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Just Transition in Australia: Moving Towards Low Carbon Lives Across Policy, Industry and Practice report

Dear Sarah,

Please find attached Energy Consumers Australia's (ECA) comments on the Just Transition in Australia: Moving Towards Low Carbon Lives Across Policy, Industry and Practice report. At ECA we believe that a just energy transition supports consumers' needs, values and expectations. Consumers are an integral part of the energy system and must have their concerns and perspectives considered in the challenging process of designing and implementing solutions to its transition.

As ECA is the independent, national voice for residential and small business energy consumers we thank you for the opportunity to contribute to your project.

Best regards,

Lynne Gallagher
Chief Executive Officer

Just Transitions in Australia: Moving Towards Low Carbon Lives Across Policy, Industry and Practice

Energy Consumers Australia welcomes the opportunity to comment and contribute to the Just Transitions in Australia: Moving Towards Low Carbon Lives Across Policy, Industry and Practice report. We believe that a just energy transition supports consumers' needs, values and expectations.

Consumers are an integral part of the energy system and must have their concerns and perspectives considered in the challenging process of designing and implementing solutions to its transition.

Energy Consumers Australia is the independent, national voice for residential and small business energy consumers. Established by the Council of Australian Governments (COAG) Energy Council in 2015, our objective is to promote the long-term interests of energy consumers with respect to price, quality, reliability, safety, and security of supply.

1. What are the key aims of Energy Consumers Australia?

Energy Consumers Australia advocates for a modern, flexible and resilient energy system that meets consumer values, expectations and needs. We use independent research to understand consumers and their needs, using our evidence base to collaborate with industry and influence positive change for residential and small business energy consumers.

As Australia's energy system rapidly decarbonises, opportunities emerge for consumers to play a role in actively informing and shaping a better future. At Energy Consumers Australia we want to make sure these opportunities are realised by all consumers fairly and believe someone's financial situation, access to technology or other potential structural barriers should not prevent their participation in the transition towards a low carbon energy system.

2. What relation does Energy Consumers Australia's work have to transition to decarbonisation in Australia? Is this a direct and explicit part of its agenda? Is it an implicit and underpinning objective, value? Is it a secondary or other interest/outcome?

Decarbonisation is the key driver of the energy system transition and is an explicit part of Energy Consumers Australia's agenda, outlined in our 2021-2024 Strategic Plan.

At Energy Consumers Australia we operate on the understanding that there are not one but two major transitions occurring at the heart of Australia's energy system. The first transition refers to the system-level shift away from the burning of fossil fuels towards a net-zero energy system running on renewable sources and storage. If this transition is poorly executed, it risks exposing consumers to unaffordable energy prices and a system that does not meet their needs.

The second transition is not unrelated but focuses more on the possibilities, opportunities and limitations that are emerging for energy consumers as they navigate a new energy system with disruptive technology and shifting social practices. The energy system is decentralising as we see a decline in the number of large-scale generators and a rise of smaller ones scattered across Australia. Consumers are at the centre of this transition, becoming active prosumers in the market as they produce their own clean energy through rooftop solar or batteries. And as the price of emerging technologies trends downwards, we see consumers increasingly exploring battery storage and switching to electric vehicles. The transition to decarbonisation involves consumers as producers, storers as well as consumers and Energy Consumers Australia works to amplify their interests as well as the interests of consumers without these technologies as the system evolves.

Energy Consumers Australia recognises that through these transitions, decarbonisation is occurring rapidly and inevitably, simultaneously providing new opportunities for consumers. We play a unique role in ensuring the voices of residential and small business consumers are heard by the industry as this occurs.

3. In what ways does Energy Consumers Australia's work address questions of transition to decarbonisation in Australia? Please provide two examples if possible.

Energy Consumers Australia addresses questions of transition to decarbonisation through our three core policy teams which focus on each level of the transition and the part consumers play within it.

Our Energy System Transition directorate focuses on the broader system changes and impacts involving decarbonisation and decentralisation—and the importance of ensuring it is consumer-centric. While the move away from fossil fuels towards renewables in Australia's energy system has the potential to provide huge benefits to consumers, these will not be realised by failing to centre them in the conversation. A transition to decarbonisation must not result in increased costs to consumers or risk not delivering on their energy needs. Our Energy System Transition team focuses on the efficient provision of infrastructure needed to connect consumers with access to affordable, reliable and abundant energy, including the development of storage at different scales.

