

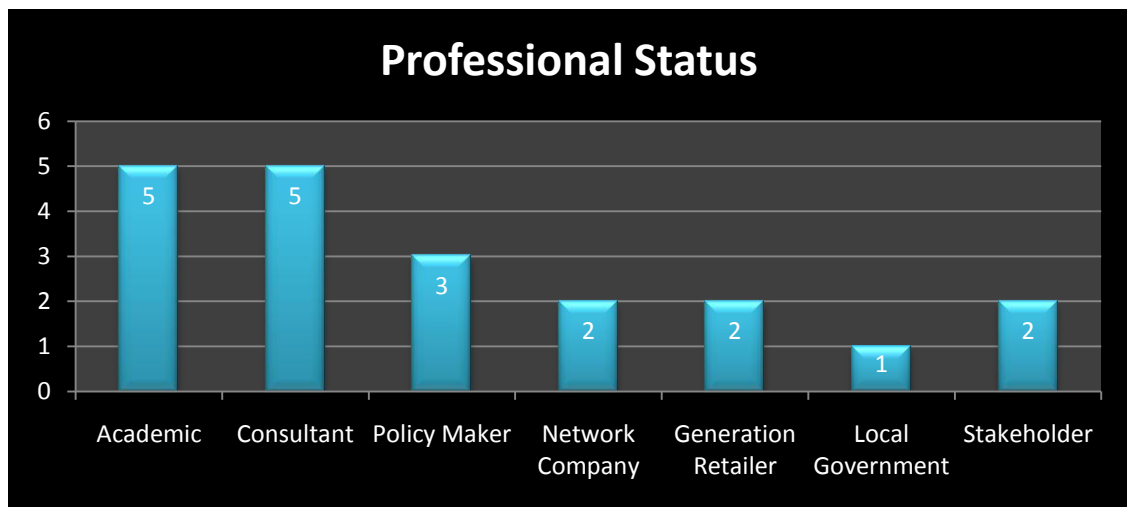
Intelligent Grid Research Cluster- Project 5

Chapter 4.4: Results & Analyses of Energy Stakeholder Surveys

Overview

This stage of the study represents the key findings emerging from an energy stakeholder survey undertaken at the “i-grid” Industry Forum held in Perth on March 11, 2010. A total of twenty (20) participants completed the surveys which sought their perspective to the issues, drivers and barriers associated with an IG-DE transition. A breakdown of the survey stakeholders’ group representation is shown in the Table (1) below. While the survey respondents are not a representative sample of the energy stakeholder network, it does reflect a general perspective of energy stakeholders’ understandings of the IG-DE issues pertinent to the industry.

