

25 March 2013

Major Project Development Assessment Processes
Productivity Commission
Locked Bag 2 Collins Street
EAST MELBOURNE VIC 8003

Attention: Mr Delwyn Lanning

(via email to: major.projects@pc.gov.au)

**RE: PRODUCTIVITY COMMISSION MAJOR PROJECT
DEVELOPMENT ASSESSMENT PROCESSES *ISSUES PAPER***

The Australian Petroleum Production & Exploration Association (APPEA) welcomes the opportunity to provide comments on the above *Issues Paper*. A number of matters addressed in the *Issues Paper* are central to achieving more effective, efficient and streamlined development assessment process, particularly environmental regulation in the oil and gas industry.

APPEA is the peak national body representing Australia's oil and gas exploration and production industry. APPEA has 90 full member companies exploring for and producing Australia's oil and gas resources. The companies currently account for around 98 per cent of Australia's total oil and gas production and the vast majority of exploration. APPEA also represents over 200 service companies providing a range of goods and services to the industry. Further details about APPEA can be found at our website at www.appea.com.au.

APPEA's response to the *Issues Paper* comprises our recently released report, *Cutting Green Tape: Streamlining Major Oil and Gas Project Environmental Approval Processes in Australia*. The report identifies several major hurdles that are hindering the oil and gas industry's ability to maintain its substantial contribution to Australia's energy security and prosperity.

This report outlines and quantifies the impediments the petroleum industry faces in guiding major projects through Government approvals. It illustrates how green tape is currently hindering the oil and gas industry's ability to optimise its contribution to Australia's future economic development and identifies potential areas of reform.

The Australian Government's recent move to regulate onshore natural gas exemplifies the duplicative and inefficient management of this critical resource. Policies that undermine the development of energy projects and curtail energy production impose real costs on the Australian community through lost jobs, forgone economic growth, and higher energy bills. The plan to introduce an industry-specific trigger in the *Environment Protection and Biodiversity Conservation Act 1999* is a textbook example of how regulation can increase costs to industry while delivering no environmental benefit.



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COAG Ministers agreed in April 2012 that there is an overwhelming need for regulatory reform particularly to reduce duplication and double-handling of environmental assessment and approvals processes. This report seeks to identify the real costs to business of lengthy delays caused by overlapping, inconsistent, and in some cases excessive regulation. Its findings reveal that regulatory compliance is imposing substantial burdens in time, dollars and extra commitments for no additional environmental benefit.

Strong demand and elevated prices for Australian gas are driving massive investment. Australia's oil and gas sector is building several major new projects. This is not only the largest wave of investment in the industry's history, these projects are among the largest developments ever built in Australia. Inappropriate and inefficient regulation will ultimately reduce investment in such projects, curtailing Australia's future prosperity.

Australia's international competitiveness is slipping and international rivals are becoming stronger. A high-cost local environment and the emergence of new LNG competitors in East Africa, North America and elsewhere will make it much harder for Australian LNG to win market share and attract investment.

While the industry and its suppliers must work harder at curtailing growing costs and meeting skilled labour requirements, governments must also play their part.

APPEA would be pleased to further expand on any of the issues raised in the submission.

Yours sincerely

David Byers
CHIEF EXECUTIVE

Enc.



CUTTING GREEN TAPE

STREAMLINING MAJOR OIL AND GAS
PROJECT ENVIRONMENTAL APPROVALS
PROCESSES IN AUSTRALIA

FEBRUARY 2013

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PART 1

REGULATING AUSTRALIA'S OIL AND GAS INDUSTRY

1.1 The regulation challenge

The Australian Petroleum Production and Exploration Association (APPEA) is the peak body representing companies engaged in oil and gas exploration and production operations in Australia. APPEA's members account for approximately 98 per cent of Australia's oil and gas production and the vast majority of petroleum exploration.

The industry is an integral part of the Australian economy. It:

- supplies reliable and competitively priced energy
- invests hundreds of billions of dollars of capital
- directs payment of billions of dollars in taxes to governments
- employs tens of thousands of Australians
- generates vast amounts of export income.

The Australian oil and gas industry relies on high-capital investment within small delivery windows. Currently seven LNG projects, valued at over \$200 billion, are at various stages of environmental approval. These projects could boost Australia's LNG export capacity to over 80 million tonnes per year (BREE, 2012), and deliver significant benefits. In 2010–11 three large coal seam gas/liquefied natural gas (CSG/LNG) projects worth approximately \$50 billion in capital expenditure received Commonwealth environmental approval, including the Santos GLNG project referred to later in this report. A list of projects in development can be found in Appendix A.

The oil and gas industry is truly global in nature and competes for a limited pool of international investment capital. Funding lost from the domestic oil and gas industry will not be spent in other parts of the Australian economy—it will be redirected overseas.

The continuation of Australia's resources boom cannot be taken for granted. Complacency in a raft of policy areas is threatening both Australia's attractiveness as a place to do business and the hundreds of billions of dollars' in oil and gas industry investment waiting for approval. While the industry has committed to a number of large-scale projects over the last decade, the next generation of investments (and extensions to existing and committed projects) is heavily dependent on an efficient, coordinated and transparent regulatory framework.

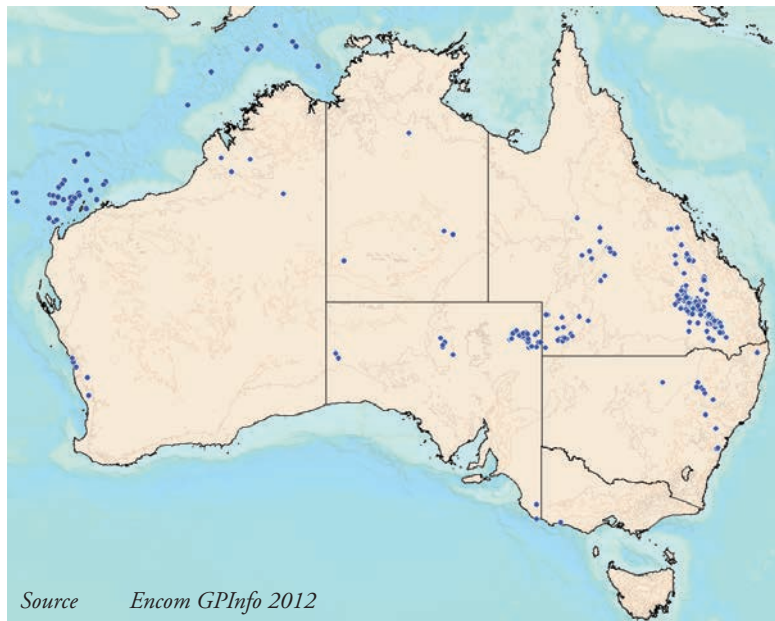
An analysis of the industry's economic contribution can be found in Appendix B.

In addition to large capital intensive projects, the industry requires approval for a significant number of activities that are vital for ongoing exploration and production activities. The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the pre-eminent legislation covering the Australian environment at a Federal level. The EPBC Act defines the Commonwealth marine area (any part of the sea from 3 to 200 nautical miles from the coast) as a matter of national environmental significance and a trigger for the Act. As a result, most offshore oil and gas industry activities are captured by this trigger and are assessed under the Act. In 2010–11 more than 40 referrals for offshore exploration or production activities were submitted.

Environmental approvals generally cover multiple operations, such as seismic and drilling programs of multiple wells or sequential activities (such as pipe laying). The average number of wells drilled in offshore waters remains relatively steady at around 100 per year, with occasional increases. Currently, each operation also requires separate approval under the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGGS Act). Current and future projects must go through extensively lengthy environmental approval processes to be delivered successfully.

In 2010–11, record levels of activity occurred onshore, including the drilling of over 600 new wells predominately servicing Australia's growing coal seam gas (CSG) industry. Three large onshore CSG projects received EPBC and state government approval in 2011, with the Federal Minister for Sustainability, Environment, Water, Population and Communities imposing around 300 detailed conditions on each project.

Figure 1 Wells drilled in 2011



The case for further reform

The Australian oil and gas industry supports a strong and robust environmental regulatory framework. It should be best-practice, and based on effective and efficient regulation with clear objectives and transparent oversight.

Across government, the Commonwealth, states and territories, and local councils have shared responsibility for the environment and, result, each level of government maintains a suite of environmental legislation and regulatory powers. This results in excessive and conflicting regulatory processes and double handling. An overview of Australian environmental legislation is in Appendix C.

Australia has an impressive history of facilitating and delivering large capital-intensive major projects, such as new LNG plants or expansions. However, much of this confidence is being eroded. Addressing this issue should be a key priority for Australian governments as the nation enters a period of growth in new petroleum project development.

Evidence from the oil and gas industry proves that Australia's environmental regulatory framework contains numerous overlapping, excessive and inconsistent requirements that are causing unnecessary project delays and costs. The legislation does not always clearly define or achieve its objectives, or add any additional benefit to the Australian economy. It imposes additional costs on the industry and, in some cases, delivers conflicting outcomes that extend project timeframes and costs.

This is particularly evident for oil and gas projects that span multiple jurisdictions. For example, INPEX Corporation's Ichthys LNG development extends across Commonwealth waters, Western Australia and Northern Territory coastal waters, and will come onshore in Darwin in the Northern Territory. As a result, it is subject to multiple legislative requirements. The unnecessary complexities of the Ichthys project are demonstrated in later sections.

Progress to date

Australian governments have identified reforming excessive legislation and red tape as an important issue. The Commonwealth Government's Energy White Paper (RET, 2012), released on 8 November 2012, stated that streamlining and addressing barriers in the approval process for major energy projects is essential for strengthening Australia's competitiveness and productivity.

The White Paper resurrects the findings of the Productivity Commission's 2009 report, *Review of the Regulatory Burden on the Upstream Petroleum (Oil & Gas) Sector* (Productivity Commission, 2009) and also the *Independent Review of the EPBC Act* (the Hawke Review, 2009). In the report, the Productivity Commission noted that Australia has 22 petroleum and pipeline laws, and more than 150 statutes governing offshore and onshore upstream petroleum activities, all regulated by over 50 agencies at the national, state and territory level. It found

this duplication, overlap and inconsistent administration of petroleum and pipeline laws imposed significant unnecessary burdens on the sector and raised international competitiveness concerns.

The Productivity Commission found that the regulatory burden on industry could be reduced through a range of institutional arrangements. The principal improvements it identified included bilateral agreements and accreditation for duplicative processes, establishing a national regulator for offshore petroleum, and implementing best practice regulatory principles in all jurisdictions.

In December 2009, the Government agreed to responses and implementation plans to 25 of the Productivity Commission's 30 recommendations and forwarded them to the Council of Australian Governments (COAG). The remaining five recommendations for institutional reform were initially suspended (until the outcomes of the Montara Commission of Inquiry were known), but later largely implemented.

