

The new practice of environmental auditing will place added pressures on the construction industry. It will require new technical skills, new management capabilities and new sensitivities to public policy issues that have not yet fully taken shape.

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Partnership with Nature



CONSTRUCTION CONSORTIUM FOR THE GLOBAL ENVIRONMENT

There is no doubt that human beings are intervening in natural environments in potentially significant ways. There are controversies about the scale and scope of these interventions. That fact is not questioned by anyone, anywhere. Because construction by definition means building human environments and altering the areas being built, the construction industry is extremely vulnerable to an emerging ethos of environmental responsibility. The crucial fact is that with the inevitable vulnerabilities come new opportunities. To the extent that the construction industry can appreciate - and even create - these opportunities, its vulnerability could be turned to major advantages, possibly greater than had ever been the case in the history of this industry.

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Global enterprises of all sorts

have traditionally been at the center of technological change, defining the frontiers of innovation and commercialization. Firms will retain an advantage to the extent that the same will be true of the environmental and ecological dimensions of business.

For the construction industry, managerial as much as technological innovation will be needed to create new opportunities and to shape new markets for environmentally sound construction services. This must be done. Otherwise, the construction industry will find itself subjected to legislation, to environmental protection practices and to greater control by governments everywhere. If this happens, the industry will be severely hampered and find itself in a defensive posture. Defense alone is never sound business practice; combining offensive business strategies of unassailable dimensions could profoundly shape this industry in the coming decade.

CONSTRUCTION BUSINESS AND GLOBAL ENVIRONMENT

On a worldwide basis, the bulk of construction activity is conducted by large corporations. These private firms are the major actors in the built environment, as the major producers, managers, distributors and market shapers. By necessity, these firms operate in a wide range of hazardous, pollution-intensive and environmentally disturbing activities. The construction companies are also the innovators, the transmitters of technology and the sources of commercial ideas. To date, they have been quite conservative, reactive rather than assertive, and they have followed the market rather than creating it. All this must change. Their actions and their strategies are crucial elements shaping the environmental landscape. In the context of global environmental change, construction companies, like the rest of us, are part of the problem. And they must necessarily be a central part of the solution - even if they themselves do not yet fully recognize this imperative. It will be the companies, their technological capabilities and edge, that will shape new economic activities and new modes of performance in global markets. Arising from this will be unprecedented scales of construction in the decades to come.



NEW POLITICS OF GLOBAL ENVIRONMENT

The elements and evidence of new global politics in the environment are already taking shape. A global consensus on environmental protection has slowly emerged over the last two decades. Between Stockholm in 1972 - the first world environment conference - and Brazil in 1992 - the second conference on environment and development - the international community has stiffened its resistance to environmental degradation and industrial practices that threaten the biosphere and ecosystems. With increased efforts by nations to regulate effluents and emissions, environmental legislation is be-

The Construction Industry must transform the environment into an asset in its global strategy.

They will also be increasingly subject to national and international regulations. The trace of environmental mismanagement are now recognizable for construction and other industries. Private interest groups supporting a cleaner environment can use these evidences to pressure governments to regulate corporate activities. Because construction is by definition so visible, it will be an easy target. As problematic as regulation, control and litigation may be, the loss of good will and the development of an anti-nature reputation is a problem that the construction industry simply cannot withstand without impunity. Construction companies cannot ignore this trend, nor can they extract themselves from mounting international pressure for greater environmental responsibility. Internationalization of environmental issues cannot be contained, just as the rate of diffusion of banking and finance worldwide in the 1970s and 1980s was a trend that amounted to uncontrollable globalization. Clearly, an environmental ethos presents a challenge to companies operating globally. If these challenges are recognized and accurately assessed, there could be important opportunities for construction firms to shape the contours of new markets for built products and services. Construction companies, in particular, must include managing, strategic interactions with nature as an essential component of business. Strategic interactions mean comprehensive assessments of construction/environment interactions during each phase of construction-related activities.



their joint interest to influence the change in a direction that would provide correct signals as to how environmental values should

change business conditions and how governments may have to react to new conditions of the marketplace.

Market forces function efficiently and serve social objectives only within a stable and well-understood set of norms. For construction companies, the objective must be to help steer global deliberations in the direction of clarity and consistency to facilitate developing a future corporate strategy throughout the industry.

Together, these factors have effectively transformed the international marketplace for construction companies. Almost overnight, global companies have been confronted with concerns well beyond the pale of conventional strategic planning, concerns that certainly were never identified in business school.

From the perspective of a global corporation, the best strategy is to try to mitigate the most severe effects of the environmental movement and to channel the others into an acceptable direction. Because environmental degradations derive from multiple, diverse and very legitimate sources - anything that is built disturbs nature - there is simply no easy way around this problem. Good business in this area means direct and forthright recognition of this fact; it also means expanding R&D efforts for containing disturbances.

