
CHAPTER 6: WHY DO COUNTRIES LEGISLATE TO ACCELERATE THE DEPLOYMENT OF RENEWABLE ENERGY?

There has never been a comprehensive study of the reasons why all of the different countries with national renewable energy laws legislate to accelerate the deployment of renewable energy. This means that, previously, it was not known whether there was a normative consensus among countries as to their rationale for legislating to support the accelerated deployment of renewable energy. Do countries only legislate to correct the market failures that affect the renewable energy sector, as economic theory would suggest, or do they legislate for a far broader range of reasons that differ between them? This chapter seeks to address this gap in the literature.

Before examining the reasons why countries are legislating to promote the deployment of renewable energy, it is first necessary to consider why countries choose to use legislation to intervene in the renewable energy sector, as well as the purpose of the legislation and legislative objectives in statutory interpretation. This will form Section 6.1 of the chapter. Section 6.2 will then examine the role of legislative objectives and how to identify them. In Section 6.3, the previous research into the motivations of countries intervening in the renewable energy sector will be considered. This will lead into an analysis in Section 6.4 of the 28 categories of legislative objectives found in renewable energy laws around the world. In particular, this section will group the legislative objectives by their primary theme and discuss the justifications given for including that objective, the frequency with which that legislative objective is adopted and its relative weighting in importance. This section will show that countries have a far broader range of reasons for legislating to accelerate the

deployment of renewable energy than the narrow economic justifications would suggest. It will also be argued that countries tailor their legislative objectives to reflect their domestic circumstances, making the future legislative convergence or harmonisation of renewable energy laws unlikely to occur, at least in the short term.

Section 6.5 considers the problem of conflicting legislative objectives contained within renewable energy legislation. Given that the average number of legislative objectives found in a country's national renewable energy laws is in excess of five different goals, this is a potential problem for most countries with national renewable energy laws. Given the wide variety of legislative objectives that countries commonly adopt, this also provides fertile ground for conflicts between legislative objectives to arise. The adoption of multiple legislative objectives can create problems in terms of the statutory interpretation of ambiguous legislative provisions, prompting questions about how the dominant purpose of the legislation can be identified. This issue is likely to cause particular problems in the context of the renewable energy sector due to the nature of electricity as a 'mixed good' and the complex intersection of a number of different unpriced externalities within the energy sector. For example, does the legislative objective targeting least-cost renewable energy deployment outweigh or is it secondary to the legislative objective targeting reducing greenhouse gas emissions or the one targeting energy security? This section posits the problem of conflicting legislative objectives against the presumption of coherence and the presumption against internal conflict, and considers whether the principle of harmonious construction will be effective in resolving these issues. This chapter concludes in Section 6.6 by considering ways that the legislative objectives contained in renewable energy laws could be improved.

6.1 WHAT DOES IT MEAN TO LEGISLATE?

Not every country has elected to legislate to support the development and accelerated deployment of renewable energy. Indeed, as at 1 January 2014, over 50 per cent of countries (104 countries out of a total of 199 countries) did not have a primary framework piece of national renewable energy law. It is hypothesised that there are two key reasons why countries do not have renewable energy legislation. First, some countries do not have the need or desire to support renewable energy, as they have high levels of energy security and competing financial interests in supporting conventional fossil fuels. Second, some countries do not have the skills, capacity or resources to develop legislation governing renewable energy.

These hypotheses appear to be borne out by the available evidence. For example, of the eleven members of the OPEC, only Algeria has a law promoting renewable energy (though Ecuador has incorporated some supportive provisions into the Republic of Ecuador Constitution of 2008). These countries control 81 per cent of the world's proven crude oil supplies, and all have very high levels of energy self-sufficiency. Equally, countries with low gross domestic products and poor access to electricity, such as Burundi, Democratic Republic of the Congo, Ethiopia, Niger, Liberia and Madagascar, are significantly less likely to legislate than countries with higher gross domestic products and greater access to electricity. Despite this, these low-income countries may still have renewable energy policies and renewable energy targets, but they will often not be binding or legally enforceable. This is a problem if countries want to achieve their policy goals, as Omorogbe has reported that laws that are specifically tailored to support the accelerated deployment of renewable energy create an environment that stimulates the growth of the sector.¹

¹ Yinka O Omorogbe, 'Promoting Sustainable Development through the Use of Renewable Energy: The Role of Law' in Donald N Zillman et al (eds), *Beyond the Carbon Economy: Energy Law in Transition* (Oxford University Press, 2008) 39, 45-51.

At this juncture, it should be noted that the market failures and market barriers that exist and prevent the full functioning of the renewable energy sector cannot only be addressed by renewable energy law or policy alone. Other options currently exist that could also go some way towards rectifying the existing market distortion, such as imposing a carbon tax on electricity generated from fossil fuel, removing direct and indirect subsidies from fossil fuel and nuclear energy, changes to infrastructure and planning laws, priority grid connection, and taking advantage of environmental and competition laws.² As stated in Chapter 5, from an economic perspective the preferred approach is to internalise the costs of externalities and the other risks associated with fossil fuels and nuclear energy with Pigovian taxes.³ However, due to the complex interplay of externalities being addressed, which range from the risks associated with carbon emissions to energy security concerns, this is not easy to achieve. This is because while some, such as Menanteau et al, have argued that the cost of environmental externalities such as the carbon emissions or impact on air quality of conventional energy use are difficult to estimate,⁴ arguably these costs are easier to price than some of the other externalities associated with conventional energy use. This view is supported by the prevalence of carbon taxes in a number of jurisdictions such as the EU,⁵ Australia until mid-2014⁶ and

² For a greater discussion of the role of environmental and antitrust laws, see Lincoln L Davies, 'Reconciling Renewable Portfolio Standards and Feed-In Tariffs' (2012) 32 *Utah Environmental Law Review* 311, 317.

³ Aviel Verbruggen and Volkmar Lauber, 'Basic concepts for designing renewable electricity support aiming at a full-scale transition by 2050' (2009) 37 *Energy Policy* 5732, 5741.. See also, Philippe Menanteau, Dominique Finon and Marie-Laure Lamy, 'Prices versus quantities: choosing policies for promoting the development of renewable energy' (2003) 31 *Energy Policy* 799, 801.

⁴ Menanteau, Finon and Lamy, above n 3, 801.

⁵ See generally, *Directive 2009/29/EC of the European Parliament and of the Council amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community* [2009] OJ L 140/63; *Directive 2008/101/EC of the European Parliament and of the Council amending Directive 2003/87/EC so as to include aviation activities in the scheme for greenhouse gas emission allowance trading within the Community* [2008] OJ L 8/3; *Directive 2004/101/EC of the European Parliament and of the Council amending Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community, in respect of the Kyoto Protocol's project mechanisms* [2004] OJ L 338/18; *Directive 2003/87/EC of the European Parliament and of the Council establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC* [2003] OJ L 275/32.

⁶ *Clean Energy Act 2011* (Cth).

British Columbia, Canada⁷ and pollution taxes in other jurisdictions such as the Ukraine.⁸ Other costs associated with conventional energy use, such as a lack of energy security or reliance on imported fuels, are much harder to price as they are largely the result of political decisions about the relative value to be ascribed to energy independence, security of supply, diversity of supply or other regional energy security approaches.

In terms of using other existing laws, Michaels has argued that national renewable energy laws may actually lead to further market distortion and over-regulation, and that the existing environmental laws could achieve a more effective outcome with greater cost-efficiency.⁹ Others have similarly argued in favour of using competition laws to address issues of market dominance or abuse that may be hindering the development of the renewable energy sector.¹⁰ However, the broad consensus appears to be that relying solely on environmental or competition laws alone would be an insufficient means to achieve the desired end. This is because the problems being addressed through such laws are not merely environmental or the result of market dominance or abuse. Rather, as will be shown in this chapter, countries support renewable energy in an attempt to overcome a wide range of problems and to achieve a variety of objectives. Thus, while over-regulation is certainly a concern and steps need to be taken in order to prevent burdensome administration and compliance costs, there is a role for separate laws promoting renewable energy that contain regulatory support mechanisms to help countries meet their legislative objectives.

So, accepting that renewable energy laws are necessary in theory, the question then becomes why specifically do particular countries regulate the renewable energy sector? The answers may largely rest in their legislative objectives.

⁷ *Carbon Tax Act*, SBC 2008.

⁸ *Environmental Pollution Fee 1999* (Ukraine).

⁹ Robert J Michaels, 'National Renewable Portfolio Standard: smart policy or misguided gesture' (2008) 29 *Energy Law Journal* 79, 86-8.

¹⁰ Paul-Georg Gutermuth, 'Regulatory and institutional measures by the state to enhance the deployment of renewable energies: German experiences' (2003) 69 *Solar Energy* 205, 209-10.

6.2 THE IDENTIFICATION AND ROLE OF LEGISLATIVE OBJECTIVES

Berry has stated that ‘a purpose section is a provision that explicitly states the social, economic or political objective or goal that is sought to be achieved, assuming that the provisions of the statute are implemented by those who are required or authorised to perform that function.’¹¹ In this way, the legislative objectives section provides a substantive enactment which ‘delimits and illuminates the legal effect’¹² of legislation. In addition, legislative objective sections are suggestive of the legislative intent, fulfilling a symbolic purpose.¹³ Hence, legislative objectives provide a signal to both industry and the market about the future direction of law and policy in the sector. Where the legislative objectives are specific and measurable, they also provide a benchmark for assessing the relative success or failure of the legislation.

The primary role of legislative objectives is to act as a guide for the statutory interpretation of ambiguous legislative provisions and resolving disputes. In both common and civil law jurisdictions, when there is any uncertainty or ambiguity in the legislation, the statutory interpreter must discern the underlying purpose of the legislation (this is sometimes also referred to as ‘identifying the mischief the legislation is seeking to address’). This is an essential step in the purposive approach to construction in the common law jurisdictions, and a feature of both the teleological and exegetic approaches in the civil law jurisdictions. Once the purpose of the legislation is identified, the courts will seek to interpret the text of the ambiguous section in light of both the purpose of the legislation and in the context of the Act as a whole.¹⁴ If two possible constructions are identified, the construction that best promotes the purpose of the legislation will be preferred.¹⁵ It is important to note that courts

¹¹ Duncan Berry, ‘Purpose sections: Why they are a good idea for drafters and users’ [2011] *Loophole* 49, 49.

¹² Ian McLeod, *Principles of Legislative and Regulatory Drafting* (Hart Publishing, 2009) 17.

¹³ House Legislative Counsel, *Manual on Practice and Procedure in Committees, Proceedings and Conferences of the House of Representatives* (1992) 201.

¹⁴ *IW v City of Perth* (1997) 191 CLR 1, 12 (Brennan CJ and McHugh J).

¹⁵ See e.g. *Acts Interpretation Act 1901* (Cth) s 15AB.

will not use the purpose of the legislation to overrule the clear and unambiguous text of an operative provision.¹⁶

Legislative objectives often seek to fulfil other roles, such as attempting to increase support for the legislation, or to provide a description of the features of the legislation. This has prompted criticism, including from Dickerson who stated that general purpose clauses can ‘degenerate into pious incantations.’¹⁷ Meanwhile Berry has reported that some of the legislative counsel interviewed for his research reported that a purpose or objects section can ‘end up being no more than a list of grandiose statements that would not be out of place in a party political manifesto.’¹⁸ This need not be the case if the legislative objective sections are appropriately drafted and focused on their future use in supporting the purposive interpretation of the legislation. The inclusion of other roles in the legislative objectives is strictly described as a ‘misuse’ of legislative objectives, with this content being more appropriately located in secondary materials such as the minister’s second reading speech, and the explanatory memoranda.¹⁹ However, given that legislation is drafted at the behest of ministers and under their ultimate control, often requiring political negotiations to get passed by the parliament, this is unlikely to change in the near future.

6.2.1 IDENTIFICATION OF THE PURPOSE OF LEGISLATION

There are a four main ways of identifying the purpose of the primary legislation governing or promoting the accelerated deployment of renewable energy. First, and most commonly, in the case of the primary framework piece of renewable energy legislation, the legislation may have a specific legislative objectives section that summarises the purpose of the legislation. Second, the purpose may

¹⁶ *Minister for Urban Affairs and Planning v Rosemount Estates Pty Ltd* [1996] NSWCA 91 (14 August 1996). See also, Evan Bell, ‘Judicial perspectives on statutory interpretation’ (2013) 39 *Commonwealth Law Bulletin* 245, 270.

¹⁷ Reed Dickerson quoted in David Renton, *The Preparation of Legislation: Report of a Committee Appointed by the Lord President of the Council*, Cmnd 6053 (2009), cited in Ian McLeod, *Principles of Legislative and Regulatory Drafting* (Hart Publishing, 2009) 17.

¹⁸ Berry, above n 11, 57.

¹⁹ Paul Lanspeary, *Statutory Interpretation for Drafters* (17 August 2005) Australasian Parliamentary Counsel <<http://www.pcc.gov.au/pccconf/2005/papers/8-Paul-Lanspeary.pdf>> 18.

be discerned from reading the legislation as a whole. Third, by identifying the mischief that the legislation is seeking to remedy, this may assist in identifying the purpose of the legislation. Finally, the purpose of the legislation may be found from studying extrinsic materials such as *travaux préparatoires*, second reading speeches, parliamentary debates, regulatory impact statements and/or committee reports. This is not to say that any one of these ways alone will be authoritative in identifying the purpose, with a combination of these approaches often being used, particularly when competing legislative objectives have been identified.²⁰

In the context of finding the purpose of national renewable energy laws, legislative objectives sections (also sometimes called the ‘statement of principle’ or the ‘purpose section’) play an important role, having largely replaced the previous practice of using the preamble to indicate the intended purpose of the legislation.²¹ Almost all of the national renewable energy laws studied in this thesis had a legislative objectives section. Indeed 79 out of the 95 countries with a primary framework piece of renewable energy legislation had an objectives section, while another six countries, as well as the IRENA and the EU, had a preamble.

²⁰ *Forsyth v Deputy Commissioner of Taxation* (2007) 231 CLR 531.

²¹ Dennis Charles Pearce and Robert S Geddes, *Statutory Interpretation in Australia* (LexisNexis Butterworths, 2006) 154.

6.3 THE LEGISLATIVE OBJECTIVES IN RENEWABLE ENERGY LAW

It is the study of these legislative objectives sections that helps us to understand why countries have national renewable energy laws. There have been a number of theories espoused as to why countries seek to regulate the renewable energy sector.²² However, due to its lack of comprehensiveness, the existing literature has sought to make generalisations based on a few select case studies.²³ As a result, while some of the theories hold true and are reflected in the findings of this research, some do not and thus this thesis demonstrates that some fallacies are being perpetuated that do not reflect the available evidence.

6.3.1 REVIEW OF SOME OF THE PREVIOUS RESEARCH

LIPP (2007)

Previous research by Lipp has stated that ‘the motivations for and objectives of RE policy are strikingly similar across most countries.’²⁴ This assessment is not supported by the research in this thesis, as shown by the significant variation between the categories of legislative objectives adopted by countries in Appendix 4. These categories reflect that countries have different endowments of fossil fuel and renewable resources, have different energy market structures and different environmental, socio-economic and security concerns. These differences are highlighted in Table 4, which summarises the legislative objectives cited by the countries whose name begins with the letter ‘A’ that have a renewable energy law. The extent of the variation among legislative objectives exhibited in different countries’ renewable energy laws will become apparent in the next section of the chapter.

²² See e.g. Aviel Verbruggen and Volkmar Lauber, ‘Assessing the performance of renewable electricity support instruments’ (2012) 45 *Energy Policy* 635; Reinhard Haas et al, ‘How to Promote Renewable Energy Systems Successfully and Effectively’ (2004) 32 *Energy Policy* 833; John A Mathews and Erik S Reinert, ‘Renewables, manufacturing and green growth: Energy strategies based on capturing increasing returns’ (2014) 61 *Futures* 13; Kelly Sims Gallagher, ‘Why & How Governments Support Renewable Energy’ (2013) 142 *Daedalus* 59; Judith Lipp, ‘Lessons for effective renewable electricity policy from Denmark, Germany and the United Kingdom’ (2007) 35 *Energy Policy* 5481.

²³ See e.g. Lipp, above n 22.

²⁴ *Ibid* 5483.

