



RESOURCES FOR GLOBAL GROWTH

AGRICULTURE, ENERGY AND
TRADE IN THE 21ST CENTURY

Center for American Progress



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The Center for American Progress is a nonpartisan research and educational institute dedicated to promoting a strong, just, and free America that ensures opportunity for all. We believe that Americans are bound together by a common commitment to these values and we aspire to ensure that our national policies reflect these values. We work to find progressive and pragmatic solutions to significant domestic and international problems and develop policy proposals that foster a government that is “of the people, by the people, and for the people.”

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EDITED BY PETER OGDEN AND REBECCA SCHULTZ

PREFACE

Later this month, in 2006, and for years to come, American trade delegations will board planes for Hong Kong and other capitals to negotiate agreements on behalf of the United States.

Trade negotiators will advocate nuanced positions on everything from blue box payments to bound tariffs, but what they lack is a vision of agriculture as a global commodity that can be developed in ways that will benefit farmers at home *and* abroad. Absent such a vision, American and European negotiators continue to squander opportunities for progress, as they have in the long-stalled Doha Development Round of trade negotiations under the World Trade Organization (WTO). At the same time, they feed into the worst fears of farmers from Kansas to Kenya – that these trade talks are focused not on people, but on politics and profits.

Those fears are well founded. While farmers everywhere hope for nothing more than a fair market price, the structure of international agriculture robs those same farmers of the opportunity to compete on a level playing field. The conventional wisdom is that this is a zero-sum game – either the agricultural sector of the United States must go without a safety net or poor farmers around the world must surrender the hope of competing in the global market. This is a false choice.

Driven by the pressing need to trim the growing federal deficit and its legal obligations under the World Trade Organization, the current administration recently put an offer on the table to reduce American agricultural export subsidies. However, by proposing a subsidy cut without a complementary plan for the rural Americans who would be affected by it, the administration fuels the misperception that livelihoods at home must be sacrificed for the benefit of people on the other side of the globe – and that trade hurts Americans. At a time when trade is growing more important to the future of the American economy, this is a perception we cannot afford to fuel.

The Center for American Progress has developed a strategy for breaking the impasse on trade and agriculture by focusing on two core beliefs. First, we believe that agricultural producers at home and abroad desire and deserve the same thing: a fair market price for their products. Second, we believe that any sustainable solution must be rooted in the ability of agricultural producers everywhere to compete in a fair global market. Building on these realities, we can honor our legal obligations, build a functioning global trading system, ensure that the world's poorest countries have a shot at participating in a fast-moving global economy, and guarantee that American farmers have access to growing and vibrant markets.

Here's how we do it. Instead of simply abandoning those small farmers who depend on the subsidy safety net – as the President seems to have done – we propose that America move quickly to make substantial and comprehensive investments in the domestic production of biofuels and bioproducts.

Significant economic growth in the United States has always come through a combination of innovation and far-sighted investment. By dramatically increasing investment in the research, development, and deployment components of a large-scale agriculture-based energy sector and providing the incentives and risk-management tools that can support the transition to new crops, the U.S. government and private sector can transform the lives of America's small farmers. Simultaneously, we can reduce our costly dependence on foreign oil and pave the way for greater energy security. Clean energy from agriculture will also be critical in reducing greenhouse gas emissions and preventing dangerous climate destabilization. And, finally, by developing a new competitive edge and creating new domestic markets, we can free up other commodity markets to the developing world and help to ensure that the world's poorest farmers can fairly compete.

The essays in this book lay out the details of how we can and must proceed, and many people have contributed to this effort. I would like to thank Jason Clay of the World Wildlife Fund for an opening chapter on trends in global agriculture that will surprise many but should inform us all. Here at the Center, these essays are the work of a team led by Gayle Smith and including Jake Caldwell, Ana Unruh Cohen, Bracken Hendricks, Kara Laney, Rebecca Schultz and Peter Ogden. My thanks to all of them.

John D. Podesta
December 2005

A GLOBAL VIEW: TRENDS IN 21ST CENTURY AGRICULTURE

JASON CLAY, WORLD WILDLIFE FUND

THE BIG PICTURE

There was a time when the world was an open playing field, and the United States and Europe could shape and promote their agricultural sectors with few considerations of global trends. But times have changed. New competitors are redrawing the patterns of global competition. Global food production is on the rise, but so is world hunger.

As Alan Beattie wrote in *The Financial Times*, “Brazil is to agriculture what India is to [outsourcing] and China to manufacturing: a powerhouse whose size and efficiency few competitors can match. Despite facing one of the highest agricultural tariffs in the Western Hemisphere—an average 30% is levied by the nations that import its produce—the country is the world’s largest or second largest exporter of [seven commodities] and is rapidly building a strong position in [four more].”

Brazil is positioned to be pivotal in the future of global agriculture and trade. It is registering the largest agricultural trade surplus in the world (\$34 billion, or 5 percent of gross national income in 2004), and maintains the largest market share (3.8 percent) in global agriculture.

Brazil’s agricultural surplus is the largest in the world.

An increase in global consumption, meanwhile, is being fueled by economic growth in Brazil, Russia, India, and China. Sustained 8 percent growth in China not only increases the demand for raw materials that drive the economy, but also generates demand for higher animal protein-based diets. Though the average worker in China does not have enough money to buy land, a house, or a car, he or she can spend marginally more “eating up the food chain” (i.e., eating more expensive animal protein and less starch). When hundreds of millions of people shift their eating habits, markets follow.

Historically, the global commodity trade was dominated by developed countries. Goods were shipped to them, held or transformed, and then reshipped. This is changing. Operating costs in developed countries are higher and consumption levels there are generally stagnant. In the recent past, China bought its soy from the United States; now it buys it directly from Brazil.

This development has prompted China to become one of the world's top investors. The combined investments of international agencies like the World Bank are about \$10-12 billion per year. The combined international investments of bilateral donor agencies like the U.S. Agency for International Development are in the order of \$55-60 billion per year. By contrast, China has invested \$30 billion in Brazil, \$20 billion in Argentina and \$12 billion in Angola. These investments are aimed predominately at creating or improving market supply to meet China's demand. For example, China's investments in Brazil are for infrastructure that will improve that country's overall agricultural export capacity. This is just the beginning.

But while there is arguably more food per capita being produced in today's world than ever before, hunger and poverty are growing. Over the past 35 years, per capita food production has grown 16 percent faster than population. Even so, the number of hungry people in every country except China increased by an average of 11 percent from 1970-1990. In Africa, agriculture employs about two-thirds of the labor force, accounts for 37 percent of GNP, and is responsible for half of exports. Yet, the sector generates insufficient wealth among the rural poor to adequately address hunger. In South Asia, agriculture generates 27 percent of the GNP but also has little impact on reducing poverty, inequality, and hunger of those most at risk.

An empty cereal box delivered to the grocery store would cost the consumer about the same as a full one.

Meanwhile, the farmer today is earning a diminishing share of retail food price. In 1900, an American farmer received about 70 cents from every dollar spent on food. Today, farmers earn on average three to four cents (less for commodities and more for fresh fruits and vegetables). This means that farmers receive less than 5 percent of the retail price of a loaf of bread or a box of

cereal. To put it another way, an empty cereal box delivered to the grocery store would cost the consumer about the same as a full one. Worldwide, farmers fare better, receiving about a third of the total food value. Today's trends, however, suggest that their share will fall to about 10 percent over the next 25 years.

NEW TRENDS, NEW TRADE

A number of additional trends combine to make trade in global agriculture more robust, but also more complex. As the United States approaches agricultural trade negotiations under the World Trade Organization, as Congress considers a

new Farm Bill, and as the United States plans its strategy to promote economic development abroad, there are several factors at play.

Food production is growing more efficient. More efficient use of resources like land, agrochemicals, and water reduces the overall impacts of agriculture. For the past 30 years, concerns about food security, total output, production efficiency, and vertical integration have increased overall efficiency within the global food system.

The market chain is being integrated and consolidated. The most important issue that has arisen within the past 10 to 20 years with regard to global food production is integration and consolidation within the market chain.

This is occurring at all levels. In 2000, for the first time in human history, the total number of farmers declined. Furthermore, there are only half as many multinational food companies today as there were 20 years ago. Consolidation has occurred both horizontally and vertically. Globally, for any single commodity, there are only 300-500 buyers who make the key purchasing decisions that create markets, not the billions of consumers.

In 2000, for the first time in human history, the total number of farmers declined.

Food prices are lower. Consumer food prices may be rising, but according to *The Economist*, when adjusted for inflation, prices are the lowest on record. Food purchases constitute an all-time low share of total household budgets in developed countries (e.g., about 14 percent in the United States). By contrast, the poor in developing countries can pay as much as 75 percent of their income for food and still be hungry.

Demand for high quality products is on the rise. Consumers are sending clear signals that they want higher quality, healthier, safer, and tastier products. This interest has been fuelled by a succession of food scares, most notably in Europe: mad cow disease, hoof and mouth disease, E. coli and salmonella outbreaks, PCBs, dioxins, and GMOs. However, the concerns are not limited to Europe. Increased organic food consumption and production in the United States is another clear indication of these concerns, while in China the market for green food products has exploded.

The role of government is on the decline. Globally, there has been an overall reduction in the role of government and the resources available to government. This means fewer regulations for agriculture and less funding to monitor laws and standards; less funding for agricultural research and extension; fewer investments in residue and product testing; and the decentralization of government power to local elites who tend not to promote the long-term interests of sustainable agriculture.

The “license to operate” is changing. Food production does not take place in a vacuum – governments, neighbors, society at large, NGOs, and even food manufacturers and retailers all have an interest in the impacts of farming and in managing those impacts. The pressures that these groups can bring on farming collectively have been referred to as the “license to operate.” This license to operate is changing.

In the past, producers were required to obey the laws of their country of residence; today, producers are required to obey the law of the consumer country. In the past, the goal was “do no harm.” Today, this is shifting to “doing good” and “going beyond compliance.”

In developing countries, cheap food for cities drives the license to operate. Even though cheap imports can displace local farmers, many decisionmakers opt to avoid the street riots and political opposition that often arise in response to high food prices in urban areas. There has also been a shift in emphasis from scale *or* equity to one of scale *and* equity. It used to be thought that achieving both was nearly impossible. Now, however, it is increasingly required that producers achieve equity (e.g., benefit society) as well as produce at a scale that is competitive on global markets.

More than half of all habitable land on the planet is used for agriculture or livestock.

Environmental sustainability remains elusive. Agricultural production must become more environmentally sustainable if it is to continue to increase its yield. More than half of all habitable land on the planet is used for agriculture or livestock. Some 90 percent of all land is farmed unsustainably (e.g., there

is a net loss of organic matter each year). To compensate, new land needs to be brought into production. Meanwhile, many of today’s production packages have reached technological ceilings. For example, per hectare production of rice is thought to be as high as it can go given today’s technology. Using fertilizers to increase production may work in the short term, but yield long-term environmental losses.

The effects of climate change are looming. Predicting the impacts of climate change is as difficult as predicting the weather. That said, the long-term effects on agriculture will most likely register on production itself. It will take such forms as an increase in demand for water, pest proliferation, and a deepening reliance on agrochemicals.

THE TREND TOWARDS COMPARATIVE ADVANTAGE

Most countries pursue an advantage by producing crops that derive from their natural resources and climate. The United States, for example, is extremely well suited to produce corn, soy, wheat, meat, fruits, and vegetables. Many developing countries, meanwhile, have an advantage in producing tropical crops such as coffee, cocoa, rubber, cashews, palm oil, or even wood pulp from plantations. Similarly, countries in the tropics that have sufficient water can produce crops all year.

Most agricultural producers focus their attention on a small number of crops grown in rotation. Very few producers of any scale or commercial market integration grow more than two or three commodity crops at one time. Even most small farmers rely on one or two commodity crops (grown in association with other subsistence foods) to generate most of their income. In general, the global trend is to produce a greater volume of fewer crops to remain competitive. While this trend has been spurred by trade for centuries, globalization further accelerates the process.

However, it is important to look at the world in terms of evolving trends, not just past performance. As technology allows for the genetic manipulation of crops like soybeans, the United States will lose its comparative advantage to countries such as Brazil, where the longer growing season allows for more production than in the temperate northern hemisphere. Similarly, wild-harvested timber for pulp wood in Canada and the United States will be less competitive than single species plantations in the tropics where trees grow all year round. The tropics will be the center of future pulp production.

As technology allows for the genetic manipulation of crops like soybeans, the United States will lose its comparative advantage to countries such as Brazil.

Similarly, fish protein (from capture fisheries and from aquaculture) is shifting from developed to developing countries. In spite of very high fishing subsidies in developed countries, developing countries accounted for about half of the export value (more than \$56 billion) of all fisheries products in 2002. That same year, the \$28 billion in developing country exports of fish protein generated \$18 billion in net revenues – twice the net revenues of the exports of coffee, bananas, rubber, tea, rice, and all other meats combined.

Not only are developing countries relying more heavily on the production of animal and vegetable protein, they are increasing consumption as well. For instance, fish consumption in developed countries is predicted to remain static until 2020, while in China it will increase more than 36 percent (and in all other developing countries by

about 61 percent). In short, production, consumption, and exports will increasingly take place within and among developing countries.

Comparative advantage will not be enough to allow producers to survive if policies do not align incentives and reinforce those advantages. The right balance is key. Producers in the United States, Europe, and Japan are adversely affected by high land values, labor costs, regulations, and other factors that are far less significant in developing countries. Consequently, even though there is a strong consumer base and the quality of the land may be high, these countries will lose their advantage to less industrialized countries. In this context, efficient producers and countries with growing rates of consumption will assume a greater role in global agricultural production and trade. It is also anticipated that efficient food manufacturing will shift to developing countries that are nearer either to the raw material producers or to the consumers.