A DILEMMA FOR CONSTRUCTION COMPANIES

Nothing can be built without some effect on nature. The now-famous dictum "environmentally benign" means not as damaging, rather than not damaging at all. No construction business can even claim neutral effects on the environment.

This fact shapes the new market reality. New opportunities are created by trying to limit future damage and by cleaning up the past ones. The "damages" that we recognize so far have, in effect, shaped new markets.

Construction has traditionally been a local activity tied to local investments. However, technology, resource needs, managerial skills and the strategic perspective are all leading to globalization of the industry. While global construction corporations have yet to encounter the legislative, political or moral constraints of environmental protection, it is inevitable that they will.

So, too, will the traditional ways *Continued on next page*

Ours is a time when an environmental ethos, business, and policy all converge.

coming the norm, rather than the exception. Even states that are reluctant to act are pushed to respond by external forces - international agencies, private environmental groups, scientific organizations and others. For example, the World Resources Institute, the World Wildlife Fund and the Sierra Club cannot be entirely ignored in the United States. Greenpeace has had a profound impact on European politics. Pres-

sure from environmental groups is even being felt in developing countries. In Europe, electoral results from 1978 to 1988 show a steady and quite remarkable growth in "green parties" and the success of "green platforms." It is difficult to see how this trend could possibly be reversed. Increasingly, there is an improved showing for "greening representation." Even in the Soviet Union, there are five major "green fronts" combining environmental concerns with opposition politics.

In sum, it is difficult to envisage any politics or political party achieving electoral success on a platform opposing or even ignoring the environment. It is impossible to imagine a business atmosphere where construction companies will be allowed to intervene in nature, without serious limitations on their activity. We can only anticipate greater rather than lesser restrictions in their corporate activities.

Ours is a time when an environmental ethos, business, and policy all converge. While moral suasion alone is hardly a factor of market import, nor one bearing on stark business decisions, it is unwise to ignore sentiments of values and ethics. They define what is legitimate: no company can ignore moral outrage. We have seen this in the petroleum industry with the Exxon Valdez incident and in the chemical industry with the Bhopal. In construction, shoddy building practices in developing countries which lead to building disasters are not likely to continue to remain out of the public eye. The earthquake in California has put all large-scale construction under scrutiny. The examples go on. The developing world is learning that global companies can be held accountable to a vague worldwide environmental morality and even liable in a court of law.

For global construction companies, these politicalgivens create the boundaries and criteria for a realistic assessment of future profit possibilities. Environmental factors will impinge on the cost of doing business; but they may also be gains. They may mean that there is a shared corporate interest in new markets in environmental management technologies and in shaping a human environment where fair competition can take place. If the rules governing global businesses are changing, then it is in

markets that the industry envis-
 ages expanding most extensively.
 Some of the most string-
 ent environmental regulations can
 be found in the United States. Over
 the past years, the United States
 has become a major magnet for
 foreign investments. This means
 that as more businesses move into
 the United States, they will inevi-
 tably encounter not only legisla-
 tive controls, but increasingly pow-
 erful environmental interests. Mem-
 bership in environmental organi-
 zations has grown enormously
 worldwide. In the United States
 alone, it is estimated that the Na-
 tional Wildlife Federation, the Si-
 erra Club, the Audubon Society, the
 Wilderness Society, the Envi-
 ronmental Defense Fund, Green-
 peace and the Natural Resource
 Defense Council, to name a few,
 have expanded their membership
 from less than 3 million in 1970 to
 roughly 18 million in 1990.

The crucial equation connecting construction business
 and the environment is this: consumer protection legislation
plus emerging environmental protection ethos *plus* precedents
 for payments to pollution victims *equals* increased liability
 costs. Never have these costs been as potentially explosive as
 at the present.

THE CRUCIAL EQUATION

pressures on the construction industry. It will require new
 technical skills, new management capabilities, and new sen-
 sitivities to public policy issues that have not yet fully taken
 shape. Even the legal framework for environmental auditing
 is still being shaped. Once this occurs, there will be enormous
 opportunities for the legal profession.

None of these is easy: the risk of investment in new
 products and processes is always great. The costs of environ-
 mental protection must be born up front, in anticipation of
 reduced costs later on - and no business willingly loads on
 immediate costs. In theory, pollution prevention or abate-
 ment will pay for itself over time through a reduced need for
 cleanup, waste disposal and most importantly, from a business
 point of view, reduced liability costs. But the immediate costs
 are inevitable. The challenge is to devise a
 sound strategy for streamlining and phasing
 the costs and raising the revenues. The op-
 portunities are enormous. For example, if



This cannot be avoided. At best, it can be managed.
 The rate of population growth for the world as a whole is es-
 timated at 1.7 percent per year, in developing countries, that
 rate stands at 2.1 percent. Roughly half of the people in less-
 developed countries are under the age of 15. This means that
 in the years to come, there will be an expanding demand for
 services. Constructed facilities will be at the core of this
 demand. Also, nearly half of the world population is urban and
 the rate of urbanization is growing. The implications are
 obvious. We can expect expanded demand for goods and
 services in initial construction, maintenance, rehabilitation
 and reconstruction, especially in areas devastated by war.
 In industrial economies, the major environmental interven-
 tions due to construction have already been put into place. The
 challenge is to provide added services and fa-
 cilities without further significant environ-
 mental damage. In developing countries, the
 problem is just beginning and it is in these

