



Can the Food Industry Help Tackle the Growing Global Burden of Undernutrition?

“If we are to successfully combat global undernutrition, efforts must be sustained by multiple stakeholders from various sectors. We believe that trust is built through industry’s demonstration of practical actions that improve health, and recognition of these actions by governments and nongovernmental organizations.”

Derek Yach, MBChB, MPH,
Zoë A. Feldman, MPH,
Dondeena G. Bradley, PhD, and
Mehmood Khan, MBChB

HUNGER AND UNDERNUTRITION remain major threats to global health. The solutions required will be complex and long term and should include stronger private–public collaboration. We identify eight specific actions by food companies that could contribute to reducing hunger worldwide. These include investing in agriculture, especially local smallholders; expanding use of corporations’ core capabilities in distribution and quality control; greater support for fortification of staples and commonly consumed nutritious foods and beverages; expansion of the portfolio of foods currently available for complementary feeding in settings of acute and chronic undernutrition; cocreation of new and innovative social business models to help combat the global burden of undernutrition; investment in the development of nutrition science capacity, especially in developing nations; innovation of product reformulation aimed at developing low-cost nutritious

foods for all markets; and committed advocacy by multinational food and beverage corporations for nutrition-friendly trade policies.

INCREASED GLOBAL ATTENTION TO UNDERNUTRITION

The number of people suffering from severe undernutrition and food insecurity recently reached one billion, and most of those affected live in developing countries.¹ Concerns about hunger dominated debates during the January 2009 United Nations meeting in Madrid² and during the April 2009 G8 Summit in Italy,³ where world leaders called for “enhanced support including investments in agricultural science, research, technology, education, extension services, and innovation.”⁴

In 2008 the results from newly published cohort studies confirmed that early stunting and micronutrient deficiencies lead to

permanent intellectual and developmental outcomes and that intimate links exist between early stunting and the later onset of diabetes and cardiovascular diseases. The need for action has never been stronger, as shown in a recent Institute of Medicine report on promoting cardiovascular health in the developing world, which emphasized early nutritional origins of cardiovascular disease.⁵

FOOD INDUSTRY AND GLOBAL NUTRITION CHALLENGES

The food industry has a vital role to play alongside governments, nongovernmental organizations, and academics in addressing nutrition. On May 13, 2008, the CEOs from 10 multinational food and nonalcoholic beverage companies and one major national company (with combined annual sales revenues totaling more than US\$350

Continued on page 976

Continued from page 974

billion⁶) signed a Global Commitment to Action in support of implementing the World Health Organization's Strategy on Diet, Physical Activity and Health.⁷ In addition to addressing chronic diseases, the CEOs also committed their companies to advance work related to undernutrition.

Though the last decade has seen the flourishing of public-private partnerships between pharmaceutical companies and the public sector—which has led to the development of and access to essential drugs and vaccines for many other infectious diseases⁸—truly influential private-public partnerships between the food industry and governments have yet to develop. This lack of partnership hampers progress in reducing world hunger.

CHANGING ECONOMIC REALITIES AND NEW BUSINESS PRACTICES

The economic and financial crisis is stimulating discussion about the future role of business in relation to major social problems like hunger. There is growing acceptance of the need to develop new business models that simultaneously generate financial profits critical for long-term growth and improve both population health and the environment—PepsiCo CEO Indra Nooyi terms this “performance with purpose.”⁹ Bill Gates, Chairman of Microsoft and Co-Chair of the Bill and Melinda Gates Foundation, calls it “creative capitalism,”¹⁰ and Muhammad Yunus, the founder of Grameen Bank, refers to the evolution of “social business.”¹¹ This mindset creates

the impetus for food companies to address hunger. It goes beyond the current focus of philanthropy as the solution to the crisis of urgent hunger. We highlight eight actions by food companies that we believe will have a strong impact on addressing global hunger, and we note that on March 22, 2010, PepsiCo officially announced its global goals and commitments around a number of different “action items,” including “investing in business and research and development to expand offerings of more affordable, nutritionally relevant products for underserved and lower-income communities.”¹²

Invest in Agriculture

This is crucial to the long-term viability of the world's food supply, as well as to help improve the nutritional status of the very poorest individuals.^{13,14} Business could strengthen food value chains by providing higher-quality seed and microcredit to farmers, improving the affordability of fertilizer and efficiency of irrigation systems, and by shifting to rely more on local sourcing of foods.^{15,16} The World Economic Forum recently highlighted successes underway in this field.^{2,16} Importantly, action aimed at the poorest billion will be led by governments using new funding mechanisms,¹⁷ but should be complimented by corporate philanthropy.

