Intelligent Grid Research Cluster- Project 5

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Stage 2: Small and Medium Enterprises Survey of Two Regional Communities

The ABS defines SMEs According to ABS statistics, a small business is defined as one which employs less than 20 people, and a medium business as one which employs between 20 and 199 people. Small to medium sized businesses make up 95% of all businesses in Australia. SMEs can be characterised as heterogeneous, resource poor both financially and in time, are a disparate group and do not think as a collective but are a vital component of Australia's economy (Walker, Redmond & Goeft, 2007). Also of relevance is that they often work in isolation and are not necessarily connected to industry groups or associations, unless required to do so for registration purposes (Condon, 2004). Working in isolation also makes it easier for them to ignore the individual impact they may be making on the environment, however, collectively they make an enormous impact on the ecological footprint of society, both on their immediate local environment as well as in a global sense (Hillary, 2000; Stokes, D., Chen, H. & Revell, A., 2007). From this perspective understanding SMEs beliefs and attitudes including the drivers and barriers implicated with the deployment of DE solutions and related energy efficiency practices is vital to promote the 'business case' that will change current management practices. The regional SMEs of Denmark and Albany located on the edge of the SWIS electricity grid are appropriate sites for understanding the issues associated with IG-DE solutions. As these communities differ in population size, socio-political and economic characteristics including energy reliability issues, the comparison between these two communities will provide a more nuanced understanding of what motivates SMEs energy related behaviours.

SMEs World Views Underpinning Energy Attitudes, Beliefs and Behaviours

The SMEs survey analysis has been informed by qualitative data collected in the previous research stages and thematic and cultures theory analysis has been applied to understand the world views underpinning SMEs' energy attitudes, beliefs and behaviours. While categorisation of discourse allows a simpler understanding of SMEs energy attitudes and behaviours it is not meant to stereotype the respondents but to recognize that a

multiplicity of worldviews exist and this analytic process will assist in the development of more flexible IG-DE policy solutions.

SMEs Perceptions of Energy Reliability Issues:

Of note is that the communities of Albany and Denmark experience divergent energy reliability issues. While Albany residents are accustomed to a secure electricity supply, Denmark on the other hand receives power from a transmission line connected to the Albany substation more than 50km away. It is therefore not surprising that Denmark experiences frequency of blackouts during peak energy periods. The SMEs survey confirms this perception and while the majority of Denmark SMEs (66% strongly agree and 24% agree) think that energy reliability is a major issue fewer Albany SMEs (14% strongly agree and 30% agree) think it is a major issue for their community. In spite of these major differences to energy reliability issues it appears that the SMEs sector in both communities share similar views about climate change, the environment and the management of energy issues.

Climate Change Beliefs & Attribution of Responsibility

Applying a cultures theory framework data analysis revealed that the SMEs energy consumers' worldviews can be categorised into three (1) Hierarchists (2) Egalitarians; and (3) Individualists. The fourth orientation the *fatalists* was not represented in this study as a salient cultural disposition. In terms of the cultural perspectives the *Hierarchists* is the largest group and responses tend to convey little "sense of individual responsibility. From this perspective the discourse suggests that climate change mitigation and development of DE options are government responsibilities. Examples of this discourse are: *"Australian businesses will be disadvantaged if overseas economies do not regulate carbon emissions"... "financial incentives are vital to take up energy efficiency and solar power generation".*

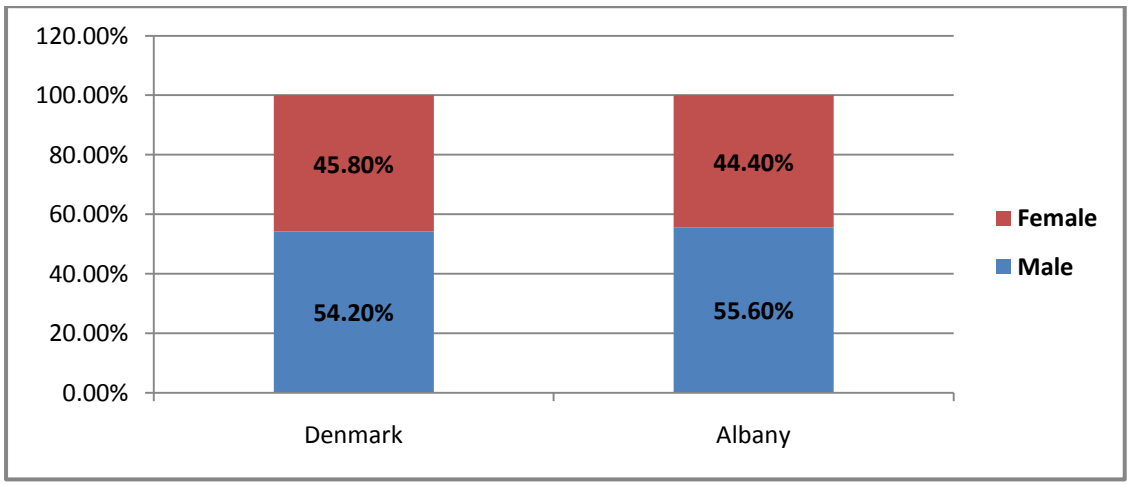
The Egalitarians represent the second largest group and their discourse indicates a fundamental belief in personal responsibility for addressing climate change and uptake of local DE generation. Examples of this discourse are: *"acting on climate change is a moral choice to protect the planet"... "we must change our behaviour to protect future generations, we must act now to reduce our carbon emissions".*

The *Individualists* is a minority group and their discourse tends to indicate an absence of personal responsibility and/or a desire to delegate responsibility to others to address climate change. Examples of this discourse are: *"there is no point subscribing to green energy because you don't know if it is RE or coal fired"... "it is not practical to pursue energy efficient operations if other businesses don't do the same"... "the big polluters (Corporations and industry) should be mainly responsible for protecting the environment"... "government is responsible for delivering a secure and reliable energy supply".*

SMEs Demographic Representation

The demographic statistics reveal a fairly even representation of SMEs for both Albany and Denmark on a number of characteristics, Chart 1 below portrays the gender distribution between the two communities.

Chart 1: Albany & Denmark - Gender



The chart 2 below shows a representative sample of SMEs based on age distribution except for the age group 45-54 where 36% of Albany SMEs and 19% of Denmark SMEs responded.

Chart 2: Albany and Denmark - Age Spread of SMEs

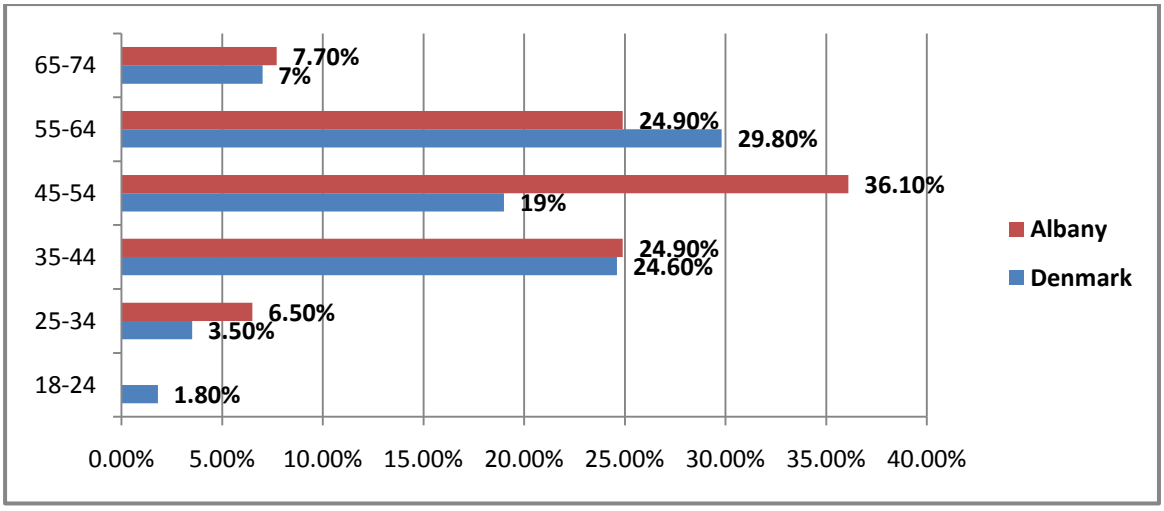


Chart 3 below illustrates the spread of SMEs representation based on business ownership model.

