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THE 'TRIANGLE' OF AUSTRALIAN ENERGY LAW AND POLICY: OMISSIONS, CONNECTIONS AND EVALUATING ENVIRONMENTAL EFFECTS

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ABSTRACT

Utilising the theory of the 'Energy Law and Policy Triangle', this article analyses the consequences of not having a comprehensive national energy policy, whereby economics, environment and politics are all included. While focusing on two of the three points of the Triangle - economics and environment - the Australian 2015 Energy White Paper has focused only on economics. It has not incorporated the third fully - the politics of energy security – and environmental protection is also inadequate. The article argues that the absence of a comprehensive national energy policy leaves Australia open to piecemeal, reactive approaches to critical issues. Using the example of the South Australian Nuclear Fuel Cycle Royal Commission it highlights the implications of a federal policy vacuum, as whatever decisions the South Australian Government takes on waste disposal, it is unclear whether the Australian Government will support them. It recommends the development of a comprehensive policy, clearer links between aspects, and to apply strategic environmental assessment to significant environmental effects of policy.

KEYWORDS: Energy law and policy triangle, Australia, strategic environmental assessment

1. INTRODUCTION

This article reviews recent energy policy initiatives at the national level in Australia and highlights omissions, the lack of coherent connections ~~between them~~, and inadequate attention to environmental effects. A resulting policy vacuum[1] ~~arising~~ from the lack of a

[1] Thi~~s e energy policy vacuum~~ has been raised i~~n various ways across Australia recently. I~~n Tasmania recently with reference to the Senate Standing Committee on Environment and Communications, Inquiry into the performance and management of electricity network companies. S ~~s~~ee: Tasmanian Greens, 'Liberals' Energy

comprehensive policy raises a number of questions, ~~which are~~ collectively the aim of this article. First, is a more effective national energy policy needed ~~for Australia~~? Second, is this possible? Third, what should it contain? And fourth, how can environmental effects ~~of any policy~~ best be addressed? Applying the 'Energy Law and Policy Triangle' (the 'Triangle') theory,[2] it argues that the three key components of energy law and policy (economics, environment and politics) must be better developed and connected, and that a comprehensive, integrated national energy policy is urgently required ~~to do this~~.

With energy law and policy in the centre of the Triangle, it also advocates greater interdisciplinarity in the energy discourse whether in Australia or elsewhere, to enable the links between economics, environment and politics - that provide the framework and context for energy law and policy - to be better understood, integrated and applied. As such, the findings have potential significance in other jurisdictional contexts, particularly in federal systems ~~of governance~~.[3] Writing 25 years ago in this journal for example, Guruswamy emphasises the environment and politics link (and how it relates to energy policy):

> …we have tended to ignore other less apparent, but more insidious and pervasive perils that constitute threats to our environmental security. Global warming and climatic change - the most ominous of the many threats to our environmental security - have already been

Policy Vacuum Risks Sector 'Death Spiral'', see: <https://tasmps.greens.org.au/content/energy-policy-sucks-life-out-local-business> accessed 25 October 2016.

[2] See Raphael ~~J~~ Heffron and Kim Talus, 'The Development of Energy Law in the 21st Century: A Paradigm Shift?' (2016) 9 Journal of World Energy Law and Business 189, 192-193.

[3] See for example Raphael ~~J~~ Heffron, 'Nuclear Energy Policy in the United States 1990-2010: A Federal or State Responsibility' (2013) 64 Energy Policy 254-266.

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advancing upon us. These threats demonstrate the extent to which environmental security is inextricably linked to energy policies.[4]

Informed by ~~recent energy~~ issues which have dominated media commentary in relation to these components, it uses the example of the South Australian Nuclear Fuel Cycle Royal Commission (NFCRC) ~~specifically~~ to illustrate the implications of a lack of a comprehensive national energy policy,[5] which can result in these threats. While policy rather than law is the primary focus, current law is ~~however~~ referred to in highlighting the need for change ~~to respond to policy developments~~.

The article advocates the application of strategic environmental assessment (SEA) beyond its current limited Australian use to address significant negative environmental effects in connection with the environment component.[6] It also emphasises that the economics and politics aspects are ~~however~~ inevitably also closely related. It notes the application of SEA to legislative proposals, although the focus is upon the efficacy of national energy policy and what is needed to improve this. The absence of policy

[4] Lakshman Guruswamy, 'Energy and Environmental Security: The Need for Action' (1991) 3(2) JEL~~ournal of Environmental Law~~ 209, 209.

[5] Nuclear Fuel Cycle Royal Commission, *Nuclear Fuel Cycle Royal Commission Report* (Government of South Australia 2016) ('NFCRC Report').

[6] For a general overview of the application of SEA to public policy, see: Kulsum Ahmed and Ernesto Sánchez-Triana, 'Using Strategic Environmental Assessments to Design and Implement Public Policy', in Kulsum Ahmed and Ernesto Sánchez-Triana (eds) *Strategic Environmental Assessment for Policies: An Instrument for Good Governance* (The World Bank 2008) 181. For explanation of this process in the Australian context, see Andrew Macintosh, 'Strategic Environmental Assessment: A Solution to the Problems Associated with Project-Based Environmental Impact Assessment?' (2013) 28(4) Australian Environment Review 541.

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environmental assessment contrasts with cost-benefit analysis (CBA),[7] which applies to economic effects, and - in relation to the national security aspect of energy security - via the procedures of the Foreign Investment Review Board (FIRB).[8]

There are five main sections ~~in this article~~. The remainder of this Introduction section explains the theory of the Triangle, considers the role of the Federation ~~in relation to it~~, and cites recent examples of Triangular connections in the Australian context. Section 2 reviews national energy policy, highlighting its piecemeal structure and approach. Building on the examples of the Triangle~~,~~ it illustrates how this has ~~in many respects~~ failed Australia~~, in recent years, as~~ exacerbated by frequent changes of federal government. ~~This is followed in~~ Ssection 3 critiques~~by an evaluation of~~ the South Australian NFCRC~~, which is critiqued~~ with reference to the ~~its operation in a~~ national policy vacuum for nuclear energy. Comparing Australia with the UK, nuclear inquiries ~~which have been~~ subject to similar constraints are examined to highlight ~~the nature of~~ the problem. Section 4 analyses how more ~~to what extent more~~ effective application of SEA can~~ould have in~~ craft~~ing~~ environmentally sustainable national policy, which alongside ~~considerations of~~ economics and politics must also be included. Conclusions in section 5 respond to the research questions ~~set out in the first paragraph~~ above.

1.1 The Energy Law and Policy Triangle

[7] See ~~generally~~ European Commission, *Guide to Cost-Benefit Analysis of Investment Projects: Economic Appraisal Tool for Cohesion Policy 2014-2020* (European Union 2015); this is also applied to climate policy, see Richard ~~SJ~~ Tol, 'A Cost–Benefit Analysis of the EU 20/20/2020 Package' (2012) 49 Energy Policy 288. In New South Wales, see <http://www.environment.nsw.gov.au/energyefficiencyindustry/efficiency-cost-benefit.htm> accessed 11 January 2017.

[8] <https://firb.gov.au/> accessed 25 October 2016.

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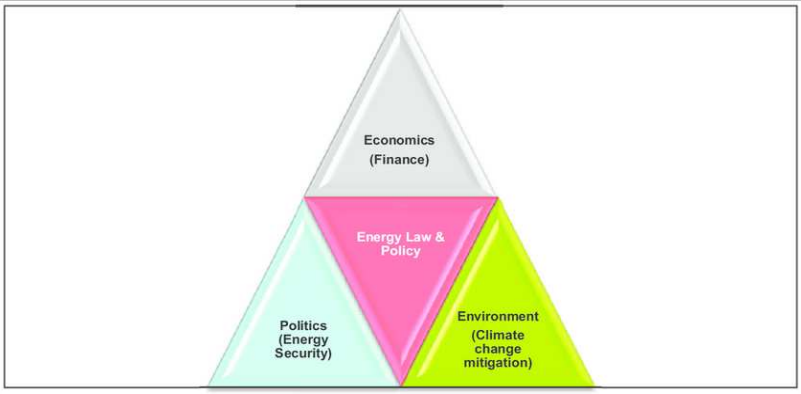
The Triangle has been advanced ~~in the literature~~ as a means of urging lawyers and others to see energy issues via the lens not only of economics, but also of politics and the environment. It~~This~~ is designed to address and counter the dominance of~~that~~ economics ~~has played~~ in the discourse ~~to date~~. Heffron and Talus explain how the Triangle – also known as the 'Energy Trilemma' – should be the means by which energy law and policy should - and can be - understood. Energy law and policy is in the centre ~~of the Triangle~~, connecting with each aspect. On the three points ~~of the Triangle~~ are economics (finance), politics (energy security) and environment (primarily but not limited to climate change mitigation). Figure 1 below provides a diagram ~~of the Triangle~~ and ~~a~~ more detailed explanation.



Explanation: Energy law and policy is in the centre of the triangle and on the three points of the triangle are economics (finance), politics (energy security) and environment (climate change mitigation). These three issues are each trying to pull energy law and policy in their direction. In essence, effective and efficient energy law and policy will balance these three aims to deliver the best outcome to society. However, if one examines energy law and policy in more detail, often it is just one of these issues that dominates the energy agenda.

Figure 1 - The Energy Law and Policy Triangle (from Heffron and Talus, 2016, 193)

While different viewpoints are likely concerning the balance between the three competing objectives being either possible or desirable - in ~~perhaps~~ a similar fashion to ongoing debates about ecologically sustainable development (ESD) - they add:

With countries at different stages of development across the world there needs to be this triple objective (economic–political–environmental) of energy policy. Under the Theory of the Energy Law and Policy Triangle, the energy law scholar envisions this and holds that it is through energy law that society can achieve a balance between these three competing objectives and deliver an energy policy that delivers the best outcome for society.[9]

1.2 The Role of the Federation in the Triangle

The federal system ~~of constitutional government~~ is implicated in many ~~of the~~ energy (and environmental) challenges Australia faces,[10] for example energy efficiency.[11] Under the Australian Constitution, energy like environment is generally a state responsibility under~~further to~~ powers to legislate for 'peace, order and good government', unless s 51 provides a legislative power for the Australian (also known as the 'federal' or 'Commonwealth') Parliament otherwise.[12] While the external affairs power and other s 51 powers allow it to enact domestic law for~~in connection with~~ international treaties for example

[9] Heffron and Talus (n 2) 193.

[10] T~~Note that t~~he USA - and perhaps~~in many respects also~~ the EU ~~– is~~ also – are governed by a federal system, so Australia is not alone. For ~~a~~ detailed analysis of ~~the~~ key issues ~~of relevance~~ for~~to~~ the USA and EU, see Raphael ~~J~~ Heffron and Gavin ~~FM~~ Little (eds) *Delivering Energy Law and Policy in the EU and the US: A Reader* (Edinburgh University Press 2016).

[11] Andrew Wear and Phil Harrington, 'Australian Federalism's Impact on Energy Efficiency Policy' (2002) 9(1) Australian Journal of Environmental Management 37.

[12] Samantha Hepburn, *Mining and Energy Law* (Cambridge 2015) 360-362; Gerry Bates, *Environmental Law in Australia* (8th edn, Lexis Nexis 2013), 130-164, and in connection with state legislative power ~~specifically~~, at 155-159.