Expanded Use of Corporate Distribution Capabilities

A significant proportion of emergency food aid fails to reach the people it is intended to help. Further, uneven attention to quality control undermines health gains. This has already been reported in an aflatoxin

contamination of peanut-based food.¹⁸ Global food and beverage companies are known for having a uniquely wide and deep reach into geographic regions, and expansion of this core distribution capability could bring nutrition to those most in need.¹⁹ Companies have started to leverage use of their distribution expertise to support infectious disease control.²⁰ Similar approaches within the food and nutrition arena could greatly improve the efficiency of major nongovernmental organizations involved in food aid. The PepsiCo Foundation has recently allocated a grant that draws upon their retired distribution experts to strengthen distribution expertise within the World Food Program.

Greater Support for Food and Beverage Fortification

Micronutrient deficiencies affect 2 billion people worldwide and contribute to infections, birth defects, and impaired physical and mental development.²¹ Multinational food and beverage companies play a meaningful role in supporting fortification programs.^{22–25} Many of these fortification efforts have been developed or supported by the Global Alliance for Improved Nutrition, the leading global private-public partnership devoted to improving nutrition.²⁶ The Global Alliance for Improved Nutrition has helped encourage development of fortification partnerships involving corporations, nongovernmental organizations, and governments that now reach almost 650 million people worldwide. Food companies could extend this progress through their reach to 4 billion consumers.

Innovation and Expansion of Foods for Undernutrition

Stunting affects about 178 million children worldwide.²⁷ Recent reviews have stressed the urgency of interventions to address the needs of children younger than two years.^{28–30} This window of opportunity closes rapidly. In an ideal world, exclusive breastfeeding, the most cost-effective intervention for nutrition, would be universally practiced for at least the first six months of a child's life and be followed by a smooth transition to healthy, nutritious, and safe weaning foods. The reality, however, is that breastfeeding frequently ends within the first month of life and is replaced by less optimal foods. Neither the WHO recommendations on infant and child feeding nor the WHO-UNICEF Code on the Marketing of Breastmilk Substitutes³¹ are adequately implemented worldwide. The consequences are seen in the dramatic decline in nutrition status during early weaning. Josette Sheeran, executive director of the United Nations World Food Programme, believes that there is need to create incentives for food companies to develop a wider range of healthy weaning foods, especially for populations suffering from acute and chronic malnutrition, and do so in ways in which breastfeeding promotion would be enhanced.³⁰

There are many initiatives underway to develop new products, led by Nutriset SA and Valid International. Nutriset produces Plumpy'Nut, a fortified ready-to-use therapeutic food (RUTF) for extremely malnourished children.³² However, the global

Continued on page 978

Continued from page 976

demand for a high-quality, safe, and nutritious RUTF is not being met. Food companies could play a more decisive role in this field if incentives were better aligned with health gains.

Innovative Social Business Models

According to Muhammad Yunus, who, along with his development enterprise Grameen Bank, won the 2006 Nobel Peace Prize,³³ the purpose of a social business is to address and solve social problems, not to make money for its investors. The sustainable business model allows profits to remain with the company. Profits are used to expand the company's reach, improve the quality of the product or service it provides, and design methods to lower the cost of the product or service. If the efficiency, competitiveness, and dynamism of business could be harnessed to deal with specific social problems, significant improvements could be made in global health and nutrition.¹¹

Yunus's ideas come to life through a unique partnership between Grameen Bank and Groupe Danone. Danone, based in France, produces fresh dairy products, biscuits, snacks, and beverages. Its partnership with Grameen Bank has led to the development of a social business model that delivers desperately needed nutrients to severely undernourished individuals in Bangladesh.³⁴ Several companies are now considering developing similar models and, in doing so, will start matching their investment with innovative new products and novel social business models.