TABLE 6.1: COMPARISON OF THE LEGISLATIVE OBJECTIVES AND THEIR PRIORITIES OF THE COUNTRIES WHOSE NAME BEGINS WITH THE LETTER 'A'

Priority of legislative objective	Albania	Algeria	Andorra	Argentina	Armenia	Australia	Austria
1	More efficient use of natural resources and energy conservation	Environmental protection	Encourage greater use of indigenous energy sources	Encourage research	Strengthen the economy	Reduce greenhouse gas emissions and address climate change	Reduce greenhouse gas emissions and address climate change
2	Sustainable development	Reduce greenhouse gas emissions and address climate change	More efficient use of natural resources and energy conservation	Encourage technological innovations	Energy security	Environmental protection	Environmental protection
3	Encourage technological innovations	Sustainable development	Reduce use of fossil fuels or nuclear imports	Local manufacturing	Encourage greater use of indigenous energy sources		Energy security
4	Reduce use of fossil fuels or nuclear imports	More efficient use of natural resources and energy conservation			Improve energy system safety and reliability		Promote the development of the internal energy market and regional integration
5	Reduce greenhouse gas emissions and address climate change	Reduce use of fossil fuels or nuclear imports			Support the development of new industry and infrastructure		More efficient use of natural resources and energy conservation
6	Environmental protection	National development			More efficient use of natural resources and energy conservation		Support the development of new industry and infrastructure
7	Meet international treaty obligations and international agreements				Public health or improving living standards or social development		Reduce use of fossil fuels or nuclear imports
8	Diversify supply						
9	Energy security						
10	Promote the development of the internal energy market and regional integration						
11	Increase the number of IPPs and small and medium enterprises						
12	Promote rural development						

VERBRUGGEN AND LAUBER (2012)

Verbruggen and Lauber found that the priorities for renewable energy regulation in developing countries are often those of ‘poverty alleviation, improvement of health and educational conditions and adaptation to a changing climate,’²⁵ all of which require a wider access to renewable electricity. In contrast, they argue that in ‘industrialized countries, carbon dioxide emissions mitigation and security of supply are the main drivers of a growing interest in renewable electricity.’²⁶ This thesis shows that these assumptions are not all correct. The research in this thesis certainly supports Verbruggen and Lauber’s contention that low and lower-middle income countries²⁷ are more likely than high income countries²⁸ to be concerned about access to electricity and improving living conditions. However, in terms of poverty alleviation, high-income countries are significantly more likely than low to lower-middle income countries to cite ‘affordable energy’ as a legislative objective. Further, while they were correct in their assessment that high income countries were more likely to prioritise reducing greenhouse gas emissions and climate change mitigation than low and lower middle income counties, their statement about security of supply is not supported by the available evidence. In fact, as shown in detail by Table 6.3, low and lower-middle income countries are more likely than high-income countries to list ‘energy security’ and ‘diversify supply’ as legislative objectives. Further, when lower and lower-middle income countries do list ‘energy security’ and ‘diversify supply’ as legislative objectives, they also tend to give them a higher priority than the high-income countries.

²⁵ Verbruggen and Lauber, ‘Assessing the performance of renewable electricity support instruments’, above n 22, 636.

²⁶ Ibid.

²⁷ Countries are organised according to GNI per capita levels as follows: ‘high’ is \$US 12,476 or more, ‘upper-middle’ is \$US 4,036 to \$US 12,475, ‘lower-middle’ is \$US 1,026 to \$US 4,035, and ‘low’ is \$US 1,025 or less. Per capita income levels and group classifications from World Bank, 2012 as adopted by REN21 Secretariat, ‘Renewables 2013 Global Status Report’ (Report, Renewable Energy Policy Network the 21st Century, 2013).

²⁸ Ibid.

HAAS ET AL (2004); MATTHEWS AND REINERT (2014)

Other research by Haas et al stated that the central purpose of encouraging renewable generation is to support the substitution of fossil fuels for renewable energy. The 'objectives derived from this core objective are: (i) to stimulate technological progress; (ii) to trigger learning effects with respect to investment costs; (iii) to minimise administration and transaction costs; (iv) to maintain public acceptance regarding RES technologies.'²⁹ In a similar vein, Mathews and Reinert argue that because renewable energy systems

embody technological change, manufacturing, learning curve effects, and the capture of increasing returns...Renewables may be viewed as a developmental strategic choice - and effects on climate change mitigation, energy security and environmental cleanliness are useful and desirable adjuncts.³⁰

The research in this thesis does not support the contentions of either Haas et al or Mathews and Reinert that these objectives reflect the primary reasons why countries intervene in the renewable energy sector. This is because countries tend to refer to these objectives less frequently than others, such as environmental protection or energy security, and when they do mention industrial policy objectives or 'national development' as a legislative objective, they tend to be prioritised lower than other categories of objectives. For example, only three countries cite job creation as a legislative objective, only eight countries target local manufacturing, only eleven countries target national development, while an objective targeting 'technological innovation' is only found in about 18 per cent of countries with renewable energy laws.

²⁹ Haas et al, above n 22, 834.

³⁰ Mathews and Reinert, above n 22, 13.

SIMS GALLAGHER (2013)

Sims Gallagher's research identified four categories of motivations for the national promotion and development of renewable energy:

1. Economic motives such as encouraging economic growth, job creation and manufacturing of renewable technologies;
2. A high endowment of renewable energy sources or a low endowment of fossil fuel sources;
3. Political motivations which encourage renewable energy deployment; and
4. Cultural values and attitudes supportive of renewable generation.³¹

She noted that different countries and states prioritise these to different extents, reflecting their diverse issues.³² While this is all correct, Sims Gallagher ignores some of the highest priorities that countries reflect in their legislative objectives. For example, some of the notable exceptions from her list include sectoral objectives such as improving system safety and reliability, environmental objectives such as seeking to reduce greenhouse gas emissions and mitigate the impacts of climate change, and security objectives such as diversifying supplies. These results are shown in the research detailed below.

It is the widespread presence of misconceptions in the existing literature, such as those found above, that highlight the need for a comprehensive study of the legislative objectives in national renewable energy laws. This will be performed in the next section of the chapter.

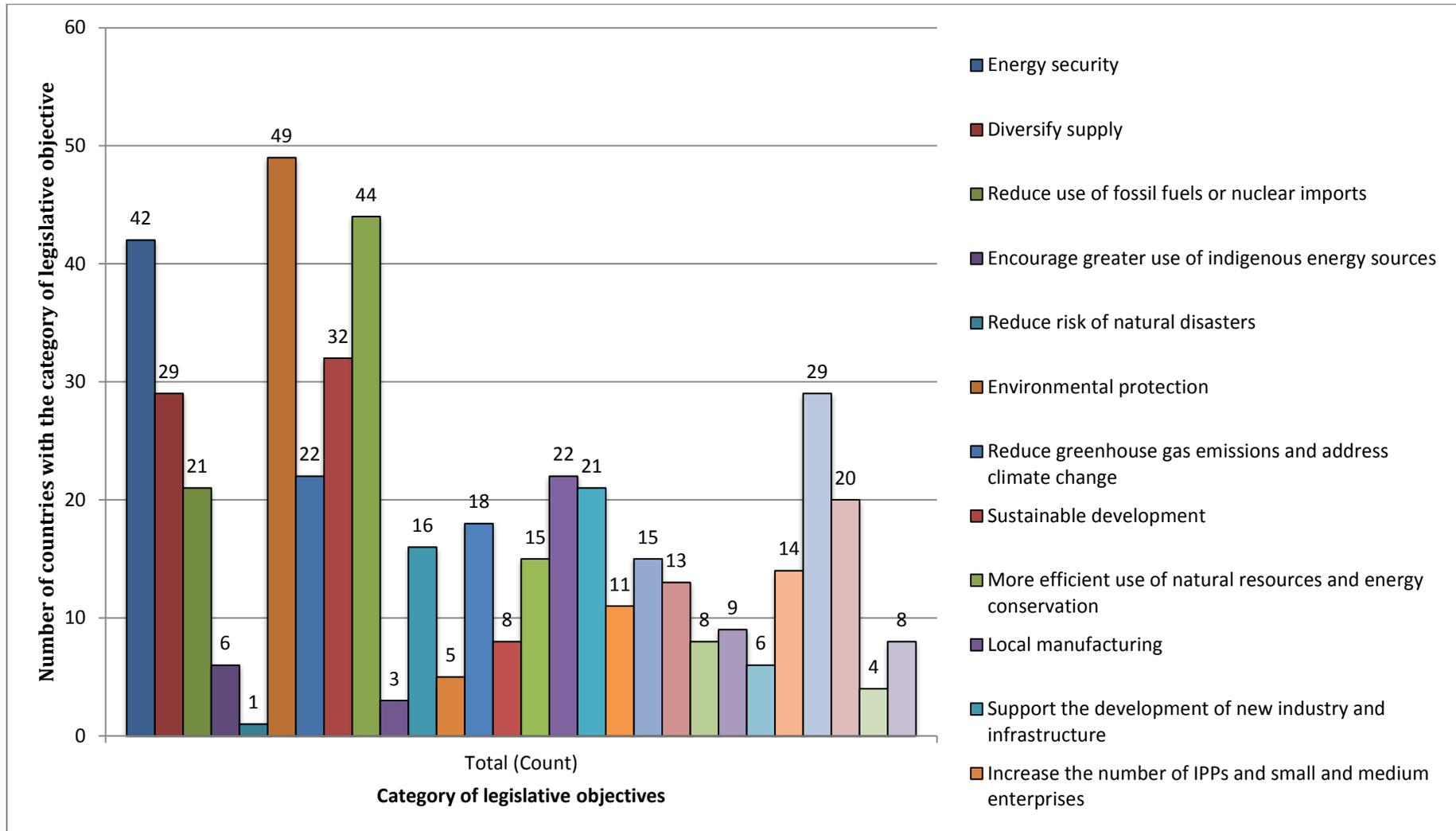
³¹ Sims Gallagher, above n 22, 60-1.

³² Ibid.

6.4 A COMPREHENSIVE STUDY OF THE LEGISLATIVE OBJECTIVES IN RENEWABLE ENERGY LAWS

As with most legislation, countries seek to achieve multiple objectives through their renewable energy law. Indeed, while the economic justifications for legislating for renewable energy are reasonably contained, in the legislation studied for this thesis there were 28 different categories of legislative objectives identified. This represents a much broader range of legislative objectives than has been identified in previous research. This diversity reflects the different problems that countries are trying to address through their legislation, as well as their different fossil fuel and renewable resource endowments, their level of economic development, and the level of environmental awareness of their citizens. The frequency of citation of each category of legislative objective is shown in Graph 6.1 (below):

GRAPH 6.1: FREQUENCY OF CITATION OF THE CATEGORY OF LEGISLATIVE OBJECTIVE IN RENEWABLE ENERGY LAWS



Once the 28 categories of legislative objectives were identified, these were then categorised by their primary theme. There were eight key themes identified in the legislative objectives: security, the environment, industrial policy, the economy, society, international and regional, sectoral and education and training. Many legislative objectives addressed more than one theme but for ease of analysis and discussion they have been addressed by their primary theme. For example, while it is arguable that ‘sustainable development’ could relate to both the environmental and economic themes, the environmental theme was identified as the primary theme based on the text and content of the specific legislative objective sections addressing this issue.

Table 6.2 (below) details the total number of countries (out of the 95 countries with a renewable energy law) with each specific category of legislative objective contained in their legislative objective section or preamble (as appropriate). In addition, the table also provides a weighted rank for specific category of legislative objective. This reflects Talus’s view that:

The key determinant of a list of objectives, though, is not the rarely justifiable declaration of a lofty overall goal, but rather its rank and weight within often conflicting objectives.³³

To calculate the weighted rank, a rank order number was assigned for each legislative objective mentioned in the legislative objectives section, for example the first category of legislative objective mentioned is assigned a 1, the second a 2, and so on. For example, s 3 of the *Australian Renewable Energy (Electricity) Act 2000* states:

The objects of this Act are:
(a) to encourage the additional generation of electricity from renewable sources; and
(b) to reduce emissions of greenhouse gases in the electricity sector; and
(c) to ensure that renewable energy sources are ecologically sustainable.

³³ Kim Talus, ‘Environment and Energy: On a Bumpy Road Towards a Clean Energy Future’ in Kim Talus (ed), *EU Energy Law and Policy: A Critical Account* (Oxford University Press, 2013) 175, 187.

The following ranks order numbers were assigned to this section:

- S 3(a) is a general motherhood statement promoting additional deployment of renewable energy so was assigned no number;
- a '1' was assigned to the category of 'reduce greenhouse gas emissions and address climate change' on the basis of s 3(b); and
- a '2' assigned to the category of 'environmental protection' on the basis of s 3(c).

Once the rank order numbers had all been noted in Appendix 4, all of the numbers in that category's column were then added, before being divided by the number of countries that cited that specific category of legislative objective. This produced the weighted rank number for each category of legislative objective. This is a valuable tool as previous research by Grace et al found that 'identifying clear objectives and signalling their proto-station or weight directly influences both the effectiveness of implementation and the degree of conflict during implementation.'³⁴ This is because it enables the implementing parties and stakeholders to understand and apply the legislation within the context of the priorities assigned to the legislative objectives and any constraints that have been attached. Where this does not happen, research suggests that it makes monitoring and compliance more difficult, one objective may dominate to the exclusion of others and disputes may arise around the legislative interpretation.³⁵ The average weighted rank achieves this by providing an indication of the relative weight that the countries that have adopted that category of legislative objective place on that category. This means that the closer the weighted rank is to 1, the higher the priority placed on that legislative objective by the average country that have adopted that specific category within their legislative objectives section.

³⁴ Robert C Grace, Deborah A Donovan and Leah L Melnick, *When Renewable Energy Policy Objectives Conflict: A Guide for Policymakers* (2011) National Regulatory Research Institute <http://www.nrri.org/pubs/electricity/NRRI_RE_Policy_Obj_Conflict_Oct11-17.pdf> 23.

³⁵ Ibid.

TABLE 6.2: LEGISLATIVE OBJECTIVES BY THE NUMBER OF COUNTRIES ADOPTING IT AND WEIGHTED RANK

Theme	Category of legislative objectives	Number of countries citing the legislative objective (out of 95 countries plus the IRENA)	Weighted rank (Rank order in list of objectives cited/frequency of citation)
Security objectives	Energy security	42	2.97
	Diversify supply	29	3.79
	Reduce use of fossil fuels imports or nuclear imports	21	3.90
	Encourage greater use of indigenous energy sources	6	3.00
	Reduce risk of natural disasters	1	2.00
	Total	99	3.40
Environmental objectives	Reduce greenhouse gas emissions and address climate change	22	5.27
	Environmental protection	49	5.06
	Sustainable development	32	3.56
	More efficient use of natural resources	44	3.54
	Total	147	4.31
Industrial policy objectives	Local manufacturing	3	4.00
	Support the development of new industry and infrastructure	16	5.69
	Encourage technological innovations	18	5.22
	Create jobs or improve skills and domestic capabilities	8	7.12
	Total	45	5.44

Theme	Category of legislative objectives	Number of countries citing the legislative objective (out of 95 countries plus the IRENA)	Weighted rank (Rank order in list of objectives cited/frequency of citation)
Economic objectives	Promote private investment	15	5.53
	Competition issues	22	4.91
	Strengthen the economy	21	3.71
	National development	11	4.64
	Increase the number of IPPs and small and medium enterprises	5	7.60
	Total	74	4.84
Social objectives	Affordable energy	13	5.15
	Public health or improving living standards or social development	15	8.00
	Improved access to electricity	8	6.87
	Promote rural development	9	7.11
	Total	45	6.80
International/regional objectives	Meet international treaty obligations and international agreements	6	6.50
	Promote the development of the internal energy market and regional integration	14	5.71
	Total	20	5.95
Sectoral objectives	Improve energy system safety and reliability	29	3.58
	Improve the structure of the energy sector	20	4.05
	Total	49	3.77

Theme	Category of legislative objectives	Number of countries citing the legislative objective (out of 95 countries plus the IRENA)	Weighted rank (Rank order in list of objectives cited/frequency of citation)
Education and research objectives	Encourage research	4	4.50
	Increase information about RES/public education	8	5.37
	Total	12	5.08

The results of this research are important. First, they highlight that more countries address the issue of environmental protection in their legislative objectives (49 countries) than energy security (42 countries). However, they also show that the weighted rank of environmental protection at 5.06 is significantly lower than that of energy security at 2.97, suggesting that the legislative objective of environmental protection is on average assigned a lesser priority among those countries that have adopted each objective. Indeed, given that the average country has just over five legislative objectives and the weighted ranks of ‘environmental protection’ and ‘reduce greenhouse gas emissions and address climate change’ are 5.06 and 5.27 respectively, this suggests that many countries may simply be tacking what are arguably important objectives on the end of their legislative objectives sections as a means of capturing the diversity of political opinion in the community.

Table 6.2 also produces a total number of citations and weighted rank for each broad theme found within the legislative objectives. It was necessary to categorise the legislative objectives by theme due to the overlapping nature and often quite similar outcome of various categories. For example, while countries differentiate between ‘energy security,’ ‘diversify supply,’ and ‘reduce fossil fuel and nuclear imports’, arguably these are designed to achieve a similar outcome, and so have been grouped to reflect this. The next section of this chapter will

separately analyse each category of legislative objective identified through this research. The categories have been arranged by their broad theme.

6.4.1 SECURITY OBJECTIVES

There were five legislative objectives identified in the renewable energy laws studied that targeted the theme of security:

1. energy security;
2. diversify supply;
3. reduce use of fossil fuel imports or nuclear imports;
4. encourage greater use of indigenous energy sources; and
5. reduce the risk of natural disasters.

