What it takes to create an enabling environment for resilience investment: A town like Cobargo

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[3] CaDET. The Cobargo and District Energy Transition Group Inc. (CaDET) is the legal entity and activities are undertaken under the brand *Renewable Cobargo*

[4] Resident Capital

[5] Climate KIC

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Cover art

The front cover is a representation of Cobargo by Shirleyanne Myers, reproduced with permission for this report. The painting is selected as a representational image of Cobargo, in keeping with the content of the report which abstracts conceptual approaches based on the lived experience of communities in Cobargo in order for others to apply and learn.

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About this report

This report documents the outcomes of the Cobargo Disaster Recovery and Energy Transition demonstration project using a new renewable energy facility in a disaster recovery context as an example to test energy transition concepts. This work is a joint effort by the CSIRO, Value Advisory Partners, Cobargo and District Energy Transition (CaDET), and other community members.

These groups have worked together in a range of ways through the early stages of the Enabling Resilience Investment demonstration project in the Bega Valley (documented in the report Towards visions, options and pathways for an adaptive future in Bega Valley[1]). Interactions have included a range of workshops, conversations, zoom calls, interviews, and the community co-authors jointly drafting this report.

This report is a deliverable for the 'Resilience Investment Assessment' project – contract P4-02-062022-OA-CSIRO-ACS between Australian Climate Service (ACS) and CSIRO with subcontractor Value Advisory Partners (VAP). This report is provided in fulfilment of Component 3 – *Project fact sheets with transferable or scalable lessons to guide, support decision-makers in diverse locations assess and build resilient investment cases*. This includes lessons on developing scenarios to an appropriate scale for identifying, evaluating and designing place-based disaster risk reduction and resilience interventions / investments that are fundable.

This report references, and includes material, covered in other Project concept sheets in this series:

- Gorddard, R., Wise, R.M., Tieman, G., Mesic, N., Marinopoulos, J., Box, P. Meharg, S., and O'Connell, D. 2023. What it takes to create an enabling environment for resilience investment: Lessons from the Enabling Resilience Investment approach. CSIRO, Australia.
- Meharg, S. 2023. Community Resilience Dimensions. CSIRO, Australia.

The CSIRO has strict protocols for Human Research Ethics and COVID-safe work practices. Any project that works with stakeholders requires a detailed planning and approval process to ensure that an ethical and fair process is used. This work was conducted under CSIRO ethics permit 085/20. The requirements of privacy legislation have been complied with.

The innovations described have been developed by the Cobargo community and their partners. The contribution of the CSIRO and VAP team has been to document, understand, test, and find ways to

[1] Deborah O'Connell, Ariella Helfgott, Dianne Flett, Russell Wise, Seona Meharg, John Marinopoulos, Ashlin Lee, Russell Gorddard, Nic Mesic, George Tieman, Joey Chan (2021) Towards visions, options and pathways for an adaptive future in Bega Valley: Building national capability for Enabling Resilience Investment. Report prepared by CSIRO, Value Advisory Partners and University of Adelaide. CSIRO, Australia.

generalise these to rapidly scale what has been learned. The Cobargo experience provides insights into conceptual framing of pathways, costs, risks and benefits. While they require further testing and quantification, these insights are useful for communities, all levels of government, as well as industry in areas of climate adaptation and disaster resilience planning, disaster recovery, regional development and the energy transition.

CaDET and other Cobargo recovery and resilience teams are committed to sharing freely their experiences with other communities to use as they choose – either prior to disaster, or after an event has occurred. This report is therefore published under Creative Commons to be cited and used without copyright restrictions.

We are grateful to those who have shared their stories and experiences from a period spanning the decade prior to Black Summer, in the time since. They have also shared their aspirations for what they hope might become possible in the future based on the opportunities they have created, and these are represented in the concepts covered in this report.

Abstract

People, communities, governments and private sector organisations are grappling with multiple challenges for planning and financing to enable thriving regions, economies and ecosystems that are climate-adapted, disaster resilient, and which provide for just transitions to deliver equity and agency. There is much discussion about investing in resilience and disaster risk reduction, but there are few demonstrations on how to build an investment case, and the novel funding and finance partnerships that are required to underpin investment.

Disaster recovery provides windows of opportunity to develop transition pathways that ensure those impacted by disaster can recover in ways which build equity and resilience to underpin sustainable and vibrant regions and economies – as well as mitigating climate and disaster risk. The energy transition coinciding with disaster recovery provides an opportunity for considering novel approaches to generating resilience-building, including a redistribution of benefits across community, governments, business and industry.

Cobargo and the surrounding district, in the NSW Bega Valley, were severely impacted by bushfires in 2019–2020. The Cobargo Community Bushfire Recovery Fund Inc was set up by local volunteers to help seed and support community recovery projects. The township has several individual projects already commenced, funded or with proposals underway from a range of sources.

This report documents the Cobargo Disaster Recovery and Energy Transition demonstration project. The demonstration applies the Enabling Resilience Investment approach in collaboration with the Cobargo and Districts Energy Transition (CaDET) microgrid initiative – as an example to learn from.

'Community-led recovery' has become a widely-used term and aspiration – but there are many outstanding challenges in what it means, how to do it successfully, and the required capabilities and competencies and resources that are necessary to underpin this. One component of this project focussed on the underpinnings of community led recovery in Cobargo. This is documented in a related report – Community Resilience Dimensions (2023)[2] – with a short summary presented here to provide context for this report.

The Cobargo Disaster Recovery and Energy Transition demonstration project uses a new renewable energy facility in a disaster recovery context as an example to test energy transition concepts. In order to conceptually demonstrate and abstract the experience of Cobargo in a way that is useful to inform other communities, industries and governments, four 'stacked' scenarios for the energy transition have been developed. Community and business leaders in Cobargo have generously shared their stories, experiences, insights, innovations, and collective intellectual property to ground the illustrative scenarios in a plausible, demonstrable reality.

The scenarios demonstrate sequential stacking of objectives, risks, opportunities, values, costs and benefits associated with different 'models' of regional scale, renewable, micro-energy grid design and delivery, in order to underpin novel investment cases, and to describe what is needed to create an enabling policy environment. The framing is developed in this way to support subsequent analytical steps.

The approach documented here can inform what is required to support an enabling policy environment to generate benefits for multiple beneficiaries by designing for multiple objectives while incorporating disaster risk reduction, building specific resilience into the energy infrastructure as well as general resilience in communities, industries and the region through spreading risk, and value-stacking in the energy transition.

[2] Meharg, S. 2023. Community Resilience Dimensions. CSIRO, Australia, publication pending. This is published in a separate report because the audiences for this component of the work are different to those of this report.

Contents

1 Investment in building resilience is needed

1.1 Increasing extreme events and disaster recovery

Human societies are being profoundly challenged by global warming, repeated extreme natural events and other disruptions, aging infrastructure, under-resourced governments and exhausted communities. How do we transition to a future where communities and economies thrive alongside the extreme events we know will continue to happen? Extreme events result in damage, not just to lives, homes and livelihoods, but to infrastructure that people rely on during an event and for recovery.

Damage to critical infrastructure is a focus of recovery effort and that urgency can result in rapid restoration of infrastructure which includes rebuilding infrastructure the same as before or marginally improved, thereby doing little to help with resilience to future extreme events. Very rarely are the bigger questions around planning for a significantly different future dealt with in recovery – though this is now starting to change with the magnitude of recent disasters.

This process is very challenging to go through in a post-disaster traumatised situation, and it is preferable to do this pre-emptively. Different approaches, and substantial increases in effort, resources and investment prior to disaster events are needed to mitigate the increasing and imminent risks of climate and disaster[3]. This is required to address the decline of current infrastructure and enhance the recovery of social, natural, and infrastructural assets that have been historically neglected, over-exploited or impacted by disasters.

1.2 Planning for multiple objectives and broader benefits

People, communities, governments, and private sector organisations are grappling with multiple challenges for planning and financing to enable thriving regions, economies and ecosystems that are climate-adapted, disaster resilient, and which provide for just transitions to deliver equity and agency. There is much discussion about investing in resilience and disaster risk reduction, but there are few demonstrations on how to build an investment case, and the novel funding and finance partnerships that are required to underpin investment.

There is an urgent need to scale up investments that build resilience (i.e., the capabilities, competencies, and governance that confer adaptability and transformability) and that support innovation and value creation (i.e., equitable and sustainable development) for people in the face of increasingly dangerous and disruptive climate and weather systems.

Disaster recovery provides windows of opportunity to develop transition pathways that ensure those impacted by disaster can recover in a way which builds equity and resilience to underpin sustainable and vibrant regions and economies – as well as mitigating climate and disaster risk.