The Energy Systems and Markets directorate focuses on how consumers engage with the market through intermediaries, including retailers and other services providers. Their engagement is rapidly changing as consumers take more control of energy generation through residential solar and batteries, and energy management technologies suing smart appliances. The team uses evidence-based research to understand the kinds of services consumers want to see from the energy market, making sure these are delivered upon whilst maintaining a system that functions efficiently, protects consumers and provides affordable energy.

The Energy Inclusion directorate is responsible for ensuring that the transition to decarbonisation does not widen an energy divide, between those with resources and access to technology and those without. For vulnerable consumers, the focus is on increased protections and safety nets with a focus on how the poor energy performance of homes acts as a hard structural barrier to fair participation in the transition. Consumers living in housing with low energy efficiency not only face higher bills but also face challenges to health and wellbeing. A just transition is reliant on all consumers having their interests addressed regardless of their financial position or access to new technologies.

In addition to our three policy teams, Energy Consumers Australia also actively conducts and supports evidence-based research. The Energy Consumer Sentiment Survey (ECSS) is conducted every six months by Energy Consumers Australia and explores how consumers think and feel about the energy market. As the market rapidly transitions, the ECSS consistently maps changes to consumer sentiment around issues such as value for money and confidence in energy markets.

The annual Energy Consumer Behaviour Survey (ECBS) accompanies the ECSS and focuses on how consumers are using energy. Understanding what consumers are using energy for, their willingness to change behaviour and their interest in new technologies is crucial information for decision-makers to centre the needs of consumers in the transition to decarbonisation. Both the ECBS and the ECSS provide unique insights into how the transition is impacting consumers over time and priorities and opportunities for future directions.

We also provide funding to not-for-profit organisations and researchers through our grants program to support projects that address the interests of residential and small business energy consumers. Grants can help organisations work with decision makers in government, regulatory bodies and industry to minimise energy costs, help community groups engage in technical issues by engaging an expert and provide a voice to diverse groups such as those experiencing financial vulnerability.

Recent grant awards have included projects seeking to support consumers as the energy industry decarbonises.

4. Do you work with concepts of transition and/or justice (please say if either or both)? Where do you identify the most interesting and useful bodies of theory or conceptual approaches in this area? And how do you apply them (please give an example if possible)?

Embedded in Energy Consumers Australia's work are concepts of both transition and justice. As noted above, Energy Consumers Australia builds and shares evidence by commissioning, carrying out and distributing research. Our aim is to influence how the two energy transitions are regulated, designed and implemented, so that they meet energy consumers' values, expectations and interests. Energy Consumers Australia recognises that the current energy transitions are complex. There are multiple stakeholders with competing interests, and multiple uncertainties that prevent a clearer prediction of the system's needs in coming years. Nevertheless, a transition design towards decarbonisation and decentralisation must envision a future energy system that is people- centred and that starts with what is possible and preferable for consumers and moves outwards from there. There are four important concepts and disciplines that influence the way we frame our thinking and support our work towards a just transition: translational research, transition design, behavioural insights, and energy justice.

Translational research - From research findings to real-world applications

When commissioning and carrying out research, whether our own or through the grants program, Energy Consumers Australia is concerned with how the research contributes not only to the scholarly literature but to "real-world" solutions and implications. There is a practical perspective in mind, i.e., a systematic effort to translate the research findings into practical applications in a way that benefits energy consumers.[1] A key focus of Energy Consumers Australia is to facilitate multidisciplinary and cross-sector research collaboration to understand consumers' needs and expectations, communicate these across the industry and embed them into decision-making practices at all levels.

Transition design

Energy Consumers Australia uses a transition design framework for bringing together the transdisciplinary knowledge, skillsets and practices relevant to understanding, seeding and catalyzing systems level change. In our work we use four key mutually reinforcing and co-evolving areas of practices, knowledge and skill sets relevant to understanding, seeding and catalyzing systems-level change:

- Vision, because we need to have clear visions of what we want to transition toward
- Theories of change, because we need a variety of theories and methodologies that explain the dynamics of change within complex systems
- Mindset and approach, because we need open, collaboration and self-reflective approaches in order to undertake our work
- New ways of designing, which will arise out of the previous three areas.

