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DINNER/DISCUSSION SUMMARY

Food security – the global balance of supply and demand for food

Held at The Royal Society on 15th October, 2008

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Chair: **The Earl of Selborne KBE FRS**
Chairman, The Foundation for Science and Technology

Speakers: **Professor John Beddington CMG FRS**
Chief Scientific Adviser to the UK Government, Government Office of Science, Department for Innovation, Universities and Skills
The Lord Haskins
Former Chairman, Northern Foods
Dr Derek Byerlee
Co-author World Development Report: Agriculture for Development, World Bank, 2008

PROFESSOR BEDDINGTON said that food security could not be considered in isolation from the interlocking factors of poverty, population growth, urbanization, water supply energy use and climate change. If poverty were to be relieved, not only did food have to be produced, but the poor must have sufficient resources to buy it. Poverty and population increase and many of the other problems were particularly severe in Africa and Asia. The consequences of population growth, urbanisation (47 per cent in cities now, 60 per cent in 2030), changes in diet (greater demand, in particular, for protein found in dairy products, fish and meat) must be faced. For supply to match, agricultural productivity, energy and water use, and climate change must all be tackled together. Areas of water shortage and stress would increase by 50 per cent by 2030; energy demand by 50 per cent by 2030; both largely in the developing world, which would also be the part of the globe where the risks to food production of major flooding in the mega estuaries of the Nile, Ganges and Mekong were greatest. The dangers of uncontrollable immigration and violence were obvious. Agricultural productivity could be significantly raised by better and more widespread use of biotechnology, even without GMO, although, in the long run, that would be essential. The key question which policy makers must now face was, by 2030, how could 9 billion people be fed? The answer was, only if water supply was increased, energy use curtailed and supply increased, agricultural productivity raised and adaptation to climate change built in to all policies.

LORD HASKINS said that demands for security were often excuses for seeking greater protection. These must be resisted. History showed that free trade in goods lead to higher production and greater efficiency. This leads to prosperity, and, in the case of food, more people getting better nourishment. The 40 years of protectionism in Ireland, for example, showed disastrous results. The UK must not be looked at in isolation: it was part of the EU and the protectionist policies of the EU must be watered down. Already there had been some improvement, but it was important that by 2013 through international legislation, remaining barriers to free trade were removed (although the US would have to play its part). Of course, this would affect UK farmers, particularly those on marginal land, but there would be no problem on food security. Global food security would be enhanced if a WTO settlement where agreed, and EU competitiveness preserved if means were found of dealing with price volatility and burden some regulation. But the real problems lay in the developing world, where increased productivity could only come from changing the traditional small holding culture and developing large farms which could invest in new technologies and justify major improvements to infrastructure. Slowing population growth and stabilizing urbanisation were also vital. He was greatly concerned by the activities of a number of NGOs who sought to preserve traditional land use patterns and practices. They were condemning developing countries to stagnation.

DR BYERLEE stressed the scale of rural poverty and hunger from which almost a billion people suffer. The problem would get worse as world grain prices increased (doubled since 2006). The poor spent 60 per cent of their income on food; doubling prices threatens survival of the poorest and most vulnerable). Global food supply meant more efficiently using water for agriculture (notably in Asia); reversing the slowing of agricultural productivity (productivity is especially low in Africa); ensuring sufficient energy to supply fertilizers at affordable prices; and factoring in the effects of climate change in tropical countries. On the demand side, urbanisation and changing diet preferences would lead to demands not only for livestock-based proteins, but also increased grain for animal feed stocks. The increased demand is being affected by the use of land for growing grain for biofuels – 40 per cent of the increased demand for wheat and coarse grains over the next decade will come from biofuels. unless action is

taken, there would be likely to be a reversal of the long term downtrend in food prices and more frequent shocks and crises from climate change, water shortages, oil price spikes and other factors. The world needed technological and institutional innovations to drive forward productivity; substantial investment to deal with resource constraints; an wider understanding of the role of GMOs ; and much more efficient use of fossil energy. Global policies should aim at avoiding doing harm; reforming damaging subsidies (notably to biofuel); supporting emergency responses; investing in global public goods (R&D);
and ensure agriculture is a central part of foreign assistance.