The energy transition coinciding with disaster recovery provides an opportunity for considering novel approaches to generating resilience-building, including a redistribution of benefits across community, governments, business, and industry. Most efforts to consider climate risks or build resilience in investment decisions within the energy sector focus on managing physical risk, perpetuate benefits to a narrow set of stakeholders (usually owners or users of existing assets and capital), and are fragmented across agencies

[3] Gorddard, R., Wise, R.M., Tieman, G., Mesic, N., Marinopoulos, J., and O'Connell, D. 2023. What it takes to create an enabling environment for resilience investment: Lessons from the Enabling Resilience Investment approach. CSIRO, Australia.

who may have visibility of, or involvement in, a small part of the investment process and a subset of climate risk issues.

Planning, policy settings and incentives to maintain or increase energy supply with low emissions technologies without planning for multiple objectives and exploring different models for governance, funding and finance, by default, reinforce the current model of energy production and extraction for profit of corporate shareholders. This report outlines the opportunity to create enabling policy and market environments for achieving multiple objectives and delivery of broader benefits for regional development and resilience, as well as climate and disaster risk reduction.

1.3 Novel approaches to enable resilience investment

An integrated set of principles, frameworks, processes, and methods for guiding and supporting how to inclusively diagnose these challenges and develop processes to undertake the necessary system-wide changes has been comprehensively described in the Enabling Resilience Investment (ERI) approach[4].

Place-based resilience investment cases expand on current approaches by developing a broad inclusive list of related opportunities for creating value through building resilience, and describing a range of benefits, beneficiaries, and possible revenue streams. In this report, the Cobargo Disaster Recovery and Energy Transition demonstration uses a new renewable energy facility in a disaster recovery context as an example to test energy transition concepts.

The Cobargo Disaster Recovery and Energy Transition demonstration project tested:

Designing the renewable energy project for multiple, stacked objectives, as part of a system that goes beyond purely the supply of renewable low (net zero)-emissions energy, to also include additional opportunities to mitigate disaster risk build resilience and socio-economic development that create new value and benefits to a wider range of beneficiaries.

This will require moving beyond current standard business cases and corporate structures and will open opportunities for novel funding and finance options through investment cases that include private and public sector investors, as well as for the community to move beyond a passive role ('social licence to operate') to become active agents and beneficiaries in the energy transition.

Realising the full potential benefits of integration of the resilience and energy investment requires coordinated change across broad domains including community roles, the structure of organisations, governance arrangements, dealing with uncertainty, monitoring and learning approaches, analytical tools detailing the risk under climate change scenarios and cross-scale engagement and relationships.

Novel processes, legal agreements and ways of working are required to effect the changes envisaged. As with any innovation pathway, these novel pathways present an upfront hurdle with additional timelines and costs (and deliver larger benefits), but once successfully demonstrated and standardised will lower the cost for future applications and implementations of best practice resilience initiatives.

This report provides insights from the Cobargo Disaster Recovery and Energy Transition demonstration project:

- It explores how regional energy transformation can be leveraged to enable resilience investment in the context of a rural settlement recovering from a recent disaster.

[4] Wise R, Marinopoulos J, O'Connell D, Mesic N, Tieman G, Gorddard R, Chan J, Flett D, Lee A, Box P, Meharg S and Helfgott A (2022) Enabling Resilience Investment Guidance version 1. CSIRO and Value Advisory Partners, Australia.

- It conceptually demonstrates that increasing integration of the energy and resilience investment agendas can result in greater and less risky net benefits for a regional area.
- It describes four scenarios in which the energy facility could run – Scenarios A, B, C and D – which sequentially layer or 'stack' additional objectives and benefits, showing increasing integration of the energy and resilience investment agendas.
- It provides insights for communities, three levels of government, and utilities providers about potential ways forward, and the challenges that need to overcome, to improve service and value delivery to a range of beneficiaries.

2 Place-based context: overview of Cobargo's recovery to resilience

2.1 Community-led recovery towards a clear vision

Cobargo and the surrounding district, in the NSW Bega Valley, were severely impacted by bushfires in 2019–2020. The Cobargo Community Bushfire Recovery Fund Inc was set up by local volunteers to help seed and support community recovery projects. The township has several individual projects already commenced, funded or with proposals underway from a range of sources.

The Cobargo community have a clear vision for their future, including to revitalise the town, repair damage from 2019, repurpose disused areas of town, reduce disaster risk and incorporate new ideas that align with the community vision. Cobargo has an interconnecting set of community organisations, several of which emerged after the fires and worked with pre-existing organisations to support redevelopment and community consultation.

Cobargo has obtained funding to rebuild the main street, a Resilience Centre to honour the stories and experiences of Black Summer, and a Community Access Centre to improve the community services. The community aims to build a resilient future-facing local economy and community, as well as reduce the risk arising from future disasters.

Communities like Cobargo are leading resilience and innovation. There is a need and stated desire from the community to value and cost the volunteer time and expertise required for these organisations to conduct project development and recovery pathways, and find options that:

- move the community from a passive role ('social licence') to becoming an active agent in preparing for an uncertain future, and
- help communities gain and retain the ongoing flow of benefits for their efforts, rather than simply accepting an extractive investment model where benefits flow to investors and elsewhere).

Some community members note that standard private sector investment would lead to the business-as-usual process of corporate investment, privatisation of benefits and no community ownership. Under this model there would be limited flow of benefits back to the community that has initiated and steered the project, with nothing to benefit the broader public good. Capacity to build upon a public funded feasibility assessment is limited.

2.2 A range of forms of capital underpins community-led recovery

In Cobargo, volunteer community-led recovery efforts have built the foundations and 'social licence to operate' for a range of recovery projects. The Cobargo community are grappling with how to quantify, retain and maximise community benefits of their projects, to maintain engagement with an active community and amplify their benefits.

'Community-led recovery' has become a widely-used term and aspiration – but there are many outstanding challenges in what it means, how to do it successfully, and the required capabilities and competencies and resources that are necessary to underpin this[5]. There are also a range of views about the way the term may

[5] A more complete description of the analytical framework for capabilities, capacities, and competencies can be found in Meharg, S. (2023) Catalysing Change Agents: Enabling Impact Through Research for Development. Springer.

be used, as with 'community resilience', to put responsibility on communities that do not have the resources and forms of capital required to enact these concepts. Therefore, a component of the work in this project focussed on the underpinnings of the community led recovery in Cobargo. This is documented in a related project report – Community Resilience Dimensions (2023)[6] – with a short summary presented below to provide context for this report.

The capabilities and competencies, and social capital of a sample of the Cobargo volunteer community were explored in three periods (pre-disaster, from Jan 2020 to Dec 2022, and looking forward). Resources form the basis of individuals' and communities' ability or power to act. Resources can be broadly categorised by seven capitals – natural resources, built or physical resources, financial/economic resources, human, social, political and cultural resources. A lack of availability or access to resources can hinder or prevent action.

The first three of the above capitals are often the focus of recovery projects, while political and cultural capitals form key contextual constraints and enablers for impact. The Cobargo community has significant depth of resource capitals, some of these (natural, built) were impacted by fire but together with the human and social capitals significantly contributed to community recovery.

A community's ability to respond to an event and recover is related to the people in that community, their characteristics and suite of competencies, and the resources or capitals they have access to. A community with a strong sense of collective efficacy will create a prosocial orientation characterised by cooperation and helpfulness, trust and sharing. A prosocial orientation fosters greater involvement in shared activities with a common focus and is positively associated with effective community adaptation responses.

The Enabling Resilient Investment approach to assessing dimensions of community resilience in Cobargo focused on community-led projects and activities that members of the Cobargo community initiated and are implementing to contribute to their own recovery and the long-term resilience of Cobargo and the district.

The brief study into the elements of community resilience in Cobargo demonstrated how social and human capital – whether related to direct disaster risk reduction activities or not, and during the periods before, during and after a disaster – are essential to build community resilience. Governments and other entities supporting recovery and resilience policies, investments and projects should explicitly consider these timeframes, and include these types of capital in their assessment benefits and risk of projects and investment when aiming to reduce disaster risk and build community resilience.

[6] Meharg, S. 2023. Community Resilience Dimensions. CSIRO, Australia, publication pending. This is published in a separate report because the audiences for this component of the work are different to those of this report.

2.3 Focussing on energy: the Cobargo and District Energy Transition microgrid initiative

The following narrative focusses in on one of the many recovery projects in Cobargo – the Cobargo and District Energy Transition (CaDET) - as told by members of CaDET and drawing on some of what they have learned from their recovery journey so far. This narrative focuses on that the elements that inform the building of community resilience and demonstrate the competencies and capabilities described in the previous section.

The Cobargo and District Energy Transition group (CaDET) was born out of the 2019–2020 bushfires that devastated the NSW South Coast township of Cobargo and the surrounding region. Lives, livelihoods, homes and businesses were dramatically impacted in the small and close-knit Cobargo community. In the aftermath of bushfire devastation, electricity to the town and surrounding areas was cut for many days, and in some cases many weeks.

