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ISO 14000:
ENVIRONMENTAL REGULATION BY ANY OTHER NAME?

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EXECUTIVE SUMMARY

Until recently, most environmental regulations took the form of uniform industry standards. However, it is now becoming apparent that these "command and control" style regulations are a costly and inefficient means of achieving environmental objectives. In response, economists and others have devised alternative mechanisms for achieving environmental objectives. Many governments and several private organizations have developed environmental labeling programs.

Concern that national environmental labeling and management schemes might become technical barriers to trade led the International Organisation for Standardisation (ISO) to begin developing international "consensus" standards in the field of environmental management tools and systems. This series of environmental standards is referred to as ISO14000. However, it is not clear that these standards will be a net benefit, environmentally or economically.

- One of the reasons ISO14000 has been suggested as an alternative to the traditional command and control type regulations is that these regulations are an inefficient mechanism for achieving environmental protection. To require compliance with these regulations as part of ISO14000 compliance seems rather perverse. In particular, it is likely to impose marginal costs in excess of the marginal benefits.

- If governments around the world required the firms from which they procured to be registered to ISO14000, then the many firms in developing countries that could not afford ISO14000 registration would be at a disadvantage. ISO14001 would then function as a technical barrier to trade.

- ISO14000 will increase the cost of implementing changes to production processes, since "environmental management" must be incorporated regardless of its effectiveness. As a result, the rate of investment in research and development is likely to fall and fewer advancements in technology will take place.

- By and large, ISO14000 registration will be an overly costly means of achieving environmental improvement for a few firms. As a result, ISO14000 registration is

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THE GREENING OF INDUSTRY

Over the course of the past 25 years, the governments of most developed countries have imposed increasingly stringent environmental regulations on businesses. To a large extent, this regulatory activity reflected an upsurge in concern for the impact of industrial activity both on the natural environment and human health. Until recently, most environmental regulations took the form of uniform industry standards. However, it is now becoming apparent that these "command and control" style regulations are a costly and inefficient means of achieving environmental objectives. In particular, such standards are inflexible, unresponsive and they often fail to take account of the actual environmental problems:

As the high cost of "command and control" type regulations has become apparent, economist have devised alternative mechanisms.

1. *Inflexibility*: national or international standards tend to ignore variations in the ability of firms to reduce their emissions. As a result, they impose higher costs on some firms than on others, often driving small firms out of business and concentrating output in the hands of a select few businesses. This effect has sometimes been countered by imposing less stringent controls on small firms, but in so doing the ostensive objectives of the regulation are emasculated.[1]

2. *Lack of responsiveness*: regulations tend to result in "technological lock-in," that is to say they prevent firms from developing new technologies (some of which might result in less environmental damage).[2] This occurs because the

[1] M. T. Maloney and R.E. McCormick, "A Positive Theory of Environmental Quality Regulation," *Journal of Law and Economics* XXV: 99-123, 1982; B. P. Pashigan, "The Effect of Environmental Regulation on Optimal Plant Size and Factor Shares," *Journal of Law and Economics* XXVII, 1984: 1-28.

[2] J. H. Morris and L. Scarlett, *Buying Green - Consumers, Product Labels and the Environment* (Los Angeles: Reason Foundation, November 1996); J. H. Morris, *Green Goods* (London: Institute of Economic Affairs, January 1997).

The ISO was founded in 1947 to "facilitate the international coordination and unification of industrial standards."

regulations tend to be based upon known technologies and therefore discourage investment in more efficient technologies. Of course, the problem is mitigated by competition amongst environmental interest groups and the producers of pollution abatement technologies, who have an incentive to encourage governments to adopt more stringent standards. However, this may result in over-regulation (for example, imposing regulations that entail virtually eliminating certain chemicals that, at the very low doses at which they are currently present, are not known to cause any harm or, at least, cause less harm than many other naturally occurring chemicals) and does not provide an appropriate incentive to generate technologies that would deal efficiently with the most pressing pollution problems.[3]

3. *Failure to take account of actual environmental impacts of emissions*: Uniform emissions standards take no account of the natural variability in absorptive capacity of the environment or of variations in the human impact of emissions. An "end-of-pipe" standard that is appropriate for the control of effluent discharged into a slow-flowing river is unlikely to be appropriate for effluent discharged into a faster-flowing river. Similarly, an end-of-pipe standard that is appropriate for airborne emissions from a plant in a built-up area is unlikely to be appropriate for a similar plant in an uninhabited region, since the human impact of the second is likely to be considerably less.[4]

As the high cost of "command and control"' type regulations has become apparent, economists and others have devised alternative mechanisms for achieving environmental objectives. In particular, a number of so-called 'market-based mechanisms' have been devised which are intended to have the same or similar effects to traditional regulations but at much lower cost. The best known of these are pollution taxes and tradable emissions permits. These mechanisms ensure that the firms reduce emissions in the most efficient manner possible.[5]

Very few nations have introduced pollution taxes, although many taxes are now justified at least in part on the grounds that they reduce the incentive to pollute (the gasoline tax in Europe is a case in point). In general, environmental taxes to date have been too low to have a significant effect on

[3] R. W. Hahn, ed., *Risks, Costs and Lives Saved* (New York: Oxford University Press, 1996).
[4] P. R. Portney, "The Price is Right: Making Use of Product Life Cycle Analyses," *Issues in Science and Technology*, Winter 1993: 69-75.
[5] W. J. Baumol and W. Oates, *The Theory of Environmental Policy* (Cambridge: Cambridge University Press, 1988).

emissions, although it seems likely that the new generation of such taxes, such as the taxes on landfill disposal in France and Britain, will have a more significant effect. Tradable emission permits, on the other hand, have been somewhat more successful.[6]

Environmental Management and Labeling

Aside from these "economic instruments," a number of other mechanisms have been proposed as means of protecting the environment. In particular, considerable attention has been given to the provision of reliable environmental information to consumers, under the premises that such information might enable consumers to choose the products that are most "environment friendly" and/or those that are produced by firms which have environmentally sound management procedures. As a result, many governments and several private organizations developed environmental labeling programs.[7] In addition, both the European Union and the British Standards Institute (BSI) developed environmental management systems.

