Communities in Transition

Goondiwindi: A Living Transitions Roadmap
Acknowledgments

The Clean Growth Choices Consortium would like to thank members of the community, our local experts in the workshop discussions, who made invaluable contributions to the process with their ideas and experiences.

We would also like to extend our sincere thanks for the continued support and help from the Central Highlands Regional Council including Mayor Graeme Scheu, Councillors David Turner and Lachlan Brennan CEO Carl Manton, Economic Development Officer, David Hayward and facilitator Julia Telford of Engage and Create Consultants with Lauren Marer and Yasmin Taylor. In Particular also, Jade Mackay has made a significant contribution to this Business Case.

The Clean Growth Choices Consortium is comprised of experienced practitioners and researchers from the University of Southern Queensland (USQ), James Cook University (JCU), CSIRO and The EcoEfficiency Group (TEG). The consortium team would like to acknowledge the strong support we received from DES, especially from Georgine Roodenrys, Matthew Arthur, Sandra Avendando and Rosanna Virzi.

The Clean Growth Choices Consortium is delivering the Communities in Transition pilot project with the support of the Queensland Government.

Citation


Copyright

© Commonwealth Scientific and Industrial Research Organisation 2019. To the extent permitted by law, all rights are reserved and no part of this publication covered by copyright may be reproduced or copied in any form or by any means except with the written permission of CSIRO, the consortium partners and the Regional Council.

Disclaimer

CSIRO advises that the information contained in this publication comprises general statements based on scientific research. The reader is advised and needs to be aware that such information may be incomplete or unable to be used in any specific situation. No reliance or actions must therefore be made on that information without seeking prior expert professional, scientific and technical advice. To the extent permitted by law, CSIRO (including its employees and consultants) excludes all liability to any person for any consequences, including but not limited to all losses, damages, costs, expenses and any other compensation, arising directly or indirectly from using this publication (in part or in whole) and any information or material contained in it.
Contents

Goondiwindi: A living roadmap summary ........................................................................................................... 2
1 Background to the project ................................................................................................................................. 4
2 Developing transition roadmaps...................................................................................................................... 5
3 Regional profile ............................................................................................................................................... 7
4 Vision, aspirations, values and goals ............................................................................................................... 11
5 Domains and pathways .................................................................................................................................. 12
6 Project Ideas and Options ............................................................................................................................... 15
7 Options selected for business cases .............................................................................................................. 16
8 Dynamic Roadmap for the future .................................................................................................................... 18
9 References ....................................................................................................................................................... 21
Goondiwindi:
A living roadmap summary

This report is an initial living roadmap designed to help the Goondiwindi Region transition to a prosperous, low emissions, sustainable future. The roadmap is developed as part of the Clean Growth Choices: Communities in Transition (CiT) project through active participation of the regional Council, community members and a local coordinator. This project is supported by a consortium from the University of Southern Queensland (USQ), James Cook University (JCU), Commonwealth Scientific and Industrial Research Organisation (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 climate, b) commodity price variability, c) access to communications in addition to disruption and benefits from digital technology, 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, 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 would be achieved. The three broad pathways are:

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. Key interventions that relate to all three pathways are: feasibility studies and research, digital connectivity, transport connectivity and affordable renewable energy.
Figure 1. Key strategic activities, that can maintain, modify and transform aspects of the region, and help the region achieve its vision for the future.

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 which make the best use of available water, population growth and skilling 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 a continuous monitoring and regular reviews at least every two years to ensure that the set of pathways remain appropriate and sufficient to achieve the vision and goals and are robust enough to changes in global and domestic drivers.
1 Background to the project

A team from USQ, JCU, CSIRO 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 is 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 and living transition roadmap for the Charters Towers 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 experienced experts who help communities, businesses and governments develop community resilience strategies. These include: The Institute for Resilient Regions, University of Southern Queensland; The Cairns Institute at James Cook University; CSIRO Sustainability Pathways Program, and; The Ecoefficiency Group.

With advice from 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 – June 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 will help 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 will have scoped a range of new ideas, settled on the ones that are most likely to be successful, and planned a staged implementation (a ‘pathway’) including actions to address related enablers and barriers.

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

Results from the focused working groups within each community will be brought together into a single regional community ‘roadmap’ of steps/projects. The consortium will assist the regional teams 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 will also support community teams to scope short term priorities and prepare few initial business cases that set broad roadmap in motion.