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- the majority of which in the energy context concern climate change[13] - state legislatures also have considerable power to regulate matters within their own jurisdictions.[14]

For the Australian Government to comply with the Constitution agreement with the states therefore is needed to regulate various energy law and policy issues, particularly those with an environment dimension, ~~which are~~ affected by the same constitutional provisions.[15] While the Australian Parliament can legislate to protect the environment, most natural resource legislation is ~~therefore~~ found in state legislation. An example of the limitations of federal authority is seen under the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act), ~~which~~ restrict~~ings~~ the federal role to 'matters of national environmental significance' ~~(also known as 'protected matters')~~; this has resulted in the use of bilateral agreements ~~for example to enable cooperation~~.[16] Not surprisingly therefore, in calling for a 'national energy vision', the Energy Policy Institute of Australia emphasises

[13] See ~~for example~~ Heffron and Talus (n 2) 194, which while concerned primarily with the energy policy of ~~the key players,~~ the USA and EU, also applies to Australia. Despite being a decade old, for discussion of ~~both the climate change agreements and other~~ international law of relevance in Australia, see Rosemary Lyster and Adrian Bradbrook, *Energy Law and the Environment* (Cambridge University Press 2006), Chapter 3.

[14] For background information, see David Clark, *Introduction to Australian Public Law* (4th edn, Lexis Nexis 2013), Chapter 5 'Legislative Power' (at 104); and Alexander Reilly, Gabrielle Appleby, Laura Grenfell and Wendy Lacey, *Australian Public Law* (1st edn, Oxford University Press 2011), Chapter 4 'Parliamentary Process and Legislative Power' (at 79).

[15] Lyster and Bradbrook (n 13) 80.

[16] Hepburn (n 12) 362-365; Bates (n 12) 163-183; Bates explains the background of cooperative federalism, notably the 1997 Council of Australian Governments (COAG) framework arrangements ~~which set the framework~~ for the Environment Protection and Biodiversity Conservation Act 1999 (Cth) ('EPBC Act'). For ~~further analysis of the~~ background to the EPBC Act and its significance in ~~both~~ energy and environment domains (with energy examples ~~of energy applications~~), see Lyster and Bradbrook (n 13) 92-95. State government initiatives (up until 2006) are outlined in Chapter 5 of this book.

both the federal system and policy making process (which are connected because the latter relies on agreement between ~~the different levels of~~ governments) as problematic:

> At the heart of Australia's energy policy problem is the structure of Australia's federal system of government and the process of policy formulation itself. The Institute considers that this process has become outmoded: it is far too slow, it is insufficiently proactive and it has been largely overtaken by events.[17]

The Council of Australian Governments (COAG) plays a key role in developing energy law and policy ~~in Australia~~. Established in 1992, its ~~role is to~~ manages matters of national significance or those ~~that~~ needing coordinated action ~~by all Australian governments~~. It has also been involved with environmental reform~~, largely~~ as part of the deregulation agenda. In 2012, it drafted a Statement of Environmental and Assurance Outcomes following reaffirmation of its commitment to 'high environmental standards, while reducing duplication and double-handling of assessment and approval processes'.[18] Although primarily focused upon bilateral agreements ~~between the State and Commonwealth Governments~~, it also emphasises 'supporting the greater use of strategic approaches, such as strategic assessments and regional environmental plans, which will both increase efficiency and improve management of cumulative impacts', as another opportunity to deliver environmental outcomes.[19] In an energy context, SEA is considered in section 4.

[17] Energy Policy Institute of Australia, *An Australian Energy Vision and Framework for Energy Policy Priorities*, Submitted to COAG Energy Council August 2016.

[18] Council on Australian Governments, *Statement of Environmental and Assurance Outcomes* (2013).

[19] Senate Standing Committee of Environment, Communication and the Arts, *The Operation of the Environment Protection and Biodiversity Conservation Act 1999: First Report* (2009) 8.

1.3 Recent Examples of the Triangle in the Australian Context.

ExamplesThe events referred to above focus mainly on the economic and environment components of the Triangle, together with the politics of the security of the national supply. The relationship between the first two was seen in the breakdown in electricity transmission to South Australia in July 2016, resulting in a spikinge in electricity prices.[20] Soon afterwards, in September 2016, an unprecedented state-wide blackout followedresulted from another transmission failure.[21] Transmission issues in relation to renewables have been the subject of various studies in the Australian context,[22] although as in July 2016, the September 2016 South Australian outage was again - despite politicians' arguments to the contrary - not the result of overreliance upon renewables.[23]

Such arguments are however illustrateive of the dominant economics focus of the Triangle, and as Lyster and Bradbrook comment 'energy policy, which provides a framework for regulatory activity, cannot be developed in isolation. It must incorporate the principles

[20] Trisdan Edis, 'South Australia's 'Absurd' Electricity Prices: Renewables are Not to Blame' *The Guardian* (London, 27 July 2016) <https://www.theguardian.com/commentisfree/2016/jul/27/south-australias-absurd-electricity-prices-renewables-are-not-to-blame> accessed 13 January 2017.

[21] Elle Hunt, 'South Australia Blackout: Entire State Left Without Power after Storms' *The Guardian*, (London, 28 September 2016) <https://www.theguardian.com/australia-news/2016/sep/28/south-australia-braces-for-storm-that-could-be-most-severe-in-50-years> accessed 13 January 2017.

[22] See for example: Glen Wright, 'Facilitating Efficient Augmentation of Transmission Networks to Connect Renewable Energy Generation: The Australian Experience' (2012) 44 Energy Policy 79; and Rabindra Nepal, Flavio Menezes and Tooraj Jamasb, 'Network Regulation and Regulatory Institutional Reform: Revisiting the Case of Australia' (2014) 73 Energy Policy 259.

[23] Michael Slezak, South Australia's Blackout Explained (and No, Renewables Aren't to Blame)' *The Guardian*, (London 29 September 2016) <https://www.theguardian.com/australia-news/2016/sep/29/south-australia-blackout-explained-renewables-not-to-blame> accessed 13 January 2017.

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contained in the international framework for ecologically sustainable development (ESD).'[24] They point to energy policy being driven by National Competition Policy, which ~~they add~~ 'should be firmly integrated with the principles of ESD~~.~~'[25] ~~They~~ conclud~~inge~~:

> It is clear that all too often governments fail to provide effectively for the twin objectives of low-priced power and ESD. It seems that if microeconomic reform and protection of the natural environment are both concerned with the efficient use of scarce resources, there should be no distinction between the two.[26]

While South Australia is given a particular focus here~~in this article~~, there are parallels elsewhere ~~in Australia~~ where the lack of connectivity between state grids has resulted in periodic transmission breakdowns. In Tasmania ~~is another clear example, where~~ renewable energy produced mainly from hydroelectricity was insufficient to meet that state's needs during the summertime drought of 2015-2016. This coincided with a breakdown in the Basslink cable from Victoria ~~– the second longest subsea electricity cable in the world –~~ which was ~~therefore~~ unable to supplement supply with base-load coal-fired produced electricity.[27]

Despite this, and as a counterpoint to the views of several politicians in relation to South Australia, calls have been made for more - not less - renewable energy ~~to deal with the~~

[24] Lyster and Bradbrook (n 13) 112.

[25] Lyster and Bradbrook (n 13) 112. In relation to SEA in Australia, see the discussion on Best Practice Regulation in Australia, which has continued this trend in offshore domains: Simon Marsden, 'Strategic Environmental Assessment of Australian Offshore Oil and Gas Development: Ecologically Sustainable Development or Regulatory Reform?' (2016) 33 EPLJ~~nvironmental and Planning Law Journal~~ 21, 28.

[26] Lyster and Bradbrook (n 13) 114-115.

[27] See Author unknown, 'Should Tasmania Build a Second Interconnector?' *Utility Magazine*, 31 August 2016.

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issue.[28] Following an emergency COAG meeting, Australia's energy ministers agreed that an energy security review was needed to 'take stock of the current state of the security and reliability of the national electricity market and provide advice to governments on a 'coordinated, national reform blueprint.''[29]

In relation to the national security aspects of energy security,[30] FIRB has been the framework through which Australian Government decisions have been taken, to protect critical infrastructure and other assets from foreign ownership considered contrary to the national interest. There were several a number of incidents of considerable controversy during 2015-2016, [31] of which the review of the proposed privatisation of the New South Wales

[28] Max Opray, 'Tasmanian Power Crisis Reveals Urgent Need for More Renewable Energy' *The Guardian* (London, , 3 March 2016) <https://www.theguardian.com/sustainable-business/2016/mar/03/tasmanian-power-crisis-reveals-urgent-need-for-more-renewable-energy> accessed 13 January 2017.; and Jack Gilding, 'Talking Point: Tasmania Poised for Key Role in Energy Reform' *The Mercury*, 17 August 2016.

[29] Katharine Murphy, 'Chief Scientist to Lead Review into Australia's Energy Security' *The Guardian* (London, 7 October 2016) <https://www.theguardian.com/australia-news/2016/oct/07/chief-scientist-to-lead-review-into-australias-energy-security> accessed 13 January 2017.

[30] See generally Hugh Dyer, 'Energy Security and Energy Policy Incoherence', in Heffron and Little (n 10) Chapter 88; and Hugh Dyer and Maria Julia Trombetta (eds), *International Handbook of Energy Security* (Edward Elgar 2013).

[31] In relation to the sale of agricultural land to Chinese investors, the Kidman Station proposal was initially also declined, following a decision taken outside the FIRB framework to allow the sale of the Port of Darwin, also to the Chinese, which raised particular concerns in the USA. See Michelle Grattan, 'Morrison Blocks Chinese Acquisition of Historic Kidman Cattle Empire' *The Conversation*, 19 November 2015 <http://theconversation.com/morrison-blocks-chinese-acquisition-of-historic-kidman-cattle-empire-50960> accessed 13 January 2017; and Michelle Grattan, 'Grattan on Friday: Turnbull Jokes about Communications Failure over Darwin Port, But No Laughing Matter to US' *The Conversation*, 19 November 2015 <

electricity grid, Ausgrid was the most notable and relevant.[32] In August 2016 the Australian Treasurer determined that it was not in Australia's interests to allow the sale ~~of this grid to foreign investors~~.[33]

2. OMISSIONS AND LACK OF AN 'INTEGRATED AND COHERENT' APPROACH

Australia has finalised several energy policies in recent years;[34] however ~~there is an absence of the~~ integration and coordination necessary to provide for a comprehensive national energy policy are absent. While economics is the focus, the environment and politics dimensions ~~of the Triangle~~ have received insufficient attention. A statement of objectives in relation to the three dimensions (also known as objectives)~~of the Triangle~~ is needed so it is clear how the~~se dimensions~~ relate to one another, are prioritised, and can~~are able to~~ be effectively implemented. What ~~for example~~ is the relationship between renewable and non-renewable energy supplies? W~~Additionally in connection with the issues raised by the South Australian NFCRC (below), w~~hat place does nuclear have in the fuel mix? The COAG Energy Council is the primary body for ensuring this coordination,[35] with its website optimistically proclaiming that 'The COAG Energy Council provides a forum for collaboration on developing *an integrated and coherent national energy policy*'[36] (my emphasis).

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http://theconversation.com/grattan-on-friday-turnbull-jokes-about-communications-failure-over-darwin-port-but-no-laughing-matter-to-us-50980> accessed 13 January 2017.

[32] Gavin Fernando, 'Chinese Press Accuses Australia of 'Chinaphobia'' *Business Media*, 12 August 2016.

[33] Scott Morrison, 'Statement on Decision to Prohibit the 99-Year Lease of 50.4 Per Cent of Ausgrid under Current Proposed Structure' *Media Release*, 19 August 2016.

[34] <http://www.australia.gov.au/information-and-services/environment/energy> accessed 25 October 2016.

[35] <http://www.scer.gov.au/> accessed 25 October 2016.

[36] Ibid, quotation from bottom of webpage.