ENERGY: A GROWING AGRICULTURAL COMMODITY

For many, energy is an increasingly appealing alternative. The rapid increase in the price of oil has triggered new speculation about the potential for renewables and biofuels such as biodiesel and ethanol. Biofuels have caught the attention of policymakers and agribusiness companies alike around the world. Growing interest is driven by environmental considerations, continued instability in the world's oil producing regions, and costs. For the agricultural sector, the immediate concern is the impact higher oil prices will have on producer costs, including direct costs such as machinery and transportation, and inputs such as fertilizers and pesticides, which have high embedded energy costs. Some preliminary findings suggest that producer costs may increase by 50 to 100 percent.

Producing energy from agriculture is a viable way forward for many. In today's world, Brazil is taking the lead. Brazil is likely to double the area devoted to sugarcane by 2010 and increase ethanol production considerably from the current 1 billion liters per year to 6-10 billion per year. Brazil's average cost of producing sugarcane is \$158 per ton, while the cost for the rest of the world is about \$250. In addition, some 94 percent of sugar mills in Brazil already produce ethanol and are among the most efficient in the world. Brazil's goal is to increase the area under sugarcane cultivation from 5 to 35 million hectares and total production from 1 to 150 billion liters, an amount equal to about 10 percent of current global petroleum consumption.

But ensuring that the potential gains that agriculture can afford are both equitable and sustainable requires careful consideration of three critical factors. First, even modest levels of renewable energy production in the world's poorest countries

will require external investments. For these countries, new technology will have to be created or adapted to local conditions to produce renewable energy, and for poor countries with limited capital, the cost will still constitute considerable risk.

Second, any effort to expand dramatically agriculture-based energy production in the United States will require government supports – including, potentially, incentives, risk management tools, subsidies, and tariffs. Given the agricultural trade issues that divide the developed and developing worlds today, it is critical that these be designed to comply with international trade agreements, and that subsidies are crafted as incentives for innovation. In short, if public money is used to support the transition to renewables, society should be able to verify that we get what we pay for. For example, if subsidies shift to green box payments, then they should measurably build soil, reduce water take, or increase water quality, biodiversity, or habitat.

Third, a move towards increased production must prevent potentially adverse environmental impacts. Any plan to increase the production of biofuels must take into account the fact that, globally, 90 percent of agricultural production loses more carbon each year through soil erosion than it replaces – and that is when only the targeted part of the plant is harvested. For this reason, it is critical that the proper species be targeted and production be utilized to produce biofuels from agriculture.

Finally, for the expanded production of renewables and biofuels to proceed without reducing the amount of top quality agricultural land that is required for food production, more marginal lands may have to come under cultivation. The most viable option would be to utilize perennials, though even cultivation of these will require caution so as to avoid more erosion and a loss of soil carbon on vulnerable marginal land.

The Copernicus Institute will soon release a multi-year study based on data from the Food and Agriculture Organization of the United Nations (FAO) that focuses on a wide range of countries. Several interesting conclusions can be drawn from its findings. First, the production of renewable energy from agriculture can be undertaken without jeopardizing food production, even for a global population of nine billion. Second, given current technology, tree crops will always be the most efficient source of renewable energy. Third, all things being equal, tropical areas will always be more efficient producers of renewable energy than temperate ones because of their ability to produce 12 months of the year.

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THE CORE PRINCIPLES FOR CHANGE

Globally, agriculture is experiencing something of a renaissance. New management practices, improved genetics and plant technologies, better equipment, and the exchange of information made possible by the Internet have significantly increased production yields around the world. Innovation is rampant, and most of it comes from farmers themselves who are trying to solve their own problems. The mantra of the day is “more with less,” and the farmers who survive and prosper without government assistance live by this creed.

However, there is a critical need for the government and private sector to step in to encourage and spread innovation. Here are a few of the significant lessons learned.

- ***Only strategic alliances and partnerships can produce results.*** If the goal is to use the market to make commodity production more sustainable, then the different actors along the market chain need to be involved. No single stakeholder group or set of government or private sector policies can make significant improvements in agricultural production single-handedly.
- ***Change takes time, but can be accelerated by information.*** Today’s agricultural production systems took a long time to create. Changing them for the better will also take time. In fact, it is easier to build better systems from scratch than it is to retrofit them. Yet, even the fastest growing commodity production systems will take 20 years or more before the output of new systems equals that from traditional ones. This raises important issues and has implications for determining who the key partners will need to be to change commodity production and markets significantly.
- ***Most entitlement programs actually make the beneficiaries worse off.*** Assuming prevailing trends continue, there will be fewer farmers working the land each year. The poorest people in rural and urban areas do not own land. There is a need to shift our emphasis from trying to protect small farmers to creating opportunity, viable scales, and equity for producers. New ways to address equity issues need to be identified and better understood. These could include ESOPs (employee stock option plans or worker-owned shares within a business), joint ventures with producers and buyers, and value-added manufacturing and processing. Brazil has dozens of such experiments going on at this time. We should learn from them, and this information should help farmers and those who work with them learn rather than reinvent solutions.

- ***Producing agricultural goods is about managing change and how to think, not what to think.*** Today's price norm is tomorrow's premium. Prices will continue to decline through globalization and increased efficiency. Given overall reductions in subsidy regimes, one tendency will be for producers to cut corners to remain competitive. The corners cut will be those that are least regulated (e.g., environmental). By contrast, producers who learn faster will survive. Overall efficiency, Best Management Practices (BMPs), and the introduction of new crops all take time to develop and disseminate. Even under the best conditions, it can take eight years or more to disseminate better practices unless they are patented information and a company is selling the technology to make money.

For good or ill, agricultural policy impacts prices, food quality, consumer health, air quality, water quality, and biodiversity. Like driving a car by looking in the rearview mirror, policies that are built on a vision of agriculture in the last century will not pave the way for the future. For the United States to remain competitive in agriculture and make agriculture more competitive in the rest of the world, the first step is to understand that though today's markets present more challenges, they also offer more opportunities.

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BREAKING THE DOHA DEADLOCK: A TIME FOR LEADERSHIP

Countercyclical payments, export assistance, subsidy caps, tariffs, green boxes, blue boxes. Accusatory fingers pointed at the French, at the United States, at the entrenched interest groups. If you have been following the heated debate surrounding the Doha Development Round of the World Trade Organization (WTO) talks, you might believe that the source of all frustration in the agricultural trade arena extends from esoteric legal technicalities.

But in fact these issues are only symptoms of a deeper and more profound problem – a problem that has stalled the Doha talks for four years and threatens to make global trade the instrument of division rather than a force for integration. This problem is the lack of a clear vision of how to make sure the lives of working people are vital, competitive, and productive in the 21st century.

In the absence of such a vision, ongoing global trade negotiations are at risk of devolving into an increasingly costly and ultimately futile attempt to preserve the status quo – a status quo in which, among other things, farmers in the developing world struggle in vain to compete against heavily subsidized competitors, and in which farmers in the United States are not given adequate opportunity to innovate because of a lack of smart government investment.

In such a world, the WTO becomes less of a forum for effective and creative engagement and more of a boxing ring in which one’s “success” is hinged to the constraints imposed on other countries. The United States must move beyond this. In an increasingly globalized marketplace, it is essential that the rules governing agricultural trade grant every farmer the right to compete fairly.

In such a world, the WTO becomes less of a forum for effective and creative engagement and more of a boxing ring in which one’s “success” is hinged to the constraints imposed on other countries.

Sadly, the Bush administration has failed to break the deadlock on trade between Americans who believe it is the source of economic insecurity and those who argue that it is a panacea; between those who believe that our trading partners are out to get us and those who believe that they deserve better; and between those for whom trade is offering a brighter and more profitable future and those for whom trade is the cause of economic hardship. As globalization charges swiftly ahead, and new economic powers rise and weak powers decline even further, the administration has failed to zero in on the dire

need for a coherent, equitable, and functional global trading system that can guide a rapidly changing economic order.

The latest in a string of trade negotiations, the Doha Round of trade talks was launched with a commitment by the world's richest nations to make development a centerpiece of trade and reform the trading system to enable poorer countries to make real gains, particularly in areas of relative competitive strength, like agriculture, which sustains 70 percent of the rural poor in developing countries.¹

The challenge is to act on those stated commitments and pursue a vision of trade that allows farmers everywhere to produce, innovate, and compete in a world of shifting production patterns and global markets. This will require real leadership on the part of the United States, and more than an endless continuation of the rhetorical "blame game" in the opinion pages of the world's leading newspapers.

BEYOND THE STATUS QUO

The status quo in trade and agriculture is under increasing pressure. As the United States prepares to reauthorize agricultural support programs and draft the 2007 Farm Bill, what happens at the WTO will have a profound impact on America's farm policy.

Increased energy demand and growing concerns about the impacts of climate change have given fresh momentum to proposals for enlisting agriculture to help diversify our energy sources.

At the same time, increased energy demand and growing concerns about the impacts of climate change have given fresh momentum to proposals for enlisting agriculture in efforts to diversify our energy sources.² Technological advances in cost-competitive renewable energy resources, including biobased fuels and products, provide a significant opportunity to increase the value of traditional crops – and break the impasse on agricultural trade.

The future of U.S. farm policy is dependent on our capacity to innovate and enhance our competitiveness in local and global markets. And what we do – or do not do – will have a direct impact on the lives of other agricultural economies, particularly in the developing world.

By pursuing a domestic agricultural growth strategy that focuses on making markets work for all of the world's farmers, increasing the production and marketing of value-added competitive products, and recognizing that our long-

term economic and national security interests are well served by a healthy and stable global economy, we can seize this opportunity to redefine the compact between our farmers and our government that strengthens the rural economy and demonstrates American leadership in the pursuit of global economic growth and development.

AGRICULTURE: DRIVING DEVELOPMENT AND THE DOHA ROUND

The WTO Doha Round of negotiations is guided by a commitment to reduce trade-distorting agriculture practices, industrial tariffs on manufactured goods, and barriers to services, while achieving further liberalization in other areas. Agriculture dominates the agenda and is central to the negotiations for two reasons.

First, over the last 30 years, the liberalization of agricultural trade has moved at a glacial pace. Trade-distorting policies (such as tariffs and subsidies that are linked to production) persist at much higher levels in agriculture than they do in other sectors. Almost all countries have higher tariffs for agricultural trade than the trade in manufactured goods.³

Second, agriculture has historically played a significant role in poverty alleviation.⁴ Opening agricultural markets and reforming subsidies are high priorities for developing countries, as it is these policies that create the greatest distortions in trade and exacerbate competitive disadvantages in the precise sector of the global economy that offers the world's poorest countries the potential to be competitive.

As a result, developing country agricultural exporters and importers have united behind a common agenda. Led by Brazil and including India, China, and South Africa, they have formed the "Group of 20" (G-20) to advocate on behalf of the agricultural interests of developing countries. Collectively, the G-20 represents almost 60 percent of the world's population, 70 percent of the world's rural population, and 26 percent of the world's agricultural exports.⁵

Collectively, the G-20 represents almost 60 percent of the world's population, 70 percent of the world's rural population, and 26 percent of the world's agricultural exports.

The G-20 has already proven to be effective in lobbying for the elimination of subsidies in rich countries, improved market access for their agricultural products, and a slower timetable for reducing tariffs in their own agricultural, manufacturing, and services sectors. But to date, overall progress has been slow.

**DECIPHERING TRADE NEGOTIATIONS:
WHAT ARE THEY TALKING ABOUT?**

The broad objectives of the agriculture negotiations in the Doha Development Round are to reduce trade barriers in order to increase access to markets by exporters and to reduce trade-distorting subsidies that are linked to farm production. The Doha Declaration commits WTO members to seek substantial reductions in three areas of global agricultural trade:

- **Export Subsidies:** Reducing or eliminating subsidies and programs used to confer unfair competitive advantages on certain products through the promotion of exports.
- **Domestic Support:** Reducing trade-distorting subsidies and support to ensure that government policies are not used to encourage the production of agricultural products. Government support should be “decoupled” from farm production.
- **Market Access:** Lowering trade barriers, such as tariffs, that restrict or regulate imports.

In addition, the declaration makes provisions for Special and Differential treatment of developing nations. An emphasis is placed on achieving an outcome that allows developing countries to meet their needs, particularly in the areas of food security and rural development.

Together with Special and Differential treatment, the “three pillars” (export subsidies, domestic support, and market access) are at the core of the agricultural trade negotiations currently underway. Progress on agriculture in the Doha Round will be measured by progress in these areas.

In order to allow for different timetables for different kinds of government support, the WTO has defined a color-coded set of boxes – amber, blue, and green (as well as a *de minimis* box for relatively minor subsidies) – that group subsidies according to their variable impacts on trade and production. The classifications are important to U.S. farm policy because they, in part, determine which farm policies (such as incentives for renewable energy) will be permissible under WTO rules. The boxes work like this:

- **Amber Box:** This box contains the domestic support that is the most trade distorting and subsidies that encourage agricultural production. Countries must keep subsidies below their agreed levels or “caps.”⁶
- **Blue Box:** The blue box contains trade-distorting domestic support and subsidies that also include limits on production. “Countercyclical payments” – which are the payments made to farmers when a commodity’s market price drops below its established target price – are likely to qualify for the blue box.
- **Green Box:** The green box is for trade-distorting domestic support and subsidies that are not in any way related to production. Programs that fall into the green box category can include unlimited subsidies and are considered exempt from mandatory reductions.