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

The three-stage process was carried out through a journey of meetings, workshops, webinars and other activities with regional council leaders and community members (Figure 3).
Figure 3. The Goondiwindi Shire transition roadmap was developed through a series of meetings, workshops, webinars and other activities.
The Goondiwindi Region was formed in 2008 with the amalgamation of the Goondiwindi Town Council and the Shires of Inglewood and Waggamba. Located about 350 km south-west of the Brisbane CBD, the region stretches from Texas in the east to Weengallon in the west and covers an area of 19,294 km² (Figure 4). It has three larger towns – Goondiwindi, Inglewood and Texas – which are primary hubs for communities in the wider area. Centres such as Yelarbon, Bungunya and Talwood are also socially and economically important.

The Macintyre River, which marks the QLD–NSW border, forms the southern boundary of the shire, and is traversed by the Dumaresq and Weir Rivers and by Macintyre Brook, 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 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 Regional Council area was 10,728, down slightly over recent years (ABS 2019). The population is projected to decrease further to 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 9,233 (86.8%) identified as Australian citizens (ABS 2019).

The population in the region is ageing population (17.0% in the 65+ age group) which is higher than the state average (14.7%) in 2018. This is particularly so in the Inglewood area (GRC 2012).

Landscapes and Livelihoods

The region is predominantly rural in character, supporting cotton and grain production, sheep and cattle grazing and forestry. Environmental features include the Bendidee National Park, Coolmunda Dam, the Macintyre River and numerous state forests. In 2018, the gross regional product (GRP) was estimated to be approximately $720 million, supporting around 5,320 jobs (GRC 2018). Unemployment was 4.4% at the end of the March 2019 quarter (DESSFB 2019). 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). At the same time, the median weekly personal income was $653 per week (ABS 2016).

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 in all seasons and more hot days and warm spells are projected. Despite increases in both minimum and maximum temperatures, the number of frost events has more than tripled, with an average of nine events now occurring in most years (Crimp and Howden 2019). There will likely be declines in average rainfall and increasing 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 and 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 improve and 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) selection of heat-, drought- and disease-tolerant varieties and breeds, d) incorporate seasonal climate forecasts and climate change into farm enterprise plans, and d) spread risk across regions with a portfolio or 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’s expanding middle class. Queensland is generally 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, with Queensland well placed due to its counter-seasonality to northern hemisphere producers. There is also increased overseas consumer demand for protein-rich products (e.g. beef, seafood, chickpeas), horticultural products (including 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

Communication technologies rely on certain levels of infrastructure and equipment such as the internet, computer and videoconferencing systems, but these can be expensive and poorly maintained in remote locations. While availability and access will have improved in recent years, in 2015 an AgForce survey showed only 39% of its members had reliable mobile phone connections and just under 20% had no mobile connection at all. For those with a connection, almost half relied on satellite internet connection and only 11% were on the NBN (AgForce 2018).

Digital technologies have the potential to enable consumers to precisely track food, from the field to the pantry, to inform decision-making. At the same time, commodity crop farmers will be able to match consumer demand for products and to produce more valuable crops. The essential connection between agricultural practice and consumer preference will accelerate the adoption of new technologies in agriculture (Perry 2017). 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. For example, telehealth can assist in the long-distance diagnosis, treatment and prevention of disease and injuries by providing clinical support and improve health outcomes by connecting patients and clinicians who are not in the same physical location (Bradford et al. 2015).

Workforce mobility and skill

The size of the population in Goondiwindi is relatively stable at just under 11 000 people, but numbers have declined slightly since 2006. However, the composition has shifted with youth leaving the region for tertiary 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 and proximity to tertiary institutions and partnerships can help eLearning that enables 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, improvements in electricity prices experienced since 2017 have been ‘strictly relative’ and 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 hydro, 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 continues 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

Vision and aspirations

Most workshop participants were aware of the Goondiwindi Economic Development Strategy 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 amongst 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.

Values

The Goondiwindi Region has many features that are highly valued by its residents. It is acknowledged that the region is a commercial hub of a vast agricultural and pastoral sector that is able to supply 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 and open, ‘one class town’
• Economic - enterprising, ‘have a go’, innovative

Reflecting on areas where change was needed, participants identified priorities to be:

• Securing greater economic diversification into 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 and goals

The vision, aspirations, and values hold both a goal and the means by which the community can achieve and sustain this goal. 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. The goal can thus be described as, “to have a prosperous, sustainable and equitable Goondiwindi Region.” It is important to specify what this goal means with respect to the current state of the region and when 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 hard)
• 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
To develop the transition pathways, it is important to reiterate the goal, “to have a prosperous, sustainable and equitable Goondiwindi Region”, and to recognise some of the current and future challenges and opportunities that need to be considered in order to achieve the goal. Some of these challenges and opportunities were identified as part of this project and are summarised in Figure 6. There is inherent uncertainty around some of these challenges and opportunities, such as how they will change over time and how they interact. This uncertainty requires that transition pathways that are developed need to be robust and flexible in order to build a prosperous, sustainable and equitable region.