Invest in Development of Nutrition Science Capacity

Nutrition science capacity is weak in developing countries. We reviewed full-length publications in the top 10 leading nutrition and general medical journals (based on ISI citation indexes) by country of the first author, nutrition topic, and year from 1991 to 2007 (unpublished data). For the last two years, 83% of a total 1716 articles were on overweight or obesity, and only approximately 5% of first authors for any nutrition category were from India or China—two countries that comprise 40% of the total world population. Only one article came from all African countries combined. There is an urgent need for major donors from the private sector, foundations, and the development community to invest in a twenty-first century approach to nutrition science.³⁵ Such investment would likely yield greater attention to the field, innovation emanating from the countries in greatest need, leverage of food company research capabilities for public good, and more science-based nutrition policies. Initiatives now underway to address these capacity needs deserve strong support from governments, food companies, and foundations.

Product Reformulation of Low-Cost Nutritious Foods

Increases in food prices are having severe impacts on the nutritional status of global populations in both developed and developing nations. The dramatic rise of the past 12 months in the cost of food poses a threat to global food and nutrition security and “creates a host of humanitarian, human rights, socioeconomic, environmental,

developmental, political and security-related challenges.”^{36(p4)}

The World Bank estimates that the double or greater increase in food prices between 2006 and 2008 pushed 100 million people into poverty worldwide.¹⁵ In the developed economy of the United States, rising food prices have created a shortfall between maximum food stamp benefits and the cost of a nutritionally adequate diet.³⁷ As of March 2009, the number of food stamp recipients in the United States reached a record 31.8 million individuals, with over 700 000 applying in a single month because of the economic recession.³⁸ Economists forecast that food stamps will cost at least \$51 billion for fiscal year 2009, a \$10 billion increase from fiscal year 2008. Food companies in all countries have a role to play in supporting improved access to nutritious foods and drinks.

Advocacy for Nutrition-Friendly Trade Policies

The need to address agricultural subsidies as part of the next world trade roundtable is supported by major food companies and leaders in public health.³⁹ The impact of changes to the antiquated system could create major gains for farmers in developing countries that, if well-managed, could boost food production and reduce hunger in developing countries over the long term. At a recent G8 Summit in Italy, world leaders called for increasing public and private investment in agriculture.³ At PepsiCo, our US Farm Subsidy Policy supports reform of current policies.¹² We support key producer groups, such as oat and sunflower farmers, in their efforts to rebalance subsidies.

CONCLUSIONS

If we are to successfully combat global undernutrition, efforts must be sustained by multiple stakeholders from various sectors. We believe that trust is built through industry's demonstration of practical actions that improve health, and recognition of these actions by governments and nongovernmental organizations. Only through new and innovative public-private sector partnerships can we truly make a difference.⁴⁰ ■

About the Authors

Derek Yach is with Global Health Policy, PepsiCo, Purchase, NY. Zoë A. Feldman is a paid consultant for Global Health Policy and Global Nutrition, PepsiCo, Purchase, NY. Dondeena G. Bradley is with Global Nutrition, PepsiCo, Purchase, NY. Mehmood Khan is with PepsiCo, Purchase, NY.

Correspondence should be sent to Zoë A. Feldman, MPH, PepsiCo Global Nutrition and Health Policy, 700 Anderson Hill Road, Purchase, NY 10577 (e-mail: zoe.feldman@pepsi.com). Reprints can be ordered at <http://www.ajph.org> by clicking the “Reprints/Eprints” link.

This article was accepted June 23, 2009.

doi:10.2105/AJPH.2009.174359

Note. The views expressed here represent the personal views of the authors and not necessarily the views of PepsiCo, Inc.

Contributors

D. Yach and Z. A. Feldman conceptualized, designed, researched, wrote, and edited drafts of the article. D. G. Bradley edited and reviewed drafts of the article. M. Khan reviewed and approved drafts.

Acknowledgements

D. Yach is senior vice president of Global Health Policy, and Z. A. Feldman is a full-time paid consultant for Global Health Policy and Global Nutrition, PepsiCo. D. G. Bradley is vice president of Global Nutrition, PepsiCo. M. Khan is chief scientific officer at PepsiCo.