Table 1 : Professional Status of Energy Stakeholders

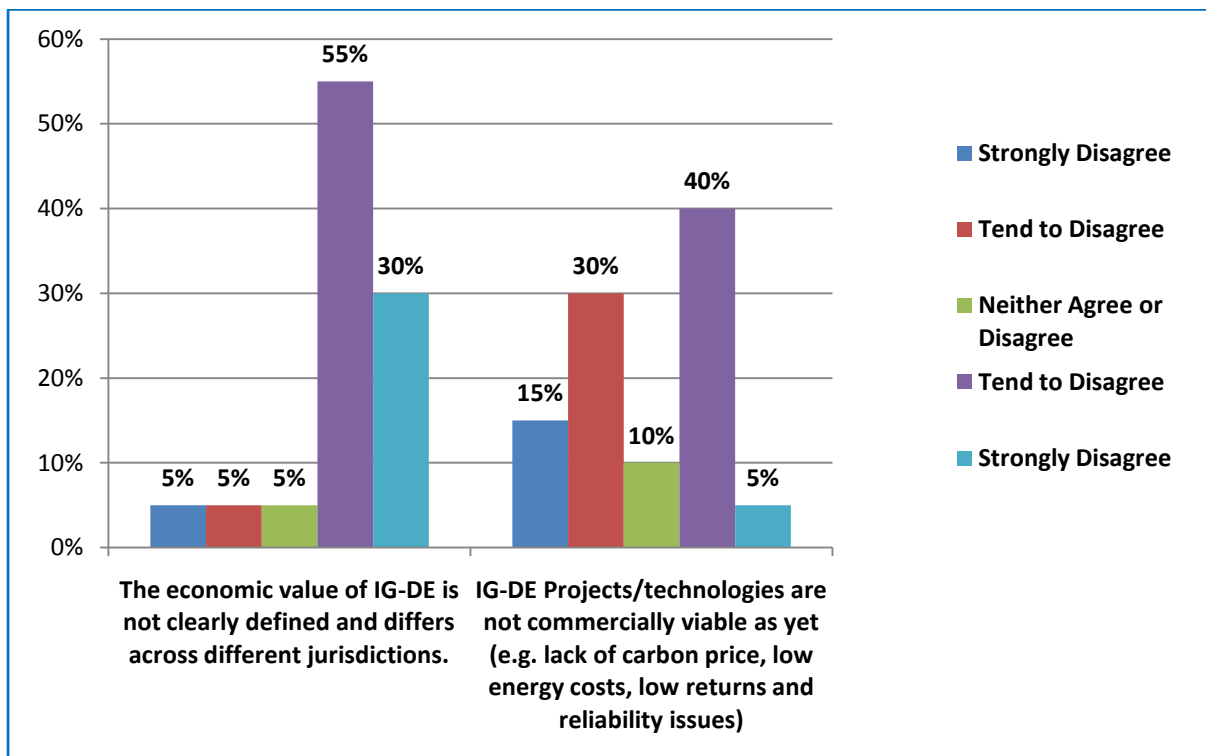


Barriers and Impediments to IG-DE

While respondents indicate a high level of agreement that specific economic, policy and regulatory and political issues presents as barriers to IG-DE, it does not necessarily curtail its deployment. For example with regard to economic barriers, 85 per cent of respondents agree that “the economic value of IG-DE is not clearly defined and differs across different jurisdictions”. In spite of this consensus, respondents are divided about the belief that “IG-DE projects/technologies are not commercially viable as yet” poses a barrier to the

industry. As the responses indicate, 45 per cent believe commercial viability is a barrier; while 45 per cent do not believe it is a barrier and 10 percent ‘neither agree or disagree’ that it is a barrier. From this perspective it appears that while there is agreement that the economic value of IG-DE lacks clarity, energy stakeholders are optimistic that its economic viability is not necessarily a barrier to IG-DE.

Table 3: Economic Constraints & Optimism

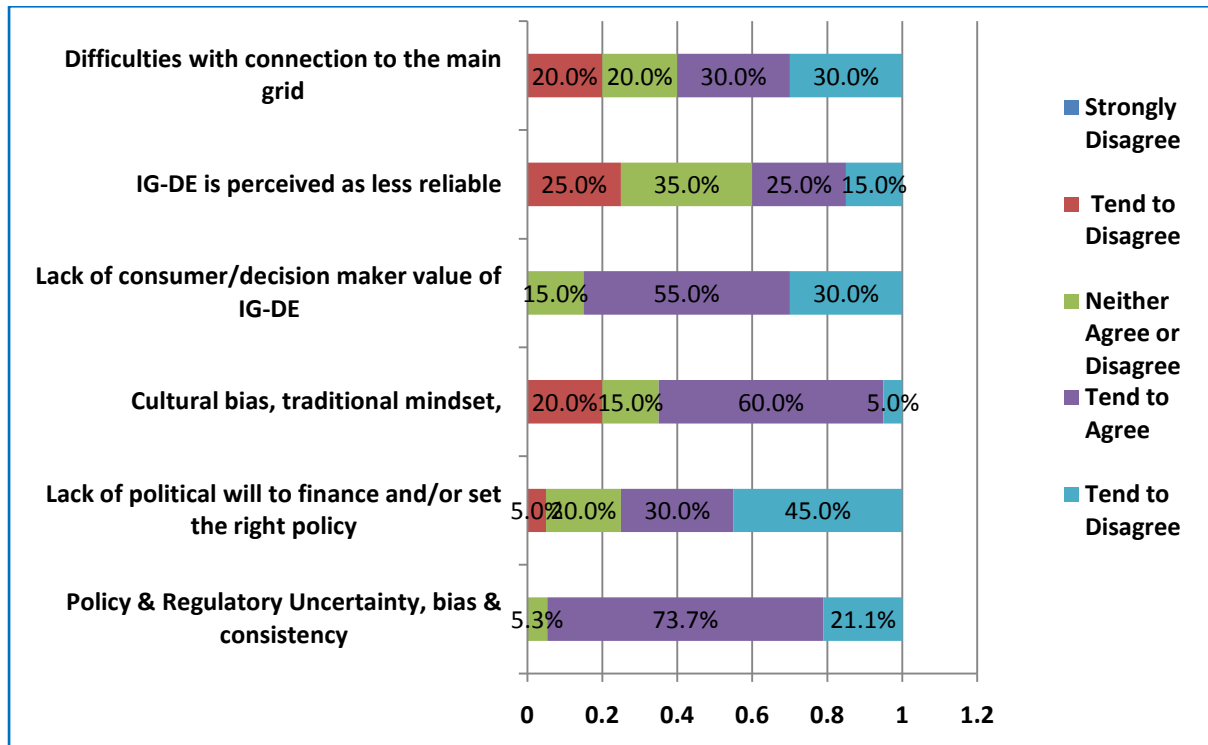


Institutional, Technological & Technical Barriers

The responses in Table 4 below also indicate that while 85 per cent of respondents believe that lack of awareness and education is a barrier to IG-DE, there is less certainty about the technological impediments to IG-DE. For example, only 40 percent of respondents agree with the statement that “IG-DE is less reliable than grid supply” is an impediment to deployment. Most respondents emphasize “policy and regulatory uncertainty” (94.8% agreement); “lack of political will to finance and/or set the right policy” (75% agreement); “lack of consumer/decision maker value of IG-DE” (85% agreement) as greater limitations to IG-DE

compared to cultural and technical impediments, such as “*cultural bias, traditional mind set*” (65% agreement) and “difficulties with connection to the grid” (60% agreement).