**Opportunities**
- Cultural and natural resources
- Strong sense of community
- History of innovation
- Digital technology
- Demand for clean, green products
- Location and comparative advantage as a regional hub

**Challenges**
- Population size and workforce mobility
- Market price volatility
- Climate change and water availability
- Digital and physical connectivity

Figure 6. Some of Goondiwindi’s current and future challenges and opportunities.
Domains of focus

From discussions of possible future opportunities, Goondiwindi workshop participants identified five themes that will help to build a resilient regional economy, while acknowledging the risks and uncertainties previously identified:

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, kids 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 that 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 and diverse businesses and make the region a tourist destination of choice
3. Build human capital with an agile and enterprising workforce and regional entrepreneurs

Outcomes and future desired state

The three focus areas closely align with three themes identified in the Goondiwindi Regional Council 2018 – 2023 Economic Development Strategy (GRC 2018):

a. A region of choice for smart and sustainable agribusiness
b. A region of choice for business investment, learning and living
c. A region of choice for visitors and events
Broad pathways

To transition the region towards the desired outcomes, 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 uncertainties 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 health soils, high in organic matter to retain more water and sequester carbon. This can be achieved through interventions (projects, policies, investment, change in practice) such as regenerative agriculture, ag-tech and clean-tech innovation and leadership for the region 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 Goondiwindi Regional Council 2018 – 2023 Economic Development Strategy (GRC 2018) which identified some activities that directly support the pathways, complementing the work of the current project in helping to achieve the regional vision.

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

<table>
<thead>
<tr>
<th>ESTABLISH WORLD-CLASS SUSTAINABLE AGRICULTURE</th>
<th>BUILD HUMAN CAPITAL – Agile and enterprising workforce, businesses and entrepreneurs.</th>
<th>A NEW VALUES-BASED ECONOMIC DIVERSIFICATION – New value enterprises and diverse businesses. Make the region a tourism destination of choice.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organic Waste Strategy Business Model</strong> – 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.</td>
<td>Opportunities Map – Identify what employment opportunities are available in Goondiwindi and what roles are likely to be needed in the near-term. Develop opportunities for local businesses to build skills through participation in major projects such as Bogabilla Road Project and Inland Rail.</td>
<td>Community Gardens Incubator – Opportunity for the community gardens to play a role as an incubator for several small businesses and initiatives e.g. include waste management initiatives such as green waste composting.</td>
</tr>
<tr>
<td><strong>Regenerative Agriculture</strong>: The numbers – is it better? test the evidence on the benefits of regenerative agriculture to enable informed decisions by local growers. Tackle the stereotype that it is a nice-to-do with no economic benefit.</td>
<td>Building Experience – School and Workplace Programs – Developing 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. This will develop a regional hub to retain locals and attract others to work and live in the region, through learning new skills required in emerging businesses and industries.</td>
<td>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.</td>
</tr>
<tr>
<td><strong>Intensive Agriculture and Water Productivity</strong> – There is an opportunity for more intensive production of high value products. How can the overall productivity of the region be improved, including through greater water productivity?</td>
<td>Real Regionalisation of Jobs – What is required for Goondiwindi People to be able to win employment in government agencies based in Brisbane or Canberra without relocating?</td>
<td>Rural Health Centre of Excellence – Build on Goondiwindi’s successes in health project, including in being a pioneer in caseload midwifery. Identify and support projects that build Goondiwindi’s reputation as a region that innovates and delivers in health services.</td>
</tr>
<tr>
<td>Enable establishment of agribusinesses that add value, supply new product lines and provide employment opportunities e.g. Native plant goods, essential oils and medicinal products.</td>
<td>Future Jobs – Identify what future jobs may exist and develop a plan to ensure that the skills for those jobs can be developed locally. This may relate to other projects such as Ag-tech innovation. Engage the Communities Entrepreneurs to develop students’ skills in identifying and acting on new business opportunities. Gaining relevant skills from major projects and inspiring local students about the types of jobs available in various professions.</td>
<td>Health and Wellness Industry – Grow an industry for health and wellness products. Locally manufactured and from local products A good fit with the Goondiwindi image of clean food with well-regarded local products.</td>
</tr>
<tr>
<td>Coordinate the consultation, feasibility assessment and business case development for a Goondiwindi Region Ag-Tech Hub.</td>
<td>Goondiwindi Growth – What growth rate can the Goondiwindi economy and community successfully accommodate? What lead times are required for the community to ensure sufficient houses, health services, education for new employees moving to Goondiwindi.</td>
<td>Expert In Residence – Bring local expertise together for new projects, new ideas and to generate.</td>
</tr>
<tr>
<td>Carbon Farming- being paid to leave vegetation in place; Intensive production of high value products through greater water use efficiency; New supply chain and market development.</td>
<td>Prepare a Goondiwindi Region Community and Recreation Infrastructure Strategy including a needs assessment and audit of facilities. Identify priority infrastructure projects that require additional business case development, for example, the Goondiwindi Pool and Regional Equestrian Centre.</td>
<td></td>
</tr>
</tbody>
</table>