The theme of security was the second most commonly identified in the legislation with 99 citations, but overall received the highest weighted rank of any theme at 3.40. The high priority placed on this theme is likely to reflect that these categories of legislative objectives are seeking to address a source of market failure, that is, the unpriced cost of ensuring a secure supply of energy.

6.4.1.1 ENERGY SECURITY

Energy security has been defined by the IEA as energy that is ‘adequate, affordable and reliable.’³⁶ The European Commission (EC) has adopted a similar but more detailed definition of energy security as ‘the uninterrupted physical availability of energy products on the market at a price which is affordable for all consumers (private and industrial).’³⁷ Barton et al define it as ‘a condition in which a nation and all, or most, of its citizens and businesses have access to sufficient energy resources at reasonable prices for the foreseeable future free from serious risk of major disruption of service.’³⁸

³⁶ Samantha Olz, Ralph Sims and Nicolai Kirchner, *Contribution of Renewables to Energy Security* (International Energy Agency, 2007) 13.

³⁷ European Commission, *Green Paper: Towards a European strategy for the security of energy supply*, COM(2000) 769 Final (29 November 2000).

³⁸ Barry Barton et al (eds), *Energy security: managing risk in a dynamic legal and regulatory environment* (Oxford University Press, 2004) 5.

The need to ensure a secure supply of energy in light of diminishing reserves of fossil fuels is a central concern of both developed and developing countries. Indeed, out of all of the legislative objectives, those targeting energy security were most likely to be prioritised highly, with an average weighted rank of 2.97.³⁹ The following countries all target energy security within their legislative objectives:

TABLE 6.3: COUNTRIES CITING 'ENERGY SECURITY' AS A LEGISLATIVE OBJECTIVE

Rank of objective	Countries
1	Colombia, Estonia, Gambia, Japan, Jordan, Morocco, Philippines, Romania, Russia, South Africa, Spain, Sri Lanka, Switzerland, Syria, Ukraine, World (IRENA).
2	Armenia, China, Denmark, Dominican Republic, Kosovo, Macedonia, Paraguay, Poland, Tajikistan, Thailand.
3	Austria, Finland, Indonesia, Palau.
4	Bangladesh, Kyrgyzstan, Panama, Senegal.
5	Hungary, Iceland.
6	Ghana.
8	South Korea.
9	Albania, Bulgaria, Lithuania.
10	Peru.

A number of geopolitical and economic factors have led to an increased emphasis on energy security in recent years. For example, there have been growing concerns expressed about the vulnerability of Europe given their heavy dependence on Russian gas,⁴⁰ particularly in light of past and more recent conflicts with the Ukraine. Equally, the sectarian violence in parts of the Middle East such as Iraq and Syria, concerns about Iran's nuclear program and events such as the Arab Spring have led to anxieties about supply disruptions. Further issues have been created by the 'grab for resources' by China and India as they seek to secure access to foreign sources of supply to meet their rising energy demand.⁴¹

³⁹ The only exception to this is the legislative objective is to 'reduce the risk of natural disasters,' which has an average weighted rank of 2. However, given that only Bangladesh has cited this in their legislation, this has skewed the results.

⁴⁰ Carolyn Fischer and Louis Preonas, 'Combining policies for renewable energy: Is the whole less than the sum of its parts?' (2010) *International Review of Environmental and Resource Economics* 51, 53.

⁴¹ Gawdat Bahgat, 'Europe's energy security: challenges and opportunities' (2006) 82 *International Affairs* 961, 961.

It is important to note that for most countries, the primary basis for their concern about energy security is their poor level of energy self-sufficiency. While there are few outlying energy exporters that are energy self-sufficient, such as Colombia (311.5% energy self-sufficiency),⁴² Russia (179.9%),⁴³ Indonesia (177.2%),⁴⁴ Paraguay (156.5%),⁴⁵ Denmark (116.7%),⁴⁶ South Africa (111.5%),⁴⁷ and pre-war Syria (112.6%),⁴⁸ the remaining 34 countries all have low levels of energy self-sufficiency. Indeed, the latter group have an average level of 50.91 per cent of their energy needs being met with domestic energy sources.⁴⁹

Amongst energy exporters, these countries seek to address energy security in their legislative objectives for two reasons. First, some countries such as Denmark need to promote renewable energy because, while they are an energy exporter (exporting the equivalent of 17 per cent of their domestic energy demand each year), 40.3 per cent of their domestic electricity comes from renewable energy.⁵⁰ These figures suggest that if the high levels of renewable generation are not maintained, Denmark may become a net importer of energy. Interestingly, the introduction of the Danish law also coincided with record oil prices in 2008, and thus it may also reflect a concern with improving their terms of trade. This reflects the second reason why energy exporters may be

⁴² 2009 data. Source: International Renewable Energy Agency, *Renewable Energy Country Profiles Latin America* (IRENA, 2012).

⁴³ 2011 data. Source: International Renewable Energy Agency, *Renewable Energy Country Profiles Russian Federation* (IRENA, 2012).

⁴⁴ 2009 data. Source: International Renewable Energy Agency, *Renewable Energy Country Profiles Asia* (IRENA, 2013) 19.

⁴⁵ 2009 data. Source: International Renewable Energy Agency, *Renewable Energy Country Profiles Latin America*, above n 39, 32.

⁴⁶ 2011 data. Source: International Renewable Energy Agency, *Renewable Energy Country Profiles European Union* (IRENA, 2013) 15.

⁴⁷ 2009 data. Source: International Renewable Energy Agency, *Renewable Energy Country Profiles Africa* (IRENA, 2011) 91.

⁴⁸ 2009 data. Source: International Renewable Energy Agency, *Renewable Energy Country Profiles Middle East* (IRENA, 2012) 25.

⁴⁹ Energy imports, net (% of energy use) 2012 (The World Bank, *World Development Indicators* (2014) <<http://data.worldbank.org/indicator/EG.IMP.CON.S.ZS/countries>>) Rounded to the nearest whole number.

⁵⁰ 2011 data. International Renewable Energy Agency, *Renewable Energy Country Profiles European Union*, above n 43, 15.

concerned about energy security. That is, it appears to be a common phenomenon that the energy exporters view energy security as being focused on maintaining the 'security of demand' for their energy exports due to the important contribution it provides to their government revenues.⁵¹

Among energy importers, there are a number of ways that countries may address short- and long-term energy insecurity including by 'establishing strategic reserves, diversification of sources of supply and their origin, switching to renewable energy, technological innovation, and so on.'⁵² Increasing the share of renewable energy is often an important strategy towards improving a country's energy security and reducing the risk of fossil fuel price volatility. For instance, these issues are addressed within the Gambian *Renewable Energy Act 2013*:

Objects and reasons

(a) promote the use of renewable energy resources, including hybrid systems, to achieve greater energy self-reliance and thereby reduce exposure to fossil fuel price fluctuations, reduce harmful emissions, and promote economic growth and protection of environment in the Gambia.⁵³

The Romanian *Law 220/2008 on Establishing the Promotion System of Energy Production from Renewable Energy Sources* also contains a good example of how energy security may be addressed in the legislative objectives, with Article 1(1) stating:

This law creates a legal framework necessary to broaden the use of renewable energy by: (a) attracting national energy balance of renewable energy sources needed to increase security in energy supply and to reduce imports with primary energy sources...

⁵¹ Daniel Yergin, 'Ensuring Energy Security' (2006) 84 *Foreign Affairs* 69, 70-1. See also, International Finance Corporation, *Renewable Energy Policy in Russia: Walking the Green Giant* (IFC, 2011).

⁵² Neil Gunningham, 'Confronting the Challenge of Energy Governance' (2012) 1 *Transnational Environmental Law* 119, 124.

⁵³ This section is unnumbered within the legislation.

6.4.1.2 DIVERSIFY SUPPLY

Diversifying supply was the second most common category within the security theme, with 29 countries identifying it as a legislative objective. It was also reasonably highly weighted, with an average weighted rank of 3.70.

TABLE 6.4: COUNTRIES CITING 'DIVERSIFY SUPPLY' AS A LEGISLATIVE OBJECTIVE

Rank of objective	Countries
1	Dominican Republic, Panama, San Marino, Taiwan. ⁵⁴
2	Finland, Japan, Kyrgyzstan, Morocco, Philippines, Switzerland, Ukraine, Yemen.
3	Czech Republic, Gambia, Paraguay, Romania, South Africa.
4	Mexico, Palau, Turkey.
5	Ghana, South Korea, Senegal.
6	Tunisia.
8	Albania, Honduras, Lithuania.
9	Peru, World (IRENA).

The main reason why countries seek to diversify their energy mix is to reduce the risk and subsequent consequences of a disruption either in the supply of specific fuels or from specific suppliers.⁵⁵ Many of the countries that legislate to diversify their supply are vulnerable to supply shocks due to heavy dependence on energy supplies from a single country. For example, Finland imports 100 per cent of its gas and 89 per cent of its oil from Russia,⁵⁶ Lithuania gets 100 per cent of its gas from Russia,⁵⁷ the Czech Republic gets 96 per cent of its oil and 75 per cent of its gas from Russia,⁵⁸ while Japan gets 83 per cent of its oil from OPEC

⁵⁴ Taiwan is heavily dependent on energy imports, with 99.34% of energy imported in 2008. (Wen-Tien Tsai, *Prospects of Renewable Energy Development in Taiwan, Energy Sources, Part B* (Taylor and Francis, 2013) 263; see also, Yung-Chi Shen, Chiyang James Chou and Grace T R Lin, 'The portfolio of renewable energy sources for achieving a three E policy goals' (2011) 36 *Energy* 2589, 2589.

⁵⁵ Thomas L Neff, *Improving energy security in Pacific Asia: diversification and risk education from fossil and nuclear fuels* (Massachusetts Institute of Technology Centre for International Studies, 1997) 16.

⁵⁶ International Energy Agency, *Energy Supply Security 2014: Finland* (2014) <http://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_finland.pdf> 173.

⁵⁷ Energy Delta, *Lithuania Country Profile* (2013) <<http://www.energydelta.org/mainmenu/energy-knowledge/country-gas-profiles/lithuania>>.

⁵⁸ International Energy Agency, *Energy Supply Security 2014: The Czech Republic* (2014) <http://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_TheCzechRepublic.pdf> 130.

producers in the Middle East.⁵⁹ For these countries, increasing the supplies of renewable energy in their energy mix may act as a powerful hedge against future price fluctuations or oil shocks. Interestingly, many of the Acts targeting diversity of supply such as those from Kyrgyzstan, Peru, Mexico, Romania, Taiwan and South Africa were introduced either during or in the immediate aftermath of the oil shocks in 2008.

Renewable energy does not simply remove the risks associated with importing foreign fuels or price volatility. Rather, diversifying the energy mix may lessen 'technology risks, secure additional reliability benefits, support the expansion of the renewable energy industry, spread the local benefits around geographically, advance less mature technologies so that they are less costly when other lower-cost technology potential is tapped out, or respond to expressed preferences of the public.'⁶⁰

An example of a legislative objective targeting diversifying supply is found in the preamble to the Peruvian *Legislative Decree on Investment Promotion for Electricity Generation with the Use of Renewable Energy 2008*, which focuses on:

Promoting renewable energy, removing all barriers and obstacles to its development, means promoting diversification of the energy mix, which is a step towards a policy of secure energy supply and protection of the environment.

6.4.1.3 REDUCE USE OF FOSSIL FUELS IMPORTS OR NUCLEAR IMPORTS

Twenty-one countries have a legislative objective designed to reduce the use of fossil fuel imports or nuclear imports. Again, this objective is weighted reasonably highly, with an average weighted rank of 3.90.

⁵⁹ International Energy Agency, *Energy Supply Security 2014: Japan* (2014) <http://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_Japan.pdf>

⁶⁰ Grace, Donovan and Melnick, above n 31, 4.

TABLE 6.5: COUNTRIES CITING 'REDUCE FOSSIL FUEL IMPORTS OR NUCLEAR IMPORTS' IN THEIR LEGISLATIVE OBJECTIVES

Rank of objective	Countries
1	Denmark, Senegal.
2	Gambia, Honduras, Romania.
3	Andorra, Bangladesh, Dominican Republic, Mexico, Panama, Philippines, Ukraine.
4	Albania.
5	Algeria, Palau, Tajikistan.
6	Germany, Lithuania.
7	Austria, Tunisia.
8	Peru.

Greater use of renewable energy sources reduces reliance on foreign imports of fossil fuels or nuclear feedstocks. This makes countries less vulnerable to price volatility, and reduces the impact of external fuel shocks. In addition to these economic and energy security concerns, countries also often cite environmental and public health concerns as a reason for shifting from fossil fuel and nuclear power generation. For example, Article 1 of the Honduran *Law for the Promotion of Electricity Generation with Renewable Resources 2007* states:

This Law has the principal aim of promoting public and/or private investment in electricity generation projects with national renewable resources, through fulfilment of the following objectives: (1) to facilitate investment in and development of projects using renewable energy resources, enabling dependence on imported fuels to be reduced through the use of the countries renewable energy resources that are compatible with the conservation and improvement of natural resources.

6.4.1.4 ENCOURAGE GREATER USE OF INDIGENOUS ENERGY SOURCES

Only six countries stated that increasing the use of indigenous energy sources was a legislative objective for them. This is likely to be because other countries have addressed this issue either through their objectives to 'ensure energy security,' or 'diversify supply.' The countries that have adopted this approach do have a significantly lower GDP per capita (2013) on average of \$US 3,392, especially when compared to the average for all countries with renewable energy laws: \$US 18,565, those seeking to ensure energy security: \$US 15,401,

those seeking to diversify their supply: \$US 14,033 and those seeking to reduce use of fossil fuel imports or nuclear imports: \$US 14,232.⁶¹

TABLE 6.6: COUNTRIES CITING 'REDUCE FOSSIL FUEL IMPORTS OR NUCLEAR IMPORTS' IN THEIR LEGISLATIVE OBJECTIVES

Rank of objective	Countries
1	Andorra.
2	El Salvador.
3	Armenia.
4	Indonesia, Latvia, Philippines.

The Andorran *Law on the Promotion of Economic Activity and Social and Rationalisation and Optimisation of Resources Administration 2010* provides an example of this type of legislative objective in Article 19(1):

with the aim of contributing to the utilisation of national natural resources and reducing dependence on external energy sources.

6.4.1.5 REDUCE RISK OF NATURAL DISASTERS

The legislative objective of reducing the risk of natural disasters only features in the Bangladeshi law. This is likely to reflect the fact that Bangladesh is highly prone to natural disasters such as severe flooding, tropical cyclones, earthquakes and landslides. A considerable body of research has established that the frequency of natural disasters has increased with global warming and climate change.⁶² Therefore, by encouraging a shift from fossil fuel generation to renewable generation, the idea is that this will in turn reduce the risk of natural disasters. This objective is contained in the Preamble to the *Sustainable and Renewable Energy Development Authority Act 2001* which states that one of the purposes of the Act is 'to mitigate the risk of natural calamity'.

⁶¹ These figures were calculated by the Author using World Bank data on GDP per capita from 2013 and the data in Appendix 4.

⁶² See e.g. Intergovernmental Panel on Climate Change, *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX)* (2012) IPCC <http://www.ipcc-wg2.gov/SREX/images/uploads/SREX-All_FINAL.pdf>.

6.4.2 ENVIRONMENTAL OBJECTIVES

As shown in Table 6.2 above, environmental objectives are the most cited justification for legislating to accelerate or promote the deployment of renewable energy. While arguably many of the categories of legislative objective in this theme are seeking to address the market failures resulting from unpriced negative environmental externalities associated with fossil fuel use and the positive externalities associated with renewable generation, this is not reflected in the overall weighted rank. The weighted average rank for environmental objectives is 4.31, which means it is assigned a lower priority than other themes such as sectoral objectives that do not involve a market failure. In addition, those categories of objectives that are purely environmental such as 'environmental protection' and 'reduce greenhouse gas emissions and address climate change' receive significantly lower ranks than those addressing multiple themes. For example, the legislative objective sections which reference 'sustainable development' and/or 'efficient use of natural resources and energy conservation,' which on average have much higher average weighted ranks, tend to highlight not only the environmental aspects, but also the economic, and sometimes social, aspects of these objectives.

6.4.2.1 REDUCE GREENHOUSE GAS EMISSIONS AND ADDRESS CLIMATE CHANGE

Given the current reliance on fossil fuel generation in many countries, there is a strong causal link between energy use and the production of greenhouse gas emissions. Indeed, energy use is responsible for 75 per cent of total greenhouse gas (GHG) emissions.⁶³ Further, the GHG emissions produced from energy use are increasing at a much faster rate than the GHG emissions from other sources, particularly in developing countries.⁶⁴ This is problematic as research has

⁶³ Tariq Banuri and Niclas Hällström, 'A Global Programme to Enable Energy Access and Climate Change' (2012) 3 *What Next* 264, 268.