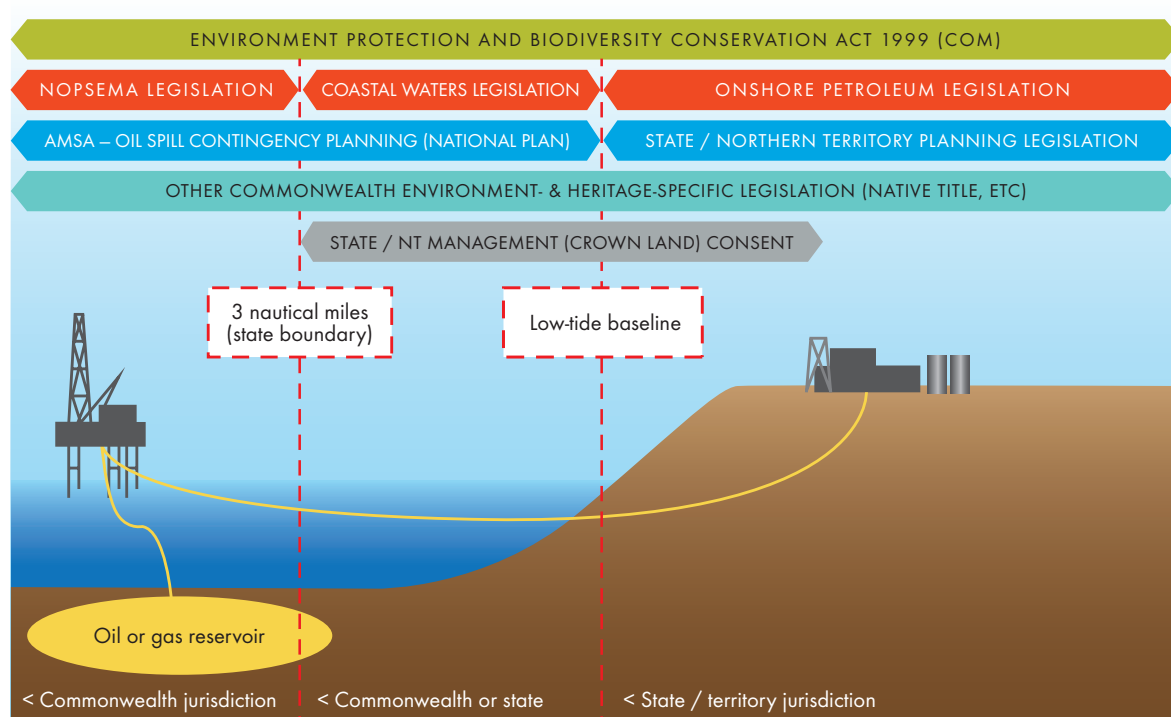
Specifically, a national offshore regulator with responsibility for regulating well and pipeline integrity, environment plans and day-to-day operations—the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA)—was established on 1 January 2012. NOPSEMA undertakes the regulatory functions of environmental plans and compliance under the OPGGS Act. The Department of Sustainability, Environment, Water, Population and Communities (SEWPC) remains the regulator of environmental approvals and compliance under the EPBC Act. Legislation currently before parliament to recognise some state processes under the EPBC continues the reform to the Act, however these measures do not go nearly far enough.

Removing duplication

In many legislative areas, more than one level of government, or two bodies within the same level of government, are providing unclear and often inconsistent regulatory approvals for the same activities. On 13 April 2012, COAG recognised this duplication as a priority (COAG, 2012). It agreed to expedite the accreditation of state and territory environmental assessment and approval processes for matters of National Environmental Significance (NES) under the EPBC Act, supported by a robust framework of standards. The Australian oil and gas industry supports this goal.

Notwithstanding recent improvements with the establishment of a single offshore regulator in NOPSEMA, there is significant potential for reform of inconsistent legislation and duplication within and between jurisdictions.

Figure 2 Legislative scheme for offshore field development with onshore processing



Source Adapted from industry submission (APPEA 2012)

Australian industry has repeatedly identified substantial duplication within the approvals required under the EPBC Act. A 2009 survey conducted by the Australian National University and others found that 73 per cent of respondents agreed with the statement, 'The EPBC Act process duplicated other regulatory processes without significantly improving environmental outcomes'. Forty-one per cent strongly agreed with the statement. Of particular note, 81 per cent of respondents whose actions were subject to conditions under the EPBC Act, as well as state and territory planning and environment permits, reported some or substantial overlap in the conditions.

The oil, gas and mining sectors reported the lowest levels of environmental effectiveness. Eighty-six per cent of mining respondents and 72 per cent of exploration respondents (i.e. oil and gas) reported that the EPBC Act imposed conditions that did not improve the environmental outcomes of their projects.

The government's own review of the EPBC in 2009, the Hawke Review, gave 71 recommendations for the improved operation of environmental law in Australia. The government responded two years later outlining a broad range of reforms and complementing the COAG process. APPEA endorses the agreement to and implementation of this first tranche of reforms and supports the government's intention to continue improving the operation of the EPBC Act by actioning further recommendations.

Australia consistently ranks low in surveys of comparative international effectiveness conducted by the Fraser Institute. The Institute's *Global Petroleum Survey 2012* analysed the regulatory performance of 147 jurisdictions involved in the administration of petroleum activities (Angevine, Cervantes, & Oviedo, 2012). Of the eight Australian jurisdictions in the survey, South Australia ranked best at twenty-ninth and New South Wales poorest at sixty-third. All Australian states and territories fell from their rankings in the previous year's survey.

For regulatory duplication and environmental regulation, New South Wales was in the bottom half of all jurisdictions and last in environmental regulations. A New South Wales respondent cited a key issue as 'Overlapping and conflicting jurisdictions'. A summary of the Fraser Institute Global Petroleum Study results for 2012 is at Appendix D.

Industry case studies

To demonstrate the need for further reform, APPEA collected a number of case studies from oil and gas companies currently (or recently) undergoing environmental approval processes in Australia. The case studies demonstrate the prevalent and pervasive nature of inconsistent and duplicative environmental legislation for both onshore and offshore oil and gas development. The case studies represent the types of projects prevalent in Australia, ranging from offshore exploration and offshore development to onshore LNG projects.

The case studies show examples of duplicative environmental approval requirements between:

- Different government agencies or departments at the Commonwealth level
- Commonwealth and state regulatory bodies.

The full case studies can be found in Part 2 of this report. Brief outlines are included below.

Case study 1 Offshore LNG Project—Prelude, Shell Australia

The Prelude project case study demonstrates significant inconsistency between two pieces of key Commonwealth legislation: the OPGGS Act (administered by NOPSEMA) and the EPBC Act (administered by DSEWPC). It demonstrates how licence conditions approved by the responsible Environment Minister (under the EPBC Act) significantly duplicate the stringent requirements of the Environment Plan regime under the OPGGS Act. Duplication and inconsistency also occur as additional agencies become involved in approval processes, such as:

- the Department of Agriculture, Forestry and Fisheries (DAFF) for ballast water management
- the Australian Maritime Safety Authority (AMSA) for oil spill planning.

The case study highlights particularly confusing processes for approval of oil spill plans, with separate approvals required by three bodies—NOPSEMA, DSEWPC and AMSA.

Case study 2 Offshore Field Development—Woodside

The Woodside case study demonstrates that operational conditions made by the Commonwealth Environment Minister in granting the EPBC acceptance, duplicate, in identical form, permit requirements under the OPGGS Act.

These ‘dual approvals’ with different timeframes and unclear objectives do not deliver any additional benefit to Australia or the environment. Further, the case demonstrates increased risk—EPBC assessments (such as EIS) do not have clear statutory timeframes by which assessment must be completed (compared with the 30-day period established by NOPSEMA). For example the EPBC assessment for Pluto referral [2006/2968] took 437 days to complete. Such uncertainty is detrimental given potential delays and costs to project timelines.

Case study 3 *General Case study—Oil Spill Contingency Planning*

For offshore oil and gas projects located in Commonwealth waters offshore Western Australia, five different State and Commonwealth bodies review and consult on one single mandatory environmental requirement. Operators, as a part of offshore environmental approvals, develop detail contingency plans to use in the unlikely event of a spill. Referred to as Oil Spill Contingency Plans (OSCPs) the duplicative nature of the approval of these plans by each of the five regulatory agencies is burdensome, and arguably limits the effectiveness of effective and clear risk planning.

Case study 4 *Offshore Seismic Survey*

The Offshore Seismic Survey case demonstrates the duplication of environmental regulations for all offshore seismic surveys under the Commonwealth OPGGS Act (regulated by NOPSEMA) with those under the Commonwealth EPBC Act (administered by DSEWPC).

On average, around 40 different seismic survey operations are conducted offshore Australia each year, with the real prospect of duplication and conflicting decisions in the environmental planning process. The case study shows that making multiple applications to different government agencies produces conflicting outcomes for no additional environmental benefit.

Case study 5 *BP Seismic Survey*

Over the summer of 2011–12 BP conducted a 3D Marine Seismic Survey in the Great Australian Bight. BP required three separate approvals to address the same environmental risks in the same environmental management plan. The case study describes the outcome of the applications, highlighting huge difference in time and substance of assessment and response from government agencies.

Case study 6 *Offshore Drilling—Field Development*

This case study shows duplication of environmental regulations for offshore drilling activities. Separate DSEWPC and NOPSEMA requirements result in unnecessary duplication of information, and increased compliance cost as objectives are modified to fit unspecified regulatory responsibilities. For each submission, the proponent must respond to often different interpretations of the information by regulators. In one instance, the cumulative assessment time was more than 200 days and significant cost was involved.

Case study 7 *Onshore CSG to LNG Project—GLNG, Santos*

The extensive Santos GLNG environmental impact assessment process demonstrates major conflicts and overlap in environmental regulation between multiple agencies and levels of government, particularly between state and Commonwealth regulators.

Case study 8 *Offshore Field to Onshore Development—Ichthys, INPEX*

This case study demonstrates overlap in the range of documents required for approval by the various regulatory entities, as well as different statutory timeframes for approvals. Some documents are required to support specific licences and permits, whereas others are required for approval conditions associated with environmental impact statements.

Case study 9 *Offshore Field to Onshore Development—Chevron*

A range of challenges arise from the complex interplay between state and Commonwealth approvals processes, including overlap and the resulting duplication of conditions and associated requirements.

1.2 Financial impacts

An environmental impact assessment for the Santos GLNG project took more than two years to write and another one-and-a-half years to review. It took four days to print and, weighing 65 kilograms, a wheelbarrow was needed to move it.

The financial impact of overlapping or duplicative environmental laws and regulations can be viewed from two perspectives: the impact on project economics; or, more narrowly, through a direct increase in compliance costs. Both affect projects where delays and/or additional costs exist.

For large-scale projects at development stage, delays affect the project economics directly. In addition, the critical timelines associated with capturing market opportunities can negatively impact on investment returns and the optimal development of resources.

The cost of compliance with Australian environmental regulations is significant.

Compliance costs are the direct additional costs to businesses of performing the various tasks associated with complying with government regulation. The Productivity Commission defines business administrative and compliance costs to include:

the administrative costs of undertaking paperwork, compiling the information, and reporting to regulators. There can also be more substantive compliance costs, such as the investment in staff training and systems and other capital upgrades required to comply with regulation.

In the oil and gas industry, direct compliance costs are incurred for initial environmental approvals and then in the ongoing management and reporting of those approvals. These costs can apply to all stages of the exploration, development and production cycle. For smaller entities in particular, compliance costs have significantly negative impacts on cash flows and some marginal activities become uneconomic or stop operating all together.

Every oil and gas company in Australia has needed to expand to comply with environmental regulation. One company has employed 50 new staff in the last two years to meet environmental regulation requirements and argues that their environmental standards haven't changed radically—just the amount of paperwork.

Additionally, complying with environmental regulation has increased the amount of time needed for the application and approval processes. Extensive paperwork for even simple and well-understood exploration activities means opportunities, such as an unexpected opening in a seismic vessels work program, are being lost or will not be captured in future. Companies are simply unable to gain the required approvals fast enough. Again, this imposes unnecessary and sometimes fatal costs on operations.

The case studies in Part 2 provide further details on the specific costs caused by duplication and unnecessary regulations.

The financial impact of project delays

Poorly managed environmental regulation has significant impacts on project profitability. In turn, this reduces the taxation revenue governments can expect to receive from the projects (such as resource taxes and company tax).

Data is generally unavailable for the impacts on individual projects (for commercial and confidentiality reasons). APPEA has therefore modelled different scenarios to reflect changes in project economics and taxation payments caused by changes in the cost profile or the timing of project development decisions.

The scenarios are based on the following generic projects:

- **Offshore LNG:** conventional offshore project with onshore liquefaction, selling primarily to the export market
- **Onshore CSG to LNG:** onshore CSG production, selling primarily to the export market.

A number of simple changes are applied to the production and cost profiles for these typical developments and compared with the base case (no change) for each project.

To simulate the impact of changes to projects costs or timelines that arise from altered timing, conditions or obligations, four different assumptions were modelled. In each scenario, two different projects were modelled and the data is presented on an average basis. This is a useful tool to understand the magnitude of impacts that can arise.

The four scenarios are outlined below:

Project delay

A delay of two years to both the construction of the project and the commencement of production. This could arise through the application of processes or conditions that delay the timing of the construction (and therefore production) of a project.

Production delay

A delay of two years on production, but no delay on capital expenditure. That is, the commencement of production is delayed by two years, but the timing or payment for construction remains unaltered. While the likelihood of this situation arising would generally be remote, it represents the worst case outcome. Such a situation could arise through the imposition of new project conditions following the signing of contracts for the construction phase of a project.