A major concern in the following discussion was the widespread anti-science bias in the public mind and in the media, leading to a slow take up of new technologies, a nostalgic view of traditional and inefficient practices, and a shortage of courses and students taking agricultural science subjects. It was an oversimplification to see sharp divisions between pro and anti science groups; it was more a matter of attending to evidence. Everyone had a belief system, and that could well lead to one preferring certain modes of life; but the danger came when the belief system forced one to ignore or downplay evidence. There was sharp criticism from some speakers of the role of NGOs, who preached organic farming to Africans and demonized large scale farming. This completely ignored the evidence that many countries could only be lifted out of poverty if they accepted that population increase, changing diets and urbanization meant that the past could not necessarily be a guide to the future. Large scale farming was not the answer in every society - it was not necessary, for example, in Asia, where better irrigation and improved seeds and practices in China and India had led to higher productivity within the traditional farming structure - but use of technology and science was.

The opposition to the use of GM crops was a notable example of the scientific illiteracy of many NGOs, who ignored the fact that they were widely planted already, and no damage had been recorded. It was a great pity that a recent report, with some authoritative authors, had not been more explicit in urging the use of GMOs. Of course, GMOs must be used with care, and not all new products should be brought into use. A further example of anti science bias was the EU directive on pesticides. This seemed to have been produced with no evidence about the effect on food production that banning many pesticides would have: if the amendments that the European Parliament wanted were adopted, the effects would seriously damage EU food production. The reduction of agricultural science courses was worrying, but why would students want to do agricultural sciences? Were they likely to lead to remunerative and fulfilling careers? What would motivate people to do such courses, and just as important, retain the motivation, when on the land, to continue with technological advances? In many ways, rural life was harder than urban life, and financial return less secure. It would be even more demotivating if students felt that their efforts would be hampered by a public and media which deliberately turned its back on present and future problems. There was a role here for social scientists to look at the incentives that could spur understanding and greater take up of new technologies in agriculture. This was particularly true in Sub-Saharan Africa, where R&D on agriculture support had declined, as had donor aid to the sector. This was very damaging, as agricultural growth can be especially effective in generating income for the poor. History plays its part in this productivity failure (low investment in research on food crops), but crucial factors are also a decline in soil fertility, and weak governance.

Speakers were also concerned about the pressure of economic issues on environmental concerns. Politicians seemed to be making the assumption that economic issues must mean that less importance needed to be given to environmental issues. Although, for the present, the R&D base in the UK was mobilized, there was a reluctance to drive forward measures which would link environmental and economic issues. There were ways in which this could be done: the Stern report was a good example; it linked the costs of reducing GHGs now rather than later, to economic advantage. Similar techniques could be used for example, on water use. It would be cheaper to reduce use now than spend on major works later. In the UK we can help sustain biodiversity, support seed banks and plant science, in particular developing skills in biogenetics.

Speakers also stressed the global nature of agricultural problems. Diseases spread from animals to humans and across continents - “Pestilence”. The UK would not be immune from a condition that started with animals in sub-Saharan Africa. But it was not only in the raw material that global damage can be caused - consider the fallout from the Chinese milk issue. Poverty and malnutrition not only affected the developing countries, but led to widespread immigration patterns, which disrupted other societies, and, when exacerbated by disasters such as floods or storms, could lead to war, which would affect us all. It was crucial for the developing worlds to be given, and be able to accept the developed worlds’ technology. This can only be done if the evidence is produced that it works, and those who cling to belief systems which discount changes, are forced to look at the evidence.

Sir Geoffrey Chipperfield KCB

Presentations from the meeting are on the Foundation web site at www.foundation.org.uk

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