EXECUTIVE SUMMARY

Agricultural subsidies and their poverty and environment impacts are part of a complex web that determines whether agriculture can help the poor and protect ecosystems. Reforming the current agricultural subsidies system in developed countries, a central goal of the Doha trade negotiations of the World Trade Organization, provides an opportunity to generate a number of positive impacts: for poor farmers in developing countries whose ability to compete is hampered by subsidy-driven overproduction in rich countries; for taxpayers in developed countries faced with rising deficits; for the environment in developed countries where subsidies contribute to ecosystem degradation; and, possibly, for the environment in developing countries. But an agreement to reduce subsidies at the international level does not guarantee that the poor and the environment will benefit; it also requires the implementation of strategic domestic policies in developing nations.

Even in the absence of subsidy reduction through the Doha Round, there are ‘no-regrets’ policies that can contribute to making agriculture work for the poor and for the environment. Without a WTO agreement, there will still be immense pressure on developed countries to reduce their agricultural subsidies: from developing countries, which are expected to file more cases in the WTO challenging these subsidies, and from within developed countries because of domestic or regional (in the case of the European Union) competition for scarce budgetary resources. Moreover, without a new WTO Agreement, trade-induced changes that affect agriculture are inevitable, whether they come in the context of global, regional, or bilateral trade agreements or through sheer market changes. The domestic policies needed to make agriculture pro-poor and pro-environment are ‘no regrets’ policies, and countries that adopt them are not only likely to be more prepared for the changes that will come with a new trade agreement, but will be able to position their agricultural sector to be effective agents for poverty alleviation and environmental sustainability.

Trade can be an effective vehicle for poverty reduction, but sound governance, at both international and national levels, is necessary so that increased trade benefits the poor, and prevents or minimizes ecosystem degradation (WRI 2005). This working paper examines what reforms developing countries need to implement so that they can capitalize on reductions in developed country subsidies. It recommends that countries adopt and implement a domestic policy reform agenda that is based on an assessment of the potential impacts of global trade decisions on ecosystem health and human well-being. While every country will have to develop its own package of reforms based on its unique physical, socio-economic, and political circumstances, the paper identifies four areas that policy-makers should address and donors should support. These include policies intended to:

- Empower small-scale farmers;
- Mainstream poverty alleviation and environmental considerations into sectoral plans focused on agriculture;
- Promote ecosystem health for human well-being, in particular ecosystems’ ability to provide essential services;
- Promote best practices in governance.
The reform agenda outlined in this paper is relevant to development organizations such as bilateral assistance agencies, multilateral cooperation institutions, private foundations, and development NGOs. It can serve as a guide for these organizations’ financial and technical support for development—particularly for their agriculture and environment portfolios. By supporting the adoption and implementation of a reform agenda, development organizations can help developing countries take advantage of a change in developed countries’ subsidies, helping make agriculture a vehicle for poverty alleviation while protecting the ecosystems on which poor farmers and society in general depend.

INTRODUCTION

In December 2005, trade ministers and officials from all over the world will assemble in the city of Hong Kong and convene the Sixth Ministerial Conference of the World Trade Organization. For six days, they will review the progress of and make decisions to accelerate the culmination of what has been dubbed as the ‘Doha Development Round,’ the trade negotiations launched in 2001. The Hong Kong meeting is critical to the continuation and success of overall WTO negotiations: with WTO Members still far apart in their positions (South Centre 2005), it is the “last and best chance to conclude the Round by next year” according to WTO Director-General Pascal Lamy (WTO 2005).

At the center of the Doha round are the agriculture negotiations, where agreement is a must if progress is to be made in other trade areas. The current system of international trade in agricultural commodities perpetuates poverty and environmental degradation in both the developing and developed world. In particular, the prevailing agricultural subsidies system contributes to poverty in developing countries and to environmental degradation in many developed and some developing countries (see Table 1 for what is at stake in the subsidies debate). Although various forms of agricultural subsidies also exist in developing countries, the negotiations and this paper focus on subsidies in developed countries. The process of subsidy reform must begin in these countries given their extent in terms of crops, enormous amounts actually spent, and their impact on the world's poor and on the environment. Research shows that the benefits from reducing agricultural support in developed countries are much greater than those from reducing developing countries’ support (Ackerman 2005). It is important to note, though, that reducing some kinds of protection in developing countries could also contribute to poverty alleviation by facilitating trade among these countries.

Reforming the agricultural subsidy system has the potential to generate a number of positive impacts: for poor farmers in developing countries whose ability to compete is hampered by subsidy-driven overproduction in rich countries; for the environment in developed countries where subsidies encourage unsustainable practices; for taxpayers in developed countries; and, possibly, for the environment in developing countries. However, these benefits are not guaranteed; strategic domestic policy reforms in developing countries are necessary to ensure these positive outcomes.

The stated purpose of the agriculture negotiations under the WTO is to “correct and prevent restrictions and distortions in

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Framing the Agricultural Subsidies Debate: Issues at a Glance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environment</strong></td>
<td>Developed Countries</td>
</tr>
<tr>
<td></td>
<td>• Overproduction of limited number of crops</td>
</tr>
<tr>
<td></td>
<td>• Land degradation</td>
</tr>
<tr>
<td></td>
<td>• Water pollution</td>
</tr>
<tr>
<td><strong>Poverty/Livelihoods</strong></td>
<td>• Biggest farms get majority of government subsidies</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
world agricultural markets.” (WTO 2001) Specifically, parties have committed to addressing three issues: export subsidies, domestic support, and market access (see Box 1). In the literature, these issues are often lumped under the single term ‘subsidies.’ In this paper, we use this term as well as ‘protection’ and ‘support’ to refer to these three types of agricultural support.

Agricultural support and protection have received attention from various negotiating groups and organizations that hope a change in the international standards governing them will contribute to Doha’s goal of serving as a ‘development round.’ While acknowledging the potential for this to occur, we suggest that changes in international trade agreements are only one component of a suite of policies necessary to improve agriculture’s contribution to poverty alleviation.