| VQA | 6 |
7 Options selected for business cases

Of the project options proposed by the Goondiwindi workshop participants and working groups, five were selected for prefeasibility business case development, two of which encompass related aspects of testing the feasibility of regenerative agriculture. A visual representation of the process arriving from the original project ideas to the business cases is given in Figure 8.

<table>
<thead>
<tr>
<th>Broad Pathways</th>
<th>Project Ideas/options</th>
<th>Prefeasibility business cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish world-class sustainable agriculture</td>
<td>Organic Waste Strategy Business Model</td>
<td>Goondiwindi Organics Hub</td>
</tr>
<tr>
<td></td>
<td>Regenerative Agriculture: The numbers</td>
<td>Goondiwindi Agriculture Diversification</td>
</tr>
<tr>
<td></td>
<td>Intensive Agriculture and Water Productivity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A Goondiwindi Region Ag-Tech Hub</td>
<td>*Ag-Tech Innovation Hub Business Case</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Build human capital</td>
<td>Opportunities Map</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Building Experience – Students in Workplace</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Real Regionalisation of Jobs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Goondiwindi Growth</td>
<td>Goondiwindi Growth</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A new value-based economic diversification</td>
<td>Community Gardens Incubator</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tourism Strategy</td>
<td>Goondiwindi Tourism</td>
</tr>
<tr>
<td></td>
<td>Rural Heath Centre of Excellence</td>
<td>Goondiwindi Food Waste Hub</td>
</tr>
<tr>
<td></td>
<td>Health and Wellness Industry</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Expert in Residence</td>
<td></td>
</tr>
</tbody>
</table>

Figure 8. The process for the creation of broad pathways, to project ideas/options and the prefeasibility business cases. (* A project idea noted as important to the pathway but being already pursued by the Goondiwindi Regional Council).
The five projects selected for prefeasibility business cases were:

1. **Goondiwindi Organics Hub**
   The 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 in increasing soil carbon and water holding capacity through measuring aspects of soil health, soil carbon capture, water holding and use efficiency and farm profitability over time. The farm level facility will take farm organic waste and return nutrients to farmers to support regenerative agriculture.

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...

3. **Goondiwindi Agriculture Diversification**
   This proposal is about identifying options to assist farmers to adapt to crops and for increased agriculture intensification and diversity and prioritising them in relation to best water usage. The proposal is a response to the need to increase farm revenue in the context of a changing climate.

4. **Goondiwindi Growth**
   Goondiwindi Growth is focused on growth as a means to ensure sustainability and resilience of the region through harder times. It seeks to explore options to create sustainable employment and build skills and to create and demonstrate a future workforce resilience model.

5. **Goondiwindi Tourism**
   This proposal is linked to Goondiwindi Growth, as an example of diversifying the regional economy. It seeks to develop options to attract more visitors and encourage them to stay longer and spend more.

For further details on each see Goondiwindi Prefeasibility Business Case reports.
Dynamic 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, modify some aspects gradually, and even transform 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 – maintain, modify and transform – that will require different types of interventions. Table 2 is an example of how interventions in one possible pathway for each of the three focus areas could be implemented to ‘maintain’, ‘modify’ or ‘transform’, without precluding work that could be initiated for the other stages as part of the broad, dynamic road map.

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 ad goals.

Interventions useful across pathways

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

1. Feasibility studies and research

Prepare prefeasibility studies for a few project ideas that will form the basis of business case proposals. For other project ideas it will be important to take stock of what has been done already in Goondiwindi and elsewhere and determine if they are feasible and how much they will contribute to each pathway.