Chart 3: SMEs Business Ownership

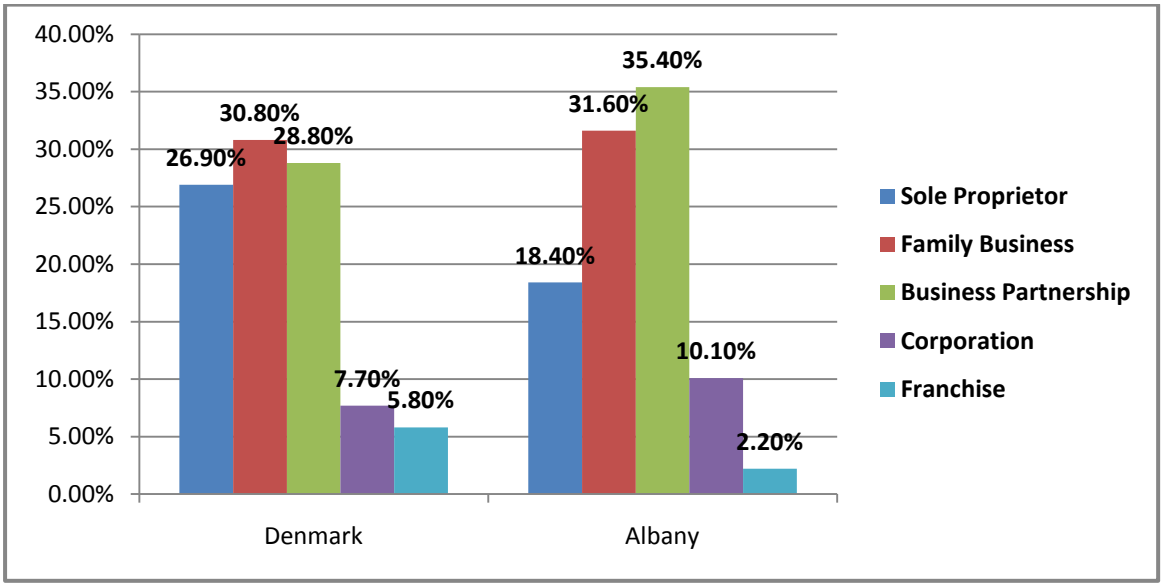
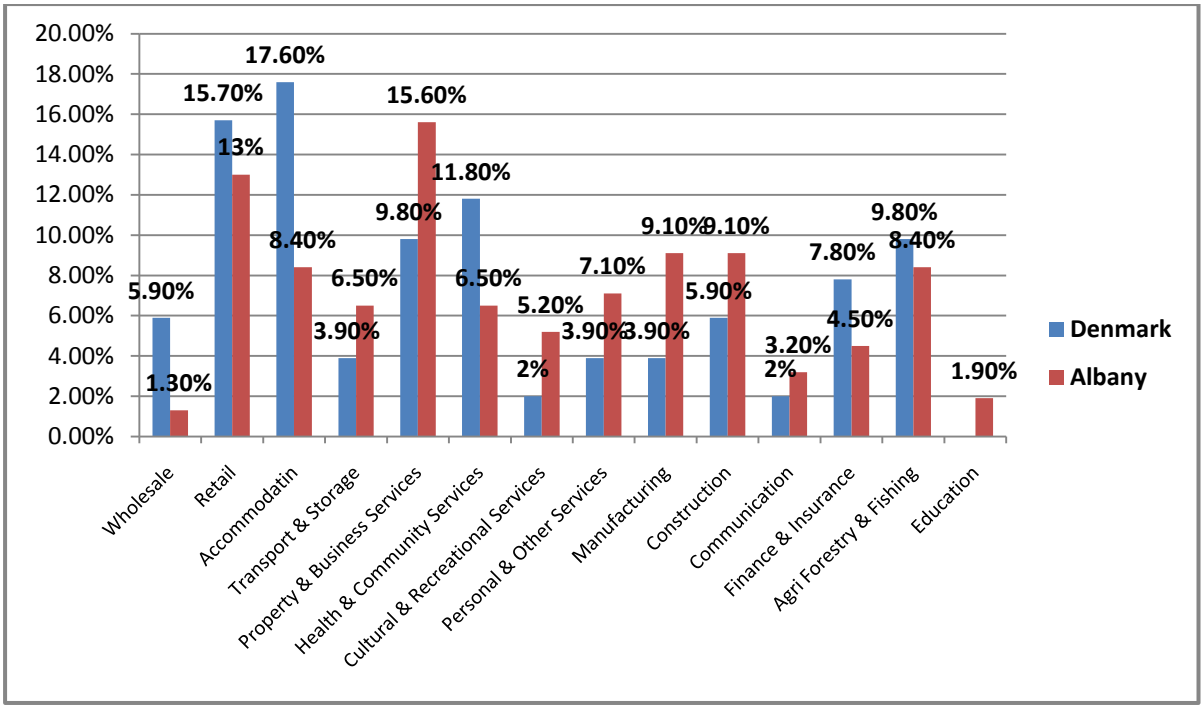


Chart 4 below depicts a fair even representation of SMEs by industry sectors.

Chart 4: SMEs by Industry Sector

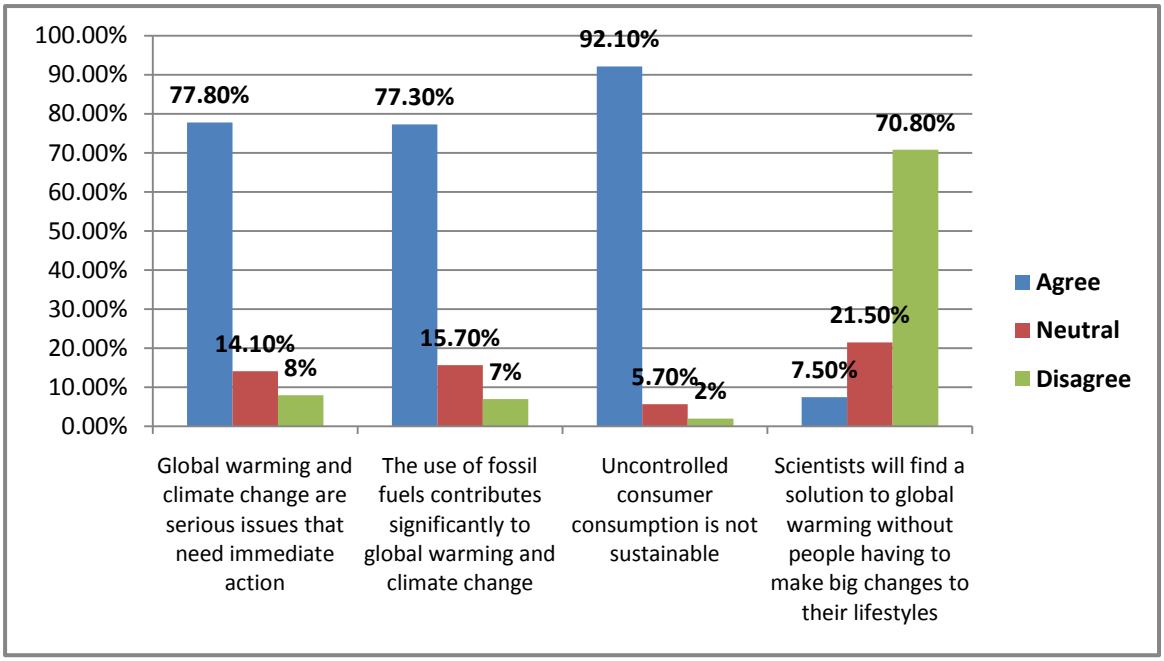


While the two regional SMEs communities differ on a number of characteristics no significant differences in energy attitudes and behaviours on the following themes were found. However, where differences are significant between the two communities these themes will be discussed in a later discussion.

Environmental Orientation:

As Chart 5 below illustrates the survey responses reveal that the majority of SMEs are highly supportive of environmentally friendly beliefs and attitudes and indicate high levels of awareness of the cause and impact of climate change. This contrasts with a minority of SMEs who hold either neutral or negative attitudes towards climate change and that its causes are human induced. There is strong agreement among SMEs that science is not the solution and that big lifestyle changes are needed to live harmoniously with the environment.