Determining which domestic supports and subsidies qualify for which box will be a key issue for the 2007 Farm Bill, ongoing WTO agriculture negotiations, and future WTO disputes. By designing programs to fit into the green box, the United States can ensure that they are minimally trade-distorting and are therefore able to receive domestic support. For example, if the United States includes significant incentives for renewable energy programs in the 2007 Farm Bill, this support should be designed to meet green box criteria. That way, they can be eligible to receive relatively unlimited subsidies and be exempt from mandatory reductions in those payments.

THE SUBSTANCE OF SUBSIDIES

A World Bank study recently noted that the sheer size of agricultural subsidies relative to the size of the market has the effect of rewarding non-competitive producers and wreaking havoc on small economies that are heavily dependent on the export of only a few crops. For example, the combined value of U.S. and EU cotton subsidies is \$4.4 billion – in a global cotton market valued at \$20 billion.⁷

Among other policy goals, subsidies in the United States are in part intended to provide farmers with greater income stability, guard against volatile commodity prices, and strengthen the international competitiveness of U.S. agricultural products. In recent years, as gains in agricultural productivity have run up against declining or unstable commodity prices, the scope and structure of subsidy payments have come under increased scrutiny.

With annual budget deficits projected to reach \$400 billion over the next several years, advocates for farm policy reform have drawn public attention to the high cost of U.S. subsidies. Furthermore, domestic support programs have also been criticized for inflating land values to the particular detriment of small farm operators. Most of all, farm policy is coming under scrutiny for its inequity: between 1995 and 2004, 72 percent of \$140 billion worth of farm subsidies went to 10 percent of farms, and the bulk of U.S. subsidies and payments are limited to five major commodity crops: cotton, corn, wheat, soybeans, and rice.⁸

**WTO NEGOTIATIONS AND THE 2007 FARM BILL:
CONVERGENCE OR CONFLICT?**

The evolution of the 2007 Farm Bill and efforts to conclude the WTO Doha Round of negotiations in 2006 will have a significant impact on each other. In the United States, “fast track” or Trade Promotion Authority (TPA) – which allows Congress to review implementing legislation for trade agreements on an expedited basis and without amendments – is due to expire in mid-2007. Any agreement achieved at the WTO must be concluded by the end of 2006 in order to receive

Congressional approval on a fast track basis. Similarly, the 2007 Farm Bill will be debated by Congress throughout 2006. As a result, the United States Farm Bill and the Doha negotiations both must be concluded no later than mid-2007.

Regardless of whether or not a Doha agreement can be successfully concluded, it is likely that pressure will continue to mount on the United States, European Union, Japan, and others to reduce their highest subsidies in production-distorting agriculture programs.

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An informal alliance of developing countries and non-agricultural industrial interests, among others, will insist on advances in the agriculture negotiations in order to maintain overall momentum for the WTO’s broader Doha trade liberalization agenda. As a result, the programs most at risk for reductions in overall support through negotiations and dispute settlement challenges in the United States are the commodity programs (grains, oilseeds, cotton, and rice). Key areas of agreement, trends, and their likely impact on United States farm policy include:

- The elimination of export subsidies and short-term export credits, by as early as 2010. This would require the United States to eliminate nearly \$600 million worth of export subsidies. The EU would be required to eliminate export subsidies valued at \$9 billion.⁹
- Further disciplines and the eventual elimination of trade-distorting practices in food aid programs. This would mean that when debating the 2007 Farm Bill, U.S. legislators will face increasing pressure to restructure the food aid program to provide less in-kind food aid from surplus crop production and more cash donations.
- Reductions in total trade-distorting support (amber box, blue box, and *de minimis* boxes combined), with the highest levels of support being reduced the most. This would require U.S. policymakers to look for savings in current commodity programs with high levels of support, including rice, cotton, dairy, sugar, and peanuts. In particular, U.S. commodity marketing loan and loan deficiency payment programs may be at risk for substantial reductions.¹⁰
- Adherence to blue box caps. The blue box designation will most likely allow U.S. countercyclical payments, but a cap equal to 5 percent of the value of a WTO member's total agriculture production has been proposed. Under this cap, the United States will not be allowed to exceed \$9.2 billion in support.¹¹
- Provisions for greater market access. Under market access provisions, the highest tariffs are to take the largest cuts. Although industrialized countries are granted flexibility to shield "sensitive products" from further market access concessions, in U.S. farm policy, the commodity programs with high levels of support and protection may require the greatest reductions.¹²
- Allowance of flexibility for the developing world. Developing countries may be granted greater flexibility and time to continue employing export subsidies and domestic support. Subsistence farmers in developing countries may be able to have their crops declared "special products," and therefore exempt from further reductions in tariffs.

Finally, there has been and will continue to be debate about whether a cut in subsidies is, in fact, a cut. In terms of the net effect of reductions in domestic support, the real outcome depends on whether a country's stated reductions will be taken from baseline ceilings already committed to or from the actual levels of trade-distorting support paid out. For most countries, including the United States and EU members, actual subsidy payments are well below baseline ceilings – but in negotiations, reduction offers are based on the inevitably higher baseline

ceilings. As a result, significant percentage cuts to domestic support may not translate into real world subsidy reductions. For example, a recent World Bank study projected that a claimed reduction of 75 percent in amber box support levels would require, in real terms, the United States to cut actual subsidies by only 28 percent, and the EU by only 18 percent.¹³

TAKING SUBSIDIES TO COURT

The 2007 Farm Bill and American farm policy will also be influenced by several current and future challenges to U.S. agricultural programs in WTO dispute settlement proceedings, such as the U.S.-Brazil cotton dispute.

In March 2005, the WTO Appellate Body affirmed an earlier WTO dispute panel decision. It determined that the United States' approximately \$3.2 billion in annual cotton subsidies were in violation of its earlier trade commitments to reduce subsidies. Brazil alleged that the U.S. subsidies to American cotton growers, millers, and exporters encourage overproduction and increase exports which, in turn, contribute to reducing the world price of cotton and the earnings of Brazilian, West African, and other developing country cotton producers. As a result of this ruling, the United States has agreed to alter certain existing farm programs and to eliminate export credit guarantees and the "Step 2" payment program for cotton millers and exporters.¹⁴

The WTO's cotton ruling also determined that certain domestic support payments under the 2002 Farm Bill had exceeded allowable limits and were not entitled to safe harbor in the green box as non-trade-distorting payments. For technical reasons, the United States will not have to comply directly with this aspect of the cotton decision, but it does establish a precedent and open a potential avenue for further challenges to U.S. programs with similar payments. If the U.S. is unable to have these subsidies declared allowable under the green box from this point forward, they will fall into the amber box and be targeted for steady reduction.¹⁵

Brazil has also successfully brought a WTO challenge against the EU sugar program. Uruguay recently announced a WTO challenge to the U.S. rice program, and Canadian trade authorities have launched a formal inquiry into current U.S. domestic support for corn. The trend appears to signal an increase in potential challenges to U.S. domestic support programs, rather than a decrease. If a Doha agreement is not reached, it is widely anticipated that countries will resort to the WTO dispute settlement process with increased frequency as a means to achieve reform gains not realized in negotiations.¹⁶

Adverse panel decisions, meanwhile, raise the specter of cross-retaliation and trade wars. An aggrieved trading partner may attempt to ensure compliance by imposing retaliatory sanctions against seemingly unrelated products. For example, in the course of the Brazil-U.S. cotton case, Brazil has threatened to impose retaliatory measures valued at \$3 billion on U.S. goods and services. In order to increase the pressure on the United States (and enlist the support of non-agriculture interests in the United States), Brazil has targeted the suspension of U.S. intellectual property protection in Brazil, such as pharmaceutical patents, as one means to ensure compliance with the cotton decision and adequate reform of the U.S. cotton program. Finally, reliance on litigation, unlike negotiation, carries the risk of requiring unilateral adjustments in existing U.S. policy without the benefit of securing favorable adjustments in a trading partner's policies.

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ENERGY: EMPOWERING CHANGES IN TRADE

As the United States confronts an ever more complex and contentious agricultural trade environment, the nation's energy policy is under increasing scrutiny from all quarters. American dependence on oil carries tremendous costs to our economic well-being, productive capacity, national security, environment, and climate. Rising oil and gas prices, meanwhile, hit farmers and rural communities particularly hard as the costs of energy inputs at every stage of production and distribution increase even as prices for goods remain flat or decline.

The United States has an increasingly important opportunity to diversify its energy supply and foster innovation in the agriculture and transportation sectors by investing in renewable energy resources. Agriculture has the potential to make a significant contribution to energy production while reducing our dependence on petroleum and promoting the diversification of the U.S. energy supply. Investing in the capacity of agriculture to produce alternative energy, meanwhile, could help us twice on trade. First, it would allow for a reversal of a looming agricultural trade deficit. Second, by expanding the production of energy crops, the United States can reduce trade-distorting supports for certain commodities while offering America's farmers a viable alternative.

The shape of the 2007 and future farm bills will be determined by whether America's political leaders choose to be reactive or proactive. If we only react – to the growing pressures imposed by a raging federal deficit and a likely string of successful challenges in the WTO – cuts will be made on an ad hoc basis and both the farm safety net and the potential for innovation will be squandered. Alternatively, America can be proactive and use upcoming farm bills as vehicles for aligning American farm policy with new trends in the global economy. This will also put us on a course to reduce global warming pollution and prevent dangerous climate destabilization.

Alternatively, America can be proactive and use upcoming farm bills as vehicles for aligning American farm policy with new trends in the global economy.

By making investments in the capacity of domestic agriculture to produce biofuels and other bioproducts, America can strengthen rural communities by providing well-paying jobs at locally built and maintained biorefineries. A new market in biofuels for traditional commodity crops can raise commodity prices and farm incomes, thereby enabling more farmers to stay on the land in a competitive enterprise. With this shift, the United States

can emerge as a viable competitor in agriculture and render the global agricultural economy more rational and more equitable.

A PATH FORWARD

The United States can fulfill the promise of Doha by eliminating trade-distorting subsidies and granting greater market access by reducing tariffs on agricultural products from poor countries. The European Union, Japan, and others must follow suit and make specific and concrete reductions in their agricultural support programs.

The proposed cuts to subsidies and tariffs must translate into real reductions with firm deadlines. Legitimate cuts from *actual* payment and tariff levels – not targeted levels – will alter current policy. True reductions will give us a fighting chance to curb overproduction and the dumping of products on the market for less than their cost of production. Furthermore, it will provide a boost to prices and incomes of farmers in the United States and around the world.

But offering meaningful changes to the rest of the world without providing a plan for our own farmers is not a viable option. At home, U.S. farm policy should focus on the need to maintain a sensible safety net for farmers, while placing limits on subsidies that encourage trade distortions and overproduction.

In the 2007 Farm Bill, overall farm program expenditures should be redeployed but not reduced. Support for rural development grants and programs must be enhanced and renewable energy programs should be fully funded. Policymakers should consider increasing revenue insurance and adjustment assistance to support strong farming communities.

The United States must ensure that the savings from reductions in domestic support and subsidies is reinvested in rural America and in the creation of incentives for the research, development, and deployment of a robust and ambitious biobased fuels and products program. A well-designed incentive program for biomass energy should be permissible under WTO rules and will give a major boost to overall U.S. renewable energy and agriculture efforts. The result would shift U.S. resources away from less competitive trade-distorting commodities, reduce or eliminate market barriers to agriculture products, and diversify U.S. energy supply in a manner that will lead to a cleaner, more secure energy future.

ENDNOTES

¹ Food and Agriculture Organization of the United Nations, “The Beijing Consensus on the Future of Global Agriculture and Rural Areas: A Blueprint for Action,” September 2005, available at www.fao.org/es/ESA/beijing (last viewed November 13, 2005).

² Ag Energy Work Group, “American Agriculture: Powering the Future,” available at <http://www.agenergy.info/home.htm> (last viewed November 13, 2005).

³ Congressional Budget Office (CBO), “Policies That Distort World Trade: Prevalence and Magnitude,” August 2005.

⁴ C. Peter Timmer, Center for Global Development, “Agriculture and Pro-Poor Growth: An Asian Perspective,” July 2005.

⁵ See www.G20.org. Current members of the G20 include: Argentina, Bolivia, Brazil, Chile, China, Cuba, Egypt, India, Indonesia, Mexico, Nigeria, Pakistan, Paraguay, Philippines, South Africa, Tanzania, Venezuela, and Zimbabwe.

⁶ The U.S. amber box subsidy spending ceiling (not actual amount of payments) agreed to in previous negotiations is \$19.1 billion. The U.S. notified \$16.8 billion in amber box payments in 2000 and \$14.4 billion in 2001 (last year available). The EU total ceiling is \$80 billion.

⁷ Ataman Aksoy and John Beghin, ed., “Global Agriculture Trade and Developing Countries,” (World Bank 2004).

⁸ Environmental Working Group, Farm Subsidy Database, “Total USDA subsidies in the United States,” available at <http://ewg.org/farm/progdetail.php?fips=00000&progcode=total&page=conc> (last viewed November 13, 2005); U.S. General Accounting Office, “Farm Programs: Information on Recipients of Federal Payments” (June 2001, Report GAO-01-606).

⁹ Congressional Budget Office (CBO), “Policies That Distort World Trade: Prevalence and Magnitude,” August 2005, 38.

¹⁰ On domestic support, the U.S. has proposed to make cuts of 60 percent from existing amber box baseline ceiling payments, or subsidies (not actual payments) as long as the EU and Japan make cuts of 83 percent. In overall trade distorting support (amber, blue, and de minimis boxes), the United States has proposed cuts of 53 percent as long as the EU and Japan make reductions of 75 percent. The G-20 have called for the U.S. to make cuts of 75 percent, and the EU and Japan by 80

percent. The EU has proposed a cut of 70 percent if the U.S. makes reductions of 60 percent and agrees to tighter restrictions on the blue box criteria.

