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Science Agency

Communities in Transition

Goondiwindi: A Living Transitions Roadmap



Citation

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The Clean Growth Choices Consortium is comprised of experienced practitioners and researchers from the University of Southern Queensland, James Cook University, CSIRO and The Ecoefficiency Group. The consortium team would like to acknowledge the strong support we received from the Queensland Department of Environment and Science, especially from Georgine Roodenrys, Matthew Arthur, Sandra Avendano and Rosanna Virzi.



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Goondiwindi: A living roadmap summary

This report is a living roadmap designed to support the Goondiwindi Region in securing a prosperous and sustainable future. The roadmap was developed as part of the Clean Growth Choices: Communities in Transition (CiT) project through active participation of the Goondiwindi Regional Council, community members and a local coordinator. This project is supported by a consortium from the University of Southern Queensland, James Cook University, CSIRO and The Ecoefficiency Group. The Clean Growth Choices project has been funded by the Queensland Government as part of its CiT pilot program.

A three-stage process was implemented in this project:

1. Assessing the current state, risks, challenges and opportunities for the region and identifying broad pathways for the future.
2. Generation and rapid evaluation of innovative ideas and options that enable the development of broad pathways.
3. Putting options and pathways into a transition roadmap and for developing business cases.

Key challenges and opportunities identified for the region relate to: a) climate variability and change, b) commodity price variability, c) access to, in addition to disruption and benefits from, communication and digital technologies, d) workforce mobility and skill, e) access to affordable, reliable and sustainable energy, and f) waste management issues.

The workshop community articulated a set of values, visions, aspirations and goals for the future of the region. These relate to agricultural excellence, profitable local businesses, tourism and a high-quality and prosperous rural lifestyle that is underpinned by social energy that stems from community and regional pride.

Three broad pathways were identified with a set of interventions, mechanisms and outcomes by which the vision and goals could be achieved:

1. Establishing world-class sustainable agriculture.
2. Economic diversification: making Goondiwindi a tourist destination region of choice.
3. Building human capital: agile and enterprising workforce and businesses.

These pathways are complementary and have phases that can be implemented to maintain, modify and transform parts of the region to achieve the community's vision and goals (see Figure 1). Key interventions that relate to all three pathways are: feasibility studies and research, digital connectivity, transport connectivity, and affordable renewable energy.

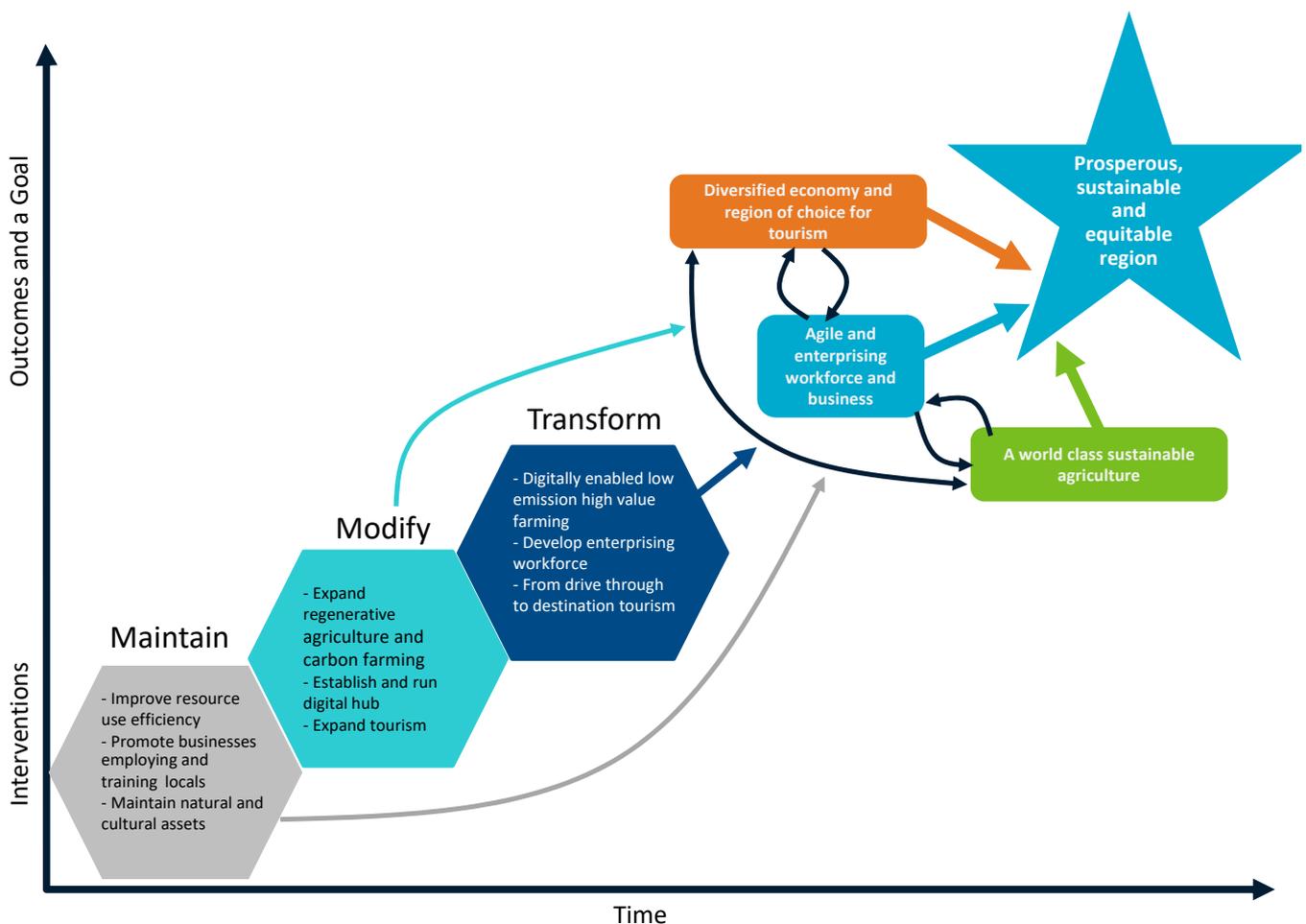


Figure 1. Strategic intervention options that would help to maintain, modify or transform aspects of the region.

Five business cases have been developed in this initial stage to set the living roadmap in motion, targeted at: establishing a new organic waste recirculation and management facility; testing the soil carbon, water retention and productivity benefits of recirculating organic waste into farm soils; diversifying and intensifying agriculture in ways that make the best use of available water, population growth and skills to enhance sustainability and resilience; and enhancing tourism.

