

# G8 CLIMATE CHANGE

addressing the **challenge**



Creating engagement between key, global stakeholders in the wake of economic downturn & **The New Economy**

# A GROUND UP PERSPECTIVE

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**Prior to the first Green Revolution, which began modernising agriculture six decades ago, food production was close to carbon neutral because it was based on recycling of agricultural waste and the use of solar energy for nitrogen sequestering. Today, food production in many developed countries consumes more fossil fuels than all other sectors except for transportation. In fact, the food production industry as a whole is the leading single contributor to greenhouse gases. The development of approaches to reduce our carbon footprint should thus include strategies to alter the ways we produce food to accommodate the growing global population.**

Thanks to the Green Revolution and the growth of the industrial and service sectors, families in wealthier countries spend a smaller proportion of their household income on food than they did before 1945. The caloric output of the world agricultural sector is way up. Modern agricultural productivity is feeding a rapidly growing global population. On its face, this looks like quite an accomplishment.

Modern agriculture does produce a lot of food calories. Indeed, in many sectors, it overproduces. Whether this overproduction is a net good, however, depends on what is being measured.

For example, at the same time that it feeds more people more cheaply, overproduction contributes to poor health and rising health care costs. It also harms smaller farmers throughout the world, who are unable to compete with highly subsidised, high output agricultural products, particularly wheat, corn, and soybeans. In less developed countries, these highly subsidised products enter the market as foreign aid, notwithstanding their negative impact. Finally, nutrient levels as measured per weight unit today have been falling ever since we adopted, and subsidised, a high output agricultural policy. The latest, peer reviewed studies conclude that, except for carbohydrates, our food (primarily fruits and vegetables) contains significantly less nutrients than it did prior to modern agriculture, 25 per cent less on average.<sup>1</sup>

## CALORIES ARE UP AND NUTRIENTS ARE DOWN

As we grapple with the sustainability of agriculture to feed 10 billion people by 2050, and given all what we have



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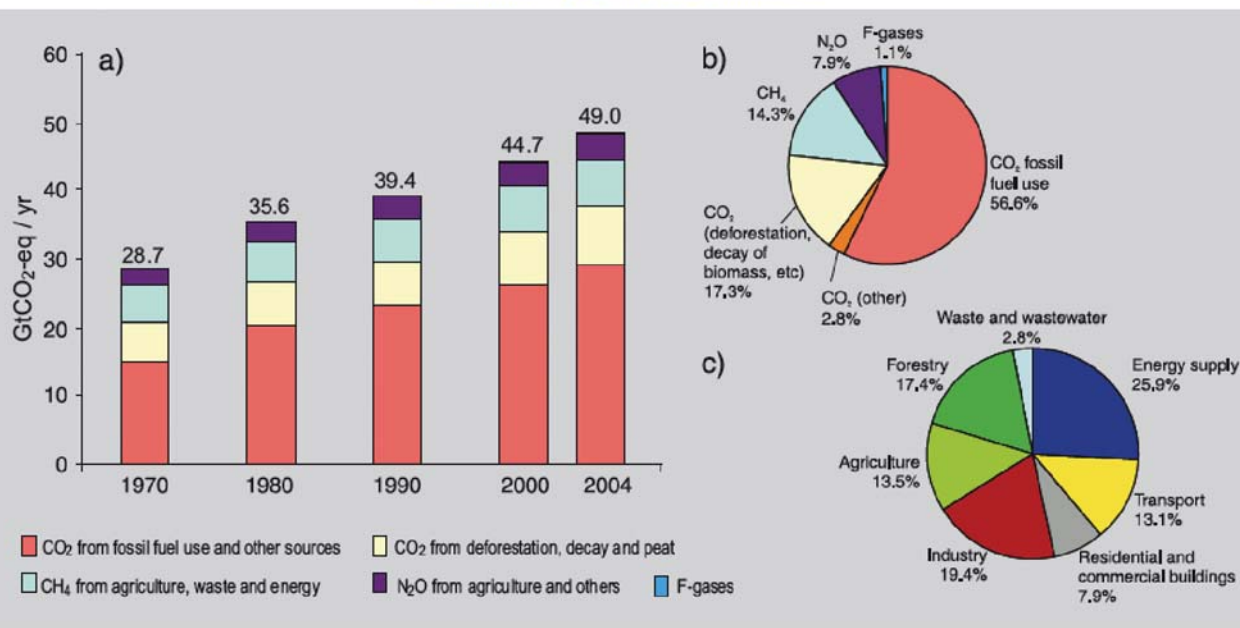
learned about public health and nutrition, global warming and ecological stresses, can we afford to keep in place conventional agricultural policies?

