported by governments and global non-governmental organisations with technical strength and community reach could overcome resource constraints and make the WHO target achievable. Such a coalition would ensure support for companies making positive changes. Without such support we could see positive changes being reversed. A recent example is Campbell slowing down its plans to almost halve sodium in soups because of weak public uptake.<sup>10</sup>

Price differential of alternatives to palm oil

Palm oil alternatives	Increase in cost/tonne compared with palm oil (\$)*
Corn oil	270
High oleic canola oil	226
Mid-oleic sunflower oil	689
High oleic sunflower oil	625
Rice bran oil	85
Rapeseed oil	332
Olive oil	1649

\*Average annual prices for crude oil taken from Oil World (www.oilworld.biz), Dow Jones, and Reuters on 21 July 2011.



Healthy crops

The broader and more sustainable nutrition changes called for by WHO require deeper involvement of food and agriculture systems.<sup>11</sup> The world faces major challenges to its ability to provide healthy food to all. The recent UK Foresight report on the future of food and farming painted a stark picture of a food system that is broken.<sup>12</sup> Comprehensive failure of our global food system has created a paradox of extremes—hunger in the presence of obesity as well as many examples of deteriorating natural environments associated with soaring demand in Asia for grain intense sources of animal protein and increases in the cultivation of palm oil. Both are threats to heart disease and the environment.

We eat what is grown; the more we eat, the more farmers grow. Encouraging farmers to increase provision of a wider range of healthy foods and oils requires a shift in their incentives and in consumer demand.

A recent review in the US by the Better Produce Foundation showed how US government funding across research, policy, and procurement significantly favours eating meat over fruits and vegetables.<sup>13</sup> For example, in 2008-9 meat received 54.7% of subsidy spending, but constituted only 8.3% of recommended daily intake in US dietary guidelines. Fruits and vegetables received 9.8% of subsidies, yet they comprise 41.4% of recommended intake. Meat is also the leading food group recipient of US Department of Agriculture research spending, receiving 53.6%. By contrast, fruits and vegetables receive only 19.8% of the department's total spending when subsidies, research, nutrition assistance programmes, and agency commodity administrative costs are included. The global picture is probably similar and contributes to government agriculture policies that are rarely aligned with desired nutrition goals.

I focus below on the importance of shifting to healthier oils as an example of changes we need within agriculture. In response to the damaging effects of trans and saturated fats on cardiovascular disease, the public health sector has set goals and recommendations for the quality and quantity of fat consumption. WHO's technical working group on non-communicable disease targets calls for "Total elimination of partially hydrogenated vegetable oil (PHVO) from the food supply by 2020; and no marketing of foods high in saturated fats, trans-fatty acids, free sugars, or salt to children."<sup>14</sup>

The huge rise in production and consumption of palm oil is concerning because of its high saturated fat content.<sup>1-3</sup> Palm oil contains 45% saturated fat compared with 10% in sunflower oil and 6% in rapeseed oil.<sup>3</sup> However, its comparatively high shelf life and low price, mean that palm oil is predominant in food production, and global food



THOMAS PICKARD/AURORA/CORBIS

## Since the majority of food in developing countries is prepared at home, on the street, even if manufacturers were to lower salt dramatically, the population's sodium burden would be only marginally affected

consumption of palm oil has nearly quadrupled over the past 20 years.<sup>15</sup>

Use of healthier oils could significantly reduce the amount of trans and saturated fats in prepared food. However, the price differential with healthier oils makes this difficult (table). Planned changes in agriculture are therefore required.<sup>16</sup> Incentives for farmers must match incentives for consumers in order to have a virtuous circle of consumer demand where farmers supply healthy, affordable food. Upstream decisions on oil production can help make the healthy choice the easy choice for both consumers and farmers.<sup>17</sup>