ISO14000

Concern that national environmental labeling and management schemes might become technical barriers to trade led the International Organisation for Standardisation (ISO)[8] to form Technical Committee 207 (TC207) in 1993, which was to develop international 'consensus' standards in the field of environmental management tools and systems. The ISO was founded in 1947 "to facilitate the international coordination and unification of industrial standards." Standards being "documented agreements containing technical specifications or other precise criteria to be used consistently as rules, guidelines or definitions of characteristics, to ensure that materials, products, processes and services are fit for their purpose."[9]

How should an ISO standard account for the fact that circumstances differ from country to country?

The resultant series, ISO14000, is divided into a number of mutually dependent standards, including:

ISO14001, 4, 31	- environmental management
ISO14010-15	- environmental audits
ISO14020-25	- environmental labels and declarations
ISO14040-43	- life cycle assessment

Of these, only ISO14001 and documents directly supporting it (ISO14004, 10, 11, 12) have been published; the others are in various stages

[6] R. W. Hahn, "Economic Prescriptions for Environmental Problems: How the Patient Followed the Doctor's Orders," *Journal of Economic Perspectives*, Spring 1989.
[7] OECD, *Environmental Labelling in OECD Countries* (Paris: Organisation for Economic Co-operation and Development, 1991).
[8] ISO is actually an abbreviation of isos (Ancient Greek for 'equal').
[9] See ISO web site, www.iso.ch/infoe.

of preparation. A brief description of each of these standards and a summary of the current state of their development as of November 1996 is provided in the Appendix. The primacy of the development of ISO14001 suggests that it will be the principal mechanism within ISO14000. Therefore much of the following discussion focuses on ISO14001

The Objectives of ISO14000

TC207 has suggested that ISO14000 is likely to have the following effects:

To require compliance with regulations as part of ISO14000 seems rather perverse.

- lead to the harmonization of national rules, labels, and methods;
- minimize trade barriers and related complications;
- promote predictability and consistency;
- lead to improvement of environmental performance;
- lead to effective maintenance of regulatory compliance;
- establish a framework to move beyond compliance;
- assist companies/organizations to demonstrate commitment;
- assist companies/organizations to enhance public posture;
- lend credibility to performance reporting;
- support a worldwide focus on environmental management;
- sensitize the internal culture in organizations to environmental matters;
- promote a voluntary consensus standards approach to environmental improvement.[10]

Two questions immediately arise on considering this list of purported benefits. First, to what extent is each member of the list really a (net) benefit? Second, will ISO14000 really achieve the designated end? To answer these questions, let us consider each "benefit" in turn.

Harmonization

The "harmonization of national rules, labels, and methods" sounds nice, but what does it actually mean? Does it mean that the rules, labels, and methods adopted in each country must be the same? If so, then how should an ISO standard account for the fact that circumstances differ from country to country? In particular, how should it account for the fact that differences in the natural environment and in the standards of living entail differences in the priorities accorded to particular environmental problems?

[10] See the web site at www.iso14000.org.

[11] The causes of lake acidification have been hotly debated. It is likely that most acidification is the result of increased forest cover, following a period of depletion; the trees tend to release acids into the soil and these seep into the lakes. However, it is possible that some acidification has resulted from the sulphur dioxide released from power stations and other industrial sources (which reacts with water vapour to form sulphuric acid).

For instance, in Northern Europe and the U.S., many lakes are now more acidic than they were fifty years ago; some scientists have suggested that this acidification is, in part, the result of "acid rain."[11] In response, governments in Europe and the U.S. have imposed limits on the emissions of SO2 from industrial plants. However, in South America no such acid rain problem has been reported, so emissions limits are less stringent. It is clear that a rule covering both the US/Europe and South America would have to take account of this difference in environmental circumstances. Such a rule clearly could not dictate that emissions limits be set everywhere at the same level as in Europe or the US, since this would discriminate against South American producers.[12] But setting the limit at the maximum allowed in the least regulated country would have no impact.

As it stands, ISO14001 (the environmental management standards) resolves this dilemma simply by requiring that firms implementing ISO14001 employ management procedures in each plant that are consistent with the existing law and legislation in the particular country in which they operate. Of course, this begs the question of whether the legislation is fit for the task of protecting the environment, and, if so, whether it does so at least cost. In the U.S. at least, these assumptions cannot be taken for granted.[13]

One of the reasons ISO14000 has been suggested as an alternative to the traditional command-and-control type regulations is that these regulations are an inefficient mechanism for achieving environmental protection. So, to require compliance with these regulations as part of ISO14000 compliance seems rather perverse. In particular, it is likely to impose marginal costs in excess of the marginal benefits in many cases.

Paul Kupakuwana, who heads the Zimbabwe delegation to TC 207, has suggested that for firms in developing countries, ISO14000 will become a trade barrier because there might not be sufficient resources available to meet existing legislation.[14] Concurring, Leonardo Cardenas, a Mexican delegate, argued that the main problem for firms in Latin countries is liquidity.[15] Basically, firms in developing countries lack access to capital for implementing environmental compliance projects; whereas firms in developed countries have much easier access to capital for such projects.

In its favor, the requirement that firms comply with national legislation will shift some of the burden of enforcement from the nation's regulators on

If governments around the world required the firms from which they procured to be registered to ISO14000, then the many firms in developing countries that could not afford registration would be at a disadvantage.