This report is an initial step in developing a dynamic and living roadmap for regional communities in transition. It will require further work to test and refine the details of the proposed pathways. It will also require ongoing monitoring and reviewing at least every two years to ensure that the set of pathways remains appropriate and sufficient to achieve the vision and goals and is robust enough to changes in global and domestic drivers.

1 Background to the project

A team from James Cook University (JCU), University of Southern Queensland (USQ), Commonwealth Scientific and Industrial Research Organisation (CSIRO), and The Ecoefficiency Group (TEG) designed a program of work in response to a Queensland Government tender for the delivery of a pathways approach to its Queensland Climate Transition Strategy, 'Pathways to a clean growth economy', a strategy that focuses on the risks associated with environmental, social and economic changes. The Queensland Government anticipates that the economy will need to keep adjusting to stay in step with the changing global economy. It assumes that Queensland has a competitive advantage that will assist with the transition, and while the transition will likely occur over decades, it should start right away to be most cost-effective. The state government has said that it will assist and guide these processes by:

- Creating an environment for investment shift and innovation.
- Facilitating existing Queensland industries to transition.
- Working with Queensland's regional communities to transition.

The dynamics of transition are complex and challenging. Transition needs to be led by the communities themselves in ways that are socially acceptable and build collective agency in shaping the future.

This report focuses on the development of an initial living transition roadmap for the Goondiwindi Region as part of the Clean Growth Choices: Communities in Transition (CiT) pilot program. The program is an active community capacity building process for strengthening regional leadership and resilience in dealing with economic, social and environmental change. It is helping Queensland regional communities to organise and process what is involved in transitioning over the intermediate to long term to achieve a more sustainable economy by:

- Referring to values, visions and plans to guide each community.
- Drawing on existing networks, knowledge, skills and capabilities.
- Canvassing current pressures, opportunities and future scenarios and visions.
- Identifying broad pathways and multiple options for transitioning and achieving the goals.
- Developing dynamic and future-focused roadmaps and identifying an initial set of business cases that set the roadmap in motion.

The project team is drawn from a collaborative consortium comprised of experts who help communities, businesses and governments develop community resilience strategies. The project team includes, The Institute for Resilient Regions at USQ, The Cairns Institute at JCU, CSIRO Sustainability Pathways Program and The Ecoefficiency Group.

With advice from the Goondiwindi Regional Council, the project team worked closely with community members to develop an initial transition roadmap and a few business case proposals. With more detailed work, a fully developed roadmap will assist the community with navigating future uncertainties and changes.

2 Developing transition roadmaps

The Communities in Transition (CiT) program provides a framework for communities to create roadmaps, set their own directions, navigate their own pathways, and design interventions conceived and implemented by the participants themselves. The roadmap development process was informed by the Resilience Adaptation Pathways and Transformation Approach (RAPTA) (version 1) (O’Connell et al. 2016). This is a design approach to bring best practice in the formulation of programs, projects and other interventions so that they have the desired outcomes. It was modified to suit this context (Maru et al. 2018) and summarised in a three-stage process (Figure 2)..

Stage 1: (Sept – Dec 2018) Assessing the broad pathways to the future

The process started with an assessment of each region’s current state, reflecting on community values, heritage and aspirations, and tabling future opportunities and risks. This phase ended with the Broad Pathways Workshop which discussed the region’s past, present and future. Participants examined the regional profile as well as key challenges and opportunities prepared by the project team and explored and identified preferred and possible broad pathways forward.

Stage 2: (Jan – Jun 2019) Focused working groups for innovative ideas and options

Working groups were formed around the domains of focus and broad pathways identified in Stage 1. As part of this stage, the consortium helped the teams draw on some of the new techniques to rapidly evaluate the real potential of the ideas as well as the enablers needed to overcome barriers and increase chances of success. At the end of this stage, each team had scoped a range of new ideas, settled on the ones that were most likely to be successful, and planned a staged implementation (a ‘pathway’) including actions to address related enablers and barriers.

Stage 3: (Jun – Oct 2019) Creating transition roadmaps and building business cases

Results from the focused working groups within each community were brought together into a single regional community ‘roadmap’ of steps/projects. The consortium assisted the regional teams to identify pathways of interdependent actions, plan the timing of these actions and identify ‘trigger points’ – things to monitor over time that should stimulate a review of the roadmap and potentially a change in action. The consortium also supported community teams to scope short-term priorities and prepare a few initial business cases that set the roadmap in motion.

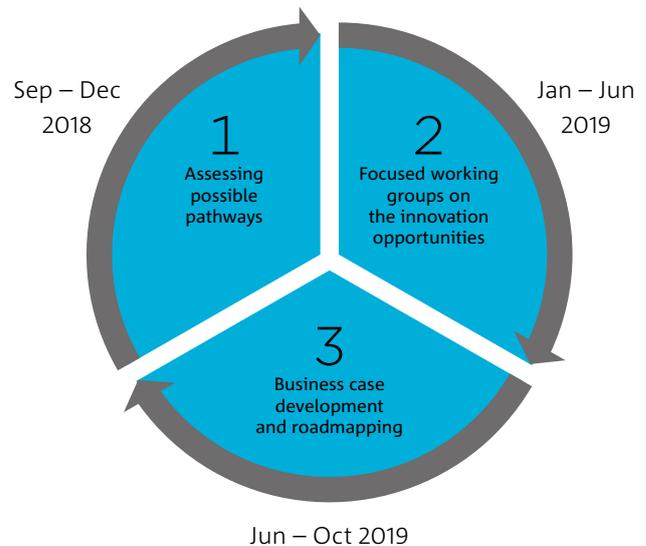


Figure 2. The three stages of the transition planning process.

The three-stage process was carried out through a series of meetings, workshops, webinars and other activities with Goondiwindi Regional Council leaders and community members (Figure 3).