Without access to electricity, Cobargo had no power to provide drinking water, to pump or treat sewage, for communications, for access to ATMs or banks for cash, to pump fuel, for fridges and freezers for food storage, for essential services and so on. People who could, camped in their homes. For many, especially the elderly and those with health issues, camping was not an option and people were forced to leave their homes because of loss of power. The loss of electricity compounded the devastating impact of the 2019–2020 bushfires on Cobargo.

In the immediate aftermath of the fires, local volunteers held community meetings to inform the recovery and rebuilding of Cobargo. Close to 150 people came together for discussions, that used deliberative engagement processes. From this dialogue, community support emerged for measures to improve energy security and resilience as part of the bushfire recovery. Prior to the fires, members of the Cobargo community had been discussing a shift to renewable energy to address climate change. The lived experience of the bushfires shifted the focus of this discussion to energy resilience and security.

The identification of greater energy resilience as a priority issue in Cobargo's recovery gave community volunteers encouragement to explore energy transition initiatives. In March 2020, a coalition of residents, business owners, farmers and other interested parties formed CaDET, an incorporated association that operates as Renewable Cobargo. CaDET aims to enhance resilience, achieve local economic benefits and reduce emissions through improved energy efficiency and increased uptake of renewable energy.

CaDET brings together tremendous volunteer capacity, relevant technical knowledge and knowledge of Cobargo and the surrounding area. The CaDET committee is comprised of nine local volunteers who between them have expertise in engineering, renewables, the energy sector, government policy, community engagement, community organisations, not-for-profit governance, accounting, legal, rural and regional knowledge. Some CaDET members who have been volunteers in Cobargo for many years and have significant expertise delivering major community events. They have extensive networks in the energy sector, in the growing recovery and resilience sphere, and beyond, and the capability and confidence to use those networks to initiate and progress initiatives. Several have had a long involvement in delivering significant community events, including the Cobargo Folk Festival, an annual music and arts event now in its 27th year.

This wealth of community experience means that CaDET members bring to the table a great deal of insight into government process, policy and regulation, married with local understanding and a commitment to practical results. This know-how is likely to have contributed to the confidence of the group to tackle major initiatives. They are confident networkers, able to reach out to people across the community and all levels of government and the private sector in pursuit of their community's vision. In turn, CaDET has been buoyed by interest and support in their initiatives from government, researchers, the energy sector, the energy regulator and others.

Cobargo is vulnerable to disruptions to electricity supply because it is at the end of a distribution network and frequently loses supply due to upstream interruptions. The microgrid initiative was given impetus following discussions with members of the Yackandandah community in northern Victoria, a leader in the transition to renewables in rural and regional Australia. These conversations helped to set the direction for energy transition for Cobargo. Since the fires, CaDET has developed and is implementing a targeted program of community-based energy transition initiatives designed to meet local needs. The central concept is an innovative community-based microgrid to provide energy security and disaster resilience for Cobargo.

A microgrid is a small, localised power grid that can operate independently but normally remains connected to and feeds energy back into the main electrical supply. An islandable microgrid would allow a portion of Cobargo to stay powered during an outage, using local generation.

The Cobargo community had the benefit of a dedicated bushfire fundraising effort that was set up by volunteers from the local folk club immediately after the New Year's Eve fire that destroyed so much in the district. The Cobargo Community Bushfire Recovery Fund raised a significant fund which was used to seed and support community recovery projects. The Fund provided seed funding for CaDET and many other community recovery initiatives and projects. These funds were used by many groups to deliver practical projects, to establish themselves as legitimate and credible associations, albeit very new, and as leverage to secure grant funding, particularly government bushfire recovery grants.

CaDET have tremendous networking capacity and from the beginning they communicated broadly with a wide range of stakeholders. As the ideas for a microgrid started to form they generated interest and support from the energy sector and all levels of government. With help from State Government officers, CaDET were successful in attracting seed-funding from the NSW Government to initiate the micro-grid project. CaDET joined forces with a business partner to develop a proposal for a feasibility study for a community-based microgrid.

In mid 2021, $1.475m over 3 years was awarded under the Australian Government's Regional and Remote Communities Reliability Fund to undertake a microgrid feasibility study. The study is being undertaken by a business partner working jointly with CaDET and is due for completion in April 2024. The project will provide the design work to progress the microgrid to procurement and construction including technical feasibility, engineering design, development approval, operational regulations and approval to connect to the NSW energy supply grid.

To be connected to the NSW energy supply grid, but also able to run independently is a novel concept. Some remote areas already have off-grid microgrids, and others have microgrids that connect to supply but are not able to also run independently. To be able to 'island' and operate 'off grid' requires new thinking, new operating rules and a new governance model. The energy sector are taking a keen interest in the project. The Australian Energy Regulator is showcasing the Cobargo microgrid as a novel innovation. The interest from government and industry is significant and an indication that major government and sector stakeholders want the project to succeed.

As the feasibility study has progressed, CaDET have remained strongly grounded in the Cobargo community, focused on delivering benefits to Cobargo and the region. CaDET contains members with significant experience volunteering in Cobargo. As pragmatic decisions are made, CaDET have been adaptive and flexible but have also maintained a strong focus on the fundamental requirement for benefits to flow to the local community from the project. It has helped that the vision for the project was not prescriptive – giving CaDET the ability to be flexible and adapt with the project. It also helps that throughout the project the business partner has worked alongside CaDET, being careful not to impose solutions on the community but rather, have sought solutions that work for Cobargo.

Community benefits of the microgrid and battery initiative

CaDET are aiming to realise a range of benefits from the microgrid initiative. They aim to maximise, deliver and equitably distribute benefits within the Cobargo community, including:

- More reliable and resilient power supply for Cobargo
- Keeping more energy dollars in the Bega Valley economy
- Building local skills and capacities for the clean energy transition
- Providing a model for other villages and larger towns in the Bega Valley
- Potentially providing a zero-emission electricity option with more stable prices for local consumers
- Showcasing Cobargo and the Bega Valley as a national leader in the clean energy transition.

CaDET is tracking well against the vision for the energy transition and towards community aspirations while being pragmatic as a community. Community consultation for the feasibility study is underway and the response from members of the community has been broadly positive. People recognise how valuable this development is for Cobargo and are very supportive.

Cobargo has a natural level of community resilience and social capital that is a source of strength. Cobargo doesn't get a lot of attention from government – especially with local government based much further south in Bega. It is a strong self-reliant community with strong community networks, a culture of volunteering, and community groups that have been going for decades.

The lived experience of CaDET volunteers, and so many other volunteers in the Cobargo region working on recovery, resilience and preparedness, has firmed up their understanding that funding for resilience and recovery needs to acknowledge the value in the soft infrastructure – networks, community and shared knowledge and understanding that creates vital social infrastructure. People feel safe in their networks, they are trusted places for people to share their experiences and to recover from trauma. This provides the grounding for community-based recovery projects – shared experience, shared knowledge, respectful and trusted relationships, and confidence in the community. People know how to work together and have learnt to see the strength in acknowledging, respecting and drawing in many different points of view. Cobargo is a strong community minded village, and this ethos provides a strong foundation for the work of CaDET.

The CaDET team is learning at every step. Recovery from a disaster is a marathon, not a sprint, everything takes longer than imagined and the degree of difficulty is high – there are many recovery projects underway in Cobargo, all important and all drawing on community resources. CaDET are patient and careful to not overload or overwhelm Cobargo's precious people. There are hard questions still to be answered – to do with regulatory obstacles, finding an equitable community ownership model, securing finance, etc – but CaDET has a strong team who work hard, work well together, respect each other and can compromise. CaDET is well positioned to tackle the path ahead.

In our words[7]

Communities suffer the consequences of disasters. We are first in, we provide immediate recovery, and we never leave. Community ownership is essential for the sustainability of any resilience or recovery measure.

"The man with the key".

[7] Quotes from CaDET volunteers

In Cobargo, two volunteers, one from the folk festival and one from the agriculture show, had the keys to unlock the Showground, which became the centre of all our relief and recovery activity after the terrible fires of New Year's Eve.

This initiative may not have had as much support if it was seen as a response to climate change. Our lived experience of the fires has shown us the importance of keeping the power on in disasters. The timing is right for energy transition.

Some people say we won't see another fire like that for many years - but how confident can we be about this given the increasing unpredictability of the climate? I'm doing it for the grandkids.

If we can 'crack' the island-able microgrid then this is significant for Australia, an important scalable example for other similar villages and regions on the 'fringe of grid' without reliable and secure energy supply during emergencies.

Rural and regional Australia need to be participants and beneficiaries of the energy transition.

The scenarios for the energy transition (Section 4) are helping CaDET to clarify the narrative for the microgrid, to focus our thinking and throw up useful questions.