Chart 5: SMEs Environmental Attitudes



Theme 1: Economic & Environmental Sustainability

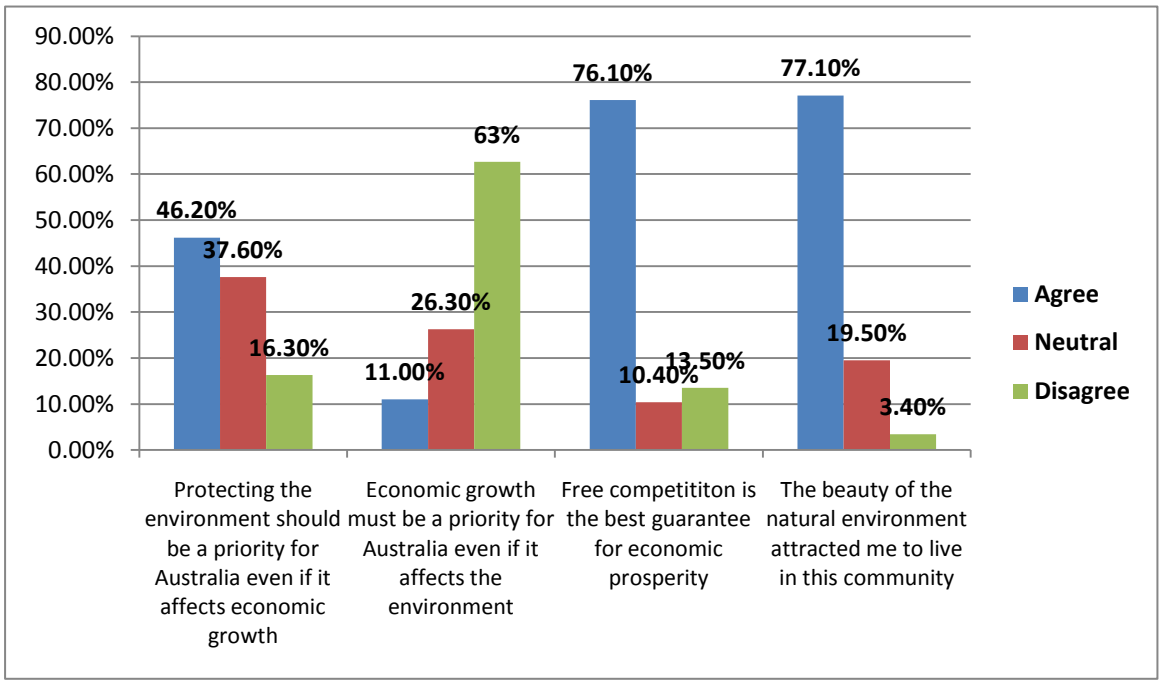
The survey revealed that the majority of SMEs position the state of the environment on a par with economic sustainability and believe that both economic and environmental issues must be integrated into the decisions made about energy management. The table below confirms that in contrast a minority of SMEs approximately 10% believe that economic considerations should take priority and 15% of SMEs disagree that the environment should take priority. While the majority of SMEs believe that economic growth and environmental protection cannot be considered in isolation, the paradox is that the majority of SMEs support the notion that *free competition* is best for economic prosperity. Only a minority of SMEs are philosophically opposed to the growth of a consumerist society.

The survey revealed that the majority of SMEs perceive environmental concerns and economic sustainability as an integrated issue. As the responses below confirm less than half of SMEs (46.2%) think that the environment should take priority over the economy and

63% of SMEs do not think that economic growth should take priority over the environment. These results reveal an aversion by SMEs to choose between prioritizing either the environment or the economy in isolation. Instead SMEs desire decisions about economic and environmental sustainability to be viewed as an integrated issue.

It is also interesting to note that although the majority of SMEs believe that economic growth and environmental protection are not separate issues, the paradox is that the majority of SMEs 76.1% support the notion that *free competition* is best for economic prosperity. Only a minority of SMEs 13.5% are philosophically opposed to the growth of a consumerist society. These responses however are in keeping with regional SMEs value systems where the environment and the economy are equally important issues. As the survey responses highlight regional communities show a strong sense of attachment to place 77.1% and are attracted to living the regional lifestyle despite the lower profit margins.

Chart 6: Attitudes to Economy and Environment



Theme 1.1: Energy Policy Actions – Economic and Environmental Sustainability

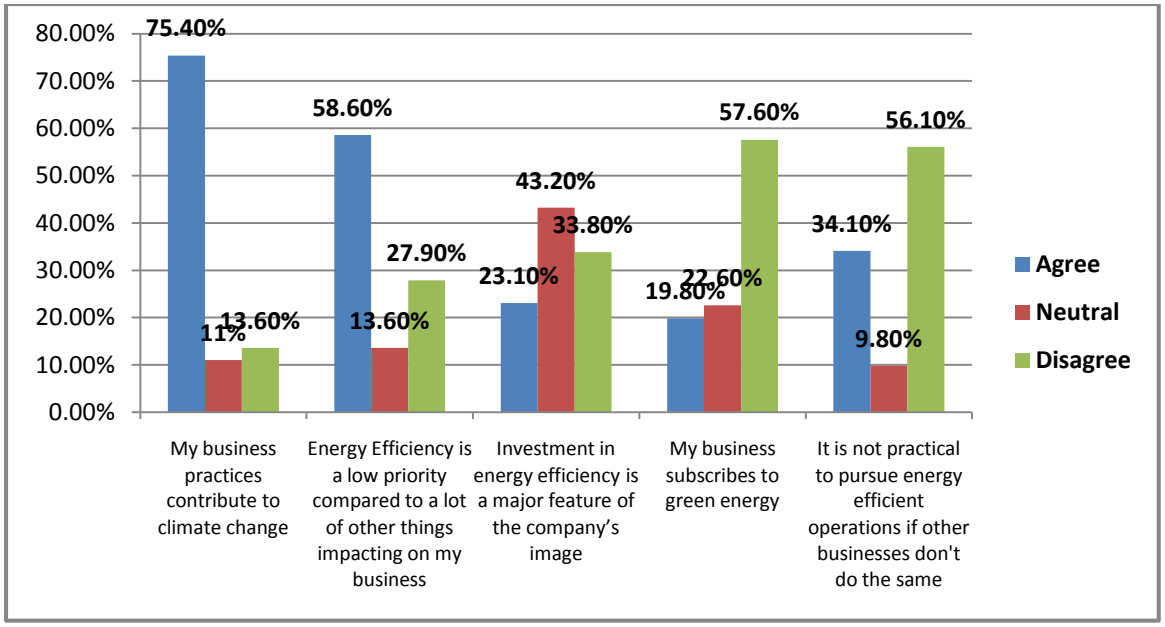
While all three energy cultures support regulatory and market reforms to integrate economic and environmental sustainability goals. The *Hierarchists* and *Egalitarians* support

the Carbon Pollution Reduction Scheme, RE subsidies & green energy investment. However, unlike the *Hierarchists* who support capitalist growth, *Egalitarians* desire cultural change to reduce consumer consumption and increase investments in an alternative green economy. *Individualists* on the other hand who are highly distrustful of governments increasing taxes are opposed to a carbon tax but support RE targets and technological developments such as Carbon Capture and Storage. Excerpts from the survey reflect sentiments above government action*: "SMEs are the backbone of the economy and there is little assistance to make a viable living ... governments are too busy playing politics to take effective action ... bilateral commitment from all parties in needed so they can feel comfortable making decisions good or bad. I'm not going to hold my breath, death would be 99.9% assured".*

Theme 2 : Awareness and Behavioural Actions

In line with numerous research findings green attitudes and awareness do not necessarily translate into concrete actions. Chart 7 below indicates that while many SMEs 75.4% take responsibility for contributing to GHG emissions they do not necessarily take actions to address it. While some SMEs 23.1% invest in energy efficiency, for 58.6% of SMEs a barrier is that it is a low priority compared to other issues that impact on the business. It is also not been as a prudential investment when other SMEs don't do the same. The Eurobarometers' survey also found that people high on environmental values do not necessarily take actions to promote energy conservation. For example while many undertake 'passive' energy behaviours like recycling, they refrain from 'active' behaviours such as using the car less or buying environmentally friendly products. While the lack of active energy behaviours could be viewed as indifference there are considerations that could explain the incongruence between attitudes and behaviours.

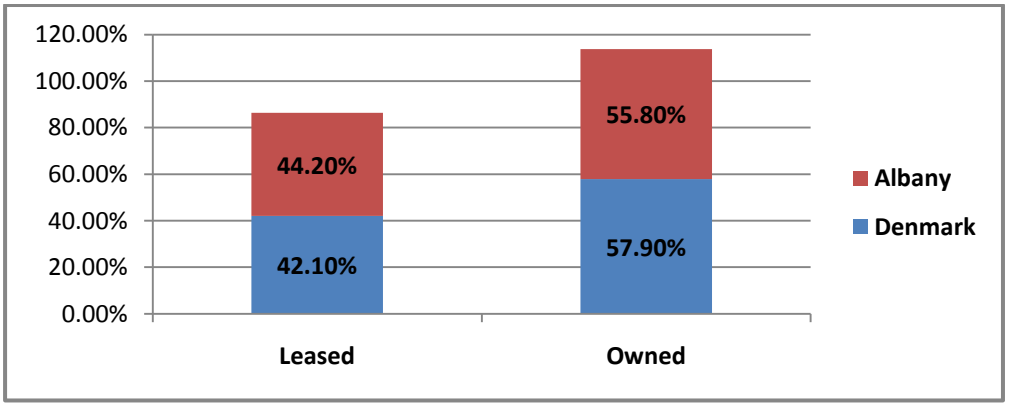
Chart 7: Green Energy Behaviours



Theme 3: Barriers to Energy Behaviours and Attribution of Responsibility

While the SMEs' responses to the more active forms of energy actions are not inspiring many factors may hinder their green actions. For example for many the business premise is leased (see Chart 8 below) some businesses are mobile, some also report that their energy use is already low and so there is little incentive to pursue DE options.