[12]ABECEL, *Position Paper on Eco-Label for Tissue Paper* (Rio de Janeiro: Associaciao Brasileira de Exportadores de Celulose, March 1995).
[13] See Michael S. Greve and Fred L. Smith, Jr., *Environmental Politics: Public Costs Private Rewards* (New York: Praeger, 1992).
[14] See ISO web site at www.iso14000.org.
[15] Ibid.

to the national ISO registration body, thereby reducing the incentive for corruption within the regulatory agency. However, this benefit is unlikely to be great, since uptake of ISO14000 is not likely to be universal (unless it becomes mandatory) – indeed, if the experience of ISO9001 is anything to go by, uptake is likely to be restricted to a small minority of firms (only around 75,000 firms in the US have become registered under ISO9001), so the majority of firms will still be subject to monitoring and enforcement action under the conventional regulatory system.[16] Again, this problem comes down to the cost of registration: "According to a survey conducted by Apple Computer for West Coast Working Group, an ISO14000 interest organization, only 7 percent of respondents plan to seek ISO 14000 certification ... The main objection that firms have with ISO certification is its expensive nature, as audits can cost as much as $15,000 per site averaging 100 employees."[17]

If the decision to register is the result of any measure of coercion then the problem of regulatory induced lock-in will worsen.

The Impact of ISO14000 on International Trade

It is by now well established that international trade benefits poor and rich alike. However, there remain many constraints on such trade. One such constraint is differences in national standards. For example, criteria for the European Eco-Label tend to reflect conditions that are prevalent in Europe, to the possible detriment of firms outside Europe that operate under different conditions. For example, the Eco-Label for tissue paper includes criteria for emissions of chlorinated organics and sulphur dioxide that reflect the concerns of European environmental activists but have little relevance in countries such as the United States, Canada, or Brazil. As a result, these ecolabel criteria create a bias in favor of paper produced in Europe and act as a *de facto* barrier to trade.[18] Prima facie, it would seem that an international ecolabel might overcome this problem -- by enabling a broader coalition of stakeholders to determine criteria. However, an international ecolabel is likely to create a more serious problem of technological lock-in than a national label. Since such lock-in would reduce the possibility for further advances in the international division of labor, the long-term effect of an international ecolabel could even be more detrimental than the long-term impact of a national label.

Moreover, if governments around the world required the firms from which they procured to be registered to ISO14000, then the many firms in developing countries that could not afford registration would be at a disadvantage. As a result, ISO14000 is likely to become a significant barrier to trade.

[16] ISO 9001 is a 'quality management' standard granted to firms that establish procedures intended to ensure quality.
[17] "Euro-Green: The Regs" *CFO* Vol. 12 (9), September 1996, pp. 22
[18] ABECEL.

Predictability and Consistency

Predictability and consistency would seem to be desirable; clearly consumers are likely to benefit from any system that enables them more simply to purchase products that satisfy their desire to protect the environment. However, if ISO14000 registration is not the best mechanism for ensuring that firms behave in an environmentally responsible manner in all circumstances, then some consumers will purchase products manufactured in ways that are predictably and consistently less environment friendly than they have been led to believe. The attempt to provide predictability and consistency itself results in firms becoming locked into particular production processes and products, reducing the level of technological innovation and thereby harming the environment.

Lock-in by ISO14000

Lock-in occurs for many reasons. In some cases, being locked into a particular path of technology might not cause too many problems, especially where the lock-in has occurred only as a result of the voluntary decisions of market participants.[19] However, where lock-in is induced by the state, then it is unlikely to be so benign.

ISO14001's management standards will increase the cost of implementing changes to production processes, since "environmental management" must be incorporated regardless of its effectiveness. As a result, the rate of investment in research and development is likely to fall and fewer advancements in technology will take place. Since technological advancements frequently result in environmental improvements (such as thinner garbage bags, lighter weight tin cans, concentrated washing powders, and more efficient combustion technologies), this is bad news for the environment.[20]

If ISO14000 remains a purely voluntary system, then firms will weigh up the costs of registering against the alternatives (such as continued regulatory enforcement) and choose their cheapest option. However, if the decision to register is the result of any measure of coercion (such as the threat

If ISO14001 remains a purely voluntary system, then firms will weigh up the costs of registering against the alternatives and choose their cheapest option.

[19] See e.g. S. J. Liebowitz and S. E. Margolis, "Path Dependence, Lock-In, and History," *Journal of Law Economics and Organization*, Vol. 11 (1), 1995, pp. 205-226.
[20] L. Scarlett, "Packaging, Solid Waste, and Environmental Trade-Offs," *Illahee*, Vol. 10 (1), 1994: pp. 15-33.

of more stringent environmental regulations), then the problem of regulatory-induced lock-in will worsen.

The problem of regulatory-induced lock-in would be even more severe if nations demanded that products bare an ISO14031 environmental label. To see how badly this might affect us, consider the impact such a label might have had if it had been imposed on laundry detergents 30 years ago:

> Product development would have been directed towards conforming with actual and expected ecolabel criteria, which could only have been based on the technology available at the time. In addition, detergent manufacturers are likely to have shifted investment in R&D away from laundry detergents and onto less risky products. Under such circumstances, it seems unlikely that today's detergents would be much different from those available twenty years ago: bulky powders, which, lacking enzymes, required high-temperatures (60C or more) for most washes.

The notion that merely introducing an environmental management system might ensure compliance seems absurdly optimistic.

Now, compare this scenario with what actually happened.

> The introduction of laundry detergents containing enzymes and other improved cleaning technologies has enabled better cleaning at lower temperatures. As a result, consumers use less electricity—thereby saving them money, consuming fewer natural resources and emitting fewer chemicals into the atmosphere and watercourses. Indeed, this single innovation, which might well not have occurred had an ecolabel been in place (either because of fears concerning the environmental impact of enzymes or simply because of lack of investment in R&D), has reduced electricity consumption in Europe so much that without it approximately six medium-sized, new power stations would have been required (estimate by scientists at P&G Europe).[21]

The Impact of ISO14000 on Environmental Performance.

Improvement in the environmental performance of firms is clearly desirable and would seem to be the primary objective of ISO14000. Yet, if the arguments above hold, then the probability is that ISO14000 will have the opposite effect. Of course, the environmental performance of some firms may well improve as a result of implementing ISO14000. For such firms, some form of environmental management system is probably desirable. Whether

[21] J. H. Morris, *The Economics and Politics of Recycling* (London: IEA Environment Unit, 1997).