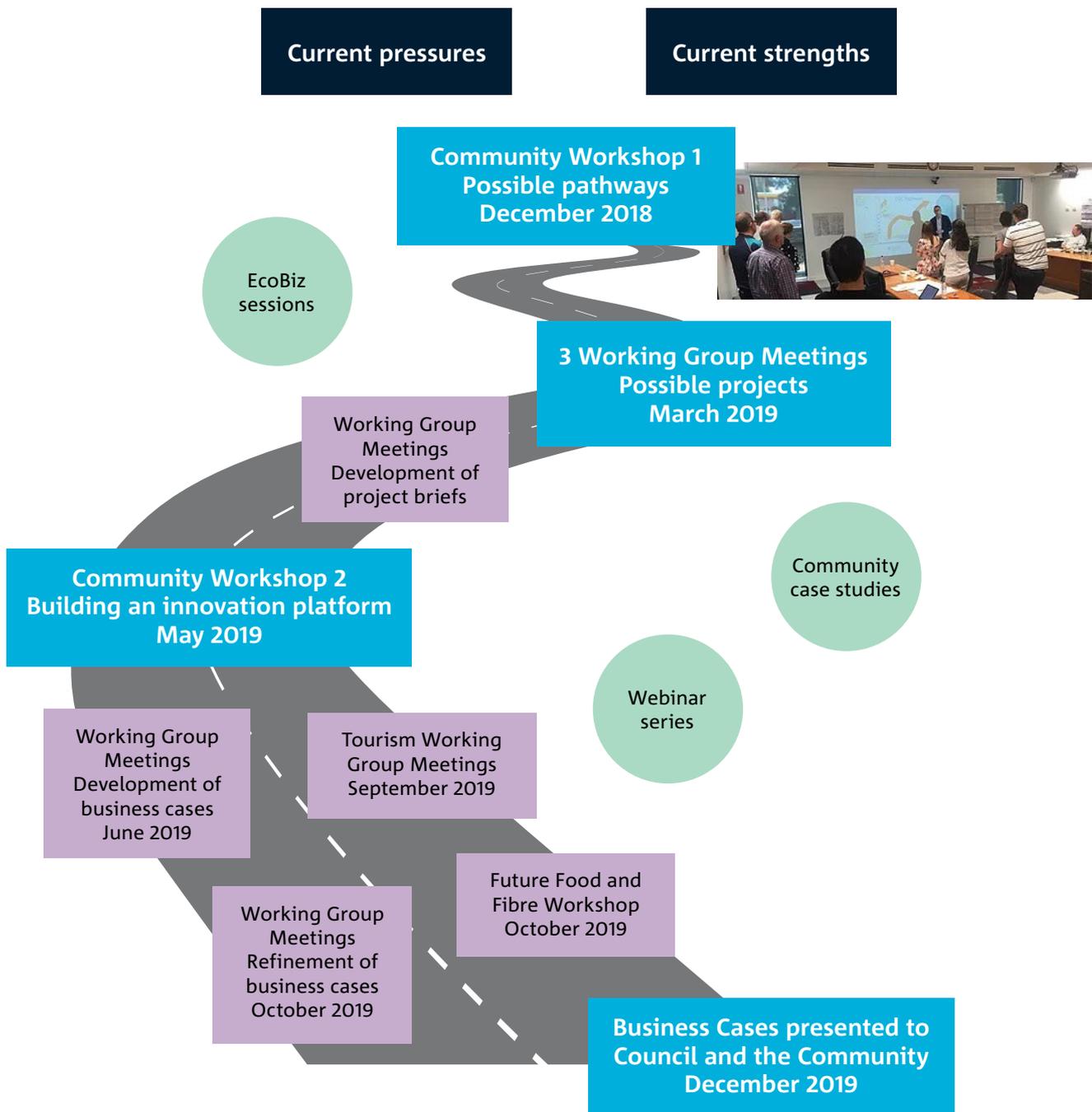


Figure 3. The three stages of the pilot program, leading to the roadmap and business cases.

3 Regional profile

The Goondiwindi Region was formed in 2008 with the amalgamation of the Goondiwindi Town Council and the Shires of Inglewood and Waggamba. Situated about 350 km south-west of the Brisbane CBD, the region has three larger towns, Goondiwindi, Inglewood and Texas, which are primary hubs for communities in the wider area (Figure 4). Centres such as Yelarbon, Bungunya and Talwood are also socially and economically important towns in the region. The Macintyre and the Dumaresq Rivers, which mark the Queensland–New South Wales border, form the southern boundary of the shire, which is traversed by the Weir River and by Macintyre Brook, all of which provide water for towns, industry and irrigation.

The area is serviced by a network of highways. While the region is formally in Queensland, the economic region extends across the border to include much of the area north of the Gwydir Highway (Figure 5). More than a third of the regional economy derives from New South Wales.

While the region is formally in Queensland, the economic region and community extend across the border to include much the area north of the Gwydir Highway (Figure 5). More than a third of the regional economy derives from NSW.



Figure 4. Goondiwindi Region (Source: GRC 2016).

Population composition and dynamics

The 2018 estimated resident population for the Goondiwindi Region was 10 728, down slightly from previous years (ABS 2019). The population is projected to decline further to around 10 652 by 2041, or about -0.1% per year (QGSO 2019).

In the 2016 census, 570 people identified as Aboriginal and Torres Strait Islander (5.4% of the total resident population) and 9233 (86.8%) were born in Australia (ABS 2019). The population in the region is ageing, with 17% of people older than 65 years, which is higher than the state average of 14.7% (in 2018). This is particularly so in the Inglewood area (GRC 2012).

Landscapes and Livelihoods

Environmental features include the Bendidee National Park, Coolmunda Dam, the Macintyre River and numerous state forests. The region is predominantly rural in character, supporting cotton and grain production, sheep and cattle grazing and forestry. In 2018, the gross regional product was estimated to be approximately \$720 million which supported around 5320 jobs (GRC 2018). In 2016, the top five industries for employment were: Agriculture, Forestry and Fishing (27.6%), Retail Trade (9.9%), Health Care and Social Assistance (9.2%), Education and Training (8.3%) and Construction (7.2%) (ABS 2016). Unemployment was 4.4% at the end of the March 2019 quarter (DESSFB 2019).

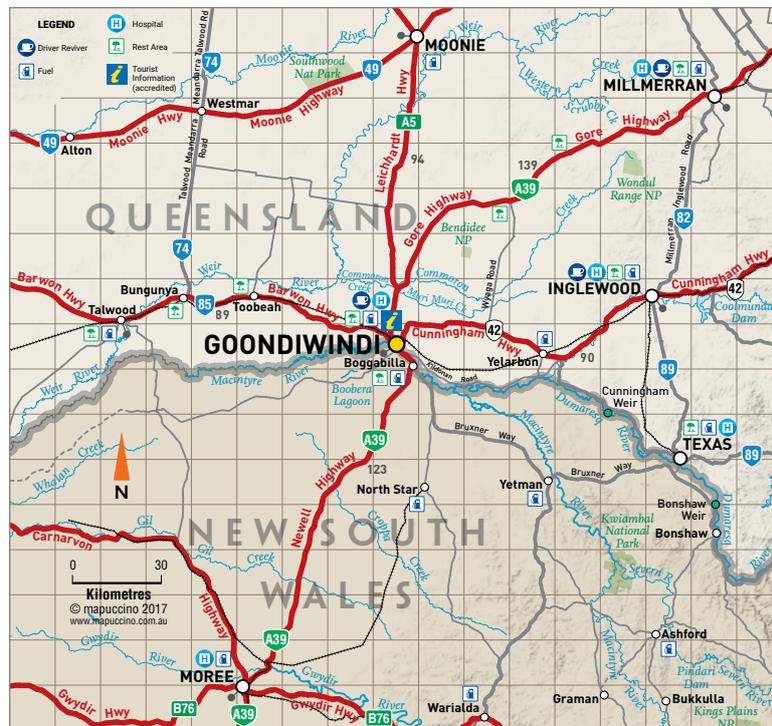


Figure 5. The Goondiwindi economic region (Source: Goondiwindi Regional Council).