¹¹ These findings are based on U.S. total agriculture production values of \$185 billion. The U.S. currently makes countercyclical payments estimated at \$7 billion a year.

¹² On market access, the United States has pledged its support to the G20 proposal to make steep cuts in the highest tariffs (55 to 94 percent) over the next five years while eventually bringing tariffs to zero in 2023. The EU has offered an average cut in agricultural tariffs of 38 percent and is insisting on special treatment for 8 percent of its tariff lines, or 160 products, that might result in no significant market opening for those products. The EU has reported that fewer than 50 tariff lines account for 90 percent of all EU farm imports.

¹³ Kym Anderson and William Martin, "World Bank Trade Note 23: Agricultural Access: The Key to Doha Success," June 2005, 2.

¹⁴ Environmental Working Group, Farm Subsidy Data Base, "Step 2 Cotton Payments," June 9, 2005, available at <http://www.ewg.org/issues/agriculture/20050609/step2analysis.php> (last viewed November 13, 2005).

¹⁵ Domestic support payments under the 2002 Farm Bill have exceeded allowable limits and are not entitled to safe harbor in the green box as non-trade distorting payments. The U.S. payments violated the requirement of decoupled income support because they placed restrictions on what producers could grow (banned fruits and vegetables from being grown on historic cotton acreage) and were thus linked to production. The Appellate Body reaffirmed that the U.S. payments have caused serious prejudice to Brazilian producers.

¹⁶ In response, the United States has attempted to insulate itself from further dispute challenges with a proposal in the Doha negotiations that would prohibit challenges from being brought if a party was in compliance with its overall WTO subsidy and domestic support reduction commitments. The proposal is noteworthy because it suggests the U.S. fully anticipates further challenges to existing U.S. farm policy at the WTO.

CHANGING THE STAKES: MAKING GLOBAL AGRICULTURE WORK FOR GLOBAL DEVELOPMENT

Globalization is a fact, not an option. And while the expansion of trade and the opening of new markets have contributed to increased economic growth in many countries, the working poor at home and abroad have yet to be convinced that globalization can offer them a secure economic future. Their skepticism stems not from opposition to trade per se, but from an acute awareness that the global trading system is skewed in favor of the few and that the rapid pace of economic change makes their future all the more uncertain.

Globalization can be managed to ensure that it not only benefits those countries, companies, and individuals with sufficient capital to participate, but also affords the majority of the world's people the economic mobility that is otherwise unavailable. As presently structured, however, the global trading system is asymmetric and frequently pits the working poor in the developed and developing worlds against each other. The subsidies that in part sustain the livelihoods of American farmers, for example, have a direct, adverse impact on the ability of farmers in the world's poorest countries to compete on the global market.

As presently structured, however, the global trading system is asymmetric and frequently pits the working poor in the developed and developing worlds against each other.

The conventional wisdom is that resolution can only be brought about through a tradeoff between subsidies for American farmers and a fair market price for poor farmers in the developing world. But this need not be the case: the world can craft a win-win solution that allows farmers around the world to compete on a more even playing field. By reducing export subsidies and increasing investment in the production of energy crops, the United States can lay the groundwork for a grand bargain that would allow American farmers to increase domestic income while also freeing up the market in other agricultural goods for farmers from poor countries.

Taken alone, a reduction in export subsidies by the developed world is insufficient to ensure that the world's poorest citizens see real and sustainable benefits from globalization. With subsidy reduction as the first, crucial step, however, the United States can lead the way to a more equitable global future – by creating the conditions that allow the world's poorest people to reduce their dependence on raw commodities, to add value to their exports, to access new markets, to develop their own manufacturing and service sectors, and to prepare for the inevitable changes that globalization will bring.

THE STORY OF SUBSIDIES

The story of cotton is a harrowing tale. The ‘fabric of our lives’ is for others a bone of contention – and a driver of poverty. In West Africa, for example, cotton was introduced at the dawn of independence in the 1960s and initially paved the way to relative wealth, fetching such a high price on the world market that it came to be known as ‘white gold.’ Entire economies were turned over to cotton production, and today cotton is the primary source of national income for countries like Benin, Mali, Burkina Faso, and Chad.

Yet, this same ‘white gold’ is today one of the drivers of economic decline. Over time, the heavily subsidized cotton sector in the United States has displaced the smaller and more fragile economies of West Africa by triggering overproduction

and, with it, a dramatic fall in the international price of cotton. West African cotton producers earn an average of \$400 per year – but in 2001-02, for example, Africa lost an estimated \$301 million to subsidized cotton producers from the United States.¹ In contrast, the U.S. Department of Agriculture estimates that America’s 20,000 cotton producers will receive government payments of \$4.7 billion, an amount far in excess of the average budget of West Africa’s cotton producing countries.²

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Undercut by falling world prices, West Africa’s farmers faced a stark choice: starve or fight back. In defense of a crop that had defined their economic livelihoods, they demanded economic justice and persuaded their governments to take action. In June 2003, with Benin, Chad, Mali, and Burkina Faso in the lead, West Africa presented a proposal to the World Trade Organization (WTO) for phasing out the developed world’s cotton subsidies. Three months later, the issue was on the agenda of the Cancun Summit of trade ministers under the banner of the Doha Development Round.

The Cancun Summit ended in failure. The United States and the European Union jointly demanded that the developing world open its economies further to manufactured goods from the developed world, but refused to liberalize their own agricultural sectors. In response, the developing world united as well: Brazil, India, Mexico, Chile, South Africa, and other developing countries forged the G-20, or ‘Group of 20’ developing countries, and opted to negotiate as a bloc.

DOUBLE STANDARDS FOR GROWTH: WHO PUTS THE FREE IN FREE TRADE?

The developed world's contradictory policy of championing free trade abroad while supporting protectionism at home affects more than global trade negotiations – it affects people's lives. Consider the case of Burkina Faso.

A small landlocked country with a tiny internal market, Burkina Faso relies on cotton for between 55 and 70 percent of its annual export income. Over the last decade, the government has dramatically transformed the cotton sector by privatizing over 40 state-run industries, reducing its share in the national ginning and marketing organization to 10 percent, and introducing a host of measures designed to attract foreign investment.³

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Like most countries in the developing world, Burkina Faso has complied with directives from the International Monetary Fund to dismantle its agricultural subsidies, remove protective tariffs, and privatize production and marketing. Burkina Faso has won high marks for liberalizing its economy, and its economic policy performance has yielded rewards. Burkina qualified for debt relief under the Heavily Indebted Poor Countries Initiative (HIPC); will win additional relief in the wake of new agreements on debt reached by the G-8 earlier this year; is eligible for benefits under the African Growth and Opportunity Act; and recently achieved “threshold status” under the new Millennium Challenge Account aid program.

But increased aid and debt relief are not enough to counter triple shocks to Burkina's economy. With the collapse of world cotton prices, the dramatic increase in the price of oil, and the decline in the value of the dollar, economic growth is projected to fall next year, from an average of over 5 percent to just under 3.5 percent.⁴

THE NEED FOR CHANGE: FROM POVERTY REDUCTION TO WEALTH CREATION

Ninety-six percent of the world's farmers live in the developing world. They are working people, many of whom are subsistence farmers and most of whom are able to produce and sell only a tiny surplus each season. Like farmers everywhere, their aspirations are straightforward: they want affordable food, the ability to earn

a living wage, and the capacity to deliver better lives to their children. Ironically, they face the greatest barriers to their exports in the sectors where they have a comparative – and sometimes singular – advantage.

A change in the agricultural subsidies policies of the United States, the European Union, and Japan would go part of the way towards solving the problem by providing countries like Burkina Faso with the ability to obtain fair market prices for their agricultural exports. The World Bank estimates, for example, that such liberalization could boost agricultural output and income in the developing world; trigger a 77 percent increase in food and other agricultural exports; and increase the value of agricultural net exports by \$87 billion.⁵ As World Bank President Paul Wolfowitz put it: “These are difficult issues and it may be uncomfortable for many here to step forward and give up subsidies and other barriers to free trade. But that temporary discomfort is as nothing compared to the daily discomfort and deprivation of the poorest people of the world. They are counting on us. We must deliver results for them.”⁶

Donor governments and the international financial institutions are quick to remind developing country governments that aid alone will not set their economies on track toward sustained growth and that only by expanding trade can they hope to join the global economy. But the prevailing terms of trade have not delivered – in fact, the world’s poorest people are falling out of the global trading system rather than being integrated into it. The very reason that development advocates from around the world have joined the international trade debate is that each of their micro-level gains is being offset by a macro-level loss. Development assistance may, for example, bring about tremendous gains in the number of poor rural women who are educated about post-natal care; those gains, however, are trumped by the fact that millions of these poor women cannot earn enough to feed their families.

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For the United States to deliver real results to the developing world, trade policy will have to include more than a reduction in agricultural export subsidies or an increase in foreign aid. What is needed is a shift from a focus on poverty reduction to a strategy for wealth creation that can allow the developing world to escape the chains of poverty and compete on the global market. Only then can the world’s poorest producers achieve economic independence and gain the

purchasing power that can in turn generate market demand.

A comprehensive policy must combine four critical ingredients: the reduction and eventual elimination of U.S. export subsidies; an end to dumping; the ability of the poorest developing countries to adopt tariff flexibility to ensure the growth of new competitive sectors; and provisions for building the capacity of developing countries to participate fully in the global trading system. These measures could enable the developing world to end its singular reliance on primary commodities, to add value to the goods it produces, and to diversify its economies.

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The Dangers of Dumping. While the need to tackle the trade-distorting impact of export subsidies dominates current trade negotiations, what affects agricultural prices for these farmers at least as much is “dumping” (i.e., the sale of domestically produced agricultural goods in foreign markets at prices below the cost of production). The General Agreement on Tariffs and Trade (GATT) prohibits dumping if another country can demonstrate that it is being “harmed” as a result. The fact of harm is hard to prove, but the evidence is not hard to find. In 2003, for instance, the U.S. exported cotton for sale abroad at 47 percent less than the cost of its production, thus giving American producers an advantage that their poorer counterparts simply cannot afford.⁷

Under fire for its own excessive subsidies, the EU alleges that the U.S. food aid program constitutes dumping because it addresses food shortages in the developing world by providing surplus grain at lower than local market prices. The U.S. food aid program often has an adverse impact on local markets. Exporting U.S.-produced grains to desperately poor countries for sale at cheap prices has the immediate effect of increasing the availability of affordable food. In the longer term, however, cheap imports depress local prices and hurt the very farmers who were initially targeted for help. The alternative – buying surplus food at market prices in an affected region – has the benefits of stimulating local markets, drastically reducing delivery time, and reducing transportation costs.

U.S. Agency for International Development (USAID) Administrator Andrew Natsios recently proposed to Congress that 25 percent of the U.S. food program be converted to cash in order to capture these gains. Not surprisingly, the proposal has been fiercely opposed by the four major agribusiness firms that sold over half of all food aid to the U.S. government last year, the five shipping companies that dominate the transport of food aid, and the major relief agencies that depend on food aid for as much as 50 percent of their budgets.⁸ But the Natsios proposal is

a move in the right direction. By securing food aid for developing countries from nearby developing world markets, the United States can more efficiently address humanitarian relief needs *and* contribute to the development of local markets at the same time.

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The immediate problem facing the world's poorest farmers is that they cannot get a fair price for their agricultural goods. Eliminating the export subsidies of and dumping by the world's wealthiest nations would lay the groundwork for fairer market prices – but taken alone, these steps do not constitute a long-term strategy for ending global poverty. Furthermore, unless accompanied by other development investments and macro-policy flexibility, agricultural liberalization alone risks reinforcing a global production system

in which the world's poorest countries are condemned to rely solely on the export of primary commodities.

The Vicious Cycle of Commodity Dependence. The structure of production in many of the world's poorest countries has changed little since they gained independence. The architecture of most of these countries was designed by colonial powers eager to develop cheap sources of commodities like coffee, tea, and sugar for consumption, or cotton for ginning in their own textile mills. While these wealthy and more powerful countries industrialized, developed service industries, and brought new technologies to bear, the world's poorest countries continued to produce and export commodities.

Today, the economies of the majority of the world's poorest countries remain dependent on commodity exports and are thus plagued by the persistent and often volatile fluctuations in world prices. More than 50 developing countries rely on only two or three export commodities to drive their economies, yet over the last quarter century the real dollar price of 41 of the 46 leading commodities has fallen. In addition, the combined price index for all commodities declined by 53 percent in real terms between 1997 and 2001.⁹

The crisis in commodity prices is nowhere on the global trade agenda despite the fact that world market price volatility has thrown tens of millions of working farmers into economic depression. This is even true of the global coffee market, in spite of the dramatic upsurge in the consumption of high-end retail products in

the developed world. Though retail sales in consumer countries have increased from \$30 billion to \$80 billion in the last 15 years, the share accruing to coffee-exporting countries has fallen from one-third to one-thirteenth. This is because the value borne of roasting, processing, and marketing is accrued not by the sellers of raw coffee beans, but by purchasers in the developed world.¹⁰

The commodity price crisis was in part triggered by falling demand and increased transportation costs following the oil shocks of the 1970s, and it is likely to grow worse given recent dramatic increases in world oil prices. Solid economic performance is insufficient to ward off the effects of these exogenous shocks. Those least developed countries that are considered to be managing their economies well enough to qualify for debt relief under HIPC, for example, derive 84 percent of their export earnings from the sale of primary commodities, and are thus extremely vulnerable to price fluctuations. Three-quarters of HIPC countries, meanwhile, are net oil importers; some allocate as much as 5 percent of their gross domestic product (GDP) to cover oil imports. On top of falling export income, they must also grapple with a deteriorating trade balance that can only be offset by a reduction in demand, which in turn undercuts growth and poverty reduction.