Construction cost increase (Capex increase)

An overall increase of 10 per cent in the capital cost of a project. This scenario is modelled to analyse the impact of a construction (or capital) expenditure increase. This could occur as a result of needing to modify the nature of a project to address regulatory conditions about the location or size of the project.

Production phase cost increase (Opex increase)

An increase of 10 per cent in the operating costs of a project. This scenario estimates the impact of an overall rise of 10 per cent on the ongoing operating cost profile of a project that could result from a need to undertake modified production or operating procedures to comply with environmental conditions.

Results are presented using two metrics. The first demonstrates the impact on the projected return from a project for an investor and the second estimates the impact on government revenue (through the full taxation chain). The second metric is achieved by comparing the impact on government net cash flows (measured on a net present value basis using a 10 per cent discount rate) of the changed scenarios against each base case.

Impact on project economics

Any change to regulation that increases costs can undermine the overall profitability and economics of a project. The worst-case outcome is that a project fails to proceed, resulting in a major loss of revenue for government.

The most useful approach for measuring the impact of a change in a project's overall cost base is through movements in the internal rate of return (IRR). The IRR is a commonly used financial measure that estimates the rate of return that equates the net present value of a project's cash flows with zero. Generally speaking, a higher IRR means a project is more attractive to an investor.

While delays to construction timelines and production schedules will affect a project's IRR, analysing the impact of higher costs (through increased construction or ongoing operational expenditures) best demonstrates the impact of modified or additional obligations.

Table 1 Variation on project IRR: Change from base cases

	CAPEX INCREASE		OPEX INCREASE	
	5%	10%	5%	10%
Offshore LNG	-0.49	-0.95	-0.06	-0.11
Onshore CSG to LNG	-0.60	-1.16	-0.10	-0.21

Source APPEA, 2012

The estimated falls in IRR in Table 1 demonstrate that:

- increases in capital expenditure or operating costs have a negative impact on project returns; and
- capital expenditure increases have a larger impact on project returns than operating expenditure increases.

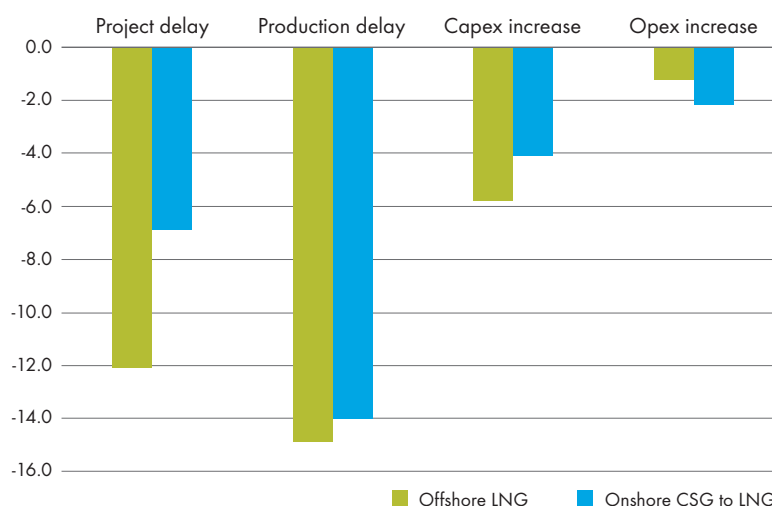
For example, for an Onshore CSG to LNG project, a 10 per cent increase in capital expenditure results in a fall in IRR of 1.16 per cent, while a 10 per cent increase in operating expenditure results in a fall of 0.21 per cent. This equates to a loss in NPV for such a project of \$823 million (for a 10 per cent increase in capital expenditure) and \$195 million (for a 10 per cent increase in operating expenditure). A reduction of this magnitude is significant in terms of its overall impact on project economics. Similarly, there is a significant negative impact on the economics of an offshore LNG project.

Results depend on the costs, production profile and timelines for individual projects. Any movement in a project's rate of return will affect investment decisions.

Impact on government taxation receipts

The greatest fall in government revenue collections occurs if there is a delay in production commencing while the original construction schedule is maintained. This situation arises from the interaction between a delay in production (and therefore the generation of income for tax purposes) from a project, and the earlier payment of construction costs. While this is an unlikely scenario, it represents a worst-case case outcome with reductions in government revenues ranging from 14.0 per cent for an Onshore CSG to LNG project to 14.9 per cent for an Offshore LNG project. Figure 3 presents the results.

Figure 3 Fall in the NPV of government taxation receipts (compared with each base case)



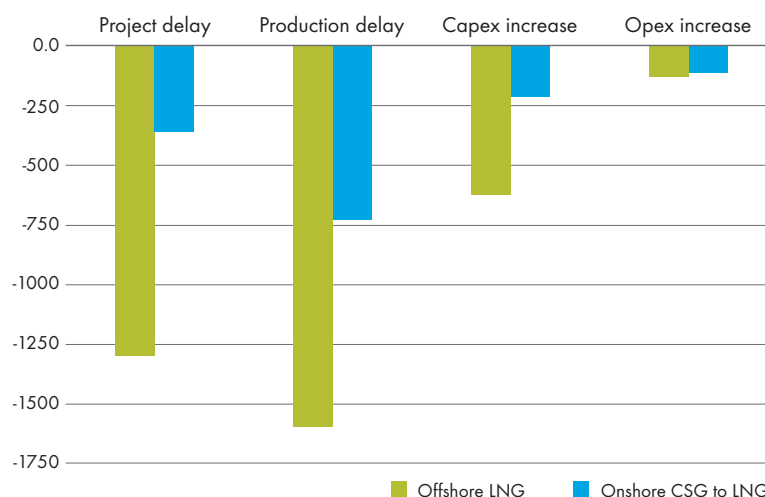
Source: APPEA 2012

A project delay of two years (where production and construction schedules are delayed) has a significant impact and results in a loss of government taxation revenues from 6.9 per cent to 12.1 per cent. Increases to capital and operating expenditures also affect government revenue collections and can be caused by factors ranging from changes to project specifications to ongoing monitoring programs.

As project structures, production profiles and cost schedules vary for all of the modelled projects, the results are influenced by a range of factors unique to each project. One common factor, however, is that deferring tax payments to later periods will always have a significant impact on a project's taxation payments due to the time value of money. A dollar today has a higher value than a dollar tomorrow.

While the reductions are broadly similar for different project types, the impacts vary due to the different physical size of each type of project when measured in dollar terms. Figure 4 depicts the change in the total cash flow of taxation payments in NPV terms using the same four scenarios.

Figure 4 Comparison across projects (\$ millions NPV of reduced taxation payments)



Source: APPEA, 2012

Significantly higher impacts for the offshore LNG projects reflect their larger scale. A delay in construction and production from an offshore LNG project could lead to a loss of nearly \$1.3 billion in tax revenue.

In summary, the financial impact of delays caused by overlapping or duplicative environmental laws or regulations affect project economics directly. In addition, the critical timelines associated with capturing market opportunities can negatively impact on investment returns and the optimal development of resources. In turn, if these major projects fail to proceed there is a significant, negative impact on government revenue.

1.3 Next steps

While the oil and gas industry supports a transparent and strong environmental law regime, a number of steps will help reduce the unnecessary regulatory burden on industry. This report demonstrates the level to which delays pose a significant burden on companies. The COAG process has recognised that these concerns must be addressed or the Australian economy will suffer.

Accreditation and Bilateral Agreements

Continued use of bilateral arrangements and accreditation of overlapping environmental regulation will minimise duplication without jeopardising environmental controls. APPEA supports future actions by COAG and governments to encourage the use of bilateral and accreditation arrangements between the Commonwealth and the states and territories.

The EPBC Act allows for agreements to reduce duplication of environmental assessments and regulation between the Commonwealth and state and territory governments. In effect, this would allow the Commonwealth Government to delegate to the states and territories, the responsibility for environmental assessments under the EPBC Act. This could also be extended to other federal agencies such as NOPSEMA. In certain circumstances, it could also delegate responsibility for granting environmental approvals under that Act.

The case studies in this report highlight the pervasive nature of overlapping Commonwealth and state approvals. They demonstrate that major gains would be made by implementing an accreditation process of EPBC Act decisions. The extension of accrediting state and territory governments and NOPSEMA to make binding approval decisions in relation to EPBC matters would remove duplicative roles within the Commonwealth Government, streamline the approvals process and reduce uncertainty for project proponents. These goals are also consistent with the independent review of the *Environment Protection and Biodiversity Conservation Act 1999* (the Hawke Review of 2009) and recommendation 98 of the Montara Inquiry Report (2009).

APPEA supports the fast-tracking of bilateral agreements under the EPBC Act.

Clarifying roles and responsibilities between governments

In areas where multiple agencies work on an approval, or conditions require proponents to work with multiple agencies, duplication can be reduced by governments clarifying the roles and responsibilities of agencies within the existing framework. The Prelude case study highlights that multiple organisations request the review of oil spill planning documents. Clarifying the role of a lead or coordinating agency would reduce the administrative burden of dealing with multiple organisations by allowing the approving agency to maintain a leadership role.

APPEA also supports additional clarity and harmonisation, recommended in past Productivity Commission reports, such as:

- strategic approaches to establish ground rules for which approvals could be granted, reducing the need for individual assessment. One example is the ‘class approvals’ of a particular category of activities, such as support activities done in a particular manner.
- improved and additional government guidelines to facilitate a better understanding of the regulatory process. For example, additional guidance on matters of National Environmental Significance (NES) would alleviate confusion and improve the functioning of the EPBC Act with respect to NES triggers. Action on ‘low hanging fruit’ such as recommended in the Hawke review (2009) including moving to a single national list of threatened species, including marine species”, could see immediate result in the number of referrals.

National Environmental Significance

The EPBC Act defines the Commonwealth marine area (any part of the sea from 3 to 200 nautical miles from the coast) as a matter of national environmental significance and a trigger for the Act.

The offshore oil and gas industry is covered by the broad Commonwealth marine environment NES trigger, that is, any part of the sea from 3 to 200 nautical miles from the coast. In this environment, industry manages risk by engaging extensively in the referrals process.

As it is so broad and all encompassing, the inclusion of the Commonwealth marine environment as an NES, at the margin, does not necessarily enhance environmental outcomes. It does however create a large degree of administrative overlap between other regulatory requirements (such as the OPGGSA).

Other matters of NES such as World Heritage properties, National Heritage places, wetlands and listed threatened species, ecological communities and migratory species capture much of the environmental impacts in the Commonwealth marine environment. Significant habitats and species that are the focus of much of the assessment of petroleum activity is mentioned elsewhere in the definition, so the exclusion of ‘Commonwealth marine environment’ from the NES definition would not make any practical difference to environmental outcomes. Oil and gas activities are also regulated and protected by a number of other Acts, not the least being the OPGGSA.

As the marine environment trigger creates a large degree of administrative overlap between other regulatory requirements, but does not necessarily enhance environmental outcomes, APPEA believes there is merit in removing or refining the commonwealth marine area as a trigger for NES. At the very minimum, credit should be accorded to duplicative environmental legislation already covering the various marine operations. Approvals or accreditation under the EPBC Act should be provided where operations recognised as performing to a high environmental standard under other relevant legislation (such as an accepted EP under OPGGSA).

Promoting clear and efficient regulation

The Australian oil and gas industry supports a legislative framework that efficiently and effectively facilitates safe oil and gas exploration, development and production that is environmentally and socially responsible. The legislative framework must be based on sound science and administered by a competent and well-resourced regulator. The industry supports legislation that is effective in addressing problems, and efficient in maximising the benefits of that regulation while taking costs into account.

APPEA urges Australia's governments to continue to promote and implement reform to deliver regulation that is:

- only necessary where it is required to meet a policy objective;
- underpinned by sound science and evidence;
- objective-based, and does not place unnecessarily prescriptive conditions on operators;
- appropriate to the nature and scale of the project;
- supported by extensive guidance provided to operators; and
- considered in the context of all legislation – at Commonwealth, state and local government levels – to ensure that conflicting objectives are identified and minimised.

1.4 Recommendations

Based on industry experience and information in the case studies, and supported by the modelling of the financial impacts on proponents and the government, APPEA recommends the following changes to improve the existing framework.