Challenges and opportunities

Participants identified the following key interacting regional challenges and opportunities.

Climate variability and change

Climate variability and change is likely to pose a significant challenge for Australia. Of greatest concern are changes in temperature, water availability, and the change in frequency and intensity of climatic extremes (e.g. heatwaves, drought and floods). In Goondiwindi, average temperatures are likely to continue to increase year-round with more hot days and warm spells. Despite increases in both minimum and maximum temperatures, the number of frost events has more than tripled to an average of nine events in most years (Crimp and Howden 2019). There will likely be reduced average rainfall and greater evaporation, while the intensity of extreme rainfall events is projected to increase. Record-breaking hot summers, droughts and a harsher fire-weather climate are also projected (Brumby et al. 2014). The cost of insurance may increase as a result of investment shift to less climate change sensitive and low-carbon industries (Deloitte Access Economics 2016).

In the short and medium term, there are opportunities to expand current levels of adaptation to climate variability in the region, such as: a) expanding zero tillage and other minimum disturbance farming practices, b) increasing water harvesting and improving efficiency of water use and distribution systems, c) selecting heat-, drought- and disease-tolerant varieties and breeds, d) incorporating seasonal climate forecasts and climate change into farm enterprise plans, and d) spreading risk across regions with a portfolio of water entitlements (Border Rivers Organisation of Councils 2010). Over the long term, these tactical adaptations may need to be superseded by transformative options such as new high-value products, carbon farming, shifting to less climate-sensitive industries and diversifying economic sectors.

Commodity price volatility

Commodities from Goondiwindi, as from other parts of Australia, will continue to be exposed to price volatility from increasing competition and from unforeseen supply shocks in Australia and globally including disaster, disease outbreaks and trade relations. The volatility of commodity prices can, to some degree, be offset by responding proactively to emerging consumer demands from Asia, and Queensland is well positioned given its geographical location and capacity in areas such as tourism, health, education and food (Naughtin et al. 2017). Opportunities include the potential for increased exports to overseas consumers wanting access to healthy food year-round, due to Queensland's counter-seasonality to northern hemisphere producers. There is also increased international demand for protein-rich food (e.g. beef, seafood, chickpeas), horticultural products (e.g. exotic fruits) and healthy food products from a 'clean green' environment (Australian Organic Ltd. 2017). There are already regional examples that have realised this opportunity including Inglewood Farms, Australia's leading producer of organic free-range chicken, and Gooralie, the longest-standing RSPCA-approved pork producer in Australia.

Digital connectivity

While mobile phone coverage is limited outside towns, coverage is improving, and new telecommunications services are providing access to a wider range of services (e.g. telehealth) (Bradford et al. 2015). Communication technologies rely on a certain level of infrastructure and equipment (e.g. internet, computer, videoconferencing systems), but these can be expensive and poorly maintained in remote locations.

Digital technologies have the potential to enable consumers to track the origin of food, inform decision-making, and to match consumer demand for products to produce more valuable crops (Perry 2017). For example, the growing use of drones in precision agriculture and logistics provides examples where new technologies are creating jobs in drone development, training and application. Digital technologies also have the potential to create new opportunities in food, education, energy, minerals, tourism and health (Naughtin et al. 2017). New telecommunications services emerging across Australia provide access to services previously unavailable to rural and remote communities (e.g. telehealth) (Bradford et al. 2015).

Workforce mobility and skill

The Goondiwindi population is relatively stable at just under 11 000 people, although numbers have declined slightly since 2006. However, the composition has shifted with young people leaving the region for education and work. While the unemployment rate is low, low-skilled jobs are declining and with digital disruption the number and nature of available jobs will change. Digital technology partnerships with tertiary institutions and effective eLearning can help to enable the development of skills relevant to emerging industries.

Energy

The price of electricity networks constitutes about 50% of the final cost of electricity for small customers (Macdonald-Smith 2018; Agnew et al. 2018). According to an Australian Industry Group report, gas supply costs are likely to remain high as exports have permanently transformed the market (Agnew et al. 2018). Access to cheap, reliable energy is critical to sustain many industries, including agriculture and retail (Naughtin et al. 2017), and consumer demand for cheaper electricity is driving demand for residential photovoltaic systems with battery energy storage (Agnew et al. 2018). Until recently, almost all electricity was generated from coal, gas and hydropower, but is increasingly being generated from wind and solar (Wood and Blowers 2017).

Nevertheless, there are fundamental changes occurring in the energy sector providing opportunities to reduce the cost of energy and shift sources of energy from non-renewable to renewable. Over the next 20 years, several existing coal-fired power stations will be approaching the end of their technical lives. Costs of new renewable energy continue to fall, and availability of storage technologies is increasing (AEMO 2018).

Waste

Queensland has developed a waste management strategy to increase recycling and create new jobs, products, industries and markets. A waste disposal levy underpinning the strategy will reduce the incentive to dispose of waste to landfill and provide opportunities to create new industries based on recycled materials. The levy applies to 39 out of 77 Local Government Areas comprising 90% of the state's population, but not to the more remote parts of Queensland. To prevent the dumping of waste in non-levy zones, waste brought in from levy zones will also incur the levy (Queensland Government 2018). The Waste Reduction and Recycling Amendment Bill (2017) enabled a container refund scheme that provides an opportunity for community organisations to make money from collecting bottles and cans while reducing litter. The program also encourages social enterprises and potentially creates new jobs and regional business opportunities (Boomerang Alliance 2018).