Table 4: Institutional, Technological & Technical Barriers



Stakeholders’ Qualitative Responses

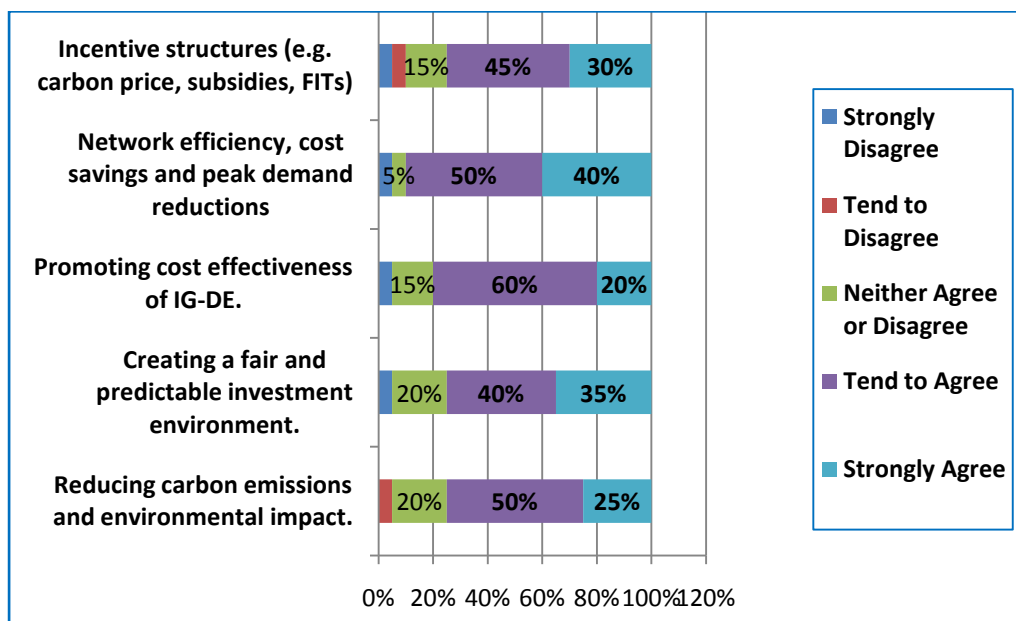
Stakeholders have also indicated a number of other barriers and impediments to IG-DE as highlighted by the following excerpts:

- Lack of clear governance arrangements with respect to re-regulated markets;
- Lack of incentives for Retailers and Generators to pursue IG-DE;
- Connection of mid range (greater than 1mw) generation – there is no clean pathway to connect to the grid and proponents are given conflicting information;
- Energy prices are not cost reflective;
- Uncertainty over carbon pricing;
- National and International Technical Standards need to keep pace

Key Drivers & Enablers of IG-DE

The respondents indicated a high level of agreement that an IG-DE transition is associated with the following environmental, institutional and market drivers. Table 5 below illustrates that while environmental concerns are a key driver of IG-DE it is also enabled by other economic and market incentives. For example, while 75 per cent believe that reducing carbon emissions and environmental impact is a key motivation for IG-DE; 80 per cent also identify cost effectiveness as a key enabler and 75 per cent link market incentives such as “creating a fair and predictable investment environment” and 90 per cent agree that “network efficiency, cost savings and peak demand reductions” are key drivers to transform the energy industry.

Table 5 Environmental & Economic Drivers

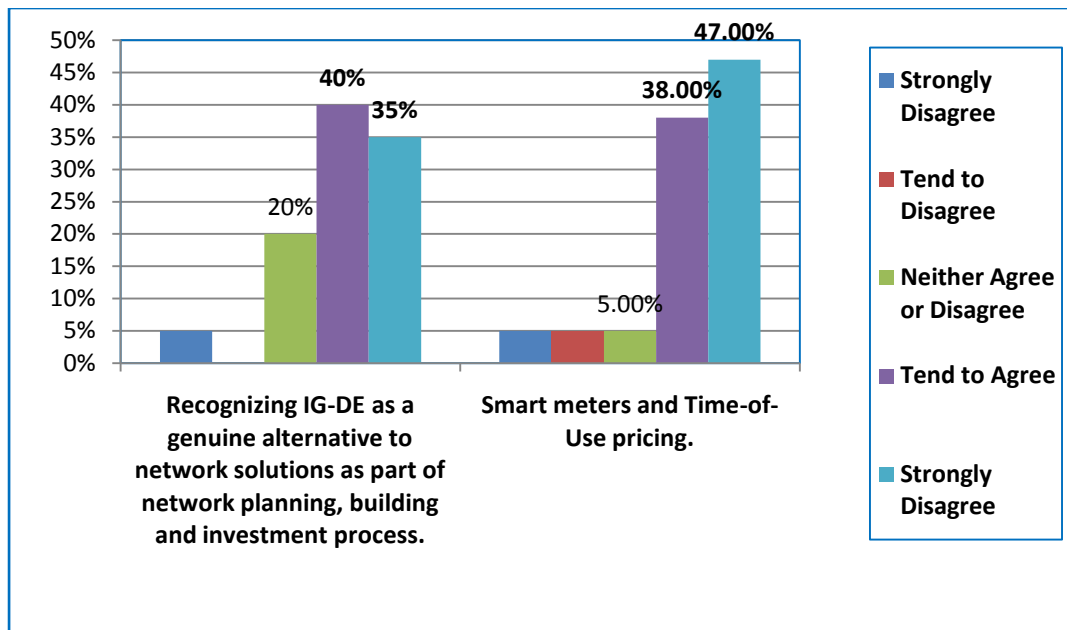


Energy Network Incentives

The survey responses in also indicate a high level of agreement that broader decision making frameworks, innovative technology along with cost reflective pricing are key enablers for networks to pursue IG-DE solutions. As Table 6 below indicates 75 per cent believe that a key driver of network transformation is linked to management “recognizing IG-

DE as a genuine alternative to network solutions as part of network planning, building and investment process". Also important, 85 per cent of respondents believe that a key driver of IG-DE is the capacity of the energy utilities to deploy technologies such as smart meters in combination with cost reflective tariffs.