In reality COAG has failed to deliver a national energy policy, which is neither integrated, ~~nor~~ coherent~~;~~ nor ~~is it~~ comprehensive, with the role of nuclear not defined. ~~This~~ creating~~es~~ a vacuum for decision-makers in ~~seeking to~~ applying policy. There is ~~hence~~ a need for clarity on the potential disposal of low and intermediate waste (by~~at~~ the Commonwealth level), and high level waste (in~~at the~~ South Australia~~n level~~)~~, if national energy policy is to be integrated and coherent~~. The potential future role of nuclear power generation and fuel reprocessing also requires certainty in the national ~~policy~~ discourse - which should have preceded discussions in South Australia - because ~~of the need for~~ Australian Government legislation is needed~~to implement agreed policy~~. Instead of a national energy policy, individual policies (whether found in 'plans', 'strategies' or other documents such as white papers) have therefore typically focused on the energy market on one hand,[37] or upon climate change on the other.[38] The integrating concept of ESD has furthermore been ignored or denied.[39] A clear example is coal seam gas development, generating conflict between communities wishing to protect agricultural land and groundwater, and developers keen to ensure a new source of supply, an experience which is shared in other countries.[40]

[37] See Australian Government / COAG Energy Council, *National Energy Productivity Plan 2015–2030* (Commonwealth of Australia 2015).

[38] See for example Australian Government, *National Climate Resilience and Adaptation Strategy* (Commonwealth of Australia 2015).

[39] See Stephanie Venuti, 'The Disappearance of Ecologically Sustainable Development within Australia's Mining Law Framework' (2014) 31 EPLJ~~nvironmental and Planning Law Journal~~ 64 (in relation to coal seam gas in NSW; Lyster and Bradbrook (n 25); and Marsden (2016) (n 25). In relation to links with climate justice, see Kirsten ~~EH~~ Jenkins, 'Sustainable Development and Energy Justice: Two Agendas Combined', in Heffron and Little (n 10) Chapter 72.

[40] Rosemary Lyster, 'Coal Seam Gas in the Context of Global Energy and Climate Change Scenarios' (2012) 29 EPLJ~~nvironmental and Planning Law Journal~~ 91. See also Hepburn (n 12) 184-188.

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In relation to the third aspect of the Triangle, ~~and~~ particularly energy security beyond the national context of efficient and affordable supply, there is a weak relationship between national ~~energy~~ policy and the FIRB national security ~~decision-making~~ process. White papers are the primary means by which national energy policy is disseminated by the Australian Government. However the fact that there have only been three over the last twelve years - in 2004, 2012 and 2015 - is cause for ~~considerable~~ concern, in an area of such significance ~~to the nations' economic, environmental and political future~~.[41] In the 2015 *Energy White Paper*, the relationship between security of supply and national security is not explicitly identified.[42] Instead the international aspect ~~is~~ focus~~ed up~~ on the geopolitics of supply, rather than the potential impact upon domestic national security via asset sales of strategic resources that FIRB regulates. National Energy Security Assessments (NESAs) ~~provide~~ guid~~ance of~~ the risks ~~potentially~~ posed by geopolitics, but the 2011 document acknowledges ~~that~~ it is 'not a policy document, but is an important input into the development of government policy

[41] Previous white papers have ~~put difference~~ emphase~~d~~s ~~differenton the~~ aspects of the Triangle. See Australian Government, *Securing Australia's Energy Future* (Commonwealth of Australia 2004) ~~, of which~~ Chapters 8 and 9 concern ~~deal with~~ climate change and energy, and energy and the environment; for commentary see Lyster and Bradbrook (n 13) chapter 4, and in relation to the EPBC Act, 92-95. The only other white paper was Department of Resources, Energy and Tourism, *Energy White Paper 2012: Australia's Energy Transformation* (Commonwealth of Australia 2012), which supposedly began the process of four-yearly reviews of policy; for discussion see Graeme Dennis, 'Energy White Paper 2012 — What Does it Mean for the Environment?' (2013) 28(4) Australian Environment Review 532.

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[42] Australian Government, Department of Industry and Science, *Energy White Paper 2015* (Commonwealth of Australia 2015).

through the Energy White Paper process'. [43] The 2015 *White Paper* comments ~~on the NESA role in the following terms~~:

> The Australian Government continues to monitor and identify emerging risks to energy supplies…~~, including relevant non-market security issues, through the periodic National Energy Security Assessment (NESA). The next NESA is due in mid-2015.~~ The NESA takes a forward-looking view of emerging risks confronting Australia's energy supply, including… ~~changes in macroeconomic conditions such as~~ global oil price volatility. It also considers physical disruptions… ~~to the energy supply chain,~~ such as natural disasters and geopolitical uncertainty.. ~~in key oil producing regions~~.[44]

This focus ~~therefore~~ typically reflects only the first two of the three aspects~~points of the Triangle explained in the Introduction~~, economics and - partly - the environment. It is not the purpose of this article to explain what these respective policies do in detail. Instead it is to highlight their lack of comprehensiveness, and the absence of coordination that results from the failure to establish a national energy policy, which should ideally guide all other policies, plans and programmes prepared there-under (see 'tiering' in SEA section below).[45] The focus upon markets is largely underlain by the trade and commerce and corporations powers

[43] The 2011 NESA considers the key influences on energy security in Australia for the period 2011 to 2035; see Australian Government, Department of Resources, Energy and Tourism, *National Energy Security Assessment 2011* (Commonwealth of Australia 2011) v.

[44] 2015 Energy White Paper (n 42) 5. Despite this claim, there is no evidence of the 2015 NESA being produced, with the 2011 and 2009 Assessments the only ones publicly available.

[45] EU guidance ~~makes~~ refer~~sence for example~~ to policies which setting the framework for official national grid development plans. See European Commission, *Streamlining Environmental Assessment Procedures for Energy Infrastructure Projects of Common Interest (PCIs)* (European Commission 2013).

affecting the relationship between states,[46] climate change by the federal external affairs power in implementing international agreements,[47] and the national security component of energy security the defence power.[48] In all cases where state legislative power is used, there is potential for action to be overruled where ~~as a result of~~ inconsistent~~ency~~ with ~~any~~ federal legislation, which will prevail.[49]

Separate sections below summarise Australian energy policies relevant ~~with respect~~ to these two aspects (economics and environment) and highlight that the third (politics) needs to be better integrated ~~into the national discourse~~ to set clearer rules about foreign investment in strategic ~~energy~~ assets. References to relevant law are ~~also~~ provided in notes, although ~~this is~~ not discussed given the policy focus of this article. These sections also identify the regulatory arrangements ~~providing~~ for institutional oversight of the three points of the Triangle, and ~~the~~ measures of relevance in the 2015 *Energy White Paper*. Government reports highlight their role on one hand, and academic and media commentary provide analysis on the relationship to and within the Triangle on the other.

2.1 Economics: Finance (and the Energy Market)

The economics of energy has been perhaps the most discussed aspect of energy law and policy ~~in the literature~~, as supplemented by interest in the climate change aspect over the last

[46] S 51(i), and s 51(xx), Australian Constitution; also the taxation power, s 51(ii). Significantly outside s 51 is s 92, which guarantees the freedom of interstate trade and commerce. See Lyster and Bradbrook (n 13) 32.

[47] S 51(xxix), Australian Constitution.

[48] S 51 (vi), Australian Constitution.

[49] S 109, Australian Constitution. This was clearly seen in the Tasmanian Dams case, with as much of an energy context as an environmental one; see Bates (n 12) 161; and *Commonwealth of Australia and Another v State of Tasmania and Others* (Judgment of 1 July 1983, 68 ILR 266.

decade. As such, and since the focus of this article is on the other two aspects of the Triangle – politics and the environment in terms of significant effects and the policy vacuum - energy economics is the least considered aspect here, unless~~other than where~~ there are links with ~~the~~ other aspects, such as foreign direct investment (FDI). In relation to the energy market in general, the Australian Energy Market Commission was established to 'make and amend the National Electricity Rules, National Gas Rules and National Energy Retail Rules.'[50] In addition, the Australian Energy Regulator was established to focus on the wholesale electricity market and electricity transmission networks in the long term interests of consumers.[51] A third body, the Electrical Regulatory Authorities Council, 'works towards the coordination between the technical and safety electrical regulatory authorities of the Australian states, territories and Commonwealth (and New Zealand).'[52]

Commentators have said the 2015 *Energy White Paper* contains 'a heavy reliance on market forces and an emphasis on deregulation', and that there is a 'lack of vision and ambition in the Energy White Paper in terms of climate change mitigation'.[53] For example the three main sections are entitled 'Increasing competition to keep prices down', 'Increasing

[50] <http://www.aemc.gov.au/> accessed 25 October 2016. See Hepburn (n 12) 140-171 for an outline of the National Gas Law and functions of the Commission and Regulator (at 147). In relation to gas prices, see Mike Sandiford, 'We Really Must Talk about Gas', *The Conversation*, 7 September 2016 http://theconversation.com/we-really-must-talk-about-gas-64213> accessed 13 January 2017; and Alan Pears, 'The Solution to Australia's Gas Crisis is Not More Gas', *The Conversation*, 34 August 2016 http://theconversation.com/the-solution-to-australias-gas-crisis-is-not-more-gas-63443> accessed 13 January 2017.

[51] <http://www.aer.gov.au/> accessed 25 October 2016.

[52] <http://www.erac.gov.au/> accessed 25 October 2016.

[53] Neil Gunningham and Megan Bowman, 'Energy Regulation for a Low Carbon Economy: Obstacles and Opportunities' (2016) 33 EPL Jnvironmental and Planning Law Journal 118, 119.

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energy productivity to promote growth', and 'Investing in Australia's energy future'. The Introduction to the *Energy White Paper* outlines the 'Vision for the energy sector'. This emphasises the market orientation further, with priorities stated in the following terms:

> Competitively priced and reliable energy supply to households, business and international markets [will be achieved] through:
> > competition that will improve consumer choice and put downward pressure on prices;
> > the more productive use of energy to lower costs, improve energy use and stimulate economic growth; and
> > investment to encourage innovation and energy resources development to grow jobs and exports.[54]

Additionally, a *National Energy Productivity Plan 2015-2030* is now in place. 'Coordinating policy' is a ~~stated~~ centrepiece ~~of this Plan~~, ~~which is~~ designed to link energy efficiency, energy market reform and climate change to achieve a forty per cent improvement in outcomes by 2030.[55] Furthermore a *Review of Governance Arrangements for Australian Energy Markets - Final Report* was released in October 2015, [56] in~~which was a~~ response to the implications of renewable energy rollouts which some politicians had argued had led to the failure of the energy supply to South Australia[57] and Tasmania,[58] and consequent cost blow outs to

[54] 2015 Energy White Paper (n 42) 2.

[55] National Energy Productivity Plan (n 36) 5.

[56] Michael Vertigan, George Yarrow and Euan Morton, *Review of Governance Arrangements for Australian Energy Markets Final Report* (Commonwealth of Australia 2015).

[57] See Simon Bartlett, 'The 'Pressure Cooker' Effect of Intermittent Renewable Power Generation in Power Systems', Public Policy Paper 6/2016, September 2016; and Alex Fattal and Nicky Ison, 'The Electricity Market's Not Doing a Great Job – Here's How to Improve it' *The Conversation*, 2 August 2016

consumers. The *Final Report* notes that the COAG Energy Council '… appear(s) to lack a focus on strategic direction and [is] not providing effective and active policy leadership to the energy sector.'[59]

Significantly, although neither document provides an overarching national energy policy as indicated by COAG, it is nonetheless a modest contribution to this, with the former *Productivity Plan* providing an important link with climate change, and the latter *Final Report* enabling change in existing governance arrangements to be put in place to meet the challenges recognised - at least in respect of this dimension of the Triangle - with potential implications for the other aspects.