-
- 1 **Fast-track bilateral arrangements for accreditation by the Commonwealth of state processes, and create a 'one-stop-shop' for state assessment and decision processes under the EPBC Act.**
 - 2 **Accredit NOPSEMA for offshore environmental approvals under the EPBC Act.**
 - 3 **Refine and reduce the triggers under the EPBC Act (national threatened species lists, refine the catch-all trigger of 'the Commonwealth Marine environment').**
 - 4 **Clarify the roles and responsibilities of State and/or Commonwealth agencies and legislation.**
 - 5 **Streamline reporting within Commonwealth and state processes (such as removing duplicate reporting to agencies, adding statutory timelines where appropriate).**
-

PART 2

PROJECT CASE STUDIES

CASE STUDY 1

Offshore LNG Project: Prelude, Shell Australia



Background

Known as the ‘*Prelude Floating LNG Project*’, Shell is the major equity holder and operator of the WA-44-L permit. The permit covers around 500 square kilometres in the remote Browse Basin, 475 kilometres north-northeast of Broome, Western Australia. The Prelude and Concerto fields have around 3 trillion cubic feet of liquids-rich gas. The relatively small size of the gas fields and the remote location make them an ideal candidate for development via Shell’s FLNG technology

Although smaller in size than some LNG developments in Australia, the Prelude FLNG project will generate significant benefits for Australia.

Duplication

On 12 November 2010, the Minister for Environment approved the Prelude project under the Commonwealth EPBC Act, along with specific licence conditions to be administered by DSEWPC. These conditions significantly duplicate the strict requirements of the Environment Plan regime established through the OPGGS Act and regulated by NOPSEMA. This duplication greatly increases regulatory compliance costs and sovereign risk, due to additional approval layers which may lead to conflicting advice and direction from different agencies. Further duplication occurs when additional agencies become involved, such as the Department of Agriculture, Forestry and Fisheries (DAFF) and the Australian Maritime Safety Authority for ballast water management.

In addition, Oil Spill Contingency Planning has been identified as a confusing and difficult process to navigate.

Duplicate and at times triplicate approvals include:

- Duplicate approval for production drilling activities, operations and offshore construction and installation (NOPSEMA and DSEWPC).
- Triplicate approval for ballast water management for international vessels arriving in Australia (NOPSEMA, DSEWPC and DAFF).
- Duplicate and potentially triplicate approval for oil spill contingency planning and preparedness (NOPSEMA, DSEWPC and AMSA).
- Duplicate operational and scientific monitoring programs, adequate baseline data and incident strategies (NOPSEMA and DSEWPC).

Table 2 Summary of regulatory duplication, Case study 1

OPGGS ACT: REGULATORY APPROVAL	EPBC: MINISTER'S APPROVAL
Drilling plans ■ drilling fluid ■ cuttings and disposal ■ fuel handling ■ ballast water management ■ offshore construction ■ design, disturbance, etc	Drilling plans ■ drilling fluid ■ cuttings and disposal ■ fuel handling ■ ballast water management ■ offshore construction ■ design, disturbance, etc
Ballast water management	Ballast water management
Develop an oil spill contingency plan ■ trajectory modelling ■ containment, response, etc ■ sensitive area identification ■ training of staff in response measures ■ reporting of incidents to regulator	Develop an oil spill contingency plan ■ trajectory modelling ■ containment, response, etc ■ sensitive area identification ■ training of staff in response measures ■ reporting of incidents to department ■ reporting of incidents to regulator
Baseline (pre-impact) environmental studies, as relevant, to provide sufficient and accurate environmental data to allow the operator to detect environmental impacts attributable to an oil spill, separate from natural environmental changes that may be occurring	Develop a post-incident operational and scientific monitoring program ■ triggers (spill volume) ■ pre-impact baseline studies required ■ strategy to implement plans, etc
Decommissioning plan prior to decommissioning the facility or any subsea equipment	Decommissioning plan prior to decommissioning the facility or any subsea equipment
Accurate records and reporting to the regulator	Accurate records and reporting to the department
Revision on request by the regulator	Minister may, at any time, request specific revisions to any: plans, reports, strategies, programs or systems currently in place

CASE STUDY 2

Offshore Field Development – Woodside

Background

Woodside has an established presence in Australia's North West Shelf and undertakes significant activities to explore for and develop gas resources in the area. Woodside has EPBC Act approval for Enfield/ Vincent (EPBC 2005/2110) and Pluto (EPBC 2006/2968).



Duplication

Approvals for all three projects have an identical condition requiring revised plans to be approved by DSEWPC for any subsea tie-in not included in approved plans. Such subsea tie-ins are considered a petroleum activity under the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* and require an Environment Plan to be accepted by NOPSEMA before activity commences. Consequently, two approvals are required for the same activity – a clear example of regulatory duplication that delivers no additional environmental benefit. The wording of the condition is as follows:

If Woodside Energy Limited proposes to undertake any subsea tie-in not included in approved plans pursuant to conditions 1,2,3,4, and 5, Woodside Energy Limited must revise such plans as to address the activities associated with, and potential environmental impacts of, the subsea tie-in. Activities associated with subsea tie-ins may not be commenced until each such revised plan has been approved by the Minister. Each revised plan that has been approved by the Minister must be implemented.

Source: Woodside EPBC referral extract

Further, the condition for revised Environment Plans to be approved by SEWPC does not have a statutory timeframe by which SEWPC must undertake its assessment (compared with the 30-day statutory period for NOPSEMA). This open-ended process introduces significant uncertainty to project timelines.

Anecdotal evidence suggests that variations of the conditions above also appear in recent approvals for other companies.

Additionally, Woodside's Greater Western Flank Project (EPBC 2011/5980) was assessed as a "not controlled action" under the EPBC Act in 2011. However, the activity was still required to be done in a particular manner with the additional conditions:

- 1 The Environment Plan, the Oil Spill Contingency Plan and the Well operations Management Plans described in the referral and additional information must be approved by the relevant authority and in place prior to the proposed action commencing.*
- 2 Procedures and equipment systems for ensuring well control must meet best practice industry standards and must be implemented prior to the proposed action commencing. This includes the installation of a minimum of two well barriers as specified in the referral.*
- 3 The oil spill preparedness and response measures and equipment described in the referral and additional information must be in place prior to the proposed action commencing.*
- 4 To minimise risks of a hydrocarbon release during decommissioning, decommissioning activities must be taken into account in the design and construction of the GWF-1 development, as specified in the referral.*

Source: Woodside EPBC referral extract

Condition 1 requires Woodside to ensure that, 'The Environment Plan, Oil Spill Contingency Plan and Well Operations Management Plan ... must be approved prior to the action commencing'.

This condition simply restates a requirement under the OPGGS Act and associated regulations and is redundant. It is a clear example of a duplicative condition that adds to the compliance burden without contributing to better environmental outcomes.

Table 3 Summary of regulatory duplication, Case study 2

OPGGS ACT: REGULATORY APPROVAL	EPBC: MINISTER'S APPROVAL
Acceptance of oil spill contingency planning and well operations management plans	Oil spill contingency planning and well operations management plans must be approved by the relevant authority
Demonstrate that systems for ensuring well control are acceptable and can demonstrate they manage risks to as low as reasonably practicable	Procedures and systems for ensuring well control must meet best practice standards and must be implemented. This includes the installation of a minimum of two well barriers.
Oil spill preparedness and response is acceptable and can demonstrate risks are managed to as low as reasonably practicable	The oil spill preparedness and response measures and equipment described in the referral and additional information, must be in place prior to the proposed action commencing

CASE STUDY 3

Exploration and offshore to onshore production

Background

Most of Australia's conventional gas resources are located offshore, with significant opportunities for future developments. These developments generally involve significant and expensive exploration programs requiring seismic surveying, drilling and appraisal. Production and development takes place predominantly at offshore processing facilities with gas piped onshore.



Exploration and production activities such as seismic surveys may cross Commonwealth and state jurisdictional boundaries. A project of this type requires approval from:

- NOPSEMA in accordance with the OPGGS Act
- DSEWPC in accordance with the EPBC Act
- the state regulatory authority in accordance with the relevant petroleum legislation.

The EPBC referral and Commonwealth or state environmental plans result in duplicate information and data being modified to fit the regulators' specific responsibilities. For each submission, the proponent must then respond to often different interpretations of the information by regulators, and a range of stakeholders to address perceived issues which often do not relate to the activity.

The experiences outlined below highlight the extensive approvals and conditions required for typical offshore exploration and production activity.

Oil spill contingency planning

For offshore oil and gas projects located in Commonwealth coastal waters off Western Australia, five different Commonwealth and state bodies review and consult on one single mandatory environmental requirement.

As a part of offshore environmental approvals, operators develop detailed Oil Spill Contingency Plans (OSCPs) for the unlikely event of an oil spill. The duplicative approval processes for these plans by five regulatory agencies is a clear burden and limits effective and clear risk planning. To approve an OSCP in Commonwealth waters, operators are generally required to consult with:

- NOPSEMA, which has legislative responsibility under the OPGGS Act to audit and accept OSCP
- AMSA, which has responsibility for Australia's national plan to combat pollution of the sea by oil and other substances. AMSA also reviews OSCP for proponents that consult with AMSA on national plan arrangements
- DSEWPC, which administers referrals under the EPBC Act. Recent conditions under the Act require operators to develop and submit OSCP to the Environment Minister for approval
- the Western Australian Department of Environment and Conservation which provides requirements to the offshore petroleum industry for consultation arrangements for OSCP under the OPGGS Act. If certain criteria are triggered (generally if spill modelling reaches coastal waters), additional consultation is required
- the Western Australian Department of Transport and Department of Mines and Petroleum also have legislative responsibilities for coastal waters off Western Australia. In many cases, if a worst-case scenario spill activity has the potential to reach coastal waters and draw on state resources, additional review and approval is required by these departments.

CASE STUDY 4

Offshore Seismic Surveying

The oil and gas industry uses seismic surveys to explore for natural resources. Seismic surveys use the controlled release of compressed air to make sound waves that travel into the seabed and reflect back from rock layers under the sea floor. With over four decades of seismic surveying in Australia, no evidence has been found to suggest that seismic operations have resulted in physical injury or damage to hearing in any marine mammal—a group that includes whales, seals and dugongs. Seismic surveys can be very large and cover thousands of square kilometres of ocean. On average, around 40 different seismic survey operations are conducted offshore Australia each year.



Duplication

Duplication of environmental regulations for offshore surveys is generally between the Commonwealth petroleum legislation, regulated by NOPSEMA, and the Commonwealth environment legislation, administered by DSEWPC. Given the often inter-jurisdictional nature of seismic surveying, duplication of activities is often far more complex and may, in addition, involve multiple regulators from the relevant state.

Example

A recent seismic survey required extensive environmental planning with a state government agency to demonstrate that all environmental risks were managed to a level as low as reasonably practicable and acceptable. The project was also referred to DSEWPC under Commonwealth legislation, due to marine environment triggers. DSEWPC conditions placed on the operator were inconsistent with risks identified in the environmental planning process with the state agency. The result was specific marine mammal observation for whales in a shallow near-shore environment. This is typically an unsuitable habitat for the species, but in any case was outside the seasonal period for the species. This condition was applied in addition to the requirement for aerial surveys to verify that another species of whale migration season had ended and all whales had departed the region.

The approval process required the proponent to submit two environmental plans for the same activity, one for the onshore component and one for the offshore component. The total survey area was less than 50 square kilometres. In this case, the mitigation measures implementation of *EPBC Act Policy Statement 2: Interaction between Offshore Seismic Exploration and Whales* would have been sufficient to mitigate against interaction with these species in the highly unlikely event it occurred.

No environmental benefit resulted from the imposition of this condition. As anticipated, no whales were observed during the survey as it was outside the respective migration season.

The operator was required to undertake the activity within a particular timeframe to avoid the risk of whale and project interaction caused additional conflict with the local fishing industry. It created the perception that the survey might affect fisheries, resulting in a new last-minute condition on the survey which required the project proponent to make a significant investment in additional research.

Approval costs for this activity were extensive, as was the relevant legislation which is listed in Table 5.