The Value of Value-Added. For poor countries to break out of their dependence on a few primary commodities, they need to follow the same path that was taken by developed countries and begin processing their commodities domestically. This would add value to exports and develop manufacturing capacity. Most development experts concur that “it is value added through manufacturing production that has the biggest bearing on the distribution of global income and the benefits of trade.”¹¹

Centuries ago, the United States and the United Kingdom depended on the export of primary commodities to fuel their national economies; decades ago, Japan and the East Asian Tigers similarly relied on commodity exports as their primary source of foreign exchange. Over time, all of these countries added value to their exports through processing, thus increasing export income and gradually incorporating manufacturing into their domestic production capacities. With increased manufacturing came increased income, expanded health and education services, and a more highly skilled workforce. These changes, in turn, enabled

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what were then developing countries to absorb and adapt new technologies and move from subsistence economies to knowledge economies.

Consider the examples of South Africa and Finland. In the 1950s, the structure of production in these two countries was similar – both relied heavily on the export of timber products, primarily logs and pulp. Over the last 50 years, Finland has diversified its exports to include a higher proportion of value-added goods including high quality paper and furniture; South Africa's exports are still dominated by logs and pulp. Finland is today one of the richest countries in Europe, while South Africa remains among the world's poorer countries.

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But the potential for growth exists. Sub-Saharan Africa, for example, produces the majority of the world's raw cocoa, a significant portion of the world's coffee beans, and a competitive share of skins and hides. But Africa is also a net importer of instant coffee, processed cocoa and chocolate, and leather goods. By expanding value-added production in these and other key sectors, sub-Saharan Africa could generate enough competitive power to reduce its dependence and, gradually, erode the gains of chronic poverty.

Achieving this turnaround, however, requires two things. First, sub-Saharan Africa must be able to protect nascent industries until they can compete on a global market. Second, the continent must rapidly increase its capacity to overcome non-tariff barriers – like phyto-sanitary standards, traceability of origin requirements, and other regulations that govern global trade. Borne of growing concern among developed world consumers about food safety, these regulations – while important – are difficult for poor countries to meet. Increased technical assistance is urgently needed to ensure that they can increase their capacity to meet these standards and do not fall further behind.

We Will If You Will. Under increased pressure to make changes in their agricultural trade policies, the United States and European Union have offered the developing world what they consider a fair deal: we will liberalize our agricultural sectors, if you open your economies further to our manufacturing and commercial services sectors. While this notion of a fair bargain may represent a legitimate negotiating tactic, it risks hindering the sustained economic development of the world's poorest countries over the long term and ensuring that they remain dependent on primary commodities.

There is truth to the fact that open borders and reduced tariffs on the part of developing countries are necessary to ensure that they can obtain the imports needed to fuel development. But by adopting liberalization wholesale across all sectors, the world's poorest countries risk undermining their capacity to develop new industries.

Consider gum arabic, a sticky substance scraped from trees that grow across East Africa. It is exported raw to the developed world, where it is cleaned, processed, and added as a stabilizer to everything from soft drink concentrates to cosmetics – which are then exported back to the developing world. Think about shoes that are made in Europe of leather imported from Somalia, and then exported back to Mogadishu. With the low tariffs that would come with increased liberalization, these imported, processed goods would be relatively cheap, at least to those who could afford them. How, then, can a gum arabic producers' cooperative or a small Tanzanian shoe company expect to gain a foothold in a competitive global economy?

Led by trade in high technology products, manufacturing exports dominate global trade today, and trade in commercial services represents a full quarter of world trade. These sectors are controlled almost exclusively by the world's developed countries, and access is skewed against the developing world.

Tariff rates between developed countries are relatively low, but barriers to developing country exports are shockingly high. According to the United Nations' Human Development Report, "Low income developing countries exporting to high income countries face tariffs three to four times higher than the barriers applied in trade between high income countries."¹² This means, for example, that Vietnam pays \$470 million in taxes on exports to the United States worth \$4.7 billion, while the UK pays roughly the same tax on exports worth \$50 billion.

This also means that unless the prevailing tariff structure changes, developing countries face very real barriers to increased trade in value-added agricultural products. Developed countries generally apply low tariffs to raw commodities, but increase tariff rates for processed or 'value-added' goods. In Canada, for example, tariffs on 'first stage' or processed food products are 12 times the tariff rate for raw commodities. The net result is that, for example, the developing world produces most of the world's cocoa beans, but Germany is the world's largest exporter of processed cocoa.

Today, manufacturing exports dominate global trade, and trade in commercial services represents a full quarter of world trade. These sectors are controlled almost exclusively by the world's developed countries, and access is skewed against the developing world.

With a distinct advantage in commercial services, the United States and European Union are now urging developing countries to open their markets further to services – including in energy, water, telecommunications, transport, and tourism. While liberalization would extend the reach and thus availability of services in the developing world, it would also squeeze nascent local service providers out of the market. The answer rests in part in allowing developing countries – the majority of which have taken momentous steps to open their economies over the last decade – to further open their economies both gradually and selectively.

During their own transitions from agrarian to industrialized economies, today’s developed countries practiced only selective liberalization, opting to manipulate tariff rates to protect nascent industries from external competition until they were able to compete on the world market. In more modern times, some of the most successful emerging economies have adopted a similar approach. China, Singapore, Malaysia, and Vietnam have grown globally competitive and lifted millions out of poverty in part by temporarily protecting their national industries – and in particular their technology sectors – from external competition.

As long as they are unable to gain a toehold in value-added processing or service delivery, poor countries will remain dependent on raw commodities and unable to generate the rural growth that translates into increased purchasing power.

The liberalization of manufacturing and commercial services by the developing world would provide a net, short-term gain for the developed world. But over time, it would only reinforce the conditions for poverty in the developing world by replicating the dynamics that have dominated agricultural trade. As long as they are unable to gain a toehold in value-added processing or service delivery, poor countries will remain dependent on raw commodities and unable to generate the rural growth that translates into increased purchasing power. Over the long term, this

means few gains in the fight against global poverty and fewer new markets for a growing global economy.

THE ELEMENTS OF A PRO-DEVELOPMENT TRADE POLICY

Trade now accounts for a greater share of world income than ever before. But according to Oxfam’s “Rigged Rules and Double Standards,” low-income countries account for only three cents of every dollar generated through exports in the international trading system.¹³ Even with the expansion of global trade, 54 countries are poorer today than they were 15 years ago; poverty levels in Africa have increased by 43 percent over the last decade; and almost half of the world’s people – the vast majority of them working people – live on less than two dollars per day.

Experts agree that the technological advances of the next few decades will not have any meaningful impact on the world's poorest countries, and that over a billion people will join the global workforce in the next decade – most of them in the developing world. At the same time, the United States will face mounting competition from emerging trading powers, including China and India, as it seeks to find new markets for American products.

It is both ironic and tragic that changes to U.S. trade policy that favor the developing world are often opposed on the grounds that they hurt U.S. producers. The irony is that by promoting development through increasing trade and improving the terms of trade, the United States can help to increase the purchasing power of the world's poor, and thus pave the way for increased market demand for American goods and services in the future. The tragedy is that this argument pits producers at home and abroad against one another, when in fact they aspire to the same goals.

In Hong Kong and beyond, international trade negotiations provide the world's most powerful countries with an opportunity to approach the evolution of a global trading system not only as a path to greater national wealth, but also as the means of redressing the gross economic imbalances that color an increasingly fragmented world. Like any country, the United States can and should pursue its own economic interests in defining the terms of world trade. But American interests extend beyond the next fiscal year. Our prosperity, security, and moral credibility depend on a world united behind common principles and a global order that affords a majority of the world's people the right to live in dignity, earn a living wage, and offer better lives to their children.

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Trade is one of the paths to that future – but only if we move swiftly to level the playing field and take active measures to ensure that the world's poor are not locked into poverty by a system that advantages the world's richest countries. The United States can take a stance in Hong Kong and future negotiating rounds that offers the world's poor the hope that globalization will also include them; it can, at the same time, make moves at home that will guarantee that America's working people are not left behind as a result.

It is time for America to think globally and act locally. By investing in the potential of our own domestic agricultural sector to produce alternative energy, the United States can create new markets, increase farm income, and offer rural America something better than a safety net – it can offer a competitive edge. In so doing, the United States can take the first step in a strategy designed to offer farmers in the developing world something better – the chance to compete in a fair market.

Meaningful success in an effort to reduce global poverty, however, will require that we take other additional steps. First, rather than waiting for a developing country to take legal action in the WTO, the United States should proactively ensure that it is in compliance with GATT agreements that prohibit dumping. Specifically, the U.S. Congress should act on the proposal by USAID Administrator Andrew Natsios to replace 25 percent of the U.S. food aid budget with cash, and in turn demand that the food aid budget is maintained at current levels. As production levels in regional markets allow, the share of food aid acquired through cash purchases should increase.

The world's poorest countries should be provided with the flexibility to adjust tariffs, particularly in sectors where they maintain a potential comparative advantage.

Second, the United States should take the lead in crafting an agreement within the WTO and among the international financial institutions and donor governments that would allow the world's poorest countries to determine the pace and sequence of the liberalization of their manufacturing and service sectors in a manner that would permit those sectors to develop. The world's poorest countries should be provided with the flexibility to adjust tariffs,

particularly in sectors where they maintain a potential comparative advantage. In order to increase investment in these nascent industries, the United States should also consider providing limited tax incentives to American companies that invest in joint ventures in those critical sectors.

Third, the United States should make targeted investments designed to help poor countries break out of their dependence on the export of raw commodities, diversify their economies to include value-added processed goods, and tackle the challenges posed by non-tariff barriers to trade. This requires reforming a foreign aid program that is currently plagued by proliferating agencies, initiatives, and accounts, not to mention competing goals and priorities.

Introduced in 2002 by President Bush and designed to provide major capital investments in the “good performers” among the world's poorest countries, the new Millennium Challenge Account should give priority to efforts to diversify

commodity-dependent economies. Specifically, it should provide the investments that can augment the capacity of developing countries to expand agricultural processing and other value-added production. Coupled with this shift, the United States should provide eligible countries increased market access for processed agricultural goods. Finally, the United States should work with other developed countries to design a special arrangement for developing countries to deal with new non-tariff barriers to trade and, specifically, afford them greater latitude in meeting new food safety and traceability of origin regulations.

Taken together, these measures would not turn the tide of globalization. But if pursued, they could persuade the millions of the world's poor who question the credibility of the global trading system – and its leaders – that the Doha Development Round is not simply a gesture designed to check a box, but is instead the opening round in a collective effort to ensure that globalization works for the working poor.

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ENERGIZING THE AGRICULTURAL ECONOMY: A PROGRAM FOR INNOVATION AND RENEWAL

A windmill turns in the breeze; a farmer feeds and waters his horses in its shade. One hundred years ago, the U.S. agricultural sector was powered by renewable energy out of necessity. Wind, water, and beasts of burden were the only sources of “power” for the farming family, and yet through ingenuity and innovation they managed to feed themselves and a growing nation.

Today, the United States consumes nearly 21 million barrels of oil each day,¹ two-thirds of which are imported.² With only 4 percent of the world’s population, the United States accounts for a quarter of global petroleum demand, making it the most profligate consumer of oil on the planet.³

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As the energy demands of China, India, and other countries increase, so too must U.S. concern about its future supply of oil. Oil is a finite resource, dispersed unevenly around the world. And although American consumption radically outpaces that of the rest of the world, proven domestic reserves account for only 2 percent of global reserves.⁴ Even with stable supply and demand, as long as the United States relies on oil as the lifeblood of the economy it will remain dependent on a non-renewable resource largely under foreign control. Such dependency hamstrings U.S. foreign policy in precisely those areas of the world where leadership is needed most.

While our dependence on foreign oil undermines our national security, the growing cost of energy undercuts the economic security of working Americans. Gasoline prices skyrocketed this summer and home heating prices are expected to follow suit this winter. In rural America, once-profitable family farms now face a new challenge as the increased cost of gasoline and diesel leads the transportation industry to raise the price of hauling crops by as much as four times the normal rates.⁵ In addition, it is increasingly clear that dependence on fossil fuels is making climate change not just a possibility, but a reality.

The United States needs more from a strategic energy policy than drilling our nation’s remaining oil and gas supplies, cajoling Saudi Arabia and the other “allies” upon whom we depend for more oil, increasing the subsidies paid to oil companies, and holding the occasional congressional hearing on gasoline prices to make it look like the government cares.

Waiting for the situation to get worse is not a strategy, it is a travesty. But by investing in that same agricultural sector that transformed a young American economy, the United States can kick-start a dynamic renewable energy industry. By bringing to bear a commitment to self-reliance and innovation, America has the opportunity to produce sufficient energy to meet its growing needs, even as it protects its environment, revitalizes its economy, promotes global development, and improves its balance of trade.