4 Vision, aspirations, values and goals

Values

The Goondiwindi Region has many features that are highly valued by its residents. The region is recognised as a commercial hub for a vast agricultural and pastoral sector that supplies agricultural products for domestic and overseas markets (GRC 2019). In a discussion about the region, its people and their values, participants settled on the following key descriptors as reflecting Goondiwindi's core values:

- community – supportive, connected, open, loyal, generous, family
- personal – responsible, ethical, accountable, energetic
- social – moderate, inclusive, open, 'one-class town'
- economic – enterprising, 'have a go,' innovative

Reflecting on areas where change was needed, participants identified the importance of:

- securing greater economic diversification in services
- upgrading and extending the digital infrastructure beyond towns
- regenerating and managing the region's natural resources (including its soils) sustainably
- developing strategies to build greater inclusiveness with Indigenous and disadvantaged groups

Vision

Most workshop participants were aware of the document Goondiwindi Region: A Blueprint for Prosperity. Economic Development Strategy, 2018-2023 and its vision for the region, 'Australia's centre of agricultural excellence, a premier visitor destination and a region celebrated for its prosperous rural lifestyle' (GRC 2018). Discussion among participants identified additional aspirations that support and align well with the vision:

- the need for growth to be gradual and sustainable
- the underpinning role of profitable businesses
- community and regional pride as a source of social energy
- the crucial economic importance of local spending and business
- quality of life as a core element of the regional vision

Goals

The values and visions point to a number of goals and the means by which the community can achieve and sustain these goals. In addition to the vision of a prosperous rural life through agricultural excellence and tourism, the community also desires 'sustainability'. This is expressed in the vision for 'advancing world-class sustainable agriculture' and the need for overall 'regional growth to be gradual and sustainable' through 'regeneration and sustainable management of the region's natural resources, including its soils'. Equity is also emphasised in the community's desire to be inclusive and a 'one-class community' clearly committing to address inequity and disadvantage in the community.

Bringing these points together, a clear goal is 'to have a prosperous, sustainable and equitable Goondiwindi Region'. To achieve this goal, it is important to specify what the goal means with respect to the current state of the region and how it will be achieved. It is also important that pathways that lead towards its achievement are developed.

Factors shaping the future

Workshop participants identified several factors that are likely to shape the future of Goondiwindi:

- population size, composition and rate of change (e.g. boom-bust is challenging)
- community capacity for collaboration
- extent of social diversity and equity
- community capacity to manage risk
- future climate
- the state of regional natural resources (e.g. soil health)
- extent of infrastructure investment
- extent of economic diversification
- extent of value-adding innovation
- markets and consumers – commodity pricing and consumer preferences
- the role of science and technology

5 Domains and pathways

Opportunities and challenges

To develop a transition roadmap, it is important to recognise some of the challenges and opportunities that the region could face now and into the future. Some of these challenges and opportunities are summarised in Figure 6.

There is inherent uncertainty around some of these challenges and opportunities, how they interact, and how they may change over time. This uncertainty requires that transition pathways that are developed are robust yet flexible in order to build a prosperous, sustainable and equitable region into the future.

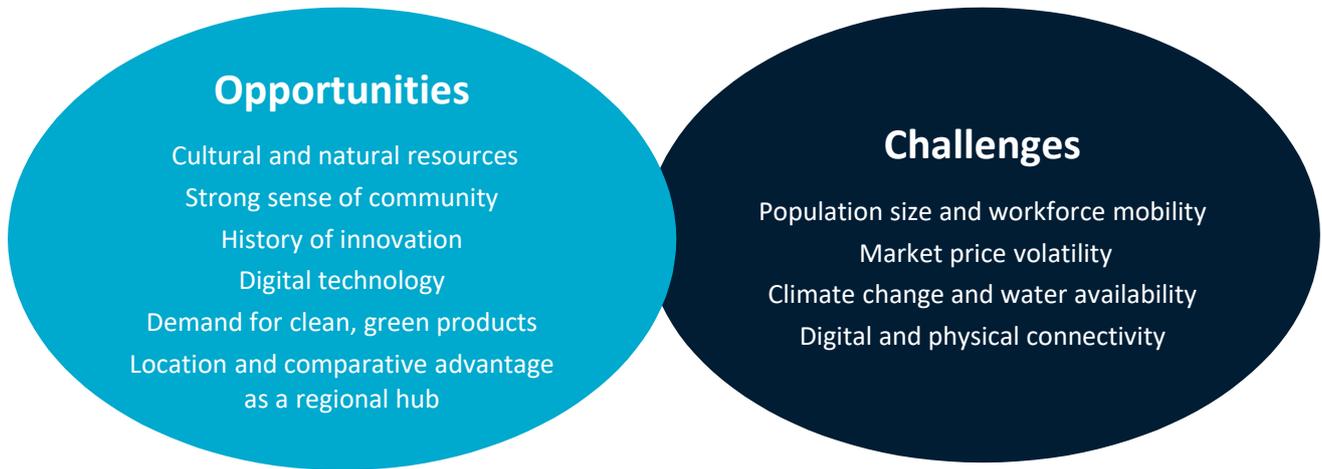


Figure 6. Some of Goondiwindi's current and future challenges and opportunities.

Domains of focus

From discussions of possible future opportunities, workshop participants identified five themes that will help to build a resilient regional economy, while considering risk and uncertainty:

1. Agricultural innovation leadership: clean and green, regenerative agriculture, technology.
2. Circular economy: reflecting a desire to be clean and green.
3. Connected, collaborative supportive communities.
4. Skilled, mobile people: addressing issues around training, attraction and retention, young people leaving with some later returning to the region.
5. Destination Goondiwindi: building tourism.

These five themes were merged into three core focus areas that can deliver outcomes to enable a transition towards the desired vision for the region (Figure 7):

1. Establish world-class sustainable agriculture.
2. Diversify the economy with new value-based enterprises, diverse businesses and making the region a tourist destination of choice.
3. Build human capital with an agile and enterprising workforce and regional entrepreneurs.

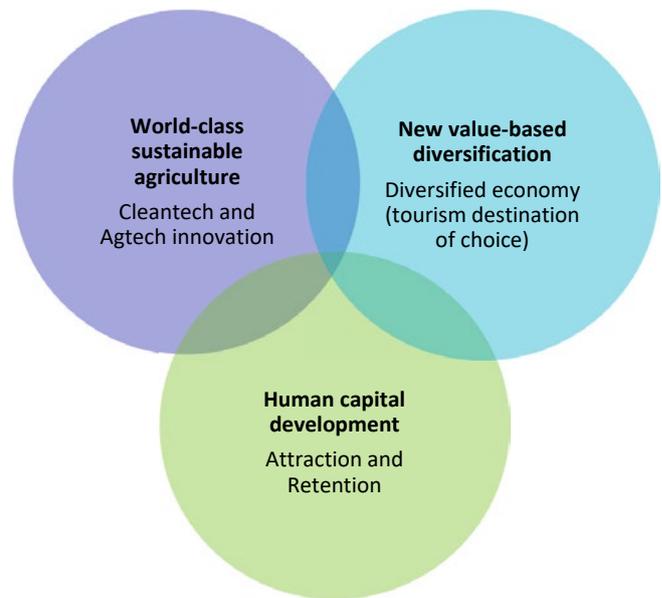


Figure 7. Three areas of focus towards building a prosperous, sustainable and equitable region.

Outcomes and future desired state

The three focus areas closely align with the three strategic themes identified in the document *Goondiwindi Region: A Blueprint for Prosperity. Economic Development Strategy, 2018–2023* (GRC 2018). These themes are for Goondiwindi Region to be a region of choice for

1. smart and sustainable agribusiness
2. business investment, learning and living
3. visitors and events.