Chart 8: Business Premises

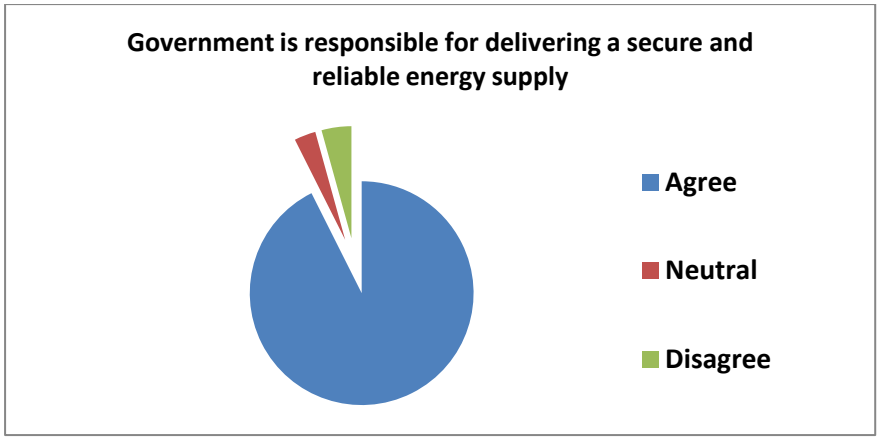


While some SMEs are altruistically motivated to adopt energy efficient practices, other SMEs are economically motivated by the advantages gained in promoting a green business identity. For the majority of SMEs who do not adopt energy actions, affordability and the low priority of energy efficiency compared to

other more pressing business concerns are major barriers to organizational change. While it is tempting to categorise this perspective as a sceptical orientation, as they can be identified with pro-economic values and anti-climate change beliefs (e.g. Cornish et al., 2008), these responses may also reflect a more pragmatic attitude to the attribution of responsibility for climate change mitigation and adaptation.

While many SMEs feel morally responsible for contributing to the cause of climate change, they also feel powerless to change without institutional facilitation. As the responses below indicate 92.5% of SMEs believe that energy security and reliability is a government responsibility. Given that government is attributed with this responsibility it is not surprising that SMEs rely governments to take the lead in providing strong signals and the incentives to facilitate more active energy behaviours.

Chart 9: Government Responsibility

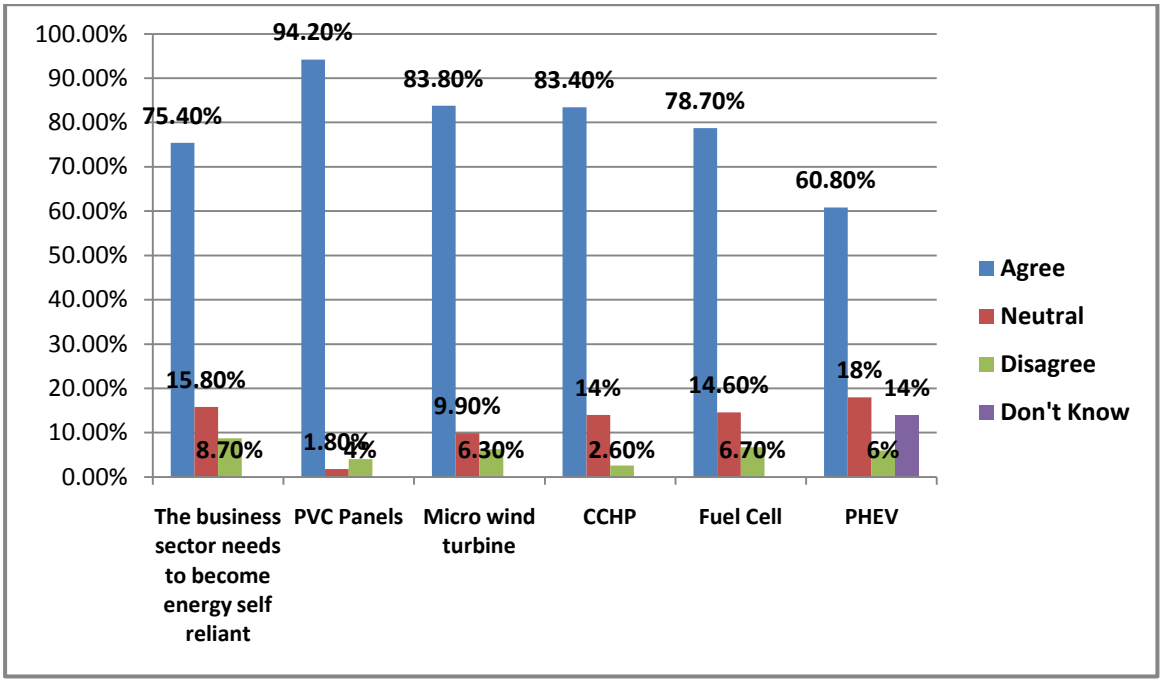


While all three cultural orientations desire institutional coordination to address energy issues, the *Hiearchists* and *Individualists* are far more reliant on institutional leadership to facilitate green energy behaviours. In contrast for the *Egalitarians,* individual responsibility is fundamental along with civic action to influence the governments' agenda for climate change and energy policy actions.

Theme 4: SMEs On-Site Acceptance of DE Solutions

While the majority desire institutional coordination to promote viable energy technological solutions, the SMEs nevertheless indicate personal responsibility to engage with on-site generation of electricity and support a suite of possible solutions. While there are high levels of acceptance for the proven technologies there is more caution taken towards the less familiar energy technologies. For example 75.4% of SMEs want to attain energy self reliance and signify their willingness to deploy the most popular technologies such as the solar panels (84.2%) and micro wind turbines (83.8%) on business premises. There is also high level of support for Combined Cooling Heat and Power (CCHP) systems and Fuel Cells. While there is moderate support (60.8%) for plug-in hybrid electric vehicles these responses signify a general acceptance of DE technologies and the signs are optimistic for DE deployment among SMEs as long as the economic, regulatory and informational barriers are addressed.

Chart 10 – Acceptance of DE Solutions

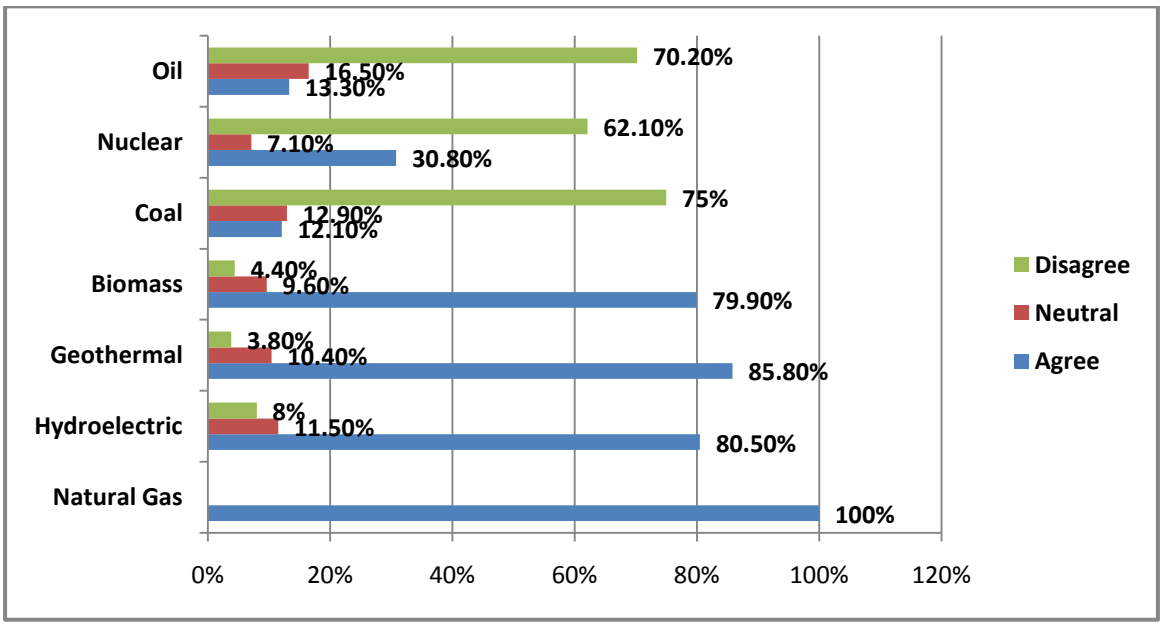


Theme 5: Sources of energy mix desired for Australia

With regard to sources of energy mix desired for Australia, it is not surprising that the majority of SMEs favour renewable energy sources over fossil fuels (see Chart 11 below).

The minority who do support the use of coal however rationalize that it is reliable, abundant and cheap. The surprising element to SMEs responses is that nuclear power is gaining support above coal. While these attitudes reflect the global renaissance for nuclear energy sources, its development is supported under the strict criteria that safety, storage and disposal and economic concerns are addressed. The supporters highlight that eventually when the globe will runs out of options there would be little choice but to pursue nuclear sources. An excerpt highlights a basis for nuclear sources as the only option left given the dire consequences of climate change: *"... nuclear has a definite place we know all the dangers they can be managed ... coal power stations have created enormous health problems and disastrous impacts for the planet yet people worry about a little Chernobly disaster – it is a drop in the ocean compared to the health consequences of coal ... it is [nuclear impacts] more visible and it is immediate and you can see it and quantify it well ... as for the health problems with coal they occur over generations ..."*. While there is minority support for nuclear power all three cultural orientations can be associated with supporting its development as a future option provided it is safe and economically viable. For the majority of SMEs however the general stigma toward nuclear power persists as there is a high perception of risk linked with dangerous waste disposal issues and the hazards posed to human health.