ISO14001 is the most cost-effective system remains in doubt; however, those firms that had not considered any environmental management system prior to the implementation of ISO14001 and do experience both a reduction in overall cost and an environmental improvement could be said to have benefited from implementation. Yet it seems likely that such firms will be in the minority and, by and large, ISO14000 registration will be an overly costly means of achieving environmental improvement for a few firms. As a result, ISO14000 registration is likely to result in the misallocation of resources and, in the long-term, have a negative impact on the environment.

ISO14001 may crowd out superior methodologies for developing environmental management programs.

The Impact of ISO14000 on Regulatory Compliance

The question of whether regulatory compliance is desirable is beyond the scope of this paper; clearly some form of control on the activities of firms is desirable. Unconstrained, firms would have little incentive to prevent pollution; whether constraint comes from government regulators or through the private law courts is another matter.

Effective maintenance of regulatory compliance can only be ensured by monitoring the activities of firms. The notion that merely introducing an environmental management system might ensure compliance seems absurdly optimistic. Even if it were the case that a management system could be devised that wholly obviated the need for monitoring compliance with particular regulations, it would still be necessary to monitor the management system itself. Essentially, ISO14001 shifts some of the burden of compliance monitoring away from the state's regulatory agency onto the administrator responsible for ensuring compliance with ISO14001. ISO14001 does not provide a framework for moving "beyond compliance."

ISO14000 as a Market Signal

ISO14000 might not actually lead to an improvement in a firm's environmental performance.

It would be desirable if companies that are providing genuine environmental improvements were able to signal this to consumers in some way. Of the mechanisms proposed in the ISO14000 series only those on certification of environmental claims would seem to fit this bill.[22]

Whether ISO14000 registration improves the public perception of a firm will be a function of many things. Since ISO14000 registration is unlikely to be beneficial to the environment and may result in increased costs to the consumer and create a barrier to trade for firms in developing countries,

[22] For a discussion of the broader issues surrounding this matter see Morris and Scarlett.

consumers should be informed that ISO14000 registration is nothing to be proud of.

Will ISO14000 lend credibility to performance reporting?

ISO14000 is inflexible: criteria take years to develop and are not changed for several years thereafter (the standards are up for revision in 1999). As a result, it is likely that developments in the science of environmental reporting will overtake the standard. Moreover, environmental audits are based on the same subjective assessments that so bedevil life cycle analysis.[23] As a result, any credibility gained by the use of ISO14000 to back environmental audits would be based on misleading information.

Some firms that may end up replacing an environmental management program that is specifically tailored to the firm's peculiarities with one that is more easily audited but less suitable to the firm in question.

ISO14001 and the Promotion of Environmental Management

ISO14001 is likely to increase companies' awareness of environmental management, especially if registration is made a criterion of procurement policies. However, this is not necessarily a good thing because the focus of ISO14001 is too narrow. Companies will be encouraged to comply with ISO14001, but not necessarily to think holistically about improving their performance by using resources more efficiently. ISO14001 is one particular kind of environmental management scheme, it is not the only kind; ISO14001 may crowd out other, perhaps superior methodologies for developing environmental management programs.

ISO14001 will only sensitize the internal culture of firms to environmental matters if that internal culture has not already been sensitized. Since ISO14001 is most likely to be implemented in large industrial concerns and since most of these are likely already to have some kind of resource-efficiency culture (otherwise they would not have got where they are), the number of firms that develop environmental management programs from scratch as a result of ISO14001 is likely to be small. Moreover, some firms that implement ISO14001 may end up replacing an environmental management program that is specifically tailored to the firm's peculiarities with one that is more easily audited, but less suitable, to the firm in question.

The Impact on Business

ISO14000 could have a significant impact on business. According to TC207:

[23] See e,g, Portney.

- "[ISO14000] may be used by companies and organizations to better manage [sic] their environmental affairs and to show a commitment to environmental protection.
- "Implementation of ISO 14000 could become a condition of business loans to companies that aren't even involved in international trade.
- "Insurance companies may lower premiums for those who have implemented the standard.
- "ISO 14000 may become a condition of some customer/ supplier transactions, especially in Europe and with the US government.
- "Evidence of conformance to ISO 14000 may factor into alternative regulatory programs, the exercise of prosecutorial and sentencing discretion, and into government consent decrees and other legal instruments.
- "In the courts, ISO 14000 may become a standard of due care in assessing whether company was in good faith making consistent and diligent efforts to manage it environmental impact.
- "In multilateral trade agreements, there is a high probability that the ISO 14000 standards will become a factor in establishing whether governments are actually making an attempt to improve the environmental situation within their countries.
- "In terms of international aid and loans, the World Bank and other financial institutions may qualify their loans to less developed countries and begin to use the ISO 14000 standards as an indicator of commitment to environmental protection."

If the procedures provide firms with a discipline that enables them to discover superior management strategies, then all well and good.

THE BENEFITS OF ISO STANDARDS

We now consider to what extent these are real benefits and whether ISO14000 standards, and in particular the ISO 14001 standards for environmental management, are likely to achieve them.

Better Management through ISO14001?

On the face of it, one could hardly object to the use of ISO14001 management standards by some companies to manage better their environmental affairs. If the procedures provide firms with a discipline that enables them to discover superior management strategies, then all well and good. However, any firm considering such a path should consider the relatively high cost of implementing ISO14001 (about $15,000 for a firm of around 100 employees – see above) and perhaps consider alternative options, such as the use of an internal life-cycle analysis (LCA) which might identify key areas where waste is occurring (see below).

ISO14001 as a Condition for Procurement, Business Loans and Insurance.

ISO14000 is likely to create an underclass of firms that cannot afford to implement its management standards.