[1] Glasgow, R. E. (2013) What does it mean to be pragmatic? Pragmatic methods, measures, andmodels to facilitate research translation. Health Educ Behav. 2013 Jun;40(3):257-65

Behavioural insights - Understanding consumers' energy use and facilitating behaviour change

Behavioural insights is, simply put, the study of how people actually behave and the choices that they make, rather than theoretical assumptions about how they will respond in certain circumstances. In the energy transition, this is particularly relevant. Investigating how and why consumers use energy in the ways they do, understanding how energy is part of their everyday activities (social practice), their attitudes to new technology, and what they expect the future of energy to be can provide insights into how a just transition can accommodate their needs and expectations.

In this regard, Energy Consumers Australia's Energy Consumer Behaviour Survey explores how consumers use energy, asking questions about appliance, solar, storage and electric vehicle uptake, when consumers use their appliances and how willing they are to change the way they use their energy. It provides Australia's richest national picture of the attitudes and activity of residential and small business energy consumers. Energy Consumers Australia has also partnered with Monash University, Ausgrid and Ausnet Services on the Digital Energy Futures project, which seeks to understand how emerging technologies are shaping the way people live and the impact on their energy use – with implications for how energy policies and forecasting approaches should evolve.

Energy justice as a framework for a just transition

The concept of energy justice is deeply grounded in environmental and social justice movements. The term energy justice emerged premised on three tenets—distributional justice, justice as recognition and procedural justice[2].

Distributional justice acknowledges that the energy system is inherently unequal. Such inequalities play an important role in who can benefit from the energy transition. Understanding what these inequalities are, and how and where they occur can assist in designing a more just transition. They might be related to energy-specific matters, such as availability of energy resources, flexibility of energy use and demand response, which are clearly within the remit of energy policy decision makers. However, they can also relate to broader structural socio-economic issues, such as income distribution, education and housing tenure, which have traditionally been dismissed as "out of scope" of decision makers in the energy market (see below for further discussion on these issues). A just transition must also assess how energy resources and technologies are allocated and its impacts on local communities and consumers.

Justice as recognition implies that, by recognising how distributional inequalities emerge in the energy system, we must reflect upon who might be in disadvantaged positions and how policies and other mechanisms can be implemented to acknowledge this form of injustice to target those groups for better distribution of energy resources. Justice as recognition can be an important means for achieving recognition of energy vulnerability and energy poverty[3]. Overlooking the potential impacts of an unjust energy transition among minorities and disadvantaged households, for example, is a problem of misrecognition.

Lastly, procedural justice refers to the need for fairness in the processes and policies put in place, transparency of actions, and impartiality in decision making. Good policy design combines distributional justice and justice as recognition to focus on solutions towards a more equitable outcome. In this sense, a just energy transition must focus on inclusive, equitable and low carbon energy systems, where political power and decision-making processes are decentralised, and consumers can become prosumers and decision-makers around the energy future.

[2] Coolsaet, B. (Ed.). (2020). Environmental Justice: Key Issues (1st ed.). Routledge.
[3] Willand, & Horne, R. (2018). "They are grinding us into the ground"-The lived experience of (in) energy justice amongst low-income older households. Applied Energy, 226, 61–70

5. What are the key policy areas that your work connects to? Are there implications for a just transition to decarbonisation in the work you do related to policy? What are these? If not, do you think there should or will be implications in the future, and how would you recommend going about mobilising these?

As noted above, decarbonisation is a key driver of the energy sector transition and an explicit component of Energy Consumers Australia's strategic agenda. The concept of a just transition is critical to both the first and second transitions:

- A just transition for all energy consumers, by minimising the cost of the first transition
- A just transition for those who face barriers to participating in the second transition, as well as a just transition for those that have invested in technologies such as solar, batteries and electric vehicles.

In the first transition, key policy areas relate to decisions about how much transmission, generation and large scale storage to build to connect renewable generation to people's homes and businesses. Our work helps to test and challenge both the need for new infrastructure and the associated cost, which is ultimately recovered from energy consumers. In doing so we give a voice to the preferences of residential and small businesses, helping them inform and influence decisions around trade-offs between risks and costs.

There are two facets to the second transition. First, there are a number of customers who face barriers to generating their own clean energy. As the policy focus shifts towards how to integrate solar PV, battery storage, EVs and other technologies that consumers invest in to reduce their carbon footprint, we must support those that cannot invest in such technologies today. They could face financial barriers, physical barriers to installation (e.g., not having a roof for solar panels, or space for a battery or EV charger), or ownership barriers if they rent their home or premises and so do not have control over investment decisions.