Chart 11: Energy Technology Mix Desired for Australia

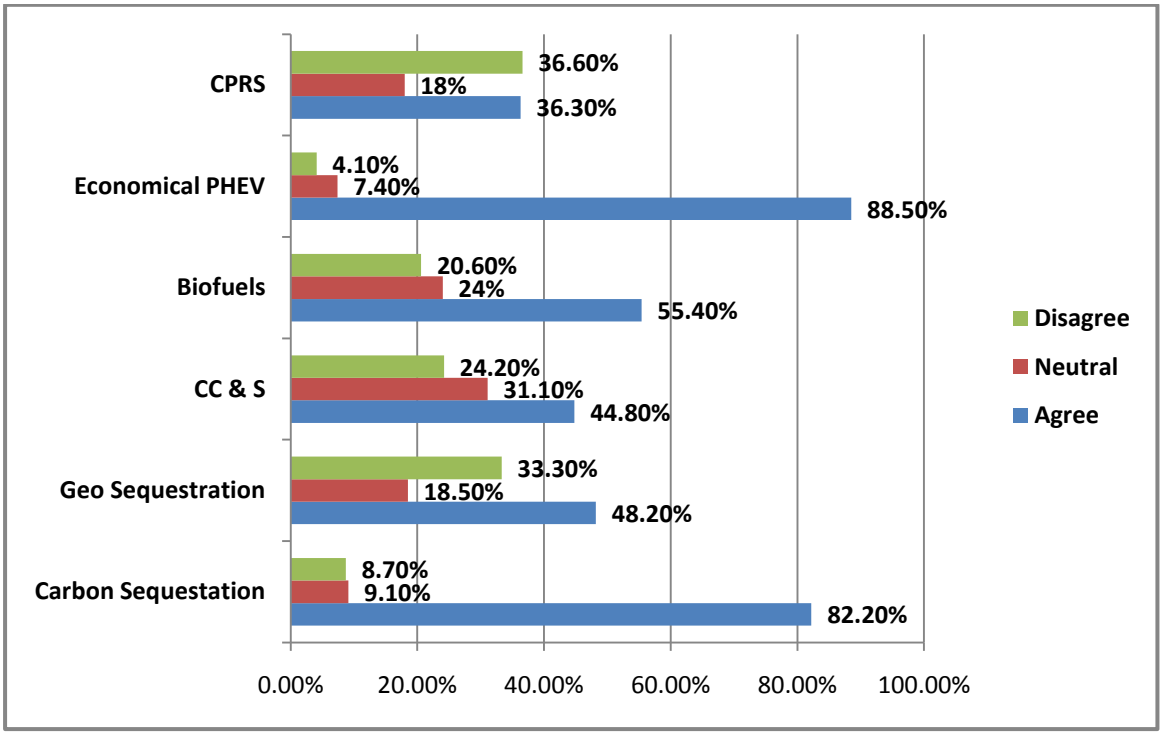


Theme 6: Reducing Carbon Emissions - Policies and Technologies

In general terms the majority of SMEs reflect a sophisticated level understanding of the issues related to the various technologies and there is majority support for strategies that are least detrimental to the environment, economy and humans. With regard to the Carbon Pollution Reduction Scheme however SMEs appear to be confused about the impacts and the costs and benefits of this policy. SMEs responses (36.3% agree; 18% neutral; 36.6% disagree) as show in Chart 12 below not only reflect a lack of knowledge about the policy but there is also concern with debates which portray it as vital to address climate change on the one hand but it will also lead to price hikes and that the scheme will subsidize the big polluters. On the whole SMEs are confused and cautious about the advantages of a policy that appears to be from their perspective another tax burden that affects all sectors of the community particularly Australia's economy.

In contrast there is overwhelming support for Carbon Sequestration (82.2%) as SMEs are familiar with this scheme. There is however a spread of responses (33.3% support; 18.5% neutral; 48.2% disagreement) to Geo-Sequestration as many SMEs are not familiar with this technology and it is also less relevant to SMEs in this region. Another technological advancement that elicits a split of responses is Carbon Capture and Storage (CC&S). With 44.8% of SMEs in support, 31.1% neutral and 24.2% who do not support CC&S as it is attributed with supporting the coal industry.

Chart 12 – Carbon Reduction Solutions



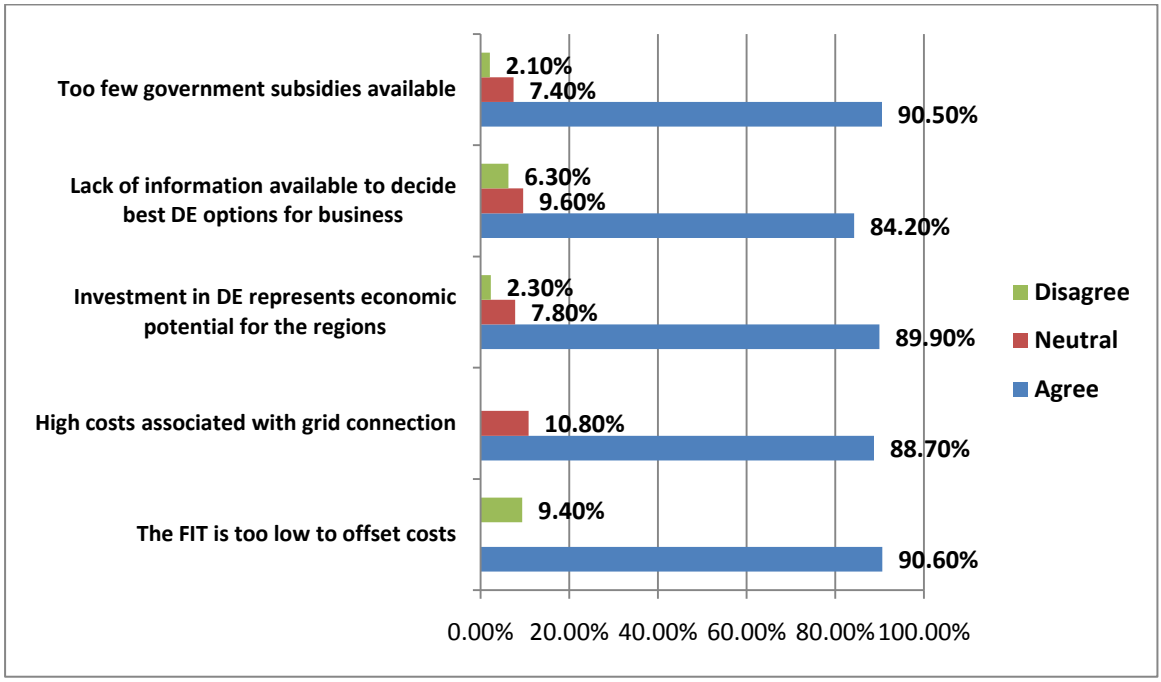
On the whole the SMEs are familiar with the concept of a PHEV in terms of reducing reliance on fossil fuels however there is less in-depth knowledge about the benefits of a PHEV with regard to the energy efficiency gains that flow from electricity generation and storage uses. Nevertheless SMEs overwhelmingly support this technology (88.5% agreement) with the key provision that it is economically affordable for the SMEs sector.

Given regional SMEs awareness of the debates around the production of bio-fuels, it is not surprising that responses are spread with 55.4% of SMEs supporting the production of this energy source. Some of the concerns raised include competition with agricultural land, the debates about a global food crisis and the hikes in food prices associated with bio-fuel plantation. In general SMEs responses tend to favour energy sources and technologies that they are knowledgeable about, that are affordable, where there is clarity about the benefits and are less associated with social, political and environmental controversies.

Theme 7: Barriers to DE Solutions

While SMEs are generally accepting of a wide variety of DE technologies and desire to be energy self reliant, there are economic and informational barriers to deployment. As the responses below highlight the barriers to deployment of DE technologies include economic considerations such as an inadequate feed-in-tariff (90.6% agreement) and lacking government subsidies (90.5%). Other issues of concern to the majority of SMEs include the high costs of grid connection (88.7%) and the lack of information available to decide the best technological options for the business (84.2%). While a minority of SMEs are already energy self-reliant due to altruistic and economic rationalist benefits, for the majority there appears to be little option but to rely on grid supply untill DE technologies becomes more affordable and when they are able to make informed choices. Most surprising however is the overwhelmingly consensus that local RE investments represents an economic potential for the regions with a response of 89.9% support for DE.

Chart 13: Barriers to DE Options



Theme 8: Local Business Solutions – Incentives for DE Deployment

To promote DE among residents and SMEs unable to afford the capital costs of DE technologies, a niche business has emerged. A local entrepreneur with previous energy utility experience has developed a business model that involves renting roof spaces from residents and businesses to generate electricity from company owned PVC panels and micro wind turbines. The company generates income from selling energy to the grid and those who can't afford the capital expenditure can now benefit from access to cheaper renewable energy. While this business venture is in transition from concept to deployment stage, a number of residents and businesses have committed to this scheme and institutional negotiations are continuing with Western Power facilitating the process to enable the success of this type of DE business model.

