

# Projected food, energy demands seen to outpace production

June 25 2009, by Terry Devitt

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(PhysOrg.com) -- With the caloric needs of the planet expected to soar by 50 percent in the next 40 years, planning and investment in global agriculture will become critically important, according a new report released today (June 25).

The report, produced by Deutsche Bank, one of the world's leading global investment banks, in collaboration with the University of Wisconsin-Madison's Nelson Institute for Environmental Studies, provides a framework for investing in sustainable agriculture against a backdrop of massive [population growth](#) and escalating demands for food, fiber and fuel.

"We are at a crossroads in terms of our investments in agriculture and what we will need to do to feed the world population by 2050," says David Zaks, a co-author of the report and a researcher at the Nelson Institute's Center for Sustainability and the Global Environment.

By 2050, world population is expected to exceed 9 billion people, up from 6.5 billion today. Already, according to the report, a gap is emerging between agricultural production and demand, and the disconnect is expected to be amplified by [climate change](#), increasing demand for biofuels, and a growing scarcity of water.

"There will come a point in time when we will have difficulties feeding world population," says Zaks, a graduate student whose research focuses on the patterns, trends and processes of global agriculture.

Although unchecked population growth will put severe strains on global agriculture, demand can be met by a combination of expanding agriculture to now marginal or unused land, substituting new types of crops, and technology, the report's authors conclude. "The solution is only going to come about by changing the way we use land, changing the things that we grow and changing the way that we grow them," Zaks explains.

The report notes that agricultural research and technological development in the United States and Europe have increased notably in the last decade, but those advances have not translated into increased production on a global scale. Subsistence farmers in developing nations, in particular, have benefited little from such developments and investments in those agricultural sectors have been marginal, at best.

The Deutsche Bank report, however, identifies a number of strategies to increase global agricultural productions in sustainable ways, including:

- Improvements in irrigation, fertilization and agricultural equipment using technologies ranging from geographic information systems and global analytical maps to the development of precision, high performance equipment.
- Applying sophisticated management and technologies on a global scale, essentially extending research and investment into developing regions of the world.
- Investing in "farmer competence" to take full advantage of new technologies through education and extension services, including investing private capital in better training farmers.
- Intensifying yield using new technologies, including genetically

modified crops.

- Increasing the amount of land under cultivation without expanding to forested lands through the use of multiple cropping, improving degraded crop and pasturelands, and converting productive pastures to [biofuel](#) production.

"First we have to improve yield," notes Zaks. "Next, we have to bring in more land in agriculture while considering the environmental implications, and then we have to look at technology."

Bruce Kahn, Deutsche Bank senior investment analyst, echoed Zaks observations: "What is required to meet the challenge of feeding a growing population in a warming world is to boost yield through highly sophisticated land management with precision irrigation and fertilization methods," said Kahn, a graduate of the Nelson Institute. "Farmers, markets and governments will have to look at a host of options including increased irrigation, mechanization, fertilization and the potential benefits of biotech crops."

The Deutsche Bank report depended in part on an array of global agricultural analytical tools, maps, models and databases developed by researchers at UW-Madison's Center for Sustainability and the Global Environment. Those tools, including global maps of land supply for crops and pasture, were developed primarily for academic research, says Zaks. The Deutsche Bank report, he continues, is evidence that such tools will have increasing applications in plotting a course for sustainable global agriculture.

Provided by University of Wisconsin-Madison ([news](#) : [web](#))

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