

**Trade and Environment:**  
***Critical concepts and considerations for project design  
and implementation***

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November, 1998

Produced under USAID contract number PCE-00-96-00002-00  
(Environmental Policy and Institutional Strengthening IQC (EPIQ));  
USAID Africa Bureau Environmental Capacity Program (ENCAP)



International Resources Group, Ltd., Prime Contractor

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***Background: a globalizing context for development.***

African economies have traditionally been strongly linked to international commodity markets via their traditional agricultural and raw material exports. Today, these historical ties are subsumed and extended by a “globalized” economic environment in which development must both accommodate and leverage deeper, more intimate ties with the international economy than was historically the case. Indeed, accelerating Africa’s integration into the global economy is a key goal for US policy on the continent.

This globalized context for development has two key, highly interrelated aspects:

- *globalization* — a set of structural changes to the international economy manifesting as rapid growth in world trade, foreign direct investment, and cross-border financial flows. Drivers of globalization include a wave of economic liberalization in combination with technological developments which have reduced the costs of transportation and communications;

- *market-oriented, outward-looking development strategies.* These are rooted in the reality of the evolving international economy, as well as declines in official development assistance (ODA), and in a “market consensus” in development theory which dominates the development efforts of national ODA agencies and the major international development institutions

This paper focuses on two trade-related trends which are both consequences and enablers of this globalized context for development: deeper liberalization of international trade regimes — including expanded scope and participation — and the spread of international trade-related standards. Both have significant implications for the environment. Our principal thesis is that while environmental gains do not automatically follow from globalization and trade liberalization, certain international environmental standards may be leveraged and diverted towards achieving such gains.

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### ***Linking this “globalizing” development context to environmental impacts***

The economic theory that supports liberalized trade and that lies behind the “market consensus” in development policy argues that free trade in the international economy and the play of market forces within economies permits resources to flow to their most productive uses. Implicit in this view is that globalization brings changes in economic activities and structure, broadly defined — including manufacturing, extraction, formal-sector and subsistence agriculture, and services.

Such theory, of course, is not without its critics. Skeptics argue that globalization is neither inevitable nor necessary for sustainable development, and that resource efficiency — even if it does result — is not the sole yardstick by which development success should be measured. For these critics, the current global financial crisis is but the latest evidence that unfettered global capital flows creates enormous and potentially ruinous volatility while depleting opportunities for more local, resilient, democratic and equitable development.

Notwithstanding this alternative school of thought, it is certainly true that market-oriented, outward-looking development policies and globalization itself impose new challenges and constraints and lead directly to changes in (1) the role of the state, and (2) the nature of and means by which economic development policy is carried out. These changes in state roles and policies — e.g., removal of subsidies, budget austerity with concomitant reductions in social services, privatization of parastatals, changes in currency controls, freeing of export-import rules — likewise have significant effects on economic activities.

It is these changes in economic activities and in policies that spawn environmental implications and impacts. The direction and nature of these impacts is often not easily predicted. They may be in net positive or negative, and may or may not exacerbate income disparities or enlarge social inequality<sup>1</sup>. These environmental impacts are of concern for two reasons, both of which have important implications for the success of development efforts in the long-run:

1. They may have short, medium, and long-run implications for the ability of the environment to provide services and resources necessary to support economic activities; and