The environmental effects of consuming palm oil are rarely linked to health consequences.<sup>18</sup> Although oil palm has the highest yield per hectare of any major oilseed crop and provides much needed employment in many developing countries, its cultivation contributes greatly to tropical deforestation and the associated release of climate warming gases, soil and water pollution, and displacement of endangered species and local communities. The health, agriculture, and environmental policy sectors therefore need to work together to find shared approaches to balance heart healthy food production with environmentally sustainable development.<sup>19</sup>

Food companies also have a role. In 2009, PepsiCo and the Inter-American Development Bank partnered to support small shareholder production of sunflower oilseed in Mexico, under environmentally sustainable conditions. This partnership supports a sustainable market of sunflower oil instead of palm oil for use in PepsiCo's food products, creates economic opportunities for local farmers through contract based agriculture, and coordinates environmental sustainability with the production of a heart healthy oil.<sup>20</sup>

The forthcoming UN high level meeting is a perfect forum to develop a set of actions aimed at redesigning the food system to make meeting the optimal nutrition needs of all its first priority. Health experts are well placed to identify the

importance of changes in diet and in specifying an optimal diet to reduce non-communicable disease and hunger. However, their prescriptions will succeed only when farmers, food and agricultural companies, non-government agencies, and parts of the UN that have yet to be fully engaged in the high level meeting are brought into the process.<sup>21</sup> This includes the Food and Agriculture Organization and the World Bank. It will take the combined expertise and perspectives of all of these groups to find solutions to the growing global challenges of non-communicable diseases.

**Derek Yach** senior vice president of global health and agriculture policy, PepsiCo, 700 Anderson Hill Road, Purchase, New York, United States  
derek.yach@pepsico.com

Accepted: 3 August 2011

**Contributors and sources:** DY has played a leading global role in many aspects of non-communicable diseases within the private, public, and foundation world for the last two decades. He has headed global health at the Rockefeller Foundation, been professor of global health at Yale University, and is a former executive director of WHO, where he led development of WHO's Framework Convention on Tobacco Control, the Global Strategy on Diet and Physical Activity and WHO's World Health Report on Mental Health. DY established the Centre for Epidemiological Research at the South African Medical Research Council. He serves on advisory boards of the Clinton Global Initiative, the Chicago Council on International Affairs' Agricultural Development Initiative, the World Economic Forum's New Vision for Agriculture, the National Institutes of Health's Fogarty International Centre, and the World Food Program USA.

**Competing interests:** The author has completed the ICJME unified disclosure form at [www.icjme.org/coi\\_disclosure.pdf](http://www.icjme.org/coi_disclosure.pdf) (available on request from him) and declares no support from any organisation for the submitted work; DY works for PepsiCo. He was a member of the Institute of Medicine cardiovascular disease committee and has an advisory role at the Fogarty International Center at the National Institutes of Health.

**Provenance and peer review:** Not commissioned; externally peer reviewed.

- 1 WHO. Diet, nutrition and the prevention of chronic diseases. WHO Technical Report Series, No 916, 2003. [http://whqlibdoc.who.int/trs/WHO\\_TRS\\_916.pdf](http://whqlibdoc.who.int/trs/WHO_TRS_916.pdf).
- 2 WHO. Global strategy on diet, physical activity and health. 2004. [www.who.int/dietphysicalactivity/publications/recsmarketing/en/index.html](http://www.who.int/dietphysicalactivity/publications/recsmarketing/en/index.html).
- 3 Institute of Medicine. Promoting cardiovascular health in the developing world: a critical challenge to achieve global health. Institute of Medicine, 2010.