Table 4 Summary of regulatory duplication, Case study 4

SEISMIC TOTAL DURATION OF ACTIVITY: < 40 DAYS	
NOPSEMA	SEWPC
Accepted environment plan	EPBC referral—particular manner
> 50 days for approval	> 35 days for referral
Cost to obtain approval is greater than \$700,000	

Table 5 Legislation requiring compliance, Case study 4

LEGISLATION
<i>Environmental Protection Biodiversity and Conservation Act 1999</i>
<i>Petroleum (Submerged Lands) Act 1982</i>
<i>Coastal Management Act 1995</i>
<i>Petroleum (Submerged Lands) Act 1982</i>
<i>Historic Shipwrecks Act 1976</i>
<i>Wildlife Act 1975</i>
<i>Flora and Fauna Guarantee Act 1988</i>
<i>Environmental Effects Act 1978</i>
<i>National Parks Act 1975</i>
Bilateral Migratory Bird Agreements between the Government of Australia and the Government of Japan (Jamba), China (Camba) and Republic of Korea (Rokamba)
Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention)
Convention on Wetlands of International Importance (Ramsar)
United Nations Framework Convention on Climate Change
Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer

CASE STUDY 5

BP Seismic Survey

Background

Over the summer of 2011–12, BP conducted a 3D Marine Seismic Survey in the Great Australian Bight. The proposed survey area was located in Commonwealth waters of the Ceduna sub-basin, around 400 kilometres west of Port Lincoln.



Duplication

For the Ceduna exploration program, BP required three separate approvals to address the same environmental risks in the same environmental management plan:

- An accepted environment plan under the Offshore Petroleum and Greenhouse Gas Storage Act (OPGGGS Act)
- a referral under the Environment Protection and Biodiversity Conservation (EPBC) Act
- an approval to conduct a mining operation in the Great Australian Bight Marine Park (GABMP) under the EPBC Act.

All three approvals were applied for in close succession. The EPBC Act referral was submitted on 16 May 2011, the environment plan was submitted on 17 May 2011 and the GABMP access request was submitted on 20 May 2011. All three requests overlapped. The environment plan and the referral were fundamentally the same document except for formatting issues. Both of them addressed the fact that the survey would be partly within the GABMP. Consequently, the GABMP access request simply referred to the other documents.

The outcome of the applications differed in time and substance. With respect to time:

- The environment plan was accepted by NOPSEMA on 13 July
- the referral resulted in a ‘not controlled if conducted in a particular manner’ decision by DSEWPC on 4 August
- the GABMP access request was granted on 1 September, with the additional time required to process the paperwork through Executive Council for the Governor General’s signature rather than deliberation on any environmental issues raised.

With respect to substance:

- The environment plan was accepted unamended after some clarification regarding procedures for cetacean entanglement in seismic lines was provided
- the referral deliberation was held up due to the potential impact on blue whales. After the referral was submitted, a new draft bio-regional plan for the south west marine area was published for comment, with a possible extension to the area known as a blue whale feeding zone. The referral was assessed against this subsequent draft boundary, not the official published one at the time of referral, which required modelling to be resubmitted. Ultimately, the required conditions were accepted but the time lost placed significant pressure on the project timetable.
- The GABMP access request required no further assessment once the referral decision was made.

CASE STUDY 6

Offshore drilling—field development

Background

While the oil and gas industry uses seismic surveys and other advanced techniques to explore for natural resources, drilling is the only way of determining what lies beneath the earth's surface. In Australia, offshore drilling has been taking place since the early 20th century using significant and extensive environmental safety controls and world-class drilling practices. On average, around 100 new wells are drilled in Australian waters every year.



Duplication

Duplication of environmental regulations for offshore drilling and field development activities generally occurs between the Commonwealth petroleum legislation, regulated by NOPSEMA, and the Commonwealth environment legislation, administered by DSEWPC. Given the often inter-jurisdictional nature of seismic surveying, duplication of activities is often far more complex and often involves multiple regulators from the relevant state as well.

Example

Exploration and petroleum field development provides another example of projects that cross multiple jurisdictional boundaries (See *Figure 2: Legislative scheme for offshore field development with onshore processing*).

An offshore drilling rig in Australia costs in excess of \$800,000 per day. Therefore even small delays can significantly increase compliance costs for operators.

This project demonstrates the complexity of seeking approval from multiple regulatory departments, at the local, state and Commonwealth levels. The submission of the EBPC Act referral and state or Commonwealth environmental plans result in duplicate information, and data being modified to fit each regulator's responsibilities. For each submission the proponent then had to respond to often different interpretations of the information by regulators and stakeholders (such as NGOs and fisheries) to address perceived issues which often do not relate to the activity.

The estimates of assessment times also create uncertainty and inherent risk for offshore projects, as it did in this case. In addition, the interpretation of submissions can be based on political pressures and resource capacity which are outside the industry's control. These factors are then multiplied by the number of parallel assessment processes required.

For this project, the time required to obtain approvals is significant, as Table 6 demonstrates. A cumulative assessment time of over 200 days led to increased costs and additional investment in time and resources. Anecdotal evidence suggests this is relatively standard for similar project approvals. Relevant legislation for this project is also extensive and is listed in Table 7.

Table 6 Summary of regulatory duplication, Case study 6

WELL DRILLING TOTAL DURATION OF ACTIVITY: < 3 MONTHS	
NOPSEMA	SEWPC
Accepted environment plan	EPBC Act referral—particular manner
> 90 days for approval	> 150 days for referral
Cost to obtain approval = \$millions	

Table 7 Legislation requiring compliance, Case study 6

REQUIRED LEGISLATION
<i>Offshore Petroleum and Greenhouse Gas Storage Act 2006</i>
<i>Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009</i>
<i>Environment Protection and Biodiversity Conservation Act 1999</i>
<i>Navigation Act 1912</i>
<i>Quarantine Act 1908</i>
<i>Quarantine Regulations 2000</i>
<i>Protection of the Sea (Prevention of Pollution from Ships) Act 1983</i>
<i>Historic Shipwrecks Act 1976</i>
<i>Environmental Protection (Sea Dumping) Act 1981</i>
<i>State Legislation</i>
<i>Pollution of Waters by Oil and Noxious Substances Act 1986</i>
<i>Flora and Fauna Guarantee Act 1988</i>
<i>Marine Act 1988</i>
<i>Fisheries Act 1995</i>
INTERNATIONAL AGREEMENTS AND CONVENTIONS
Bilateral Migratory Bird Agreements between the Government of Australia and the Government of Japan (Jamba), China (Camba) and Republic of Korea (Rokamba);
Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention);
United Nations Framework Convention on Climate Change; and
Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer

CASE STUDY 7

Onshore CSG to LNG Project—GLNG, Santos

Background

Santos Gladstone (GLNG) Project is a world-first initiative to convert coal seam natural gas (CSG) to liquefied natural gas (LNG) for export to global markets.

The project involves developing gas fields from the Bowen and Surat Basins in south-western Queensland, and transporting the gas via a 420 kilometre underground pipeline to a two-train LNG processing facility on Curtis Island, off the coastline of Gladstone.

The US\$18.5 billion project is a joint venture between Santos and three of the world's largest LNG companies – PETRONAS, Total and KOGAS. The first LNG cargoes are scheduled for export in 2015.



Duplication

The Santos GLNG project completed an Environmental Impact Statement (EIS) for its current gas fields in 2010. The EIS assesses the project impact from gas fields near Roma to the plant on Curtis Island. The EIS is comprehensive and includes 13,500 pages of general and technical information.

As a major onshore project, Santos GLNG demonstrates significant layers of overlap in environmental regulation between Commonwealth and state approval processes, despite bilateral agreements being in place – evidence the current system is not working. Some of the duplicative processes and conditions have similar objectives and outcomes but require the company to provide completely different documentation and reporting which increases the compliance burden.

In addition to the requirements in Table 8, and ongoing compliance with state environmental authorisations, the Commonwealth also requires Santos to notify SEWPC when there is a breach in any state approval (such as environmental, cultural heritage, liquor licensing, road). This condition duplicates state process by extending the jurisdiction of the EPBC Act beyond matters of national environmental significance. It is only in place to audit the state's compliance control on companies constructing major facilities.

Table 8 Summary of regulatory duplication, Case study 7

SEWPC	QUEENSLAND
Reporting and compliance requirements	Reporting and compliance requirements
Rehabilitation plans required under EPBC Act approval	Rehabilitation plans required under state environmental approval, and Coordinator General
Requirement for water monitoring and water management.	Water management plans and groundwater impact modelling, spring surveys and monitoring
Constraints planning and field development protocols required	Constraints planning and field development protocols required
Disturbance limits for environmentally sensitive environments, ecological communities, ecosystems and habitat values	Disturbance limits for environmentally sensitive environments, ecological communities, ecosystems and habitat values
Species management plans, species management and fauna management for species covered by the EPBC Act	Significant species management plans, species management and fauna management
Environmental offsets for unavoidable disturbance to ecosystems, listed fauna, flora, etc	Environmental offsets for unavoidable disturbance to ecosystems, listed fauna, flora, etc
	Requirement for financial assurance
Monitoring and reporting requirements	Monitoring and reporting requirements
Requirement for annual reports	Requirement for annual reports
Third party audit requirements	Coordinator General report requires third party audits on an annual basis State EA also has audit requirements against operational plans and conditions (three years)
Detailed decommissioning plans required	Decommissioning timeframes being post-approval or time period subject to cessation/proposal to decommission the facility
Induction programs/code of conduct for Curtis Island development	Induction programs/code of conduct for Curtis Island development

CASE STUDY 8

Offshore field to onshore development (with offshore condensate) – Ichthys, INPEX



Background

In 2000–01, three exploratory wells resulted in the discovery of the Ichthys gas and condensate field. Resource estimates for the field are 12.8 trillion cubic feet of gas and 527 million barrels of condensate over an operational life of more than 40 years. In 2006, INPEX transferred a 24 per cent participating interest in the project to Total. INPEX is the operator of the project.

The Ichthys Project's initial capacity is 8.4 million tonnes of LNG and 1.6 million tonnes of liquefied petroleum gas (LPG) a year, as well as approximately 100,000 barrels of condensate per day at peak production.

Duplication

As Ichthys is an offshore field located in Western Australian waters, with liquid processing offshore and gas processing onshore in the Northern Territory, a number of jurisdictions are crossed. This has resulted in duplication and overlap for the proponent in a number of Commonwealth and state processes.

There is considerable overlap in the range of documents required by the various approving entities, as well as different statutory timeframes for approvals. Some documents are required to support specific licences and permits, whereas others are required as a result of approval conditions associated with an environmental impact statement (EIS).

INPEX estimate that it takes approximately three months to prepare an EIS for submission (depending on complexity), with numerous people involved at any one time. These compliance costs are significant.

Table 9 Summary of regulatory duplication, Case study 8

ONSHORE AND NEARSHORE	NORTHERN TERRITORY
SEWPC	Northern Territory Department for Natural Resources, Environment, the Arts and Sport (NRETAS)
■ Liquid discharge management plan ■ Marine piling noise management plan	Construction environment management plan for Blaydin Point including: ■ oil spill contingency ■ liquid discharge management ■ waste management ■ marine piling noise management
■ N/A	■ Construction environment management plan for accommodation village ■ Liquid discharge management ■ Waste management
■ Dredging and spoil disposal ■ Management plan for shipping channel, berthing pockets and turning basins	■ Dredging and spoil disposal ■ Management plan for shipping channel, berthing pockets and turning basins
■ Dredging and spoil disposal ■ Management plan for gas export pipeline (within Territory waters)	■ Dredging and spoil disposal ■ Management plan for gas export pipeline (within Territory waters)
■ N/A	■ Nearshore environmental monitoring program

Table 10 Summary of regulatory duplication, Case study 8

NOPSEMA	SEWPC
■ N/A	■ Nearshore and offshore oil spill contingency plan (includes well development and pipeline through Darwin Harbour)
Environment plan for FPSO, including: ■ oil spill contingency ■ liquid discharge management ■ waste management	■ Liquid discharge management plan ■ Waste management plan
Environment plan for URF/SPF, including: ■ oil spill contingency ■ liquid discharge management ■ waste management	■ Liquid discharge management plan ■ Waste management plan
Environment plan for CPF, including: ■ oil spill contingency ■ liquid discharge management ■ waste management	■ Liquid discharge management plan ■ Waste management plan
Environment plan for gas export pipeline, including: ■ oil spill contingency ■ liquid discharge management ■ waste management	■ Liquid discharge management plan ■ Waste management plan
Environment plan for well development and drilling, including: ■ oil spill contingency ■ liquid discharge management ■ waste management	■ Liquid discharge management plan ~ 3-5 ■ Waste management plan ~ 3-5
Environment plan for potential UXO clearing, including: ■ oil spill contingency ■ liquid discharge management ■ waste management	■ Liquid discharge management plan ■ Waste management plan

CASE STUDY 9

Offshore Field to Onshore Development— Gorgon Project, Chevron



Chevron is the operator for the \$52 billion Gorgon Project, which has been under construction on Barrow Island since late 2009, after the Gorgon Joint Venturers received State and Commonwealth approval and made their final investment decision in September 2009. The Project will develop the Gorgon and Jansz-Io gas fields, located within the Greater Gorgon area, about 130 kilometres off the north-west coast of Western Australia. It is the largest single resource project in Australia's history.