This working paper looks beyond Hong Kong and the Doha Round to examine the question of how developing countries can capitalize on reductions in developed country subsidies to make agriculture a vehicle for poverty alleviation while protecting the ecosystems on which farmers and society in general depend. It does not provide in-depth analysis of the effects of subsidy reduction on developed countries. The policy recommendations in this working paper are a starting point for more detailed analysis; given the heterogeneity of developing countries’ agricultural sectors and related socioeconomic circumstances, each country will be affected somewhat differently by changes in the subsidy system and thus will need to implement different approaches to adjustment.

Section I describes the importance of agriculture to poverty alleviation and the role that trade plays in that relationship. It also discusses the links — both positive and negative, and flowing in both directions — between agriculture and the environment. Section II presents the case for subsidy reform from both a developed-country and developing-country perspective, describing both economic and environmental effects of the subsidy system. Section III explores the potential poverty and environment impacts of subsidy reduction. In section IV, we propose a domestic policy reform agenda that developing countries can implement to ensure that subsidy reductions benefit poor farmers and protect the environment. Such an agenda can and should be supported by bilateral and multilateral development organizations and NGOs.

### Box 1 Agricultural Support and Subsidies

Agricultural support takes many forms. The following are under negotiation in the Doha Round:

**Market access** includes measures that protect domestic agriculture by limiting or otherwise restricting imports. This includes **tariffs** — customs duties on merchandise imports which give price advantage to similar locally-produced goods and raise revenues for the government; **quotas** — limitations on imports for a particular good from a given country; and **special safeguards** — action taken to protect a specific industry from an unexpected build-up of imports.

**Export subsidies** are benefits conferred on a firm by the government, contingent on exports.

**Domestic support:** Sometimes called ‘internal support,’ this is any domestic subsidy or other measure which acts to maintain producer prices at levels above those prevailing in international trade. Types of domestic support include direct payments to producers (including deficiency payments), and input and marketing cost reduction measures available only for agricultural production. Domestic support is further classified into three categories according to the degree of distorting effects on agricultural production and trade:

- **Amber Box:** Refers to the most trade-distorting subsidy payments, including product-specific support, such as direct support and administrative prices, and non-specific support, such as insurance and support for capital and factor use. Subsidies in this category are mandated to be reduced and eliminated under the present WTO regime.
- **Blue Box:** Consists of subsidy payments directly linked to historical production, rather than current price and volume of output. These payments are implemented under schemes which limit production by imposing production quotas or requiring farmers to set aside part of their land, including deficiency payments and acreage support. Blue Box support is deemed to be partially decoupled from production and is not subject to WTO reduction commitments.
- **Green Box:** Refers to decoupled support paid directly to producers, regardless of current production levels or prices. Green Box support is expected to cause little or no trade distortion and is not subject to WTO reduction commitments. The Green Box includes support for environmental programs, government service programs (e.g., research, pest control, extension, and infrastructure provisions), public stocking for food security purposes, domestic food aid, relief from natural disasters, and government income insurance and income safety-net programs.

Source: Adapted from UNDP 2003
Many of the policies and measures recommended in this paper would be beneficial even in the absence of significant change in the WTO; a new international agreement would, however, provide new opportunities and incentives for domestic policy reform. Additionally, because a healthy natural resource base is essential to the long-term viability of agriculture as well as bringing benefits to society as a whole, we include recommendations for government and donor initiatives to promote sustainable agriculture practices.

I. SETTING THE STAGE: AGRICULTURE, POVERTY, TRADE, AND THE ENVIRONMENT

Poverty, agriculture, environment, and trade are fundamentally linked — physically, ecologically, socio-economically, and ultimately at the policy-level. Box 2 illustrates some of these linkages for agriculture and the natural resource-based sectors. While this is the case in all countries, the connections are most obvious in developing countries and countries with economies in transition, where poverty frequently coincides with the predominance of agriculture in the economy (La Vina and Fransen, 2005).

Nearly three billion people in the world live on less than US$2 a day; among them, over one billion people live in extreme poverty, surviving on less than US$1 a day (World Bank 2001). The Food and Agriculture Organization (FAO) estimates that there were 842 million undernourished people in the world in 1999-2001, with 798 million living in developing countries and 34 million in countries with economies in transition (FAO 2004). Worldwide, almost 80 percent of the hungry live in rural areas and depend on agriculture as their source of livelihood (Clay 2004). The Millennium Project’s Task Force on Hunger breaks down this figure, stating that about half of the world’s undernourished are small farmers, 20 percent are landless rural dwellers, 10 percent are pastoralists and fishermen, and the remaining 20 percent are urban dwellers (Mayrand et al. 2005).

Substantial reductions in poverty and hunger among the farming population would have implications for countries’ national economies. In fact, historically, “[a]ll reported rapid reductions in widespread poverty started with livelihoods being enhanced through agricultural transformation” (DFID 2002). Additionally, in many developing countries agriculture is a primary source of foreign exchange earnings (UNDP 2003).

Box 2 Environmental Impacts of Trade Expansion

In 1997 WRI released a report and accompanying country-by-country analysis examining the environmental impacts of trade expansion in Latin America and the Caribbean (Runge et al. 1997; Faeth and McGinnis 1997). The report concluded that trade-led growth creates both challenges and opportunities for environmental quality and natural resource conservation. Challenges arise from the rate and manner of resource extraction in sectors including agriculture, forestry, and fisheries, and in industries including mining, petroleum, and food processing. But there are also opportunities to respond to environmental challenges in these sectors, enhanced by the income that trade creates. In addition, the removal of trade-distorting policies may in itself have some environmental benefits.

The report developed four principles for sustainable trade policy that are relevant to the discussion surrounding agriculture today:

1. Whenever trade and environmental policy issues intersect, both sets of policies should be adjusted so as to maximize the complementarity of trade reform and environmental sustainability.
2. Sustainable economic growth will require environmental damages (externalities) to be explicitly recognized and, where possible, reduced or eliminated (internalized) through the application of the polluter-pays principle or other environmental policy reforms that emphasize pollution prevention.
3. The uncertainty and rapid change of economic and environmental indicators demands a no-regrets, proactive set of trade and environmental policies in which reforms will prove beneficial regardless of what happens internationally.
4. Implementing both trade and environmental reforms will require much clearer definitions of property rights respecting goods and services as well as infringements of those rights by bads and disservices, including environmental pollution.