The Limits of Oil. Constrained by the laws of physics and vagaries of geology, an oil field can only produce a fraction of its total oil resource. Oil extraction rates start low and increase to a maximum, or peak, before declining to a point at which no more oil can be extracted profitably from the field. The same applies to a country's total oil reserves. In 1956, M. King Hubbert of Shell Oil predicted that U.S. oil production would peak in the early 1970s. Although derided at first, his prediction proved accurate: U.S. oil extraction peaked by 1971.⁶

Today, a growing number of oil industry insiders and analysts are concerned that the world oil peak is not far off.⁷ According to a 2004 Department of Energy analysis, global oil reserves are already being depleted three times faster than new reserves are being discovered. Those who are more optimistic about the future oil supply assume that the Organization of Petroleum Exporting Countries (OPEC) will dramatically increase its total production for years to come – a far from safe assumption given continued instability in the Middle East and how little is publicly known about the reserves of many countries. Even Saudi officials have privately expressed concern that they will be unable to meet projected global oil demand within a decade,⁸ and some U.S. officials have expressed skepticism about Saudi Arabia's current oil forecasts.⁹

With current production already struggling to keep pace with growing demand, a decline in extraction could at the very least inflict profound damage on the

The United States spends \$400,000 every minute on imported oil.

U.S. and global economies. Already, the United States spends \$400,000 every minute on imported oil,¹⁰ while from January to August of 2005 the United States sent nearly \$28 billion directly to members of OPEC.¹¹

These energy imports generate massive trade imbalances and swell the coffers of a number of unstable and undemocratic regimes. Last year, Federal Reserve Chairman Alan Greenspan went so far as to declare that the high price of imported oil amounted to a tax on U.S. citizens that cost the nation three-quarters of a percent of its economic output.¹² An Oak Ridge National Laboratory study, meanwhile, estimated that the volatility of the oil market over the past 30 years has cost the U.S. economy \$7 trillion.¹³

In recent years, these trends of dependency, rising prices, and diminishing supply in the market for transportation fuels have been replicated in the natural gas market. The desire to reduce pollution from utilities has led to a rapid increase in natural gas powered electrical generation. In terms of environmental impact, this is a good thing. Compared to a conventional coal-fired power plant, burning natural gas emits less carbon dioxide and nitrogen oxide, and no sulfur dioxide or mercury.¹⁴

However, domestic natural gas supplies are increasingly unable to meet this new demand. As a result, the United States has moved from having some of the world's cheapest natural gas in the 1990s to the most expensive today, as demand for this limited resource has surged. This has had a detrimental impact on the economy, especially in the chemical and agricultural industries that are dependent on natural gas not only for energy, but as an essential feedstock for production. An 80-year-long trade surplus in chemicals has now come to an end,¹⁵ and farmers have seen their production and processing costs rise (including a doubling of the cost of nitrogen fertilizer made from natural gas over the past two years alone).¹⁶ Thus, sectors of the economy that rely heavily on electricity and natural gas also urgently require affordable energy alternatives.

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The Climate Change Challenge. As difficult as the diplomatic, economic, and trade issues posed by oil are, the challenge of combating climate change may surpass them all. Hurricane Katrina was a stark reminder that environmental disruption can take a horrible toll on society. It is now proven science that rising concentrations of greenhouse gases (especially carbon dioxide and methane) in the atmosphere are increasing global temperatures and escalating the risk and severity of extreme weather events, agricultural losses, water shortages, and damaged ecosystems.

Preventing or mitigating the impacts of global climate change will require new energy systems, the deployment of innovative technologies, investment of considerable resources, and, perhaps most importantly, increased and sustained political resolve, all on a global scale. Without at least the active participation of the United States – and ideally, its leadership – progress on any of these fronts will prove elusive.

The United States is by far the largest emitter of greenhouse gases per capita, but total emissions from countries in the developing world are increasing rapidly and some are nearing U.S. totals. The use of petroleum in vehicles is a major contributor to this global warming pollution (of the 5.9 billion tons of carbon

dioxide emitted in the United States in 2003, nearly a third came from the transportation sector¹⁷) but electricity for residential and industrial consumers also significantly contributes to greenhouse gas emissions. Sources of low- or no-carbon energy are desperately needed throughout the economy – and in both the developed and developing worlds – to avoid dangerous climatic destabilization. Agriculture will be essential in meeting these growing needs.

Eco-Capitalism: An Opportunity for Rural America. The rural economy can play a pivotal role in putting the United States on a secure and sustainable energy pathway by producing and processing biofuels and bioproducts, generating clean electricity, and storing carbon. Utilizing these resources will increase U.S. energy security and reduce global carbon emissions, while creating real economic opportunity for agriculture, the forest products industry, rural communities, and Native American tribes.

An economy that runs on renewable energy will provide two new and potentially substantial markets for farmers to enter: one for energy products and one for the tradable carbon credits that are the mechanism for tracking emission reductions. The Natural Resources Defense Council estimates that an aggressive biofuels

The Natural Resources Defense Council estimates that an aggressive biofuels development and deployment plan could increase farmers' profits by \$5 billion per year by 2025.

development and deployment plan could increase farmers' profits by \$5 billion per year by 2025.¹⁸ At the same time, carbon credits from biofuels, windpower and increased carbon storage in the soil could provide an additional windfall for farmers. It is estimated that income from carbon credits would cut the net cost of biofuels by \$1-6 per barrel and increase net pretax farm income by about \$26-128 per acre per year from the 2002 average of \$43.¹⁹

Furthermore, farm revenues can be enhanced by locating the processing of bioproducts near feedstock production, bringing new economic development to rural states, and decreasing the costs of commodity production. The price of a bushel of corn may have risen by as much as ten cents due to the rapid increase in corn ethanol consumption since 2000, but farmers who own shares in ethanol plants have accrued gains equivalent to 50 cents per bushel because of their annual dividends.²⁰ The state of Minnesota has found that by processing corn products instead of exporting the raw corn, they can double the value of each bushel to the farmer.²¹ In the near future, farmers could generate as much as half of their income from sources other than traditional crops.²²

Farming Energy: Present and Future. The corn ethanol industry has been one of the bright spots in the rural economy. The United States produced 3.4 billion gallons of ethanol in 2004 and has reached record production levels in 2005. The most recent numbers from the Energy Information Administration show production soaring to nearly 11 million gallons per day in August 2005.²³ An additional one billion gallons of capacity is currently under construction in the United States, much of it by farmer-owned cooperatives.²⁴ Since 1990, cooperatives have been responsible for 50 percent of new ethanol production capacity, redirecting financial flows from energy imports (that benefit foreign emirates directly) into the growth of domestic regional economies.²⁵

The greatest potential for sustainable transportation fuels, however, will come from emerging technologies that produce alcohol fuels from cellulose. Unlike corn ethanol (which is produced only from the starch of kernels), “cellulosic ethanol” also uses the woody, rigid material that makes up the majority of a plant. Once considered merely waste, the discarded corn stalks, sugarcane residues, and rice straw are finding new purpose as feedstock for fuels.

The greatest potential for sustainable transportation fuels will come from emerging technologies that produce alcohol fuels from cellulose.

Switchgrass, a perennial prairie grass native to the Midwest and Southeast, has tremendous promise as a source of cellulosic ethanol. It has a high yield, requires little water or fertilizer (further reducing energy consumption), and prevents soil erosion with its extensive root system. Using familiar techniques, farmers can harvest it like hay once or twice each year. Because it can restore soil fertility, it is already a popular crop for land that has been degraded by annual crop production.

Switchgrass also allows a broader range of farmers to grow ethanol crops, particularly in the eastern United States where corn is less prevalent. With potential yields of seven to ten tons per acre annually, switchgrass could be a real boon to farm economies, generating revenues of \$400 to \$600 per acre in comparison to revenues from corn, soybeans, and wheat of \$100 to \$300.²⁶ Switchgrass cultivation also lowers up front costs compared to conventional crops.

But can ethanol really play a significant role in meeting U.S. transportation fuel needs? According to many experts, the answer is yes. Last year, the Rocky Mountain Institute and the Natural Resources Defense Council released studies that demonstrated how biofuels, coupled with strong efficiency and smart growth policies, could dramatically reduce, if not eliminate, the United States’ need for oil.²⁷

Brazil, meanwhile, already uses ethanol to meet a significant portion of its total fuel needs. The majority of Brazilian drivers fill up with a gasoline blend that is 25 percent ethanol, while a growing number of cars on the road run on pure ethanol.

Between 1975 and 2000, Brazil's ethanol use saved the country \$43.5 billion worth of oil imports.

The economic impact has been substantial: between 1975 and 2000, Brazil's ethanol use saved the country \$43.5 billion worth of oil imports.²⁸ The United States can learn valuable lessons from Brazil's experience.

There are also biomass replacements for diesel, which accounts for 20 percent of U.S. transportation fuel consumption.²⁹ "Biodiesel" can be produced from the oil of soybean and rapeseed, from recycled vegetable oil, and even from unconventional sources like turkey offal using a thermal depolymerization technique.

Biomass powered diesel is not new. In 1897, Rudolf Diesel ran his eponymous engine on biodiesel (specifically, peanut oil), and with a few inexpensive alterations modern diesel engines can run on everything from low fuel blends to pure biodiesel. New John Deere tractors are sold with a 5 percent biodiesel blend in their tanks, while the city of Berkeley, California is running almost all of its diesel fleet (e.g., fire engines and garbage trucks) on 100 percent biodiesel.³⁰ Even though U.S. production is on the rise, the European Union produced 17 times more biodiesel in 2003 than the United States.³¹

Minnesota is leading this country in biodiesel production. Over 60 million gallons per year of biodiesel are due to come on-line there in 2005. Once in production, Minnesota alone will have tripled the annual U.S. production capacity of biodiesel in fewer than three years.³² Minnesota is also the first state to require a 2 percent blend of biodiesel in all diesel fuel sold, which the state estimates will increase farmer revenues by \$56 million and add \$206 million in total economic activity to the state.³³

Minnesota is not alone in investing in biodiesel. Numerous facilities are being built across the United States as demand grows from the trucking industry, U.S. military, and consumers. This year, the U.S. Navy directed all non-tactical vehicles to be fueled with a 20 percent biodiesel blend where feasible. The national low-sulfur diesel requirements that are to take effect in 2006 will further increase the demand for biodiesel, which contains no sulfur and can improve the performance of low-sulfur petroleum diesel.

The desire for clean electricity and the threat of global climate change also present opportunities for agricultural communities to participate in energy markets, beyond producing biofuels for transportation.

Global demand for clean electricity is rapidly expanding. Wind and solar energy are the fastest growing energy sources in the world, though currently they constitute only a small fraction of global energy production. The growing number of state renewable electricity mandates is already providing an opportunity for farmers to supplement their incomes. For example, by leasing small parts of their farms for wind turbines, farmers are earning thousands of dollars from power companies on land that would earn them only hundreds if planted with crops.³⁴ Bioenergy can also play a substantial roll in meeting U.S. electricity needs, bringing new cash crops like perennial switchgrass on-line for co-firing in conventional power plants and powering the biorefineries of the future.

As markets for carbon dioxide emissions develop, farmers will also be able to earn carbon credits for clean electricity, biofuels, and conservation practices that can be sold to polluters in emerging carbon markets. Deriving energy from carbohydrates (in the form of agricultural products and byproducts) rather than from hydrocarbons (in the form of oil, coal and gas) would dramatically slow the rise in global carbon emissions and begin to sequester atmospheric carbon dioxide in soil and plant matter. Biodiesel carbon dioxide emissions are 78 percent lower than those of regular petroleum diesel, while cellulosic ethanol emissions are 68 percent lower than those of regular gasoline.³⁵ Moreover, certain feedstocks, like perennial switchgrass, which have a complex root system, can sequester carbon with the right cultivation techniques, removing carbon dioxide from the atmosphere and storing the carbon back in the earth. A carbon trading system would reward such stewardship with new revenue potential, and further help to accelerate development of farm-based renewable energy.

But the benefits of a transition away from a fossil fuel-based economy to one driven by agriculture and innovation go well beyond the energy sector. Biomass can substitute not only for energy inputs, but also for a broad range of industrial and chemical inputs (such as those used to make plastics, solvents, alcohols, lubricants and greases). In fact, a 1999 National Research Council report found that bioproducts could displace 90 percent of petroleum feedstocks (the equivalent of one million barrels of oil per day) by 2025.³⁶ Industry leaders are already embracing these new products as part of their long-term business planning. Dupont, for example, has set a goal of using 20 percent biomass feedstock by 2010, and it has already developed a nylon derived from corn and a biobased polymer platform.³⁷ But strong policy signals would help to accelerate this transition.

Biobased industry can provide real macro-economic benefits to rural communities as an engine of jobs and growth. But reaching an industrial scale will also improve micro-economic performance for firms, creating new efficiencies and decreasing bioproduct costs. In a biorefinery, for example, the bioproduct itself is just one of many co-products that can include fuels, power, materials, chemicals, and heat, each of which represents new cost savings or potential revenue streams to the firm. In addition, the substitution of renewable feedstocks for fossil fuel inputs like natural gas creates improved price stability by reducing and stabilizing demand in the volatile and constrained market for natural gas, and instead connecting manufacturers to a diverse, domestic supply base in the agricultural community.

HOW DOES THE UNITED STATES GET FROM HERE TO THERE?

The 2002 Farm Bill reauthorization, which included an energy title for the first time, reflects the increased importance that is being attached to renewable energy within the agricultural sector. The Energy Policy Act of 2005, moreover, establishes new bioenergy provisions, such as a renewable fuels standard requiring at least 7.5 billion gallons of ethanol use by 2012. This is the first national renewable energy mandate and may become an important precedent for future requirements that build market demand.

These bills hold promise for expanding the renewable energy market, but they are only as good as their implementation. Unfortunately, Farm Bill energy programs, as well as their complimentary conservation programs, have been continually underfunded by the Congress. This year, conservation and energy programs were cut by \$1 billion in the Senate's version of budget reconciliation, while the House bill sought to halt enrollment in – or completely eliminate – a number of crucial programs. Though funds for the newly authorized energy bill have yet to be appropriated, the chance of complete funding is slim given the growing deficit and Congress's track record on the issue.