⁶⁴ *Ibid.*

shown that the larger a country's carbon dioxide emissions, the smaller their commitment to renewable energy tends to be.⁶⁵ Marques et al have stated that 'this suggests that the greater the level of economic activity, the greater the pollutant activity will be and therefore the propensity to invest in renewable sources will be smaller.'⁶⁶

Legislative objectives targeted at reducing greenhouse gas emissions and addressing climate change are commonly included to encourage compliance with the country's obligations under the Kyoto Protocol.⁶⁷ In some instances, these objectives may also be seeking to address a perceived economic risk associated with future climate agreements or regulations.⁶⁸ An unexpected outcome of the research for this thesis was that the level of concern that countries express about climate change and greenhouse gas emissions through international agreements such as the United Nations Framework Convention on Climate Change⁶⁹ and the Kyoto Protocol was not reflected in the number of countries targeting it as a legislative objective in their renewable energy laws. For example, while 191 countries are a party to the Kyoto Protocol, only 22 countries have a legislative objective of reducing greenhouse gas emissions and addressing climate change. The striking feature about many of the countries that do have this as a legislative objective is that they were very early parties to the Kyoto Protocol, with most countries agreeing to it in the period of 1999 – 2002. Despite this, it is often not a highly weighted legislative objective, with its average weighted rank being only 5.27.

⁶⁵ António C Marques, José A Fuinhas and J R Pires Manso, 'Motivations driving renewable energy in European countries: A panel data approach' (2010) 38 *Energy Policy* 6877, 6883.

⁶⁶ *Ibid.*

⁶⁷ *Kyoto Protocol to the United Nations Framework Convention on Climate Change*, opened for signature 11 December 1997, 2303 UNTS 148 (entered into force 16 February 2005).

⁶⁸ Grace, Donovan and Melnick, above n 34, 3.

⁶⁹ *United Nations Framework Convention on Climate Change*, opened for signature 4 June 1992, 1771 UNTS 107 (entered into force 21 March 1994).

TABLE 6.7: COUNTRIES CITING 'REDUCE GREENHOUSE GAS EMISSIONS AND ADDRESS CLIMATE CHANGE' IN THEIR LEGISLATIVE OBJECTIVES

Rank of objective	Countries
1	Australia, Austria, Bangladesh, Czech Republic.
2	Algeria, Germany, Panama.
3	Denmark, World (IRENA).
4	Tajikistan.
5	Albania, Gambia, Turkey.
6	Estonia, Palau.
8	Romania, Senegal.
9	South Korea, Morocco, Philippines.
12	Bulgaria.
14	Peru.

This may be because some economists argue that regulatory support mechanisms for renewable energy distort emissions trading schemes (ETS) such as the EU ETS by lowering demand for fossil fuels and hence the effective price of carbon.⁷⁰ They argue that specific renewable energy policies should not be used if their purpose is to reduce greenhouse gas emissions and mitigate climate change.⁷¹ Alternatively, they may be concerned about the potential interaction between renewable energy laws and climate change laws.⁷² However, as can be seen from both the previous chapter on the economic justification for regulatory intervention and the current chapter, most countries are trying to achieve much more than reducing greenhouse gas emissions through their renewable energy laws. Further, those countries that do seek to incorporate it as a legislative objective on average place quite a low priority on it relative to other objectives such as energy security, diversifying supply, sustainable development, strengthening the economy or even improving system stability, safety and reliability.

Countries that do prioritise this objective are often focused on rapidly deploying renewable generation, regardless of the size or location of the project. They may also prefer to support renewable energy technologies that produce lower

⁷⁰ Carolyn Fischer and Richard G Newell, 'Environmental and technology policies for climate mitigation' (2008) 55 *Journal of Environmental Economics and Management* 142; Max Rathmann, 'Do support systems for RES-E reduce EU-ETS-driven electricity prices?' (2007) 35 *Energy Policy* 342.

⁷¹ Cédric Philibert, 'Interactions of Policies for Renewable Energy and Climate' (Working Paper, OECD/IEA, 2011) 5.

⁷² Fischer and Preonas, above n 40.

greenhouse gas emissions over their lifecycle. This may mean that woody biomass and new large-scale hydropower plants may be avoided due to their effect on the release of methane, whereas landfill and sewage gas generation may be promoted due to their benefits in using methane that would otherwise be released into the atmosphere.⁷³

Examples of objectives targeting the reduction of greenhouse gas emissions and addressing climate change are found in both the Preamble to the IRENA Statute and in the Algerian law respectively:

- IRENA Statute: ‘Convinced of the major role that renewable energy can play in reducing greenhouse gas concentrations in the atmosphere, thereby contributing to the stabilisation of the climate system, and allowing for a sustainable, secure and gentle transit to a low carbon economy.’
- Algeria: Article 2 ‘The promotion of renewable energies aims to: [...] contribute to the fight against global warming by reducing emissions of greenhouse gases.’⁷⁴

6.4.2.2 ENVIRONMENTAL PROTECTION

Out of all of the categories of legislative objectives, the category of legislative objective targeting ‘environmental protection’ was the most common, having been adopted by 49 countries. This is over half of the 95 countries with renewable energy laws. This objective seeks to address many of the environmental problems associated with conventional fossil fuel use. This may include problems such as air pollution, unsustainable water use and pollution, thermal pollution, and waste, as well as their consequences such as increased health problems, acid rain, waste disposal and loss of biodiversity.

⁷³ Grace, Donovan and Melnick, above n 34, 17.

⁷⁴ *Loi n° 04-09 du 27 Jomada Ethania 1425 correspondant au 14 août 2004 relative à la promotion des énergies renouvelables dans le cadre du développement durable* [Law No 04-09 of 27 Jumada Ethania 1425 corresponding to 14 August 2004 on the promotion of renewable energies in the framework of sustainable development] (Algeria) [Stephanie Watson translation from French].

The countries that legislate with the objective of ‘environmental protection,’ on average have higher levels of energy self-sufficiency (83.22%) than the average for all countries with renewable energy laws (79.78%). They also have higher levels of electric power consumption using an average of 15,616kWh/per capita, as opposed to an average of 10,240 kWh/per capita for all countries with renewable energy laws.⁷⁵ Despite the range of problems that countries that target ‘environmental protection’ seek to address, Lyon and Yin, in their empirical study of the adoption of Renewable Portfolio Standards in the United States, found that ‘local environmental conditions and preferences ha[d] no significant effect on the timing of adoption.’⁷⁶

TABLE 6.8: COUNTRIES CITING ‘ENVIRONMENTAL PROTECTION’ IN THEIR LEGISLATIVE OBJECTIVES

Rank of objective	Countries
1	Algeria, El Salvador, South Korea, Luxembourg.
2	Australia, Austria, Czech Republic, Ghana, Taiwan, Uzbekistan.
3	Belarus, Estonia, Germany, Jordan, Kazakhstan, Tajikistan, Yemen.
4	Kosovo, Lichtenstein, Slovenia, Tunisia.
5	China, Dominican Republic, Japan, Kyrgyzstan, Lithuania, Montenegro, the Netherlands, Switzerland, Ukraine.
6	Albania, Colombia, Iceland, Serbia, Turkey.
7	Gambia, Palau, Peru, Poland, Romania, South Africa.
8	Macedonia, Morocco, Paraguay.
9	Russia, Thailand.
11	Bulgaria, Philippines.
14	Indonesia.

When this objective is prioritised, it is important to recognise the specific problems that the legislation is seeking to address. This may not only have an impact on the fossil fuel generators but may also affect the renewable energy sector. For example, if the legislators are particularly concerned with air pollution, this may mean that power generated from photovoltaic solar, wind and hydropower is given preference over power generated from woody biomass. Equally, where the legislators are concerned about water usage, this may steer energy project developers away from not just coal and nuclear fired generation but also away from large biomass, concentrated solar thermal and geothermal

⁷⁵ Source: The World Bank, *World Development Indicators*, above n 50.

⁷⁶ Thomas P Lyon and Haitao Yin, ‘Why Do States Adopt Renewable Portfolio Standards?: An Empirical Investigation’ (2010) 31 *The Energy Journal* 131.

generation, all of which are heavily water intensive/per kWh generated. Further, and as discussed in Chapter 4, it is environmental concerns that have also prompted some countries to remove large-scale hydropower from their supported renewable energy sources.

Examples of legislative objectives targeting ‘environmental protection’ include:

- ‘to mitigate the adverse environmental effects of energy operations using fossil fuels’⁷⁷
- ‘Promotion of the use of renewable energy sources is hereby established, with the aim of contributing to the protection of the environment, the use of renewable resources existing in the country and a high-quality supply of electricity.’⁷⁸
- ‘The promotion of renewable energies aims to: protect the environment by promoting the use of non-polluting sources of energy’⁷⁹
- ‘The objects of this Act are: [...] (c) to ensure that renewable energy sources are ecologically sustainable.’⁸⁰
- ‘The purpose of this Act is to contribute to the preservation of the environment...’⁸¹

6.4.2.3 SUSTAINABLE DEVELOPMENT

The most commonly adopted definition of sustainable development is that of the Brundtland Report: ‘[d]evelopment that meets the needs of the present without compromising the ability of future generations to meet their own needs.’⁸² Legislative objectives targeting sustainable development were adopted by 32 countries, and were often quite highly prioritised, with an average weighted rank of 3.56.

⁷⁷ *Ley No. 5707 sobre Incentivo al Desarrollo de Fuentes Renovables de Energía y de sus Regímenes Especiales* [Renewable Energies Incentive Law 57-07] (Dominican Republic) 2007 [Linguistico Translations translation from Spanish].

⁷⁸ *Ley De Incentivos Fiscales Para El Fomento De Las Energías Renovables En La Generación De Electricidad* [Fiscal Incentives Law for the Promotion of Renewable Energy] (El Salvador) 2007 [Linguistico Translations translation from Spanish].

⁷⁹ *Loi n° 04-09 du 27 Jomada Ethania 1425 correspondant au 14 août 2004 relative à la promotion des énergies renouvelables dans le cadre du développement durable* [Law No 04-09 of 27 Jumada Ethania 1425 corresponding to 14 August 2004 on the promotion of renewable energies in the framework of sustainable development] (Algeria) [Stephanie Watson translation from French].

⁸⁰ *Renewable Energy (Electricity) Act 2000* (Cth) s 3.

⁸¹ «개발의 승진 주문, 사용 및 확산 새로운 신 재생 에너지의» [Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy] (Republic of Korea), 31 December 2004, Art 1 [Korean Legislative Research Institute translation from Korean].

⁸² World Commission on Environment and Development, *Our Common Future (The Brundtland Report)* (Oxford University Press, 1987) 43.

TABLE 6.9: COUNTRIES CITING ‘SUSTAINABLE DEVELOPMENT’ IN THEIR LEGISLATIVE OBJECTIVES

Rank of objective	Countries
1	Belarus, Germany, Indonesia, Lithuania, Poland, Tunisia, Vietnam, World (IRENA).
2	Albania, Bulgaria, Mexico, Nicaragua, Serbia, Slovenia.
3	Algeria, Ghana, South Korea, the Netherlands.
4	Colombia, Jordan, Paraguay, Romania.
5	Czech Republic, Philippines.
6	China, Japan, Kyrgyzstan, Taiwan.
7	Estonia, Morocco.
8	Tonga.
10	South Africa.

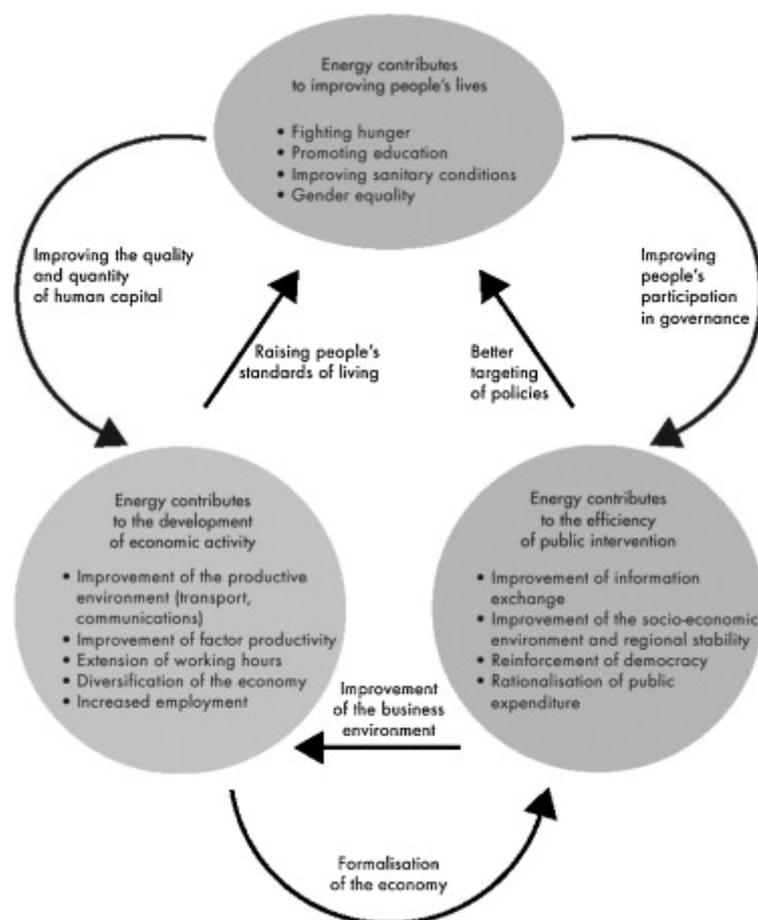
The countries that have adopted ‘sustainable development’ as a legislative objective, have an average GDP per capita of \$US 11,229, which is much lower than the average for all countries with renewable energy laws of \$US 18,565.⁸³

One of the criticisms of the use of ‘sustainable development’ is that the term is often either not defined in the laws at all or defined very vaguely. This is likely to be because ‘there remains no consensus of the exact meaning of the term.’⁸⁴ This may make it harder to achieve this objective than other objectives as: (a) it is often not clear what is sought to be achieved; and (b) it is often not clear what indicators will be used to measure relative success or failure. Despite this, energy plays a critical role in ensuring sustainable development in developing countries, as Kaygusuz has characterised in the following diagram:

⁸³ GDP per capita 2013 (current US\$) (source: The World Bank, *World Development Indicators*, above n 46) Rounded to the nearest whole dollar.

⁸⁴ Andrea Ross, ‘Why Legislate for Sustainable Development? An Examination of Sustainable Development, Provisions in UK and Scottish Statutes’ (2008) 20 *Journal of Environment Law* 35, 39.

FIGURE 1: THE ROLE OF ENERGY IN SUSTAINABLE DEVELOPMENT⁸⁵



Some examples of legislative objectives focusing on 'sustainable development' include:

- 'The purpose of this Act is to facilitate a sustainable development of energy supply...'⁸⁶
- 'The purpose of the Act is the creation the conditions for sustainable development of the country...'⁸⁷
- 'To develop electricity in a sustainable manner on the basis of optimally tapping all resources, satisfying demands on electric energy in service of people's life and socio-economic development with stable quality, safety and economy, civilised services, thus contributing to the maintenance of national defense, security and energy security.'⁸⁸

⁸⁵ Kamil Kaygusuz, 'Energy for sustainable development: A case of developing countries' (2012) 16 *Renewable and Sustainable Energy Reviews* 1116, 1119 fig 2.

⁸⁶ *Gesetz für den Vorrang Erneuerbarer Energien* [Act on granting priority to renewable energy sources] (Germany) 25 February 2000, BGBl, 2009, part 1 s 1(1).

⁸⁷ *Prawo energetyczne 1997* [Energy Law 1997] (Poland) 10 April 1997, Art 2 [Poland Office of Sejm translation from Polish].

⁸⁸ *Electricity Law 2004* (Vietnam) 28/2004/QH11, Art 4(1).

6.4.2.4 MORE EFFICIENT USE OF NATURAL RESOURCES AND ENERGY CONSERVATION

‘More efficient use of natural resources and energy conservation’ was the second most frequently cited category of legislative objective, with 44 countries including it in their laws. It was also commonly highly prioritised with an average weighted rank of 3.54.

TABLE 6.10: COUNTRIES CITING ‘MORE EFFICIENT USE OF NATURAL RESOURCES AND ENERGY CONSERVATION’ IN THEIR LEGISLATIVE OBJECTIVES

Rank of objective	Countries
1	Albania, Ghana, Hungary, Kazakhstan, Lichtenstein, Mexico, New Zealand, Tajikistan, Uzbekistan.
2	Andorra, Belarus, Croatia, Luxembourg, Sri Lanka, Vietnam.
3	El Salvador, Honduras, Kosovo, Latvia, Macedonia, Montenegro, Poland, San Marino, Spain, Turkey.
4	Algeria, Czech Republic, Netherlands, Serbia, South Africa, Ukraine.
5	Austria, Bangladesh, Colombia, Estonia, Indonesia, Jordan, Tunisia.
6	Armenia.
7	Lithuania, Thailand.
8	Philippines.
9	Gambia, Tonga.

This is likely to reflect the considerable work undertaken by a number of international organisations such as the IEA, UN-Energy, the United Nations Environment Programme (UNEP), the United Nations Development Programme (UNDP), the EU and the International Partnership for Energy Efficiency Cooperation in improving energy efficiency and energy conservation.