Just as agriculture is relevant to poverty and hunger, it is also important for the environment. Agriculture is “probably the single most powerful influence on environmental quality in most developing countries” (Scherr 1999), where it accounts for most land use and affects many environmental variables such as water quality and flow, soil quality and movement, natural vegetative cover, and biodiversity. Land use change driven by agriculture is the largest source of forest and biodiversity loss. In OECD countries, agriculture is the single largest user of water and source of pollution (Clay 2004).

Not all agricultural systems are equally destructive, and in fact some types of farming can play a positive role in environmental quality. Agroforestry, for example, is an integrated farming system that attempts to mimic a natural ecosystem and can provide a number of ecosystem services such as soil and water...
conservation and soil nutrient cycling. In more intensively cropped systems, planting hedgerows along contours can minimize erosion on hillsides (McNeely and Scherr 2003). Some agricultural lands, if managed properly, can help sequester greenhouse gases from the atmosphere (Clay 2004).

The relationship between agriculture and environment is complex and bidirectional: while agriculture can degrade ecosystems, degraded ecosystems also erode the viability of agriculture, with important implications for poverty. More than half of the world’s poorest people live in ecologically vulnerable areas (Vitalis 2004). Desertification, drought, and declining agricultural yields are major drivers of poverty and hunger among these populations, and poverty can in turn be a contributing factor to environmentally unsustainable livelihood practices (Mayrand et al. 2005).

For agricultural growth to play a positive role in poverty reduction, and for that growth to be environmentally sustainable, special attention must be given to how trade, both domestic and global, interacts with the sector. Barriers to markets (physical, economic, and legal) and unfair competition resulting from trade-distorting policies are principal obstacles to maximizing agriculture’s role in poverty alleviation. At the national level, reforms are needed to accelerate the removal of the physical and economic isolation of poor farmers, which prevents direct involvement in trade and markets at local, national, and global levels. Without such reforms, success in making international trade rules more equitable would have minimal impact on the ground.

II. WHAT ARE THE IMPACTS OF AGRICULTURAL SUBSIDIES ON THE POOR AND THE ENVIRONMENT?

Agricultural subsidies in most developed countries have remained high and have not been substantially modified for the past two decades, notwithstanding the fact that agriculture represents a small share of national income and farmers are decreasing in number — they make up about 2.6 percent of the labor force in the United States and 4.4 percent in Europe (IFPRI 2003). The United States, the European Union (EU), Japan, and other Organization for Economic Cooperation and Development (OECD) countries provide about US$300 billion annually in support to farmers (Chigunta et al. 2004; OECD 2004). This is the equivalent of 1.3 percent of GDP in OECD countries and roughly six times all official development assistance (Greig-Gran 2003). The US$300 billion figure refers to total support and includes payments to farmers as well as import restrictions and other government interventions such as research and development (Elliott 2004). Of support that is considered most trade-distorting, OECD countries are estimated to have spent approximately US$180 billion a year between 2001 and 2003 (Elliott 2004).

What are the impacts in subsidizing countries?

While agricultural subsidies’ original goals were to enable small family farms to operate and to ensure food security, their current use is far from this vision. The distribution of subsidies is uneven, significantly skewed in favor of larger farmers and agribusiness with capital-intensive, highly mechanized operations on vast commercial estates rather than small farmers considered poor by developed-country standards (Cline 2003). The WTO Annual Report (2003) estimates that in the EU, United States, Canada, and Japan the largest 25 percent of farms receive 70 percent, 89 percent, 75 percent, and 68 percent of total agricultural subsidies, respectively. In the United States, 60 percent of farmers are provided no support at all, while the biggest 7 percent account for 50 percent of government payments (Diao et al. 2003).2

Agricultural subsidies also exacerbate the environmental damage resulting from agriculture in developed countries (Vitalis 2004). As early as 1991, U.S. farm policy was shown to distort economic realities and inhibit the use of resource-conserving agricultural practices by making such practices appear less profitable (Faeth et. al and Repetto 1991). Government support influences both the quantity and types of crops produced. Under the U.S. Farm Bill (see Box 3), some payments are tied to yields, encouraging farmers to produce more of a certain crop than they otherwise would or to bring

---

2. Under the US Farm Bill of 2002, farmers in just six states — Iowa, Illinois, Texas, Kansas, Nebraska, and Minnesota — are estimated to receive almost half of the subsidy payments. Most of these subsidies go towards corn, wheat, cotton, rice, soybeans, and protected specialty products like milk, sugar, and peanuts. In states where these products are not grown, most farmers are out of luck. For example, in California only 9 percent of farmers receive subsidies; in Florida, only 8 percent; and in New Jersey, only 7 percent (Lager 2002).
Box 3  U.S. Farm Bill

The United States 2002 Farm Security and Rural Investment Act, more commonly known as the 2002 Farm Bill, is perhaps the most generous farm subsidy package in U.S. history, encouraging overproduction and depressing international agricultural prices (WTO 2003). The 2002 Farm Bill marks a complete reversal of the previous trend toward lower farm subsidies and smaller production stimuli promoted by the U.S. Congress through the former farm bill, the 1996 ‘Freedom to Farm’ Act. It provides nearly US$180 billion, an increase of US$83 billion over the 1996 Farm Bill, to domestic farmers over 10 years in the form of subsidies, farmland conservation, rural development, and food security support (ICTSD 2002; Summer 2003; Commission for Africa 2005).

The 2002 Farm Bill is scheduled to be reviewed by 2007. The House Agricultural Committee and a number of other stakeholder groups started preliminary discussions and field hearings for the 2007 Farm Bill in 2005. Opportunities have arisen to reform the bill to provide lower government payments, fairer trade practices, and higher funding for conservation and improvements in nutrition programs. The current U.S. budget deficit is likely to have significant ramifications for the new Farm Bill deliberations. In addition to internal budget issues, external pressures through the WTO — particularly the WTO ruling on U.S. cotton protection and the potential for other cases to be filed by developing countries — could influence the review of the Farm Bill.

marginal land into production, increasing the pressure on the environment (Mayrand et al. 2003).