Barrow Island is located off the Pilbara coast 85 km north-northeast of the town of Onslow and 140 km west of Karratha. The island is approximately 25 km long and 10 km wide and has been a Class A Nature Reserve since 1910. Chevron has been successfully producing crude oil from Barrow Island since 1967, while maintaining and protecting the island's conservation and biodiversity values. Barrow Island's ecology and status as a Class A Nature Reserve remains intact, largely attributable to Chevron's environmental management of the island, which has received state, national and international recognition.

The Gorgon Project is operated by an Australian subsidiary of Chevron (47.3 per cent interest), in joint venture with the Australian subsidiaries of ExxonMobil (25 per cent), Shell (25 per cent), Osaka Gas (1.25 per cent), Tokyo Gas (1 per cent) and Chubu Electric Power (0.417 per cent).

Case study—Overlap and duplication between State (EP Act) and Commonwealth (EPBC Act) ministerial approval processes

Common to many large projects that require State and Commonwealth environmental approvals, there are a range of challenges that arise from the complex interplay between State and Commonwealth processes. These challenges include overlapping processes and a resulting duplication of conditions and associated requirements. As experienced by the Gorgon Project, there is a difference between the State and Commonwealth approvals processes when a project requires change (i.e. a variations and or expansion of its scope) and or its management plans.

Key Issues

Unlike the WA EP Act, the EPBC Act does not enable a scope change to be approved under a single revised approval. For example, when the initial Gorgon two train (10 mtpa) LNG development was revised to a three train (15 mtpa) LNG development, this required a new EPBC Ministerial approval to be granted (EPBC Reference: 2008/4178) and the existing EPBC Ministerial approval (EPBC Reference: 2003/1294) to be revised to ensure consistency with the new approval, as the new approval could not supersede the former. In the case of the EP Act, Ministerial Statement No. 800 superseded Statement No. 748 subject to certain 'grandfathering' provisions.

Similarly, for less substantive project scope changes there is no mechanism within the EPBC Act to assess and approve these changes, unlike the EP Act's section 45c. Therefore, while a scope variation might be assessed and approved by the State, the Commonwealth has no similar means to formally 'approve' such changes. As such, without formal approval there is no 'legal defence' for the associated environmental impacts should they occur.

At the time the initial conditions were negotiated and written, the EPBC Act required a set of Commonwealth conditions that could not rely upon the State EP Act Ministerial conditions. This resulted in similar but sufficiently different State and Commonwealth conditions for separate environmental management plans to be prepared. However, as a result of the revised and expanded proposal to three trains, the Commonwealth agreed to use exactly the same conditions as those imposed by the State, with a few minor differences. While this required considerable resources to negotiate, it achieved consistency across the conditions imposed and enabled the same management plans and performance reports to be submitted to the State and Commonwealth.

As a result of the duplicated State and Commonwealth Ministerial Statement conditions, the same environmental management plans are required to be assessed and approved by different agencies/Ministers. This requires considerable resources for all parties to commit to consultation and negotiation to (preferably) generate a single plan that meets the respective needs of the various agencies. For example, notwithstanding the other agencies/

stakeholders that need to be consulted, the Offshore Feed Gas Pipeline Construction Management Plan has to be assessed and approved by the Western Australian DEC, Western Australian DMP, DSEWPaC and NOPSEMA.

There are a number of challenges that arise as a result of the above issues, including:

- It is not possible to physically or even legally separate the facilities and activities associated with, or the environmental impacts of, the two or three train developments. This is because some of the facilities and impacts between these ‘actions’ would be different in degree and or cumulative, so cannot be solely attributed to either action.
- Generates multiple, duplicated conditions that create overlap and repetition between instruments.
- Exposes the proponent to the potential of regulatory action under multiple instruments for the same event should there be a non-compliance with (the duplicated) requirements.
- Potential for inconsistencies between the State and Commonwealth approved project scope/description to establish for the less substantive changes.
- Poses a challenge in trying to align State and Commonwealth approvals, and the subsequent management plans and regulatory reporting requirements that flow from these approvals.
- Management plans and regulatory reports require ‘approval’ or ‘Ministerial determination’ under each of the various instruments.

Implications for the Project

The current constraints within the EPBC Act meant the Project, with its integrated Gorgon Gas Development and Jansz Feed Gas Pipeline, cannot be encompassed by a single Ministerial Statement from the Commonwealth – rather, multiple Ministerial Statements have been and will need to be issued. Coupled with the highly complicated drafting of conditions and compliance assurance requirements, this creates a challenging regulatory environment that is resource intensive and administratively burdensome on the proponent as well as the administering agency (SEWPaC).

The EPBC conditions for the project do not have provisions for non-substantive amendments to be made to the approved systems, plans and procedures without further approval. The requirement to prepare environmental management systems, plans and procedures for assessment by multiple agencies is resource intensive and this is exacerbated by the large number of plans required, and the need to resubmit these documents for additional review and approval each time they are amended. This is particularly the case with respect to management ‘systems’ as they comprise many layers of interdependent components (e.g. procedures, processes, guidelines, checklists etc), which when varied comprises a change to the system and hence requires subsequent approval. This requirement to submit highly detailed systems, plans and procedures for approval, and the review and approval of any subsequent amendments, restrict the proponent’s operational flexibility, timely implementation of continuous improvement opportunities, and have the potential to create delays, uncertainty and increase project costs if not well planned and executed by the proponent well in advance of approval being required.

Opportunity for Improvement

Legislative change to the EPBC Act that enables the assessment and approval of a change to a Project scope (without the need for a new referral) and subsequent modification of an existing Ministerial Statement to accommodate the project change would be beneficial to both government and proponents.

Where there are already exhaustive State Ministerial Statement conditions of approval that adequately regulate a proponent’s activities, then a legislative change to the EPBC Act that enables the cross-referencing of these conditions, for the avoidance of duplication and potential for inconsistency, would be beneficial.

Similarly, provisions either in the legislation or in the EPBC Approval Conditions that enable proponents to make non-substantive changes to, previously approved, environmental management systems, plans and procedures would also be beneficial to both government and proponents.

These changes would assist proponents by reducing risk, remove uncertainty, reducing potential schedule delays and costs; it would also assist agencies facing resource constraints.

Commonwealth and state approvals processes differ when a project changes due to variations, expanding scope or different management plans.

APPENDIX A

Petroleum major projects in development

Project	Company	Location	Expected start-up	Capacity	Capital cost (\$B)	Estimated construction employment
CSG-LNG PROJECTS						
Australia Pacific LNG	Origin/ConocoPhillips, Sinopec	Gladstone, Qld	2015	9.0 mtpa	23.0	6000
Curtis Island LNG	BG Group	Gladstone, Qld	2014	8.5 mtpa	20.4	5000
Gladstone LNG	Santos, Petronas, Total, Kogas	Gladstone, Qld	2015	7.8 mtpa	15.5	5000
CONVENTIONAL LNG						
Gorgon	Chevron/Shell ExxonMobil	Barrow Is, WA	2015	15.6 mtpa 300 TJ/d domgas	43.0	7000
Wheatstone	Chevron/Apache/ KUFPEK/Tokyo Electric	Onslow, WA	2016	8.9 mtpa 200 TJ/d domgas	29.0	5000
Ichthys	Inpex/Total	Darwin	2016	8.4 mtpa	34.0	3000
Prelude Floating LNG	Shell/Inpex	Browse Basin	2016	3.6 mtpa	10.0	N/A
OTHER						
Montara (oil)	PTTEP Aust	Browse Basin	2013	35 kbd	0.7	N/A
Kipper, Tuna-Turrum (oil and gas)	Kipper: Esso Australia, BHP Billiton, Santos Turrum-Tuna: Esso Australia, BHP Billiton	Bass Strait	2013 (oil) 2016 (gas)	N/A	4.4	N/A
Balnaves (oil & gas)	Apache, KUFPEC	Carnarvon Basin	2015	30 kbd	0.4	N/A
Coniston (oil)	Apache, Inpex	Carnarvon Basin	2013	22 kbd	0.5	N/A
Fletcher Finucane (oil)	Santos, KUFPEC, JF Nippon Oil & Gas	Carnarvon Basin	2014	15 kbd	0.5	N/A
Macedon (gas)	BHP Billiton, Apache	Onslow, WA	2014	200 TJ/d	1.5	N/A
North Rankin Redevelopment (gas & condensate)	Woodside, BP, BHP Billiton, Chevron, Shell, MIMI	Carnarvon Basin	2013	N/A	5.0	N/A
Greater Western Flank Phase 1 (gas & condensate)	Woodside, BP, BHP Billiton, Chevron, Shell, MIMI	Carnarvon Basin	2016	N/A	2.5	N/A

APPENDIX B

Deloitte Access Economics Report

To analyse the value of the oil and gas industry, a recent Deloitte Access Economics (DAE) study assessed its economic contribution to the Australian economy, quantifying the output and how it will potentially grow over time. In addition, DAE analysed the economic impact of the industry recognising the unprecedented level of capital investment currently committed and the value of increased production. The study captures the industry's contribution over and above its significant production and export profile.

In addition, a number of other studies have recently been completed at a state level that examine the impact of industry growth, with a strong focus on CSG in Queensland and New South Wales. These studies all identify significant regional and economy-wide benefits associated with a growing industry, as well as significant revenue streams for the Commonwealth and state governments.

A 'snapshot' of the economic contribution of Australia's oil and gas operations

The DAE analysis covers the economic contribution of the direct impact of oil and gas operations, and the flow-on contribution of oil and gas projects. In 2011, the sector contributed \$28.3 billion to the economy—accounting for 2.0 per cent of GDP. The extractive processes and related refining operations are extremely capital intensive. Of this, \$4.3 billion was found to be flow-on contributions distributed among supplying industries: exploration support and professional services, maintenance and construction, transport and storage and wholesale trade in Australia. The links between sectors have regional, interstate and international dimensions.

While the current economic contribution is substantial, the future contribution is expected to be much more significant. The unprecedented committed expansion is forecast to increase output by \$68 billion in 2020 and \$63 billion in 2025. Existing developments are set to decrease output value from \$29.7 billion in 2011 to \$22 billion in 2025 as reserves deplete and production slows. The share of the oil and gas industry and associated exploration activities to GDP increases from 2.1 per cent to 2.5 per cent in 2025—peaking at 3.5 per cent in 2020.

Table B1 Forward economic contributions

		NPV*	2011	2020	2025
Oil and gas	Value added (\$b)	420.0	28.3	64.7	60.1
	Direct value added (\$b)	356.7	24.1	55.0	51.5
	Indirect value added (\$b)	63.3	4.3	9.8	9.1
	Direct value added, share of GDP (%)		1.7	2.9	2.3
	Total value added, share of GDP (%)		2.0	3.5	2.7
Exploration	Value added (\$b)	9.1	1.1	0.8	1.1
Total	Value added (\$b)	429.1	29.4	65.5	61.2
	Share of GDP (%)		2.1	3.5	2.8

* The NPV incorporates a discount rate of 7 per cent for the period 2012–25

Source Deloitte Access Economics

The industry's fiscal contribution

On the back of considerable production growth, the oil and gas industry will make a substantive contribution to government revenues—\$93.6 billion in net present value (NPV) terms over the period. These projections should be considered indicative given the volatility of commodity prices and cost structures for individual projects. In reality, these amounts could be considerably higher.