Energy Consumers Australia's work in this area, framed by concepts of distributional justice, provides a reminder that policies are required to support these customers to ensure they do not miss out on affordable, clean energy. This could include supporting policies that help overcome the barriers some consumers face in adopting new technology. It also includes ensuring that policies around how the cost of network infrastructure is recovered are fair, so the cost burden does not fall on a shrinking group of customers who can only access energy via the grid.

As an example, recent research by Energy Consumers Australia found that most household consumers support policies that would help renters and apartment dwellers access solar and batteries. There was also strong support for governments to install solar on the public and community housing they own. This research helps build an evidence base for the types of policies we advocate for.

The second component to the second transition is to promote policies to better integrate distributed energy resources into the grid that reflect how consumers use their energy technology in their everyday life - identified through behavioural insights - and are acceptable to consumers. Currently there is a strong and urgent policy focus on how to maintain a secure, reliable and safe system as the penetration of solar panels and electric vehicles increases. These policies are heavily influenced by system needs and make assumptions about how consumers will behave that do not necessarily accord with reality.

Further, policies that remove consumer autonomy, whether through automation or switching off a household's solar, require social licence and trust that are currently lacking in the energy sector.

An emerging area of policy focus is the uncertain future of the gas network and how best to transition consumers from the use of gas for heating, cooking and hot water. As significant customers begin exiting the natural gas network, the cost for those remaining on the network escalates. Energy Consumers Australia is active in promoting policies and interventions that enable consumers to affordably and equitably benefit from electrification of heating and transport.

6. Are there overlapping, background, intersecting, policies and practices that affect or pertain to 'just transitions' that should be considered, perhaps working at different scales or levels?

Decarbonisation is not only the key driver of the energy system transition, but also to achieving net-zero goals by 2050. Other major sectors in Australia, such as building, transportation, industry and agricultural sectors, are decarbonising and, in many instances, their transition directly impacts the energy system transition5. Energy Consumers Australia is particularly focused on the decarbonisation of the residential sector and how that might affect energy consumers. There are two major pathways for building decarbonisation: reducing energy waste through major efficiency improvements, and electrification with a shift away from fossil fuels to zero or near-zero emissions alternatives.

Energy efficiency in the residential sector

Australian homes are extremely inefficient when it comes to energy use: in the NatHERS rating scheme from 0 to 10 stars, most existing homes are classified below 2 stars[4], which means the building envelope does very little to reduce the discomfort associated with hot or cold weather. Australia has been a very slow adopter of energy efficiency requirements, and the current minimum standards still fail to reflect international benchmarking regulatory practices. Australia's minimum energy efficiency requirements have not changed in over ten years, and current standards are not set to cope with climate change and accompanying temperature extremes, posing significant implications for household energy costs and health. The NSW Audit Office estimates there will be a 70% increase in energy cooling requirements in 2030 compared with 2020. Home energy efficiency is fundamental to reducing cooling demand in future decades.

Policies towards energy efficiency improvements in the Australian residential sector must recognise the issues highlighted above with respect to energy justice. It is well established that energy vulnerability and the energy inefficiency of the home are correlated. As Energy Consumers Australia's research further indicates, the energy divide begins at home; benefitting from the energy transition depends on where you live. Households with low levels of agency or capabilities, such as those who are financially insecure and renters, have less access to virtually every form of energy efficiency tool and technology than those who are more financially comfortable or homeowners.

Therefore, residential energy efficiency policies need to be designed and implemented considering the just transition. Otherwise, retrofit poverty[5]—as in "the inequality of opportunity to improve the energy performance of the home"—reinforces energy poverty among those vulnerable households and undermines a just energy transition. The prevalence of poor-quality and poor-energy efficient housing in Australia affects households very differently, bringing to light the inherent discrimination towards low- income households in the housing market. Low-income renters, in particular, tend to live in poor quality and inefficient homes that require a greater amount of energy supply than good quality and energy efficient homes[6]8. The negative impacts on health and wellbeing, as well as the financial burden of maintaining and repairing these dwellings are much worse for low-income households.