Some subsidies are designed to produce positive environmental outcomes and are generally not thought to be trade-distorting. These include conservation or land retirement programs under the US Farm Bill and rural development programs in the EU Common Agricultural Policy (CAP). While these types of subsidies are important because they provide incentives to improve the sustainability of agricultural practices, studies suggest that a very low proportion — 2.9 percent, according to one report — of overall support actually results in positive environmental outcomes (Mayrand et al. 2003).

What are the impacts in developing countries?

Overproduction of certain crops in developed countries, encouraged by subsidies, has led to dumping — selling at prices below those that would prevail in undistorted markets and, in many cases, at prices below the cost of production — of excess agricultural commodities on the world market (Diao et al. 2003). This has contributed to the general downward trend of world market prices for agricultural commodities over the past several decades. The impact of developed country subsidies is felt by agricultural sectors in developing countries. According to a WTO report (2003), these subsidies “constrain agricultural growth and development opportunities in non-OECD countries.” One estimate shows that trade distortions caused by agricultural subsidies cost developing countries US$200 billion per annum (Akande 2002). Among the developing countries, those in sub-Saharan Africa have suffered the largest loss (in percentage terms) of about 10–15 percent of total agricultural and agro-industrial incomes (Diao et al. 2003).

A number of studies have documented cases of the dumping of particular subsidized agricultural exports in developing countries’ markets. Oxfam, the International Cotton Advisory Council (ICAC), and others have shown that subsidies provided to cotton farmers in developed countries — primarily the US — reduce world cotton prices, generating losses for lower-income cotton-producing countries. Estimates suggest that in West and Central African countries, where an estimated 10 million people rely on cotton for their livelihood, up to US$250 million is lost every year as a result of these subsidies (Oxfam 2004). A recent study by the International Food Policy Research Institute (IFPRI) indicated that a 40 percent reduction in farm-level cotton prices leads to a 21 percent reduction in income for cotton farmers and a 6–7 percent increase in rural poverty (Pfeifer 2004).

In the sugar sector, OECD countries’ subsidies averaged US$6.4 billion dollars per year from 1999 to 2001; this figure is slightly more than the combined value of developing country sugar exports, which total about US$6.3 billion annually (IMF 2001; Aksoy and Beghin 2005). As a result, the share of developed countries’ exports in the world sugar market has risen from 30 percent during the 1970s to some 40 percent in 1990s. Conversely, the share of sugar exports from developing countries declined from 71 percent during 1980–85 to 54 percent in 1995–2000 (Mitchell 2004).

U.S. corn is exported at prices 20 percent below the cost of actual production, and wheat at 46 percent below cost. As a result, Mexican corn farmers are being put out of business (Akande 2002). European countries also subsidize dairy and wheat, depressing world market prices for these commodities (World Bank 2003). Japan provides subsidies to rice farmers — at 70 times the cost of production — effectively shielding domestic farmers from exports from Thailand, Vietnam, and other countries (Wailers 2005).
Developed country subsidies may also have environmental effects in developing countries, to the extent that they result in lower producer prices and thus influence farming practices and overall poverty in rural areas. One response to low prices is to stop farming or to shift production from the unprofitable crop(s) to other commodities, which, depending on what alternatives farmers turn to, could have either negative or positive environmental impacts. In Brazil, some cotton farmers switched to other crops when cotton prices began to fall; in West Africa, some farmers shifted to livestock production or subsistence farming to feed their families (BBC 2003; Pfeifer et al. 2004).

In some cases, though, farmers cannot or do not decrease production in response to falling producer prices. This is due to a variety of factors, such as a lack of jobs in alternative sectors or unsuitability of land for other crops. Cultural ties to land or a particular crop, such as maize in Mexico, could also keep farmers growing crops even when it is not economically optimal (Polaski 2003; Audley et al. 2004). Instead of shifting out of production of the unprofitable crop, such farmers may actually increase production in the hopes that greater production will compensate, at least partially, for lower prices (Audley et al. 2004). The environmental effects of greater production include bringing marginal and uncultivated land into production, increasing the use of agro-chemicals, and reducing fallows (Mayrand et al. 2005).

Poverty exacerbated by developed country subsidies also means that farmers in developing countries are less likely to invest in sustainable practices. For example, WWF predicts that in Zambia, Zimbabwe, Mozambique, and Malawi more than 60 percent of total water supply will be used to irrigate sugarcane by 2025. The region needs to invest in more efficient and sustainable irrigation practices, but it will only be able to do so if it earns more from sugar (WWF 2004), the price for which is currently kept low by EU subsidies. Not only would greater profits generate funds necessary for irrigation infrastructure, but they would also provide an incentive to improve infrastructure, as farmers are more likely to invest in enterprises that generate greater returns.

III. REDUCING SUBSIDIES: POTENTIAL CONSEQUENCES FOR POVERTY AND ENVIRONMENT

Reducing subsidies makes sense from both a developed and developing country perspective. Given the limited number of beneficiaries within developed countries, and the price to taxpayers, the economic case is clear. Environmental gains are also likely, though additional measures may be necessary to see significant improvements. There is a strong economic interest among developing countries as well, given the potential for subsidy reduction to raise farmer incomes. While subsidy reduction is an important element in reducing rural poverty in developing countries, though, there is no guarantee that it will automatically benefit the poorest farmers — domestic policies will be important in translating subsidy reduction into poverty alleviation. Likewise, the environmental effects in developing countries are unclear and will vary depending on domestic policies that mediate how farmers respond to the effects of subsidy reduction.

What are the poverty impacts of reducing subsidies?