References

1. Lean G. Year of the hungry: 1,000,000,000 afflicted. *The Independent*. December 28, 2008. Available at: <http://www.independent.co.uk/news/>

Continued on page 980

Continued from page 978

- world/politics/year-of-the-hungry-1000000000-afflicted-1213843.html. Accessed January 8, 2009.
2. Bartiromo M. World economic brainstorming: what happened to the global economy? Geneva, Switzerland: World Economic Forum; 2009. Available at: http://www.weforum.org/en/knowledge/Events/2009/AnnualMeeting/KN_SESS_SUMM_27146?url=/en/knowledge/Events/2009/AnnualMeeting/KN_SESS_SUMM_27146. Accessed January 28, 2009.
 3. United Nations High Level Task Force on the Global Food Security Crisis. Progress report, April 2008–October 2009. Available at: [http://www.g8italia2009.it/static/G8_Allegato/G8%20Health%20Experts%20Report%20and%20Accountability%20%2012%20%202009-%20FINAL\[1\],0.pdf](http://www.g8italia2009.it/static/G8_Allegato/G8%20Health%20Experts%20Report%20and%20Accountability%20%2012%20%202009-%20FINAL[1],0.pdf). Accessed January 28, 2009.
 4. Blas J. G8 Admits losing battle against hunger. *The Financial Times*. April 20, 2009. Available at: <http://www.ft.com/cms/s/0/3db36d9c-2da7-11de-9eba-00144feabdc0.html>. Accessed April 20, 2009.
 5. Fuster B, Kelly BB. *Promoting cardiovascular health in the developing world: A critical challenge to achieve global health*. Washington, DC: National Academies Press; 2010.
 6. Global 500. *Fortune*. 2008; 14. Available at: <http://money.cnn.com/magazines/fortune/global500/2009>. Accessed March 23, 2010.
 7. World Health Organization. Nutrition for health and development programme Web site. Available at: <http://www.who.int/nutrition/en/index.html>. Accessed January 28, 2009.
 8. International Federation of Pharmaceutical Manufacturers and Associations. Status report: pharmaceutical industry research and development for diseases of the developing world—2008. Available at: http://www.ifpma.org/pdf/20081114Status_RnD_for_DDW_19Nov08.pdf. Accessed January 26, 2009.
 9. PepsiCo. PepsiCo 2007 annual report: performance with purpose. Available at: http://media.corporate-ir.net/media_files/irol/78/78265/2007_AR.pdf. Accessed January 27, 2009.
 10. Gates B. Making capitalism more creative. *Time*. July 31, 2008. Available at: <http://www.time.com/time/business/article/0,8599,1828069,00.html>. Accessed January 29, 2009.
 11. Yunus MA. Social business. Available at: <http://www.muhammadyunus.org/Social-Business/social-business>. Published 2008. Accessed January 12, 2009.
 12. PepsiCo. PepsiCo commitments Web site. Available at: <http://www.pepsico.com/annual09/goalsandcommitments/index.html>. Accessed March 23, 2010.
 13. Nugent RA. Contributions and constraints from agriculture in achieving a nutrition strategy to prevent chronic diseases. *Asia Pac J Clin Nutr*. 2002; 11(suppl 9):s767–s771.
 14. Sachs JD. A breakthrough against hunger. *Guatemala Times*. Jan 20, 2009. Available at: <http://www.guatemalaitimes.com/opinion/syndicated-2/economics-and-justice/729-a-breakthrough-against-hunger.html>. Accessed March 22, 2010.
 15. World Bank. *World Development Report of 2008: Agriculture for Development*. Washington, DC: World Bank; 2008.
 16. Yach D. The role of business in addressing the long-term implications of the current food crisis. *Global Health*. 2008;4:12.
 17. Ideas Foundation. Smallholder food production and poverty reduction. January 26, 2009. Available at: http://www.earth.columbia.edu/sitefiles/file/Issues/Smallholder%20Food%20Production%20and%20Poverty%20Reduction_26%20January%202009.pdf. Accessed January 28, 2009.
 18. Paul Wild C, Montesano R. An order of Plumpy'nut, hold the aflatoxins. *Science*. 2008;322(5907):1464–1465.