[4] CSIRO 2019 Energy Rating-National Overview https://ahd.csiro.au/dashboards/energy-rating/energy- rating-national-overview/, cited in Report for Achieving Low Energy Existing Homes, COAG Energy Council 2019

[5] Willand, N., Moore, T., Horne, R., & Robertson, S. (2020). Retrofit Poverty: Socioeconomic Spatial Disparities in Retrofit Subsidies Uptake. Buildings and Cities, 1(1), 14–35

[6] Liu, E., Martin, C., & Easthope, H. (2019). Poor-Quality Housing and Low-Income Households. City Futures Research Centre, Faculty of Built Environment, UNSW for Shelter NSW: Sydney.

Energy Consumers Australia is campaigning for major changes to encourage procedural energy justice across four key energy efficiency areas:

- Retrofitting: A campaign to retrofit the 8 million or so of our homes that have an average energy efficiency rating of 1.7 stars (compared to a new home, which is commonly at least 6 stars).
- Rental standards: Energy efficiency standards that require landlords to meet a minimum threshold so that the costs of energy inefficiency are not unfairly borne by tenants.
- Residential Building Code: A new version of this code is proposed and lifts the standard for new build homes from 6 to 7 stars. It's important that this proposal becomes law.
- Reporting and disclosure: When consumers inspect a property either to buy or rent it is currently very difficult to get information about how energy efficient it is. This information is highly relevant to the decision to buy or rent that property and should be available. We support initiatives to create a voluntary scheme for such reporting and to move towards a nationally-accredited compulsory scheme.

All-electric homes and moving away from gas

The electrification shift presents significant challenges too. Gas is a pervasive feature of Australian homes and, as mentioned earlier, policies are needed to address its uncertain future as electrification is encouraged. Nearly half (48%) of Australian homes are connected to the gas network, with greater proportions in Victoria and the ACT[7]. In this setting, gas is primarily used for space and water heating and cooking, representing on average half of total household energy use. Residential gas consumption in winter is over four times the consumption in summer, and, presently, gas is supplied to homes at around half the cost of electricity.

Presently, only the ACT has committed to no new gas connections. National gas network connections have grown 8% in the last five years—reaching nearly 5.2 million connections in 2020—and they are still growing at an average of 100,000 new connections per year. Nevertheless, the Australian Energy Regulator indicates that a dramatic reduction in the demand for natural gas is expected in the long run, which will, in all likelihood, result in gas price increases for remaining customers.[8] In this sense, another important challenge refers to households' inability to transition to fully electrified homes due to low income, limited agency and/or lack of knowledge. The replacement of gas appliances may be costly and disruptive, especially for households in disadvantaged or vulnerable conditions. There needs to be careful consideration in regards to households who may not have the capabilities and/or resources to transition early in the process. For instance, low-income households and those in the private rental market face additional barriers to electrification. As the AER report suggests, "as more customers leave the gas network, there will be fewer customers to share the fixed costs of gas networks". Gas prices may go up if there is less gas demand, and those excluded from electrification may be overburdened and "penalised" for something they cannot act upon. Thus, the electrification transition needs to be well designed and implemented, so that all consumers can feel empowered and benefit from better energy services, lower prices and sustainable technologies.

In summary, climate, energy and housing policies need to work together if we aim to achieve decarbonisation targets. Energy policies and regulations need to be considered in the big picture of housing and climate adaptation so that no household is left behind in this transition. Electrification of the energy system needs to happen simultaneously with an energy efficiency revolution in the housing sector.

[7] Energy Networks Australia, "Reliable and clean gas for Australian homes," 2021.

[8] Australian Energy Regulator, Regulating Gas Pipelines under Uncertainty, Information Paper, https://www.aer.gov.au/networks-pipelines/performance-reporting/regulating-gas-pipelines-under-uncertainty-information-paper

7. Which are the important institutions, organisations, communities and stakeholders you have worked with? Are they committed to a just transition? Does your work with them engage with just transitions or decarbonisation in any way?

Energy Consumers Australia's engagement with other stakeholders in the energy industry plays a vital part in our advocacy for consumers in the energy transition. Energy Consumers Australia works closely with the three energy market bodies; the Australian Energy Market Operator (AEMO), the Australian Energy Market Commission (AEMC) and the AER, as well as the Energy Security Board (ESB) that has been tasked with designing fit-for- purpose energy market frameworks as we shift to an electricity system without fossil fuels. Each of these organisations is responsible for different elements that together must deliver energy in a way that is in the long-term interests of consumers, including in respect of price. While the objectives that these organisations are guided by are focused on economic efficiency[9] they are increasingly open to interpreting "the long-term interests of consumers" more broadly than in simple efficiency terms. For example, our work with AEMO to develop social licence with consumers as they build a system capable of facilitating increased renewables is a positive sign that they are committed to a consumer-centric, just transition. We have also been working closely with the AEMC and the ESB to bring a consumer focus to their work and support the recent work the AER has done to provide additional protections to customers during the Covid-19 pandemic and broaden the concept of consumer vulnerability.