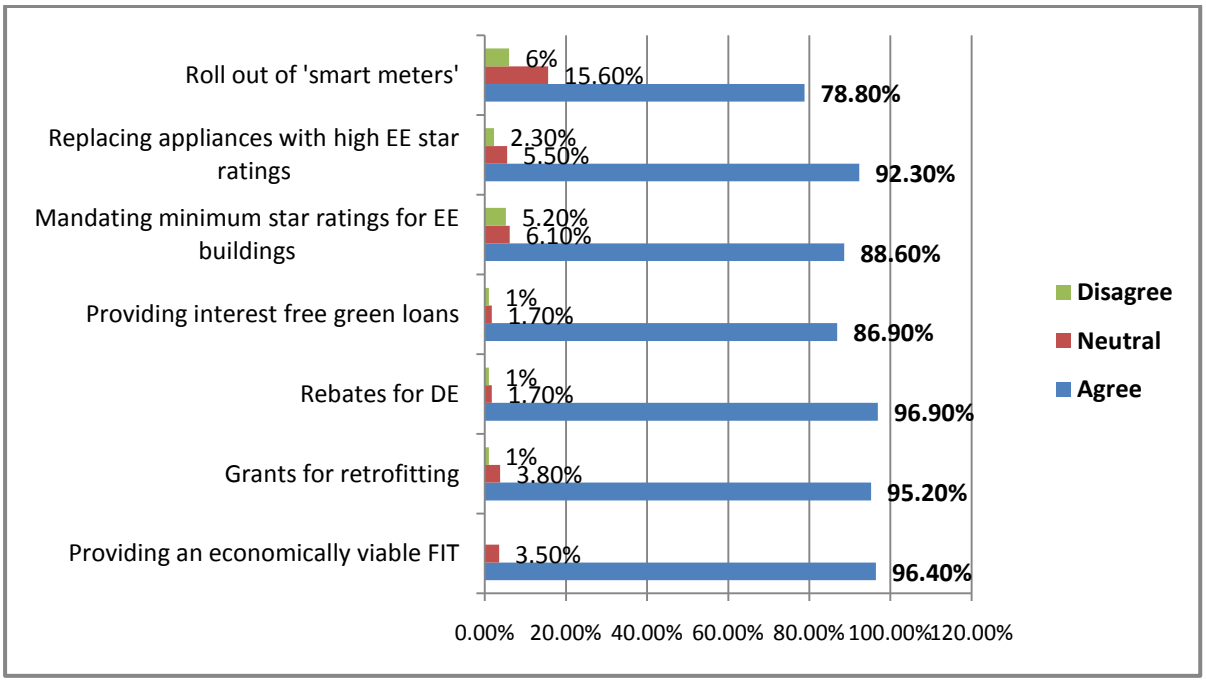
Theme 9: Incentives to Facilitate DE & DM Solutions & Social Equity

SMEs believe that incentives are vital to enable the sector to deploy DE solutions and indicate overwhelming support for initiatives to motivate change in organizational and management practices towards energy generation and efficiency. There is an overwhelming response for a more economically viable FIT (96.4%) including access to rebates for DE (96.9%); grants for retrofitting (96.9%); and other economic and technological incentives as outlined in Chart 15 below. However, there is also overwhelming support for regulatory incentives (88.6%) to mandate the minimum star energy efficiency rating required for buildings. Given the high rate of SMEs who lease premises this is viewed as a strategy that would assist businesses to become more energy efficient.

SMEs positive response toward economic and regulatory incentives including technological advancement for the roll out of smart meters (78.8%) is indeed inspiring (see Chart 14 below). Most significant is that these responses suggest that regardless of environmental and cultural worldviews if there is sufficient incentive in place then SMEs are willing to adopt DE and demand management solutions. While SMEs believe that financial incentives are vital for the deployment of DE and energy efficiency there is also a social justice concern raised during the interviews that it may also lead to inequality within the sector as many who are financially disadvantaged will not be able to able to access the

grants and rebates. The issue of social inequity is a great challenge for policy makers to ensure that incentives are accessible to all energy consumers regardless of socio-economic status.

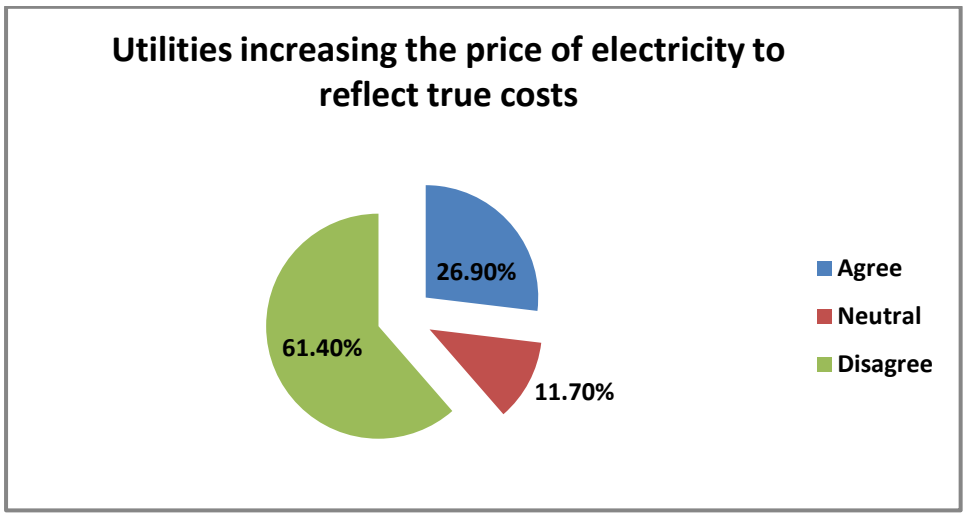
Chart 14: Incentives for DE Solutions



Theme 10: Cost Reflective Energy Pricing – Cause for Concern

The one incentive viewed by SMEs as posing a deleterious impact on the business sector is the relentless electricity tariff increases transpiring in Western Australia. Western Australian energy consumers are already reeling from the price hikes however, a State Government report on WA's energy market 'Energy2031' predict the average electricity bill jumping more than 60 per cent from $963 in 2008-09 to $1547 in 2012-13. A key concern is that while higher electricity prices may force some reduction in energy usage, economic constraints will curtail the deployment of other more energy efficient strategies. It is therefore not surprising that only 26.9% of SMEs support increases in electricity prices as a key driver to promote energy efficient practices (see Chart 15 below).

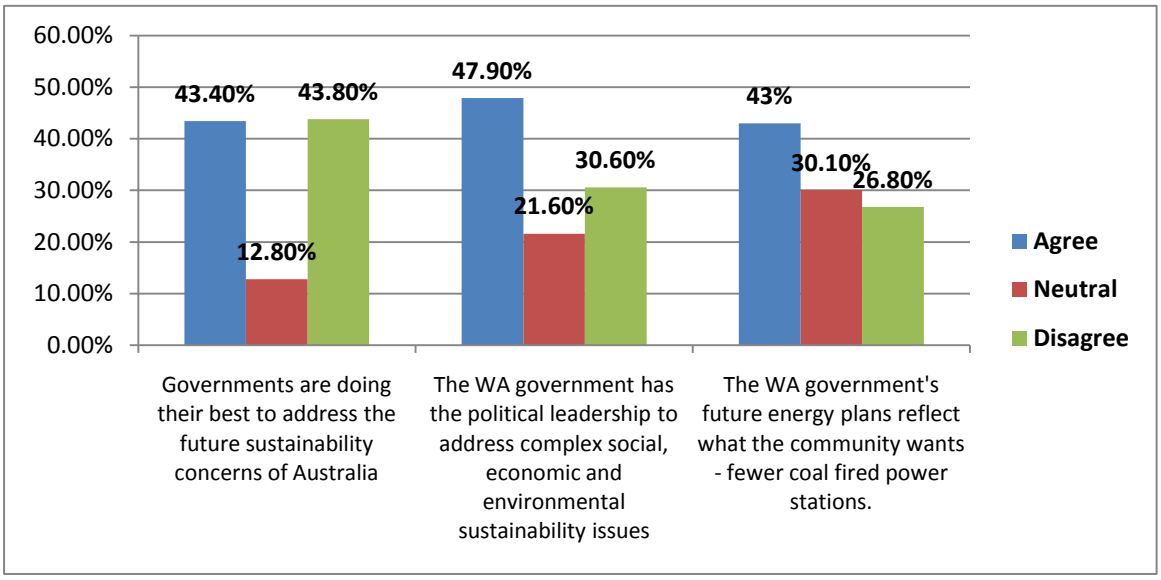
Chart 15: Increasing Cost of Electricity



Theme 11: Trust in Government Leadership – Climate Change & Energy Policy

SMEs response to trust in government leadership is mixed and there is a split between positive and negative views toward both national and state governments' capacity to act on sustainability and energy policy issues. While 43.8% of SMEs disagree and 43.4% agree that governments on the whole are doing their best to address both sustainability and energy issues, 12.8% provide a neutral response that they neither agree or disagree with the statement (see Chart 16 below). Responses are split again to the statement that the *"WA government has the political leadership to address complex issues of social, economic and environmental sustainability"*. Where 47.9% of SMEs agree with this view while 21.6% disagree and 21.6% are neutral.