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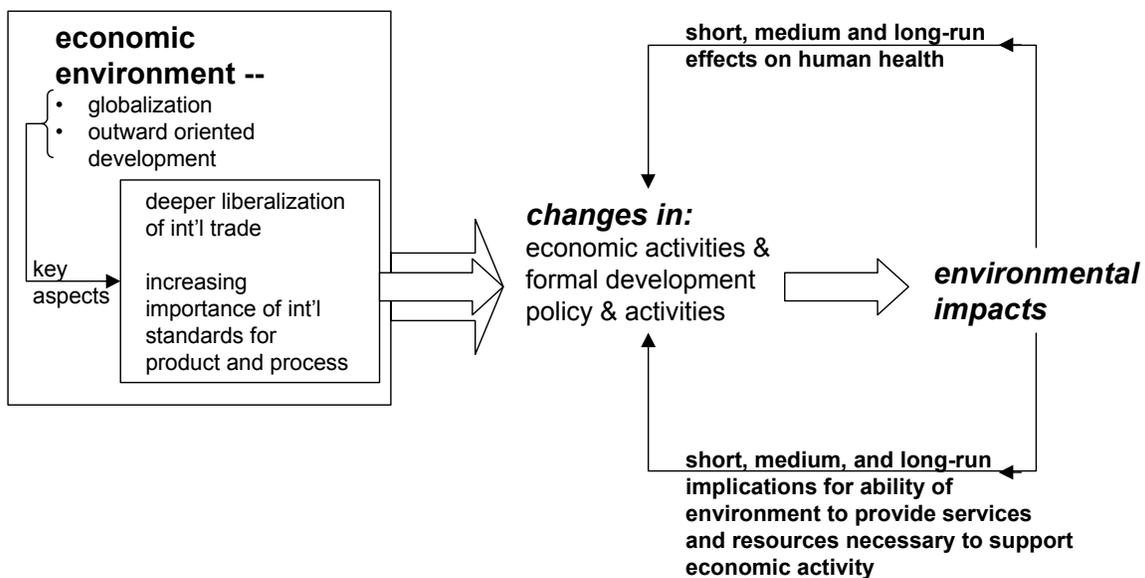
<sup>1</sup> E.g., in exposure to environmental health risks differentiated by socio-economic class, geographic distribution, or ethnic affiliation.

2. They may have direct effects on public health.

A number of examples of changes in economic activity and resultant environmental impacts are discussed in later sections of this paper. They include:

- Removal of subsidies for petro-fuels (particularly kerosene) stimulates increased use of biofuels, with a resultant increase in charcoal manufacture in marginal area and, in turn, accelerated loss of agricultural resources.
- Conversion of land previously used for subsistence activities to commercial export agriculture displaces subsistence smallholders to ecologically sensitive areas (e.g., hillsides), with consequent increase of erosion and deforestation.

This relationship between the globalized economic context and environmental impacts is depicted in the diagram below:



**Figure 1: conceptual links between trade and environmental impacts**

Optimally, changes in economic activity stimulated by trade and trade-oriented development policy provide an opportunity for environmental and environmental health improvements. *Indeed, in the long-run, no other outcome is acceptable.* However, we argue that this synergy is unlikely to happen without intelligent policy and project design. Environmental/trade linkages with potentially harmful environmental repercussions must be identified in the design and eliminated or reduced in the design and implementation of projects and policies..

### **Responsibilities of USAID & its Partners**

As administrators, fundors and planners of development projects and broader trade/economic policy reforms — and therefore as causative agents of environmental change — USAID and its partners have a responsibility to attempt to assure the environmental soundness of projects under their purview.

USAID has recognized this responsibility historically via its environmental review process. Consideration of the full scope of trade and environment linkages, however, demands a broader base of assessment than traditional environmental impact assessment. The three sustainable development policy objectives identified by USAID suggest themselves for this purpose:

- safeguard the natural resource foundations of broad-based economic growth,
- protect critical ecosystem integrity,
- alleviate/prevent threats to public health.

Given these criteria, the environmental protection role of USAID & its partners lies in two categories:

- *Actions, funding and planning aimed directly at environmental objectives:* Activities in this category include direct: funding, planning, and implementation of projects in environmental mitigation, capacity-building, and pollution prevention and control, including “additionality” funding.
- *Careful consideration and attempted mitigation of the indirect environmental effects of trade-related development activities.* As noted, these considerations go beyond standard EIA, and focus on anticipation of linkage effects and unintentional environmental impacts.