Our work with consumer groups emphasises the need to bring all consumers along on the transition to decarbonisation. Platforms like our annual Foresighting Forum, which brings together representatives from all parts of the industry, provide an opportunity for consumer advocates to have their concerns and ideas heard by the broader energy industry while also sharing with them expertise they can use in their own advocacy. Opportunities for collaboration such as these are a crucial part of our work to ensure a just transition is achieved by including consumer voices at the centre of the conversation.

As noted above, we also provide funding to not-for-profit organisations and researchers through our grants program. We collaborate with grants recipients to provide a platform to disseminate their results and help amplify their reach and impact. Examples of organisations and projects that have been awarded Energy Consumers Australia grants include:

- The University of Wollongong for their project on creating a fair transition for apartment-dwellers excluded from the benefits of rooftop solar
- Business Australia for their project to understand how small businesses feel about and use energy to enable strong advocacy and improve understanding of how to achieve better outcomes for small businesses.
- ACT Council of Social Services for their project ensuring a just transition from gas in the ACT for all consumers, especially low-income households.
- Australian National University for their project on identifying the barriers to landlords installing rooftop solar on rental apartments and how policies may be improved to better allow it.
- Renew for the project "Understanding consumer attitudes to home energy performance" which aims to support energy and building minister to improve energy performance standards in the next National Construction Code.
- Better Renting who are working with a national coalition of advocates to gain a commitment from all jurisdictions to implement new standards for minimum energy efficiency in existing homes and rental properties.

[9] Specifically, each of these organisations is guided by the National Electricity Objective: "to promote efficient investment in, and efficient operation and use of, electricity services for the long-term interests of consumers of electricity with respect to: price, quality, safety and reliability and security of supply of electricity; and the reliability, safety and security of the national electricity system". Similar objectives apply in relation to gas and energy retail markets.

8. How does the Australian context present distinctive issues for a just transition to decarbonisation? Please outline the key reasons why this is so.

In Australia, the two ongoing energy transitions are happening faster than expected. The increasing competitiveness of renewable electricity generation and the decarbonisation goals are forcing coal-fired power plants to close earlier than expected. The early retirement of fossil-fuel energy sources - that still contribute nearly 80% of total electricity generation in Australia - requires significant investment in new renewable generation and firm capacity. Currently, renewable energy sources account for less than a quarter of the total electricity generated. Additionally, new transmission infrastructure is needed to upgrade the currently overcrowded grid mostly built between the 1950s and 1970s.

Similarly, the adoption of solar has far exceeded expectations. Already, more than three million homes have solar on their rooftop. While this is giving these consumers greater agency and control over where their energy comes from, the high penetration of solar in localised areas can cause technical challenges on the network. High levels of solar has also led to the “duck curve” - low levels of demand during the day, which makes it more difficult for AEMO to balance the system.

Balancing the urgency of transmission infrastructure investment, resolving grid and system issues as a result of high penetration of solar, and consumers’ interests and autonomy is a major and distinctive challenge in Australia. The National Electricity Market wants to modernise the grid rapidly so that businesses and investors can develop new generation projects to counter fossil-fuel reliance, and consumers can continue to invest in solar. However, in the race to upgrade and update the energy system to be compatible with renewable generation, there are risks about investments that need to be considered carefully. While investment costs are easier to estimate, future benefits remain uncertain, particularly if one considers the difficulties in predicting DER adoption and future energy needs. Thus, consumers might end up paying too much for unnecessary investments, and the just transition gets forgotten in this rush to build infrastructure.

Remote communities in Australia also are at the vanguard of the energy transition. The AEMC’s recent review of Stand Alone Power Systems (SAPS) identified more than 17,000 consumers who, according to distribution network estimates, would receive more reliable electricity at a lower cost for all consumers by transition away from a network connection onto SAPS. Modern SAPS typically generate more than 90% of their energy from solar power (the remainder is typically from a gas or diesel turbine), and we are unaware of anywhere else globally where market actors recognise that it would be cheaper to disconnect consumers from the network, given the declining costs of modular solar and batteries.