2.2 Environment: Climate Change Mitigation (and Development)

There are numerous environmental effects from energy in all its dimensions, which are explored further in the final section of this article. In relation to climate change specifically - and in very brief summary - the main arrangements to deal with this are as follows. The Clean Energy Regulator is tasked with 'administer[ing] legislation to reduce carbon emissions and increase the use of clean energy such as the Renewable Energy Target' (RET).[60] Carbon pricing has been a large part of the response of governments globally.[61] The

http://theconversation.com/the-electricity-markets-not-doing-a-great-job-heres-how-to-improve-it-63260> accessed 17 January 2017.

[58] The Commonwealth and Tasmanian Governments have requested a feasibility study of whether a second electricity interconnector would help to address long-term energy security issues and facilitate investment in renewable energy. See: <http://www.industry.gov.au/Energy/Pages/Tasmanian-Energy-Taskforce.aspx> accessed 25 October 2016.

[59] National Energy Productivity Plan (n 37) 7.

[60] <http://www.cleanenergyregulator.gov.au/> accessed 25 October 2016. For an outline of the role under the Clean Energy Regulator Act 2011 (Cth), see Hepburn (n 12) 253.

RET allows home owners to reduce the purchase cost of their solar panels or solar water heater through the RET scheme.[62] This is achieved via Renewable Energy Certificates (REC), under which the REC Registry, 'supports the Large-scale Renewable Energy Target (LRET) and Small-scale Renewable Energy Scheme (SRES) by facilitating the creation, transfer and surrender of renewable energy certificates (RECs).'[63] The Australian Renewable Energy Agency has the job of 'Making renewable energy solutions more affordable and increasing the supply of renewable energy in Australia.'[64]

Another institution, the Clean Energy Finance Corporation, 'Provides and develops financing solutions across the clean energy sector spanning renewable energy, low-emissions technologies and energy efficiency.'[65] An additional related initiative, the National GreenPower Accreditation Program, is designed to ensure that 'households and businesses commit their GreenPower providers to purchasing the equivalent amount of electricity from accredited renewable energy generators.'[66] Finally, the Climate Change Authority provides

[61] See: Karen Bubna-Litic and Natalie Stoianoff, 'Carbon Pricing and Renewable Energy Innovation: A Comparison of Australian, British and Canadian Carbon Pricing Policies' (2014) 31 EPLJnvironmental and Planning Law Journal 368.

[62] <http://www.cleanenergyregulator.gov.au/RET/Pages/default.aspx> accessed 25 October 2016.

[63] <https://www.rec-registry.gov.au/rec-registry/app/home> accessed 25 October 2016. For discussion of feed in tariffs, see James Prest, 'The Future of Feed-in Tariffs: Capacity Caps, Scheme Closures and Looming Grid Parity' (2012) 1 Renewable Energy Law and Policy Review 25.

[64] <http://arena.gov.au/> accessed 25 October 2016. See Hepburn (n 12) 252. For discussion, see Michael Hopkin, 'Australian Renewable Energy Agency Saved but With Reduced Funding – Experts React' *The Conversation*, 13 September 2016 <http://theconversation.com/australian-renewable-energy-agency-saved-but-with-reduced-funding-experts-react-65334> accessed 13 January 2017.

[65] <http://www.cleanenergyfinancecorp.com.au/> accessed 25 October 2016. See Hepburn (n 12) 253-254.

[66] <http://www.greenpower.gov.au/> accessed 25 October 2016.

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expert advice on Australian Government climate change mitigation initiatives, including the Carbon Farming Initiative, and National Greenhouse and Energy Reporting System.[67]

The 2015 *Energy White Paper* addresses environment issues solely in the context of climate change, noting a commitment to a Direct Action Plan on climate policy.[68] Its centrepiece is the Emissions Reduction Fund (ERF) to help reduce Australia's greenhouse gas emissions by 5 per cent on 2000 emissions by 2020.[69] An ongoing commitment to a RET that delivers 20 per cent of Australia's energy needs by 2020 is part of meeting this target. The ERF is intended to encourage investment in more efficient generation, with new technologies and energy productivity to contribute to meeting longer-term emissions targets. Despite the development of numerous climate change policies from respective governments in recent years however, the market focus has been maintained.

Development is additionally a prime contributor to human induced climate change, although this is not always recognised sufficiently because impacts may be indirect. The 2004 White Paper: *Securing Australia's Energy Future* for example states as one of the 'key points' that 'The main *non-greenhouse* environmental impacts from energy use in Australia are urban air pollution, and the impacts of resource developments' (my emphasis).[70] Burning

[67] <http://climatechangeauthority.gov.au/about-cca> accessed 25 October 2016. See Michael Hopkin, 'Climate Change Authority Suggests Emissions Trading But No New Climate Targets' *The Conversation*, 31 August 2016 http://theconversation.com/climate-change-authority-suggests-emissions-trading-but-no-new-climate-targets-64675> accessed 13 January 2017.

[68] 2015 Energy White Paper (n 42) 2. The 2012 Energy White Paper, while self-described as 'a comprehensive strategic policy framework to guide the further development of Australia's energy sector over the next four years' has a similar focus on economics and markets, with the 'acceleration of clean energy transformation' the main environment focus. See 2012 Energy White Paper (n 41) xvii, xix-xx.

[69] <https://www.environment.gov.au/climate-change/emissions-reduction-fund> accessed 25 October 2016.

[70] 2004 Energy White Paper (n 41) 151.

fossil fuels to produce the materials needed for these 'resource developments' whether ~~they be~~ manufacturing steel from iron ore by burning coal, or ~~in the~~ constructingon ~~of~~ transport infrastructure or buildings by the use of machinery fuelled by petrol and diesel, are unquestionably environmental impacts which are 'greenhouse' in nature, and therefore contribute to global warming.

The 2004 White Paper does however recognise the significant air pollution from transport use,[71] and industrial and residential emissions,[72] ~~and makes~~ referringence to ~~the~~ processes for assessing environmental effects of proposals under the EPBC Act,[73] and commenting: 'Many potential environmental impacts in the energy sector are site-specific from particular resource development projects. These include issues such as marine impacts from offshore oil exploration and processing, effects on biodiversity from mining, and salinity impacts of water use by power stations.'[74] These types of effects are considered in more detail in section 4 in relation to the role that SEA plays - or potentially could play - in the process.

[71] 2004 White Paper (n 41) 154-157. See also Megan Vine, 'Energy Security, Oil and the Transport Sector – is Australia's Policy Adequate, Reliable and Affordable?' (2012) 29 EPLJnvironmental ~~and Planning Law Journal~~ 401.

[72] 2004 White Paper (n 41) 157.

[73] See Lyster and Bradbrook (n 13) chapter 4 and in relation to the EPBC Act specifically, 92-95. See also Hepburn (n 12) 387-398. Alongside ~~the~~ other effects of nuclear actions regulated elsewhere~~considered under other legislation~~, development effects evaluated under the EPBC Act were also recognised by an inquiry a decade ago, see Department of the Environment and Heritage, *Submission to the Australian Government Department of the Environment and Heritage to Standing Committee on Industry and Resources Inquiry Into Developing Australia's Non-Fossil Fuel Energy Industry: Case Study, Strategic Importance of Australia's Uranium Resources* (Commonwealth of Australia, 2006) 4, 9-10

[74] 2004 White Paper (n 41) 157, and see 158-161 for examples.

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2.3 Politics: Energy Security (and National Sovereignty)

Energy security has become of considerable interest in recent years,[75] and responds to Guruswamy's emphasis on 'The Need for Action' emphasised at the start of this article. Whether the 'insidious and pervasive perils' be global warming and climate change'[76] or threats to national sovereignty, this 'need for action' has increased. The aspect least discussed may - alongside climate change - ironically be one of the greatest concerns for Australian energy security, FDI in strategic energy assets.[77] While this article is not intended to be a support to the anti-globalisation agenda apparently sweeping the globe, it is undeniable that concerns about globalisation are increasing, and require enhanced public engagement ~~in the discourse~~ to better contribute to the policy making process.[78]

As considered in the example of nuclear energy in the section below, if foreign companies and governments are allowed to buy into electricity transmission grids (as in

[75] See Andre Månsson, Bengt Johansson and Lars ~~J~~ Nilsson, 'Assessing Energy Security: An Overview of Commonly Used Methodologies' (2014) 73 Energy 1.

[76] (n 4).

[77] For a detailed review, see Vivienne Bath, 'Foreign Investment, the National Interest and National Security - Foreign Direct Investment in Australia and China' (2012) 34(5) Sydney Law Review 6. 'National interest' is for the Minister to decide. As an environmental example Bath (at 13) refers to the National Environment Protection Measures (Implementation) Act 1988 (Cth) (s 5), where 'a matter of national interest' is stated to include international relations or obligations, national security, national defence and a national emergency, ~~as well as matters prescribed by regulation or any other matter agreed by the Commonwealth and the States and Territories~~. Bath gives as an energy example (at 15), a FIRB decision in 2009 where an application by a Chinese company to buy 100 per cent of Oz Minerals Ltd was refused on national security grounds because it included mining operations located within the Woomera Prohibited Area weapons testing range.

[78] Examples are the resistance to trade agreements such as the Trans-Pacific Partnership, Transatlantic Trade and Investment Partnership and the Comprehensive Economic and Trade Agreement.

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Australia), or in nuclear power generation (as in the UK), there may be considerable security risks. Notwithstanding that ownership or control does not protect against threats of cyber attacks, both nonetheless provide additional means of disrupting supply. National security concerns from strategic asset sales to foreign investors and cyber security incidents are outlined below with recent examples. In general however, energy security in Australia has been overwhelmingly focused upon security in connection with a more limited range of areas;[79] in particular, the geopolitics of supply and the international relations that are essential to ensure its maintenance. Energy security was defined by the previous relevant Australian Government department as follows:

> In an Australian context, energy security is defined as the adequate, reliable and competitive supply of energy where:
>
> - adequacy is the provision of sufficient energy to support economic and social activity.
> - reliability is the provision of energy with minimal disruptions to supply.
> - competitiveness is the provision of energy at an affordable price.'[80]

In contrast to the concerns expressed above about ownership by non-Australian corporations (some state-owned as in the case of China), FDI in Australian resources was emphasised as a positive rather than a negative in the 2011 NESA, with the former Minister commenting in the Executive Summary that 'the ability to bring on adequate *investment in future energy infrastructure* in the decades ahead will largely *determine our level of energy security*. In this context, government policy has a role in creating the environment in which the private sector invests, and *attracts global capital to Australia's energy sector*' (my emphasis). Potentially

[79] In relation to the transport sector and oil, see Vine (n 71).

[80] <http://www.industry.gov.au/Energy/EnergySecurityOffice/Pages/default.aspx> accessed 25 October 2016.

allowing strategic asset sales to foreign private companies or state-owned companies – particularly the latter - may however impose unacceptable risks to Australian energy security, and must continue to be resisted where not found to be in the national interest.

On 31 March 2016 the Treasurer announced that sales of critical state-owned infrastructure assets to foreign investors would be formally reviewed by FIRB.[81] As indicated above, this resulted in the Ausgrid sale to overseas investors in New South Wales being blocked.[82] Although not a regulator like FIRB, the Australian Cyber Security Centre (ACSC) concentrates cyber security expertise across the Australian Government, and 'It is the hub for private and public sector collaboration and information-sharing to combat cyber security threats.'[83] To meet the concerns about transparency that cases like Ausgrid (and the hacking into Australian Government computer systems, as seen below) raise, the Engineers Institute of Australia identify the need for a clearer link between national security and traditional perceptions of energy security. They comment:

> National economic security, national security and energy security are highly interrelated and can reinforce and undermine one another. Both national economic security and national security are concerned with protecting sovereignty and independence as well as advancing national interests and values internationally. Economic security focuses on sources of

[81] <https://firb.gov.au/2016/04/critical-asset-sales-now-reviewed/> accessed 25 October 2016.