The first of these, actions with explicit environmental objectives, are relatively well-defined and have garnered most of AID’s attention to date. This paper is largely devoted to the second category of “indirect” effects and towards avoiding unintended, trade-driven environmental impacts.

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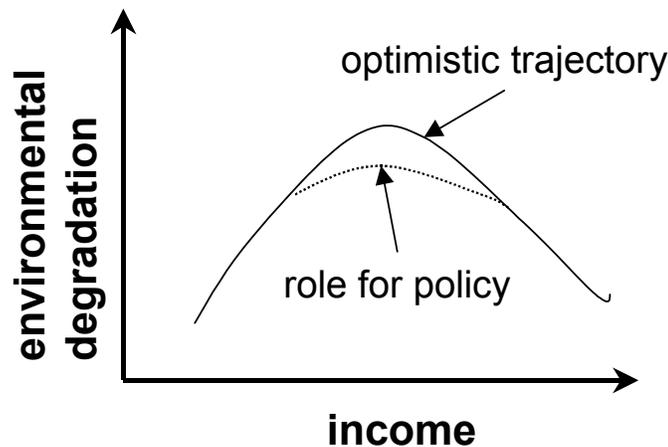
### ***The best-case model: environmental gains from trade***

To explore these indirect effects, consider the most optimistic view of the relationship between trade and environment — that trade is essentially beneficial to environment — and then consider why this optimistic picture may fail to materialize:

This optimistic model argues that environmental gains should result from trade, particularly in the long run. Environmental improvements arise because trade increases income and the overall level of economic development, which (at least historically) has the following effects:

1. environmental degradation associated with poverty (i.e., from slash-and-burn agriculture and subsistence activities) is reduced;
2. the state acquires the financial resources to devote to environmental and environmental health problems (e.g., water supplies, sewage treatment, agricultural outreach);
3. environmental amenities become valued more highly, with subsequent public pressure for rigorous environmental policy;
4. the resources to acquire “cleaner” processes and environmental technologies and know-how are gained; access to these technologies is enhanced by a liberalized trade environment.
5. the economy moves along an economic development trajectory which, in maturity, will result in an economy characterized by less material and energy-intensive activity (i.e., from raw materials extraction and processing to services).

Taken together, these points form the “Kuznets curve” argument — that is, the proposition that the relationship between environmental degradation and income exhibits the relationship depicted below. Degradation rises with income to a certain point, after which increases in income tend to bring about environmental improvements. The role of policy is thus (1) to assist this transition by increasing income, and (2) attempt to avoid the peak of degradation by building environmental management capacity, promoting cleaner production, and natural resource management.



**Figure 2: Kuznets curve: optimistic view of the relation of income to environmental quality**

The logic of the Kuznets curve argument is based on the historical trajectories of environmental quality and income over time in the rich industrialized economies. It is broadly consistent with a set of stylized development facts:

- that the adoption of industrial modes of production both for goods and agriculture is necessary to achieve significant increases in income, and
- that subsistence activities associated with poverty and the environmental practices of poor countries are *not* environmentally sustainable.

While observers may argue over the slope of the curve and the efficacy of policy intervention, we assume that, in the long run, environmentally sustainable development must rest on successful, equitable economic development. Quite apart from the rights of nations and peoples to a level of material well-being which meets basic needs, the subsistence and industrial modes associated with poverty are almost never environmentally sustainable. At the same time, however, we do not assume environmental gains from trade are an automatic or even an easy outcome of development in a globalized context.

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### ***Where and why the “best case” model may fail***

The synergy between trade-driven development and environment depends on a number of assumptions and causal relationships which are frequently at odds with reality. Understanding

these weak links and the situations in which they might fail is essential to assessing the environmental soundness of projects and policies. At least four such “weak links” are identifiable.