It is possible, even likely, that some companies and governments will require ISO14000 certification as a prerequisite for procurement. However, it is not clear that this is desirable. Most firms are likely to comply with the spirit of ISO14000 – in particular, the requirement of achieving continuous environmental improvement – as a matter of course, regardless of any external guidance, since environmental improvements such as using fewer raw materials tend to be in the financial interests of the firm and can generate good will and reinforce a positive public image. But ISO14001 involves a costly auditing procedure that might actually result in the redirection of resources away from investment in more environment friendly processes. Moreover, there is no obvious reason why a firm with ISO14001 certification should be any more committed to environmental improvement than a non-certified firm. This fact has been recognized by B&Q, a British chain of hardware stores that has led the way in the provision of such items as "sustainably sourced" hardwood. B&Q does not favor ISO14001 certification. Instead it carries out its own environmental audits based on what it sees as the key environmental issues for any particular firm or product.[24] The possibility that governments might require ISO14001 certification is more disturbing. Given the market power of most governments, in areas where the government has the majority market share (such as, in most developed countries, the provision of medical care and education) the impact on firms could be devastating, with small firms likely to be most affected.

Given the high costs of implementing ISO14001, it would be rather perverse to require implementation of ISO14000 as a condition of business loans to companies. Of course, ISO14001 registration might act as a signal to banks and insurers that the firm is a lower risk than other firms in a class. However, it is not clear that this risk is directly related to the impact a firm will have on the environment. If that was the case, banks and insurers would require firms to carry out environmental audits that are tailored to their own

[24] Interview with Dr. Alan Knight, Director of Environment, B&Q Stores.

needs, rather than the more general (and costlier) ISO14001 audit. It seems more likely that ISO14001 would reduce the credit and insurance risk of a business by providing a signal of regulatory compliance to the state.

All this suggests that ISO14000 is likely to exaggerate divisions within markets, creating an "underclass" of firms that cannot afford to implement ISO14000. These firms will be subject to more regulatory supervision and will be convicted more frequently of environmental crimes.

ISO14000 and WTO

The suggestion that ISO14000 might figure in international trade agreements as "a factor in establishing whether governments are actually making an attempt to improve the environmental situation within their countries," is cause for concern. The cost of becoming registered under ISO14000 is high in developed countries; in less developed countries the cost of registration is likely to be astronomic. It is unlikely that there will be a large supply of qualified auditors. So, once again, a methodology developed in the North[25] (and one which is probably inappropriate there) will be imposed unwillingly on the people of the South. Indeed, the use of ISO14000 as a condition in an international trade agreement would be nothing short of environmental imperialism. Under WTO rules, ISO14000 should not be allowed as part of any government's procurement policy; in particular, given the dubiousness of the claim that ISO14001 registration will lead to environmental improvement, requirement of ISO14001 should not qualify as an exception under Article XX of GATT.

The suggestion that the World Bank, the IMF and other International institutions might demand that governments require ISO14000 registration by firms from which they procure is not surprising. Loans from these institutions have often merely been an excuse to benefit firms whose parent companies are in developed countries. Since it is these Northern firms that are most likely to be able to afford ISO14000 registration, the imposition of an ISO14000 condition would merely perpetuate this imperialist tradition. But, in any event, the real problem with loans from the World Bank, the IMF, and other multilateral lending institutions, is not the conditions they impose but the fact that they are only granted to governments, which tend to disburse the resources in ways which are not particularly beneficial to the people.[26]

"Harmonization of national rules, labels, and methods" sounds nice, but what does it actually mean?

More Fundamental Problems with ISO14000

[25] The terms North and Northern are used here generically to describe 'developed' countries, which one might differentiate as having a per capita income of $10,000 or more (thus, Australia and New Zealand would qualify as 'Northern' countries); the terms South and Southern refer to the other, 'less developed' countries.

[26] See e.g. D. Bandow and I. Vasquez, *Perpetuating Poverty* (Washington DC: Cato Institute, 1994)

It might appear that most of the criticisms above have focused on problems that might be addressed by restructuring ISO14000 in some way, so that it does not discriminate against firms in developing countries or against smaller firms in general. For example, it could be envisaged that disadvantaged firms might receive a subsidy towards the cost of ISO14000 registration. In fact, such a system has already been developed in Canada - the government of Nova Scotia has announced that it is to give firms a tax credit of 25 percent on costs related to ISO14000 registration up to a maximum of $150,000.[27]

However, several more fundamental problems exist with ISO14000. First, the environmental audits carried out for registration under ISO14001 might not actually lead to an improvement in a firms environmental performance. The main reason for this is that the auditors might not identify the most appropriate areas for reducing environmental impacts. This problem is itself a function of the trade-offs that are inherent to any environmental issue. For example, consider a firm that produces extruded plastic tubes. New technologies might enable the firm to produce tubes of a similar strength using less virgin material. However, a firm carrying out an environmental audit might notice that a considerable amount of material is wasted during the cutting process (where tubes are cut to the length demanded by consumers); As a result, the audit firm may recommend that an environmental improvement would include reuse of this scrap material. However, inclusion of scrap in the production of new tubes is likely to alter the properties of the plastic, requiring that the tubes be thicker in order to provide an equivalent performance. As a result, the overall use of raw materials might fall slightly, but the total amount of material used in each tube has increased so the energy required for producing the tubes is likely to have risen. The use of raw materials and the consumption of energy might both be considered "environmental impacts", so there is an obvious trade-off between consumption of raw material and consumption of energy. However without further information it is not possible to know whether the addition of recycled material increases or reduces the environmental impact. Suppose that the energy used for producing the tubes comes from oil. Burning this oil means consuming a scarce resource and, possibly, causing some air pollution. This hypothetical example is mirrored in the real world by the experience of a Californian company that makes garbage bags (see box on facing page).

Any sort of compulsion to implement ISO14000 might seriously distort the market and lock in a potentially inferior approach to environmental management.

Is ISO14000 registration beneficial to firms?

At base, the problem with ISO14000 comes down to this: Any improvement that might be recommended as environmentally superior by an

[27] Report in *Consensus Magazine*, published by the Standards Council of Canada, 1996 (cited on www.iso14000.org). Of course, this tax credit will also benefit larger firms that choose to register for ISO14001.