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 vere than that of other global businesses. Clearly, building
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of viewing international business
 in the context of nations, borders
 and markets blur as environmental
 damages cross national borders,
 transmitted by wind, currents and a
 wide range of natural processes.
 The entire theory of international
 corporate liability may be subject
 to revision as the issue of environ-
 mental protection and compensa-
 tion for environmental degradation
 takes shape. Parent company lia-
 bility may be extended in a variety
 of ways, such as requiring firms to
 warm against the risk of hazardous
 activity materials. Construction
 companies, in particular, may be-
 come internationally liable for
 defective, damaging or polluting
 products by any part of the enter-
 prise, including marketing, build-
 ing and distribution services far
 from the location of initial produc-
 tion.
 The question is not whether to
 respond to the new business con-
 text, but *how*; not *whether* compe-
 tion will evolve around modes of response, but how fast and
 how effectively. This is true for all sectors and in all facets of
 global construction business.

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playing field and keep competition where it should be: on technology, on management skills and on market creation and shaping market advantage.

The Center for Construction Research and Education at the Massachusetts Institute of Technology is taking an important and unprecedented step in this direction. The MIT initiative was designed to pull together an alliance among the strongest construction companies operating on a global scale, to shape the contours of new opportunities and to help identify the properties of a more environmentally responsible construction market.

The approach adopted by the MIT Construction Consortium is to devise a "winning strategy" for environmental management in construction business. It will draw upon the most advanced knowledge base in this area, carefully and selectively, and have access to MIT's exceptional research capabilities. It will evaluate prospects for "soft" and "hard" technologies in critical facets of this industry.

The guiding principle is to capitalize on opportunities and create opportunities for construction business worldwide. The new markets are fluid and the bounds of the new technologies are unclear. The challenges to management in construction are unprecedented in scale and scope. The purpose of the MIT Consortium is to help realize these opportunities and to contribute to the protection of natural environments on both local and global levels.

Environmental issues will not simply go away. We are at an early phase of the internationalization of environmental pollution and moral suasion. Corporate strategy requires a new business ethos that blends environmental ethics and profits. Corporations need to help arrest environmental deterioration: they need to internalize environmental factors to develop viable competitive strategies.

Firms operating on a global basis must be environmentally responsible over the long haul: it cannot be viewed as a posture of convenience or an element of short-run profit maximization. In essence, construction corporations must transform the global environment into a partnership with nature. Preserving the planet's natural assets could become sound business practice.

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East Germany were to adopt the environmental standards of West Germany, the direct costs would amount to more than \$100 billion for pollution abatement facilities alone.

The prospects range from clean-up, to reduced waste products, to substitution of less-polluting for polluting products. Inevitably, there will be strong competition on each of these dimensions.

On environmental grounds, we can already see the nations of the world consolidating themselves into various types of environmental policy. First are the most stringently protective: the Nordic countries, parts of the United States and the Netherlands. Second are the less rigorous but legislatively vigilant, nonetheless: most of Western Europe and Canada. Third are Africa and most of the large Latin American economies; and fourth are the environmentally negligent states: all of the less developed countries, India and China. The effects of the 1992 Global Conference on Environment and Development will be to strengthen the emerging environmental ethos, in other words, to move countries out of the third and fourth groups into the first and second.

The governments of developing nations will be in an anomalous position, for they must support infrastructure development as well as new investments in roads, housing and other areas and they cannot be viewed as declaring war on nature.

They are already beginning to see some way out by exploring the bargaining possibilities inherent in environmental protection. For example, a wide range of debt-for-nature swaps in reducing the financial burden of past commitments and nature-for-new technology swaps may be negotiated to facilitate access to less polluting technologies.

Environment must therefore become a salient factor in strategic planning within the construction industry. There are important opportunities for staying ahead of these developments and for shaping the way in which these issues will be addressed to enhance a construction firm's position globally.

Environmental image may become nearly as important as the bottom line. In Europe, environmentally friendly firms are already reaping great goodwill, hardly a monetizable commodity, but crucial for business.

CONSTRUCTION CONSORTIUM FOR THE GLOBAL ENVIRONMENT

Under these circumstances, the case for establishing a Construction Consortium for the Global Environment (CCGE) seems powerful indeed. A CCGE for exchange of information, streamlining transactions costs associated with environmental factors and establishing a forum for policy deliberation would be important in facilitating corporate strategic assessments. No two companies are alike; yet none is ultimately unique. In the case of environmental concerns, the shared predicaments outweigh by far the idiosyncratic risks. The goal of such a consortium would be to help level the environmental

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