## **Distributional disparities of gains from trade — changes in land and property rights**

The experience of Africa under structural adjustment, while generally supporting the idea of economic gains from trade<sup>2</sup>, highlights the distributional consequences of switching to a more open economy. Indeed, such distributional consequences are to be expected — they are a consequence of the specialization which is the theoretical basis for gains from trade. A more liberal trading environment would be expected, as resources are concentrated within their most productive uses, to benefit established firms and entrepreneurs in those sectors and industries, often to the detriment of those operating in other segments of the economy.<sup>3</sup>

Changes in land ownership and property rights are the distributional consequences of a liberalized trade environment likely to have the most severe environmental consequences. Where land resources are removed from subsistence use and switched to producing goods for the export sectors (e.g., conversion of agricultural land to commercial cultivation of counterseasonal fruit and vegetables in Latin America, or the destruction of mangrove forests for shrimp cultivation), subsistence activities tend to be marginalized. This results in intense cultivation of marginal lands with consequent and often permanent environmental damage.

## **Implied reversibility of environmental degradation.**

The Kuznets curve argument assumes that rising income levels will increase both resources available for environmental improvement and the inclination to devote resources to these ends. The underlying assumption is that environmental degradation is reversible; i.e. that environmental damage can necessarily be remediated to restore environmental quality to a higher level. This is true only in a limited sense; most natural systems and ecosystems — soil fertility, fisheries, forests — can be pushed beyond recoverable limits.

- Modes of subsistence associated with poverty can push natural systems beyond recoverable limits (e.g., soil fertility reduced by traditional agricultural practices), particularly given strong population pressures. Thus, meaningful increases in real income for the majority of the population would be expected to reduce these poverty-driven impacts. Where a liberalized trade environment produces equitably distributed gains, trade would contribute to environmental improvement. (However, where marginalization occurs via inequitable distribution, environmental damage would be expected to increase.)
- Specialization is a key source of expected economic gains from trade. Increased specialization/concentration in the export resources typical of African economies (raw

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<sup>2</sup> Though not the focus of this paper, it is increasingly evident there are significant institutional requirements for extracting economically sustainable gains from liberalized trading regimes. Institutions necessary for an efficiently functioning market — credit and banking, regulation of the stock market, communications — demand scarce managerial capacity. Static reallocation must be combined with investments which have long-run dynamic potential for technological learning — (e.g., traditional agricultural exports vs. manufacturing. Further, where significant foreign investment (and particularly ownership) is involved in establishing of new production facilities, appropriating gains may be complicated.

<sup>3</sup> Within the benefited sector, larger, better-financed concerns often prosper at the expense of smaller or traditional enterprises and individual producers.

materials, minimally processed goods), leads to an intensification in the exploitation of these renewable and non-renewable resources. Without adequate safeguards, such intensified exploitation can push natural systems beyond recoverable limits (e.g., forest products, fisheries). This is particularly true when more capital-intensive, larger-scale commercial production methods are adopted to cultivate and harvest fisheries, export crops and forest resources.

## Capacity and willingness to prioritize environment

The best case model argues that trade increases income, thereby increasing the potential resources which *can* be dedicated to environment. This is *not* identical to the actual dedication of these resources via a competent administrative institution. Obstacles to the realization of this potential include:

- The underdeveloped environmental management and policy-making capacity of most African states (the improvement of which is the purpose of this USAID project) means that the capability to address environmental problems is poor. The improvement of this capability is likely to lag the increase in environmental impacts which would accompany any trade-driven economic expansion. (The same lag characterizes the private sector.)
- While there is scant evidence that production relocates based purely on environmental costs (the “pollution haven” thesis), developing countries have traditionally argued (1) that the imposition of environmental protection costs would represent an insuperable burden on economic development and (2) that their environmental resources constitute an exploitable resource in the process of economic development. This view accounts for their strong resistance to process-based standards under the GATT. Thus, the commitment of resources to environmental protection may be hindered by the conflict, *real or perceived*, between increasing the environmental costs burden on domestic industry and the ability to exploit the comparative/competitive advantages available to developing countries.<sup>4</sup>

(Cleaner production has been put forth as a win-win approach to this problem — achieving reduced environmental loading often at lower variable cost, but achieving widespread implementation is a challenge — see last bullet in this section.)