Table B.2 Oil and gas tax payments, selected years and NPV

CONTRIBUTION (\$B)	NPV* (2012–25)	2011	2020	2025
Corporate	61.2	4.4	9.1	8.5
Production taxes	32.4	3.5	3.7	3.6
Total	93.6	7.9	12.8	12.1

* NPV uses a discount rate of 7 per cent

Source: *Deloitte Access Economics*

See www.appea.com.au for more information on these reports.

APPENDIX C

Environmental legislation in the States and Territories

The environmental legislative framework reflects Australia's federal system, with powers shared between the Commonwealth, state and territory, and local governments.

The Commonwealth Government is responsible for nationally and internationally important flora, fauna, ecological communities and heritage places defined in Commonwealth legislation as matters of national environmental significance (NES) or national responsibilities (such as the Commonwealth marine environment).

The states have primary responsibility for the protection of the onshore environment, and in turn delegate some environmental responsibilities to local councils through legislation. For example, in New South Wales local councils have the power to make local environmental plans, assess and approve some developments, investigate and control pollution, and enforce environmental laws.

The duplication of regulation

The Commonwealth Government

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is Australia's national environment law and is administered by the Department of Sustainability, Environment, Water, Populations and Communities (SEWPC). The Act makes it an offence for any person to take an action that is likely to have a significant impact on matters protected by the Act, unless they have the approval of the Australian environment minister. The EPBC Act protects matters of national environmental significance as well as the environment of Commonwealth land.

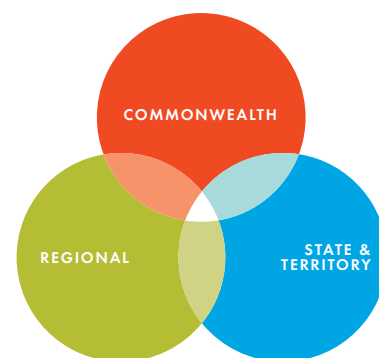
The eight matters of national environmental significance (also known as 'triggers') protected by the EPBC Act are:

- 1 World Heritage properties
- 2 National Heritage places
- 3 Wetlands of international importance (listed under the RAMSAR Convention)
- 4 Migratory species protected under international agreements
- 5 Listed threatened species and ecological communities
- 6 Commonwealth marine areas
- 7 The Great Barrier Reef Marine Park
- 8 Nuclear actions (including uranium mines).

The EPBC Act also applies to actions that have an impact on the environment on Commonwealth land, and to actions taken by the Commonwealth Government, and Commonwealth Government agencies which are likely to have a significant impact on the environment (anywhere). As Commonwealth marine areas are included as a trigger under the EPBC Act, most oil and gas offshore operations are referred under the EPBC Act.

State environmental planning

In executing their responsibilities to protect the environment, the Australian states and territories have enacted similar environmental protection legislation. The environmental legal systems in the states comprise of a suite of legislation that covers a wide variety of components. No single level of government regulates all activities.



Local councils

Local council quasi-regulation can have ongoing impacts on industry development. In 2012, the Northern Rivers Regional Organisation of Councils (an association representing a number of local governments) indicated that it was attempting to deny access to natural gas exploration activities on council owned roads (thus using the Council's role as landowner of local roads). Lismore and Cessnock Councils have also denied access for seismic work.

Local governments (or councils) also play a role in environmental management. Local governments are constituted under state and territory legislation and are subordinate to the relevant state or territory government and Commonwealth laws.¹ Local government activities focus on services and infrastructure provision, regional economic development, operational cost savings or advocacy.

Local government interactions with business on environmental regulation tend to occur in relation to development applications, such as planning and land use, or in response to complaints about a business's impact on an aspect of the environment. However, in recent years local governments have often moved into activities generally under the auspices of state or Commonwealth legislation, such as large project approvals.

Legislation applying to specific states and territories

Australian Capital Territory

- *Environmental Protection Act 1997*
- The environment protection for business and industry page covers the environmental legislation and codes of practice affecting ACT businesses.

New South Wales

- *Protection of the Environment Operations Act 1997*
- Environmental Planning and Assessment Act
- Other NSW environmental legislation

Northern Territory

- *Environmental Assessment Act 1982*
- Environmental Management Legislation
- Environmental codes of practice

Queensland

- *Environmental Protection Act 1994*
- Information for business and industry
- Voluntary environmental codes of practice
- Bilateral Agreement between the Commonwealth and Queensland www.ehp.qld.gov.au/register/p01700aa.pdf

South Australia

- *Environment Protection Act 1993*
- Environment protection legislation
- Codes of practice

¹ Productivity Commission, Local Government as Regulator
www.pc.gov.au/__data/assets/pdf_file/0008/118547/02-local-government-overview.pdf

Tasmania

- *Environmental Management and Pollution Control Act 1994*
- Information on Environmental policies, publications, procedures and strategies

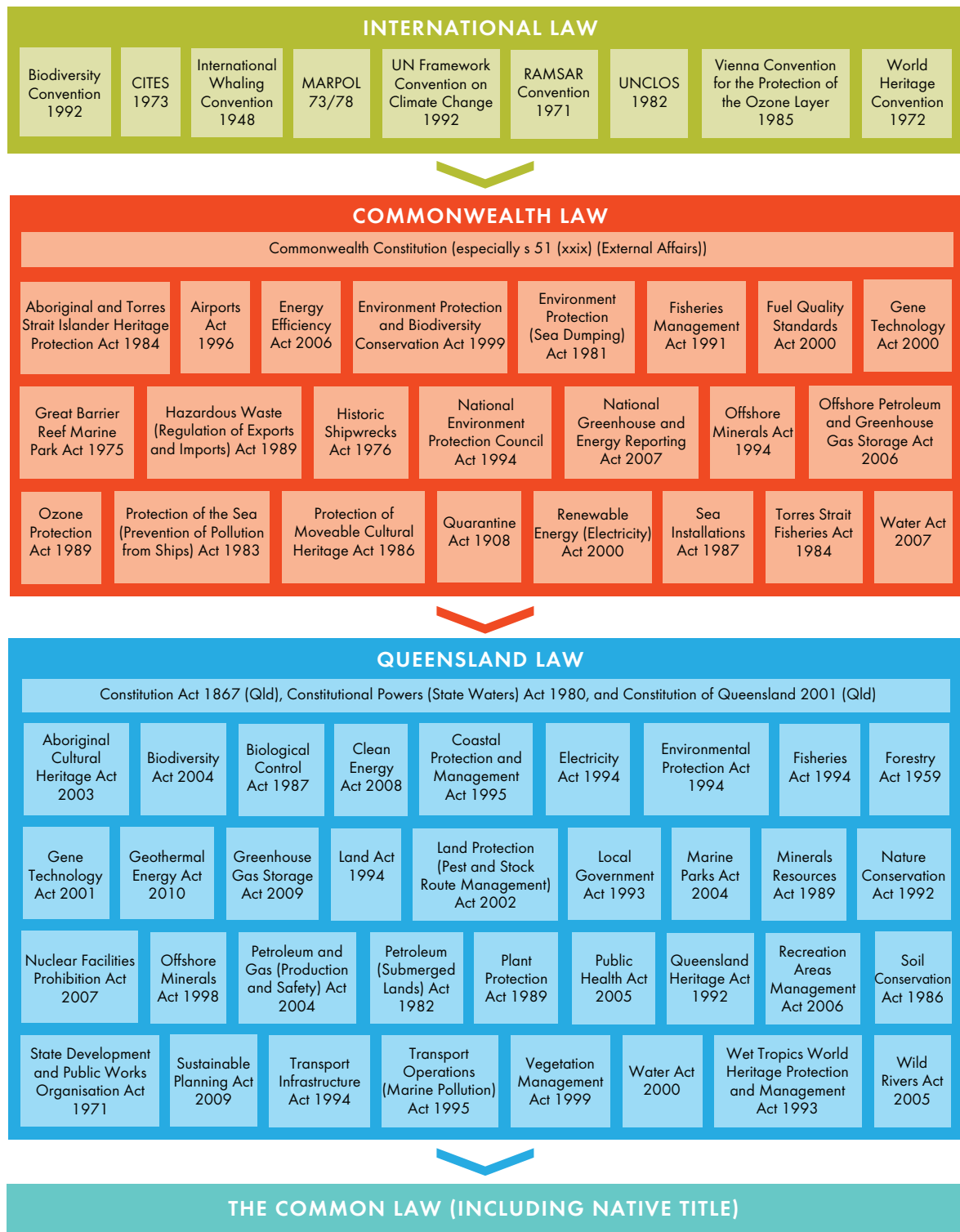
Victoria

- *Environment Protection Act 1970*
- Other Victorian environmental legislation
- Publications and codes of practice

Western Australia

- *Environment Protection Act 1986*
- Information on environmental legislation
- Bilateral Agreement between the Commonwealth and Western Australia
- <http://edit.epa.wa.gov.au/EPADocLib/wa-signed-agreement.pdf>

Figure C1 The complex legislative environment in Queensland



Source: www.envlaw.com.au/sqels5.pdf

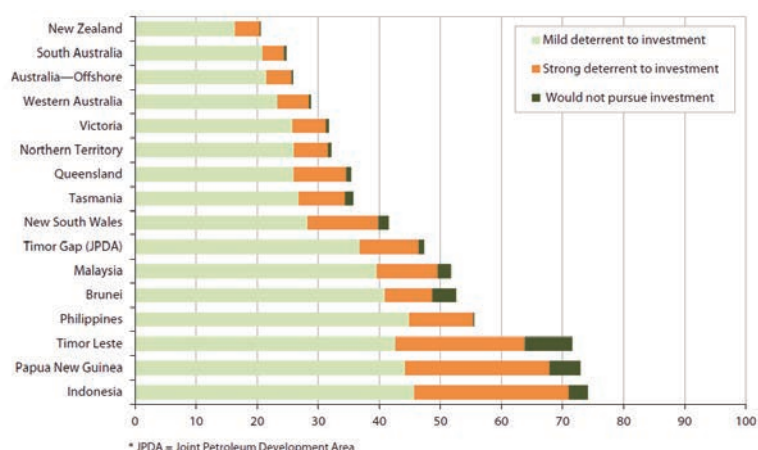
APPENDIX D

Fraser Institute Global Petroleum Survey Results (2012)

The Fraser Institute Global Petroleum Survey 2012 is an annual survey of 18 factors that affect investment decisions in jurisdictions. The scores are based on the proportion of negative responses received by jurisdictions. The lower the ranking, the greater its perceived investment barriers.

Australian jurisdictions in the survey include the six states, the Northern Territory and Australia—Offshore. Compared to the Oceania region, Australian jurisdictions rank favourably (Figure D1). They were, however, outperformed by New Zealand—the Oceania jurisdiction considered most favourable to invest in.

Figure D1 All-inclusive composite index — Oceania



Source: Fraser Institute Global Petroleum Survey 2012

Compared to the 147 jurisdictions in the study, Australia is much lower down the list on the global stage. Further, except for Australia—Offshore, all Australian jurisdictions fell in the rankings from the 2011 survey.