In the context of these renewable energy laws, energy efficiency refers to the same standard of service and performance being achieved with less energy. In contrast, energy conservation refers to the standard of service and performance being reduced due to less energy being available. As a result, energy conservation is often viewed as being faster and less costly to introduce.⁸⁹ However, due to it being associated with lower levels of service and lifestyle changes, energy conservation measures often do not succeed in the long-term

⁸⁹ Larry Hughes, ‘The four ‘Rs’ of energy security’ (2009) 37 *Energy Policy* 2459, 2460.

unless education, infrastructure and pricing strategies are introduced to complement it.⁹⁰ As a result, Hughes has argued that energy efficiency measures are often more effective in reducing energy consumption over time.⁹¹

Examples of legislative objectives targeting ‘more efficient use of natural resources and energy efficiency’ include:

- ‘promote economical and efficient use of energy and resources in the energy industry operation, with due consideration of the environmental impact and balance of natural resources.’⁹²
- ‘The object of this Act is to provide for the development, management and utilisation of renewable energy sources for the production of heat and power in an efficient and environmentally sustainable manner.’⁹³
- ‘State regulation in the area of support of renewable energy sources utilisation is performed with a purpose of creation of favourable conditions for electrical and (or) heat power generation with utilisation of renewable sources of energy in order to reduce energy intensity of economic sector, to decrease environmental impact of power industry, and to increase the share renewable energy sources for electrical and (or) heat power generation.’⁹⁴
- ‘The purpose of this Act is to promote, in New Zealand, energy efficiency, energy conservation, and the use of renewable sources of energy.’⁹⁵

6.4.3 INDUSTRIAL POLICY OBJECTIVES

*We're in a competition all around the world, and other countries – Germany, China, South Korea – they know that clean energy technology is what is going to help spur job creation and economic growth for years to come. And that's why we've got to make sure that we win that competition. I don't want the new breakthrough technologies and the new manufacturing taking place in China and India. I want all those new jobs right here...in the United States of America, with American workers, American know-how, American ingenuity*⁹⁶ – President Barack Obama

⁹⁰ Ibid.

⁹¹ Ibid.

⁹² *Energy Industry Act, B E 2550* (Kingdom of Thailand) 10 December 2007, div 1 s 7(7) [Thai Law Forum translation from Thai].

⁹³ *Renewable Energy Act* (Ghana) 2011, s 1(1).

⁹⁴ «О поддержке использования возобновляемых источников энергии Закон Республики Казахстан от 4 июля 2009 года № 165-IV» [Law of the Republic of Kazakhstan No 165-IV About Support of Use of Renewable Energy of 4 July 2009] (Kazakhstan) ch 2 Art 3(1) [Government of the Republic of Kazakhstan translation from Kazakh].

⁹⁵ *Energy Efficiency and Conservation Act 2000* (NZ) s 5.

⁹⁶ Barack Obama (Remarks, Allison Transmission Headquarters, Indiana) cited in Adele C Morris, Peitro S Nivola and Charles L Schultze, ‘Clean energy: revisiting the challenges of industrial policy’ (2012) 34 *Energy Economics* S34, S34.

The renewable energy sector has become a fertile ground for countries to exercise industrial policy. To this end, countries will provide regulatory support to the renewable energy sector to assist in the development of their local manufacturing sectors to become leading producers of renewable energy technologies. In this way, countries often also tried to stimulate jobs and foster technological innovation, thereby encouraging the development of new industries and infrastructure within a country and the development of an export market.⁹⁷ This may be successful, with Lund reporting that a study of the energy technology exports of the EU-15 showed that they amount on average to 5 per cent of total exports.⁹⁸ Further, Germany, Denmark and the United Kingdom had all been successful in increasing their relative shares of exports over time, indicating that renewable energy laws may play an important role in the context of a country's industrial policy.⁹⁹

6.4.3.1 LOCAL MANUFACTURING

The rationale behind using renewable energy to support local manufacturing is that it can 'ameliorate unemployment, stimulate growth, and stem the 'offshoring' of manufacturing,'¹⁰⁰ leading to increased economic growth and national income in the long-term. That said, only three upper-middle income countries used their renewable energy laws to support local manufacturing:

TABLE 6.11: COUNTRIES CITING 'LOCAL MANUFACTURING' IN THEIR LEGISLATIVE OBJECTIVES

Rank of objective	Countries
2	Peru.
3	Argentina.
7	Turkey.

⁹⁷ Morris, Nivola and Schultze, above n 96, S36.

⁹⁸ Peter D Lund, 'Effects of energy policies on industry expansion in renewable energy' (2009) 34 *Renewable Energy* 53, 53.

⁹⁹ Ibid; Fischer and Preonas, above n 40, 54.

¹⁰⁰ Morris, Nivola and Schultze, above n 96, S36.

This is likely to be for two reasons. First, it may be that countries do not believe that their renewable energy laws are the most efficient and effective vehicle for achieving this objective. Second, the reluctance to include local manufacturing as a legislative objective may also reflect concerns about domestic content clauses under the Agreement on Subsidies and Countervailing Measures (SCM) to the WTO.¹⁰¹ Despite this, Turkey currently provides an additional incentive of between \$US cents 0.4 and 2.4/kWh for five years for renewable energy facilities which use Turkish-manufactured mechanical and electromechanical equipment.¹⁰²

An example of this category of legislative objective is found in the Turkish law:

The purpose of this Law is to expand the use of renewable energy sources for the purpose of energy generation, to introduce such sources into the economy in a reliable and economic fashion and to a good quality standard, to broaden the variety of sources, to reduce greenhouse gas emissions, to exploit waste, to protect the environment, and to develop the manufacturing sector as required in order to fulfil these purposes.¹⁰³

6.4.3.2 SUPPORT THE DEVELOPMENT OF NEW INDUSTRY AND INFRASTRUCTURE

Sixteen countries ‘support the development of new industry and infrastructure’ through their renewable energy laws, with it being assigned an average weighted rank of 5.68. These countries include the industrial powerhouses of China and South Korea, as well as a number of emerging economies, such as South Africa, Indonesia and the Philippines. In 2013, the average GDP per capita of the countries that had adopted this legislative objective was \$US 9,197.¹⁰⁴

¹⁰¹ *Marrakesh Agreement Establishing the World Trade Organisation*, opened for signature 15 April 1994, 1867 UNTS 3 (entered into force 1 January 1995 annex 1A (‘*Subsidies and Countervailing Measures*’) Arts 3.1-2.

¹⁰² KPMG International, *Taxes and incentives for renewable energy* (September 2013) KPMG <<http://www.kpmg.com/DE/de/Documents/taxes-incentives-renewable-energy-2013-kpmg.pdf>> 50.

¹⁰³ *Yenilenebilir Enerji Kaynaklarının Elektrik Enerjisi Üretimi Amaçlı Kullanımına İlişkin Kanun Kanun Numarası* [Law Regarding The Use Of Renewable Energy Resources For Electricity Production] (Turkey) 2005 No 5346, s 1 [Linguistico Translations translation from Turkish].

¹⁰⁴ GDP per capita 2013 (current US\$). (Source: The World Bank, *World Development Indicators*, above n 46) Rounded to the nearest whole dollar.

TABLE 6.12: COUNTRIES CITING 'SUPPORT THE DEVELOPMENT OF NEW INDUSTRY AND INFRASTRUCTURE' IN THEIR LEGISLATIVE OBJECTIVES

Rank of objective	Countries
1	China, Honduras, Nicaragua.
3	Lithuania, Taiwan, Tonga.
5	Armenia.
6	Austria, Bulgaria, Paraguay.
7	South Korea, Senegal.
9	Hungary, South Africa.
12	Indonesia, Philippines.

Legislative objectives that target the development of new industries and infrastructure operate on the basis that the particular industries or infrastructure are so important to the country that they justify distorting the market through regulation supporting them. These objectives may be the result of political compromise, and may ensure that regulatory support goes to industries prevalent in specific geographic areas within a country.

An example of a how legislative objectives target this area is found in the South Korean legislation:

The purpose of this act is to contribute to [...] use and distribution of new and renewable energy, and the activation of the new energy industry and renewable energy industry...¹⁰⁵

6.4.3.3 ENCOURAGE TECHNOLOGICAL INNOVATIONS

The rationale behind encouraging technological innovation is that this may facilitate new industry and export markets in the country. In addition, by encouraging the development and subsequent commercialisation of emerging technologies, it may make electricity generation from renewable sources more efficient and in the long term more likely to achieve cost competitiveness with fossil fuel sources.¹⁰⁶ Other benefits include the potential to reduce some of the costs and risks currently associated with technologies in the sector, while increasing the benefits. Huang et al have also argued that technological innovations can lead to expanded energy supplies, and improve the availability

¹⁰⁵ «개발의 승진 주문, 사용 및 확산 새로운 신 재생 에너지의» [Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy] (Republic of Korea), 31 December 2004 [Korean Legislative Research Institute translation from Korean].

¹⁰⁶ Grace, Donovan and Melnick, above n 34, 3.

and quality of energy, all while reducing the adverse environmental impacts that result from energy extraction, conservation and usage.’¹⁰⁷

Technological innovation was supported by eighteen countries through their renewable energy laws, with an average weighted rank of 5.22:

TABLE 6.13: COUNTRIES CITING ‘ENCOURAGE TECHNOLOGICAL INNOVATIONS’ IN THEIR LEGISLATIVE OBJECTIVES

Rank of objective	Countries
2	Argentina, Lithuania, Tonga, Russia.
3	Albania.
4	San Marino, Uzbekistan, World (IRENA).
5	Bulgaria, Paraguay.
6	South Korea, Peru, Senegal.
7	Germany.
8	South Africa, Ukraine.
9	Vietnam.
11	Morocco.

Countries that support technological innovation are likely to design their regulatory support mechanisms in such a way as to band the support of renewable energy technologies, rather than simply preferring the technology that is currently least-cost. The banding of technologies may be done in several ways, including carving out projects and technologies that are already cost competitive or well-established, and applying a multiplier to the support given to emerging technologies based on their level of commercialisation. Ideally, renewable energy laws should enable regulatory support mechanisms to be provided for all phases of the innovation cycle from research and development to commercialisation to provide legal certainty and market stability.¹⁰⁸

An example of this objective is found in the Lithuanian law:

This Law aims to ensure sustainable growth in the exploitation of renewable energy sources as well as to promote further development and implementation of relevant new technologies...¹⁰⁹

¹⁰⁷ Cui Huang, Jun Su, Xiaoyun Zhao, Jigang Sui, Peng Ru, Hanwei Zhang and Xin Wang, ‘Government funded renewable energy innovation in China’ (2012) 51 *Energy Policy* 121, 121.

¹⁰⁸ Jeffrey M Loiter and Vicki Norberg-Bohm, ‘Technology policy and renewable energy: public roles in the development of new energy technologies’ (1999) 27 *Energy Policy* 85, 95; See also, Davies, ‘Reconciling Renewable Portfolio Standards and Feed-In Tariffs’, above n 2, 321.

¹⁰⁹ *Atsinaujinančių išteklių energetikos įstatymas* [Law on Energy from Renewable Sources] (Lithuania) 2011, part 1 Art 1(2) [Linguistico Translations translation from Lithuanian].

6.4.3.4 CREATE JOBS OR IMPROVE SKILLS AND DOMESTIC CAPABILITIES

Legislative intervention in the renewable energy sector is sometimes justified on the basis that regulatory support mechanisms stimulate job creation. As can be seen in the Table 6.14 below, job creation and improving domestic capabilities tend to be a focus of lower to upper middle-income countries, though it is often not a high priority with an average weighted rank of 7.12. Further, Lyon and Yin’s empirical study of the adoption Renewable Energy Portfolio Standards in the United States found that the states with high unemployment rates were slower to adopt a renewable portfolio standard (RPS) than those with lower unemployment rates.¹¹⁰ On average, the eight countries that cited job creation in their legislative objectives had an annual GDP per capita of \$US 3,980 in 2013.

TABLE 6.14: COUNTRIES CITING ‘CREATE JOBS OR IMPROVE SKILLS AND DOMESTIC CAPABILITIES’ IN THEIR LEGISLATIVE OBJECTIVES

Rank of objective	Countries
4	Honduras.
6	Dominican Republic, Romania, Tonga, World (IRENA).
8	Gambia, Ghana.
13	Indonesia.

Much of the research into the impact of renewable energy laws on job creation has focused on Germany, a country that does not list employment opportunities as a legislative objective, but does have a long history of providing legislative support to the sector. Jobs are often cited by the government as one of the primary benefits of the German renewable energy law, with the German Environment Ministry referring to the renewable sector as a ‘job motor for Germany’.¹¹¹ Various studies have been conducted into the employment impact of providing regulatory support to the German renewable energy sector. A 2008 Report by the BMU found that there had been a 55 per cent increase in ‘green jobs’ in the period 2004 – 2007, with 249,300 people working in ‘green jobs’ in

¹¹⁰ Lyon and Yin, above n 76.

¹¹¹ Manuel Frondel et al, ‘Economic impacts from the promotion of renewable energy technologies: The German experience’ (2010) 38 *Energy Policy* 4048, 4055.

Germany in 2007.¹¹² By 2012, almost 380,000 total jobs were created by the renewable energy sector in Germany in 2012 (a slight decline on 2011 figures), with the majority of jobs stemming from investments in wind installations, though an increasing share is related to maintenance and operational services.¹¹³ These figures were projected to rise to 400,000 people by 2020.¹¹⁴

However, the export market has not remained strong for German renewable energy exports in the face of the Global Financial Crisis and increased competition from China, leading to a drop in the support for the renewable energy sector and resulting job losses. The figures also do not consider the net employment impact of providing regulatory support to the renewable energy sector, in particular, the projected increase in jobs did not factor in direct job losses in fossil fuel fired generation, and associated industries. A further area of concern involves indirect job losses due to higher electricity prices, which may cause highly energy intensive industries such as aluminium smelting to shut down and/or to move abroad if they are not given preferential treatment. Indeed, Frondel et al have argued that, contrary to the perception that renewable energy legislation can be used to create jobs,

numerous empirical studies have consistently shown the net employment balance to be zero or even negative in the long run, a consequence of the high opportunity cost of supporting renewable energy technologies. Indeed, it is most likely that whatever jobs are created by renewable energy promotion would vanish as soon as government support is terminated, leaving only Germany's export sector to benefit from the possible continuation of renewable support in other countries such as the US.¹¹⁵

Similar results have been achieved in other studies of the employment effects of renewable energy laws.¹¹⁶ For example, when the available tariff under the NSW Solar Bonus Scheme was reduced and then new applications under the scheme were closed, it had an almost immediate effect on employment levels and

¹¹² Ibid.

¹¹³ Bundesministerium für Umwelt, *Renewably employed: Short- and long-term impacts of the expansion of renewable energy on the German labour market* (BMU, 2012); Marlene O'Sullivan et al, 'Bruttobeschäftigung durch erneuerbare Energien in Deutschland im Jahr 2012' (Research Paper No 03240528, BMU, 2013) cited in Anna Pgels and Wilfried Lütkenhorst, 'Is Germany's energy transition in case of successful green industrial policy?' (2014) 74 *Energy Policy* 522.

¹¹⁴ Frondel, above n 111, 4055.

¹¹⁵ Ibid.

¹¹⁶ Morris, Nivola and Schultze, above n 96, S39.

business closures within the NSW solar industry. A survey conducted by the Australian Solar Energy Society in August 2011 of 91 solar businesses in NSW stated that there had been ‘a 93 per cent fall in sales inquiries and more than 400 job losses’ since November 2010.¹¹⁷ Further, ‘25 per cent of the businesses contacted were either closed or planning to close.’¹¹⁸ This would suggest that the poor design of the NSW Scheme actively hampered its second objective of ‘developing jobs in the renewable energy sector by assisting renewable energy generation to compete with non-renewable energy generation,’¹¹⁹ as the jobs created were not sustainable without the assistance of the feed-in tariff.

An example of this legislative objective is found in the Romanian law:

This law creates a legal framework necessary to broaden the use of renewable energy by: (b) stimulating sustainable development at the local and regional level and creating new jobs associated with recovery processes of renewable energy,¹²⁰

6.4.4 ECONOMIC OBJECTIVES

During the Global Financial Crisis, the renewable energy sector was targeted as a means of stimulating the economy through the development of new technologies, new jobs, new industries and new infrastructure. Indeed, by 2010, over \$US 190bn had been pledged in the form of renewable energy support under ‘Green Fiscal Stimulus’ packages, predominantly by China, the United States and Korea.¹²¹ The economic theme of legislative objectives was the third

¹¹⁷ Amos Aikman, ‘Government’s Withdrawal of Solar Subsidy Scheme Leaves Industry in Trouble’, *The Australian* (online), 18 August 2011 <<http://www.theaustralian.com.au/national-affairs/governments-withdrawal-of-solar-subsidy-scheme-leaves-industry-in-trouble/story-fn59niix-1226117018314>>.