[82] Paul Karp, 'Scott Morrison Blocks Ausgrid Sale on National Security Grounds' *The Guardian* (London, 11 August 2016) <https://www.theguardian.com/australia-news/2016/aug/11/scott-morrison-blocks-ausgrid-sale-on-national-security-grounds> accessed 13 January 2017.

[83] <https://www.acsc.gov.au/> accessed 27 October 2016.

economic harm whereas national security focuses on foreign powers and increasingly non–state actors.[84]

Given the 2016 FIRB refusal of the Ausgrid sale, the new NESA will likely take a changed perspective and make reference to such concerns. However one of the risks specifically identified in the 2011 NESA is a shock scenario caused by a cyber security attack, which is also likely to receive renewed NESA emphasis. Attacks have occurred on more than one occasion over the last 12 months, notably with respect to the Bureau of Meteorology[85] and the Australian Bureau of Statistics.[86] The potential implications from such events for Australia's energy and resources sector are therefore very real, and raise the prospect of significant damage to critical infrastructure and other assets. The 2011 NESA comments on the relevance of cyber security:

[84] Engineers Institute of Australia, *Energy Security for Australia: Crafting a Comprehensive Energy Security Policy* (Engineers Institute of Australia 2014) 17-18.

[85] Andrew Greene, 'Bureau of Meteorology Hacked by Foreign Spies in Massive Malware Attack, Report Shows" *ABC News*, 112 October 2016 http://www.abc.net.au/news/2016-10-12/bureau-of-meteorology-bom-cyber-hacked-by-foreign-spies/7923770> accessed 13 January 2017. For more detailed analysis, see David Glance, 'Cyber Breach at the Bureau of Meteorology: The Who, What and How, of the Hack' *The Conversation*, 2 December 2015 <http://theconversation.com/cyber-breach-at-the-bureau-of-meteorology-the-who-what-and-how-of-the-hack-51670> accessed 13 January 2017.

[86] Helen Davidson~~David Kalisch~~, 'Census 2016: Australian Bureau of Statistics says Deliberate Attacks were to Blame for Website Crashing~~te Attacked by Overseas Hackers~~', *The Guardian* ~~*ABC News*~~ (London, 9~~10~~ August 2016 https://www.theguardian.com/australia-news/2016/aug/09/the-great-australian-census-fail-of-2016-website-crashes-under-load.; ~~Eliza Borrello, 'Census Attack 'Could be Chinese Hackers Unhappy about Mack Horton v Sun Yang Drugs Saga'' *ABC News*, 10 August 2016.~~

~~The 2011 NESA includes a cyber security case study on the energy sector to build on the previous NESA examination of critical infrastructure resilience.~~ While physical security forms an integral part of all Australian governments' critical infrastructure protection and resilience efforts within the energy sector, the rise of more interactive and technologically connected energy systems creates an emerging area of vulnerability.[87]

2.4 Changes Following the 2016 Federal Election

Energy was previously part of the Department of Innovation, Industry and Science.[88] However the 2016 Federal Election resulted in the establishment of a new portfolio, the Department of Environment and Energy, the website for which contains information on the approach of the Australian Government to climate change, coal, coal seam gas and water. One of the new initiatives announced in March 2016 was the Clean Energy Innovation Fund to support emerging technologies.[89] The Departmental website however remains primarily focused on environmental issues in relation to development activity, whether they concern environmental assessment or areas of the environment impacted by energy and other development, such as the Great Barrier Reef,[90] or concerns over the Great Australian Bight,[91]

[87] 2011 NESA (n 43) ix.

[88] <http://www.industry.gov.au/Energy/Pages/default.aspx> accessed 25 October 2016.

[89] For an overview of climate change initiatives in Australia, see <https://theconversation.com/timeline-australias-climate-policy-59984> accessed 25 October 2016.

[90] Simon Marsden, 'Australian World Heritage in Danger' (2014) 31(2) EPLJ~~nvironmental and Planning Law Journal~~ 192, 200-206.

[91] Andrew Hopkins, 'Drilling in the Bight: Has BP Learnt the Right Lessons From its Gulf of Mexico Blowout?' *The Conversation*, 1~~5~~6 September 2016 <http://theconversation.com/drilling-in-the-bight-has-bp-learnt-the-right-lessons-from-its-gulf-of-mexico-blowout-65471>.

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(which have, however in part led the proponent to withdraw the proposal.[92]) While these issues need to be emphasised for ~~with respect to~~ energy also, there is little evidence yet of a more integrated approach ~~to environment and energy matters~~, and no indication of the concerns of either environmental or energy security and how these are to be dealt with. Commentators have nonetheless responded reasonably well to the link between energy and environment:

> Energy and environment policies have been too separate for too long, which is why the appointment of a single federal environment and energy minister is a welcome move. However, the National Electricity Objective, which forms the basis of energy policy decisions, does not include an environmental component. It emphasises 'price, quality, safety, reliability and security', but not emissions. This means that regulators cannot consider the climate or environmental implications of their decisions.[93]

Australian energy policy ~~however~~ remains dominated by economics, as seen particularly in the 2015 *Energy White Paper*, and the fact that energy development has traditionally been left to the private sector. Both things have ensured that key aspects of energy security and environmental protection have taken a back seat in the discourse, which needs more of a public focus to meet the challenges ahead. An example of the consequence of the privatisation of energy is the lack of an effective sovereign wealth fund to secure the nations' economic future - notwithstanding the contributions made to superannuation as related to the

[92] Author unknown, 'BP Withdraws from Great Australian Bight Drilling' *ABC News*, 11 October 2016 <http://www.abc.net.au/news/2016-10-11/bp-withdraws-from-great-australian-bight-drilling/7921956> accessed 13 January 2017.

[93] Fattal and Ison (n 57).

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defunct mining tax.[94] This is in stark contrast with the scheme in Norway following the start of the North Sea oil boom, which has secured that nations' economic future.[95]

In the Australian context, to address the environment and security aspects of the Triangle, an energy security review ~~has recently~~ commenced following the state-wide power outage in South Australia, focusing upon whether the national electricity market can deliver reliable base load power while meeting Australia's climate change commitments.[96] The next section highlights this by also combining the environment and security foci of the Triangle. It considers the role of nuclear in the development of energy policy in Australia and overseas, with particular reference to the role commissions and inquiries have played in England and South Australia. In the first, concerning Sizewell B in particular, a site specific planning inquiry highlighted a national policy vacuum. In the second, a Royal Commission considered state-wide options for the nuclear fuel cycle despite no clear agreed national position on the

[94] Michelle Grattan, 'Mining Tax Repealed but Compulsory Super Increase Delayed' *The Conversation*, 2 September 2014 <http://theconversation.com/mining-tax-repealed-but-compulsory-super-increase-delayed-31181> accessed 13 January 2017.

[95] Paul Cleary, 'Lessons in Avoiding the Resources Curse', *The Weekend Australian* (Sydney, 27-28 August 2016) <http://www.theaustralian.com.au/news/inquirer/norway-offers-lesson-in-avoiding-the-resources-curse/news-story/adfb451a49890d0e0437045acad7c426>; Another good example of a strategic energy related decision of long-standing significance is the Delta Project in the Netherlands in response to the flood in 1953 in which over 2000 people died. Successive governments have financially supported ongoing works to ensure the security of the Netherlands from another such event. See <http://www.deltawerken.com/Deltaworks/23.html> accessed 25 October 2016.

[96] Katharine Murphy, 'Chief Scientist to Lead Review into Australia's Energy Security' *The Guardian* (London, 7 October 2016) <https://www.theguardian.com/australia-news/2016/oct/07/chief-scientist-to-lead-review-into-australias-energy-security>.

issue. Not surprisingly, it has therefore been argued that Australia's energy sector is 'in critical need of reform.'[97]

3. THE POLICY VACUUM - NUCLEAR ENERGY EXAMPLES FROM ENGLAND AND SOUTH AUSTRALIA

The nuclear fuel cycle typically involves four phases: exploration, extraction and milling; further processing and manufacture; electricity generation; and management, storage and disposal of nuclear and radioactive waste.[98] Australian experience with nuclear energy,[99] (particularly in respect of military issues), has been shaped by a long history of opposition following British nuclear tests in South Australia (considered by a 1985 Royal Commission),[100] French nuclear tests in the South Pacific (reviewed by the ICJ),[101] and

[97] Tony Wood, 'Australia's Energy Sector is in Critical Need of Reform' *The Conversation*, 13 July 2016 <http://theconversation.com/australias-energy-sector-is-in-critical-need-of-reform-61802> accessed 13 January 2017.

[98] See NFCRC, Report (n 5) Chapters 2-5. See generally, EE Michaelides, *Alternative Energy Sources* (Springer-Verlag, 2012), Chapter 4, 'Introduction to Nuclear Energy' 99.

[99] See generally: <http://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/Browse_by_Topic/ClimateChangeold/responses/mitigation/emissions/nuclear> accessed 25 October 2016.

[100] JR McClelland, Jill Fitch and William Jonas, *Report of the Royal Commission into British Nuclear Tests in Australia* (Commonwealth of Australia 1985). See also SBS Online, 'Backgrounder: Why was Maralinga Used for Secret Nuclear Tests?' 5 November 2014.

[101] Request for an Examination of the Situation in Accordance with Paragraph 63 of the Court's Judgment of 20 December 1974 in the *Nuclear Tests* (New Zealand *v.* France) Case; and Nuclear Tests (Australia *v.* France), Judgment.

Australia's longstanding opposition to nuclear weapons.[102] The Australian Government has also recently decided against the use of nuclear as a fuel source for the new generation of submarines to be built in South Australia following the conclusion of contractual negotiations with France, although commentators believe there is potential for this - and indeed Australia's opposition to nuclear weapons - to change in the future.[103]

Uranium mining does however occur in Australia, with a history that can be traced to the 1930s to extract radium for medical uses, and in the 1950s and 1960s for military use by the UK and USA.[104] Since the 1970s, uranium has been extracted for energy use in electricity generation overseas, provided there is a bilateral nuclear cooperation agreement between the state purchasing the ore and Australia to use it for peaceful purposes.[105] Small quantities are also used to fuel research reactors. Uranuim comes primarily from Ranger in the Northern Territory, and Olympic Dam and Beverley in South Australia. The Ranger Uranium Environmental Inquiry which examined the environmental impact of the development of

[102] Australia has a potentially conflicted stand in relation to nuclear weapons based on national security issues however, see Tim Wright, 'Australia Faces a Stark Choice in the Growing Movement for a Global Nuclear Weapons Treaty' *The Interpreter*, 17 June 2016.

[103] Tory Shepherd, 'Experts Say France's DCNS was Chosen Because They Already Build Nuclear-Propelled Submarines' *The Advertiser* (Adelaide, 10 June 2016) <http://www.adelaidenow.com.au/news/south-australia/experts-say-frances-dcns-was-chosen-because-they-already-build-nuclearpropelled-submarines/news-story/dae1b2c55bceb9ef3bdf61e64380337e?from=public_rss> accessed 13 January 2017.

[104] For discussion, see Standing Committee on Industry and Resources, *Inquiry into Developing Australia's Non-Fossil Fuel Energy Industry*, Submission by the Australian Government Department of the Environment and Heritage, Case Study – Strategic Importance of Australia's Uranium Resources (Commonwealth of Australia 2006) 1-2; see also Department of the Environment and Heritage (n 73).

[105] The bilateral agreement with India has caused concerns in this respect given India's non-membership of the Non-Proliferation and Comprehensive Test Ban Treaties. This is addressed in the NFCRC Report (n 5) 146.