 19. Enserink M. Global health: malaria drugs, the Coca-Cola way. *Science*. 2008;322(5905):1174.
 20. Nets for Life Africa Web site. Available at: <http://www.netsforlifeafrica.org>. Accessed January 27, 2009.
 21. World Health Organization. What is the recommended food for children in their very early years? Available at: <http://www.who.int/features/qa/57/en/index.html>. Published March 19, 2007. Accessed January 28, 2009.
 22. Nestle. Nestle (Malaysia) Berhad sustains double digit growth for first nine months of 2008 [news release]. Selangor, Malaysia: Nestle (Malaysia) Berhad; October 30, 2008. Available at: http://www.nestle.com.my/NR/rdonlyres/0C4C1181-ABBA-4DF9-8B68-AF1D7DB6F769/0/PR_30Oct08EN.pdf. Accessed January 29, 2009.
 23. Schauer C, Zlotkin SH. Home-fortification with micronutrient sprinkles—a new approach for the prevention and treatment of nutritional anemias. *Paediatr Child Health*. 2003;8(2):87–90.
 24. Unilever. Annapurna iodized salt Web site. Available at: http://www.unilever.com/careers/insideunilever/oursuccessandchallenges/annapurna-iodised-salt/?WT.LHNAV=Annapurna_iodised_salt. Accessed March 21, 2010.
 25. Zlotkin SH, et al. Micronutrient sprinkles to control childhood anaemia. *PLoS Medicine*. 2005;2(1):e1.
 26. Global Alliance for Improved Nutrition Web site. Available at: <http://www.gainhealth.org>. Accessed January 14, 2009.
 27. Lawn JE, Cousens S, Zupan J; Lancet Neonatal Survival Steering Team. 4 million neonatal deaths: when? Where? Why? *Lancet*. 2005;365(9462):891–900.
 28. Sheeran J. Innovating against hunger and undernutrition. *Global Forum Update Res Health* 2008;5:174–176.
 29. World Health Organization. *Preventing and Controlling Micronutrient Deficiencies in Populations Affected by an Emergency*. Geneva, Switzerland: World Health Organization; 2007. Joint statement by the World Health Organization, the World Food Programme, and the United Nations Children's Fund.
 30. Horton R. Maternal and child undernutrition: an urgent opportunity. *Lancet*. 2008;371(9608):179–185.
 31. World Health Organization. International code of marketing of breast-milk substitutes. Geneva, Switzerland: World Health Organization; 1981. Available at: http://www.who.int/nutrition/publications/code_english.pdf. Accessed January 28, 2009.
 32. Enserink M. The peanut butter debate. *Science*. 2008;322(5898):36–38.
 33. Nobel Prize Web site. Available at: <http://www.nobelprize.org>. Accessed January 27, 2009.
 34. Bekefi T. *Business as a Partner in Tackling Micronutrient Deficiency: Lessons in Multisector Partnership*. Cambridge, MA: John F. Kennedy School of Government, Harvard University; 2006. Corporate Social Responsibility Initiative Report No. 7.
 35. Feasting and fasting [editorial]. *Nature*. 2008;454(7200):1.
 36. Office for the Coordination of Humanitarian Affairs, Humanitarian Appeal. *Consolidated Appeal for West Africa 2009*. New York, NY: Office for the Coordination of Humanitarian Affairs, United Nations; 2008.
 37. Hanson K, Andrews M. *Rising Food Prices Take a Bite Out of Food Stamp Benefits*. US Washington, DC: Dept of Agriculture, Economic Research Service; 2008. Economic Information Bulletin 41.
 38. Abbott C. Food stamp enrollment jumps to record 31.8 million. Reuters. March 5, 2009. Available at: <http://www.reuters.com/article/domesticNews/idUSTRE52478R20090305>. Accessed April 20, 2009.
 39. MacDonald R, Horton R. Trade and health: time for the health sector to get involved. *Lancet*. 2009;373(9660):273–274.
 40. Bradley D. Beyond product: the private sector drive to perform with the purpose of alleviating global undernutrition. *Global Forum Update Res Health*. 2008;5:171–173.