¹¹⁸ Ibid. Note, it is unclear how much blame for the reduction in employment opportunities within the sector can be attributed to the removal of the NSW Solar Bonus Scheme given the other ancillary pressures present in the market at the time, including the effects of the global financial crisis and general market turmoil.

¹¹⁹ *Electricity Supply Amendment (Solar Bonus Scheme) Act 2009* (NSW) sch 1 s 15(1A)(1)(b), which amended the *Electricity Supply Act 1995* (NSW).

¹²⁰ *Legea 220/2008 pentru stabilirea sistemului de promovare a producerii energiei din surse regenerabile de energie, republicata 2010* [Law 220/2008 on establishing the promotion system of energy production from renewable energy sources] (Romania) ch 1 Art 1(1) [Linguistico Translations translation from Romanian].

¹²¹ Bloomberg New Energy Finance, *Weathering the storm: Public funding for low carbon energy in the post financial crisis era* (2010), 8.

most prioritised theme in the renewable energy laws of countries, with an average weighted rank of 4.84.

6.4.4.1 STRENGTHEN THE ECONOMY

There is a link between the accelerated deployment of renewable energy and GDP growth, with a study by Apergis et al finding that a 1 per cent increase in renewable energy consumption increases real GDP by 0.76 per cent.¹²² Other areas that could signal a strengthening of the economy include lower rates for electricity, greater levels of access to electricity, job creation, new infrastructure development, and support for new industries and local manufacturing. Most of these areas correlate positively in the long-term with increasing levels of renewable energy deployment (with the possible exception of job creation, as explained above). As a result, 21 countries targeted economic growth through their renewable energy laws. Further, when ‘strengthen the economy’ is included as a legislative priority, it is often given a high priority, with an average weighted rank of 3.71.

TABLE 6.15: COUNTRIES CITING ‘STRENGTHEN THE ECONOMY’ IN THEIR LEGISLATIVE OBJECTIVES

Rank of objective	Countries
1	Armenia, Iceland, Turkey.
2	South Korea, Colombia, Japan, Kazakhstan, Palau, Tunisia.
3	Hungary, Kyrgyzstan, Slovenia.
4	Bulgaria.
5	Serbia, Vietnam, World (IRENA).
6	Philippines, Gambia.
7	Indonesia.
8	Thailand, Kosovo.

One of the downsides to renewable energy laws that prioritise economic objectives highly is that they may focus on renewable energy development only to the extent that it is economically advantageous in the short-term. This means that renewable energy sources and technologies that are currently least-cost are

¹²² Nicholas Apergis and James E Payne, ‘Renewable energy consumption in economic growth: Evidence from a panel of OECD countries’ (2010) 38 *Energy Policy* 656, 659.

likely to be prioritised, even if they will not be the most effective or efficient in the long-term.

An example of this clause is found in the Armenian law:

The purposes of the present Law shall be defining the principles of the state policy on the development of the energy saving and renewable energy and the mechanisms of the enforcement of those aimed at: Strengthening the economic and energy independence of the Republic of Armenia.¹²³

6.4.4.2 NATIONAL DEVELOPMENT

Renewable energy legislation is often designed to foster national development. This is a very broad legislative objective, and it is not often clear what countries are trying to achieve by listing it in their legislative objectives, and further, how any relative success or failure to meet this objective will be measured. This objective is often used in connection with some of the industrial policy objectives, such as strengthening the economy, creating jobs, local manufacturing and supporting the development of new industry and infrastructure. This particular approach seems to have found favour with the countries involved in high-tech manufacturing such as Japan, South Korea, and Taiwan. The reference to ‘national development’ sometimes also appears to refer to post-conflict nation-building such as in Kosovo and Montenegro.

TABLE 6.16: COUNTRIES CITING ‘NATIONAL DEVELOPMENT’ IN THEIR LEGISLATIVE OBJECTIVES

Rank of objective	Countries
2	Iceland, Indonesia.
3	Japan.
4	South Korea, Tonga, Montenegro, Peru.
5	Taiwan.
6	Algeria.
7	Philippines.
10	Kosovo.

¹²³ *The Law of the Republic of Armenia on Energy Saving and Renewable Energy* (Armenia) 9 November 2004, ch 1 Art 1 [National Assembly of the Republic of Armenia translation from Armenian].

Two examples of this objective are found in the Indonesian law and Kosovan law, respectively:

- ‘in order to support sustainable national development and improve national energy security, the management of energy shall be aimed to...’¹²⁴
- ‘The purposes of this law are to: [...] (f) enhance the economic and social cohesion of Kosovo.’¹²⁵

6.4.4.3 PROMOTE PRIVATE INVESTMENT

The promotion of private investment in the renewable energy sector is designed to reduce the dependence of the sector on government support and to help break-up the market power of the dominant market players (often former state-owned monopolies). Attracting private investment is also sometimes seen as a means of improving the standards and reliability in the sector, as private investors may bring with them new, more efficient and safer technologies. The fifteen countries that have adopted this objective have an average GDP per capita of \$US 8,315, which is less than half of the average GDP per capita of all countries with renewable energy laws.

TABLE 6.17: COUNTRIES CITING ‘PROMOTE PRIVATE INVESTMENT’ IN THEIR LEGISLATIVE OBJECTIVES

Rank of objective	Countries
1	Guatemala, Palau.
2	Jordan, Syria.
4	Dominican Republic, Ghana.
5	Peru.
6	Yemen.
7	Tonga, Kosovo, Montenegro, Serbia.
9	Romania, Ukraine.
12	Morocco.

¹²⁴ *UNDANG-UNDANG REPUBLIK INDONESIA NOMOR 30 TAHUN 2007 TENTANG ENERGI* [Law of the Republic of Indonesia Number 30 of 2007 About Energy] (Republic of Indonesia) ch 2 Art 3 [Ellen Marie O’Brien translation from Indonesian].

¹²⁵ *Law on Energy 2004* (Kosovo) 03/L184, ch 1 Art 2.

An example of such an objective is found in the Ukrainian law:

The fundamental principles of state policy in the area of alternative energy sources are: [...] Attraction of domestic and foreign investment and support for entrepreneurial initiatives in the field of alternative energy sources, including through the development and implementation of nationwide and local programs for the development of alternative energy.¹²⁶

6.4.4.4 COMPETITION ISSUES

Historically, the electricity sector was structured around vertically integrated and state-owned monopolies that were regulated through the use of ‘command and control’ style regulation. More recently, there has been a clear shift towards investor-owned private enterprises operating in competitive markets.

Competition issues represent a legislative objective of 22 countries with renewable energy laws. Almost half of these countries are located in Eastern Europe, and include four of the current five EU candidate countries that are required to ensure competition within their energy sector as part of the Economic Accession Criteria.¹²⁷ This category of legislative objective has an average weighted rank of 4.90.

TABLE 6.18: COUNTRIES CITING ‘COMPETITION ISSUES’ IN THEIR LEGISLATIVE OBJECTIVES

Rank of objective	Countries
1	Finland.
2	Hungary.
3	Bulgaria, Colombia, Serbia, Thailand.
4	Estonia, Iceland, Macedonia, Poland, Spain.
5	Yemen.
6	Honduras, Kosovo, Latvia, Montenegro, Morocco, Russia.
7	Czech Republic, Dominican Republic, Vietnam.
11	Lithuania.

¹²⁶ *Law on Alternative Energy Sources* (Ukraine) 20 February 2003, no 555-IV, Art 1) [Linguistico Translations translation from Ukrainian].

¹²⁷ EU Economic and Financial Affairs, *Economic accession criteria* (13 December 2011), European Commission, <
http://ec.europa.eu/economy_finance/international/enlargement/criteria/index_en.htm>.

Examples of objectives addressing competition issues include:

- 'to enhance the economy's competitive capacity through an efficient competitive electricity market;'¹²⁸
- 'The purpose of the Act is the [...] development of competition, counteracting the negative consequences of natural monopolies...'¹²⁹

6.4.4.5 INCREASE THE NUMBER OF IPPS AND SMALL AND MEDIUM ENTERPRISES

This objective is linked to other objectives targeting a more competitive electricity market, and improving the structure of the electricity sector. In seeking to increase the number of independent power producers (IPPs) and the number of small and medium enterprises active within the electricity generation sub-sector, this objective is trying to reduce the market power held by the dominant players. This forms an essential component of the breakup of the traditional vertically integrated monopolies and the transition to a privatised and deregulated energy market. It also forms part of the Economic Accession Criteria to the EU.¹³⁰

TABLE 6.19: COUNTRIES CITING 'INCREASE THE NUMBER OF IPPS AND SMALL AND MEDIUM ENTERPRISES' IN THEIR LEGISLATIVE OBJECTIVES

Rank of objective	Countries
6	Poland, Thailand.
7	Russia.
8	Bulgaria.
11	Albania.

This objective is not a top priority for any country, with an average weighted rank of 7.6. An example of an objective to increase the number of IPPs and small and medium enterprises is found in the Albanian law:

The purpose of this law is to: (f) increase the number of independent energy producers and promote the development of small and medium enterprises...¹³¹

¹²⁸ 2007. évi LXXXVI. törvény a villamos energiáról [Act No. LXXXVI of 2007 on Electric Energy] (Hungary) ch 1 s 1(a) [Linguistico Translations translation from Hungarian].

¹²⁹ *Prawo energetyczne 1997* [Energy Law 1997] (Poland) 10 April 1997, ch 1 Art 2 [Poland Office of Sejm translation from Polish].

¹³⁰ EU Economic and Financial Affairs, above n 123.

¹³¹ *Për Burimet E Energjisë Së Rinovueshme* [Law on Renewable Energy Sources] (Albania) No 138/2013, ch 1 Art 1 [Linguistico Translations translation from Albanian].

6.4.5 SOCIAL OBJECTIVES

The four categories of legislative objectives within social theme are:

1. Public health or improving living standards or social development;
2. Affordable energy;
3. Improved access to electricity; and
4. Promote rural development.

The social objectives are often not highly prioritised, with an average weighted rank of 6.8, making it the lowest ranking theme out of all of the eight themes.

6.4.5.1 PUBLIC HEALTH OR IMPROVING LIVING STANDARDS OR SOCIAL DEVELOPMENT

This legislative objective has two central but inter-related subjects. First, when it is used to target public health, it commonly refers to reducing reliance on fossil fuel generation or traditional biomass use, which makes up much of the domestic fuel used in the developing world.¹³² These fuels have been associated with particulate air pollution and negative health impacts such as increased risk of heart attacks, strokes, lung disease and asthma. They also have serious impacts on child mortality, with the World Health Organization (WHO) reporting that 4 million premature deaths occur each year as a result of indoor smoke inhalation, and more than half of these deaths occur among children under five years of age.¹³³

Second, the use of traditional fuels such as firewood, charcoal and animal dung has a marked impact on the living standards and social development of communities,¹³⁴ and has a particularly negative impact upon the women in the

¹³² Banuri and Hällström, above n 63, 268.

¹³³ World Health Organisation, 'Household air pollution and health' (Fact Sheet No 292, WHO, March 2014).

¹³⁴ Kamil Kaygusuz, 'Energy services and energy poverty for sustainable rural development' (2011) 15 *Renewable and Sustainable Energy Reviews* 937.

community, who are often responsible for collecting the firewood and animal waste.¹³⁵

The average weighted rank among the fifteen countries that cite this objective is 8.

TABLE 6.20: COUNTRIES CITING ‘PUBLIC HEALTH OR IMPROVING LIVING STANDARDS OR SOCIAL DEVELOPMENT’ IN THEIR LEGISLATIVE OBJECTIVES

Rank of objective	Countries
3	Tunisia.
4	Belarus, Japan.
6	South Africa, Ukraine, Vietnam.
7	Armenia, Honduras.
9	Kosovo, Poland.
10	Philippines, World (IRENA).
11	Indonesia.
13	Bulgaria.
15	Peru.

An example of this legislative objective is:

improving the living standards of the population through economically efficient use of energy from renewable sources.¹³⁶

6.4.5.2 AFFORDABLE ENERGY

When countries stipulate that they are targeting the cost of energy in their legislative objectives, they are primarily referring to: (i) reducing electricity rates for consumers; and (ii) reducing the risk of fluctuating energy prices. One of the key benefits of renewable energy is that, unlike coal and gas fired generation, much renewable generation does not require costly feedstocks. This means that once a renewable energy project has been constructed, the majority of the costs associated with the project have already been borne. This makes the cost of supplying renewable generation more predictable and less susceptible to price volatility.¹³⁷

¹³⁵ See also, Wenguang Ding, Lijun Wang, Baoyu Chen, Luan Xu and Haoxu Li, ‘Impacts of renewable energy on gender in rural communities of north-west China’ (2014) 69 *Renewable Energy* 180, 188.

¹³⁶ «Закон за енергията от възобновяеми източници» [Energy from Renewable Sources Act] (Republic of Bulgaria) 3 May 2011, State Gazette 35, 2011, ch 1 Art 2.

¹³⁷ Grace, Donovan and Melnick, above n 34, 14.

Out of all of the legislative objectives, the countries that were concerned about affordable energy rather ironically had the highest average GDP per capita of \$US 21,812 in 2013. These thirteen countries did not rank affordability of energy as a particularly high priority, with an average weighted rank of 5.15.

TABLE 6.21: COUNTRIES CITING 'AFFORDABLE ENERGY' IN THEIR LEGISLATIVE OBJECTIVES

Rank of objective	Countries
2	Estonia, Montenegro, World (IRENA).
4	Gambia, Germany, Switzerland, Thailand.
5	Latvia.
6	Spain.
7	Hungary.
8	Russia.
9	Indonesia.
10	Poland.

Where the affordability of energy is a high legislative priority, this implies that the focus of the legislation will be providing renewable generation at least cost. This means that renewable energy technologies that are currently the most competitive are likely to be the one supported under the legislation regardless of the size of the project, its location, or even whether it is likely to be the most efficient form of renewable generation in the long term.

A further benefit that renewable energy provides in terms of achieving this legislative objective is the so-called 'price suppression effect.'¹³⁸ In competitive wholesale electricity markets, the electricity market operator will call for bids to supply electricity within the applicable window of time. The market operator will select the lowest-priced bids until they have sufficient supply to meet the likely electricity demand within a window. Due to the lack of feedstocks used in much of the renewable generation, renewable generators are often able to offer their electricity at a lower cost than some fossil fuel generators. This then lowers the 'bid-stack' and reduces reliance on high cost and often old, fossil fuel generators. Interestingly, the 'price suppression effect' diminishes over time, as

¹³⁸ Clean Energy Council, 'Clean Energy Council submission' (Issues paper, Renewable Energy Target Review, 2014) 19.

future investment decisions factor this in and renewable generation capacity increases.

An example of a legislative objective targeting energy affordability is found in the Indonesian law:

in order to support sustainable national development and improve national energy security, the management of energy shall be aimed to: [...] (f) Improve accessibility to energy for communities that are less wealthy and/or that live in remote areas to bring about fair and equitable welfare and prosperity for the people by: (1) providing assistance to increase the availability of energy to societies that cannot afford it; (2) building energy infrastructure to undeveloped areas so as to reduce disparities among regions.¹³⁹

6.4.5.3 IMPROVED ACCESS TO ELECTRICITY

Globally, access to electricity is very unevenly distributed with an estimated 1.4 billion people, or approximately 20 per cent of the global population, lacking access to electricity.¹⁴⁰ Research conducted by the Islamic Investment Bank found that '70% of Africans have no access to electricity, while the entire electricity generation capacity of Sub-Saharan Africa is 68% of that of Spain.'¹⁴¹ This problem is particularly acute in rural communities, with over 90 per cent of people lacking access to energy being rural dwellers.¹⁴²

Energy poverty has a wide range of impacts ranging from preventing income generating economic activities that rely on energy, limiting access to transportation, the internet and telecommunications, poorer health and educational outcomes, and a greater domestic burden being placed upon women.¹⁴³ In this way, a lack of access to electricity poses a serious barrier to economic and social development.

¹³⁹ *UNDANG-UNDANG REPUBLIK INDONESIA NOMOR 30 TAHUN 2007 TENTANG ENERGI* [Law of the Republic of Indonesia Number 30 of 2007 About Energy] (Republic of Indonesia) ch 2 Art 3 [Ellen Marie O'Brien translation from Indonesian].

¹⁴⁰ Gunningham, above n 52, 125.

¹⁴¹ Gorbuz Gonul, *Islamic Development Bank's Approach for Improved Access to Electricity* (May 2013) Islamic Development Bank <<http://www.isdb.org/irj/go/km/docs/documents/IDBDevelopments/Internet/English/IDB/CM/Publications/Electricity.pdf>> 7.

¹⁴² Ibid.

¹⁴³ Ibid 8; see also, Ding, Wang, Chen, Xu and Li, above n 135, 180-1.