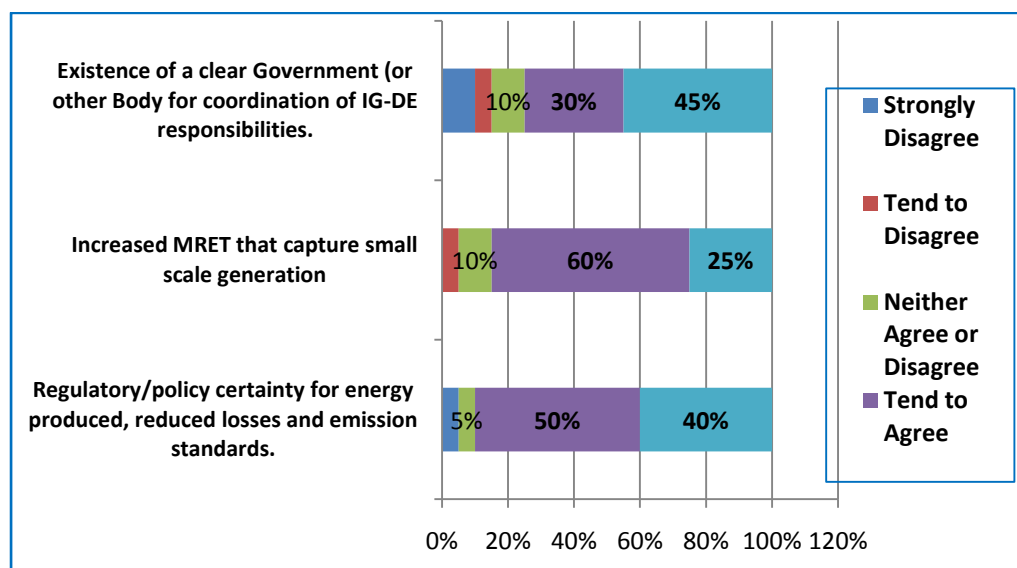
Table 6 – Network Drivers



Regulatory and Policy Structures

The consensus is strong among respondents that an IG-DE transition is highly dependent on key regulatory and policy structures including government leadership and coordination. For example, as Table 7 highlights, 95 per cent of respondents believe that a key driver of IG-DE is linked to “increased MRET that capture small scale generation”; while 90% of respondents are in support of “regulatory/policy certainty for energy produced, reduced losses and emission standards” as vital, also 75 per cent think that the “existence of a clear Government (or other Body) for coordination of IG-DE responsibilities” will also progress the transformation. There is clear support for regulatory and policy certainty as key enablers of the energy industry’s transition toward IG-DE.

Table 7 – Regulatory & Policy Drivers



Stakeholders’ Qualitative Responses – Other Drivers & Enablers

The respondents also highlight a number of other institutional, educational and technological drivers and enablers of IG-DE as reflected in the quotes below:

- Regulatory reform to promote a triple bottom line approach to include IG-DE considerations;
- Collaborative (government-private sector) investment arrangement on DE;
- Energy generation mix must be explained - reasons for future vision must be clear;
- Raising public awareness on energy conservation;
- Good coverage – improving reliability
- Electric vehicles will accelerate peak overload growth;
- Innovative technical developments.

Qualitative Responses - Single Most Important Driver for IG-DE

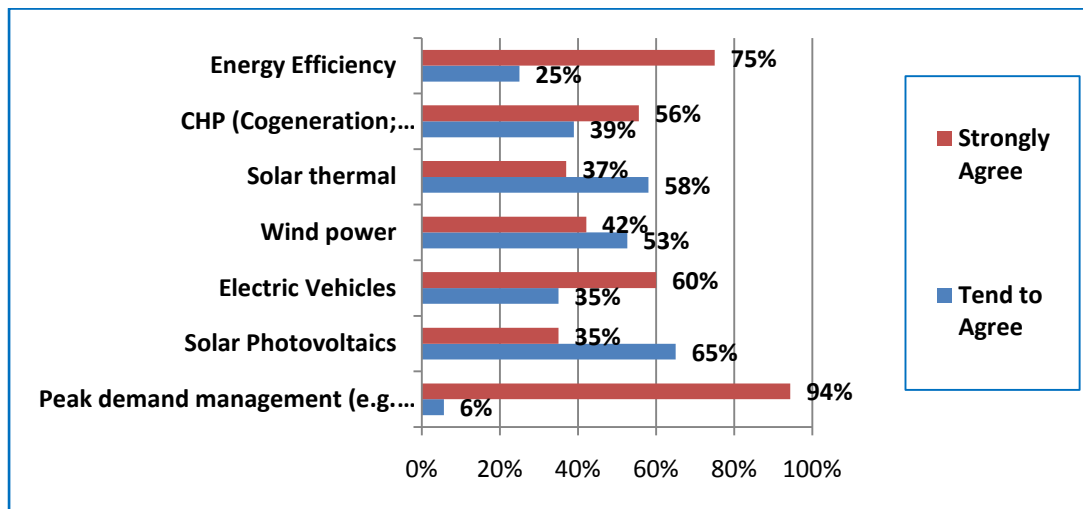
Respondents identified the following institutional, economic, market, policy and regulatory, network and environmental drivers for IG-DE:

- **Economics:** proving economic viability over centralized approach;
- Streamline and evaluate the benefits across generators, networks, distributors and customers to highlight the real value of IG-DE;
- **Policy/Regulatory:** State and Federal policy direction and leadership;
- Having a collaborative approach between state agencies (in particular) for addressing planning functions for the state/country.
- Pricing and cost transparency are critical for sustainable decision making;
- Achieving customer buy-in will become a key enabler for IG-DE solutions overall. From a customer perspective, the current state of increasing electricity prices is going to force people to look to alternative energy solutions to either generate their own electricity or reduce their consumption. The industry needs to be equipped to meet customer demand when this time comes.
- **Market Signals:** Getting the price signals right but at present price signals are distorted, muted or absent altogether and incentives by the network to invest in IG-DE may not be captured by network/recognised by regulator.
- Real time of use pricing (once cost reflectivity is achieved)
- **Network Incentives:** Reductions in peak loads without significant capital investment;
- Deferred requirement for network investment;
- Efficiency of energy distribution and capital expenditure;
- **Environmental Drivers:** Efficient use of scarce commodities

Energy Source & Technology Mix for Australia

The survey responses indicate an overwhelming support for RE sources including a variety of energy technological solutions as a viable option for Australia’s electricity system. Table 8 illustrates a strong support for the following technologies and strategies: (a) 100 per cent support for “*peak demand management*”; “*solar photovoltaics*” and “*energy efficiency*”; as well as (b) 95 per cent support for the development and deployment of the following energy generation technologies and source including: “*electric vehicle*”s; “*CHP*”; “*solar thermal*” and “*wind power*”.

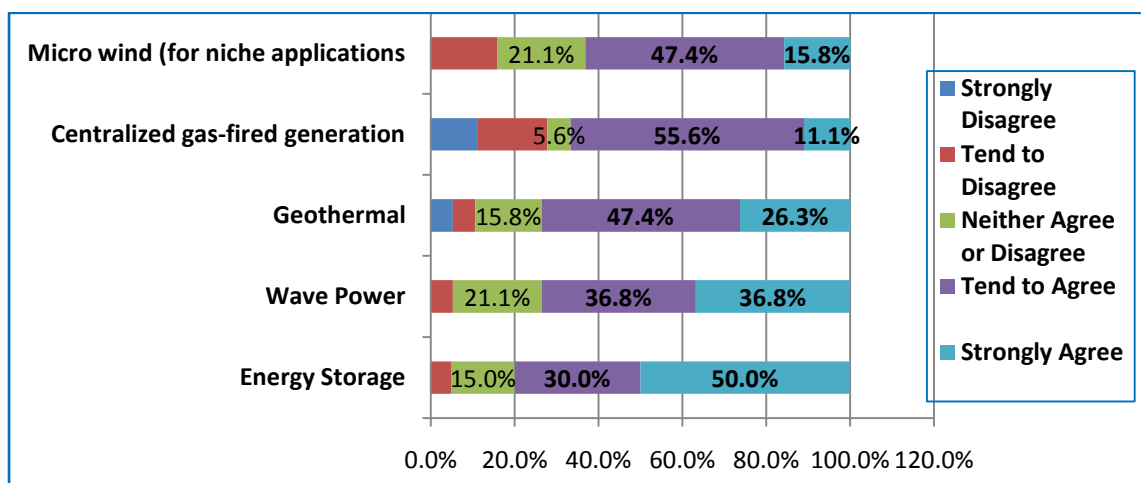
Table 8: Highly Favoured Energy Source & Technologies



Other Favoured Sources & Technology Mix

The responses also show a high level of support among respondents for the following energy source and technological solutions. As shown in Table 9, the findings are as follows: (a) 80 per cent support for “energy storage”; (b) 73.7 per cent support for “geothermal”; (c) 73.6 per cent support for “wave power” and (d) 66.7 per cent support for “centralized gas-fired generation” and 63.2 per cent support for “micro wind turbines”. While respondents are highly supportive of RE sources and technologies, there is less support for micro wind turbines compared to large scale wind power. Given the emphasis on economic barriers, these results most likely reflect concerns over cost effectiveness of small scale wind turbines as a viable option.