ECOLABELS AND ENVIRONMENTAL TRADEOFFS:
THE CASE OF GARBAGE BAGS

Awarding ecolabels on the basis of a single criterion such as "recycled content" may encourage consumers to purchase products that do not necessarily provide significant benefits over alternatives. Sometimes, such ecolabels may even hinder environmental progress.

Consider, for example, the tradeoff between recycled content and source reduction for plastic garbage bags. The State of California mandates that garbage bags thicker than 0.75 mm must contain a minimum of 20 percent recycled content, increasing to 30 percent in January 1997. Before the law took effect, many firms had reduced the thickness of their garbage bags from between 1.5 and 2 mm to under 1 mm. This conserved between 100 and 200 million pounds of virgin plastic resin. However, these new, lighter-weight bags cannot maintain the same product performance if they contain recycled material. This is largely because the recycled resin cannot perform within the same performance parameters as virgin resin.

First Brands Corporation experimented with incorporating recycled material into their bags. They used their own plastic scrap, which was of relatively high-quality since it was a uniform material and had only undergone the process of thermal degradation once (compared to the three or four times that is common for post-consumer recycled plastic). The bags made in this manner exhibited 25 to 65 percent strength loss, resulting in holes in the bags, tearing, and separation of the plastic layers. In sum, First Brands used the cleanest, purest recycled material available yet still could not make a bag with adequate strength to hold garbage.

To compensate for these problems, First Brands had to make thicker bags, using more total material in order to meet the mandatory recycled content required in California. The company now runs two separate product streams – one for California and one for the rest of the nation. Higher production costs (resulting from shorter runs for the recycled-content bags), and additional material costs mean Californian consumers are paying more for thicker, poorer-quality garbage bags that use more total resources. First Brands still receives complaints from Californian consumers who say that even the bags made from the heavier (thicker) material fall apart. Ironically, before the Californian law was imposed, entrepreneurs, testing the competitive marketplace, had already attempted to introduce bags that used post-consumer recycled plastics. But these bags held less than ten percent of market share, suggesting that only the 'evergreens' were buying them.

This example demonstrates some of the complexities associated with reducing the environmental impacts of products. A single-criterion ecolabel obscures these complexities. In California, the net effect of the mandatory recycled content law is that newer, lighter garbage bags that represent a technological advance over earlier bags are locked out of California's market. Companies are forced to adapt their product line at higher costs to consumers, with no net environmental benefits. Ecolabels, which typically are awarded to products on the basis of a narrow range of criteria, have similar effects.

Source: Personal interview by Lynn Scarlett with Bob Vetere, First Brand Corp., Conn. Adapted from J. H. Morris and L. Scarlett, *Buying Green - Consumers, Product Labels and the Environment* (Los Angeles: Reason Foundation, November 1996).

external auditor is likely to based on that auditor's subjective assessment of environmental problems. Regional biases may also affect the objectivity of the audit process. Finally, we must recognize that environmental priorities change over time with the expansion of scientific knowledge and the evolution of societal preferences. Any formalized audit process risks lagging behind these changes. The only alternative to this is that the auditor focuses exclusively on the problem of reducing the overall costs of the firm. Indeed, many protagonists of ISO14000 have touted this as a prime benefit of registration. However, ISO14000 is not the only system that has been developed to improve a company's performance. Internal life cycle analyses have been carried out by firms since the early 1970s as a means of identifying areas where firms can reduce costs and increase output.

An international ecolabel is likely to create a more serious problem of technological lock-in than a national label.

A voluntary alternative to regulations?

Dr. John Gibbons, head of the White House Office of Science and Technology, noted that "the [ISO14000] process must be voluntary: ISO should not become a prescriptive mechanism used to enforce environmental compliance. It is an alternative, not an addition, to the command-and-control system and should not become another burden imposed by government on industry on top of other regulatory, permitting, and reporting requirements."[28]

It is very important that ISO14000 be voluntary, for any sort of compulsion to implement ISO14000 (or even a system in which preferential treatment was given to firms complying with ISO14000) might seriously distort the market and lock in a potentially inferior approach to environmental management. As the above discussion has indicated, the cost of complying with ISO14000 is likely to vary considerably between industries and firms. Moreover, for many firms, compliance with ISO14000 may not be the most environmentally sound way of investing resources. Compulsory compliance with ISO14000 would discriminate against firms that were complying with regulations but which had no formal environmental management procedure. In such cases, compliance might mean that resources are diverted away from investments that lead to environmental improvements (such as the light-weighting of products) towards pointless changes to management and accounting procedures.

ISO14000 purports to provide an alternative to regulation, a "market based" solution to environmental problems. In reality, at best it is likely to be little more than an invitation for auditors to make a few more bucks. At worst, it will result in environmental imperialism, restricting trade and imposing unnecessary costs on firms in developing countries that will lose out relative to firms in developed countries.

[28] Speech to ANSI/GETF, December 14, 1995.

APPENDIX:
CURRENT STATE OF DEVELOPMENT OF ISO14000 SERIES

(adapted from www.iso14000.org)

ISO 14001 -Environmental management systems - Specification with guidance for use.

This document is the core management systems specification document in the ISO 14000 series. It contains the required elements that must be satisfied by an organization seeking registration or certification of its environmental management system to the standard. The elements detailed in ISO 14001 must be implemented, documented, and executed in such a way that an independent third-party registrar can grant and justify registration on the basis of evidence that the organization has implemented, in good faith, a viable environmental management system. ISO 14001 is also designed for organizations that wish to declare their conformity to the standard to second parties willing to accept such self-declaration without the intervention of third parties. ISO 14001 is intended for use by all types and sizes of organizations in all countries.

This document has completed its development and has been published by ISO. ISO/TC 207/SC 1 has agreed to initiate consideration of its revision in 1999. This document has also been formally adopted by the USA as an American National Standard.

ISO 14004 - Environmental management systems - General guidelines on principles, systems and supporting techniques.