Northern Territory uranium deposits, reported in 1977.[106] It found that if uranium mining were properly regulated and controlled, the hazards of mining were not sufficient to prevent the development of mines. With the permission of the local Aboriginal people, mining therefore began.[107]

In 2005, the Federal Minister for Industry, Tourism and Resources established an inquiry into the strategic importance of Australia's uranium resources.[108] In the same year the Minister announced that the Australian Government had taken control over the Northern Territory's uranium deposits, which the Australian Constitution allows.[109] The only current nuclear facility in Australia is the Lucas Heights research nuclear reactor in New South Wales, which is tightly regulated.[110] Increased use of this facility for nuclear medicine has, however, led to the need to locate a suitable disposal facility for the low to intermediate level waste produced from this use.[111]

[106] Commonwealth of Australia, *Ranger Uranium Environmental Inquiry* (Commonwealth Parliamentary Papers 1977) volume 6 paper 117.

[107] See generally Benjamin Richardson and Ben Boer, 'Federal Public Inquiries and Environmental Assessment' (1995) 2(2) Australian Journal of Environmental Management 90

[108] The Parliament of the Commonwealth of Australia, *Australia's Uranium — Greenhouse Friendly Fuel for an Energy Hungry World: A Case study into the Strategic Importance of Australia's Uranium Resources for the Inquiry into Developing Australia's Non-Fossil Fuel Energy Industry* (House of Representatives Standing Committee on Industry and Resources (Commonwealth of Australia 2006).

[109] Author unknown, 'Government Takes over NT's Uranium' *The Age ~~Sydney Morning Herald~~*, (Melbourne, 4 August 2005) <http://www.theage.com.au/news/National/Govt-seizes-control-of-NT-uranium-mines/2005/08/04/1123125836681.html> accessed 13 January 2017.

[110] <http://www.ansto.gov.au/AboutANSTO/MediaCentre/News/ACS048969> accessed 25 October 2016.

[111] <http://www.radioactivewaste.gov.au/> accessed 25 October 2016.

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Significantly however, the construction or operation of nuclear energy facilities in Australia is not permissible under current legislation.[112] Other than nuclear weapons and in relation to the use of nuclear as a power source in the military, the Australian Liberal Party has a flexible attitude to the nuclear fuel cycle, however unclear policy positions are.[113] The Australian Labor Party is however opposed to a high level nuclear waste facility being constructed in South Australia,[114] as are the Australian Greens.[115] With this in mind, this section considers the effect of unclear or absent national policy settings and inter-jurisdictional conflict. The focus is upon both the environment and security dimensions of the Triangle, raising the prospect of improved assessment processes for both.

3.1 England's Experience of Inquiry and Tribunal Review for Generation and Reprocessing

In England it is notable that the absence of a transparent national energy policy has caused major difficulties in the past, whatever the Government Response[116] to the findings of the

[112] See for example EPBC Act 1999 (Cth), s 21(1); Australian Radiation Protection and Nuclear Safety Act 1998 (Cth), s 10; and Atomic Energy Act 1953 (Cth).

[113] Josh Frydenberg, 'South Australian Nuclear Fuel Cycle Royal Commission Report Welcomed' *Press Release*, 9 May 2016.

[114] Leah Maclennan, 'Labor's National Policy Against Nuclear Could Create Issues for SA's Waste Dump Proposal' *ABC News online*, 234 June 2016 http://www.abc.net.au/news/2016-06-24/alp-policy-could-create-issues-for-sa-nuclear-vision/7539166> accessed 13 January 2017.

[115] <http://greens.org.au/policies/nuclear-uranium> accessed 26 October 2016.

[116] *Nuclear Power and the Environment*, The Governments Response to the Sixth Report of the Royal Commission on Environmental Pollution (Cm 6620, 1977). The implications for energy policy are outlined at 5-6. No clear policy emerges, with contrasting comments: 'The Government accept the Commission's view that the development of alternative energy sources should be pursued with greater vigour' (para 10); in relation to

'Flowers Report,'[117] or the views of former PM Margaret Thatcher thereafter.[118] The consequent policy vacuum has been seen through public inquiries established to consider site specific matters turning attention to underlying policy. This has resulted in considerable debate as to the best approach to be taken, particularly to the environmental issues raised in those inquiries. The notion of 'The Big Public Inquiry' came about to highlight the inadequacies of the approach.

O'Riordan, Kemp and Purdue argue in their research into the Sizewell B nuclear power development in Suffolk that: 'What characterises the big public inquiry and makes it controversial is the intractable connection between the proposal under consideration and national policies which are controversial and the subject of party political dissent.'[119] Furthermore, in also making reference to the Windscale development in Cumbria, Hutton comments: 'These are inquiries into the siting of large developments often involving complex technology, very often posing potential major hazards, often in areas in which there is no clear government policy and often where the state is both developer and decision-maker.'[120]

non-nuclear fossil fuel options, that 'The Government will continue to study this alternative strategy' (para 11); and 'we … need to assess and have available a wide range of energy options' (para 11).

[117] Royal Commission on Environmental Pollution *Nuclear Power and the Environment*, Sixth Report (Cm 6618, 1976), Chairman Sir Brian Flowers ('Flowers Report').

[118] See Stephen Tromans, 'Subsidies for Nuclear Power in the UK: Putting the Debate in Context', where the clear position of Thatcher: 'a strong proponent of nuclear energy, promising early in her premiership in 1979 to build a new nuclear station every year for ten years' is discussed (at 3). See < http://www.39essex.com/subsidies-for-nuclear-power-in-the-uk-putting-the-debate-in-context/> accessed 28 October 2016.

[119] T O'Riordan, R Kemp and M Purdue, *Sizewell B: An Anatomy of an Inquiry* (Macmillan 1988) 51.

[120] N Hutton, *Lay Participation in a Public Local Inquiry* (Gower 1986) 10.

Since then, environmental concerns have been raised in other fora in relation to a nuclear reprocessing plant in Cumbria, MOX Plant; notably these have included international courts and tribunals where the conflicting standpoints of the UK and Irish Governments have been presented and dealt with.[121] More recently, both environmental and security concerns have been raised in relation to another nuclear power development: Hinkley Point C in Somerset. The environmental concerns were similar to those of MOX Plant, impacts upon the Irish Sea and, in the case of Hinkley, across Europe from transmission of toxic material by wind; both identify clear failures to consult adequately in relation thereto.[122] As to the security issues, while security of supply matters have motivated the UK to grant permission for the plant,[123] the fact that it is being funded jointly by Électricité de France and particularly

[121] Paul James Cardwell and Duncan French, 'Who Decides? The ECJ's Judgment on Jurisdiction in the *MOX Plant* Dispute' (2007) 19(1) JEL~~ournal of Environmental Law~~ 121; see also Peter D Cameron, 'The Revival of Nuclear Power: An Analysis of the Legal Implications' (2007) 19(1) JEL~~ournal of Environmental Law~~ 71.

[122] Terry Macalister, 'Hinkley Point: UN says UK Failed to Consult over Risks' *The Guardian* (London, ~~–~~8 May 2016) https://www.theguardian.com/uk-news/2016/may/08/hinkley-point-united-nations-says-uk-failed-to-consult-over-risks> accessed 13 January 2017. As with the MOX Plant case above, in relation to Hinkley the UN body referred to was the Compliance Committee of the Espoo Convention.

[123] Rowena Mason, 'Hinkley Point: Ministers Sign Go-ahead for Nuclear Power Plant' *The Guardian* (London, ~~2930~~ September 2016) <https://www.theguardian.com/uk-news/2016/sep/29/hinkley-point-ministers-sign-go-ahead-for-nuclear-power-plant> accessed 13 January 2017. Additional concerns relate to the involvement of another Chinese company with military ties, which is keen to expand Chinese involvement. See Adam Vaughan, 'Chinese Firm with Military Ties Invited to Bid for Role in UK's Nuclear Future' *The Guardian* (London, ~~–~~8 August 2016) https://www.theguardian.com/environment/2016/aug/07/chinese-firm-with-military-ties-invited-to-bid-for-role-in-uks-nuclear-future> accessed 13 January 2017.

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its partner China General Nuclear - with a one third stake in the project - was raised by many as a reason not to permit the project.[124]

3.2 South Australia's Experience of Inquiries for Nuclear Tests and Waste Disposal

As noted in the Introduction, South Australia has attracted significant recent attention in the Australian media following the July and September 2016 cost blowout and breakdown in energy transmission ~~across the state~~.[125] Around the same time, South Australia's NFCRC delivered its findings into the future that nuclear can play. The NFCRC was established in March 2015 to inquire into and report on the four areas of activity comprising the nuclear fuel cycle.[126] The first of these, exploration, extraction and milling, has already been carried out in the state for some time as noted above. The second, third and fourth: processing and manufacture, electricity generation and management, and storage and disposal, have not. The NFCRC also examined issues of social and community consent, radiation risks, non-proliferation and security, and transport and regulation in recognition of the significance of each of these areas.

The Report was handed down in May 2016, with particular recommendations in connection with the fourth component of the fuel cycle, storage and disposal.[127] Following

[124] Heather Stewart, Rowena Mason and Graham Ruddick, 'Theresa May Accused of Avoiding Security and Cost Issues of Hinkley' *The Guardian* (London, 15 September 2016) <https://www.theguardian.com/uk-news/2016/sep/15/theresa-may-accused-backing-down-hinkley-point-c-deal> accessed 13 January 2017.

[125] For discussion, see Tony Wood and David Blowers, *Keeping the Lights On: Lessons from South Australia's Power Shock* (Grattan Institute 2016). ~~For media commentary, see:~~

[126] <http://nuclearrc.sa.gov.au/> accessed 25 October 2016.

[127] As a clear link between Hinkley Point C and the potential for the waste produced to find its way to South Australia, see Jamie Doward, 'Secret Government Papers Show Taxpayers will Pick up Costs of Hinkley

the conclusion of the NFCRC the Government of South Australia commenced an extensive public campaign to inform and collect views from the community at large with respect to the findings and recommendations.[128] With regard to the first, it recommended simplification of the mining approvals processes, together with improved environmental protection in respect of decommissioning and remediation work.[129] Concerning the second, the removal of prohibitions on licensing of further processing was recommended 'to enable commercial development of multilateral facilities'.[130]

In connection with the third, it found that 'commercial electricity generation from nuclear fuels is not viable in South Australia under current market rules',[131] but - significantly for the purpose of this article - 'the Commission has recommended the development of a *comprehensive national energy policy*, *which enables all technologies, including nuclear*, to contribute to a reliable, low-carbon electricity network at the lowest possible system cost' (my emphasis).[132] It does not in itself therefore deny the potential for generation of electricity from nuclear power, but urges consideration to given to this in future national energy policy development. This would be an important step to closing the policy gap. Sheridan, writing in *The Australian* in early 2016 commented:

Nuclear Waste Storage' *The Guardian* (London, 30 October 2016) <https://www.theguardian.com/uk-news/2016/oct/30/hinkley-point-nuclear-waste-storage-costs> accessed 13 January 2017.

[128] <http://nuclear.yoursay.sa.gov.au/> accessed 25 October 2016.

[129] NFCRC Report (n 5) 169.

[130] NFCRC Report (n 5) 169. Note that further processing activity is focused upon the development of a fuel fabrication facility in conjunction with an existing supplier; it does not envisage reprocessing of nuclear fuel, which is considered inherently risky activity. See NFCRC Report (n 5) 36-37.

[131] NFCRC Report (n 5) 170.

[132] NFCRC Report (n 5) 170.