Over the past several years, a growing number of modeling exercises have predicted that liberalizing agricultural trade would have positive and profound impacts on poverty in the developing world. Depending on the models’ assumptions, methodologies, and scenarios used, estimates of the total potential annual gain for developing countries in agricultural trade associated with the full elimination of protectionism and subsidies in industrialized countries’ agriculture range from just under US$10 billion to US$60 billion (Table 2) (Anderson et al. 2000; Diao et al. 2005; Bread for the World 2003; Watkins 2002; Ackerman 2005). These figures are aggregate sums that include the reduction of all three forms of protection: domestic support, export subsidies, and market access. Several studies show that reductions in barriers to market access generate the majority of gains to developing countries, while benefits from reductions in domestic support are significantly smaller (Anderson et al. 2005).

As Table 2 indicates, predictions of welfare gains vary considerably among studies. Further, more recent research shows more modest gains than earlier studies. Given these facts, not only is more detailed analysis necessary, but further measures to maximize the benefits of trade liberalization for
poverty reduction should be considered, along with alternatives on the domestic front.

Studies focusing on single commodities, meanwhile, have made fairly bold predictions about the benefits that developing countries could reap with the reduction of developed country subsidies. In a 2002 report, Oxfam cites estimates by the International Cotton Advisory Committee (ICAC) that the withdrawal of American cotton subsidies would increase cotton prices by 26 percent (Oxfam 2002).

Studies of the sugar market indicate that reducing subsidy payments to OECD producers and lowering import restrictions would have significant effects on the world sugar market. These effects include changes in market prices, increase of overall sugar consumption, reduction of sugar production in developed countries, and creation of employment for 0.8 to 2.0 million workers in developing countries (WWF 2004).

A large share of these potential gains could accrue to low-cost, highly competitive sugar producing and exporting counties, such as Brazil, Australia, and Thailand. Total welfare gains could be as much as US$4.7 billion (Mitchell 2004). Brazil, one of the world’s lowest cost producers, is expected to benefit the most from reforms, with exports rising 23 percent (Sheales et al. 1999). The other potential beneficiaries of the sugar market reforms are consumers in heavily protected countries; while prices paid to producers are expected to go up, sugar prices for consumers would decline 65 percent in Japan, 40 percent in the EU, and 25 percent in the United States, saving consumers as much as US$4.8 billion per year (Sheales et al. 1999).

However, removal of protection for sugar could create ‘losers’ along with ‘winners’ in the developing world. Small-scale sugar producing countries with high production costs such as Cuba, Belize, Mauritius, Kenya, and Fiji would be particularly hard hit (Clay 2004; Elliott 2005). These countries, where sugar accounts for a significant share of total export revenues, often lack the political, legal, socioeconomic and institutional conditions necessary to exploit new market opportunities effectively. Countries that currently enjoy preferential access to European and U.S. sugar markets would also face losses from liberalization. Borrell (1999) estimates net loss to these producers from full liberalization at US$0.45 billion, accounting for the loss of preferential markets as well as offsets from higher world prices. Other potential losers include net importers of sugar, as removal of sugar subsidies is anticipated to result in an increase of world sugar prices of 30 to 70 percent (Garside et al. 2005; Mitchell 2004).

Even in cases where subsidy reforms lead to economic gains at the national level, not everyone benefits equally from the process. The gains from agricultural subsidy reforms in developed countries and a shift in agricultural production from developed to developing countries may accrue disproportionately to large-scale farmers in many developing countries (Mayrand et al. 2005). Rural smallholders and landless farm laborers, often the poorest members of society, are often marginalized in terms of their access to land and water resources, information, marketing infrastructure, farm credits and inputs, and other government supports (Watkins 2003). Thus, even if producer prices do increase, small farmers may not in fact see any benefits: “Lack of competition among traders, remote geography, poor infrastructure, and high transport costs can all prevent the transmission of border price changes to intended … beneficiaries” (World Bank 2005).

Table 2: Estimates of Welfare Effects from Full Elimination of all Protection and Subsidies in Developed Countries

<table>
<thead>
<tr>
<th>Authors</th>
<th>Welfare Gains in developing countries (US$bn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anderson, Francois, Hertel, Hoekman and Martin (2000)</td>
<td>31</td>
</tr>
<tr>
<td>Watkins, Braum, Diaz-Bonilla and Gulati (2002)</td>
<td>40</td>
</tr>
<tr>
<td>Bread for the World (2003)</td>
<td>60</td>
</tr>
<tr>
<td>Ackerman (2005)</td>
<td>9.6</td>
</tr>
<tr>
<td>Diao, Diaz-Bonilla, Robinson and Orden (2005)</td>
<td>10</td>
</tr>
</tbody>
</table>
The removal of agricultural subsidies could also have an adverse impact on poor net food-importing countries, as well as on poor net consumers, who will have to pay more for food if prices go up. According to Cline (2004), there is one ‘loser’ for every five ‘winners’ from agricultural liberalization. Thus, while agricultural liberalization should result in net poverty reduction, there is potential for increased poverty, particularly in urban areas, and countries may wish to consider mechanisms such as food stamps to assist this population.

What are the environmental impacts?
The effects of subsidy reductions on the environment in developing countries are difficult to predict and have not been thoroughly studied. If world prices go up, as is expected for some commodities, production incentives in currently non-subsidizing countries would increase, with a corresponding rise in environmental damage related to agriculture such as pollution from fertilizer and pesticide use (Lankoski 1997). An OECD study (2000) predicts that if production shifts from developed to developing countries, conversion of nonagricultural land — for example, currently forested areas — could result.

At the same time, higher world market prices could have a positive environmental effect in developing countries by “…. permitting farmers to use more environmentally friendly production techniques and to make conservation-type investments that increase long-term productivity” (Lutz 1992 in Lankoski 1997). Other positive trade-related impacts would be improved infrastructure, sharing of new management techniques, and access to new and adapted technologies. As Mayrand et al. point out (2005), “[t]rade can also open new market opportunities for certified products, thereby improving agricultural practices.”

Within developing countries, commodity production and associated environmental impacts are likely to change as various crops become more or less profitable. When Costa Rica carried out structural adjustment programs, for example, the country shifted away from livestock and grain production toward the production of export crops such as fruits. While soil erosion and compaction declined, the use of agrochemicals and loss of biodiversity increased. Thus, environmental degradation was effectively reallocated from soil erosion to pollution (Lojenga 1995 in Lankoski 1997). Similar changes in production patterns and environmental impacts could also be expected as a result of subsidy reform.