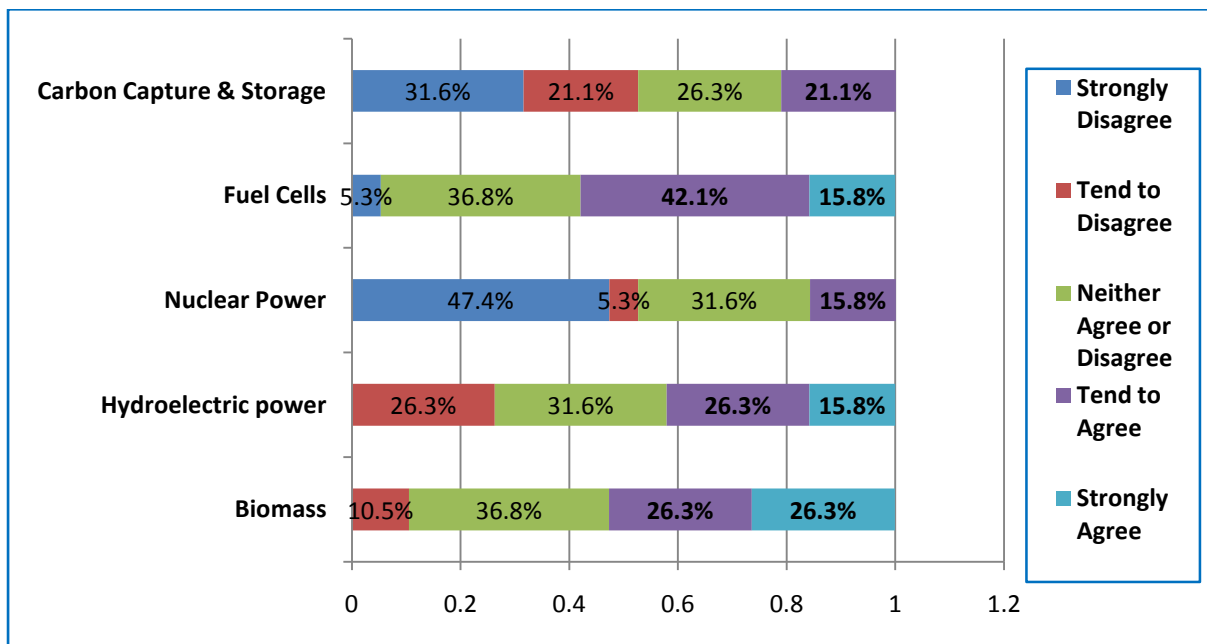
Table 9: Other Favoured Energy Source & Technologies



Least Favoured Source & Technologies

Table 10 below illustrates the respondents' perspective of the least favoured and most controversial sources and technologies. With regard to *carbon capture and storage*: 47.4 per cent support it as a viable option; 42.7 reject it and 21.1% are neutral. For *fuel cells*: 57.9 per cent support it; 5.3 per cent reject it and 36.8 per cent are neutral. As for *nuclear power*: 15.8 per cent favour it; 52.7 per cent reject it and 31.6 per cent are neutral to the option. For *hydroelectric power*: 42.1 per cent support its development; 36.3 percent reject it and 31.6% have a neutral opinion. As for *biomass*: 52.6 per cent support it; 10.5 per cent reject it and 36.8 per cent are neutral about its use. Given respondents preferences for RE sources which are economically, socially and environmentally feasible it is not surprising to find these options are considered a more conflictive option for Australia.

Table 10 Contentious Sources and Technologies



Stakeholders' Qualitative Responses

The respondents also highlighted the following issues and options for energy source and technology mix viable for Australia, as indicated by these quotes:

- Retail gas is too expensive for fuel cells;
- Direct use heat displacement facilities (or low temperature geothermal);

- Super conducting cables.

Stakeholder's Qualitative Responses: Most promising Technology/Process

The stakeholders' response to what is the technology/process that is most promising in the near term five to ten years revealed the following:

- The most popular technology for the respondents is the *"electric vehicle"* with the proviso that network issues need to be addressed;
- The second most identified energy trend is the *"smart meter"* and the *"smart grid"* infrastructure as the building block for energy technologies; in combination with *"electricity market reform"*; *"cost reflective pricing"* and *"live retail tariffs"* that convey the full cost of electricity delivery at that time.

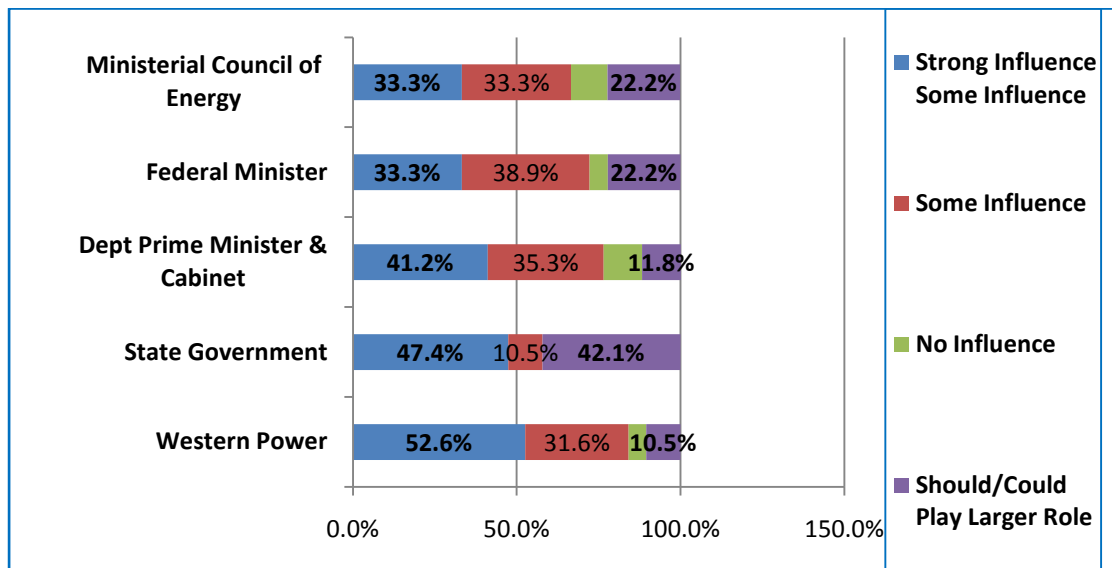
Other popular technologies/process considered most promising also include:

- Solar thermal, solar storage and energy efficiency;
- Energy efficiency; energy conservation and energy storage;
- Geothermal and super conducting cables;
- Solar and wind combination with battery storage and time shift dispatch and load shifting;
- Incentivising all stakeholders.