- There is significant shift of the world share of heavy industry (e.g., steel, refining, basic chemicals) to developing economies in Asia and Latin America. This shift currently is not an African phenomenon. However, to the extent that a liberalized trading environment is successful in encouraging the development of export industries which capture a greater portion of the value chain<sup>5</sup>, a liberalized trading environment may induce a displacement of the traditionally dirtiest industries into these economies. (Whether or not such movement is in fact motivated by low environmental costs.) Weighting the economy with these industries would create structural barriers to environmental improvement — because they are highly

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<sup>4</sup> The Kuznets curve argument assumes a nominal degree of responsiveness on the part of government to popular concerns regarding/valuation of environment. Authoritarian regimes and/or capture of state apparatus by commercial concerns that do perceive precisely this conflict might significantly impede such responsiveness.

<sup>5</sup> e.g. primary and secondary processing as opposed to raw materials and commodities

polluting<sup>6</sup>, and, once fundamental production technologies are in place, their persistence is long and change is difficult.<sup>7</sup>

- The acquisition and wide deployment of environmentally superior technology both in industry and agriculture is recognized as being essential to mitigating the environmental impacts of economic development. Deeper liberalization of international trade regimes and participation in them by developing economies are often argued to provide better access to such technology and associated know-how. Access is improved both by reductions in tariff barriers and because increased coverage of services and intellectual property protections provide incentives to technology and technical consultancy providers to service developing country markets.

However, more than the technologies themselves, evidence is strong that it is the mode and manner of technology transfer that determines the extent of technological capabilities acquisition by developing country firms and sectors. To the extent that investment regimes are liberalized with trade regimes, less leverage may exist for African firms and governments to secure relationships with foreign firms and multinationals which are favorable to the acquisition of technological capabilities by the private sector.

### Short-run damage vs. long-run benefits

The best case model makes an essentially long-run argument — that increased income yields increased resources for and valuation of environmental protection, which in turn yields environmental improvement. This sequence of events cannot happen overnight. *Ceteris paribus*, however, environmental degradation, increases simultaneously with increases in economic activity. If trade is successful in creating an expansion of economic activity, environmental impacts will scale proportionally, with administrative and institutional capacity for environmental protection playing a catch-up game.

If existing practices and policies in a particular sector which expands with trade are environmentally inappropriate or altogether lacking, damage is all the worse. (e.g., poor timber harvesting practices, an agricultural sector with poor chemical management expanded). As USAID and other development agencies have recognized, economic expansion creates an urgent need to develop capacity for environmental protection. Examples of problems in this category include:

- Occupational exposures of field workers to agricultural chemicals
- Increases in industrial density or scaling-up of production at existing plants leading to increases in emissions
- Infrastructure to meet demand for transport, power and services can develop far more slowly than demand. For example, rapid increases in vehicle ownership can produce extreme

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<sup>6</sup> Note, however, that new heavy industry (HI) plants and HI which basically represents greenfield development in these economies is likely to be significantly cleaner fundamentally (absent end-of-pipe controls) than the average, older stock in wealthy industrial economies, as newer plant tends to be more efficient. A major caveat, however, is that the import of older technology (used plant) from industrialized states would dilute or reverse these gains from cleaner production. Such import is attractive as plant can often be obtained at a fraction of its value.

<sup>7</sup> The large scale, lumpy investments, capital intensity, and specialized and interrelated nature of heavy industry plant investments mean that production equipment has a long life and that piecemeal process changes are difficult.

congestion and associated pollution. Likewise, small-scale generators employed in place of grid power can contribute significantly to air pollution.