This problem does not just confine itself to domestic consumers, with commercial users in Africa 100 times more likely to experience service interruptions such as blackouts than the applicable US standard.¹⁴⁴ Access to electricity is also an issue for developed countries, with Banuri and Hällström noting that ‘measured in kilowatt-hours (kWh) per person per day, the global average consumption of primary energy of the richest countries is even more unequally distributed than per capita income.’¹⁴⁵

Previous research has suggested that when countries that have limited energy resources legislate to improve access to electricity, they are forced to make decisions about the relative importance of allocating electricity for human welfare purposes versus economic development and industrialisation.¹⁴⁶ As has been highlighted above, in the very poorest countries almost all of the energy is consumed by household consumption and public health needs,¹⁴⁷ often in the form of traditional biomass.¹⁴⁸ In contrast, in the emerging economies that make up the bulk of countries with this objective, a disproportionate share is dedicated to industrial purposes.¹⁴⁹

In contrast to the high average GDP per capita for legislative objectives targeting energy affordability, the average GDP per capita for countries that are targeting improved access to electricity is only \$US 5,149. This places the average GDP these countries in the lower end of the ‘upper-middle’ income band according to the World Bank classification. The countries that have adopted this legislative objective on average provide access to electricity to 85.6 per cent of their population. Despite this, providing access to energy often performs quite poorly on the prioritisation of legislative objectives, with an average weighted rank of 6.87.

¹⁴⁴ Gonul, above n 141, 7.

¹⁴⁵ Banuri and Hällström, above n 63, 265.

¹⁴⁶ Ibid 266-7.

¹⁴⁷ Musiliu O Oseni, ‘Improving households’ access to electricity and energy consumption pattern in Nigeria: Renewable energy alternative’ (2012) 16 *Renewable and Sustainable Energy Reviews* 3967, 3967.

¹⁴⁸ Banuri and Hällström, above n 63, 266-7.

¹⁴⁹ Ibid.

TABLE 6.22: COUNTRIES CITING 'ACCESS TO ELECTRICITY' IN THEIR LEGISLATIVE OBJECTIVES

Rank of objective	Countries
3	Vietnam.
4	Russia.
5	Morocco.
7	Ghana, World (IRENA).
8	Indonesia.
10	Tonga.
11	Peru.

An example of this legislative objective is found in the Moroccan law:

The development of national sources of renewable energies is one of the priorities of the national energy policy, whose main aims are: [...] providing general access to energy, by the availability of modern energy for all segments of the population and at competitive prices.¹⁵⁰

6.4.5.4 PROMOTE RURAL DEVELOPMENT

This legislative objective is closely related to the previous objective of improving access to electricity. Renewable energy laws often try to stimulate economic activity and create jobs within particular parts or regions of the country. There are a wide range of measures that may be used to promote rural development, including: additional subsidies available for projects based in rural areas; mandating a specified amount of local content in each project; and facilitating research and development in rural areas.¹⁵¹ The nine countries that are targeting rural development in their legislative objectives have an average access to electricity rate of 66 per cent among their populations. They have an average weighted rank for promoting rural development of 7.11.

¹⁵⁰ *Loi n 13-09 relative aux énergies renouvelables* [Renewable Energy Law] (Kingdom of Morocco) 2010, Preamble [Tallulah Bur translation from French].

¹⁵¹ Lipp, above n 22, 5485.

TABLE 6.23: COUNTRIES CITING 'PROMOTE RURAL DEVELOPMENT' IN THEIR LEGISLATIVE OBJECTIVES

Rank of objective	Countries
3	Iceland, Senegal.
5	Honduras, Romania.
7	Bulgaria.
8	World (IRENA).
10	Indonesia.
11	Tonga.
12	Albania.

Countries that seek to promote rural development often focus on the provision of distributed generation. In this way, electricity can be brought to rural and remote communities without the need to build new transmission and distribution infrastructure or upgrade any existing infrastructure.¹⁵² Countries that focus on the promotion of rural development through their renewable energy laws also need to consider how the impact of renewable energy may differ from more urban areas. For example, consideration must be given to traditional land use patterns, farming practices and the impact on the local environment.¹⁵³

An example of a legislative objective promoting rural development is found in the Honduran law:

This Law has the principal aim of promoting public and/or private investment in electricity generation projects with national renewable resources, through fulfilment of the following objectives: [...] (5) Increase the quality of life for inhabitants in the rural parts of the country through their participation in the benefits brought by energy developments.¹⁵⁴

¹⁵² Warren Leon, *Evaluating the Benefits and Costs of a Renewable Portfolio Standard* (Clean Energy States Alliance, 2012) 8-9.

¹⁵³ Ibid 22.

¹⁵⁴ *Ley de Promocion a la Generacion de Energia Electrica con Recursos Renovables 2007* [Law for the Promotion of Electricity Generation with Renewable Resources 2007] (Honduras) 70/2007, ch 1 Art 1 [Linguistico Translations translation from Spanish].

6.4.6 INTERNATIONAL/REGIONAL OBJECTIVES

It is surprising that only seventeen countries have legislative objectives addressing international agreements or regional integration, especially when the number of international agreements concerning the renewable energy sector is considered. For example, there is the Statute of the IRENA, the Energy Charter, the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol, Copenhagen Accord and the Doha Amendment, not to mention numerous other regional and bilateral agreements. The average weighted rank for this theme is 5.85.

6.4.6.1 MEET INTERNATIONAL TREATY OBLIGATIONS AND INTERNATIONAL AGREEMENTS

Greenhouse gas emissions and climate change are global problems, which have resulted in international action to try to address these issues. As stated above, a number of international treaties and agreements affect the renewable energy sector. Despite this, only six countries sought to use their renewable energy laws to help them meet their international treaty obligations and international agreements. What is striking about this group of countries is that five of the six countries are all either:

- EU Member States: Lithuania and Poland;
- Candidate countries for the EU: Albania and Macedonia; or
- Designated by the EU as a possible candidate country: Kosovo.

The renewable energy law of the sixth country, Peru, explicitly states in the Preamble of its legislation that the aim of the law is to ‘facilitate the implementation of the Peru-United States Trade Promotion Agreement and its Protocol of Amendment.’¹⁵⁵

¹⁵⁵ *Decreto Legislativo De Promoción De La Inversión Para La Generación De Electricidad Con El Uso De Energías Renovables* [Legislative Decree of Investment Promotion for Electricity Generation With The Use Of Renewable Energy (Peru) No 1002/2008, Preamble [Linguistic Translations translation from Spanish].

TABLE 6.24: COUNTRIES CITING ‘MEET INTERNATIONAL TREATY OBLIGATIONS AND INTERNATIONAL AGREEMENTS’ IN THEIR LEGISLATIVE OBJECTIVES

Rank of objective	Countries
1	Peru.
4	Lithuania.
7	Albania, Macedonia.
8	Poland.
12	Kosovo.

The average weighted rank of this category of legislative objective is 6.5. This legislative objective is often given a low priority, possibly because many countries directly incorporate the principles of international treaties and agreements and thus do not need to place further emphasis within their domestic renewable energy law. Another alternative explanation may be that countries cover off this objective through the use of other categories of legislative objectives such as ‘reduce greenhouse gas emissions and address climate change.’

An example of this legislative objective is found in the Macedonian law:

The present law shall aim at: [...] (4) integration of Republic of Macedonia’s energy markets into the regional or international energy markets, pursuant to the commitments assumed under the ratified international treaties...¹⁵⁶

6.4.6.2 PROMOTE THE DEVELOPMENT OF THE INTERNAL ENERGY MARKET AND REGIONAL INTEGRATION

This category of legislative objective was adopted by fourteen countries, with an average weighted rank of 5.71. The countries that adopted this approach are either Member States of the EU or candidate countries, or, in the case of Morocco, seeking access to the markets of the EU. This latter point is made apparent from the Preamble to the Moroccan legislation that states that one of the main aims of the law is to strengthen ‘regional integration through the opening of energy to

¹⁵⁶ *Energy Law 2006 (‘New Energy Law’)* (Macedonia) Art 2(1) [Government of the Republic of Macedonia translation from Macedonian].

the Euro-Mediterranean markets and the harmonisation of energy laws and regulations.’¹⁵⁷

TABLE 6.25: COUNTRIES CITING ‘PROMOTE THE DEVELOPMENT OF THE INTERNAL ENERGY MARKET AND REGIONAL INTEGRATION’ IN THEIR LEGISLATIVE OBJECTIVES

Rank of objective	Countries
1	Greece, Italy, the Netherlands, Paraguay.
4	Austria.
5	Lichtenstein.
6	Czech Republic, Macedonia.
8	Hungary, Montenegro, Serbia.
10	Albania, Morocco.
11	Kosovo.

This focus on the internal market and regional integration reflects the EU’s objective of developing an internal energy market by 2014 and its regional approaches to ensuring energy security, addressing climate change and meeting rising energy demand.¹⁵⁸ This approach was detailed in the European Commission’s Green Paper entitled ‘A European strategy for sustainable, competitive and secure energy,’¹⁵⁹ which described the three objectives of European Energy Policy as:

- Sustainability: (i) developing competitive renewable sources of energy and other low carbon energy sources and carriers, particularly alternative transport fuels, (ii) curbing energy demand within Europe, and (iii) leading global efforts to halt climate change and improve local air quality.
- Competitiveness: (i) ensuring that energy market opening brings benefits to consumers and to the economy as a whole, while stimulating investment in clean energy production and energy efficiency, (ii) mitigating the impact of higher international energy prices on the EU economy and its citizens and (iii) keeping Europe at the cutting edge of energy technologies.
- Security of supply: tackling the EU’s rising dependence on imported energy through (i) an integrated approach – reducing demand, diversifying the EU’s energy mix with greater use of competitive indigenous and renewable energy, and diversifying sources and routes of supply of imported energy, (ii) creating the framework which will stimulate adequate investments to meet growing energy demand, (iii) better equipping the EU to cope with emergencies, (iv) improving the conditions for European companies seeking access to global

¹⁵⁷ *Loi n 13-09 relative aux énergies renouvelables* [Renewable Energy Law] (Kingdom of Morocco) 2010, Preamble [Tallulah Bur translation from French].

¹⁵⁸ Bahgat, above n 38, 962. Note that while progress has been made towards completing the Internal Energy Market, it is not it is a work in progress: European Commission, ‘Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions’, COM (2014) 634.

¹⁵⁹ European Commission, ‘A European strategy for sustainable, competitive and secure energy’, COM (2006) 105.

resources, and (v) making sure that all citizens and business have access to energy.

It is particularly important for EU candidate countries to align their laws with these objectives in mind to help smooth the accession process for their domestic and commercial electricity consumers. This concern is particularly apparent from Kosovo's law, which states that the purpose of the law is to:

- 'promote integration of Kosovo into the European Economic Area with a view to its future accession to the European Union and as a first stage through the inclusion of Kosovo as a full partner in the Southeast Europe Electricity Market;¹⁶⁰ and
- 'promote the gradual approximation of the energy legislation of Kosovo to the European Union's energy legislation and the participation of Kosovo in all relevant international agreements that Kosovo is a party to or may become associated with.'¹⁶¹

6.4.7 SECTORAL OBJECTIVES

Legislation targeting the renewable energy sector is not merely designed for economic or environmental reasons, but may also seek to address broader structural issues within the energy sector. For example, in concert with the competition concerns addressed above, the legislation may seek to alter the structure of the energy sector through, for example, encouraging net metering or more distributed generation, to reduce reliance on large fossil-fuelled power plants. Objectives such as these may also assist with maintaining system safety and reliability by making the process of balancing energy demands against supply easier. In this way, these laws may also encourage a more efficient use of natural resources and encourage energy conservation. As a result, the sectoral theme of legislative objectives had the second highest weighted rank after the security objectives, with an average weighted rank of 3.77.

6.4.7.1 IMPROVE ENERGY SYSTEM SAFETY AND RELIABILITY

Energy system safety and reliability focuses on mitigating or reducing risks that may cause the power network to become overloaded or fail. This objective is

¹⁶⁰ *Law on Energy 2004* (Kosovo) 03/L184, Art 2(g).

¹⁶¹ *Law on Energy 2004* (Kosovo) 03/L184, Art 2(h).

6.4.7.2 IMPROVE THE STRUCTURE OF THE ENERGY SECTOR

Negro et al have defined market structure as ‘as the organisation of the current market and the criteria used to select innovation.’¹⁶⁴ In most countries, the market structure of the energy sector favours the incumbent and dominant market players, who in this case are fossil fuel generators. This acts as a barrier to entry to the introduction of renewable energy sources and new market participants to the energy market.¹⁶⁵

Twenty countries have identified improving the structure of the energy sector as an objective of their renewable energy laws, with an average weighted rank of 4.05. These countries tend to be upper-middle income countries:

TABLE 6.27: COUNTRIES CITING ‘IMPROVE THE STRUCTURE OF THE ENERGY SECTOR’ IN THEIR LEGISLATIVE OBJECTIVES

Rank of objective	Countries
1	Kyrgyzstan, Latvia.
2	Lichtenstein, San Marino.
3	China, Peru, Syria.
4	Hungary, Morocco, Taiwan, Yemen.
5	Germany, Kosovo, Macedonia, Poland, Russia, Spain, Thailand.
6	Netherlands.
9	Honduras.

This objective is closely linked to the objectives targeting competition, increasing the number of independent power producers and small to medium-sized enterprises engaged in generating electricity, improving system safety and reliability and encouraging the development of new industries and infrastructure.

While this objective is vague, there are a number of ways that countries are currently attempting to improve the structure of their energy sectors. One example of this is the move towards distributed renewable generation. This uses

¹⁶⁴ Simona A Negro, Floortje Alkemade and Marko P Hekkert, ‘Why does renewable energy diffuse so slowly? A review of innovation system problems’ (2012) 16 *Renewable and Sustainable Energy Reviews* 3836, 3838.

¹⁶⁵ Dörte Fouquet, ‘Policy instruments renewable energy – From a European perspective’ (2013) 49 *Renewable Energy* 15, 17.

smaller units for electricity generation and places them closer to the end user, thereby reducing reliance on large power plants and avoiding load losses as the electricity does not need to be transmitted over long distances. In this way, the costs of fossil fuel feedstocks are avoided (which also provides a hedge against fossil fuel price rises), upgrades to large-scale power plants may be deferred or avoided altogether and the costs of upgrading or building new transmission lines may be deferred or avoided.

One downside to using more distributed generation is that, at present, distributed electricity is more costly to produce than that produced using large power plants. There may also be implications for system balancing if large amounts of small-scale distributed generation are added into the energy mix, as there may still need to be back-up generation capacity installed for planning and operating reserves, i.e. the times that the distributed generation is not supplying a sufficient quantity of electricity to meet the consumer demand. This is most likely to occur during extreme weather events when electricity demand peaks. A further concern may also relate to the implications that increasing the proportion of distributed generation may have for system safety and reliability.

An example of this objective is found in the *Renewable Energy Law of the People's Republic of China 2005*:

This Law is enacted for the purpose of promoting the development and utilisation of renewable energy, increasing the supply of energy, improving the structure of energy, safeguarding the safety of energy, protecting environment and realising a sustainable economic and social development.¹⁶⁶

6.4.8 EDUCATION, TRAINING AND RESEARCH OBJECTIVES

The theme of education, training and research objectives was only found in the legislation of twelve countries. The average weighted rank of this theme is 5.08. Information asymmetries and positive spillovers are other identified sources of

¹⁶⁶ «中华人民共和国可再生能源法» [Renewable Energy Law of the People's Republic of China] (People's Republic of China) National People's Congress, 28 February 2005, ch 1 Art 1 [Ministry of Commerce of the People's Republic of China translation from Mandarin].

market failure that adversely affect the renewable energy sector. The low frequency of citation and weighted rank of this theme again suggests that the majority of countries are not necessarily concerned with addressing market failures through their legislation but rather prioritise other domestic concerns.

6.4.8.1 INCREASE INFORMATION ABOUT RENEWABLE ENERGY/PUBLIC EDUCATION

Kandpal et al have stated that ‘the broad objectives of renewable energy education pertain to providing functional knowledge and understanding of facts, concepts, principles and technologies are harnessing of renewable sources of energy.’¹⁶⁷ Four countries sought to adopt this legislative objective, with an average weighted rank of 4.5.

TABLE 6.28: COUNTRIES CITING ‘INCREASE INFORMATION ABOUT RENEWABLE ENERGY/PUBLIC EDUCATION’ IN THEIR LEGISLATIVE OBJECTIVES

Rank of objective	Countries
1	Bulgaria.
3	Lichtenstein.
5	Belarus.
9	Ghana.

Countries that explicitly tailor their renewable energy legislation to educate the public about renewable energy sources and thereby increase public support for renewable energy may lead to different legislative outcomes than those that do not, especially if they then make decisions based on the levels of public support achieved. This may lead to renewable energy projects such as onshore wind, which may be more cost-efficient and effective than many alternatives, being spurned because of a perceived lack of public support in some areas. Conversely, greater levels of support than may otherwise be warranted may be granted to small-scale domestic projects such as photovoltaic solar so that residential households and small businesses can benefit from the subsidies. Despite this, supporting popular policies may be advantageous in that they may provide the

¹⁶⁷ Tara C Kandpal and Lars Broman, ‘Renewable energy education: A global status review’ (2014) 34 *Renewable and Sustainable Energy Reviews* 300, 302.

groundwork for more stringent and unpopular policies in the future.¹⁶⁸ They also provide a basis on which people can engage with renewable energy technologies and acceptance levels can be built for other renewable energy sources and technologies.