> The conjunction of a motivated, pragmatic Labor Premier, a federal government inclined to push ahead, an activist and capable cabinet minister, and the unique economic and geo-strategic circumstances Australia and South Australia find themselves in, just might be enough to overcome the paralysis that routinely afflicts this policy area.[133]

4. STRATEGIC ENVIRONMENTAL ASSESSMENT OF ENERGY POLICY

SEA has an important role in delivering better energy law and policy and balancing the Triangle. SEA, or 'strategic assessment' as it is known in Australia, is a process used to analyse the environmental impacts of policies, plans and programs, in order to expedite the evaluation of the environmental impacts of projects, the process for which is commonly known as environmental impact assessment ('EIA').[134] Alternatives and cumulative effects are more appropriately considered in SEA than EIA, and other benefits include avoidance of duplication, and improved governance.[135]

The experiences of both England and South Australia ~~in the section above~~ highlight not only the need for a comprehensive national energy policy, but also for improved assessments of significant environmental effects of proposals, and~~together with~~ the national security implications of FDI in strategic sovereign assets. Given the previous discussion of

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[133] Greg Sheridan, 'Nuclear Energy a Great Economic Opportunity for Australia' *The Australian* (Sydney, 30 January 2016) <http://www.theaustralian.com.au/opinion/columnists/greg-sheridan/nuclear-energy-a-great-economic-opportunity-for-australia/news-story/e36d9cf0a1e7eaa64fb6a5198093e40c> accessed 13 January 2017.

[134] See Thomas ~~B~~ Fischer, *Theory and Practice of Strategic Environmental Assessment* (Earthscan 2007); Simon Marsden, *Strategic Environmental Assessment in International and European Law: A Practitioners' Guide* (Earthscan 2008).

[135] Monica Fundingsland Tetlow and Marie Hanusch, 'Strategic Environmental Assessment: The State of the Art' (2012) 30 Impact Assessment and Project Appraisal 15.

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the FDI (especially in the NESA and FIRB processes) and the environmental focus of this article, this final section will focus on environmental protection, particularly the role that SEA can potentially play in evaluating the environmental effects of national energy policy. As noted in the Introduction - and to re-emphasise the Triangle - the absence of policy environmental assessment contrasts with the economics of energy policy, which is usually evaluated further to CBA. Hepburn contrasts these approaches as follows:

> There are two fundamentally different policy paradigms around which regulatory frameworks for environmental assessment have largely been structured. The first can be broadly described as the 'cost-benefit approach' to environmental assessment, whose objective is to optimise social welfare… ~~by 'predicting, weighing and aggregating all relevant consequences of policy proposals in order to identify choices that represent welfare maximising uses of public resources'.~~ The second is a more pragmatic and risk-averse approach known as the 'precautionary approach'. The precautionary approach to environmental regulation accords with that fundamental principle of ecologically sustainable development, the 'precautionary principle', and is fundamentally grounded in minimising the risk of environmental damage.[136]

The global regulatory approach to SEA clearly favours the latter, with the application of SEA to energy considered ~~in the international peer reviewed literature~~ in various jurisdictional contexts.[137] While SEA has been applied to energy proposals in Australia, it has been informed by ~~particular~~ perspectives not focused upon~~which contrast with an~~ environmental protection~~ informed approach~~. For example SEA has been applied to offshore oil and gas

[136] (n 12) 357~~, citing D Kysar, 'It Might Have Been: Risk, Precaution and Opportunity Costs' (2007) 22 Journal of Land Use and Environmental Law 1, 3.~~

[137] Stephen Jay, 'Strategic Environmental Assessment for Energy Production' (2010) 38 Energy Policy 3489–3497.

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exploration and development, with a~~but the focus is upon~~ deregulation rather than ESD focus.[138] There are also currently two SEAs being undertaken in relation to iron ore development in Western Australia, but these are also intended to reduce the regulatory burden for the proponents rather than prioritise environmental protection.[139] Despite ~~While there has been~~ encouragement for greater uptake of SEA nationwide, including in the 2015 *Energy White Paper*, the focus is again upon streamlining regulation.[140] The environmental effects of energy are reviewed below, before SEA in Australia is critiqued alongside the global approaches.

4.1 Significant Environmental Effects of Energy

Michaelides refers to global warming, acid rain, lead contamination and nuclear waste as key examples of the environmental effects of energy. He comments tellingly in the advocacy of this article for improved governance that 'Environmental threats are neutralized by public policy, either national policy or concerted international efforts and protocols that are ratified by several countries.'[141] The example of acid rain is perhaps one of the most successful

[138] Marsden 2016 (n 25).

[139] <https://www.environment.gov.au/protection/assessments/strategic> accessed 26 October 2016.

[140] 2015 Energy White Paper (n 42) 38, Attachment 1, 'Australian Government COAG Energy Council priorities for 2015, para 11, urges governments to 'Tackle unnecessary approvals processes by identifying further opportunities to streamline or remove unnecessary regulation that impedes mineral and energy resources development, including greater use of strategic / regional assessments…'

[141] See generally E~~I~~ Michaelides, *Alternative Energy Sources* (Springer-Verlag 2012) in particular Chapter 2, 'Environmental and Ecological Effects of Energy Production and Consumption' 33.

examples of effective international environmental law.[142] Applying SEA to energy policy is a means of addressing environmental effects in domestic and international contexts, with numerous examples worldwide.[143] International and European law and policy mandates its use in numerous states, and applies specifically to energy.[144] It is therefore an important tool to help 'neutralize' the 'environmental threats' from strategic proposals.

The environmental aspects of energy cover a huge range of areas related to the types of the resource - fossil fuels or renewables - and the phase under consideration - exploration, extraction, or use. Each of these three phases will also need energy to be used in the construction of any fixed or moveable assets - whether offshore or onshore structures (above or below ground) for oil and gas development for example. Power stations for electricity generation - whether coal, gas or nuclear - require energy in their construction; the construction of turbines for dams and windmills, and photovoltaic arrays for solar, are also required for renewables.

[142] Adam Byrne, 'The 1979 Convention on Long-Range Transboundary Air Pollution: Assessing its Effectiveness as a Multilateral Environmental Regime after 35 Years' (2015) Transnational Environmental Law 1-31.

[143] See Rob Verheem, 'SEA of the Netherlands National Waste Management Plan 2002', in Barry Dalal-Clayton and Barry Sadler (eds), *Strategic Environmental Assessment: A Sourcebook and Reference Guide to International Experience* (Earthscan 2005) 118; Theo Hacking and Peter Guthrie, 'Assessment for Sustainability Assessment: Theoretical Framework and Application to the Mining Sector', in Barry Sadler, Ralf Aschemann, Jiri Dusik, Thomas ~~B~~ Fischer and Rob Verheem (eds) *Handbook of Strategic Environmental Assessment* (Earthscan 2011) 566; and SS Elvin and GS Fraser, 'Advancing a National Strategic Environmental Assessment for the Canadian Offshore Oil and Gas Industry with Special Emphasis on Cumulative Effects' (2012) 14(3) JEAPM~~ournal of Environmental Assessment Policy and Management~~ 1250015.

[144] Gregory Jones and Eloise Scotford (eds), *The Strategic Environmental Assessment Directive – A Plan for Success?* (Hart 2016); and Marsden, (2008), (n 134)

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Similarly, the need for steel, concrete and related construction materials, manufactured from iron ore, sand and other resources also results in additional exploration, extraction and use, and consequent potential for significant environmental effects. Such effects include loss, depletion or harm of and to land, soil, biodiversity and water. Pollution of marine and coastal areas from offshore oil and gas production are notable risks; pollution to and reduction of environmental flows inputting rivers and ground-waters are also commonplace in connection with hydroelectricity and the extraction of non-conventional gas resources, with the latter also implicated in increasing concerns about induced seismicity.[145] Consequently the challenges of reconciling energy and environment in the new Australian Government ministry remain and will only increase, for example in connection with wind energy, which in Australia as in other states has divided public opinion.[146]

4.2 SEA in Australia Compared with Global Approaches

SEA is a means of evaluating significant environmental effects from policies, plans and programs which set the context for individual projects and their assessment. With numerous benefits, including the reduction of cumulative effects, broader opportunities for public participation and avoidance of detailed project level EIA, it has been applied to various

[145] See Lyster (n 40) in connection with unconventional gas and climate change; also Jonathan Verschuuren, 'Hydraulic Fracturing and Environmental Concerns: The Role of Local Government' (2015) 27 (3) JEL~~ournal of Environmental Law~~ 431.

[146] Graham Lloyd, 'Josh Frydenberg's New~~New~~ Power Struggle Written in the Wind' *The Weekend Australian*, (Sydney, 23-24 July 2016) < http://www.theaustralian.com.au/news/inquirer/josh-frydenbergs-new-power-struggle-written-on-the-wind/news-story/4b274b6062edf3222eba4a8fc91abad9> accessed 13 January 2017.~~; and Rebecca Puddy and Casey Treloar, 'Policy Wobbles Putting the Wind up Investors' *The Weekend Australian*, 20-21 August 2016.~~

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sectors including energy.[147] Procedure for environmental assessment usually begins by screening types of proposal for evaluation, which typically accord with these sectors. SEA is hence required for plans and programmes which are prepared for energy, mining, transport, regional development and waste management where those plans and programmes set the framework for future development consent for projects. This is specified in an annex of the UNECE SEA Protocol,[148] and the EU SEA Directive.[149] As to policies - and indeed legislation – the SEA Protocol encourages Parties to consider and integrate environmental concerns in their preparation.[150]

[147] United Nations Economic Commission for Europe, *Protocol on Strategic Environmental Assessment: Facts and Benefits* (UNECE 2016). Note this is open to ratification by all UN member states, including potentially Australia. See UNECE, 'The UNECE Protocol on Strategic Environmental Assessment now a Global Instrument' <http://www.unece.org/?id=35708> accessed 31 October 2016.

[148] SEA Protocol, Article 4.2. Annex I is dominated by energy related projects, and lists crude oil refineries; thermal power stations; installations for enrichment of nuclear fuels, reprocessing, or storage, disposal and reprocessing of radioactive waste; oil and gas pipelines; large dams and reservoirs; major mining, on-site extraction and processing of metal ores or coal; offshore hydrocarbon production; and major storage facilities for petroleum, petrochemical and chemical products. See Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context (adoption 21 May 2003, entered into force 11 July 2010) 2685 UNTS 140 ('SEA Protocol'); for a summary, Nick Bonvoisin, 'The SEA Protocol' in Barry Sadler, Ralf Aschemann, Jiri Dusik, Thomas ~~B~~ Fischer and Rob Verheem (eds) *Handbook of Strategic Environmental Assessment* (Earthscan 2011) 165.

[149] The SEA Directive, Article 3.2(a) contains similar provisions to the SEA Protocol. For differences, see Bonvoisin (n 148) 171-172. Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment, [2001] OJ L197/30 ('SEA Directive').

[150] SEA Protocol, Article 13. For examples of application, see UNECE (n 147) 12, and 18, which concerned SEA of the Slovak Energy Policy 2000.

The different approach to SEA in Australia is ~~ in~~ partly related to the dynamics of the federation, with~~h ich mean that~~ constitutional competence for environmental and energy matters ~~is~~ largely a matter for the states. Where the Australian Constitution limits this - for example ~~in relation to~~ multilateral environmental agreements ~~which~~ falling within the external affairs legislative power of the Australian Government - then the power to legislate is ~~one~~ for the national government. This forms the framework for the EPBC Act and its provisions concerning 'matters of national environmental significance', and also those for bilateral agreements between the Australian and state governments,[151] some which enable SEA to be conducted in accordance with that agreement.[152]

Unlike the EU SEA Directive and UNECE SEA Protocol, where energy proposals are specified as setting the context for a development consent needed for project level EIA,[153] there is no list approach to screening proposals likely to result in significant environmental effects in Australia. Instead the purpose is to reach agreement between proponents and the Australian Government to conduct SEA and - unlike the EU and UNECE regulation (which are limited to the public sector) - agreements can be with private as well as public proponents;[154] the objective is to expedite environmental approvals, rather than protect the environment in itself, which is the clear purpose of both the SEA Protocol and SEA Directive. The Australian Government also does not view the process of tiering - whereby policies, plans and programmes evaluated under SEA avoid duplication with EIA as the

[151] Hepburn (n 12) 362-365.