Broad pathways

To transition the region towards the desired future, each focus area will need an ensemble of intervention options (investment, policies, programs, projects and practice change) that are prioritised, sequenced and implemented. The pathways will also require mechanisms by which the challenges and opportunities can be addressed. The pathways need to be broad, alternative and complementary to allow for flexibility in addressing the uncertainty around how the challenges and opportunities may unfold in the future.

Each of the three broad pathways will need a feasible and effective set of interventions such as those described below:

1. Establish world-class sustainable agriculture

The working groups recognised the fundamental importance of soil health in the long term, and the ability of healthy soils, high in organic matter to retain more water and sequester carbon. This can be achieved through interventions such as regenerative agriculture, agtech and cleantech innovation and regional leadership that aligns with demand from national and global economies.

2. Build human capital with an agile and enterprising workforce, businesses and entrepreneurs

This can be achieved through interventions that strengthen economic resilience by building regional human capacity through skilling, attracting and retaining a broad range of people with technical and professional skills and services as well as projects and businesses that support regionally based entrepreneurs.

3. Diversify the economy with new value-based enterprises and diverse businesses. Make the region a tourism destination of choice

This can be achieved through interventions that strengthen existing economic activities and create new sources of value in the region through innovative enterprises, diverse businesses and by attracting new industries.

6 Project Ideas and Options

Working groups were formed around each of the three pathways to generate project ideas and prioritise them into a final set of projects. Table 1 summaries these project ideas with additional ideas from the document *Goondiwindi Region: A Blueprint for Prosperity. Economic Development Strategy, 2018–2023* (GRC 2018), which identifies some activities that directly support the pathways and complement the current project in helping to achieve the regional vision.

Table 1. Broad pathways and initial project ideas for the three focus areas.

ESTABLISH WORLD-CLASS SUSTAINABLE AGRICULTURE	BUILD HUMAN CAPITAL – Agile and enterprising workforce, businesses and entrepreneurs.	A NEW VALUES-BASED ECONOMIC DIVERSIFICATION – New value enterprises and diverse businesses. Make the region a tourism destination of choice.
Organic Waste Strategy Business Model – Develop a new business model for green and agricultural waste management where the conditions are established for the development of a new organic waste management facility.	Opportunities map – Identify the employment opportunities that are available in Goondiwindi and the roles that are likely to be needed in the near term. Develop opportunities for local businesses to build skills through participation in major projects such as the Boggabilla Road Project and Inland Rail.	Community gardens incubator – Create an opportunity for community gardens to play a role as part of an incubator for several small businesses and initiatives and include waste management initiatives such as green waste composting.
Regenerative agriculture – Test for evidence on the benefits of regenerative agriculture to enable informed decisions by local growers. This will tackle the stereotype that it is ‘nice-to-do with no economic benefit’ by providing evidence to assess its merits.	Building experience – school and workplace programs – Develop relationships between school students and workplaces in Goondiwindi to build skills and loyalty to local businesses and a desire to work there. Use digital technology and work with vocational and tertiary education centres to develop a regional hub that will focus on retaining locals and attract others to work and live in the region and through learning new skills required in emerging businesses and industries.	Tourism strategy – Bring together Goondiwindi’s strengths to have a structured unified strategy. Conduct a study of what visitors want and trends in rural tourism. Work with the region’s tourism industry stakeholders to develop a new destination management strategy with a consistent narrative that promotes the whole region including food, culture and the story of Goondiwindi, and generate ideas for enhancing market opportunities.
Intensive agriculture and water productivity – Create opportunities for more intensive production of high-value products and assess how overall productivity of the region can be improved (e.g. through greater water efficiency).	Real regionalisation of jobs – Assess what is required for Goondiwindi residents to win employment in government agencies that are based in cities (e.g. Brisbane or Canberra) without relocating.	Rural Health Centre of Excellence – Build on Goondiwindi’s successes in health projects, including in being a pioneer in caseload midwifery. Identify and support projects that build Goondiwindi’s reputation as a region that innovates and delivers health services.
Agribusinesses – Enable the establishment of agribusinesses that add value, supply new product lines and provide employment opportunities (e.g. native plant goods, essential oils and medicinal products)	Future jobs – Identify ‘jobs of the future’ and establish a plan to ensure that the skills for those jobs are developed locally. This may relate to other projects such as Agtech innovation and Agribusinesses. Engage community entrepreneurs to help students develop skills, engage them in projects, and inform them about the types of jobs available in various professions, in addition to identifying and acting on new business opportunities.	Health and wellness industry – Grow an industry for health and wellness products based on locally sourced and manufactured products. This is a good fit with the Goondiwindi image of clean food with well-regarded local producers including organics.
Agtech innovation – Coordinate the consultation, feasibility assessment and business case development for a Goondiwindi Region Ag-Tech Hub.	Goondiwindi growth – Investigate what growth rate the Goondiwindi economy and community can successfully accommodate. Calculate what lead times would be required for the community to ensure that there are sufficient housing, health services and education to accommodate new employees moving to Goondiwindi.	Expert in Residence – Bring local expertise together to explore new ideas and generate new projects.
Carbon Farming – Investigate options for leaving vegetation in place, intensive production of high-value products through greater water use efficiency, and new supply chain and market development.	Community and Recreation Infrastructure – Prepare a Goondiwindi Region Community and Recreation Infrastructure Strategy that includes a needs assessment and audit of facilities. Identify priority infrastructure projects that require additional business case development (e.g. Goondiwindi Pool and Regional Equestrian Centre)	

7 Development of prefeasibility business cases

Of the project options proposed by the Goondiwindi workshop participants and working groups, five were selected for development of prefeasibility business cases. Two of these projects relate to aspects of testing the feasibility of regenerative agriculture. Figure 8 shows the pathway from developing the broad pathways, to project ideas/options and to prefeasibility business cases.