Influential Players in Energy Policy in WA

The respondents highlighted the following influential stakeholders and who they believe should be playing a larger role over IG-DE policy decisions in WA. Respondents highlighted that: (a) Western Power; (b) State Government; (c) Department of the Prime Minister and Cabinet; (d) Ministerial Council of Energy (MCE) and the Federal Minister have a strong influence over policy and regulation as a whole. As Table 11 below indicates, while *"Western Power"* the energy transmission network is attributed with having a greater level of influence (52.6%), the respondents however indicate that it is the *"State Government"* (42.1%) that needs to play a larger role in policy and regulation in WA.

Table 11 – Stakeholders Needing to Play a Greater Role

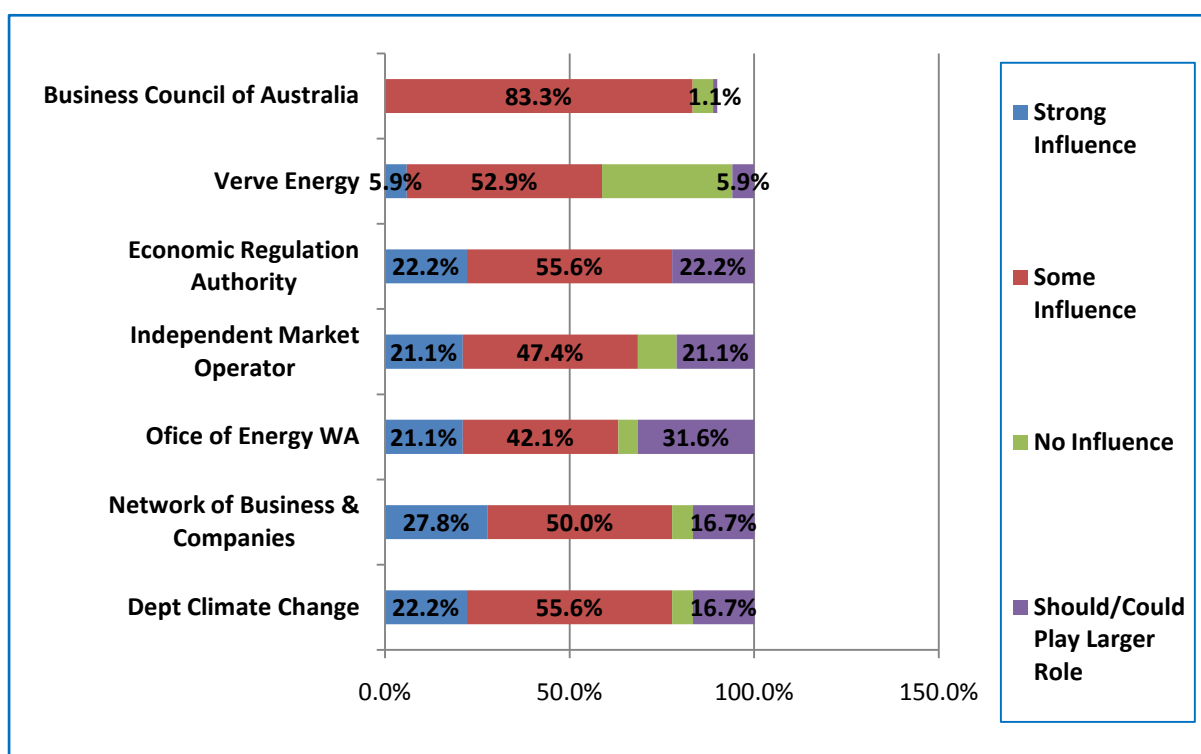


Other Influential Players in the Energy Network

As indicated by the respondents, Table 12 illustrates a number of other key players who are attributed with having some level of influence over energy regulation and policy. While 77.8 per cent attribute the “ERA” with influence, only 10.5 per cent believe they should play a greater role. Similarly 58.8 per cent attribute “Verve Energy” with influence and only 5.9 per cent think they should play a greater role. With regard to the “IMO” 68.5 per cent believe they have influence and 21.1 per cent believe they should play a greater role. As for the “Network of Business and Companies”, 77.6 per cent attribute them with influence and only 16.7 per cent believe they should play a greater role.

Most pertinent however, is that while the “Business Council of Australia” is attributed with having some level of influence by 83.3 percent of the respondents and the “Office of Energy” is attributed with having some influence by 42.1% of respondents, the majority of respondents (31.6%) believe that the “Office of Energy” needs to play a larger role in policy and regulation. Hence, based on these responses, it appears that respondents want government leadership as they attribute the “Office of Energy” and the “State Government” as needing to take a leading role in energy policy and regulation in WA.

