Global food system must be transformed 'on industrial revolution scale'
The existing food system fails half the people on the planet, and needs radical change if world is to feed itself, report warns

The existing global food system is failing half the people on Earth, the report warns. Photograph: Martin Godwin

The world will not be able to feed itself without destroying the planet unless a transformation on the scale of the industrial revolution takes place, a major government report has concluded.

The existing food system is failing half of the people on Earth, the report finds, with 1 billion going hungry, 1 billion lacking crucial vitamins and minerals from their diet and another billion "substantially overconsuming", leading to obesity epidemics. Stresses on the food system are reflected in price spikes but the cost of food will rise sharply in coming decades, the report adds, which will increase the risk of conflict and migration.

"The global food system is spectacularly bad at tackling hunger or at holding itself to account," said Lawrence Haddad, director of the Institute of Development Studies and an author of the Global Food and Farming Futures report. An expanding world population combined with the need to stop over-exploiting natural resources such as soil and water means there is a compelling case for urgent action, the report states. Food is responsible for up to 30% of global greenhouse gas emissions.

"We need to act now," said Caroline Spelman, the secretary of state for environment, food and rural affairs, whose department co-commissioned the report from the government's futures thinktank Foresight. "Farmers have to grow more food at less cost to the environment."

The report, conducted by 400 scientists from 34 countries, found that food security is inextricably linked with seemingly diverse issues from poverty and economic growth, to water and energy shortages, to climate change and biodiversity loss. "The world has not recognised that this linking is essential" to meeting the challenge of feeding 2 billion more people by 2050 but with less environmental impact, said the government's chief
scientific adviser, John Beddington, who oversaw the report. "It is not just science and technology, trade and prices – it is much bigger than that."

No single solution exists, says the report, but it is critical to spread existing knowledge and technology to the developing world to boost yields by "sustainable intensification". Dramatically reducing food waste is also crucial. "Thirty per cent of all food produced is never consumed," said Charles Godfray, at the University of Oxford and another report author. Investing in better trucks, roads and infrastructure is vital to getting food to people before it rots. In rich countries, such as the UK, preventing food being unnecessarily thrown away could save a family £500-700 a year, said Godfray.

There is a place for organic agriculture, found the report, but it "should not be adopted as the main strategy to achieve sustainable and equitable global food security". Scenarios suggesting organic production can satisfy future global demand assume major changes in peoples' diets, which "may be unachievable," says the report.

The report stated that new technologies, such as genetically modified crops and cloned livestock, should not be excluded on ethical or moral grounds, but that investment is "essential in the light of the magnitude of the challenges."

Global food price spikes in 2007-8 and 2010 saw riots and export bans around the world, and the Foresight report predicts further increases as competition for land, water and energy intensifies. Modelling done for the report, which attempted to account for climate change and water requirements as well as economic factors, predicts a doubling in real terms for maize, which feeds 300 million in Africa, between 30-80% rise in the cost of rice and 40-60% rise in the cost of wheat.

"The last three to four years have seen alarming spikes in hunger," said Haddad. "The price rises in 2007-8 were actually quite modest in a historical context but it led to 100 million more people going hungry. Bigger prices rises could wipe out the development gains of the last 20 years and promote violent conflict and migration."

Spelman emphasised the role of free markets and of consumers: "We must open up markets by removing subsidies and stopping protectionism." She said the biggest step forward in tackling food security would be a successful end for the stalled Doha trade talks, which began in 2001, adding that reform of the EU's common agricultural policy should encourage climate and wildlife protection.

In the UK, farmers should produce "more food more sustainably" and she suggested that small price increases represented an economic opportunity for British farmers.

But the report was criticised by some environmental and agricultural experts. The Indian food analyst Devinder Sharma said the report was limited in vision and anti-poor. "The world already produces enough food for 11.5 billion people. Beddington and the government call for radical change but they really want to intensify existing policies. This is just a very clever camouflage for policies which have failed the poor around the world."

Olivier de Schutter, the UN special rapporteur for the right to food, said that hunger was a political question, not just a technical one. "Since the early 1990s, the food bills of many poor countries have been multiplied by five or six, the result not only of population growth, but also of a lack of investment in agriculture that feeds local communities. The focus on export-led agriculture makes these countries vulnerable to price shocks on international markets as well as to currency exchange volatility." He urged G20 countries to address food speculation by banks and financiers, stop the "land grab" of farmland in Africa and elsewhere by rich countries and help countries build food reserves and avoid spikes in food prices.
Tom MacMillan, director of the UK Food Ethics Council said governments should help the most vulnerable people. "Priority must be to give the people most vulnerable to climate change and food insecurity more control over the markets, policies and innovations that affect them. Tackling hunger ... is more about power and poverty than about technology."

The Foresight report is significantly different in its conclusions to that of the *International Assessment of Agricultural Knowledge, Science and Technology for Development report* – approved by the UK government and 57 others in 2008. This found that small-scale, environmentally friendly and organic production methods, based on local knowledge and protected from globalised markets, were the way forward to avert hunger in the next 40 years and that GM food was not a solution.