The costs of inaction are high and the status quo is not sustainable. Without rapid and radical change, our continued dependence on fossil fuels will undermine our national security, do grave and irreversible harm to the environment, and generate new and higher costs to be paid by working Americans.

The opportunities, however, are many. By empowering our domestic agricultural sector to produce renewable energy, we can reduce our dependence on despoils and increase the chances of meaningful democratic reform in the Middle East. We can rejoin the struggle to prevent human-induced climate destabilization. Finally, as we expand energy markets for domestic agricultural producers, farmers will

enjoy new sources of revenue, while reducing reliance on agricultural export subsidies that have disproportionately benefited industrial scale farming and undermined the capacity of the world's poorest countries to compete in global agricultural markets.

The United States must do better. Here is how:

Aim High. To make the shift to renewable energy, the United States must set bold goals, such as:

- Generating 25 percent of all of the United States' energy from agricultural sources by 2025.
- Using wind, solar, biomass, and other renewable sources to produce 25 percent of U.S. electricity by 2025.
- Extending consumer choice by requiring that all light duty vehicles sold in the United States be able to run on high blends of biofuels by 2015 and reforming fuel economy standards so that credits awarded to automakers for producing vehicles that can run on a combination of gasoline and cleaner fuels be granted only for the time that cleaner fuels are actually used.
- Implementing an expanded renewable fuels standard that would expedite the development of cellulosic ethanol, while preserving air quality and encouraging continual improvement in biofuels production.
- Enacting a national carbon cap and establishing a credit trading market to create incentives for the use of low carbon energy sources like biofuels in both the electrical and transportation sectors of the economy.

Provide the Tools. The United States must promote new policies in three key areas:

- ***Research & Education:*** Increase R&D funding for genomics and other key scientific and technical breakthroughs to \$500 million per year. The United States Department of Agriculture should promote consumer awareness through documentation and labeling of sustainable bioproducts, modeled on the Environmental Protection Agency's Energy Star and the timber industry's Forest Stewardship Council programs.

- **Infrastructure:** Increase the tax credit for installing biofuel fuel pumps. The credit should be \$50,000 in 2006 with a \$10,000 decline in the credit each year until 2010. Smart regulations also can help deploy biofuels while improving public health. For example, low sulfur diesel requirements encourage blending with biodiesel to improve fuel characteristics. These regulations are set to take effect in 2006, but there is opposition. It is essential that these regulations not be rolled back.
- **Finance:** Provide loan guarantees and underwrite the financing of at least ten new biofuel production projects in order to promote the rapid deployment of new technologies like cellulosic ethanol and reduce the perceived risk of private investment. Improve financial incentives to expand the nation's distribution infrastructure for consumer biofuels and the manufacture of efficient advanced technology cars that can run on high biofuel blends.

Focus Support on Family Farms. The family farm can and must play a central role in the renewable energy economy. For this to happen, the United States should:

- Establish a Bioenergy Transition Extension Service – modeled on the successful agricultural extension services that help farmers increase yields – to assist farmers in the transition to bioenergy production.
- Help smaller and mid-sized producers to enter the market for energy crops by funding their transition with money saved from payment limits on subsidies for industrial scale agriculture.
- Define and document the environmental benefits of bioenergy and efficiency programs in order to improve incentives in trade agreements and strengthen their claims to green box status at the World Trade Organization (WTO).
- Un-constrain the Conservation Security Program (CSP) to accommodate any producer wanting to participate and establish procedures and certification tools such that CSP contracts can be used to credit carbon storage in carbon trading markets.
- Use land management policies like the Conservation Reserve Program to encourage harvesting of perennial bioenergy crops (like switchgrass), while maintaining environmental and habitat protections.

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REVITALIZING RURAL AMERICA: THE PROMISE OF A BIOBASED ECONOMY

In the Doha Development Round, the United States and other World Trade Organization members have committed to crafting a global trading regime that promotes the development of the world's poorest countries. But "development" is not only essential for the world's poorest countries; it is essential for the United States.

The dramatic changes in global agriculture mean that rural communities in America – like rural communities everywhere – are at a crossroads. Agriculture, forestry, and other traditional sectors that once were the drivers of the U.S. rural economy now account for a mere 4 percent of rural earnings.¹ Meanwhile, the current configuration of farm subsidies and the prevailing international trade rules pit U.S. farmers against one another in the pursuit of scarce resources, as well as against farmers in the developing world. And as sustainable rural livelihoods disappear and economic pressures grow, small towns struggle to provide the health and educational services that hold communities together. The result is a steady exodus from rural to urban America.

In the face of these fast-paced and disconcerting changes, the agriculture sector has the potential to play a crucial new role in the energy future of the United States while also creating new economic opportunities for rural America. By strategically investing in a biobased economy, the United States can utilize its scientific prowess to rejuvenate its rural sector and lead the country toward energy security.

THE CHALLENGE

Too often rural America is interpreted as synonymous with farming. However, while agriculture directly supported 41 percent of the U.S. labor force in 1900, today it provides a livelihood to just 1.9 percent of working Americans.² Only 2.2 million of America's 49 million rural residents operate farms,³ and more than half of those supplement their income with off-farm employment.⁴

While agriculture directly supported 41 percent of the U.S. labor force in 1900, today it provides a livelihood to just 1.9 percent of working Americans.

These shifts in demographics and livelihoods reveal several critical shortfalls in the United States' rural development strategy. Like farmers everywhere, American

producers need dynamic policies to increase and secure the prosperity of their operations. Unfortunately, U.S. farm subsidies, with their production-related incentives, generate less-than-optimal market conditions for U.S. farmers. Even though the United States Department of Agriculture (USDA) forecasts near record-level production of corn and soybeans in 2005 and net farm income is predicted to be second only to the 2004 all-time high (as a result, largely, of commodity payments to the biggest operators),⁵ the glut of commodities on the market caused by payment incentives is depressing prices below domestic operating costs. As a result, farm subsidies paid out in 2005 will increase more than 60 percent from 2004 and will likely exceed the 2000 record of \$22.9 billion.⁶

However, even as prices drop, these record payments will help only a segment of the farming population because most subsidies support program crops as designated by the commodity titles of the Farm Bill (i.e., wheat, cotton, rice, corn, soybeans, and peanuts). Perhaps more importantly, just 10 percent of commodity farmers collect over 70 percent of the payments.⁷ Therefore, record subsidy payments will do nothing for the 60 percent of farming households that lose money on their agricultural operations and must rely on off-farm income for survival.⁸ Without crop diversification and the reduction of production-related subsidies, American farmers will continue to suffer from the economic downturns created, in part, by the United States' own policies.

Another challenge for rural development is to address the needs of the 46.8 million rural Americans who are not farmers. As agriculture's demand for labor has decreased, manufacturing has filled the void as a key employer in rural areas. Rural manufacturing jobs, however, often require fewer skills and command smaller salaries than urban industrial employment. As a result, rural workers are locked into wage competition with cheap labor at home and abroad. Moreover, communities that rely upon manufacturing companies often see their prospects for economic development vanish when industries relocate in search of a better business climate.

Increasingly inadequate federal support for local social programs compounds these challenges to rural America. Since the Reagan administration, the federal government has decentralized social service funding and devolved these responsibilities to local governments without compensatory monetary support.⁹ For example, block grants replaced matching grants in the reforms to family welfare support in the 1990s; the intense competition for resources created by this change has significantly decreased funding to non-metropolitan counties. Specifically, the introduction of a grant-writing requirement to secure funds in these block grants severely disadvantages rural governments, which have smaller staffs and less available expertise.¹⁰ In this instance, diminishing support from the

federal government negatively impacts poor rural families. Similar adjustments to federal funding have stretched rural county and community governments beyond their administrative capacity to provide quality social welfare programs, schools, and health services to their citizens.

As decent jobs and social services decline, rural areas attract fewer residents, which in turn translates into a diminishing tax base. Furthermore, job and population losses erode the social fabric of rural areas. Emigration breaks community ties, and the remaining residents commute to cities and suburbs for work, leaving less time to devote to their families and communities.

Combined, these challenges threaten the sustainability of the quality of life in rural America. The consequences are particularly severe for regions such as the Great Plains, the Corn Belt, the Mississippi Delta, and Appalachia, which have historically been reliant upon extractive industries that are no longer cost-effective or competitive on global markets. Moreover, areas with the best conditions for farming – flat fields and high precipitation – usually are unattractive as tourist or retirement destinations.¹¹ With few natural amenities such as temperate weather to attract new residents or recreation-based businesses to lure tourists, these parts of the country have been hit particularly hard by the consequences of population decline.

THE BIOBASED ECONOMY

Rather than simply seek to preserve the status quo in the face of these daunting challenges, the United States must carve out new roles for the rural sector. One such opportunity is in the burgeoning – but still far from fully realized – biobased economy.

The United States' growing need for clean, domestic energy could provide a key new market for agricultural production, and it is one that has only just begun to develop in the United States. By making use of agricultural waste materials and giving farmers the option to shift land into production for biofuels and biobased products, agriculture could offer a more promising livelihood for rural Americans.

The United States' growing need for clean, domestic energy could provide a key new market for agricultural production.

A biobased economy is not a panacea for all rural communities. Profitable biofuel plants and biorefineries depend upon several factors of production, not necessarily accessible to all communities. Furthermore, not every small town has the requisite population base to support biobased processing, and those that do may confront other obstacles such as a lack of skilled labor or an underdeveloped market.

However, as the economic and security costs of environmental degradation and energy dependence become increasingly apparent to American citizens, many rural communities are well-positioned to capitalize on the financial and social benefits a biobased economy can provide.

A biobased economy serves multiple rural constituencies. At a time when the implications of the international trading regime are being felt at home and traditional government support programs are in transition, a biobased economy provides farmers with a valuable new market and an opportunity to diversify. The domestic demand for corn for use in ethanol has already raised the price per bushel by ten cents.¹² Similarly, the growing popularity of biodiesel creates new, competitive markets for soybean and oilseed farmers.

In addition to fuel, America's crops are increasingly being incorporated into household products. Polylactic acid derived from corn can replace petroleum-based polymers in plastics and synthetic textiles.¹³ Today corn is being used to produce biodegradable utensils and bottles, as well as socks and cosmetics.¹⁴ This market diversification and expansion will continue to increase crop prices while also mitigating farmers' risks.

The future could also bring expanded income opportunities from farmers' fields. As the conversion of cellulosic material into ethanol and other products becomes cost-competitive with its grain-based alternative, farmers will have the opportunity to sell their crops to the grain market and their crop residue (e.g., rice straw and corn stalks) to the biobased market. While farmers will need to manage residue harvesting to maintain soil health, the processing of cellulosic material represents another way farmers could profit from an expanded biobased economy.

Further, this new paradigm presents farmers with the ability to capture some of the profits generated from value-added products. Many farmers have already joined together to build cooperatively-owned biofuel production facilities. Instead of a ten cent per bushel increase in price, these farmer-investors typically receive

annual returns equal to a 50-75 cent price increase per bushel of grain.¹⁵ Today, most ethanol plants produce both fuel and dried, distilled grain, which is a highly concentrated, affordable feed for livestock. However, the evolution of advanced biorefineries will lead to the efficient production of more lucrative, value-added products, such as chemicals, fibers, and nutrients. As the biobased economy grows, farmer-investors will receive increasingly higher returns from their crops.

The evolution of advanced biorefineries will lead to the efficient production of more lucrative, value-added products, such as chemicals, fibers, and nutrients.

REVITALIZING RURAL AMERICA: THE UPWARD SPIRAL OF THE BIOBASED ECONOMY

A biobased economy has the potential to expand farm earnings and diversify market opportunities, thus providing farmers with income alternatives to market-distorting, production-related subsidies. Whether it is through the increase in commodity prices, the sale of crop residue, or the investment in value-added production, a promising, profitable future for farming is one step toward rejuvenating rural communities. Not only will farm sustainability keep families in rural areas, but it will also demonstrate to younger generations that farming continues to be a creative, rewarding endeavor with a viable future, even as production-related subsidy programs are curtailed or eliminated.

Not only will farm sustainability keep families in rural areas, but it will also demonstrate to younger generations that farming continues to be a creative, rewarding endeavor with a viable future.

A 40 million gallon per year ethanol plant (the optimal size for production and costs related to construction, labor, and administration) employs approximately 40 people.¹⁶ By some estimates, the wealth generated from these operations can further support upwards of 600 employment opportunities in the local economy.¹⁷ For small towns, this level of job creation would impact the local economy in a number of ways.

First, it would attract people to rural areas where the primary affliction is population loss. Between 2003 and 2004, almost half of all non-metropolitan counties saw their populations decline; this trend was particularly pronounced in the Great Plains, where the rural population has steadily shrunk for more than a decade. Much of the loss can be attributed to the exodus of young adults, who typically relocate to urban areas in search of better jobs.¹⁸ This emigration results in an aging rural population that cannot replace itself.

Biobased economy jobs, however, create incentives to stay in rural counties that do not feature natural amenities or recreation-based industries. Moreover, unlike the low-skill jobs that rural manufacturing industries tend to offer, biofuel plants and biorefineries provide some jobs which require managerial or engineering skills. These higher-wage, professional opportunities create a pull-effect toward rural communities that can counteract the push on young, job-seeking adults toward urban areas.