Chart 16: Trust in Government



To the statement that the *"WA government's future energy plans reflect what the community wants - fewer coal fired power stations"*, the responses understandably are complicated as the statement could have been interpreted in a number of ways. For example it is plausible that 47.9% agree that this is government energy policy; while 26.8% may disagree that this policy is actually being implemented or that they don't actually support this policy. Given the high level of neutral responses (30.1%) it is conceivable that SMEs are not sure what the energy policy status is in WA.

While many of these responses may reflect political allegiances, on the whole the mixed responses most likely reflect general community frustration and confusion with state and federal governments' policy and action on climate change and energy. Within the WA context for example, while the state government has committed to the expansion of DE it has also approved three new and two refurbished coal fired power plants. These policy decisions have stirred much public debate in the media and energy commentators have highlighted the glaring vacuum in climate change policy at the state level to reduce GHG emissions despite community desire for certainty on these issues. Given the lack of leadership at both national and state policy levels to push the green energy agenda it is not surprising that SMEs are confused over the incongruent signals to plan for an energy constrained economy.

Theme 12: Information, Educational & Identity

Analysis of the data revealed a link between SMEs awareness of energy technology, social identify and framing of educational material to promote acceptance of DE technologies and energy conservation behaviours. While 71.2% of SMEs reported being informed about energy issues 28.9% indicated that they are badly informed. The majority of SMEs 72.5% also indicate that their opinion about future energy alternatives has been influenced by the national and international debate on climate change only 9.3% report being a little influenced and 3.5% report not being influenced. As Chart 17 and 18 below reveal the majority of SMEs report being knowledgeable about energy issues and are influenced by media debates.

Chart 17: SMEs Awareness

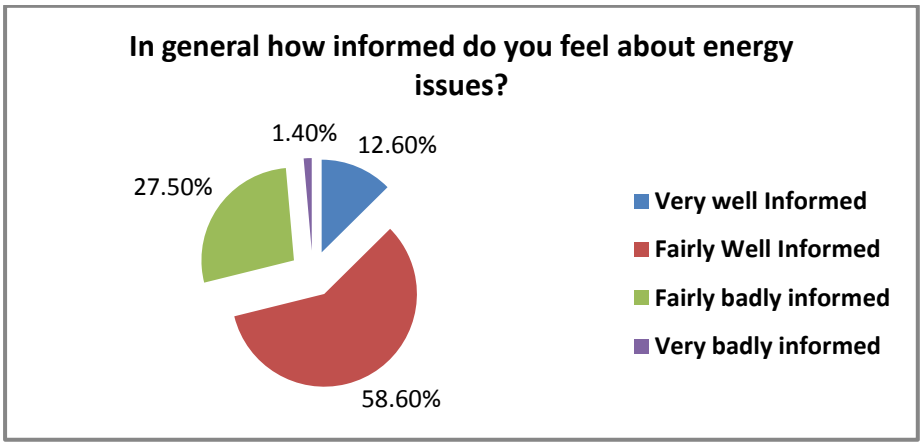
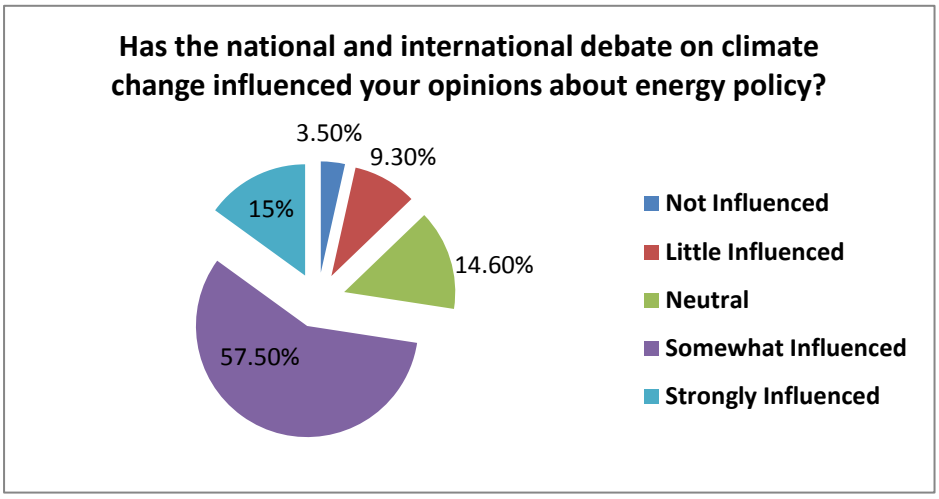


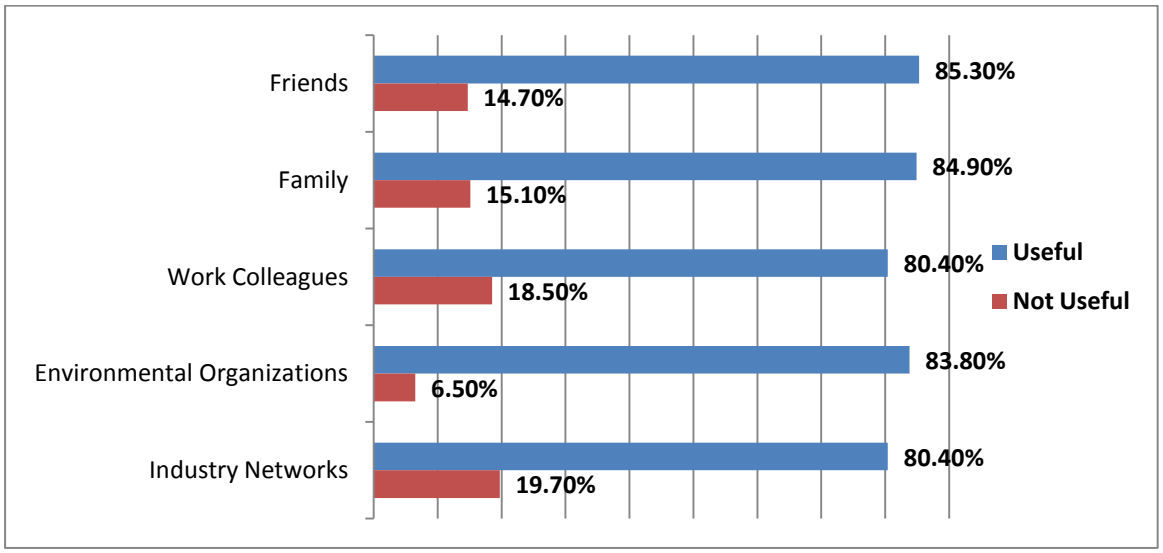
Chart 18: Influenced by Debate



Influential Source of Information

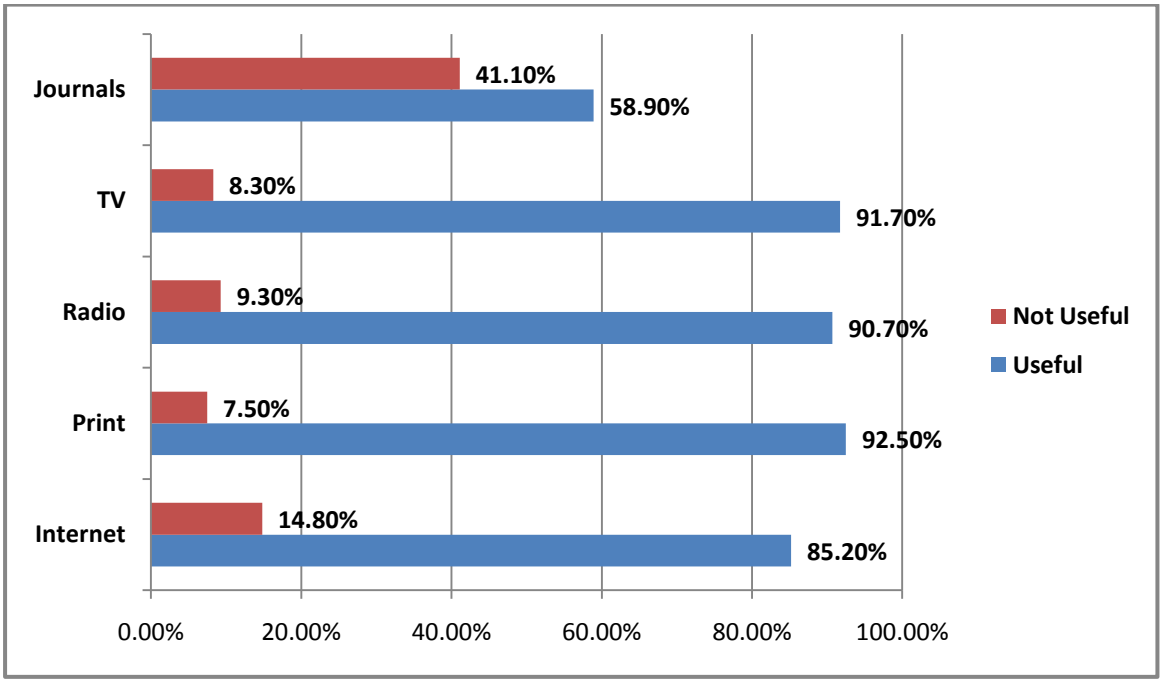
Given that the media can influence attitudes toward energy issues knowing where SMEs source their energy information can assist in selection of the best means by which to communicate public educational campaigns. As Chart 19 below illustrates SMEs access energy information from a wide source of social and community networks, however, it appears that the media and the internet are important sources, although scholarly journals are accessed by fewer respondents. The responses below indicate that SMEs rely on their social and community networks to be informed of energy issues. In place-bound communities local social networks play a fundamental role in the sourcing of information including information on energy and climate change issues.