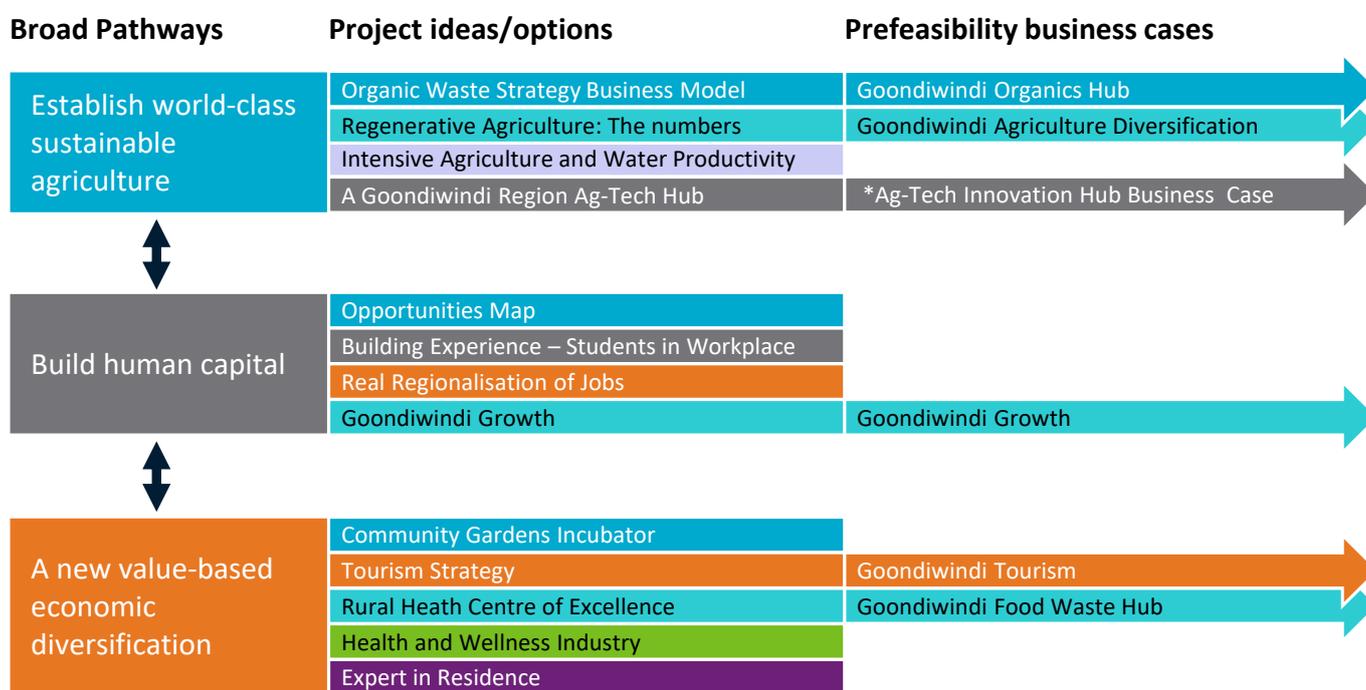


Figure 8. The process of development from broad pathways, to project ideas/options (only a few are shown as an example), to prefeasibility business cases.

Prefeasibility business cases

Details of the five projects selected for development of prefeasibility business cases are outlined below. For a more complete description, see the Goondiwindi Prefeasibility Business Case reports for each of the projects.

1. Goondiwindi Organics Hub

This business case proposes a model to engage a developer to work with farmers, agronomists and the scientific community to test the potential for an integrated organic recycling facility. The focus of this proposal is to test the efficacy of recirculating organic material into farm soil, increasing soil carbon and water holding capacity by measuring aspects of soil health, soil carbon capture, water holding capacity and changes in efficiency and farm profitability over time. The farm level facility will take farm organic waste and return nutrients to farmers to support regenerative agriculture practices.

2. Goondiwindi Food Waste Hub

This proposal explores organic waste repurposing and is proposed to operate at two levels: farm and town. The town level facility will compost food waste and provide compost to the community gardens, which, in turn could provide garden produce back to the community.

3. Goondiwindi Agriculture Diversification

The proposal is a response to the need to increase farm revenue in the context of a changing climate. This proposal is about identifying options to assist farmers with selecting climate appropriate crops to increase agriculture yield and diversity and prioritising the options in relation to water usage.

4. Goondiwindi Growth

Goondiwindi Growth is focused on population growth to ensure sustainability and resilience of the region through difficult times. It seeks to explore options to create sustainable employment and build the skills necessary to create and demonstrate a resilient workforce model for the future.

5. Goondiwindi Tourism

This proposal is linked to Goondiwindi Growth as an example of diversifying the regional economy. Tourism can diversify and build the resilience of the Goondiwindi Region economy through a comprehensive long-term strategy that focuses on bringing more people to the region, encouraging them to stay longer, and to spend more while they are there.

8 Dynamic transition roadmap for the future

Types of change pathways

Each of the broad pathways will build and enhance existing resource use and livelihood systems in the region in the short term, modifying some aspects gradually and even transforming other aspects by radically changing and/or adding some significant new components into the regional economy. Therefore, it is possible to envisage each proposed pathway as having different stages or aspects to maintain, modify and transform the region that will require different types of interventions. Table 2 is an example of how possible interventions for each of the three focus areas could be implemented to maintain, modify or transform aspects of the region without precluding work that could be initiated for the other stages as part of the broad and dynamic roadmap.

To aid visualisation of the broad pathways, Figure 9 shows sets of strategic intervention options that would maintain, modify and transform aspects of the region to realise the vision and goals.

Interventions useful across pathways

Five cross-cutting intervention domains were identified in the workshops and working group discussions that could enable the realisation of the three broad pathways. These are:

1. Feasibility studies and research

Prefeasibility studies have been prepared for selected project ideas that will form the basis of business case proposals. Building on these prefeasibility studies, it will be essential to undertake thorough feasibility studies to develop business cases for investment that sets the foundations of this roadmap in motion. This roadmap is a living and dynamic document to allow for learning from trials and innovation. As more information is gathered, more developed feasibility studies can be prepared that include new innovative ideas and robust options for achieving the vision and goals of the region.

Table 2. Three proposed pathways and potential intervention options that would maintain, modify and transform aspects of the region to realise the vision and goals.

BROAD PATHWAY	MAINTAIN	MODIFY	TRANSFORM
Establish world-class sustainable agriculture	Improve water productivity, energy and input use efficiency.	Adopt conservation and regenerative agriculture and carbon farming practices widely. Diversify cropping and move towards higher yield per mL and higher gross value per mL or water.	Embrace new low to zero emission and circular agriculture and horticultural product lines and food value chains. Adopt wide and distributed digital technology while maintaining a vibrant rural lifestyle.
Economic diversification. New value-based enterprises and diverse businesses. Make the region a tourism destination of choice	Take stock and reinforce current tourism events built on heritage and diverse cultural and natural resources.	Expand amenities and tourist experiences to increase tourist number and days spent in the region.	Add new tourism options (e.g. fresh food and rural immersion/detox experiences and amenities) to change from 'drive through tourism' to 'destination tourism.'
Build human capital. Agile and enterprising workforce, businesses and entrepreneurs	Support and promote current businesses and provide opportunities for employment and training. Identify opportunities for broad engagement.	Work with schools and tertiary institutions to build regional human capacity in tune with the vision.	Diversify new businesses and economic sectors to provide opportunities for learning, working and living in the area.

