Integration of EMS into national regulatory frameworks for offshore oil and gas production

Adaee Ixes

Summary
Driven by pressures from the public, market pressures and their own self-interest, companies (e.g. in the offshore oil and gas sector) rely on environmental management systems to effect substantial improvements in environmental performance. Models of these systems have been standardized, including by the International Organization for Standardization (ISO standards) and the European Union (EMAS). To ascertain whether (and how) governments integrate EMS into prescriptive regulations for better environmental performance, profiles of six national environmental regulatory frameworks are compared and analyzed in this article. Successful EMS adoption by governments, within a regulatory framework, can increase the efficiency and effectiveness of regulatory mechanisms.

Resumé
Sous la pression du public et du marché, mais aussi dans leur propre intérêt, les entreprises (par exemple l’industrie pétrolière et gazière offshore) s’appuient sur des systèmes de gestion environnementale pour améliorer de façon substantielle leurs performances. Des modèles de ces systèmes ont été normalisés, notamment par l’Organisation internationale de normalisation (normes ISO) et par l’Union européenne (EMAS). Pour savoir si (et comment) les gouvernements intègrent les systèmes de gestion environnementale dans les réglementations contraignantes visant à améliorer les performances environnementales, l’auteur a analysé et comparé les profils de six cadres réglementaires nationaux sur l’environnement. Il semblerait que, bien menée, l’adoption de systèmes de gestion environnementale au sein d’un cadre réglementaire augmente l’efficacité et les performances des mécanismes réglementaires.

Resumen
Motivadas por presiones del público, presiones del mercado y su interés propio, las empresas (en el sector del petróleo offshore y del gas, por ejemplo) utilizan sistemas de gestión medioambiental para mejorar significativamente su actuación medioambiental. Algunos modelos de estos sistemas han sido normalizados por la Organización Internacional de Normalización (normas ISO) y por la Unión Europea (EMAS). Para determinar en qué medida (y cómo) los gobiernos integran sistemas de gestión medioambiental en las reglamentaciones para una mejor actuación medioambiental, se comparan y analizan los perfiles de seis marcos nacionales de reglamentaciones ambientales. El éxito en la adopción de sistemas de gestión medioambiental por parte de los gobiernos, dentro de un marco reglamentario, puede aumentar la eficiencia y eficacia de los mecanismos regulamentarios.

Offshore production is a significant source of crude oil and gas supply in several oil-producing countries. However, offshore oil and gas exploration and production has serious environmental impacts. These include pollution from oil spills, accidents and fires (some of which have been intensely publicized) and the continuing impacts of operational discharges, atmospheric emissions and negative social pressures in coastal areas.

The challenge posed by sustainable development is to meet world energy demands with minimum impacts on the environment. National laws remain the means by which countries meet their international environmental obligations and regulate the conduct of companies and individuals within their borders. National regulation has traditionally been prescriptive, based on “command and control” legislation that specifies permits, prohibitions, emission standards, monitoring mechanisms, and, occasionally, environmental impact assessment (EIA). Such systems often prescribe fixed minimum standards applicable to existing problems. Thus they are not readily adaptable to newer environmental approaches such as the precautionary principle.

Prescriptive legislation does not usually aim to achieve compliance and environmental performance beyond required minimal standards. The significance of environmental management systems and standards is that they encourage environmental performance beyond minimal standards. This proactive response has been prompted by the modern drivers of environmental compliance: public disclosure, market pressure and self-interest. Regulatory controls independent of EMS will not create sufficient incentive for the introduction of cleaner technologies or environmentally friendly innovations.

Standardized environmental management systems such as the International Organization for Standardization’s ISO 14000 series and the EU’s Eco-management and Audit System (EMAS) make use of registration and certification procedures to ensure uniform reliable and verifiable application. Within this framework, other management tools employed to improve performance include environmental assessment (including strategic and risk assessment), environmental auditing and public corporate environmental reporting. These systems and tools have resulted in a number of actions and procedures that could be effectively “captured” by regulation to achieve improved environmental performance.

This article presents a brief overview of regulatory mechanisms. It examines the mode of – and the extent of integration between – such mechanisms within the given examples of national regulatory frameworks for environmental regulation of offshore oil and gas production. It concludes with some thoughts on the necessity for an integrated approach.

Environmental issues relevant to regulation of the offshore oil and gas industry are listed in Table 1.