The first Green Revolution was born of a noble desire to use our best knowledge to meet the food needs of a rapidly growing global population. Governments clearly have a common humanitarian and security interest in assuring that this population is fed. This is the driving rationale behind the use of capital-intensive fossil fuels to increase food production. This use is not sustainable in the long-term, however, as food producers face increasingly stiff competition for this resource from other industrial users, and as the resource itself becomes increasingly scarce.

Over the past 60 years, modern agriculture has relied on hundreds of nutrients found in our once rich soil. For the most part, industrial agriculture has taken, but not returned, these nutrients. Many have hope for the brilliant technological promise of biotechnology (GMO) to address soil deficiencies and plant stress. Yet, even GMO has not addressed the fundamental link between the richness of the soil and the health of plants and the humans who consume them. GMO crop systems, as all modern agricultural systems, have not yet answered the call to replenish the soil. As a result, our food quality (as measured by nutritional content) has been deteriorating for decades.



Global anthropogenic GHG emissions



### Agriculture's contribution of greenhouse gases

#### ORGANIC AGRICULTURE - THE SECOND GREEN REVOLUTION

There are more cost effective ways to nourish the growing population, while simultaneously improving public health and reducing carbon emissions.

A sustainable agricultural policy is fundamental to our common concerns of global warming, public health, ecological degradation, and rapid population growth rates.

President Obama commenting about Michael Pollan's New York Times article dated October 12, 2008 said: "...our entire agricultural system is built on cheap oil. As a consequence, our agriculture sector actually is contributing more greenhouse gases than our transportation sector. And in the meantime, it is creating monocultures that are vulnerable to national security threats, are now vulnerable to sky-high food prices or crashes in food prices, huge swings in commodity prices, and are partly responsible for the explosion in our healthcare costs because they're contributing to type 2 diabetes, stroke and heart disease, obesity, all the things that are driving our huge explosion in healthcare costs." Time Magazine

Symbio is a recipient of grants from the Global Environmental Facility Fund ([www.gefweb.org](http://www.gefweb.org)), set up to address Global Warming and Biodiversity Loss, and investments by the International Finance Corporation's SME programme. Symbio was launched to accomplish the

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goals of sustainably increasing yields of nutrient-rich food by applying best knowledge in organic food production with efficiencies of modern organic business and agricultural extension services. The result has been rapidly increasing yields and returns on investment for all stakeholders - from the small-scale family farmer through major food brands to the final consumer. Symbio and similar businesses around the world effectively demonstrate that, with relatively little investment, small family farmers can be coordinated and managed to increase yields as measured in both weight and nutrients per cultivated area, while simultaneously competing in the global food marketplace.

Organic systems have been proven to restore the nutrients depleted as a result of industrial agricultural practice by recycling organic waste (animal and vegetable) and by using the sun's energy naturally to sequester nitrogen from the air. The agricultural industry can increase traditional farms' yields without the use of fossil fuel-based fertilisers, herbicides, or pesticides by relying on these organic systems. Most important, economies of scale have been achieved by market-driven incentives to coordinate the activities of many smaller growers.

POLICY RECOMMENDATIONS

Among the systems that we must analyse because they contribute to global warming is the agricultural industry. In this, as in related settings, we need to examine carefully our assumptions about how things work and the opportunities for creating more sustainable conditions. For example, the great majority of the world’s farmers still practice their traditional farming techniques, having neither adopted conventional nor modern organic methods.

Organic agriculture can increase levels of vital nutrients by an average of 25 per cent over conventionally grown foods





Organic agriculture is developing the capacity to rival the yield of conventional agriculture. And with investments in market-driven businesses like SymBio, organic agriculture can increase levels of vital nutrients by an average of 25 per cent over conventionally grown foods, all while using up to 60 per cent less energy than conventional agriculture. The

SymBio model, and others developed within culturally-specific environments, can be replicated throughout the world to achieve similar results.