Intervention options

Legend:

Green set = agriculture Blue set = human capital

Orange set = diversified economy

Dotted line – early stage Hard line – established

No intervention

Improving resource use efficiency and productivity to maintain and enhance resilience of current agriculture

Modifying agriculture to be more diverse regenerative and to farm carbon

Enabled by digital technology, transform agriculture to be climate proof, low emission and sustainable high value plant-animal farming, forestry and agribusinesses

Support and promote current businesses providing employment, and training to get contracts in major state national projects

Establish and run digital hub and develop a rural innovation ecosystem for learning, working and living

Build and maintain an agile, digitally enabled and enterprising workforce and businesses

Maintain existing natural- and cultural-assets based tourism activities

Develop and implement a strategy that drive change of the region from “drive through and see” to “destination and experience” tourism

Work with governments to partner with and provide incentives for the private sector to invest in amenities for destination tourism and in new and diverse sectors

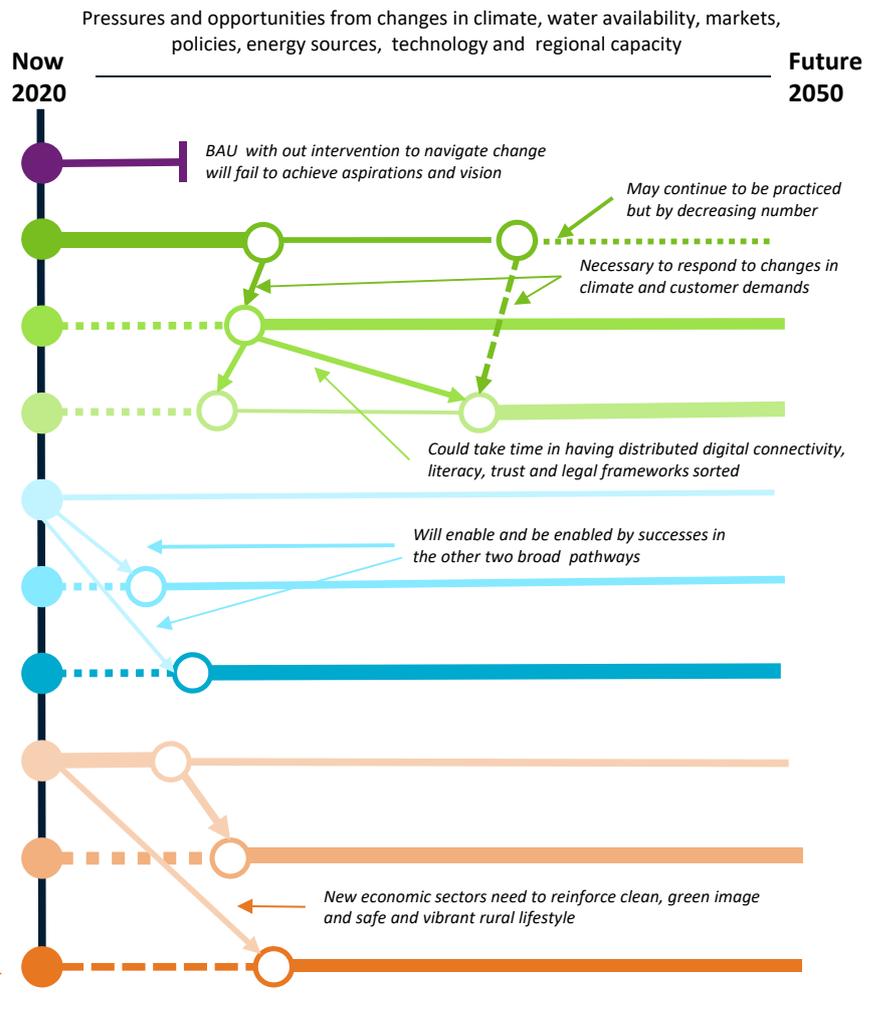


Figure 9. Sets of intervention options and their interdependencies, to ‘maintain’, ‘modify’ and ‘transform’ aspects of the region.

2. Digital connectivity

Digital connection that is well distributed to towns, farms and other businesses across the region will be a key driver and enabler of change across the three pathways. The document *A Blueprint for Prosperity: Economic Development Strategy, 2018-2023* (GRC 2018) identifies an action to collaborate with the Queensland Department of State Development, Manufacturing, Infrastructure and Planning and with telecommunications companies to secure funding for infrastructure to improve digital connectivity to the region.

3. Physical (transport) connectivity

A well-connected region is essential for the efficient and effective provision of services, for transporting agricultural inputs and produce, and for providing access and services for tourism and a diversified regional economy. The Goondiwindi Regional Council economic development strategy (GRC 2018) has specific

planned activities aimed at making Goondiwindi a logistics hub. These activities include conducting a needs-based assessment and developing a masterplan for the Goondiwindi Regional Airport. It also includes reviewing the region’s road and train routes and working with state and federal governments to improve transport and logistics infrastructure in the region including on the planning and implementation of the Inland Rail Project and South West Rail upgrades.

4. Renewable energy

The pathways require renewable energy to establish world-class sustainable and low-emissions agriculture, to reinforce the clean green image of agricultural produce and agribusinesses, to promote rural lifestyle experiences and tourism, and for making the region attractive for learning, working and living.

Table 3 is a matrix of the cross-cutting interventions and the three broad pathways.

Table 3. Matrix of project ideas and potential benefits from broad pathways and cross-cutting interventions.

CROSS-CUTTING INTERVENTIONS	BROAD PATHWAYS		
	Establish world-class sustainable agriculture	Economic diversification New value-based enterprises and diverse businesses. Make the region a tourism destination of choice	Build human capital Agile and enterprising workforce, businesses and entrepreneurs
Feasibility studies and research	Research what it takes to achieve world-class sustainable agriculture that builds on current state agriculture and innovation in the region.	Investigate which sustainable economic diversification options are feasible for the region (in addition to making it a tourism destination of choice)	Take stock of existing and potential workforce requirements to make Goondiwindi attractive for learning, working and living.
Digital connectivity that is well distributed	Support digital agriculture and value chains (e.g. enable blockchain and provenance of produce).	Support digitally enabled tourism, agribusiness and other businesses to diversify economic activities	Ensure e-health and education are accessible to make the region attractive for healthy living and for building human capital
Physical (transport) connectivity	Ensure there is efficient and effective transport for agricultural inputs and produce.	Reduce business cost increases and provide opportunities for the creation of new businesses.	Ensure there are employment opportunities and skills development during construction and maintenance of transport infrastructure and services.
Affordable renewable energy	Reduce the cost of production (cheaper in the long term), reduce emissions and the resource-use footprint, and reinforce a clean, green image.	Reduce costs and emissions of new and diverse industries. Create new renewable energy installation, operation and maintenance businesses.	Create new skills and employment opportunities

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