Types of regulatory mechanisms
Traditional command and control (C & C)
Several governments, when confronted with the task of providing a national environmental framework that will reflect their international commitments and effectively improve environmental performance in the industrial sector, have chosen prescriptive legislation (traditional command and control) involving some of the following instruments:
- permits;
- prohibitions;
- emission standards;
- monitoring;
- environmental impact assessment (EIA).
Prescriptive environmental regulation is generally found in a variety of national laws. These include general petroleum or planning laws and regulations developed to deal with specific environmental issues (Table 2).

### Environmental management systems and tools

**EMS types**

Environmental management systems can be defined as “the organizational structure, responsibilities, practices, procedures, processes and resources for implementing and maintaining environmental management.” EM S also takes account of those aspects of management that plan, develop, achieve, implement, control and improve the enterprises environmental policy, objectives and targets.

The use of environmental management systems is still in its early stages and will continue to develop. The following types have emerged:

- company in-house EM S systems;
- association framework EM S;
- standardized models of EM S.

Five standards in the International Organization for Standardization (ISO) 14000 series were published in 1996, creating a framework for environmental management systems. In this series companies are registered only with respect to ISO 14001. The other standards are guidance documents. Companies that intend to be certified under this series must meet the specific requirements of ISO 14001, which requires:

- formation of an environmental policy;
- planning of environmental objectives and targets;
- implementation and operation;
- checking and corrective action involving internal auditing;
- management review.

The ISO 14001 standards focus on structural requirements in any organization desiring to implement, maintain and improve an environmental management system. Such an organization must provide a framework for setting and reviewing environmental objectives and targets, and this should be properly documented and communicated to all employees and made available to the public.

The Eco-management and Audit Scheme (EMAS) was set up by the European Union for establishment and implementation by companies within the Community engaged in industrial activities. To participate in EMAS, these companies must:

- adopt a company environmental policy;
- conduct an environmental review of the site;
- introduce an environmental programme on the basis of review;
- carry out environmental audits;
- set objectives for continuous improvement of their environmental performance.

The company is to prepare an environmental statement designed for the public, and verified by an accredited environmental verifier.

**EMS tools**

EMS provides a comprehensive set of tools for use within the environmental management system. These tools are structured instruments for improving decision making or information management (or for effecting changes in the behaviour of others), with the overall aim of improving the industry’s environmental performance. All the key actors (e.g. companies, governments) can use environmental management tools to monitor and improve environmental performance. These tools include:

- public corporate environmental reporting;
- voluntary codes;
- environmental assessment (EA) (risk and strategic);
- environmental auditing;
- voluntary/negotiated agreements.

### Economic and tax instruments

These instruments are based on a different approach to influencing pollution activities, aiming for an indirect effect by internalizing externalities where financial tools (e.g. a carbon tax) can reflect the cost of such externalities. An acceptable classification has been set out by the O organization for Economic Co-operation and Development (OECD). It proposes five groups:

- charges;
- subsidies;
- deposit-refund systems;
- market creation;
- financial enforcement incentives.

### Comparative analysis

A comparative analysis of instruments applicable in six countries is presented in Tables 3-6. Each country has significant offshore oil and gas production. These tables allow an overview of the use of similar mechanisms in different countries.

The following is a summary of national profiles. The complete text of these profiles is available on the Offshore Oil and Gas Environment Forum (OEF) Website (www.oilandgasforum.net/management/legislation.html). Profiles were compiled with the assistance of the appropriate national authorities.