The more we share the presentation with people the more feedback we get and the more it refines our thinking. The CSIRO scenarios capture our learning and our understanding of the landscape in a useful way. It helps to take what is in 'our heads' and articulate it so that it can be communicated and documented for the benefit of others.

What is next for CaDET? CaDET still has a long road ahead, including:

- Ongoing community consultation
- Ongoing discussions with local and state government, the energy sector, and the Australian Energy Regulator
- Development approval for the microgrid and application for approval to connect to the grid
- Develop a preferred community ownership model
- Grant applications for funds to build the microgrid
- Fundraising and financing and possible partnerships with institutional investors, banks, electricity retailers and large energy consumers
- Create an entity to own the microgrid and flow benefits to the community.

The CaDET team has contributed to, and also used the evolving collaborative thinking presented in the next sections to help shape their own emerging pathways forwards.

3 A broader picture of the opportunities in the energy transition

The Australian and NSW State governments and many businesses and communities are increasing their commitments to renewable energy, and the transition away from fossil-fuelled electricity and towards renewable energy is accelerating. Technologies for renewable energy generation are maturing rapidly, and costs are dropping. Energy generation is moving towards renewable and distributed, and away from fossil-fuels, however distribution is mostly through individual household, business or local offtake agreements. Aggregating distributed energy to multiple providers and users at a localised level but at a lower scale than current centralised production and distribution is a significant opportunity.

There are challenges to connecting renewable energy systems to an ageing energy distribution system not designed for this purpose. There are also complexities in the market, pricing and regulation, matching demand and supply to stabilise the grid. The energy transition is towards new systems of energy production that are clean, low cost, distributed and embedded in natural systems. Generation is scalable, from micro-systems to large reticulated systems. Rather than being a pre-requisite for development, energy is a service that can be tailored to the needs of each context. By transforming the relationship between an electricity system and the living and natural environment, the energy transition opens up enormous possibilities for economic, environmental and social innovation. The opportunity is greater participation and access to energy while delivering cheaper, more reliable electricity.

The energy transition opportunities:

A distributed system is, in principle, more reliable than a centralised system, in that one part may go down but the rest will survive[8].

A more decentralised system is … more community based and more responsive to the needs and voices of consumers[9].

Local empowerment, when done well, is underpinned by decentralised and deliberative decision-making, spawning new ideas with the local capacity and drive to resource and implement projects. In new energy systems, members of the community shift from being passive consumers of externally imposed and managed “solutions” to become active participants creating, co-designing and implementing a local, place-based solution. The energy transition generates self-organisation as the commitment to pursue local solutions generates new ideas and enthusiasm, increasing and enhancing participation and capacity.

Energy transition provides the opportunity for new energy systems to be more dynamic with an embedded technical and social infrastructure that is responsive to variable environmental conditions. These enhanced local competencies are primed to exploit value-stacking opportunities by seeing synergies, articulating linkages and actioning them. These competencies recognise and design for threats, using local knowledge to place infrastructure in lower risk areas and build additional protections where relevant.

The energy transition can be leveraged for broader resilience outcomes – adapting technologies to the local context, designing the ability to diversify and integrate opportunities, enhancing competencies and self-organising potential and embedded learning to create new applications to prototype. These competencies

[8] Engineers Australia https://www.engineersaustralia.org.au/sites/default/files/2022-08/Integrating-DER-in-the-grid-Discussion-Paper_0.pdf

[9] Energy Consumers Australia

are relevant for broader resilience outcomes. The energy transition provides a unique, investible focal point for resilience, one that, if done right, can unlock future resilience opportunities in regions.

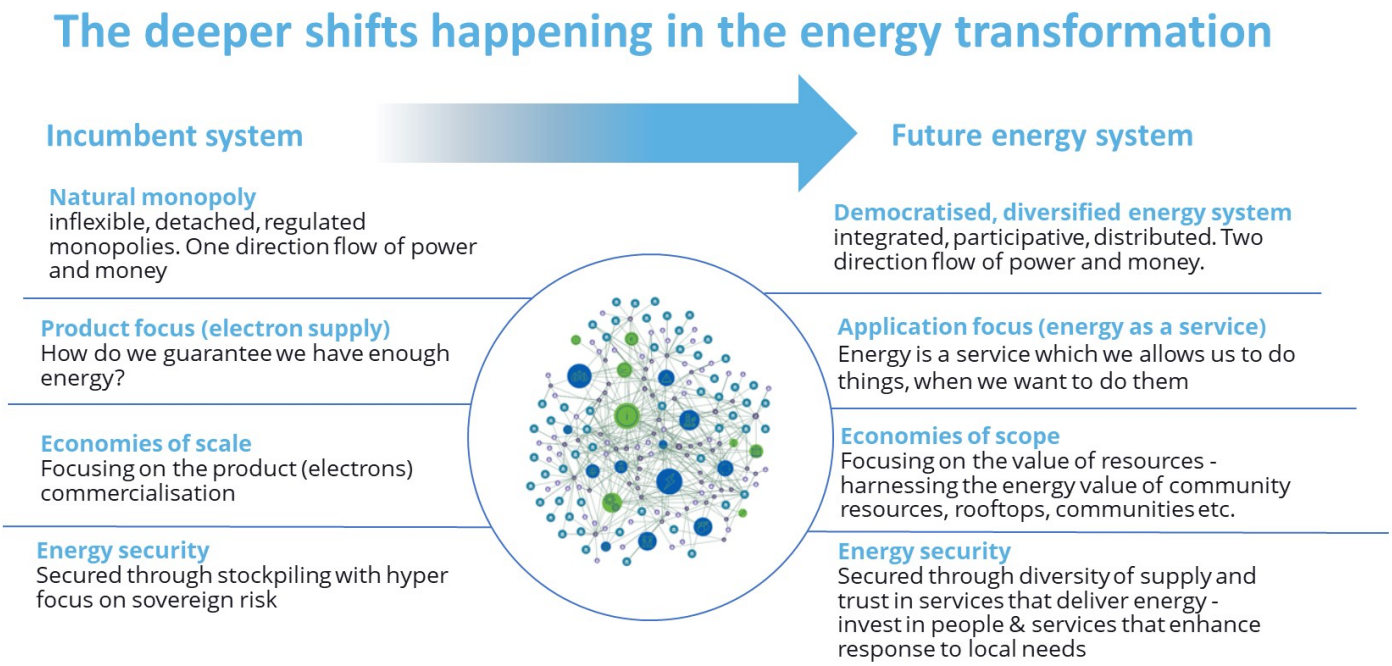


Figure 1 A conceptual view of the deeper shifts that can happen in the energy transformation

4 ‘A town like Cobargo’: A conceptual approach for a staged approach to increasing resilience in an energy transition

In order to conceptually demonstrate and abstract the experience of Cobargo in a way that is useful to inform other communities, industries and governments, four ‘stacked’ scenarios for the energy transition have been developed. Community and business leaders in Cobargo have generously shared their stories, experiences, insights, innovations, and collective intellectual property to ground the illustrative scenarios in a plausible, demonstrable reality.

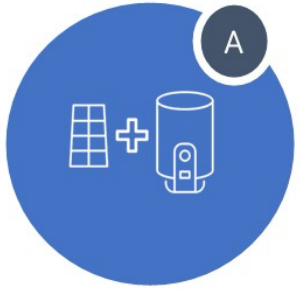
This work honours real experiences and draws from the stories and insights of Cobargo, however, it is not a factual account with correct chronological ordering of events. It does not represent the complexity of on-ground experiences and lived realities of individuals. Renewable micro-energy development and investment scenarios illustrate the core concepts, and the costs and benefits of taking a place-based systems and resilience perspective to investing in regional-scale renewable micro-energy.

The scenarios demonstrate the conceptual framing for the sequential stacking of objectives, risks, opportunities, values, costs and benefits associated with different ‘models' of regional scale, renewable, micro-energy grid design and delivery, in order to underpin novel investment cases, and to describe what is needed to create an enabling policy environment. The framing is developed in this way to support subsequent analytical steps (which have not been completed for this report).

Four scenarios A – D are illustrated in Figure 2 and described in the following sections.