Second, biobased jobs will not instigate a “race to the bottom,” as other rural businesses often do. For example, the rise of the meat-packing industry in the Great Plains in recent decades has provided abundant low-skill employment opportunities and caused the populations of some rural communities to explode overnight. By pitting rural areas desperate for economic development against one another, these companies have extracted profit-maximizing operating conditions from state and local officials – at the expense of worker health and safety and the sanitation of the U.S. food supply. Rural immigrant populations, which typically supply the labor for these plants, often suffer disproportionately from company shortcuts. Car manufacturers in the South, likewise, have obtained huge subsidies from state governments under the threat that, without concessions, these jobs will be relocated overseas. Such predatory business practices trap declining rural areas between a rock and a hard place.

*Almost half of the ethanol
refineries in the United States
are farmer-owned.*

Biobased jobs, on the other hand, are tied to the productivity of the land. Because of transportation costs and restraints, biorefineries function optimally when grain or residue feedstock is supplied from within a 50-75 mile radius.¹⁹ Plant location, therefore, is determined by the agricultural profile of an

area, rather than the tax incentives or health code waivers states or counties can offer businesses and corporations. Local ownership of these facilities – almost half of the ethanol refineries in the United States are, in fact, farmer-owned²⁰ – also make it less likely that workers will be exploited. Local businesses generate income and provide tax revenue for education and health care that can help rural governments compensate for the decline in federal funding.

The biobased industry, therefore, has the potential not only to bolster economic productivity in rural areas, but to help restore a spirit of self-reliance to rural communities. New jobs reduce the need for residents to commute for employment, thereby increasing the time they have to participate in community matters. Local shopping opportunities also keep people (and their disposable incomes) connected to their towns. Schools, often the social center for small towns, play a large role in drawing residents together as higher tax revenues expand the educational and extracurricular activities provided. Better schools also attract more young families to rural areas. Thus, the return of civic engagement at the local level will work in tandem with new economic opportunities to reinforce rural communities’ prospects for sustainability.

RECOMMENDATIONS: PRIORITIES FOR STRATEGIC INVESTMENT

The emergence of a robust biobased economy requires substantial investments by both the government and the private sector. The priorities for investment should be:

- Continued government support for cooperatively- and locally-owned biofuel and biobased production plants.
- Research and development initiatives focused on creating and building advanced biorefineries that are capable of producing cost-competitive biochemicals in addition to biofuels.
- Investment in transportation infrastructure compatible with a biobased economy.

The introduction of a high-value, agriculture-based energy industry will put rural communities on an upward spiral toward economic prosperity. As demands increase for clean, affordable fuel derived from homegrown resources, small town rural America will take on a new and central role in the modern transportation sector, leading the country toward a future marked by technological innovation, clean energy, and smart development.

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GLOSSARY

Bioenergy – Energy, in the form of electricity, heat, or liquid fuel, that is produced from biomass.

Biofuel – A liquid fuel produced from biomass. Types of biofuel include:

- **Ethanol** – A type of alcohol produced by converting the carbohydrate portion of biomass into sugar, which is then converted into ethanol (ethyl alcohol) in a fermentation process similar to brewing beer. Corn and sugarcane are the most common crops used to produce ethanol.
- **Cellulosic ethanol** – A type of ethanol produced from the rigid cell wall material that makes up the majority of plants. Agricultural waste such as corn stalks and rice straw as well as grasses and woody plants can be used to produce cellulosic ethanol.
- **Biodiesel** – A type of ester produced from vegetable oils (fresh or recycled) or animal fats that can be used as a fuel in diesel engines. Soybean and canola are the most common crops used to produce biodiesel.

Biomass – Organic matter from recently living organisms or their metabolic byproducts, such as manure from cows. Biomass includes forest and mill residues, agricultural crops and wastes, wood and wood wastes, animal wastes, livestock operation residues, aquatic plants, and fast-growing trees and plants.

Bioproducts – Replacements produced from biomass for products that traditionally use petroleum as a feedstock.

Biorefinery – A facility that converts biomass into value-added products, such as biofuels, biochemicals, plastics, and livestock feed. Conversion can occur through thermal, mechanical, chemical, and biochemical processes.

Boxes: Amber, Blue, Green (and a *de minimis* box for relatively minor support) – In the traffic light terminology of the WTO, countries have established “boxes” to group subsidies based on their relative impacts on agricultural production and trade distortion. The classifications play a role in determining which farm policies may be permissible under WTO rules. Each category will also influence the scale and pace at which current subsidies must be reduced or eliminated under trade agreements. The boxes include:

- **Amber Box** – Subsidies deemed to encourage overproduction and distort trade most severely. Countries must keep these subsidies below their agreed levels, or caps, and commence reductions.
- **Blue Box** – Subsidies that are determined to distort trade less severely. These payments, though they are linked to production, include set limits and quotas to curb overproduction. U.S. countercyclical payments, which are payments that compensate a farmer's losses when a commodity's market price drops below the established target price, may qualify for the blue box.
- **Green Box** – Domestic support and subsidies not considered to be related in any way to production. These would include direct income support payments that are not linked to production or market price. If a program is deemed to be eligible for the green box, it may receive relatively unlimited subsidies without a cap and be exempt from mandatory reduction. Green means go.

Carbohydrates – An organic compound consisting of a chain of carbon atoms to which hydrogen and oxygen are attached in a 2:1 ratio (e.g., sugars, starch, glycogen, and cellulose).

Carbon Credits – A tool for certifying carbon emission reductions, from fuel switching, technology change, carbon sequestration, or other means. Carbon credits can be traded in carbon markets, such that clean energy producers can sell credits to facilities that pollute more, thus offsetting emissions at the least possible cost.

Carbon Sequestration (or Carbon Storage) – The removal and long-term storage of carbon dioxide (CO₂) from the atmosphere through the use of natural carbon sinks. Major terrestrial sinks include forests and grasslands, which absorb carbon when they break down carbon dioxide during photosynthesis, storing carbon in plant fiber and within the soil. Ocean systems naturally sequester large quantities of carbon. Carbon can also be sequestered mechanically by injecting CO₂ directly into underground formations such as salt caves or abandoned gas wells.

Chronic Poverty – People who live in chronic poverty are people who will be poor for much or all of their lives and will probably pass on their poverty to their children. They will make up the majority of the 900 million people who will still be poor in 2015.

Common Agricultural Policy (CAP) – The main mechanism utilized by the European Union to manage EU farm policy, including a system of production targets and marketing mechanisms designed to govern agricultural trade within the EU and with the rest of the world.

Doha Development Round – A broad agenda of trade liberalization negotiations launched at the fourth WTO Ministerial Conference in Doha, Qatar, in November 2001. The work program known as the **Doha Development Agenda (DDA)** was founded on a consensus that the benefits of a multilateral trading system must be spread to all people, particularly those in developing countries. The program includes negotiations in agriculture, services, industrial (non-agricultural) tariffs, trade and environment, WTO rules such as anti-dumping and subsidies, investment, competition policy, trade facilitation, transparency in government procurement, intellectual property, and special and differential treatment for developing countries.

Dispute Settlement Body – The formal mechanism established by WTO members to meet and settle trade disputes between governments. An independent seven-person **Appellate Body** considers appeals in WTO disputes.

Dumping – The act of selling exported goods below the market price in the receiving country or below the cost of production. If a country is accused of “dumping” goods on the market, it is generally understood that another country claims to be exporting those goods for less than what they are sold for in the domestic market.

Eco-Capitalism – A business or economy where the basic building blocks for industry and the raw materials for energy are derived from renewable sources. Also known as bioeconomy.

Energy Crop – A crop grown specifically for its fuel value. These include food crops such as corn, as well as nonfood crops like switchgrass.

Farm Bill – In the United States, the term “Farm Bill” refers to a multi-year federal support law that governs the nation’s farm policy. The majority of the Farm Bill authorizes legislation that requires additional annual appropriations to implement the provisions of the law. (Note: most commodity programs are treated as entitlements and are not required to seek annual appropriations in order to receive funding). Farm Bills include titles on commodity programs, trade, energy, rural development, food aid, farm credit, conservation, agricultural research, food and nutrition programs, forestry, marketing, etc. The current 2002 Farm Bill is set to expire in 2007.

Fast Track Trade Promotion Authority (TPA) – TPA refers to the manner in which the U.S. Congress reviews implementing legislation for trade agreements on an expedited basis and without amendments. Congress must approve TPA before it takes effect for any implementing bills attached to specific trade agreements with foreign nations. The current TPA is due to expire in mid-2007.

Feedstock – Any material that is converted to another form or product through a manufacturing process. For example, corn kernels can be the feedstock for ethanol, while natural gas is a primary feedstock for ammonia used in nitrogen fertilizer.

Five Interested Parties (FIPs) – Group of negotiating countries actively leading WTO agriculture negotiations: United States, European Union, Brazil, India, and Australia.

Food Security – The principle by which a country maintains that it must be as self-sufficient in agriculture and food production as possible in order to meet the basic dietary needs of its own population.

G-8 – Group of seven leading industrial countries (i.e., Canada, France, Germany, Italy, Japan, United Kingdom, and United States) as well as Russia.

G-20 – “Group of 20” developing country agricultural producers and importers led by Brazil and including India, China, and South Africa that emerged as a negotiating bloc prior to the 2003 WTO Cancun ministerial. During the ongoing Doha negotiations, the G-20 has been an effective advocate for the immediate elimination of rich country subsidies, improved market access for their agricultural products to wealthy markets, and fewer reductions and slower timetables for reducing tariffs in their own agricultural, manufacturing, and services sectors. The G-20 was originally composed of Argentina, Bolivia, Brazil, Chile, China, Colombia, Costa Rica, Cuba, Ecuador, El Salvador, Guatemala, India, Mexico, Pakistan, Paraguay, Peru, the Philippines, South Africa, Thailand and Venezuela.

G-77 – Group of developing countries established at the first session of the United Nations Convention on Trade and Development (UNCTAD). Originally 77, but now more than 130 countries are in this group.

General Agreement on Tariffs and Trade (GATT) – General Agreement on Tariffs and Trade was the original agreement that established a multilateral trade system in 1947. GATT has since been superseded as an international organization by the WTO. An updated General Agreement is now the WTO agreement governing trade in goods.

Genomics – The study of the structure and function of genes in an organism.

Greenhouse Gases – A greenhouse gas is a component of the atmosphere that absorbs heat radiated by the earth and subsequently warms the atmosphere, creating what is commonly known as the greenhouse effect. The main greenhouse gases are water vapor (H₂O), carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and a host of engineered chemicals, such as chlorofluorocarbons (CFCs). Human activities – primarily the burning of fossil fuels and land use changes – are increasing the concentration of greenhouse gases, especially carbon dioxide, in the atmosphere and thus contributing to climate change.

Heavily Indebted Poor Countries (HIPC) – The HIPC debt initiative, launched in 1996 by the World Bank and International Monetary Fund with the support of major donor countries including the United States, entails coordinated action to reduce the external debt burdens of the most heavily indebted poor countries. Debt relief eligibility is determined by a country's track record of reform and its strategy for poverty reduction. As of September 2005, debt reduction packages had been approved for 28 countries, 24 of them in Africa.

Hydrocarbons – A naturally occurring organic compound that contains carbon and hydrogen. Hydrocarbons may be gaseous, solid, or liquid – for example, natural gas, tar sands, and petroleum.

Millennium Challenge Account (MCA) – A U.S. initiative for global development launched by President George W. Bush in 2002. The MCA was designed to provide assistance to countries that rule justly, invest in their people, and encourage economic freedom. Least developed countries must qualify for eligibility according to specific metrics that gauge these criteria. Qualified countries are given an opportunity to submit their own proposals for financing.

Modality – A negotiating blueprint and way to proceed. In WTO negotiations, modalities set broad outlines, such as formulas or approaches for tariff reductions, for final commitments.

Non-Tariff Barriers – Government policies (other than tariffs) such as quotas, import licensing systems, health, safety, environmental regulations, prohibitions, bans, etc. that may interfere with trade and commerce.

Renewable Energy – Energy derived from resources that are replenished rapidly by natural processes, such as wind, solar, geothermal, wave, hydro, and biomass.

Subsidies – Government payments or other forms of support that confer a benefit on a producer of a particular product. Subsidies are used to allow producers to remain economically competitive, even when prevailing market prices would not encourage production. There are two types of subsidies. An **export subsidy** is a benefit conferred by the government on an enterprise that relies on exports. A **domestic subsidy** is a benefit other than an export subsidy that a government confers upon a product or enterprise.

Tariffs – A duty applied to imported products prior to gaining access to a country's markets. In the WTO agriculture negotiations, **market access** talks are attempting to lower trade barriers such as tariffs that restrict or regulate imports. Tariffs tend to give price advantages to similar, locally-produced goods by making imports more costly relative to domestic products. Also, they raise revenue for the government.

Thermal Depolymerization – A process for the reduction of complex organic materials (polymers) into simpler compounds or elements, using pressure and heat.

Trade Distortion – Trade distortion occurs when prices are higher or lower than normal levels in a competitive market.

Uruguay Round – Multilateral trade negotiations launched at Punta del Este, Uruguay, in September 1986. Attempts to liberalize domestic agriculture programs were a significant component of the negotiations. Signed by Ministers in Marrakesh, Morocco, in April 1994.

World Trade Organization (WTO) – The multilateral institution overseeing trade negotiations and rules as agreed by governments of 148 member nations. The WTO was established in 1995 at the conclusion of the Uruguay Round and its main functions include: administration of WTO trade agreements; a forum for trade negotiations; and a dispute settlement system to enforce the terms of agreements.

Sources: World Trade Organization, Organization for Economic Co-operation and Development, U.S. Department of State, U.S. Department of Agriculture, U.S. Department of Energy, Chronic Poverty Research Center, International Monetary Fund.



Center for American Progress

1333 H Street, NW 10th floor

Washington, DC 20005

202.682.1611 • 202.682.1867

www.americanprogress.org