- Increased availability of imported goods can lead to the increased import and consumption of environmentally problematic goods, particularly where labeling, education for proper use, and disposal infrastructure are deficient.

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### ***Trade-associated standards and their environmental implications***

In addition to more open economic policy and deeper liberalization of international trade regimes, the globalizing context for development is characterized by the spread and increasing importance of trade-related standards. Understanding the environmental implications — and in some cases opportunities — that these standards present requires first a familiarity with the different forms they take:

#### **Product standards and their relationship to the GATT/WTO**

Historically and in the largest part currently, trade agreements such as the GATT/WTO have allowed countries to impose *product standards* on imports to protect public health and the environment, but not — with certain narrow exceptions — *process standards*. Process standards, as the name implies, concern the processes and conditions of production, such as working conditions, pollution generated during production, and sustainability of harvesting techniques.

This process-product distinction is particularly controversial. Critics charge that states with low standards of environmental protection give an unfair “environmental subsidy” to their enterprises compared to enterprises in states characterized by high standards and high environmental costs. This, it is argued, creates downward pressure on standards. Others argue that low environmental factor costs should constitute a comparative advantage that a developing country can choose to exploit, and that wealthy states have no right to impose their environmental values on the South, particularly as an excuse for protectionism.

Health-based product standards (allowed under the GATT, with certain provisions<sup>8</sup>) are particularly rigorous in the OECD for agricultural products, the export category of most concern for African states. Pesticide residue standards are an important example.

#### **Eco-labeling schemes**

Eco-labeling schemes are expanding, particularly in Europe. Such schemes either (a) provide information on environmental impacts associated with production and use of a product, or (b) serve to indicate environmentally superior products in the marketplace. The intent is to provide information to the consumer to allow the market to reward environmental leadership via the exercise of consumer preference.

Ecolabels are thus far mostly national in scope and apply largely to manufactured goods. Ecolabels for forestry products are emergent, however, and would indicate that the products have

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<sup>8</sup> primarily that they be uniformly applied to foreign and domestic goods, are scientifically defensible and are the least trade-restrictive option to achieve the policy goal.

been “sustainably harvested” according to certain criteria. Labelling schemes may be government administered, third-party administered, or “self-declared.”<sup>9</sup>

With regard to agricultural goods, “organically grown” or “integrated pest management” certifications are a parallel concept to environmental labeling of manufactured goods. An emergent trend may be “green sourcing,” in which processors, manufacturers and retailers commit to purchasing inputs produced to certain environmental specifications for all products or, more frequently, for particular product lines.<sup>10</sup>

The WTO and other bodies are considering whether environmental-labels can function as non-tariff trade barriers. A key point is that they often are life-cycle assessment (LCA)-based. As such, they embody an assessment of production processes rather than simply product characteristics.

### **Voluntary environmental management system standards (ISO et al)**

Environmental management system (EMS) standards set out generic frameworks for environmental management in an organization. They specify that a firm or facility has in place and employs procedures and requirements which together constitute a comprehensive EMS. By focusing on processes and procedures, they are intended to ensure a minimum level of environmental management capability in an organization, make possible a structured approach to setting environmental objectives and targets, and facilitate achieving these objectives and monitoring progress. However, while EMS standards typically require adherence to applicable legislation and commitment to continuous improvement, they *do not* specify a level of environmental performance.

There are several competing EMS standards groups. The ISO (International Organization for Standardization) 14001 and 14004 standards are in principle applicable to any organization, in the public or private sector. In Europe, the ISO standards compete with the EU’s EMAS (Eco-Management and Audit Scheme) in manufacturing establishments.<sup>11</sup> A number of other national standards also exist.

