Chapter 52
Insights from U.S. Experience to Guide International Reliance on Standardization:
Achieving Supply Chain Sustainability

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ABSTRACT

Sustainability in supply chain operations fundamentally relies on environmental standards, the traditional driver of investment in pollution control and a major factor in facilities site selection. While environmental standardization has traditionally focused on activities in nations and in some multinational regions, in the future a more international perspective is needed. Environmental standards spur investment in technologies enabling sustainable supply chain networks. The complex institutional framework of environmental standardization is a widely misunderstood socio-technical, political process. Experience with the development of legal constraints on standardization in the U.S. has produced problems in areas like intellectual property (IP), antitrust and public participation. Standardization venues often host collaborative development of innovation by uniquely fusing technology design and public policy development. Various constituencies are typically engaged: environmentalists; technologists; legislatures at national, regional or provincial levels; regulators at various levels of government; standards-setting organizations; upstream suppliers; downstream users; the connecting supply chains; and society's varied range of affected communities. This article reviews the role of standardization activities in setting environmental constraints, in the development of green technologies and in establishing metrics for environmental metrology, certification and monitoring. Implications from U.S. experience in managing environmental standardization are examined here to guide participation in international standardization activities. The risks of misunderstanding standardization are so significant that their disregard imperils competitiveness.

INTRODUCTION

Environmental controls are generally expressed in environmental standards emanating from governments (regional, national, provincial, local), from industry associations and in private contracts. Environmental standards are the traditional and most forceful driver in design, development and deployment of pollution controls. Standards attract professionals and firms engaged in development and administration of environmental testing. Standards underlie the deployment of sensor networks for environmental monitoring. Standards also drive the development of attestation programs that administer environmental certifications. Thus, environmental standards will drive sustainable and environmentally-aware supply chain technologies, as well as their deployment, by a wide variety of firms and governments worldwide.

The institutional framework for environmental standardization is political; a complex and widely misunderstood socio-technical process. Standardization is a unique fusion of technology design and public policy development. Many participants in the venues hosting environmental standardization may directly engage in collaborative development of innovations. These various constituencies are often involved: industrial and transportation firms, environmentalists, technology developers, legislatures, regulators, standards-setting bodies, upstream suppliers, downstream users, the connecting supply chains and the affected communities in society. International treaties and accords increasingly obligate nations to implement environmental design through pollution controls as well as establish metrics for testing, monitoring, and certification. Given the political difficulties of achieving multi-lateral consensus on detailed environmental standards through national legislative or regulatory bodies, environmental standardization will be undertaken in a wide variety of venues, both government-related and industry-related.

This article provides a unique perspective on the implementation of government-inspired environmental standards to drive sustainability in the varied venues sometimes called standards-setting organizations (SSO); these are hereinafter referred to as standards development organizations (SDO). Much international effort has been focused on the standardization of environmental management (ISO Central Secretariat 2009). This article focuses on the environmental standardization experiences in the United States and other nations to illustrate how this experience is predicted to affect international environmental standardization activities in areas of IP, antitrust and public participation (Japan Fair Trade Commission, 1999). The active, successful management of environmental standardization activities are essential to the development of sustainable business models in all aspects of industrial processes, supply chains as well as the logistics and transportation networks (World Trade Report, 2005). Many of these firms already operate in various nations and their products are produced and services delivered across national borders. Disregard of the risks of environmental standardization will significantly imperil the competitiveness of logistics firms because the measurement of compliance with environmental-related standards is the quintessential evaluation criteria for acceptable sustainable designs and performance.

This article provides a logical development of the standardization process and then acquaints the reader with the public policy, legal and regulatory difficulties encountered by standardization, including, antitrust, intellectual property (IP) and democratic principles of public participation. Standardization examples from environmental fields are integrated throughout as are classic standardization precedents from other fields that are likely adaptable to environmental standardization for supply chain economies.

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