This document is guidance for either large organizations trying to improve an existing environmental management system, or guidance for small and medium sized enterprises just beginning to establish an environmental management system. This document clearly states in its introduction that only ISO 14001 contains the requirements that may be objectively audited for

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certification/registration purposes or for self declaration purposes. This document contains examples, descriptions and options, as well as practical advice, that will aid in both the implementation or enhancement of an environmental management system, and in strengthening its integration into the overall management of the organization. ISO 14004 is intended for use by all types and sizes of organizations in all countries.

This document has completed its development and has been published by ISO. ISO/TC 207/SC 1 has agreed to initiate consideration of its revision in 1999. This document has also been formally adopted by the USA as an American National Standard.

ISO 14010 - Guidelines for environmental auditing - General principles on environmental auditing.

This document provides the general principles of environmental auditing, as developed by ISO/TC 207/SC 2. These general principles are meant to apply to all types of environmental auditing, not just to environmental management systems auditing. This document states that an environmental audit should have as its focus a clearly defined and documented audit criteria; auditors are not free to select what it is that they want to audit. They are required to audit to criteria that have been predetermined. However, the scope of the audit and these criteria may be set by the client in consultation with the auditor.

This document has completed its development and has been published by ISO. ISO/TC 207/SC 2 has agreed to initiate consideration of its revision in 1999. Formal adoption of this standard by the USA as an American National Standard was completed October 1996.

ISO 14011 - Guidelines for environmental auditing - Audit procedures - Auditing of environmental management systems.

This document provides guidance specifically for environmental management systems audits, which are a required element of ISO 14001, although the use of ISO 14011 to conduct such an audit is not required in ISO 14001. This document may also be useful for registration audits, but other documents may also be necessary in this context. ISO 14011 is intended for use by all types and sizes of organizations operating an environmental management system.

This document has completed its development and has been published by ISO. ISO/TC 207/SC 2 has agreed to initiate consideration of its revision in 1999. Formal adoption of this standard by the USA as an American National Standard was completed October 1996.

ISO 14012 - Guidelines for environmental auditing - Qualification criteria for environmental auditors.

This document provides guidance on the qualification criteria for internal and external environmental auditors who perform environmental management system audits. ISO 14001 does not require that ISO 14012 be used when determining the qualifications of auditors, but it is expected that many organizations will review this guidance document and use elements from it, as appropriate to their needs. The process of certifying auditors for the purpose of performing registration audits is separate from EMS audits performed to meet the requirements of ISO 14001. Such accreditation processes may, however, use ISO 14012 as a basis for qualifying auditors.

This document has completed its development and has been published by ISO. ISO/TC 207/SC 2 has agreed to initiate consideration of its revision in 1999. Formal adoption of this standard by the USA as an American National Standard was completed October 1996.

ISO 14015 - Environmental site assessments.

The transfer of real estate in recent time is often preceded by an assessment of the environmental condition of the property. This puts prospective buyers on notice to avoid future surprises and liabilities. It also protects the seller by establishing the state of the property when it is transferred. Some delegations to ISO/TC 207 believe there is a need to standardize such assessment at the international level. Other delegates believe such assessments are done on the basis of expectations and legal framework at the national level; so, while national standards on this subject may serve a useful purpose, there may be no need or justification for an international standard.

This document, listed in the work program, is currently at the new work item proposal stage, and no draft document has been produced yet by ISO/TC 207/SC 2. Consideration of justification statements and overall scope for this project is under consideration by ISO/TC 207/SC 2. After the justification and overall scope are agreed upon, work will begin within ISO/TC 207/SC 2 to produce a first working draft, and final publication and availability is expected in about three to four years.

ISO 14020 - Environmental labels and declarations - Basic principles.

This document provides guidance on goals and principles that should frame all environmental labeling programs and efforts, including practitioner programs and self-declaration. Strong, credible programs and efforts should conform to these goals and principles.

This document recently completed the ISO committee draft (CD) voting stage, but changes to the document have resulted in its revision and recirculation as a CD for voting. Final approval and publication is expected during 1997.

ISO 14021 - Environmental labels and declarations - Self-declaration environmental claims - Terms and definitions.

This document provides the definitions of terms commonly used by organizations when they self-declare, either on labels or through other forms of claims, that their products have certain environmental attributes or qualities. The intent is to help ensure that information on labels or other forms of claims is accurate, verifiable and nondeceptive. This document also includes guidance on what consideration to give to life cycle assessment as part of the requirements for manufacturer claims.

This document completed the ISO committee draft (CD) voting stage during Fall 1995, and will soon be circulated as an ISO draft international standard (DIS) for voting by ISO member countries. Final approval and publication is expected during 1997. Requests for ISO to delay the advancement of this document in order to bring ISO 14022 and ISO 14023 up to the same level of development were not accepted by ISO.

ISO 14022 - Environmental labels and declarations - Self -declaration environmental claims - Environmental labeling symbols.

This document serves the same purpose as ISO 14021 for symbols, rather than for terms and definitions. A working draft document is currently being developed. Final approval and publication of this document is expected in approximately three years.

ISO 14023 - Environmental labels and declarations - Self-declaration environmental claims - Testing and verification methodologies.

This document seeks to standardize testing and verification methodologies to further strengthen the comparability of labels from one country to another. It makes little sense to standardize on criteria if the methods to measure the criteria are not the same or equivalent. This will further strengthen the credibility of environmental labels and prevent barriers to trade that may arise from inconsistent testing and measurement.

A working draft document is currently being developed. Final approval and publication of this document is expected in approximately three years.

ISO 14024 - Environmental labels and declarations - Environmental labeling Type I - Guiding principles and procedures.

This document provides the principles and protocols that third-party labeling, "seal" or "practitioner" programs should follow when developing environmental criteria for a particular product. The intent is to standardize the criteria used by a multitude of such programs world-wide, to lead to greater agreement among stakeholders and less divergence in the criteria developed and used by different programs. These third party programs use the established criteria to determine and certify, for the edification of consumers, that certain products have certain environmental characteristics or attributes, and are therefore, environmentally preferable.

This document recently completed the ISO committee draft (CD) voting stage, and will soon advance to the ISO draft international standard (DIS) voting stage for final approval. Final publication and availability is expected by mid-1997.