An example of this objective is found in the Ghanaian law:

The object of this Act is to provide for the development, management and utilisation of renewable energy sources for the production of heat and power in an efficient and environmentally sustainable manner. [...] the object shall encompass... (F) public education on renewable energy production and utilisation.¹⁶⁹

6.4.8.2 ENCOURAGE RESEARCH

There is a clear need for governments to support research and development within the renewable energy sector. This reflects one of the areas of market failure identified in the previous chapter. One of the challenges for private firms investing in research and development is that it is difficult for them to prevent the knowledge of their discoveries from either leaking or being reverse engineered by their competitors. This may affect their ability to achieve the full benefits of their investment. These so-called, 'knowledge spillovers', are considered in economic terms to be a positive externality. This is because where a knowledge spillovers occurs, the gain to the public is greater than its private value.¹⁷⁰

Eight countries adopted a legislative objective of encouraging research into more efficient and effective renewable energy sources and technologies:

¹⁶⁸ Rolf Wüstenhagen, Maarten Wolsink and Mary Jean Burer, 'Social acceptance of renewable energy innovation: An introduction to the concept' (2007) 35 *Energy Policy* 2683, 2687-8.

¹⁶⁹ *Renewable Energy Act* (Ghana) 2011, Arts 1(1)-(2).

¹⁷⁰ 532. Philibert, above n 71, 11.

TABLE 6.29: COUNTRIES CITING 'ENCOURAGE RESEARCH' IN THEIR LEGISLATIVE OBJECTIVES

Rank of objective	Countries
1	Argentina, Tonga.
3	Uzbekistan.
5	Mexico, South Africa.
7	Ukraine.
8	Vietnam.
13	Peru.

Nemet's research into the factors influencing cost reductions in photovoltaic solar cells indicated that technological efficiency triggered by research had more of an impact in reducing the cost of photovoltaic solar cells than subsidised market penetration.¹⁷¹ This suggests that 'funding R&D in order to trigger significant technology improvements would have been a more promising avenue to efficiently achieved substantial cost reductions in early technology stages in the heavy subsidisation of market penetration, a policy alternative where technological improvements are rather by-products.'¹⁷² Thus, research into renewable energy technologies play a critical role in meeting the long-term challenges of ensuring energy security, addressing climate change and sustainably meeting rising energy demands.¹⁷³

An example of this legislative objective is found in the Tongan law:

The principal objects of this Act are – (a) to promote the development of the renewable energy industry in the Kingdom by: (i) researching and developing opportunities of renewable energy in the Kingdom...¹⁷⁴

¹⁷¹ Gregory F Nemet, 'Beyond the learning curve: factors influencing cost reductions in photovoltaics' (2005) 34 *Energy Policy* 3218, 3227-8.

¹⁷² Frondel, above n 111, 4056.

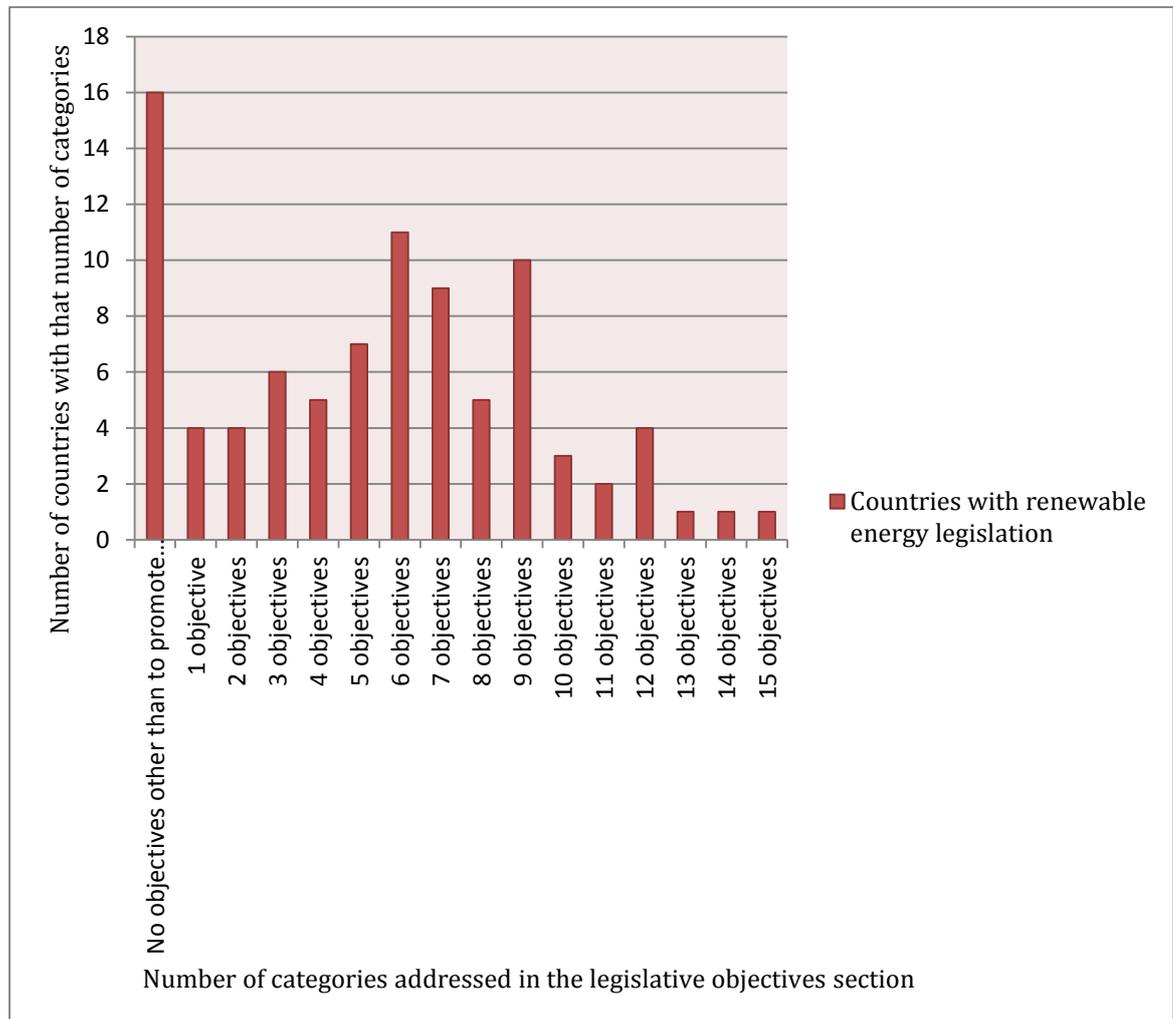
¹⁷³ Kaygusuz, 'Energy for sustainable development', above n 85, 1120.

¹⁷⁴ *Renewable Energy Act 2008* (Tonga) No 10 of 2008, Art 3.

6.5 MULTIPLE AND COMPETING LEGISLATIVE OBJECTIVES

One of the challenges with using legislative objectives sections, is that they often contain multiple, and at times, conflicting objectives. For example, Graph 6.2 (below) shows the number of themes addressed in the legislative objectives in renewable energy legislation.

GRAPH 6.2: NUMBERS OF CATEGORIES ADDRESSED IN THE LEGISLATIVE OBJECTIVES SECTION IN RENEWABLE ENERGY LEGISLATION



This graph shows that some countries are seeking to achieve up to fifteen legislative objectives within their legislation, with the average number of objectives being over five. With this number of legislative objectives involved in the average national renewable energy law, conflicting objectives are often inevitable. This is not a new problem, with the competing objectives contained within renewable energy legislation well-recognised in the previous research.¹⁷⁵

There are a number of implications that follow from renewable energy laws having multiple and conflicting objectives. First, multiple and conflicting objectives can cause confusion and regulatory uncertainty, if it is not explicitly clear which objective is the dominant objective or how to weigh the costs and benefits to determine which should be the dominant objective. This may 'exacerbate investors' perception of political and regulatory uncertainty, operating as a disincentive for investment in the very technologies and projects that policymakers seek to stimulate through renewable energy policy.'¹⁷⁶ Second, conflict often seems to arise between trying to achieve the desired outcome at least-cost versus other environmental, energy security, industrial policy or technology goals,¹⁷⁷ which may require a longer-term view to be taken or the externalities to be priced into decisions around cost. Third, consideration needs to be directed towards the implications of trying to achieve multiple objectives through a single legislative instrument and how they will all interact.¹⁷⁸ In some circumstances, it may be more appropriate for different legislative instruments to be used to achieve different goals. This in turn will make it easier to assess the relative costs and benefits justifying legislative intervention and to evaluate the success or failure of that intervention.

¹⁷⁵ See e.g. Geoff Kelly, 'Renewable energy strategies in England, Australia and New Zealand' (2007) 38 *Geoforum* 326; Fischer and Preonas, above n 37, 53-6; Grace, Donovan and Melnick, above n 34.

¹⁷⁶ Grace, Donovan and Melnick, above n 34, 2.

¹⁷⁷ Ottmar denhofer, Lion Hirth, Brigitte Knopf, Michael Pahle, Steffen Schlömer, Eva Schmid and Falko Ueckerdt, 'On the economics of renewable energy sources' (2013) 40(1) *Energy Economics* 512, 513. See also, Grace, Donovan and Melnick, above n 34, 4.

¹⁷⁸ Philibert, above n 71, 9.

Competing legislative objectives may be the result of political compromise,¹⁷⁹ but the implications of ameliorating those conflicts through the statutory interpretation process warrants more consideration than it is often given. For example, hypothetically, if a renewable energy law does not contain a definition of what constitutes renewable energy, and a regulator has to decide whether a large-scale hydroelectric project is eligible for regulatory support under the legislation, the interpretation of the legislative objectives could have a material effect on the outcome. If the country prioritises energy security within its legislative objectives, it may be that the large-scale hydropower project is deemed to be an eligible project. If, however, the country is concerned about water pollution or loss of biodiversity, it may be that the project is not deemed to be eligible. For this reason, legislative objectives that contain multiple and conflicting objectives without any guidance on the dominant objective may render this task near impossible.

The following legislative objectives section from the Japanese law provides an example of the difficulties involved in interpreting the legislative priorities:

The purpose of this Act is, in consideration of the fact that the use of non-fossil energy is important in order to ensure the secure and appropriate supply of energy in accordance with the domestic and global economic and social environment, as well as to reduce the burden on the environment in relation to the use of energy, to endeavour to take the necessary measures to comprehensively promote the development and introduction of non-fossil energy while contributing to the sound development of the national economy and the stability of the lives of citizens.¹⁸⁰

¹⁷⁹ *Carr v Western Australia* (2007) 232 CLR 138, [5]-[6].

¹⁸⁰ «石油代替エネルギーの開発及び導入の促進に関する法律, 昭和五十五年法律第七十一号» [Act on the Promotion of Development and Introduction of Non-Fossil Energy 1980] (Japan) Art 1 [Melanie Trezise, Australian Network for Japanese Law, translation from Japanese].

6.5.1 RESOLVING CONFLICT BETWEEN COMPETING OBJECTIVES

Where conflict between competing objectives occurs, the common law court will seek to resolve the conflict by applying the principle of harmonious construction. This principle is premised on two presumptions: one against internal conflict and another in support of coherence.¹⁸¹ The principle of harmonious construction was described by the High Court of Australia in *Project Blue Sky Inc v Australian Broadcasting Authority*:

A legislative instrument must be construed on the prima facie basis that its provisions are intended to give effect to harmonious goals. Where conflict appears to arise from the language of particular provisions, the conflict must be alleviated, so far as possible, by adjusting the meaning of the competing provisions to achieve that result which will best give effect to the purposes and language of those provisions while maintaining the unity of all the statutory provisions.¹⁸²

If a harmonious construction cannot be achieved and the conflicting objects of the legislation will materially affect the interpretation of an ambiguous provision, the court must seek to determine which of the objects is pre-eminent.¹⁸³ This is achieved through an application of the ordinary principles of statutory interpretation within the relevant jurisdiction, but will ordinarily require an analysis of the text, context of the Act as a whole (including any relevant extrinsic materials) and the purpose. Where the dominant purpose is still not apparent, it is likely that the court will use a similar process to the interpretation of a company memorandum: that is, the earliest objectives in the section will likely be considered to be the dominant purpose, with the later objectives being considered ancillary.¹⁸⁴ Similar processes are used in both civil law and mixed law jurisdictions. All of this could be avoided, however, if this issue were given more consideration or more direction were provided on the relative prioritisation of objectives.

¹⁸¹ Ruth Sullivan, *Sullivan and Driedger on the Construction of Statutes* (Butterworths, 4th ed, 2002) 262 quoted in Mark Leeming, *Resolving Conflicts of Laws* (Federation Press, 2011) 47.

¹⁸² (1998) 194 CLR 355, [70] (McHugh, Gummow, Kirby and Hayne JJ). Similar principles exist in other common law jurisdictions: *Saulnier v Royal Bank of Canada WBLI Inc* [2008] 3 SCR 166, [16] (Binnie J, McLachlin CJ and LeBel, Deschamps, Fish, Abella, Charron and Rothstein JJ concurring); *Attorney-General v Sillem* (1864) 159 ER 178, 217 (Pollock LCB).

¹⁸³ *Institute of Patent Agents v Lockwood* [1894] AC 347, 360 (Herschell LJ).

¹⁸⁴ *Re Haven Gold Mining Co* (1882) 20 Ch D 151.

6.6 CONCLUSION

This chapter has highlighted that, beyond the narrow economic justifications for intervening in the renewable energy sector, countries are seeking to achieve a very broad range of legislative objectives through their renewable energy laws. In contrast to the previous research suggesting a high degree of commonality in the legislative objectives adopted around the world, some 28 categories of legislative objective were identified in the laws of the 95 countries with renewable energy laws. Further, the fact that a theme of legislative objective sought to address one of the sources of market failure identified in the previous chapter did not mean that it necessarily was prioritised over those themes that merely sought to address domestic market barriers or other goals. The exceptions to this rule are the security themed objectives, which were often prioritised over the objectives in the other themes. However, the education, training and research themed objectives received a higher weighted rank (i.e. lower priority) and were cited less frequently than any of the sectoral themed objectives, as well as the objective of ‘strengthening the economy.’ This process was even evident in the environmental themed objectives. Indeed, the objective that most closely addressed the unpriced environmental externalities within the energy sector, ‘reduce greenhouse gas emissions and address climate change,’ was the least likely environmental objective to be cited, and the one with the highest weighted rank (i.e. lowest priority).

This chapter showed that there is significant national variance in the legislative objectives of different countries in their renewable energy laws, which has an impact upon their scope and implementation. The sheer number of legislative objectives that countries are seeking to achieve also means that it is likely that any normative power of the objectives will be diminished and that conflicts may arise between them. This should prompt two questions. First, are countries that are seeking to achieve multiple and conflicting legislative objectives in their national renewable energy laws far beyond the narrow economic justification over-reaching in their regulation? Certainly, the economists would argue that this is the case and, if they are correct, this may lessen the efficacy and legitimacy

of these laws. Second, does the extent of the variance within the legislative objectives adopted by different countries provide an explanation for why countries have thus far been unwilling to engage in legal harmonisation or convergence of their renewable energy laws despite the globalisation of renewable energy technologies? This suggests that there are still strong domestic factors at play within the renewable energy sector, which closely reflect a country's natural resource endowment, economy, political and market structure, institutions and culture. Given the important role that energy plays in everyday life and the sensitivity of the electorate to energy issues, this is an area of their legislative competence that many countries are reluctant to give up.

The other problem that becomes apparent from a study of the legislative objectives is the effect that uncertainty might have on the sector. Some uncertainty within the sector is inevitable. For example, the future cost of renewable energy generation and technologies, the future cost of fossil fuel generation, the degree and location of economic benefits and the cost of climate change and other environmental and geopolitical risks that renewable energy laws are seeking to mitigate are not known with certainty.¹⁸⁵ This is no different from legislating in other areas. However, the failure to clearly articulate and appropriately prioritise the legislative objectives risks adding a further unnecessary layer of uncertainty that could be avoided.

Countries need to consider how many legislative objectives they are trying to achieve, how they will prioritise them and how they will interact. They also need to consider whether renewable energy law is the most efficient and effective way of achieving those goals. Courts will not have to resort to the principles of statutory interpretation to resolve the priorities of a piece of legislation if it is well drafted. Countries also need to view the legislative objectives in renewable energy legislation as long-term goals.¹⁸⁶ In this way, the objectives will be less likely to be subject to frequent amendment and will send clear and stable signals to the market about what the country is attempting to achieve through its renewable energy law.

¹⁸⁵ Grace, Donovan and Melnick, above n 34, 30.

¹⁸⁶ Ibid 32.