**Abu Dhabi**

Abu Dhabi, in the United Arab Emirates, has a legislative framework with a de facto regulator, AD N O C (the national oil company). AD N O C shares this responsibility with the UAE Federal Environmental Agency. While AD N O C has no operations of its own, it controls operating companies and reports to the Abu Dhabi Supreme Petroleum Council. The fundamental environmental legislation is the Federal Environmental Law, which requires permitting of the offshore oil and gas industry. Environmental impact assessment is mandatory before activity is undertaken. The EPBC and the Petroleum (Submerged Lands) Act (PSLA) and the Environmental Protection and Biodiversity Conservation Act (EPBC). The EPBC is triggered only where the proposed activity would affect ecological communities, migratory species, commonwealth marine areas and nuclear activity. The 1999 Regulations for management under the PSLA require an extensive environmental plan before petroleum activity is undertaken; the EPBC (where triggered) requires extensive environmental assessment, public environmental reports, public enquiry and approval of the Minister of Environment and Heritage. In Australia there is also active cooperation among regulators.
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<thead>
<tr>
<th>Issues</th>
<th>Abu Dhabi</th>
<th>Australia</th>
<th>Malaysia</th>
<th>Norway</th>
<th>United Kingdom</th>
<th>United States</th>
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<tbody>
<tr>
<td>Climate change</td>
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<td>Prevention of Oil Pollution Act (used to regulate flaring/venting)</td>
<td>Clean Air Act</td>
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<td>Water pollution</td>
<td>Regional Convention for the Marine Environment</td>
<td>Petroleum (Submerged Lands) Act</td>
<td>Protection of Sea (Pollution from Ships) Act</td>
<td>Pollution Control Act, Regulations on Oil Discharges from Drill Cuttings, permits</td>
<td>MARPOL incorporated in the Merchant Shipping Acts. Prevention of Oil Pollution Act-oil spill plans required.</td>
<td>Oil Pollution Preparedness Response Regulation</td>
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<tr>
<td>Impacts on ocean ecology</td>
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<td></td>
<td>Draft Offshore Petroleum Activities (Conservation) of Habitats Regulations 2001</td>
<td>Endangered Species Act, Marine Mammal Protection Act</td>
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<tr>
<td>Coastal zone management</td>
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<td></td>
<td>Coastal Protection Act</td>
<td>Coastal Zone Management Act</td>
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<tr>
<td>Decommissioning</td>
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<td>Operators submit abandonment programmes or DTI approval.</td>
<td>Permit required.</td>
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<td>Chemical safety contamination</td>
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<td>Draft Offshore Chemicals regulations 2001</td>
<td>OHS</td>
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<tr>
<td>Overall environment</td>
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<td></td>
<td>Draft Offshore Petroleum Production and Pipeline (Assessment of Environmental Effects) Regulations 1999</td>
<td>EIS</td>
</tr>
</tbody>
</table>

1. Command and control: permits, approvals, licenses, release standards
Consultative forum. The coordinating regulator, alliances between government and industry and a implemented by voluntary measures such as formal Norwegian has a legislative framework in place, com-

Environmental Quality Act and that concerning Malaysia's Exclusive Economic Zone (EEZ), on conservation of the marine environment. In Malaysia there is an emphasis on legislation, Malaysia. The Petroleum Mining Act 1966 designates PETRONAS as the petroleum authority within the offshore areas. The two United Kingdom United States

Malaysia

In Malaysia there is an emphasis on legislation, with the Malaysian Department of Environment as main regulator. It shares this task with other government agencies and the national oil company, PETRONAS. The Petroleum M ining Act 1966 designates PETRONAS as the petroleum authority within the offshore areas. The two major pieces of environmental legislation applicable to Malaysian offshore activities are the Environmental Quality Act and that concerning Malaysia's Exclusive Economic Zone (EEZ), which require environmental impact assessment, environmental quality monitoring and reporting.

Norway

Norway has a legislative framework in place, complemented by voluntary measures such as formal alliances between government and industry and a consultative forum. The coordinating regulator, the Norwegian Petroleum Directorate (NPD), issues licenses for offshore activity. Licenses must contain information on planned activities, technical solutions, and implementation and use of management systems. The Norwegian Pollution Control Authority (SFT) is a specific regulatory authority for matters concerning oil pollution response and oil and chemical discharges to the sea. The industry association (OLF) produces the annual Norwegian Oil Industry Association Environmental Report and encourages voluntary use of ISO 14000 and EMAS. Norway taxes CO2 emissions from petroleum activity on the continental shelf.

United Kingdom

A fundamentally prescriptive environmental framework applies to the offshore industry in the UK. The Department of Trade and Industry (DTI) is the lead regulator. Other agencies (e.g. the Environment Agency, the Scottish Environmental Protection Agency) regulate offshore activities within a three-mile coastal limit. DTI requires companies operating in offshore areas to obtain licenses at the exploration and production stages. These licenses include conditions relating to environmental protection. DTI also carries out regular monitoring and surveillance flights. The UK regulatory picture features an active relationship with the industry association, the United Kingdom Offshore Operators Association (UKOOA).

DTI works with UKOOA to obtain data from industry; in areas where legislation does not exist, agreements are negotiated. The EU regulation on voluntary use of EMAS is applicable.

