

ENVIRONMENTAL MANAGEMENT SYSTEM

GOAL

Improve environmental stewardship by using a contractor that has a formal environmental management process.

CREDIT REQUIREMENTS

The prime contractor, design-builder or construction management firm shall have a documented environmental management system (EMS) for the entire company or at least the portion(s) of the company participating in the project. The EMS must be in place for the duration of project construction. As a minimum, the EMS and its documentation shall meet the requirements of International Standards Organization (ISO) 14001:2004.

Details

The prime contractor, design-builder or construction management firm is considered to have a documented EMS if it has:

- ISO 14001:2004 certification.
- An EMS that meets ISO 14001:2004 requirements but is not formally certified.

DOCUMENTATION

Submit one (1) of the following items:

1. Documentation of the ISO 14001:2004 certification for the prime contractor, design-builder or construction management firm.
2. A copy of the prime contractor, design-builder or construction management firm's EMS documentation to include:
 - Environmental policy
 - Environmental objectives and targets
 - Identified regulatory requirements and compliance with requirements
 - Defined roles and responsibilities
 - Employee training plan
 - Listing of documented processes
 - Preventive actions
 - Corrective actions
 - Emergency procedures


EW-1
2 POINTS

RELATED CREDITS

- ✓ PR-1 Environmental Review Process
- ✓ PR-10 Site Maintenance Plan
- ✓ CA-1 Quality Management System
- ✓ CA-2 Environmental Training

SUSTAINABILITY COMPONENTS

- ✓ Ecology
- ✓ Extent
- ✓ Expectations
- ✓ Experience
- ✓ Exposure

BENEFITS

- ✓ Reduces Water Use
- ✓ Reduces Fossil Fuel Use
- ✓ Reduces Raw Materials
- ✓ Reduces Air Emissions
- ✓ Reduces Greenhouse Gases
- ✓ Reduces Water Pollution
- ✓ Reduces Solid Waste
- ✓ Improves Human Health & Safety
- ✓ Improves Accountability
- ✓ Increases Awareness

APPROACHES & STRATEGIES

- Have a prime contractor with ISO 14001:2004.
- Have a prime contractor with a documented EMS that meets the requirements of ISO 14001:2004.

Example: Environmental Management System (EMS) Manuals

While it is not possible to present an entire EMS, there are many examples of key EMS documents available on the Web including the following EMS manuals:

- U.S. Environmental Protection Agency, Philadelphia Office:
http://www.epa.gov/region03/ems/philly_manual.htm
- Robins Air Force Base: <http://205.153.241.230/ems/basics/emsrobins.pdf>
- The City of San Diego (contains PowerPoint presentations on key ISO 14001 facets):
http://www.sandiego.gov/environmental-services/ems/emp_manual.shtml
- Mass Highway: <http://www.mhd.state.ma.us/downloads/projdev/emsmanual.pdf>
- North Carolina Department of Environment and Natural Resources (they have a generic guide EMS manual for use by those wishing to create one): <http://www.p2pays.org/ref/08/07378/0737829.pdf>
- The American Association of State Highway and Transportation Officials (AASHTO) maintains an EMS implementation guide website at:
http://environment.transportation.org/documents/ems_implementation_guide.asp.

POTENTIAL ISSUES

1. Smaller firms may not be able to afford the ISO certification process.
2. Documentation of an EMS is not the same as having an effective EMS; however collection of documentation (in lieu of an actual audit) is an efficient way of gathering evidence of an effective EMS.

RESEARCH

According to ISO (2009) an EMS is a management tool that "...provides a framework for a holistic, strategic approach to the organization's environmental policy, plans and actions." One of the more comprehensive descriptions of such a system comes from ISO in their 14000 family of standards.

ISO 14000

The ISO 14000 family of documents addresses various aspects of environmental management. ISO 14001 and ISO 14004 specifically address EMS requirements and guidelines respectively. Essentially, it is a formal description of an EMS and all that is involved in its creation, implementation and use. The ISO is a standard publishing body similar to ASTM International or the American Association of State Highway and Transportation Officials (AASHTO).

Certification: ISO 14001

The requirements for certification are contained in ISO 14001. Therefore, organizations are certified in accordance with ISO 14001; the number is appended with the year of the standard that applied when the organization was certified. The most current version is ISO 14001:2004.

ISO does not certify organizations itself. Most countries have formed formal groups or "certification bodies," which audit organizations applying for ISO 14001 certification. Through mutual agreements these bodies ensure that certification audit standards are relatively the same worldwide. Certification, once granted, must be renewed at standard intervals, often three years.

ISO does not require certification and many organizations just choose to follow ISO 14000 requirements but forgo certification. However, it is common practice in many parts of the world (e.g., Western Europe, China, India, etc.) to require ISO certification as a prerequisite for doing business. Therefore, countries that require this usually see the highest certification rates.

Arguments for Certification

Arguments for certification typically cite the general idea that proper and active management of a company's impact on the environment can result in better regulatory compliance, better business opportunities, less impact on the environment and improved safety. Typically these items are measured by counting regulatory violations, market share, sales growth, reduced injuries and other metrics.

Arguments against Certification

Opponents of certification argue that the actual act of certification and existence of documentation do not, in and of themselves, guarantee improved environmental impacts. Further, they point out that ISO 14001 certification can be an expensive and burdensome process that does not necessarily produce results.

Certification Cost

According to Christini et al. (2004), it cost one major U.S. construction firm about \$1 million to achieve certification. Most research (e.g., Zeng et al. 2003; Ofori et al.; 2000) tends to investigate reasons for ISO 14000 adoption and not the actual cost.