Each region will require tailored strategies. Populations that are suffering from too many inexpensive calories (which are boosting high-fat meat consumption and sugar-rich diets) can refocus their agricultural policy, now devoted to domestic carbohydrate production, to a nutrient rich-food production system by building on the organic rules and regulations established in developed countries. In regions where the cost of food calories needs to be kept at a minimum to fend off hunger, it may sometimes be necessary to invest in fossil-fuel based systems to produce food calories. But given their downstream costs, this approach must only be temporary.

Some policies to consider:

- **Objectivity** - agricultural policy must be designed to minimise the energy and costs used in production while maximising the nutrients delivered. It is imperative that a wide array of approaches and interests be considered objectively when designing policy, not simply private interests that only gain from the status-quo;
- **Expanded product labelling** - consumers can increasingly refer to food labels to determine ingredients and some nutrition levels for processed foods. By

Institution	Publications
 <p>Food and Agricultural Organisation (FAO)</p>	<p>Organic Agriculture and Food Security Low Greenhouse Gas Agriculture: mitigation and adaptation potential of sustainable farming systems</p>
 <p>Rodale Institute</p>	<p>The Organic Green Revolution</p>
 <p>Institute of Science in Society</p>	<p>Mitigating Climate Change through Organic Agriculture and Localised Food Systems</p>
 <p>National Sustainable Agricultural Information Service (ATTRA)</p>	<p>Agriculture, Climate Change and Carbon Sequestration</p>



**A contemporary Polish agricultural landscape. Poland successfully produces high volumes of organic food for the local and international markets.**

expanding labelling requirements to include naturally occurring nutrition levels in grains, fruits, and vegetables, the consumer can assess whether they are receiving relevant value - including not only variety and weight but also nutritional value - for their money. Consumers who consider nutrients in their food choices may purchase the richer foods. Because organic products typically have more nutritional value than conventional ones, this will stimulate market forces to develop the organic market;

- **Reassessment of subsidies for the production of meat and biofuels** - developed countries should reconsider the subsidies for grains produced for the meat and bio-fuels industries. Those who argue for the status quo on the grounds that high-energy foods systems are needed to feed a hungry world should agree that the diversion of these subsidised foods for the production of meat and biofuel is counter-productive;
- **Investment in non-conventional infrastructure** - out of the reach of most smaller, sustainable farms is the infrastructure needed to process foods locally. The industrialisation of agriculture has bankrupted most of the smaller scale food processors, and the larger processors that do exist are not equipped to handle the small farm production lot size or are at such a distance that they are not logistically viable;
- **Balancing food aid and food security** - food aid can be counter-productive to food security if it undermines local production. Countries that provide food aid and that receive food aid should carefully balance the two interests in the determination whether and the extent to which it should be provided;
- **Re-thinking agricultural subsidies in developed countries** - subsidies now used to support industrial farms should be reoriented in part to assist landowners in adopting sustainable farming techniques;
- **Re-thinking agricultural subsidies in developing countries** - subsidies now used to promote production in developed countries should be reoriented at least in part to invest in developing country businesses and infrastructure

so that they can produce organic foods for local diets as defined by cultural preferences and nutritional needs, and grow cash crops for export markets<sup>2</sup>;

- **Inclusion of organic agriculture in carbon trading schemes** - as wind turbines benefit from carbon trading, so too should projects that produce food while releasing fewer greenhouse gases. ■

#### ABOUT THE AUTHOR

**Tokya Dammond is the President of the United States-based Symbio Impex Corporation, established in 1994, and the founder of Poland-based Symbio Polska S.A., established in 1998. Symbio was formed out of concern for international development issues, especially rural and sustainable development, in the face of the rapid global population growth rate. Symbio Polska's primary business is to serve as a consortium of Polish organic farmers by pooling their production and processing, bringing it to market, and linking them to technical information and expertise. Symbio Polska S.A. is now listed on the Polish Public exchange, NewConnect. Symbio Impex Corp. is globally active in promoting social and environmental benefits through organic trade and related consulting. Contact: Symbio Impex Corp, tel: 00 1 845 810 2729, [www.symbio-organic.com](http://www.symbio-organic.com).**

#### REFERENCES

- 1 State of Science Review: Nutritional Superiority of Organic Foods, by Charles Benbrook, Xin Zhao, Jaime Yanez, Neal Davis and Peterson Andrews, The Organic Center, March 2008.
- 2 If developed countries are to have open markets for their goods in developing countries, the same should hold for developing countries.