Table 2. Three proposed pathways and potential interventions/stages to ‘maintain’, ‘modify’ and ‘transform’.

<table>
<thead>
<tr>
<th>BROAD PATHWAY</th>
<th>MAINTAIN</th>
<th>MODIFY</th>
<th>TRANSFORM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish world-class sustainable agriculture</td>
<td>Improve water productivity, energy and input use efficiency</td>
<td>Wide adoption of conservation and regenerative agriculture and carbon farming. Diversify Cropping – move towards higher yield per ML, higher gross value per ML.</td>
<td>New low to zero emission and circular agriculture and horticultural product lines and food value chains. Wide and distributed digital technology adoption while maintaining a vibrant rural lifestyle</td>
</tr>
<tr>
<td>Economic diversification</td>
<td>Take stock and reinforce current tourism events built on heritage and diverse cultural and natural resources</td>
<td>Expand amenities and tourist experiences to increase tourist number and days in the region</td>
<td>Add new lines - fresh food and rural immersion/detox experiences and amenities - to change “drive through” tourism to destination tourism</td>
</tr>
<tr>
<td>Build human capital</td>
<td>Support and promote current businesses and provide opportunities for employment and training. Identify opportunities to engage</td>
<td>Work with schools and tertiary institutions to build regional human capacity in tune with the vision</td>
<td>Diversified new businesses and economic sectors that provide opportunities for learning, working and living in the area</td>
</tr>
</tbody>
</table>
**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 to ‘maintain’, ‘modify’ and ‘transform’ aspects of the region and their interdependencies.
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 Regional Council Economic Development Strategy (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 efficient and effective provision of health, education, social and administrative services for residents, for transporting agricultural inputs and high value produce, as well as for providing access and service for tourism and a diversified regional economy. The Regional Council Economic Development Strategy (GRC 2018) has specific planned activities aimed at making Goondiwindi a logistics hub. These activities include conducting a needs assessment and developing a masterplan for the Goondiwindi Regional Airport, reviewing the region’s road train routes, and working with state government and federal agencies to improve transport and logistics infrastructure in the Goondiwindi 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 agriculture with low emissions to reinforce the clean green image of agricultural produce and agribusinesses to promote rural lifestyle experiences and tourism and for providing a region attractive for learning, working, and living.

For a summary of the matrix of the cross-cutting interventions and the three pathways see Table 3.

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

<table>
<thead>
<tr>
<th>CROSS-CUTTING INTERVENTIONS</th>
<th>BROAD PATHWAYS</th>
<th>Economic diversification</th>
<th>Build human capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feasibility studies and research</td>
<td>Research what it takes to achieve world-class sustainable agriculture that builds on current state agriculture and innovation in the region</td>
<td>Research which sustainable economic diversification options are feasible for the region (in addition to making it a tourism destination of choice)</td>
<td>Take stock of existing and potential workforce requirements to make Goondiwindi attractive for learning, working and living</td>
</tr>
<tr>
<td>Digital connectivity that is well distributed</td>
<td>Supporting digital agriculture and value chains; enabling blockchain and provenance of produce</td>
<td>Supporting digitally enabled tourism agribusiness and other businesses and diverse economic activities</td>
<td>Accessible e-health and education - making the region attractive for healthy living and building human capital</td>
</tr>
<tr>
<td>Physical (transport) connectivity</td>
<td>Enabling efficient and effective input and produce transport</td>
<td>Reducing business cost increases and providing opportunities for new businesses</td>
<td>Employment opportunities and skill development during construction and maintenance</td>
</tr>
<tr>
<td>Affordable renewable energy</td>
<td>Cheaper in the long term – reducing the cost of production. Reducing emissions and resource-use footprint. Reinforcing clean and green image</td>
<td>Reduced costs and emissions of new and diverse industries. New renewable energy installation, operation and maintenance businesses</td>
<td>New skills and employment opportunities</td>
</tr>
</tbody>
</table>


Naughtin, C., McLaughlin, J. & Hajkowicz, S. 2017. Opportunities for growth: Driving forces creating economic opportunities for Queensland companies over the coming decade. CSIRO, Brisbane, Australia.


As Australia’s national science agency and innovation catalyst, CSIRO is solving the greatest challenges through innovative science and technology.

CSIRO. Unlocking a better future for everyone.

Contact us
1300 363 400
+61 3 9545 2176
csiroenquiries@csiro.au
csiro.au

For further information
Land and Water
Dr Yiheyis T Maru
Principal Research Scientist
+61 2 6246 4171
yiheyis.maru@csiro.au
research.csiro.au/eap