Changes in agricultural production and trade patterns are an important factor for aggregate environmental effects of trade liberalization. If production shifts from developed countries to developing countries, the practices in the latter category — which tend to be much less intensive — would become more prevalent overall, while the more environmentally damaging practices of developed countries would decrease, resulting in environmental improvements on a global scale (Anderson 1991 in Lankoski 1997). In the case of cotton, subsidy reduction in countries where the production system is capital-intensive and relies heavily on irrigation and agrochemicals could stimulate production in other countries where systems are instead labor-intensive and use fewer inputs, making cotton production, globally, less environmentally damaging (Clay 2004).

At the same time, since developing countries overall tend to have more intact ecosystems, the environmental effects of agriculture could be proportionately more damaging in these countries than in developed countries where land conversion has occurred to a greater extent.

The challenge is to find a balanced approach that allows production to increase while minimizing agriculture’s environmental impacts. The next section proposes a domestic policy reform agenda to assist countries in responding to this imperative of making agriculture work for livelihoods and ecosystems.

IV. THE ROLE OF A DOMESTIC POLICY REFORM AGENDA

International agricultural policy reform, such as globally mandated subsidy reductions in developed countries, can contribute significantly to sustainable development in agriculture. However, in order for reductions in agricultural subsidies to benefit the poor and protect the environment, domestic policy reforms must also be implemented. According to the World Bank’s World Development Report (2005), “…there will be winners and losers. Outcomes depend on the ability and willingness of governments to mitigate losses to particularly hard-hit sectors, possibly by redistributing some of the gains accruing to winners” (World Bank 2005).

Because subsidy reductions can result in expansion of agriculture and increased production in a number of countries where there is a concentration of both poverty and biological diversity, it is important to anticipate the poverty and environmental impacts in those areas. The possibility that there could be adverse poverty and environment impacts in some countries...
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Large-scale or higher-income farmers may be able to take advantage of new opportunities and higher prices, at the expense of small-scale and poor farmers</td>
<td><em>Empower small farmers</em></td>
<td>Farmers are more likely to conserve their land and practice sustainable techniques if they know the land will not be taken from them</td>
<td>Greater security encourages farmers to invest in more productive crops and practices</td>
</tr>
<tr>
<td></td>
<td><em>Secure land tenure</em></td>
<td>Community organizations can be effective means for teaching and promoting sustainable agriculture techniques</td>
<td>Organizing for beneficial marketing mechanisms will allow small-scale farmers to compete with larger producers by streamlining transport and lowering costs</td>
</tr>
<tr>
<td></td>
<td><em>Support community enterprises and organizations</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Higher border prices may not necessarily mean that small farmers will receive higher prices</td>
<td><em>Mainstream poverty and environment into planning in the agriculture sector</em></td>
<td>Investment in new technology and tools can help farmers use resources more efficiently and protect their land</td>
<td>Decreasing isolation and empowering farmers with technology and information will help them increase production and receive prices for their products that are closer to actual world prices</td>
</tr>
<tr>
<td>Land conversion (extensification) may result as a consequence of increased production</td>
<td><em>Promote ecosystem health for human well-being</em></td>
<td>Land use laws should prevent or at least minimize ad hoc agricultural expansion</td>
<td>If implemented carefully, a land use strategy should provide opportunities for poor farmers to maintain production in certain areas (i.e., plan carefully around sensitive ecosystems and engage stakeholders in determining land use laws)</td>
</tr>
<tr>
<td>Intensification/increased chemical use could occur with greater production</td>
<td><em>Provide incentives for — and invest in — sustainable agriculture; pay farmers for provision of ecosystem services and soil conservation (seek donor support, e.g., under multilateral environmental agreements)</em></td>
<td>Economic incentives should result in more environmentally friendly practices even while increasing production</td>
<td>Payments for ecosystem services could increase farmer incomes</td>
</tr>
</tbody>
</table>

WRI Conference Paper: Beyond the Doha Round and the Agricultural Subsidies Debate
is not a justification for continuing the status quo on subsidies in developed countries, given the potential for subsidy reduction to bring development benefits to many countries, as well as positive economic and environment impacts in developed countries.

What is needed is a domestic policy reform agenda based on an integrated assessment of the potential impacts of global trade decisions on ecosystem health and human well-being. While every country will have to develop its own package of policy reforms based on its unique physical, socio-economic, and political circumstances, this paper identifies four areas that policy-makers should address and donors should support. These include policies intended to:

- Empower small-scale farmers;
- Mainstream poverty alleviation and environmental considerations into sectoral plans focused on agriculture;
- Promote ecosystem health for human well-being, in particular ecosystems’ ability to provide essential services; and
- Promote best practices in governance.

Table 3 provides examples of how policies in the first three categories above could help countries capitalize on subsidy changes to benefit poor farmers and protect — and even improve — the environment. The fourth type of reform, following best practices in environmental governance, is an enabling step that is necessary for the effective development and implementation of the other three recommendations.

Without the policy reforms introduced above (and described in greater detail in the following paragraphs), changes in the subsidy regime will neither automatically benefit poor farmers, nor be good for the environment. In fact, without the adoption of strategies and policies that are explicitly pro-poor and pro-environment, the opposite could occur. The example of the expansion of soy production in South America, an outcome of global trade trends and decisions, illustrates the potential negative social and environmental outcomes of well-intentioned trade reforms (see Box 4).

**Empowering Poor Farmers**

Agriculture is often one of the few livelihood strategies available to the rural poor, providing small farmers with food and income as well as safety nets during economic downturns. Examples of pro-poor farmer policies that could be adopted and specifically adapted for agriculture include: (1) policies that adopt and implement rights-based land tenure policies, and (2) policies that support community enterprises and provide economic incentives for poor farmers.