Other issues were discussed at length in previous answers: barriers to residential energy efficiency and electrification, and consumers who face additional barriers to participating in the second transition due to lack of agency or capabilities.

9. What are the key/most important factors to a successful 'just transition'? Please supply at least two examples of how this has come about in Australia (or where examples of existing success are not available, please propose two examples where it might come about).

In a just transition, and to quote Reddy's[10] words on a slightly different aspect, every energy consumer must have "sufficient choice in accessing adequate, affordable, reliable, high-quality, safe and environmentally benign energy services to support economic and human development". It is Energy Consumers Australia's strategic goal to make sure consumers and their interests are represented in a successful energy transition where:

- Energy is affordable for all households and small businesses
- Individualised and optimised energy services give consumers choice and control
- A modern, flexible and resilient energy system is better able to withstand or recover from disastrous events.

A just transition must incorporate the future energy experience consumers want and how they might play a role in actively shaping it. The voices of consumers are particularly needed in this moment, to inform and influence an energy market that is undergoing dramatic transition. As noted above, a consumer-centred approach is needed to make sure the energy transition supports consumers' needs and expectations. People are part of the energy system and, more importantly, part of the solution.

Their values, concerns and constraints (related to affordability, accessibility, capability, security, control of their assets and reduction of emissions) should be seen as the system's.

One relevant example where consumer participation plays a pivotal role in designing a successful just transition refers to social licence and management of DER. As research has shown, the management of DER output is essential for energy system reliability, security and price stability. However, this also means consumers will be giving up part of their agency over their own devices, which, in turn, could slow down the adoption of solar PV, as expected benefits might not be fully realised. Engaging consumers and understanding their concerns in regards to allowing government or institutions to control their DER system requires building trust and improving transparency about potential individual/community benefits and costs. Lastly, and taking into account the need to consult and meaningfully engage consumers in the planning and development of the future energy system, AER recently published the Better Resets Handbook - Towards consumer-centric network proposals. This Handbook aims to guide energy network providers towards a greater emphasis on high-quality consumer engagement for a more efficient regulatory reset process.

10. What are the frictions or impediments to a 'just transition'? Please supply at least two examples of this occurring in Australia.

There are a range of potential frictions and impediments to a just transition in the context of decarbonising the energy sector. Some of these we have explored above - such as barriers to consumers accessing solar PV/batteries, the inefficiency of the current housing stock and the urgency with which the national electricity market needs to transition.

[10] Reddy, A. K. (2000). Energy and Social Issues, in "World Energy Assessment", UNPD, New York.

Another issue that is particularly relevant where change needs to happen quickly, but is not present in today's energy markets, is trust. Related to social licence, consumer trust that the energy market is working in their interest is critical for community acceptance of new services and products as well as policies that may reduce their autonomy. However, energy consumers consistently express a lack of trust in both energy retailers and markets in general. In our latest sentiment survey, only 46% of respondents were confident that energy markets were working in their long-term interests. While this is up from a low of 21% in December 2017, the industry has a long way to go to engender the levels of trust that are required for wholesale and rapid change.

Related to trust, there is a lack of market transparency and information, resulting in power asymmetry to the detriment of consumers. Multiple reforms have been implemented in an effort to reduce confusion and complexity for consumers in choosing an energy plan and understanding energy bills. However, the number and types of offers remain overwhelming for some, particularly those with low levels of literacy. In its draft report on its consumer vulnerability strategy, the AER has recognised characteristics of the energy market and energy products, including complexity, as a contributor to vulnerability. Participating in energy markets will only become more complex as the number of services and options increase and open up new potential avenues for consumer exploitation.

Finally, it's not clear that the objectives that guide policy making are fit for purpose for delivering a just transition to a decarbonised energy market. These objectives were legislated in the 1990s when there was a strong focus on microeconomic reform to deliver efficiency savings. They are predicated on the assumption that generators, networks and retailers together deliver energy to a passive energy consumer, and are designed to do this in a way that minimises costs while maintaining reliability, safety and security. However, the objectives do not contemplate consumers themselves investing in generation and providing services back to the system. They also do not encompass a concept of "fairness" that, while important to communities, tends to be overlooked in the quest for efficiency.