[152] Simon Marsden, 'Protecting Heritage on Australia's Coasts: A Role for Strategic Environmental Assessment?' (2013) 15(3) JEAPM~~ournal of Environmental Assessment Policy and Management~~ 1350014-4-1350014-5.

[153] For discussion, see Jones and Scotford (n 144) and Marsden (n 134).

[154] Marsden (n 152).

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objective[155] - but rather that SEA is a means to avoid EIA entirely. This is not the rationale for SEA as it is understood in most parts of the world either today or when it, and EIA, were first introduced in the US National Environmental Policy Act 1969 (NEPA).[156]

While ~~there is room for considerable criticism of~~ the Australian approach can be criticised, particularly ~~in relation to~~ the dominance of the deregulation agenda, there has been some success. In relation to the SEA for the Browse Basin for example, an international study commented favourably on the assessments undertaken in comparison with those in Europe and elsewhere. In a review of eleven SEA reports related to both the offshore and onshore oil and gas sector, the Australian SEA for the Browse Basin 'shows more articulated and integrated goals' in comparison with the United Kingdom SEA for offshore oil and gas storage, which leans 'towards a predominantly economic and/or socio-economic justification for the assessment.'[157] This and other experiences are analysed further below.

4.3 Australian Experience of SEA in the Energy Sector

[155] For a more detailed exposé, see Jos Arts, Paul Tomlinson and Henk Voogd, 'Planning in Tiers? Tiering as a Way of Linking SEA and EIA' in Barry Sadler, Ralf Aschemann, Jiri Dusik, Thomas ~~B~~ Fischer and Rob Verheem (eds) *Handbook of Strategic Environmental Assessment* (Earthscan 2011) 415.

[156] Ray Clark, Lisa Mahoney and Kathy Pierce, 'SEA in the US', in Barry Sadler, Ralf Aschemann, Jiri Dusik, Thomas ~~B~~ Fischer and Rob Verheem (eds) *Handbook of Strategic Environmental Assessment* (Earthscan 2011) 74. Note that NEPA has in recent years – as in other jurisdictions – been affected by a trend away from environmental analysis of proposals. Clark et al refer to the changes made by the Energy Policy Act 2005 (at 79), which excludes numerous activities from environmental review.

[157] L Lamorgese, D Geneletti and M~~R~~ Partidário, 'Reviewing Strategic Environmental Assessment Practice in the Oil and Gas Sector' (2015) 17(2) ~~JEAPMournal of Environmental Assessment Policy and Management~~ 1550017-1, 550017-15.

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As indicated, Australia has experience of energy SEAs both offshore and onshore, with eight SEAs either completed or in progress. Offshore SEAs for the Browse Basin,[158] Great Barrier Reef[159] and Commonwealth waters[160] are complete, and SEAs for South Australian waters and the Pilbara are in progress. Almost all have been carried out under the EPBC Act.[161] Regional approaches to SEA have been highlighted as a means to address and minimise negative cumulative effects, with a focus on ESD.[162] In Australia, these approaches were a focus of the regulatory reform efforts for SEA, with Recommendation 6(1) of the 2009 Hawke Report suggesting 'that the Australian Government: (a) expand the role of strategic assessments and bioregional plans so that they are used more often.'[163] However ESD has become less of a focus given regulatory reform priorities.

In relation to the SEA for the Browse Basin, the proposal was a plan for a liquefied natural gas (LNG) hub precinct adjacent to James Price Point on the Kimberley coast of Western Australia. The SEA was intended to prevent piecemeal development and avoid

[158] Marsden (n 152) 1350014-1.

[159] The first of these was the SEA for defence activities in the Great Barrier Reef World Heritage Area, and the second – and the most significant - was for the Reef World Heritage Area specifically, see John Ashe and Simon Marsden, 'SEA in Australia' in Barry Sadler, Ralf Aschemann, Jiri Dusik, Thomas ~~B~~ Fischer and Rob Verheem (eds) *Handbook of Strategic Environmental Assessment* (Earthscan 2011) 21, 29; and Marsden (2014) (n 90).

[160] Ashe and Marsden (n 159) 26; and Marsden (2016) (n 25).

[161] <https://www.environment.gov.au/protection/assessments/strategic> accessed 26 October 2016.

[162] Jill Baker and Friederike Kirstein, 'Regional Sectoral Assessment and Extractive Industries', in Barry Sadler, Ralf Aschemann, Jiri Dusik, Thomas ~~B~~ Fischer and Rob Verheem (eds) *Handbook of Strategic Environmental Assessment* (Earthscan 2011) 208.

[163] Alan Hawke, *Report of the Independent Review of the Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth of Australia, 2009) ('Hawke Report'). See Simon Marsden, 'A Critique of Australian Environmental Law Reform for Strategic Environmental Assessment (2013) 32(2) University of Tasmania Law Review 277.

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cumulative impacts.[164] Four shortlisted sites were released for public comment, and an independent analysis of feasible alternative locations for the precinct outside the Kimberley was also carried out, including offshore locations. Despite potential for offshore floating facilities and development in the Pilbara, James Price Point was selected for more detailed analysis. Following consideration by the Western Australian Environmental Protection Authority, the state Environment Minister formally approved the proposal in 2012. It was clear that it was determined in a pro-development context given the determination of the state government to extract and process LNG, and because of the opportunities of the legislation to avoid more detailed project assessment. However the proponent later withdrew the proposal citing changed financial circumstances.

In relation to the SEAs for the Great Barrier Reef, particularly the most recent, greater sensitivities to energy development were needed because of the inscription of the Reef on the World Heritage Convention.[165] The first SEA was focused upon defence activities in the Reef World Heritage Area (WHA); it was intended to facilitate sustainable military activity and was finalised in 2006.[166] The second followed the conclusion of the Reactive Monitoring Mission by the World Heritage Committee in 2012, which was particularly concerned about coastal development impacting the Reef WHA; thereafter the Australian and Queensland Governments agreed to undertake a comprehensive SEA of the Reef and adjacent coastal zone.[167] This included associated port development around Gladstone harbour from where the

[164] Marsden (n 152) 1350014-7-1350014-9, 1350014-12- 1350014-14; and Marsden (2016) (n 25) 26-28.

[165] Convention Concerning the Protection of the World Cultural and Natural Heritage (adopted 16 November 1972, entered into force 17 December 1975) 11 ILM 1358. For background, see Marsden (2014) (n 90), and Marsden (n 152) 1350014-10- 1350014-12.

[166] Ashe and Marsden (n 159) 29.

[167] Marsden (n 152) 1350014-10- 1350014-12.

coal exported from the inland Galilee Basin was to be transported. A proposal for the expansion of coal mining in the Galilee Basin has ~~at the time of writing~~ an uncertain future, again in part because of changed financial circumstances of the proponent.[168]

The offshore SEAs for Commonwealth waters were initiated in 2001 and 2015. The first was to consider environmental effects of exploration activities under the responsibility of the Australian government. Including the choice and availability of new areas for exploration and associated licensing, as well as exploration and evaluation of effects, the release of the report led to guidance on the relationship between seismic activity and cetaceans.[169] The second was to examine the effects of the environmental management permitting process regulated by the Australian Government, in particular the impacts of this process upon the protected matters of the EPBC Act - such as the treaties which have been incorporated into Australian domestic law.[170]

Concerning the onshore SEAs in the Pilbara, on 18 September 2012 both BHP Billiton Iron Ore Pty Ltd and Hamersley Iron Pty Ltd (Rio Tinto) respectively signed Agreements with the Australian Government for SEAs. The first was of the impacts of developing future iron ore mines and associated infrastructure on matters of national environmental significance (BHP); the second was to assess the environmental impacts of the company's plan for mining and transporting iron ore, and developing and maintaining related infrastructure (Rio Tinto). BHP invited public comment on the Draft Impact Assessment

[168] Simon Marsden, 'The World Heritage Convention: Compliance, Public Participation and the Rights of Indigenous People' (2015) 32(6) EPLJ~~nvironmental and Planning Law Journal~~ 534, 536-537.

[169] Marsden (2016) (n 25) 26.

[170] Marsden (2016) (n 25) 28-29.

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Report and Draft Program from 21 March to 2 May 2016.[171] Rio Tinto has also prepared a draft plan and impact assessment report, subsequently released for public comment.[172] Outcomes from both are pending at the time of writing.

5. CONCLUSIONS

Energy solutions cannot be found in a vacuum and must be framed with reference to a comprehensive national policy. Australia remains without such a policy. The challenges over recent months illustrate quite clearly the consequences of this. Whether relating to electricity transmission failings that left states without power or subject to extremely high prices, or governance which potentially enabled overseas state owned or private companies to acquire strategic assets, a national energy policy could have avoided both things. Such a policy could also have clarified the objective, whether ESD or economic efficiency. Significantly, ESD incorporates the latter, which however excludes the environmental aspects of ESD.

The South Australian NFCRC was in one sense possible because of this policy vacuum. While nuclear has been a largely 'no go' area across party lines, it is not clearly proscribed in national government policy. Uranium is mined and exported to selected countries, nuclear medicine is a key part of Australia's health solutions, and finding a repository for the waste produced is part of an ongoing discourse. In acknowledging the challenges of overcoming community concerns and legislative prohibitions, it is also necessary that unclear federal policy settings be clarified. Without this, there will be no 'integrated and coherent national energy policy' that COAG proclaims, and the vacuum will not be filled.

[171] <https://www.environment.gov.au/protection/assessments/strategic/wa-pilbara-bhp> accessed 25 October 2016.

[172] <https://www.environment.gov.au/node/18608> accessed 25 October 2016.

The first question asked in the Introduction was: is a more effective national energy policy needed for Australia? The answer is indeed yes, based on the fact that the current energy policy outlined in the 2015 *White Paper* lacks a comprehensive basis and also fails to integrate and coordinate the three aspects of the Triangle. Although the environmental aspect has been focused upon, as the politics (and geopolitics) of energy security are closely related to environmental protection, these must also be part of the policy if it is to be effective. The second question asked was, is this possible? This is dependent upon political will as well as political practicality; the challenges of federalism mean cross-party support is often needed to enact legislation, and allowing other aspects of the nuclear fuel cycle will be highly contentious. Effective policy-making depends on legal implementation, and while the former is quite possible, the latter is far more complex.

Given the controversies that have afflicted energy law and policy in 2015/2016, there is room for optimism that cross-party support may be forthcoming for policy positions that are in accord with majority views in the community. Whether these concern reliability and cost of energy supplies, protecting strategic sovereign assets, or more effective environmental protection, there will be a need for decisions to be taken as to how these are best achieved. Combining the environment and energy departments in one Australian Government ministry is a positive step in the right direction in relation to two of the three aspects of the Triangle - linking economics with the environment - but there remains the need to also ensure a greater connection with the third dimension - politics, and especially national security.

The third question asked in the Introduction was what should any national policy contain? Above all there is a need for clarity on nuclear issues. This is perhaps the most important contribution that can be made, as it will connect not only economics with the environment, but both also with politics. The fourth and final question asked was how can environmental effects of any policy best be addressed? SEA is recommended if current law

and policy are reformed. As with establishing a truly national energy policy in Australia, considerable political will is required for this, although this - as with any consequent law reform - is quite possible. Based on the experience of other states it is also not only highly desirable, but also essential if the environment is to be effectively balanced with the economy and politics in the Triangle, to achieve the most sustainable outcomes.

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