Chart 19: Source of Information - Social & Community Networks



As depicted by Chart 20 below SMEs identify a wide range of media sources as useful for accessing information on energy issues, but they rely less on scientific journals.

Chart 20: Media Sources of Information



Cultural Theory Perspective – Accessing Sources of Information

While it is interesting to note that SMEs source both community and external media sources to gain information there are implications for the types of sources used to promote information and educational campaigns. For example, when these responses are viewed from a cultural orientation perspective it appears that trust in the source of information and the way information is communicated is linked to community social identity. For example from a cultural theory perspective *Hierarchists* who identify with strong environmental values, are more open to educational information that is framed to provide simple practical solutions to energy issues. The motivation for change comes from the economic incentives and energy savings that flow from DE solutions.

With regard to educational campaigns this orientation is not responsive to climate change discourse that emphasizes the gravity posed to humans and this should be avoided. For this group there is a stigma attached to an environmentalist identity and therefore care

must be taken to ensure that information is framed in neutral language that focuses on benefits and that the information can be sourced from locally trusted people and organizations. Even though 83.8% of respondents identify environmental organizations as a good source of energy information this does not necessarily mean that all SMEs will access it from this source. *Hierarchists* are more comfortable accessing information from government and industry sources such as the Local Shire; local government and NRM agencies, the Chamber of Commerce & Industry, Tourism Agencies, etc where trust has been established and social identity is not threatened.

Individualists are also more sceptical of climate change language and are not open to environmentalist appeals. They are more trusting of local radio programs and community newspapers including local government and industry networks as sources of information. Behaviour change for this orientation would come from an appeal that is framed around technocentric and economic incentives such as the advantages of energy efficiency and green energy business image.

Egalitarians are more sceptical of media sources, they trust climate change science and would source environmental organizations, scholarly journals and the internet. As they are already converted, eco-centric and techno-centric appeals that emphasize climate change catastrophe is a strong motivator for change.

Many *egalitarians* tend to have strong links to local environmental organizations and practice environmental sustainability. In this region a small group of green oriented activists are leading the way in promoting educational campaigns to promote energy efficient behaviours and are a great asset for facilitating community level behavioural change. Local environmental organizations however, would need to communicate the message to fit the motivational appeals of a variety of audiences and this will be elaborated on in the discussion chapter.

Salience of Energy Issues – Motivational Differences: Albany and Denmark

While the survey has not revealed significant differences in environmental and energy related attitudes and behaviours between Albany and Denmark SMEs, there are clear differences between the two communities' in terms of the salience of energy conservation

actions at the community level. Key environmental activists in Denmark are actively engaged in modelling energy conservation actions and the whole community is benefitting from increases in levels of awareness and knowledge about environmentally sustainable energy technologies and behaviours. There are numerous examples of active energy behaviours being modelled by key community leaders and environmental organizations within the community. Some of the initiatives include (a) community stakeholders engaging with Western Power in planning the sustainable energy needs of the community; (b) environmental activists constructing architecturally designed energy efficient buildings such as the Centre for Sustainable Living and (c) entrepreneurial environmentalists successfully obtaining a Commonwealth grant to develop a community owned wind farm and (d) volunteers engaging with the public to promote energy conservation education.

This community is unique in that environmental conservation is a mainstream value system and this is a credit to the key social change agents who have worked tirelessly to push the sustainability agenda across the generations. In a similar vein social change agents have continued to push the green agenda as an all of community approach to target climate change mitigation by reducing GHG emissions through DE and DM solutions. Given the level of active energy behaviours being observed as a cultural norm in the community it is not surprising to find that energy is a salient issue for all sectors of this community. While community acceptance of DE and Demand Side Management (DSM) solutions is high the deployment of solutions is reliant on the economic, regulatory, informational and educational barriers being addressed at the policy level.

A number of factors have enabled Denmark's community level awareness and engagement with sustainable energy solutions. Firstly the community engagement processes instigated by Western Power has enabled the community stakeholders to voice their desire for DE and DM initiates. This in turn has empowered Western Power to develop the Green Town project to reduce the peak energy demand and meet community and institutional goals. This project involved public educational programs and participation in energy efficiency strategies such as CFL replacements; free replacement of inefficient hot water systems and stoves; fuel switching to greener alternatives, load control and smart metering trials. These highly publicised initiatives enabled the community to gain greater

awareness and access to information and to Western Power officers to discuss the options. Denmark is a small community population of 5000 it is less arduous for community leaders and Western Power officers to tap into the community's established social capital networks, and motivational drives (Ebi & Semenza, 2008) to disseminate energy conservation solutions and behaviours.

Albany on the other hand is a larger community with a population of approximately 35 000, it is also more politically conservative and does not experience energy reliability issues. While there is a community based environmental organization in Albany it has less influence over a diverse community constituent and most importantly Environmentalists are not politically influential in this community. Other factors which diminish the community's motivational drive to be concerned about energy issues is that government organizations such as the South Coast Natural Resource Management and the Great Southern Development Commission are devoted to promoting the economic and environmental goals and strategies for the region. Given this level of regional government focus it is not surprising that community environmental initiatives are at the more passive level of information provision and energy audit facilitation. A State Energy Development Office (SEDO) project grant was undertaken by the Albany Environmental Centre in 2009 to promote energy conservation. The project manager reported that residents and SMEs were extremely reluctant to undertake free energy audits and it was extremely difficult to elicit community participation in this project. While the lack of participation may point to apathy with energy conservation however it may also signal the participants' discomfort with an Environmental organization having a green cultural identity undertaking an energy audit. The project may have gained more success if the promotion material had been framed for a diverse audience and community members representing the diversity of identity groups had been employed to elicit participation in the energy audits.

While a few altruistically and technologically motivated SMEs in the Albany community have deployed solar generation on business premises there is no community group or government organization devoted to promoting DE solutions. While the Albany Chamber of Commerce and Industry held forums entitled the Green Advantage to promote more passive actions on energy efficiency it does not target the active DE solutions. The fact

that Albany has a highly visible wind farm and is currently pilot testing wave technologies also reduces the motivational drive of residents and SMEs to be concerned about energy conservation as they perceive Albany as a show case for green energy. The lack of engagement by Western Power to provide an educative and facilitative role towards more active community driven behavioural changes is also a key factor limiting Albany residents and SMEs transition towards DE solutions.

A study commissioned by the Swan Catchment Council with 200 Light Industrial Albany SMEs' in 2008 revealed that while businesses are concerned about the impacts of their environmental practices, in general SME's actions displayed a deficit in sustainable business practices. SMEs also believe that all sectors of society including individuals, community and government are responsible for the environment. While SMEs are willing to change their environmental practices economic assistance is vital if it is going to cost more. In terms of energy conservation SMEs are indicated a willingness toward more passive changes such as the installation of skylights and energy efficient lighting. According to these SMEs the best methods for promoting changes in environmental practice include: (a) education 33%; (b) financial support (33%); (c) self management/industry driven (20%) and (d) Laws and Enforcement (12%).

A comparison between Denmark and Albany's energy actions confirms that when personal responsibility for energy is not a salient issue and when leadership and institutional coordination is lacking SMEs have no option but to operate in isolation and very little can be achieved when SMEs don't feel supported. To promote more active behavioural changes of both residents and SMEs toward DE solutions it is vital for regional organizations such as the Local Government, Great Southern Development Commission (GSDC); Albany Chamber of Commerce & Industry, South Coast Natural Resource Management (SCNRM), Western Power and other relevant groups to work collaboratively through community engagement processes to address the issue of energy sustainability. Integrating the community with key stakeholders in visioning energy initiatives will facilitate stronger social capital networks through which energy social norms can be disseminated. A key finding is that the sucessful deployment of DE solutions in the regions require community level approaches which combine institutional facilitation with social and

community networks operating as the conduit to enable collective behavioural change for the long term. Of note however is that since visits have been undertaken to Albany by iGrid team members Dr Costello and Professor Stuart White there has been a greater focus by both the SCNRM and the GSDC on the social, environmental and economic benefits of DE solutions. Strong regional leadership is the key but it is also dependent on state and federal policies on energy and climate change providing the motivational drive to incentivise DE solutions.