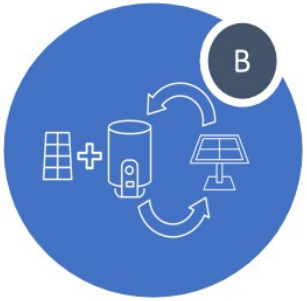
Contained single asset: increase supply of renewable, low emission energy

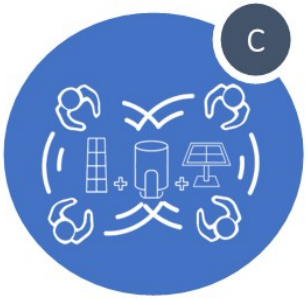
- Solar project
- Established investment and governance structures – corporate structure maximise production and profit, minimise cost
- Streamlined for best site connection & power sales through wholesale energy market



Disaster-resilient, connected/ islandable asset: improved reliability, climate and disaster risk incorporated

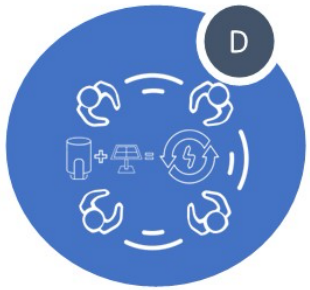
- Includes A
- Solar project with enhanced physical risk management
- Grid enhancement through islanding capability in extreme climate events





Co-ordinated, diversified assets: optimize energy performance

- Includes B
- Increased energy literacy in the town
- Active demand management and grid services to allow for broader participation, and 'value stacking'
- Enact energy efficiency opportunities



Integrated resilient systems approach: maximise energy value to underpin regional resilience

- Includes C
- New business structure for increased local equity and benefit flow to local community and business
- Integrated as a local economic development response
- Investment in long-term local institutional capacity
- Reduced load on government budgets and service provision

Figure 2 Illustrative scenarios for an energy microgrid

4.1 Scenario A – Contained single asset

Scenario A is the 'business as usual' approach. Independent operators construct solar and wind farms that operate independently of each other and their local communities. They provide electricity for the grid and typically they are the least cost design.

Design objectives

1) Increase supply of renewable, low emission energy
2) Maximise profit to shareholders

Description

5 MW microgrid array, operated as single asset, connected to grid

The energy transition benefits

- Increases supply of renewable, low emission energy

Under this scenario a 5MW microgrid array is proposed by the community. A volunteer group of interested locals is formed. They drive the proposal by obtaining funds for scoping and feasibility studies, as well as discussions with a range of people in the town and district.

In this illustrative scenario, imagine that the feasibility study shows that a 5MW solar generation facility, once approved and post incorporation of current standard grant provisions, will provide an attractive return on investments. This attracts the interest of a corporate energy investor, who is well aligned with the enabling policy environment for zero emissions and can capitalise on the 'social licence to operate'. The investor group further develops the proposal and takes it through the approvals process, purchases / leases nearby land at low cost, and invests in infrastructure. Energy is sold into the grid, and the revenue generated is returned as profit to company shareholders.

Direct benefits to the local community are somewhat limited. During the construction phase – local contractors might be used). Individual landowners may benefit from leasing or sale of land, but this is not a wide spread of benefit. In order to access renewable energy, the community must purchase it through their retailer who sources it from the energy market. The investor group recoups upfront capital costs and return dividends to shareholders. Despite being adopted as a familiar and standardised model, it may not be financially optimal.

Concepts of resilience and hazards and realization of benefits for communities are not considered. There is limited discussion of risk or integrated delivery and little adaptation during operations. Where projects fail to deliver benefits to local communities, social license may be lost or damaged and projects may face long lead times getting to approval.

Energy generation and sales will be impacted by number of days of cloud or smoke haze reducing generation, or days that the grid itself is powered down due to high wind, high temperatures, storms or bushfire activity. Long and uncertain timelines disrupt capital formation and reduce returns. Disrupted capital formation leads to bespoke funding arrangements and limits transition to a more institutionally funded model where rapid deployment of capital and deployment at scale is critical. What appears to be an optimal return model may be a self-limiting pathway, leading to slow adoption at scale.

Potential climate and disaster outcomes under Scenario A

Under a possible future, during a wet period such as experienced in 2021-2023, cloud days and storms reduce energy generation impacting on sales. In the event of a catastrophic bushfire such as Black Summer, smoke and haze reduces generation. If the facility is damaged or destroyed and the transmission network needs to be replaced, this will have a severe financial outcome. In the future, the asset may struggle to obtain insurance. However, the investor group can 'write off' the lost infrastructure If this occurs after their capital outlay costs have been recouped. The community are back to the situation they encountered in January 2020 because the energy infrastructure cannot be islanded and is at high risk of being destroyed again.

4.2 Scenario B – Disaster-resilient, connected/islandable asset

Scenario B takes into consideration location and connection to local communities. The design considers whether the electricity generation (solar or wind) is near a town or not, whether it connects to the electricity grid or not, whether it requires a battery, and the extent of social license in the community for the development. The developer works with a delivery partner to access government grants, works with community, and adapts the project to take on board community considerations. The community need certain competencies to engage with and benefit from the development as well as the planning for extreme events. Governance structures account for engagement with communities and design and operations are modified to reduce impacts and maximise benefits to communities.

Design objectives

1) Increase supply of renewable, low emission energy
2) Maximise profit to shareholders
3) Reduce risk and impacts of extreme climate events on the asset
4) Increase capacity of town to deal with extreme climate events with inclusion of islandable battery, and refuge buildings with power supply connected directly to islandable supply for extreme events

Description

5 MW microgrid array with a battery, connected to grid but 'islandable'

The energy transition benefits

- survive extreme climate events
- operate during or immediately after extreme climate event
- be available as islanded operation in times of power supply disruption
- more reliable support for energy load management across the network

Under this scenario the energy company incorporates climate and disaster risk assessment into the site selection and design of the facility. This includes sourcing information on locationally specific risks from flood and bushfire to ensure that the siting of the facility is on land which has less risk of being inundated or burned – and less risk that supply to the town will be interrupted. The facility is located close to the town, even though this means that the land purchase / lease is more expensive. A large battery is included and located at a suitable site. The battery needs to remain connected to both the town and the solar farm.

The financial forecasting in the business case incorporates information such as the number of days per year across seasons that solar power generation and sales might be impacted (for example due to smoke haze

or heavy cloud or storm activity, or by islanding), as well as the number of days that the grid itself is powered down due to high wind, high temperatures, storms or bushfire activity.

The Australian Climate Service – https://acs.gov.au – provides data and information about climate, hazards and risks. Information is available for regional areas in Australia and can be accessed to support the scenarios and financial analysis for specific locations and business cases.

The assets have some protection – the vegetation around the solar panels is well managed and the facility is irrigated, and irrigation can be switched on during a fire event. In addition, the power line from the facility connecting the solar farm, battery and town is resilient to fires and other disruptions. The facility and battery can sell power into the grid and it is also islandable during times when disconnection from the grid is needed.

Rather than being a passive recipient or purchaser of energy, the community are active agents, managing their energy usage. They work cooperatively with local government and local emergency services on disaster risk reduction measures around their homes and engage in scenario planning to develop community wide responses to disruptive events. People of the town also build their resilience to future events by nominating buildings in town which can provide cool havens from heat waves and (depending on design options, funding and site, potentially also fire, floods and storms). These buildings have priority access to the energy once the decision is made to island the town. They work with governments and their fire service to plan to shelter for people during events. They do not need to evacuate the town during an event because water, sewerage and other key services which rely on power are not lost. They work with government agencies and their fire service to plan for shelter in the town during a fire event, knowing that if those trained to deal with fires can go back out into the town immediately after the fire front has passed to deal with embers, there will be significantly less loss and damage in the town than there was during Black Summer.

In the short term to 2030, the investor costs are higher and significant investment is also required by the distribution networks. It takes longer to recoup their upfront capital costs, but their assets are insurable, the financial forecasting is more accurate, and returns or dividends to shareholders will be possible in the longer term despite an increase in the number of extreme events.

Potential climate and disaster outcomes under Scenario B

Potential climate and disaster outcomes: Under a possible future, during wet period such as experienced in 2021-2023, heat waves or catastrophic bushfire seasons such as Black Summer, the benefits include reduced physical and financial loss and damage to infrastructure, the community and the energy company and shareholders, insurers and government because of the mitigation measures taken. Interruptions in services and economic activity are reduced, and there are non-commensurable benefits such as increased sense of agency in the community and business.

4.3 Scenario C – Coordinated diversified assets

Scenario C builds on scenario B to derive added value from infrastructure investment. This scenario considers the added benefits that might accrue from investment in renewable energy infrastructure and additional opportunities and adaptations that might be incorporated into the delivery model. This scenario strengthens how benefits are structured, determining beneficiaries and how they receive benefits. These might be social, natural, resilience or disaster preparedness. The design process considers added value,

value at risk and value protected. This might include energy subsidies or supply options and requires understanding of integrated delivery models and novel governance for benefit sharing.

Design objectives

1) Increase supply of renewable, low emission energy
2) Maximise profit to shareholders
3) Reduce risk and impacts of extreme climate events on the asset
4) Increase capacity of town to deal with extreme climate events with inclusion of islandable battery, and refuge buildings for extreme events
5) Optimise energy production (through rooftop solar), and demand through adoption of smart technology) at town and district level with active demand management/smart energy technology increased investment in household and business energy efficiency, and additional battery capacity

Description

5 MW microgrid array supplemented by rooftop solar and increased battery storage, connected to grid but 'islandable'. Active demand management through addition of town energy co-ordinator, energy literacy program, and smart, energy-efficient technology.