ISO 14025 - Environmental labels and declarations - Environmental labeling Type III - Guiding principles and procedures.

This document will provides guidance and the principles and protocols on the specific third-party practitioner program referred to as Type III labeling (that is, quantified product information labels based upon independent verification using preset indices). The objective is to provide a methodology that can be used to ascertain which indices are appropriate for a given product and how they will be measured. The goal is to achieve uniformity from program to program on a world-wide basis.

ISO/TC 207/SC 3 agreed in late 1995 to actively initiate work on this item, at it is now advancing to the development of a working draft document under an ISO/TC 207/SC 3 working group. Final approval and publication of this document is expected in approximately three or four years.

ISO 14031 - Environmental management - Environmental performance evaluation - Guidelines.

This document provides gives guidance on the design and use of environmental performance evaluation, and on identification and selection of environmental performance indicators, for use by all organizations, regardless of type, size, location and complexity. This document does not establish environmental performance levels, does not provide a methodology to compare absolute performance of organizations, and is not intended for use as a specification standard for certification/registration purposes. However, this document does support Section 4.4.1 of ISO 14001, which calls for an organization to record information to track performance. It should be noted that ISO 14001 does not require that ISO 14031 be the document used to accomplish this, and ISO 14031 is intended for use by organizations with or without an EMS in place.

Currently at the ISO working draft stage under ISO/TC 207/SC 4 working groups, a fifth working draft version of this document was circulated for review and comments on July 31, 1996. This fourth working draft, as well as comments received on it, will be reviewed at the November 1996 ISO/TC 207/SC 4 meetings in Stockholm, Sweden. At these meetings, ISO/TC 207/SC 4 will determine whether a sixth working draft is necessary, or whether the document can advance to the ISO committee draft (CD) stage. The current business plan of the subcommittee calls for pilot testing of the CD stage document to obtain useful input to further develop its content, prior to ISO draft international standard (DIS) stage voting and final publication. Final approval and publication of the document is currently anticipated by the end of 1998.

ISO 14040 - Life cycle assessment - Principles and framework.

This document is intended to provide a clear overview of the practice, applications and limitations of LCA to a broad range of potential users and stakeholders, including those with a limited knowledge of life cycle assessment.

This document recently completed the ISO committee draft (CD) voting stage, and was issued on June 13, 1996 for a six-month vote at the ISO draft international standard (DIS) voting stage. As this document is also being considered for adoption by Europe, upon successful completion of the DIS voting stage, it will undergo a two-month final draft international standard (FDIS) voting stage. Final approval and publication of this document is expected by mid-1997. This document is also being proposed as an American National Standard, and the processes for such adoption should be completed during 1997.

ISO 14041 - Life cycle assessment - Life cycle inventory assessment.

This document is intended to provide special requirements and guidelines for the preparation, conduct and critical review of life cycle inventory analysis (the phase of LCA that involves the compilation and quantification of environmental relevant inputs and outputs of a product system).

A working draft document is being developed by ISO/TC 207/SC 3/WG 2 & 3. Final approval and publication of this document is expected in approximately three or four years.

ISO 14042 -Life cycle assessment - Impact assessment.

This document is intended to provide guidance on the impact assessment phase of LCA (that phase of LCA aimed at evaluating the significance of

potential environmental impacts using the results of the life cycle inventory analysis).

A working draft document is being developed by ISO/TC 207/SC 3/ WG 4. Final approval and publication of this document is expected in approximately three or four years.

ISO 14043 - Life cycle assessment - Interpretation.

This document is intended to provide guidance on the interpretation of LCA results in relation to the goal definition phase of the LCA study, involving review of the scope of the LCA, as well as the nature and quality of the data collected.

A working draft document is being developed by ISO/TC 207/SC 3/ WG 5. Final approval and publication of this document is expected in approximately three or four years.

ISO 14050 - Environmental management - Terms and definitions.

This document, when completed, will collect and compile into one glossary-type document all terms and definitions provided in the individual standards of the ISO 14000 series.

Committee draft (CD) stage voting was completed on this document in March 1996. Sufficient affirmative votes were received to advance this document to the ISO draft international standard (DIS) voting stage. This document will now advance to DIS stage, and final publication and availability is expected by mid-1997.

likely to result in the misallocation of resources and, in the long-term, have a negative impact on the environment.

- ISO14000 is inflexible, as criteria take years to develop and are not changed for several years thereafter. As a result, it is likely that scientific developments will overtake the standard. Environmental priorities change over time with the expansion of scientific knowledge and the evolution of societal preferences. Any formalized audit process risks lagging behind these changes.

- The focus of ISO14000 is too narrow. Companies will be encouraged to comply with ISO14001, but not necessarily to think holistically about improving their performance by using resources more efficiently. ISO14000 may crowd out other, perhaps superior methodologies, for developing environmental management programs.

- ISO14000 involves a costly auditing procedure that might actually result in the redirection of resources away from investment in more environment friendly processes. The possibility that governments might require ISO14000 certification is more disturbing and could have a big impact on smaller firms.

- The cost of becoming registered under ISO14000 is high in developed countries. In less developed countries, the cost of registration is likely to be astronomic. The use of ISO14000 as a condition in an international trade agreement would be nothing short of environmental imperialism.

It is very important that ISO environmental standards be voluntary. Any sort of compulsion to implement ISO environmental standards might seriously distort the market and lock in a potentially inferior approach to environmental management. The cost of complying with ISO14000 is likely to vary considerably between industries and firms. Compulsory compliance with ISO14000 would discriminate against firms that were complying with regulations but which had no formal environmental management procedure. In such cases, compliance might mean that resources are diverted away from investments that lead to environmental improvements towards pointless changes to management and accounting procedures.

ISO14000 purports to provide an alternative to regulation, a "market based" solution to environmental problems. At best, it is likely to be little more than an invitation for auditors to make a few more bucks; at worst it will result in environmental imperialism, restricting trade and imposing unnecessary costs on firms in developing countries that will lose out relative to firms in developed countries.