- 4 Beaglehole R, Bonita R, Horton R, Adams C, Alleyne G, Asaria P, et al. Priority actions for the non-communicable disease crisis. *Lancet* 2011;377:1438-47.
- 5 Asaria O, Chisholm D, Mathers C, Ezzati M, Beaglehole R. Chronic disease prevention: health effects and financial costs of strategies to reduce salt intake and control tobacco use. *Lancet* 2007;370:2044-53.
- 6 He FJ, MacGregor GA. Reducing population salt intake worldwide: from evidence to implementation. *Prog Cardiovasc Dis* 2010;52:363-82.
- 7 Alexander E, Yach D, Mensah GA. Major multinational food and beverage companies and informal sector contributions to global food consumption: implications for nutrition policy. *Global Health* 2011;7:26 [Epub ahead of print].
- 8 Speirs C, Bertolozzi R, Sahi S, Vanbleus C, Johnston K, Hill S, et al. Salt reduction in premium bread: understanding the influence of physical and chemical properties on stickiness, collapse and open texture. 2011. [www.foodbase.org.uk/results.php?f\\_report\\_id=364](http://www.foodbase.org.uk/results.php?f_report_id=364).
- 9 PepsiCo. 2010 annual report. [www.pepsico.com/Download/PepsiCo\\_Annual\\_Report\\_2010\\_Full\\_Annual\\_Report.pdf](http://www.pepsico.com/Download/PepsiCo_Annual_Report_2010_Full_Annual_Report.pdf).
- 10 Geller M. Campbell adds salt to spur soup sales. Reuters 2011. [www.reuters.com/article/2011/07/12/us-campbellsoup-idUSTR76B2V320110712](http://www.reuters.com/article/2011/07/12/us-campbellsoup-idUSTR76B2V320110712).
- 11 Nestle M. Deconstructing the USDA's new food plate. 2 June 2011. [www.foodpolitics.com/2011/06/deconstructing-the-usdas-new-food-plate/](http://www.foodpolitics.com/2011/06/deconstructing-the-usdas-new-food-plate/).
- 12 Foresight. The future of food and farming final project report. Government Office for Science, 2011. [www.bis.gov.uk/assets/bispartners/foresight/docs/food-and-farming/11-546-future-of-food-and-farming-report.pdf](http://www.bis.gov.uk/assets/bispartners/foresight/docs/food-and-farming/11-546-future-of-food-and-farming-report.pdf).
- 13 Produce for Better Health Foundation. 2010 GAP analysis—the federal fruit and vegetable consumption challenge: how federal spending falls short of addressing public health needs. [www.pbhfoundation.org/pdfs/about/res/pbh\\_res/2010gapanalysis.pdf](http://www.pbhfoundation.org/pdfs/about/res/pbh_res/2010gapanalysis.pdf).
- 14 WHO. Targets to monitor progress in reducing the burden of noncommunicable diseases. 2011. [www.who.int/nmh/events/moscow\\_ncds\\_2011/twg\\_targets\\_to\\_monitor\\_progress\\_reducing\\_ncds.pdf](http://www.who.int/nmh/events/moscow_ncds_2011/twg_targets_to_monitor_progress_reducing_ncds.pdf).
- 15 Food and Agriculture Organization of the United Nations. FAOSTAT. 27 July, 2011. <http://faostat.fao.org/site/636/DesktopDefault.aspx?PageID=636#ancor>.
- 16 Adeyi O, Smith O, Robles S. Public policy and the challenge of chronic noncommunicable diseases. World Bank, 2007:99.
- 17 Mozaffarian D, Appel LJ, Van Horn L. Components of a cardioprotective diet: new insights. *Circulation* 2011;123:2870-91.
- 18 Block B. Global palm oil demand fueling deforestation. Worldwatch Institute. [www.worldwatch.org/node/6059](http://www.worldwatch.org/node/6059).
- 19 Von Schirmding Y, Yach D. Unhealthy consumption threatens sustainable development. *Rev Saude Publica* 2002;36:379-82.
- 20 Acharya T, Daniel B, Sauerhaft B, Yach D. The role of the food industry in strengthening links between agriculture, nutrition and environmental sustainability. *Global Policy*, 2010. <http://onlinelibrary.wiley.com/doi/10.1111/j.1758-5899.2010.00051.x/pdf>.
- 21 Nishtar S. Time for a global partnership on non-communicable diseases. *Lancet* 2007;370:1887-8.

Cite this as: *BMJ* 2011;343:d5097