It is generally accepted that secure land tenure is essential for poor farmers to prosper and to provide an incentive to use the land sustainably (WRI 2005). The certainty that a person’s rights to continuous use of land or resources will be recognized and protected against challenges from individuals or the state is an incentive to make long-term investments in

---

**Box 4 Soy Expansion in Brazil**

Soy is a major source of income for a number of countries in South America, namely Brazil, Argentina, and Paraguay. It is not surprising that these countries have encouraged the expansion of soy, due to its economic benefits. For example, driven by export demands from Europe, Brazil increased its production of soy by 85 per cent between 1993 and 2002. In 1940 there were only 704 hectares of soy fields; by 2003 there were 18 million hectares. Predicting continued expansion, Brazil’s Minister of Agriculture has estimated that Brazil will overtake the U.S. in soy production in the next 10 to 20 years (WWF 2003).

This expansion of soy production has high ecological and social costs as it contributes to the destruction of forests and savannas of high conservation value. Half of Brazil’s soy production comes from the Cerrado, a savannah area of 200 million hectares covering 23 percent of Brazil. It has the greatest biodiversity of any savannah in the world, providing habitat to approximately 90,000 insect species, 40,000 fungi, 550 kinds of birds and 150 mammal species, including the jaguar. This rich habitat is being replaced by monotonous soy fields, which are spreading into the Amazon (WWF 2003).

Brazil is losing its soil and its biodiversity to soy, and at the same time, small farmers are losing their land. In some cases, small-scale farmers have been pushed out by big producers and forced to move further into the Cerrado or the Amazon forest. In 2002, 16 percent of the Amazon forest had disappeared, and was being cut down at a rate of 7000 ha per day, mostly to make room for cattle and crops, especially soy. (WWF 2003).

A number of organizations have established initiatives to find practical solutions to the social and environmental impacts of soy expansion. For example, in March 2005, at the first Conference of the Roundtable on Sustainable Soy in Foz do Iguacu, Brazil, participants agreed to work toward solutions to reduce the impacts of soy expansion, including developing and promoting responsible soy production. They also agreed on an open, transparent, multi-sectoral, and participatory process to deal with the challenges posed by soy expansion. The conference attracted more than 200 people, representing the soy business — from small to big producers, feed mill operators, meat producers, and retailers — and social and environmental organizations (WWF 2005).
maintaining or enhancing the productivity of that property. Policies on allocation, distribution, titling, and use of land are all elements of land tenure; reforms of this nature directed at strengthening the tenure of poor farmers are needed in many countries (WRI 2005). Agrarian reform laws which redistribute land according to equity principles, such as “land to the tiller,” and the recognition of ancestral domains of indigenous peoples are also examples of policy reforms that could be adopted to give small farmers more secure land tenure (La Vina and Fransen 2005).

Another means of empowering poor farmers is to support community efforts to organize economically and politically. Community enterprises, such as production and marketing cooperatives, can be strengthened so that poor farming communities can better compete with wealthier producers (WRI 2005). In some cases, it might be appropriate to implement policies that provide economic incentives to poor farmers so that they manage and conserve land and natural resources used for agriculture. An example is a law that allows for direct payments to landowners in return for land management that protects ecosystem services, such as water quality and carbon storage, which are of value to society (MA Board 2005).

Protecting Ecosystems for Human Well-being

The recently issued Millennium Ecosystem Assessment (MA) report concludes that progress has been made in providing more food for the world, but this has come at a high price to ecosystems and in the long run will undermine the world’s capacity for food production (MA 2005). The MA suggests ways to reduce ecosystem degradation, including within the agricultural sector (see Box 5).

Over the long term, it is clear that resource-conserving agricultural systems are environmentally and economically superior to conventional systems (Faeth et al and Repetto 1991). These resource-conserving agricultural systems require policy reforms that address land degradation and promote conservation of biological diversity.

Land degradation is not just an environmental problem. Its impacts on development are considerable, as it undermines food production and exacerbates poverty. Land degradation is a huge drain on economic resources (OECD 2002). Agriculture is both a driver of and a solution to this problem: overtiling and poor irrigation practices are causes of land degradation, while soil conservation and other sustainable agricultural practices can help prevent further degradation, mitigate degradation that has already occurred, and contribute to restoration.

Soil conservation practices and technologies that address land degradation are available but have not been widely adopted due to the lack of appropriate enabling policies and institutional environments (Pandey 2001). In order to encourage the widespread adoption of these practices and technologies, domestic policies need to make them affordable and labor intensive (to provide jobs in rural areas). However, as adoption is determined by factors that vary across locations and among
farmers, a thorough understanding of farmers’ objectives and their production constraints is necessary for designing suitable interventions (Pandey 2001). In addition, practices that degrade the soil can be discouraged through environmental and land use regulations, among other measures.

Policies to reduce land degradation nonetheless need to allow for increased agricultural productivity in the short- as well as the long-term. This would require that policies do not impose costs or inefficiencies on farmers and thereby reduce their ability to compete effectively in international or regional markets. (La Vina and Fransen 2005).

In order for agriculture to be practiced sustainably, countries also need the right mix of policies that allow poor farmers to stay and farm in some biodiversity-sensitive areas, including in protected and other high conservation areas, while limiting the impact of agricultural activities on biological diversity (Mellor 2002). One approach is to promote, at least where practical, ecologically-based agriculture, an approach that is consistent with both poverty alleviation and environmental sustainability objectives. Such an approach includes (Thrupp 1998):

- Promoting crop diversification, recycling and conservation of soil nutrients and organic matter, and ecologically-based integrated pest and disease management;
- Reforming trade and market policies that are inconsistent with ecological agriculture, such as subsidies, taxes, and credit policies that promote monocultures and excessive use of chemical inputs; and
- Establishing flexibility and diversity in marketing standards to enable retail food stores and distributors to diversify varieties of produce and reduce wasteful cosmetic standards for foods in markets.

Where protected areas conflict with local people’s livelihoods, the participation of stakeholders in planning and management of the area is recommended. Schemes such as sharing park revenues or employing local people as guards or guides can provide an economic incentive to participate in protecting the area by discontinuing agriculture or adopting more environmentally sustainable practices (Mellor 2002).