United States

The US implements offshore policy on natural energy through the Minerals Management Service (MMS). In this task it shares some responsibility with the Environmental Protection Agency (EPA), which regulates air and water quality. In the US the emphasis is on legislation and programmes to regulate industry and improve environmental performance. The Safety and Environmental M anagement Programme (SEMP) is a process for coordinating outer continental shelf (OCS) oil and gas operations, focusing on worker safety and pollution control. The National Environmental Policy Act (NEPA) requires environmental assessment and environmental impact statements. The MMS requires permits for offshore operations. While there is a strong industry association, the American Petroleum Institute (API), with several voluntary standards and an annual environmental performance report, the US’s profile does not indicate serious cooperative efforts between industry association and government. Environmental auditing is carried out by operating companies without government participation, except on request. The MMS is required to give environmental reports to Congress every other year.
### Table 5
Negotiated agreements for joint actions

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<tr>
<th>Issues</th>
<th>Abu Dhabi</th>
<th>Australia</th>
<th>Malaysia</th>
<th>Norway</th>
<th>United Kingdom</th>
<th>United States</th>
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<tbody>
<tr>
<td>Climate change</td>
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<td>Voluntary Code on Atmospheric Emissions-UKOOA</td>
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<td>Guidelines for Reducing Atmospheric Emissions from Oil/Gas Facilities-UKOOA</td>
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<tr>
<td>Ozone protection</td>
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<td>Water pollution</td>
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<td>Code on Synthetic Drilling Fluids-UKOOA</td>
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<td>Waste disposal</td>
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<td>Code on Seismic Activity-UKOOA</td>
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<tr>
<td>Impacts on ocean ecology</td>
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<td>Code on Seismic Activity-UKOOA</td>
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<tr>
<td>Coastal zone management</td>
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<td>Guidelines on Exploration Operations in Nearshore/Sensitive Areas-UKOOA</td>
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<td>Decommissioning</td>
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<td>Chemical safety contamination</td>
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<tr>
<td>Overall environment</td>
<td>APPEA Code of Practice EA + APPEA Agreement</td>
<td>No negotiated agreements</td>
<td>OLF has Environment Programme and includes: • research, coordination, analytical reports • consultative forum</td>
<td>Atlantic Frontier Environment Network • Joint Nature Conservation Committee • UKOOA have produced: • Statement of Guidelines for Offshore Environment • Guidelines on Internal Audit and Training • Guidelines on EMS</td>
<td>SEMP</td>
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### Table 6
Economic instruments

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<th>Issues</th>
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<td>Climate change</td>
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<td>CO₂ Tax</td>
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<td>Ozone protection</td>
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<td>Water pollution</td>
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<td>Oil Pollution Act-penalties for liabilities</td>
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<td>Waste disposal</td>
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<td>Chemical safety contamination</td>
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<tr>
<td>Overall environment</td>
<td>Economic incentives not used</td>
<td>Economic incentives not used</td>
<td>Economic incentives not used</td>
<td>No economic instruments in place</td>
<td>Economic incentives not used</td>
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1. Economic instruments: taxes, fees, liabilities, incentives
three years on the cumulative environmental effects of these activities. MMS works closely with outer continental shelf (OCS) operators to voluntarily incorporate the Safety and Environmental Management Program (SEMP) into their operations for worker safety and pollution control. The regulatory framework does not acknowledge use of environmental management systems or ISO 14001.

Conclusion

These profiles indicate a traditional command and control framework, with slight references to EMS. The Norwegian profile reflects the best advances made towards integration. The recommended integrated approach refers to the effective “capture” of standardized EMS certification processes and tools in a legislative framework. Such a system, when in place, creates an incentive for companies that adopt and practice association or standardized environmental management systems. In other words, there is a benefit in place for achieving higher standards than what would otherwise be required by law. This would imply an integrated framework relying on the EMS certification processes. External verification by accredited third-party agencies is strongly recommended for the sake of transparency. The enabling prescriptive legislation within such framework would focus on defaulters and accreditation procedures for such third-party verifying bodies.

Efficient use of the certification and verification procedures of standardized systems such as ISO 14000 and as EMAS would also lead to practical use of human and financial resources. It would create added incentive for improvements, as being seen as “certified and green” becomes important. The need for such incentives in the offshore oil and gas industry is highlighted by the call for investment in several developing countries. These countries are tempted to lower environmental standards as a bargaining chip. However, with such integration compliance becomes a competitive advantage.

Within developed countries, where governments seek to encourage investment in marginal and unexplored fields, these lower costs can be obtained using an integrated approach. The application of international EMS and tools would internationalize these standards in each country, so that companies could no longer complain of oppressive environmental standards. Conversely, these standards themselves will provide for compliance with legislation applicable within such countries and can be adapted to suit any individual country requirements. This flexibility would make it possible to include disclosure and verification requirements, as well as lists of accredited third-party verifiers. Countries with such a programme of integration could strike a balance between EMS regulated activity and legislation.

Given the complex nature of the environment and the multifaceted impact of offshore oil and gas exploration and production activities, the actions indicated in the profiles are inadequate. There is room for additional improvements, which could be achieved through the integrated approach and with greater cooperation from industry.