The energy transition benefits

- lower cost energy supply
- less price variability in energy supply
- potential to retain local energy supply
- improve health outcomes through reduced indoor and outdoor pollution

Under this scenario the people of the town increase their sense of agency and opportunity as active participants in the energy system. The town employs an energy co-ordinator who is available for advice for any homeowners and businesses who wish to switch to solar panels, batteries, more efficient buildings or smart electrical appliances and equipment. The co-ordinator runs an education program at town level as well as being available for advice and help with accessing available government subsidies.

In this scenario, the data collected through regular grassroots engagement informs targeted advocacy to governments and the private sector, focusing on removing barriers to participation in the energy transition, particularly in rural and regional areas. Local people increase their knowledge about the energy system and gain deeper understanding of their energy usage. They begin to implement efficiencies in their homes and businesses. Local business leaders recognise the shift to renewables as a major economic opportunity and implement business continuity plans.

Local energy production, storage and end-use efficiency are increased, and bills reduced through installation of rooftop solar panels on more of the buildings in the town, greater use of heat pumps for water and space heating, and installation of behind-the-meter and shared community batteries.

Potential climate and disaster outcomes under Scenario C

Under a possible future, the additional benefits beyond those in Scenario B include that energy generators, distributors and retailers as well as the community have learned from this early example and has become a market leader in offering these integrated energy transformations for neighbouring towns and regions. The town increases energy literacy and adopts a range of technologies increasing the efficiency.

4.4 Scenario D – Integrated resilient systems approach

Scenario D incorporates elements of disaster recovery and building resilience. It considers the recovery that is possible from the financial structures set up under Scenario C.

Design objectives

1) Increase supply of renewable, low emission energy
2) Maximise profit to shareholders
3) Reduce risk and impacts of extreme climate events on the asset
4) Increase capacity of town to deal with extreme climate events with inclusion of islandable battery, and refuge buildings for extreme events
5) Optimise energy production (through rooftop solar), and demand through adoption of smart technology, increased investment in household and business energy efficiency, and additional battery capacity
6) Use the energy facility as a foundational asset to complement other general resilience initiatives at town, district and region.
7) Create innovative investment, funding, and finance approaches – supported by appropriate novel governance structures – that distribute benefits across community, business and government

Description

5 MW microgrid array with a battery, connected to grid but 'islandable'. Active demand management and electrification through addition of town energy co-ordinator, energy literacy program, and smart/energy-efficient technology. The energy system is a foundational asset, which complements other initiatives at town, district and regional scale including innovative funding, finance and governance approaches to increase total benefits to a broader range of beneficiaries.

The energy transition benefits

- leverage the lower costs of production and full range of benefits to grow industry (and the energy transition)
- lower demand through actively maximising energy use efficiency
- employment up-lift through attracting new businesses or providing cost advantages for companies matching power demand to power supply

Under this scenario community and business leaders enact innovative ways to distribute benefits across the community. There are a range of groups set up by volunteers. These groups hold community conversations about the future of the town, as well as undertaking a range of specific projects. One of the novel governance mechanisms is a non-distributive Community Co-operative which manages incoming funds and projects. The Board is comprised of a diverse and inclusive network of people, with a high level of confidence and trust in their decisions, and broad reach across the community. Volunteer efforts are quantified using a 'Resilience Self-Assessment Tool', fully accounting for time, competencies and skills put into scoping, feasibility studies, project management, policy alignment and socialisation with the community. These are costed at market rates, and converted into an equity share, based on a calculation of 'sweat equity'. Government grants programs supporting community-led clean energy and resilience initiatives such as microgrids choose to recognise 'sweat equity' as well as other public benefits in the level of financial support they provide.

The governance model incorporates a different financing scheme and introduces a new entity to become the co-investor/co-beneficiary through 'sweat equity' as a share in investment returns. This profit provides

a source of income to the Community Co-operative. It is used to move away from reliance on cycles of short-term government grants, to support a range of other opportunities – for example a Community Service Centre with facilities and staffing, providing a range of services to the community, advice for engaging with government agencies and accessing services. It also hosts a range of other service providers such as mental health services. In this way, it relieves some of the costs to government for service provision in remote areas.

In this scenario, in the short term to 2030, the investor(s) recoups their upfront capital costs and returns dividends to shareholders including the community co-operative.

Potential climate and disaster outcomes under Scenario D

Under a possible future, the additional benefits beyond those in Scenario B and C: in addition to the opportunities afforded by a secure and affordable renewable energy foundation, the community's share in the company means that it is able to catalyse and realise a range of other business and regional economic opportunities and community services.

4.5 Insights from the renewable micro-energy development and investment scenarios

How local energy opportunities and barriers are managed and integrated over the next five years will have a major bearing on Australia's ability to support full electrification and decarbonisation. The illustrative scenarios A-D are constructed to show the added value that could be achieved with the 'stacking' of objectives that could be harnessed in the energy transition if the design was incentivised by an enabling policy environment.

Investments should provide benefits over a much longer timeframe than (for example) a five-to-ten-year payback period for initial investment, and those benefits could be provided to communities on an ongoing basis. The four scenarios are a tool for understanding the financial structure needed to maximise benefits from developments. The scenarios provide a framework for articulating a hierarchy of benefits, support and competencies for the energy transition. As new elements are added, costs increase – but so do potential returns.

Communities are often considered passive downstream beneficiaries and not included in the delivery model for an investment. Community participation ensures people are directly participating in the investment and benefiting from the value that is created. In this way, these scenarios allow exploration of a wider set of benefits across all beneficiaries and show how a layered approach can reveal unexpected opportunities to participate in benefit sharing.

Using the scenarios to articulate benefits across a range of beneficiaries provides interested parties with visibility of potential benefits and the obstacles to benefit- sharing, it assists community and government understanding of the regulatory structure needed to realise those benefits, and aids investors understanding of project viability and scale needed to achieve financial outcomes (Figure 3).

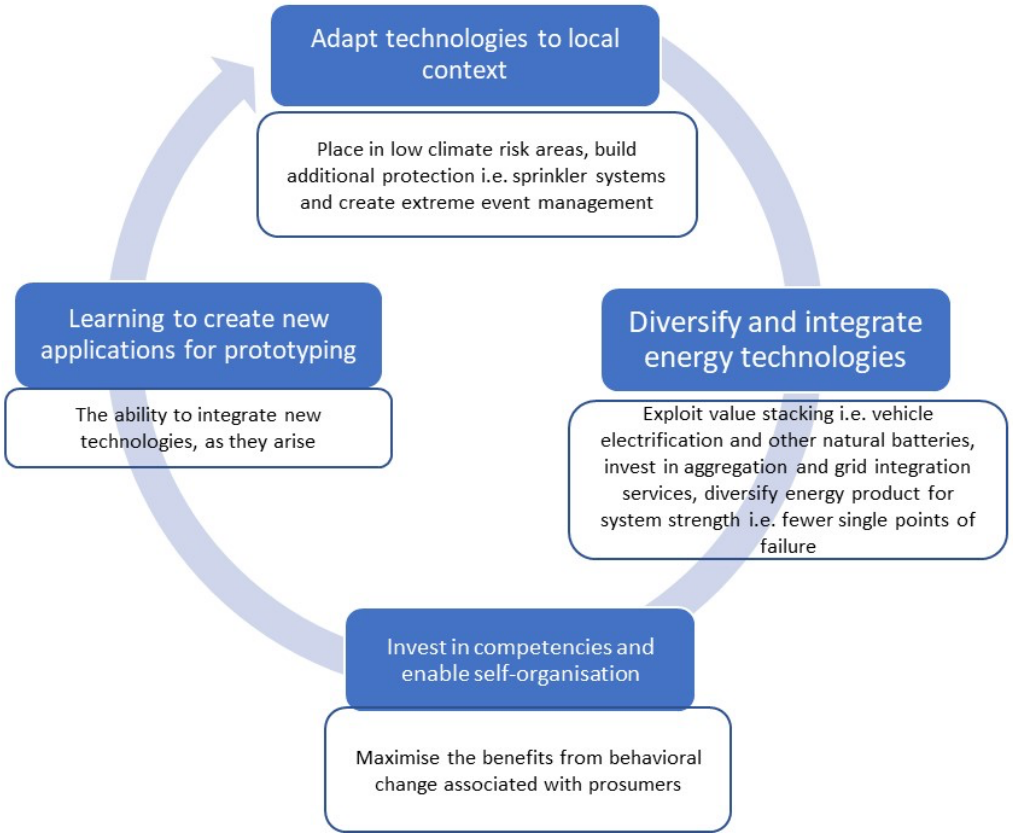


Figure 3 Creating a reinforcing cycle to maximise value from the energy transition

Investors are concerned about risk – by spreading risk, the potential return (risk rating of return) is also increased. By considering risk, including hazards and climate change, and net present values on a multi component basis, the risk assessment for NGOs, super funds and private equity investment also changes. The scenarios help to articulate this relationship.