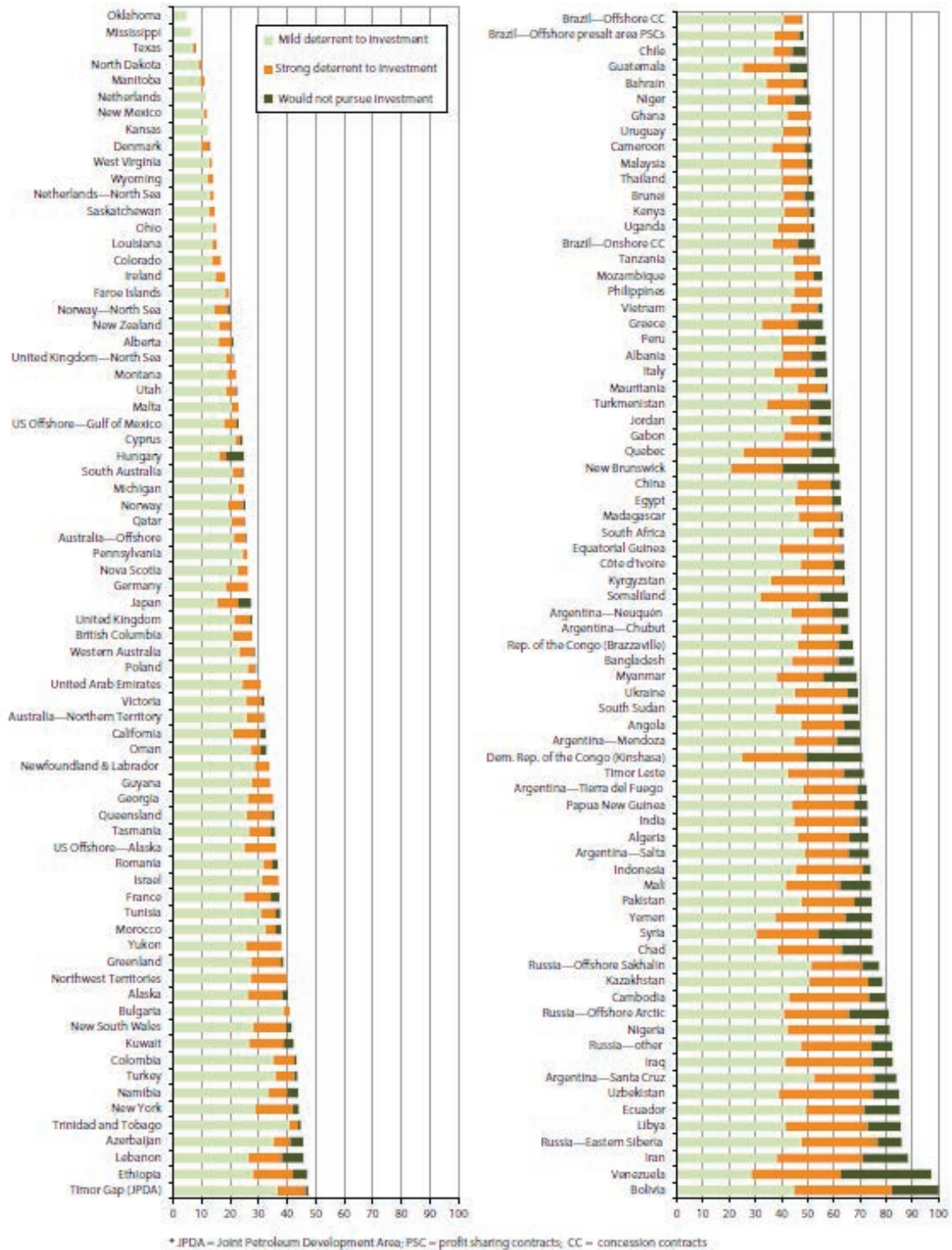
Table D1 Australian rankings compared, 2011 and 2012

JURISDICTION	2012 (OUT OF 147)	2011 (OUT OF 135)
South Australia	29	21
Australia Offshore	33	40
Western Australia	40	37
Victoria	43	19
Northern Territory	44	30
Queensland	50	42
Tasmania	51	28
New South Wales	63	45

Source: Fraser Institute Global Petroleum Survey 2012

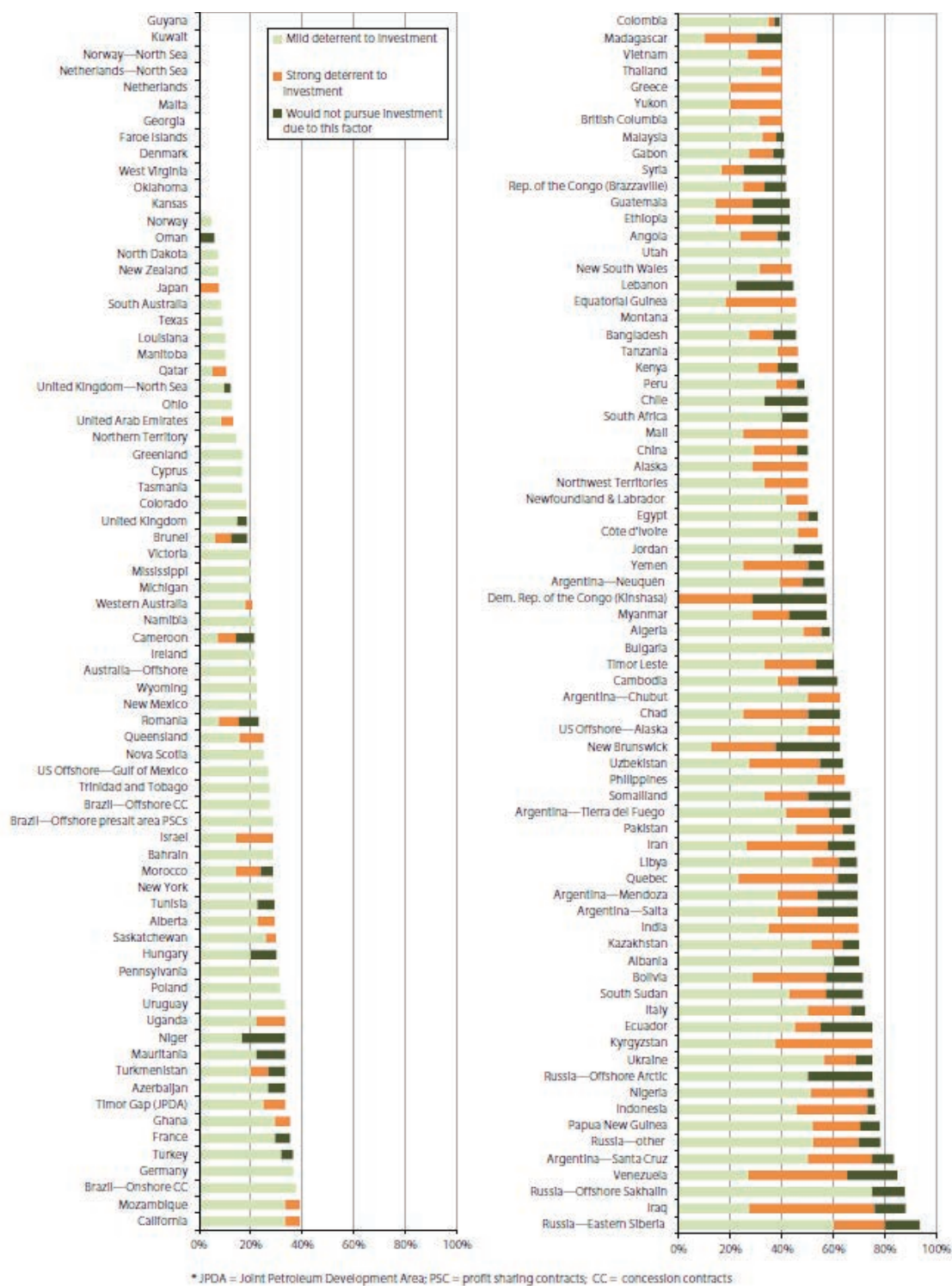
In environmental regulations, all eight Australian jurisdictions ranked in the bottom half of the survey, with New South Wales scoring the lowest of all jurisdictions. Uncertainty in New South Wales is likely to be linked to environmental concerns surrounding coal seam gas development.

Figure D2 All-inclusive composite index



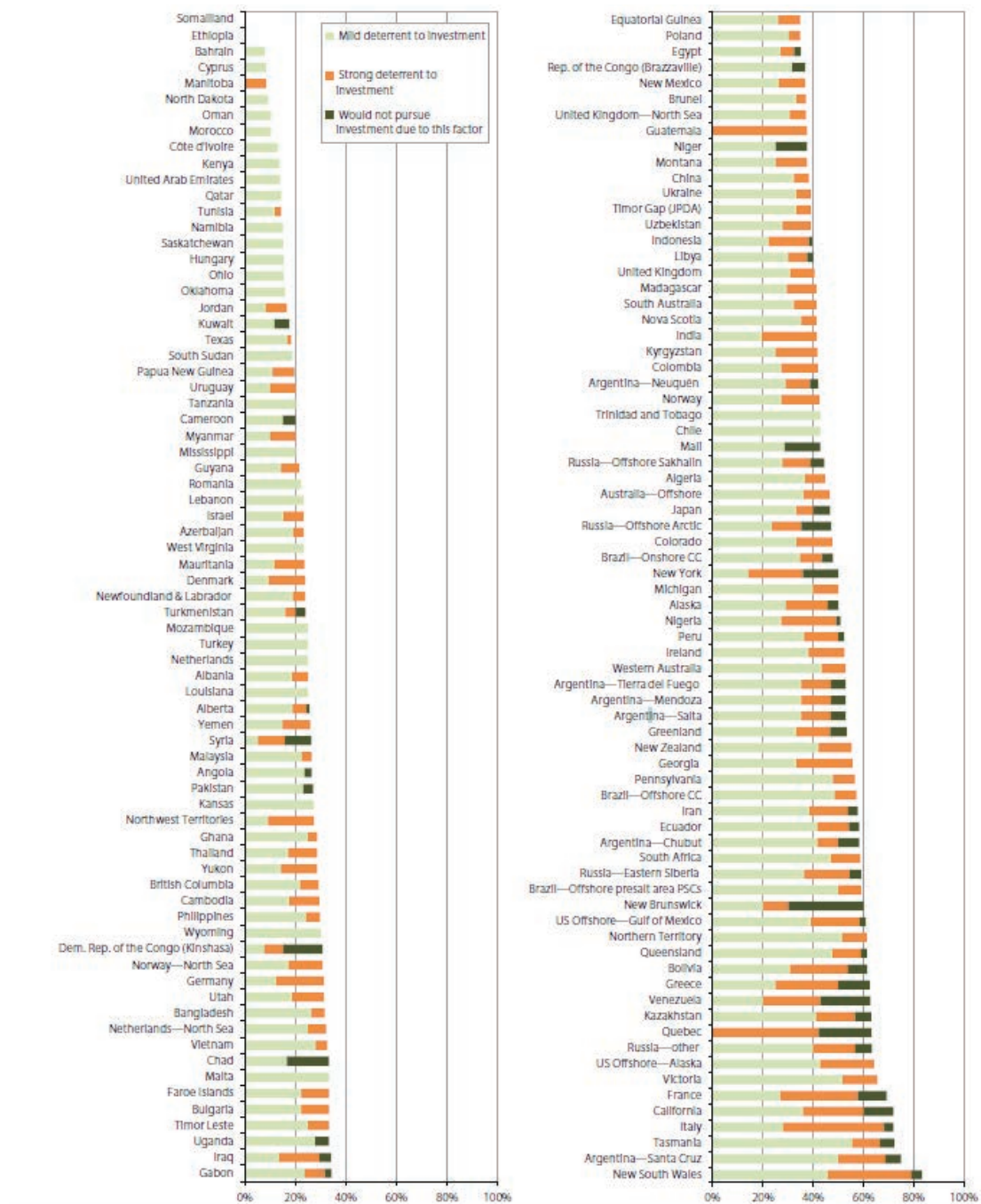
Source: Fraser Institute Global Petroleum Survey 2012

Figure D3 Regulatory duplication as a deterrent to investment



Source: Fraser Institute Global Petroleum Survey 2012

Figure D4 Environmental regulations



Source: Fraser Institute Global Petroleum Survey 2012

Bibliography

Angevine M, Cervantes M, & Oviedo V 2012, *Global Petroleum Survey 2012*, Fraser Institute.

BREE 2012, *Resources and energy quarterly, September Quarter 2011*, Bureau of Resources and Energy Economics, Canberra.

COAG 2012, *COAG Meeting, 13 April 2012*. Accessed 1 November 2012, <www.coag.gov.au/node/313#BAF>.

Deloitte Access Economics 2012, *Advancing Australia: Harnessing our Comparative Energy Advantage*, <www.appea.com.au>.

Productivity Commission 2009, *Review of the Regulatory Burden on the Upstream Petroleum (Oil and Gas) Sector*, Accessed <www.pc.gov.au/projects/study/upstream-petroleum>.

RET 2012, *Australia's Energy White Paper 2012*, Australian Government Department of Resources, Energy and Tourism, Canberra.

NOTES

www.appea.com.au