There seems to be increasing movement on the part of multinationals to require suppliers to be ISO-certified. The penetration of ISO is particularly strong in Japan and Southeast Asia, where export-oriented manufacturers are closely aligned with European and North American firms which view ISO 14000 as a useful assurance mechanism and sequel to the ISO9000 quality standard. Concern has been expressed that ISO or other EMS certification requirements may act as trade barriers for indigenous firms without know-how, resources to certify

### **Some potential to leverage trade-related standards for environmental improvement**

As seen above, trade liberalization *per se* and the agreements which define its terms are not concerned with domestic environmental standards, policies and activities, except insofar as they

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<sup>9</sup> Both the certification process and the criteria by which claims of environmental superiority are established are controversial, particularly for “self-declared” labels. Certain categories of environmental labelling — e.g., certifications of organic origin, recycled content and recyclability — are increasingly regulated in OECD countries.

<sup>10</sup> Green sourcing can be seen, for example, in food products, as well as textiles.

<sup>11</sup> EMAS is currently being expanded to non-manufacturing concerns.

may interfere with the flow of goods or access to markets.<sup>12</sup> In short, the GATT/WTO regime (and similar, “traditional” trade agreements) present no impediments to the types of failures of the optimistic gains from trade model described above.<sup>13</sup>

Trade-related standards such as ISO, product standards and ecolabeling do seem to present some opportunity to leverage trade for environmental benefits. These benefits accrue through the greening of production processes and the development of environmental management capabilities. Because trade-related standards are likely to apply particularly to exported goods and manufacture for export processes, they may mesh well with outward oriented development:

- Health-based product standards have some environmentally beneficial process implications. The export of foodstuffs subject to pesticide residue limitations, for example, restricts the use of some pesticides banned in OECD countries and requires judicious application regimes.
- Eco-labeling and green sourcing requirements may provide incentives for African exporters to build environmental management capability and to “green” their production processes to maintain or increase their level of access to western markets.
- Requiring ISO 14000 series (or similar) certification of multinational manufacturing or agro-industry investments may be a way to build environmental management capacity in private sector, both in the new investments directly and, through spillover effects to the larger economy via the development of a trained cadre of domestic environmental professionals.

Trade-related standards are not a panacea, however, for ensuring environmental gains from trade. For example:

- Pesticide residue requirements have no necessary effect on the occupational exposure of field laborers.
- Rather than motivating domestic producers to “green” their production techniques, ecolabels and green sourcing requirements may prove simply to be market barriers to indigenous firms without resources or know-how to improve their production techniques.
- Certification to an environmental management system sets no environmental performance standards and cannot be a substitute for environmental standard-setting and administration by governmental authorities.

In short, trade-related standards should be leveraged to the extent possible to achieve environmental gains from trade (or to mitigate the “failure modes” of the best-case model). Of course, in principle there is no impediment to the adoption of ISO, product or labeling standards by African governments *independent* of pressures to do so from global trading partners. However, it is almost certainly the case that intensified trade will spur adoption of such standards much faster than governments would choose to on their own.

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<sup>12</sup> NAFTA, which contains environmental and labor side agreements, has been cited as a harbinger of a “new generation” of trade agreements.

<sup>13</sup> Many commentators argue in fact that the GATT/WTO and similar regimes facilitate environmental degradation arising from trade.

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## **Key questions for USAID and partner policies and projects.**

What, then are the implications for AID and AID partners of these trade-environment-standards linkages? This concluding section sets out a set of key questions and considerations.

As above, the focus is on the indirect environmental effects of trade which go beyond the scope of standard EIA activities. This assumes that direct effects — particularly for discrete, sited projects rather than sectoral initiatives — are sufficiently addressed via well-established environmental assessment and screening criteria employed by USAID. The questions set forth below would ideally be relevant to IEE/EA/PEA formulation. The examples cited are suggestive but by no means comprehensive.

## **Program or policy-specific questions and considerations**

- Is the intent of a project or policy to convert natural resources previously used in subsistence to the formal sector? If not the intent, is the project or policy likely to have that effect?