The 'value-stacking' illustrated in Figure 4 shows how adapting technologies for the local context, harnessing local community leadership and entrepreneurialism, taking account of behavioural changes, supporting self-organising and empowered towns can provide not only local benefits of maximising value from the energy system but also provide a learning opportunity that can be shared globally.

Patient investors are seeking better financial forecasting, longer term returns and more insurable assets. However, there are no current examples of such investments at scale, and the current experience of CaDET with the Cobargo microgrid is heavily reliant on government grants to get the financial returns up to the hurdle rates required by private investors (including super funds that claim to have long horizons). These grants would need to be higher still to gain community equity. Australia used to use public investment/ownership to achieve such longer term, community-wide goals and some state governments are starting to return to that approach for the energy transition.

Figure 4 also shows the incumbent system pathway to renewable energy. Singular objectives for net zero will likely lead to defending existing extractive business models, centralised efficiencies. There will be a continual pressure to follow the lower path – the top path is disruptive and requires finance, communities and energy actors to act differently.

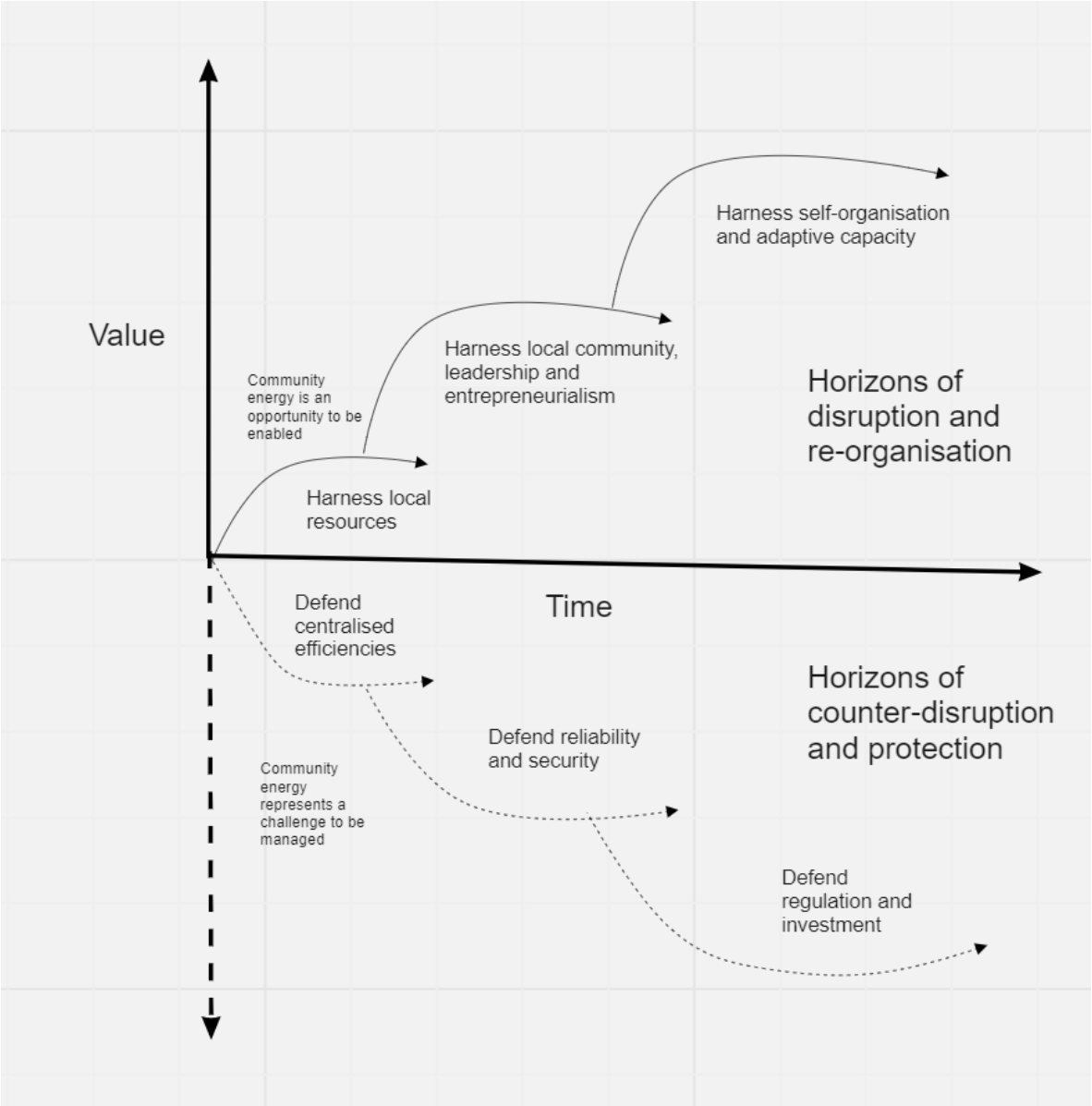


Figure 4 Layered design objectives and 'value-stacking' can enhance the value of the energy system

Application

The scenarios show communities and their energy assets as an active part of the system, aligned with consumer incentives and poised to catalyse self-organizing catalytic benefits.

Understanding the Cobargo demonstration informs application to other regions in Australia where this kind of energy transition and novel governance models would work. These ideas are conceptually illustrated here, and next steps should aim to quantify all these elements.

5 Conclusions and next steps

"Community-led recovery" is a catchphrase increasingly used by government, community and industry. Knowledge, experience, capabilities and competencies at individual, regional and societal levels are extremely varied. There is little systemic understanding or adequate support to catalyse this and put it into action at a broader scale. This report provides some insights that might be useful for communities, the renewable energy industry, investors, and governments at local, state and Federal level across multiple portfolio areas.

The innovations documented in this report were generated by, and belong to, the community of Cobargo. The town provides a living example of some of the ways that community-led resilience and recovery can manifest. However, many of the insights are equally applicable prior to, or in the absence of a disaster recovery context because they create value, opportunity and community resilience at local and regional scales, especially as the pace of change accelerates.

Through walking alongside and learning from CaDET in their exploration of a microgrid for Cobargo, the authors of this report have developed a generalisation of the innovations by framing them as discrete, staged conceptual scenarios. These can be used as the basis for developing specific scenarios in other renewable energy projects across Australia. Quantifying these scenarios for specific projects will support development of investment and business cases, and therefore provide a basis to rapidly scale out some of the learning from Cobargo as well as the Enabling Resilience Investment10 approach to other communities.

The approach documented here can inform what is required to support an enabling policy environment to incorporate disaster risk reduction, build specific resilience into the energy infrastructure as well as general resilience in communities, industries and the region through spreading risk, and value-stacking in the energy transition. A shift is required from a qualitative assessment of risk to a quantitative assessment of costs, benefits, risk (especially the different distribution and bearers thereof) embodied in this conceptual approach. This has consequences for investment, potentially making investments more favourable to investors. There are many other questions that remain to be explored in more detail. Some of the questions are shown in Figure 5 Questions that require further exploration in order to quantify conceptual model for different energy transition scenarios, and scale out what is being learned in Cobargo

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[10] The Enabling Resilience Investment Approach – Enabling Resilience Investment (csiro.au)