Table 12: Players with Some Influence



Qualitative Responses – Other Influential Stakeholders

Respondents identified the following stakeholders not included in the survey as having influence over energy policy and regulation.

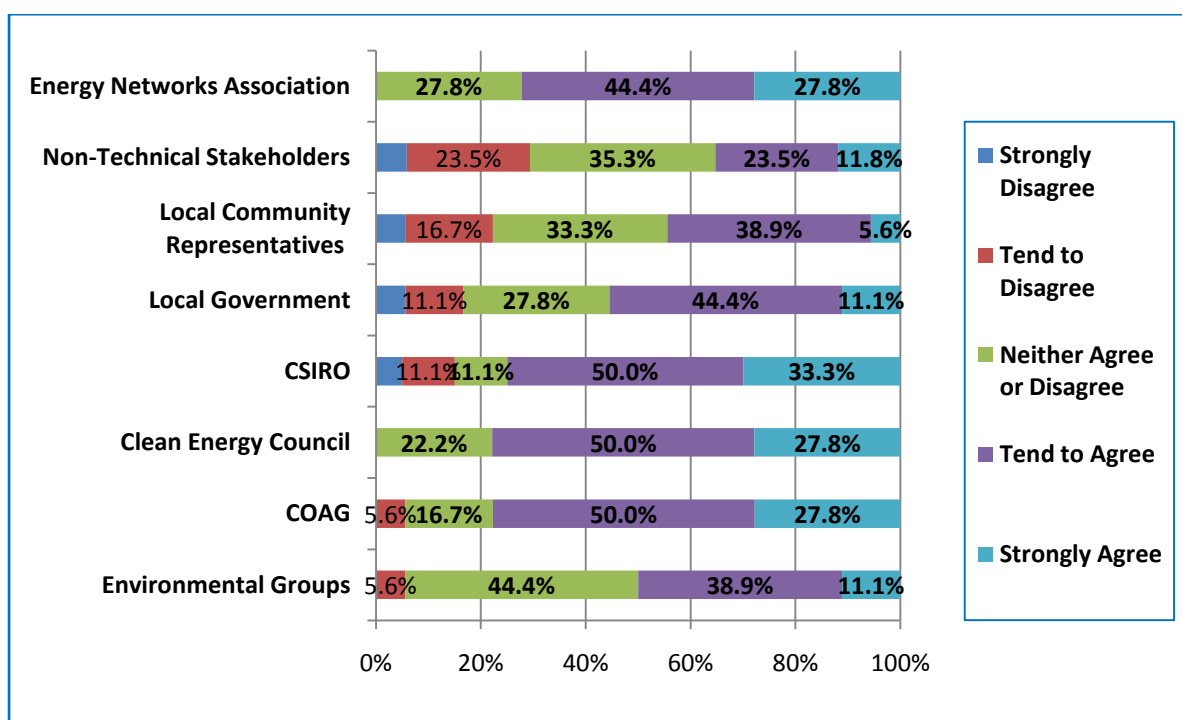
- Energy Retailers; Synergy; Horizon Power
- Consumer Advocates: WACOSS
- Consumers: communities; residential customers; project developers
- Local government
- Contractors; Land Developers
- Universities should be helping to set the agenda
- State Planning Bodies

Stakeholders Who Should Play a More Significant Role

With regard to who should play a more significant role in energy policy and regulation, respondents support the involvement of the following stakeholders: (a) *CSIRO* – 83.3 per cent agreement; (b) *Council of Australia Governments (COAG)* – 77.8 per cent

agreement; (c) *Clean Energy Council* - 77.8 per cent agreement and (d) *Energy Networks Association* – 72.2 per cent agreement. There is however, less support for stakeholders who are perceived as vested interest groups or lacking the technical knowledge to contribute to policy and regulation. For example Table 13 below highlights there is less support for a greater role to be played by the following stakeholders: (a) *Local Government* – 55.5 per cent; (b) *Environmental Groups* - 50 per cent; (c) *Local Community Representatives* – 44.5 per cent and (d) *Non-Technical Stakeholders* – 35.3 per cent.

Table 13: Playing a More Significant Role



Qualitative Responses – Stakeholders who should play a more significant Role

Respondents identified the following stakeholders who should play a more significant role to ensure that the diversity of voices are represented, particularly those adversely impacted by an IG-DE transformation.

- WACOSS /ACOSS are advocates for energy poverty and consumers which need to be factored in by policy makers;
- DRET, DCCEE – Office of RE Regulator;

- Customer feed-back should be passed on to Retailer, Network, Generator and Regulators. It is difficult to approach ALL the stakeholders with an issue;
- State Planning Bodies;
- Local business groups.

Conclusion

Although the energy stakeholders highlight a number of economic, market, institutional, political, policy and regulatory, cultural, knowledge, technological and technical barriers, there is also much optimism about the advancement of IG-DE as the benefits outweigh the impediments. Respondents also identify numerous drivers and enablers that will facilitate the energy industry's transformation process and much emphasis is placed on leadership and collaboration among government, industry and stakeholders to promote the technological advancements and developments that is expected to overcome the economic and institutional and technical barriers that constrains its deployment.