Worldwide ISO 14001 Certification

Data from 2006 show worldwide ISO 14001 certifications at 129,199 in 140 different countries and growing (Figure EW-1.1). In December 2006 the U.S. had 5,585 certifications, which ranked seventh worldwide (Figure EW-1.2). ISO 14001 certification is far more common in Europe and Eastern Asia with 44% and 41% of worldwide certifications respectively. North America (consisting of only the U.S., Canada and Mexico) comprised almost 6% of the worldwide total.

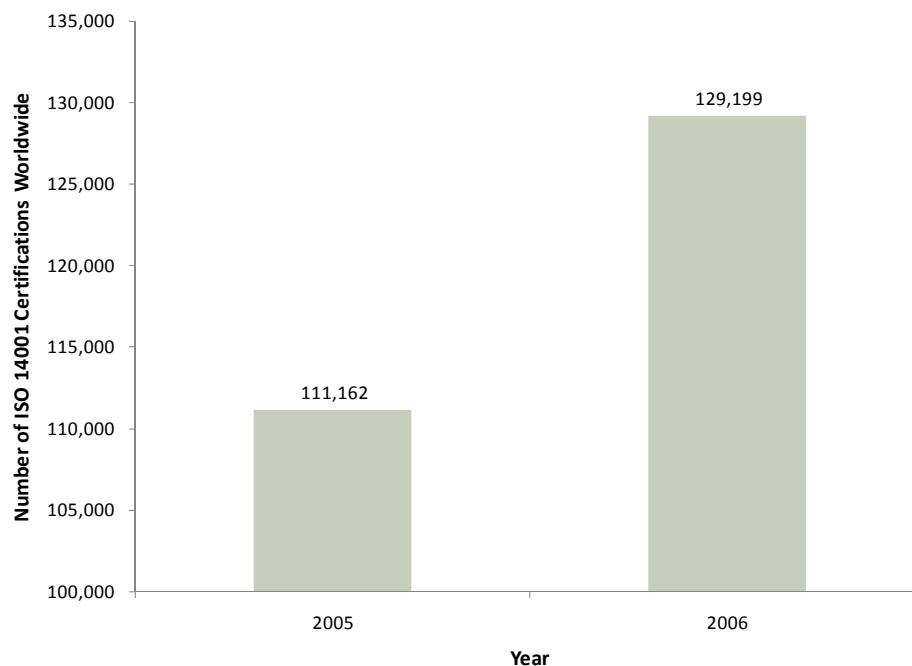


Figure EW-1.1: ISO 14001 certification worldwide growth 2005-2006 (data from ISO 2006).

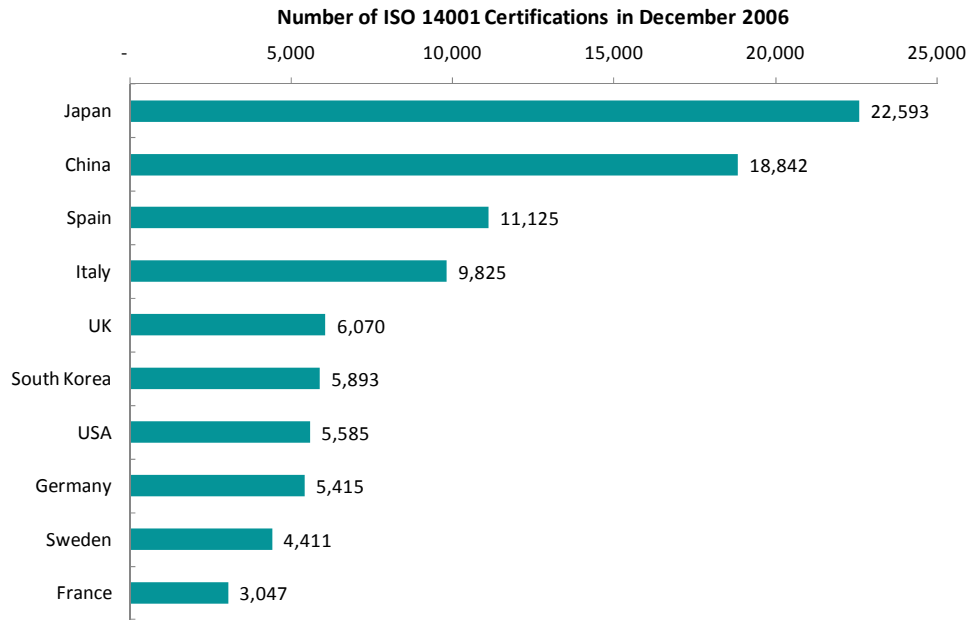


Figure EW-1.2: Top 10 countries in terms of number of ISO 14001 certifications in 2006 (data from ISO 2006).

ISO 14001 Certification in the U.S. Construction Industry

ISO 14000 enjoys growing worldwide popularity, however relatively few U.S. construction firms are certified (Christini et al. 2004). Reasons for the low popularity in the U.S. are somewhat non-specific but perhaps can be attributed to a lack of any government requirement, no insistence by clients, implementation costs, and a subcontracting system that makes it difficult to use an EMS on a particular job (Tse 2001).

Evidence to support the positive outcomes of ISO 14001 certification generally comes from surveys or case studies of contractors that are largely already ISO certified (e.g., Christini et al. 2004; Valdez and Chini 2002; Ofori et al. 2000) or segregate the certified firms and then ask them what the benefits were they were seeking in certification (Zeng et al. 2003). It is not surprising that results indicate a general benefit to ISO 14001 certification. Even so, there is evidence to suggest that ISO 14000 can reduce landfilled waste and produce financial savings (Christini et al. 2004).

GLOSSARY

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| ISO | International Standards Organization |
| EMS | environmental management system |

REFERENCES

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