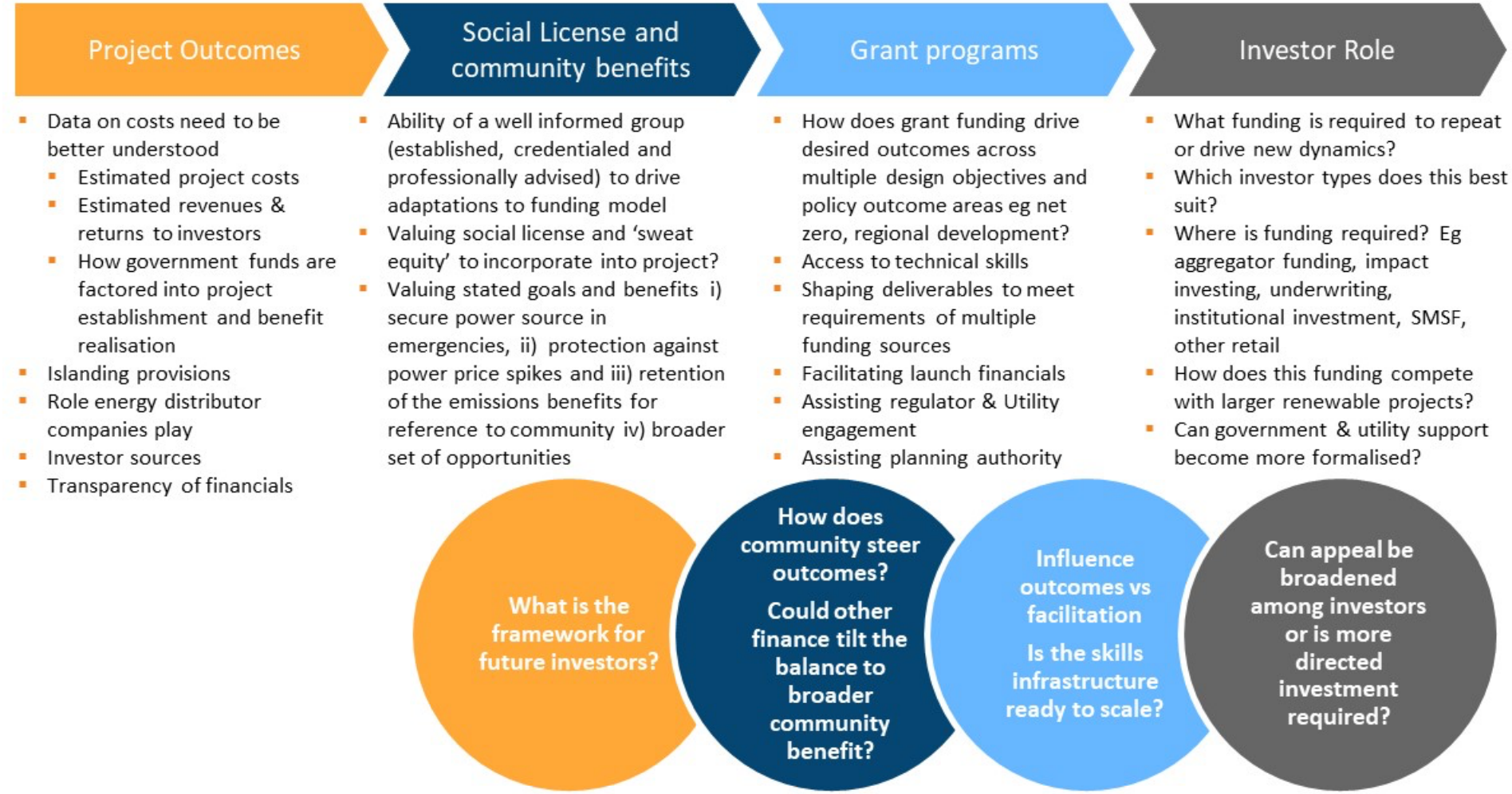

Figure 5 Questions that require further exploration in order to quantify conceptual model for different energy transition scenarios, and scale out what is being learned in Cobargo

The project team has built some understanding of what can be changed to minimize the cost of an infrastructure development and maximize the outcomes and benefits, and could further explore and quantify what this means, in terms of:

- the social license for the community
- social and natural benefits
- equitable benefit sharing
- risk and risk sharing
- resilience outcomes.

Specific next steps for further quantification and evaluation of the Cobargo case study, and for consideration in other microgrid developments that other communities might be wanting to progress are shown in Figure 6. They include more detailed economic and financial analysis to inform community engagement, project design and delivery, novel finance sources and governance structures to deepen understanding of the barriers to community-led development and to shape the development of policy mechanisms which enable the benefits to be realised:

- Understanding the process of the different trajectories of project development as illustrated in the scenarios A – D
- Quantifying value adds and enhancements, both project- and community-based
- Viability and durability from project perspective as well as preferred partners
- Seeding and scale – focussing on generation of seed projects to demonstrate these novel scenarios, and explore and expand the roles for institutional and retail investors and novel funding mechanisms

More generally, this report raises many questions that need to be further explored around the governance arrangements not only for funding and finance, but for management of risk and responsibility for operations and maintenance. The concepts of community-led recovery, and community agency have broad appeal and some practical challenges. A range of parties are encountering emerging issues as they attempt to get community-led bushfire funded projects off the ground in part. For example, local Councils are challenged with accommodating recovery projects which fall outside the scope of established local development priorities and governance arrangements. Councils are not sufficiently resourced or agile to keep up with community plans. New infrastructure – even when construction might be fully funded – incurs ongoing operations and maintenance responsibilities and costs, with no established ways to distribute these.

CaDET is experiencing part of a broader trend in Australia and other regional areas – the lack of attention and investment in building or transitioning capability and competencies to support the many job/career/business opportunities that will manifest in the energy transition. For example, like many rural and regional areas there are few tradespeople who have both traditional electrical engineering skills and the rapidly growing technical knowledge required in the energy transition. This shortage will grow as demand for skilled, clean energy workers accelerates.

The CaDET energy transition team is working with young volunteers and mentors on a project designed to draw in young people who may not previously have considered a career in the renewable energy field. It will expose a cohort of young people to the growing opportunities that will become available in the energy transition to renewables., with opportunities across a wide range of industries, including the power sector, electric vehicle manufacturing, technology development as well as end uses such as energy efficiency.

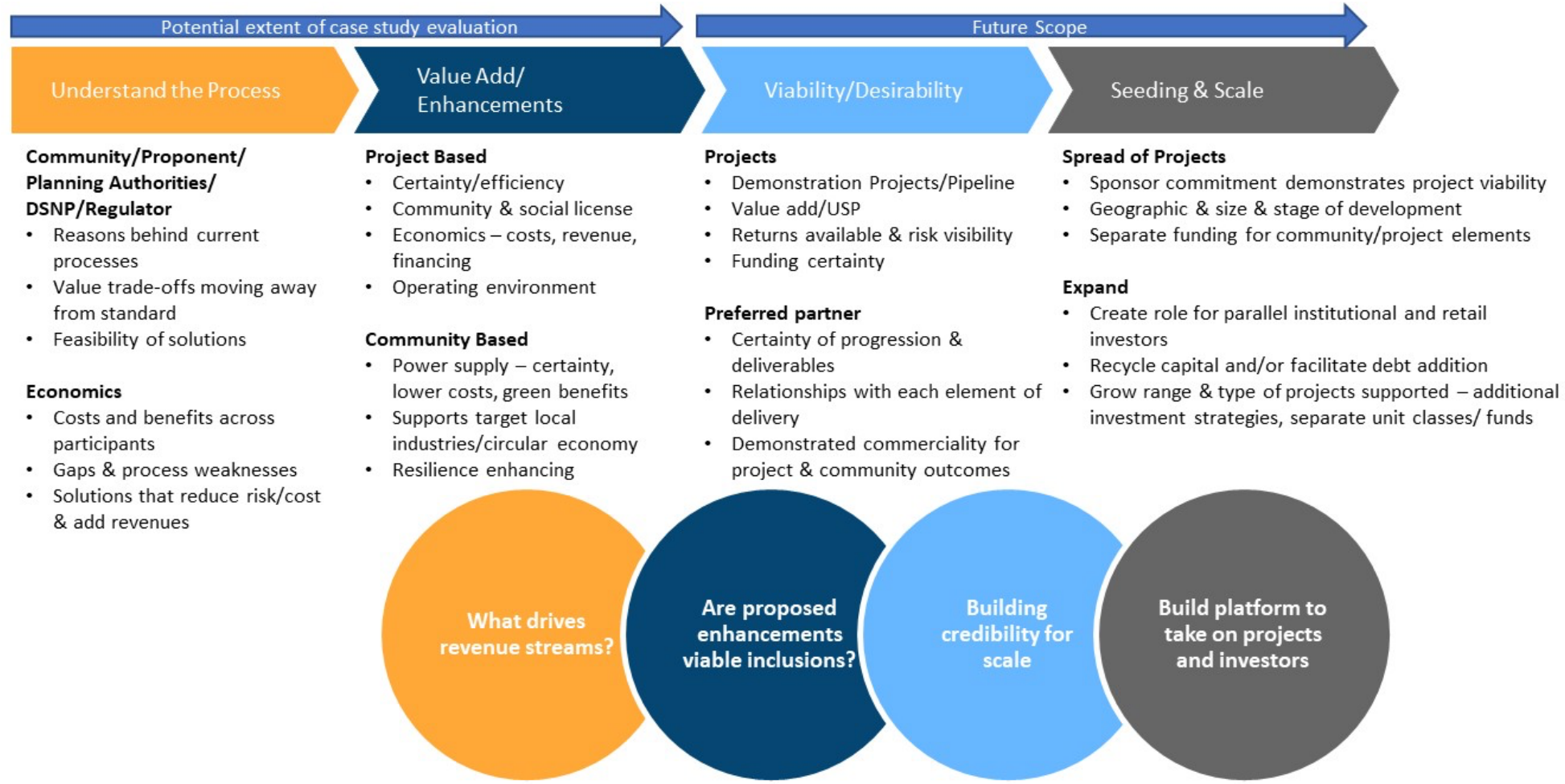

Figure 6 Overview of specific areas recommended for further exploration to scale out what has been learned in Cobargo

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