**Best Practices in Governance**

Finally, the policy reforms discussed in the previous sections are not in themselves sufficient to ensure that subsidy reductions actually benefit livelihoods and ecosystems. Reforms are also needed in governance processes and institutions, both at large and in those which are specific to agriculture. Such reforms could include:

- Accountable decentralization of authority over land and agriculture decisions;
- Establishment of inter-agency and multi-stakeholder processes in agriculture; and
- Strengthened legal enforcement of environmental laws, rules and regulations.

Decentralization of land and agriculture decision-making, accompanied by vigorous accountability mechanisms (Ribot 2004), can result in local ownership over plans and programs that affect agriculture. Because most of the economic and environmental impacts of agriculture decisions are local in nature, empowering local authorities can be an important step toward making agriculture sustainable.

Mechanisms that allow and promote an enabling environment for an inter-agency and multi-stakeholder approach to agriculture decisions, including trade-related ones, are essential to a reform agenda (La Vina and Fransen 2005). Lead institutions that are sector-focused, such as departments...
or ministries of agriculture, are probably necessary so that accountabilities for decisions are clear. But these institutions, because of their narrow and limited focus, need to be continually engaged with other agencies (such as environmental offices) and all relevant stakeholders. These include farmers of all scales, from the subsistence level to large agribusiness, as well as other rural dwellers and agricultural workers. The agricultural sector serves multiple objectives. Therefore, the establishment of inter-agency and multi-stakeholder decision-making processes, supported by appropriate political and legal authority and adequate budgets, is critical for ensuring ownership by stakeholders of decisions that affect them. Such processes, to be credible, would have to be transparent and allow for meaningful participation by all affected stakeholders, particularly poor farmers and their families (WRI 2005).

Strengthened enforcement of environmental laws is necessary for agricultural development to become sustainable (La Vina and Fransen 2005). For example, land conversion laws — such as the criteria and process by which forest lands are converted for agricultural use — need to be strictly followed. Decisions on whether new areas should be opened up to agriculture should be made scientifically, transparently, and in a participatory manner. Rigorous scientific criteria are key to making these decisions, and all relevant stakeholders (especially affected indigenous peoples and poor farmers) must be consulted and allowed to participate in the decisions. Other environmental laws include the establishment of buffer zones that allow for only certain types of agriculture around the perimeter of protected areas, and ‘environmental corridors’ in agricultural landscapes to mitigate fragmentation of natural habitats (OECD 2002).

Finally, the rigorous enforcement of pollution laws within the agricultural sector is necessary. This could involve the modification of existing pollution laws, which are usually designed to regulate industrial waste and by-products. In addition, countries may wish to modify existing policies to comply with the new Stockholm Convention on Persistent Organic Pollutants (POPs), a global treaty to protect human health and the environment from persistent organic pollutants. A potentially cost-effective means of reducing agricultural pollution, particularly nutrient releases and carbon emissions, is the establishment of market mechanisms (MA Board 2005).

These types of domestic policies, summarized in Box 6, can contribute significantly to agriculture’s power as a tool for development. As illustrated throughout this section, the principal incentives for the adoption of these policies are the poverty alleviation and environment benefits that result from their implementation.

V. CONCLUSION

Agricultural subsidies and their impact on the poor and the environment are part of a much more complex web that determines whether agriculture can become an effective vehicle for poverty alleviation and sustainability in all countries. Indeed, even if meaningful reductions were agreed to in the Doha negotiations, there is no certainty that the purported development goals of this trade round will be achieved. Poor farmers in developing countries may not receive benefits unless these international decisions are accompanied by domestic policy reforms (summarized in Box 6) directed at making agriculture pro-poor and pro-environment.

This reform agenda is relevant to developing country governments, and also to development organizations such as bilateral assistance agencies, multilateral cooperation institutions, private foundations, and development NGOs. It can serve as a guide for their financial and technical support for development – particularly their agriculture and environment portfolios. By supporting the adoption and implementation of this reform agenda, development organizations can assist poor countries in making agriculture a vehicle for poverty alleviation while protecting the ecosystems on which poor farmers and society in general depend.

Domestic policy reforms can be adopted and implemented by developing countries, and supported by development cooperation agencies of developed countries, even while the Doha negotiations are taking place. Indeed, such reforms should be put into place regardless of whether the Hong Kong ministerial meeting succeeds, and even if the Doha trade round completely collapses and is abandoned. Without a WTO agreement, there will still be immense pressure on developed countries to reduce their agriculture subsidies. The pressure will come from developing countries, which are expected to file more cases in the WTO challenging these subsidies. It will result from domestic competition for scarce national or regional (in the case of the EU) budgetary resources. Moreover, without a new WTO agreement, trade-induced changes that affect agriculture are inevitable. These changes will come in the
context of global, regional, and/or bilateral trade agreements or through sheer market changes, and they will have an impact on the poor and on ecosystems.

The domestic policies needed to make agriculture pro-poor and pro-environment are ‘no regrets’ policies, and countries that adopt them are not only likely to be more prepared for the changes that will come with a new trade agreement, but will be able to position their agricultural sector to be effective agents for poverty alleviation and environmental sustainability.

REFERENCES


The **World Resources Institute** is an environmental think tank that goes beyond research to create practical ways to protect the Earth and improve people’s lives. Our mission is to move human society to live in ways that protect Earth’s environment for current and future generations.

Our program meets global challenges by using knowledge to catalyze public and private action:

- **To reverse damage to ecosystems.** We protect the capacity of ecosystems to sustain life and prosperity.
- **To expand participation in environmental decisions.** We collaborate with partners worldwide to increase people’s access to information and influence over decisions about natural resources.
- **To avert dangerous climate change.** We promote public and private action to ensure a safe climate and sound world economy.
- **To increase prosperity while improving the environment.** We challenge the private sector to grow by improving environmental and community well-being.

In all of its policy research and work with institutions, WRI tries to build bridges between ideas and actions, meshing the insights of scientific research, economic and institutional analyses, and practical experience with the need for open and participatory decision making.