If yes to either of the above, will subsistence activities be displaced? If so, from where will they draw the resources required (land, water, biomass fuel) and what are the environmental consequences of this displacement likely to be?

*Examples. Conversion of subsistence cropland to plantations or other commercial farming endeavors may displace cultivation of foodcrops into other, more marginal regions within a country or to more marginal/fragile/ecologically sensitive areas within a region (e.g. steep hillsides). Results might include increased deforestation and topsoil loss.*

*Clearing of mangrove/other wetlands for commercial aquaculture can result in the decline of natural fisheries previously used for subsistence fishing.*

- Is an export development project or trade policy reform targeted at/likely to stimulate a sector which relies on exploitation of depletable renewable resources?

If yes, are environmental management policies and administrative infrastructure sufficient to ensure sustainable harvesting rates?

*Examples. Reform of export laws and/or development of transport and export infrastructure can encourage timber exports, whether or not this is a targeted activity. Inappropriate or poorly enforced forestry policies can result in an acceleration of deforestation or significant declines in forest productivity.*

*Removal of energy subsidies with consequent increases in prices of petro-fuels can stimulate use of biomass fuels, including charcoal and fuelwood. Uncontrolled expansion of charcoal-making, for example, to scrub slopes and environmentally marginal areas can increase erosion and siltation and lead to reduced groundwater levels.*

- Do the sector(s) targeted by/likely to be stimulated by a project or policy reform have intrinsic and significant environmental issues associated with them (e.g., large use/generation of toxics or agricultural chemicals, high energy-intensity, inadequate fallow practices, etc) (parallels USAID classification of projects “normally having a significant effect on the environment.”).

If yes, are current practices in these sector(s) environmentally appropriate? If not, what are the likely environmental effects of sector expansion?

*Examples. Direct provision of credit, infrastructure development, or export incentives to develop sectors such as mining, energy resource development, forest products, agro-business should be closely scrutinized for the adequacy of current practice/environmental policy and policy administration.*

- Is the project or policy reform likely to stimulate import/consumption of environmentally problematic goods and/or goods for which supporting infrastructure is inadequate (or barely adequate) at current levels of consumption?

*Examples: Tariff reforms which reduce the cost of owning private vehicles, for example, will likely lead to increased congestion and air pollution in urban areas. Increased availability and affordability of energy-using consumer goods (e.g., air conditioners, refrigerators) (as well as expansion of manufacturing) will lead to increased demand for electricity and, potentially, the increased use of private generating units. These units are concentrated in urban areas and are, on a per-kWh basis, generally highly polluting compared to centralized generation.<sup>14</sup>*

*Industrial operations involving or generating chemicals for which there are inadequate waste-handling infrastructures or practices and which expand under liberalized trade and/or investment regimes are likewise environmentally problematic. (e.g., solvents used to clean electronic assemblies, electroplating associated with light manufacturing, agricultural chemicals production)*

- Does the project provide a means to leverage trade-associated standards against production processes, and is this being exploited?

## Higher-level and strategic questions and considerations

The first set of questions, above, provide qualitative assessment criteria to policies already in the concept or design stage. Trade and environment linkages should also be assessed proactively, however, to identify critical areas and concepts for policy/project formulation..

- Given current liberalization and trading trends, what are the key sectors/products/enterprises in Africa (or a specific country) most likely to be affected?
- What are the current environmental impacts attributable to these sectors/products/enterprises? What are current environmental practices? What are ownership patterns and the geographical distribution of production?
- How is liberalization likely to affect economic output and/or ownership and the distribution of production? What are the environmental effects of such changes?
- Do trade-related standards currently have a significant impact on the activities (including environmental performance) of these sectors/products/enterprises traded-related standards? Are they likely to have a significant impact in the future? Can they be leveraged for improved environmental performance?

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<sup>14</sup> Demand for vehicles and appliances is also highly correlated to income; trade-based economic expansion (should such occur) would be expected to increase demand for these goods even absent specific tariff reforms.