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Fiscal and Monetary Policy Options for improving and sustaining livelihoods and the environment in the Rangelands

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Fiscal and Monetary Policy Options for improving and sustaining livelihoods and the environment in the Rangelands

Background Paper for Rangeland Dialogues, Regional Workshops for Policy Development, AgForce Queensland, NRM Queensland, Royal Society of Queensland

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Key Points

- A series of capitals and their associated investments – natural, human, social, monetary are key to understanding the Rangelands economy
- Fiscal and monetary policy are critical inputs to the way Rangeland development has, and will evolve
- Application of Keynsian stimulus concepts as a core input to fiscal policy and the ideas about Government spending associated with Modern Monetary Theory, as evidenced in this Covid crisis, indicate that Governments can do more through fiscal and monetary policy to support Rangelands communities, landholders and the environment especially service provision.
- Monetary support could be provided by establishment of a Rural Reconstruction and Development Board as a component of the Reserve Bank. This could enable ways to transition landholders out of crippling debt and to support a more explicit, land stewardship approach.
- Increasing and stabilising funding of R, D &E is necessary to underwrite the transition of the Rangelands to a more sustainable management including ways to mitigate and adapt to climate heating, reduce emissions of greenhouse gases particularly methane, and undertake a stewardship approach to land management especially vegetation. Promising approaches that are emerging need to be tested on a large scale with Government support for their adoption perhaps initially through a Regional model. Regional Natural Resource Management will be a key to assessing land condition, developing and monitoring land management plans with landholders and communities.
- The US, EU and WTO recognise the need to support farmers and sustain the environment and have regulations and fiscal policies that explicitly do this in ways that does not happen in Australia. This places Australian Rangeland landholders and communities at a disadvantage.
- Recent changes to regulations about the conversion of leasehold land to freehold are allowing the establishment of larger enterprises often with a reduction of labour requirements. This has the potential to change the cultural dynamics of the Rangelands.
- Changing ways to manage the land through use of fire and enable sequestering carbon in soil and vegetation have potential to provide overall benefits to the environment and productivity.
- Mining will be a continuing component of Rangelands and the benefits of this exploitation of natural capital need to be equitably distributed, along with appropriate protection of aquifers and land restoration.

- Indigenous initiatives on land management especially with respect to historical cultural artifacts need to be encouraged.
- Renewable energy hubs with fiscal and regulatory support are enterprises that will transform the ways natural capitals are used in support of Rangelands communities and productivity.

1. Capitals

The Rangelands are maintained by a series of capitals and their investments – monetary, natural, human, social and over time both their status (stocks) and the relationships between them change. The stock of natural capital provides ecosystem services and their flows play a central role in sustaining economic and social well-being (Bateman and Mace 2020; Bastien-Olvera and Moore 2020; Woinarski et al 2007). Changes in these natural assets are critical for the "well-being" of the Rangelands. The physical landscape changes through successional changes in the biota driven through long duration weather cycles and fire, now being accelerated by climate heating, and the interventions of human capital including land clearing, soil disturbance and loss of soil organic matter and minerals, water use through extraction and disturbance of flows and storage, mining of minerals, introduction of herbivores and the way they are managed, introduction of new plant species, energy production and changes in the composition of the atmosphere.

Human capital not only interacts with natural capital but also operates within a social capital construct which includes the way communities are organised and governed, their collective knowledge base. These capitals impact on the way goods are exchanged through money flows established through a fiscal and monetary construct that facilitates exchange of labour and production of tools. "**Fiscal policy**[1] is represented by the spending and taxation choices made by the government (the "treasury"). The net financial accounting outcomes of these decisions are summarised periodically by announcements of the government's fiscal position.

Fiscal policy is one of the major means by which the governments seek to influence overall spending in the economy and achieve its economic and social objectives." (Mitchell et al 2019). The capacity for governments like Australia to use fiscal policy tools such as spending and taxation is underpinned by having a unique currency which is not pegged to foreign currencies, as evidenced by the floating value of the Australian dollar against other currencies. Avoiding debt in foreign currencies allows the Government maximum fiscal space to operate in (Mitchell et al 2019).

Monetary policy is conducted by the Reserve Bank of Australia[2] (established by the Reserve Bank Act 1959) which involves setting short term policy target interest rate. It also manages money supply, and regulates and supervises the conduct of banks, acting as a lender of last resort to stop bank runs. A major objective of monetary policy is to control inflation. The way monetary and fiscal policy, especially through management of taxation, create and redistribute wealth (monetary capital), and the way money supply is being, and can be regulated, are addressed later in this paper under the discussion of Modern Monetary Theory (Section 10).

The Reserve Bank as part of its management of money in the economy, also makes cash allocations to banks who are then allowed to leverage this to increase the amounts

the banks lend, over and above the lending of money deposited (savings), to promote economic activity.

Options for the way fiscal and monetary policy can be used in support of the Rangelands economy are addressed later in this paper (section 10). They involve the ideas being canvassed under Modern Monetary Theory which has arisen from the Keynsian fiscal approach of managing aggregate demand to stabilise the economy. "An **economy** is the large set of inter-related production and consumption activities that aid in determining how scarce resources are allocated. The production and consumption of goods and services are used to fulfill the needs of those living and operating within the economy, which is also referred to as an economic system.

A nation's economy encompasses all activity related to production, consumption, and trade of goods and services in an area. An economy applies to everyone from individuals to entities such as corporations and governments. The economy of a particular region or country is governed by its culture, laws, history, and geography, among other factors, and it evolves due to necessity. For this reason, no two economies are identical." https://www.investopedia.com/terms/e/economy.asp And therein lies the trap of following an economic dogma such as that promulgated by neoliberal economics.

Governments redistributed money (financial) capital or wealth produced in the Rangelands through taxes and their subsequent monetary redistribution in Government spending. Banks used the money deposited by Rangelands entities and then leveraged this to increase the amounts of funds lent. Both processes led to a flow of wealth from the Rangelands to the more densely populated coastal areas and towns and cities.

Regional Councils continued to support the Rangelands communities through management of **natural capitals** but were restrained by fiscal rules from going into much debt. This is revisited later in the discussion of Keynsian economic stimulus measures to stimulate demand in the economy through Government spending (rather than supply and trickle-down economics) in Government budgets and the way this led to the concepts of Modern Monetary Theory (MMT), Green Bonds (Stanford 2020), living wage or basic Liveable Income Guarantee (Quiggin et al 2020).

The role of the Reserve Bank in controlling money supply and inflation, and providing economic stimulus especially through interest rates, has not worked to reduce unemployment to post war levels or lead to an increase in wages. The Covid pandemic has led the Commonwealth and State Governments to provide fiscal support for business and workers even though this has increased the budget deficit considerably not unlike the situation after the second world war when Government spending aimed for, and obtained, full employment. The way the Commonwealth fiscal spending and Reserve Bank interact to control money supply has enabled this current fiscal deficit situation which runs counter to the previously prevailing neoliberal policies apart from a similar increase in fiscal (Keynsian approach) debt as support for the economy after the GFC.

The spending of these natural capital assets to support production of goods (eg herbivores) in the Rangelands affects not only the landscape and wellbeing of societies living within them but of societies they service with goods both now and into the future. So, the way these capitals are managed is critical to the way humans and the environment interact. The status and changes occurring in natural and social capital

and the impact of global heating are addressed in more detail in companion papers in this series.

Decisions about the use of natural capitals need to be tempered by the understanding that these resources are not unlimited apart from energy from the sun which of course is affected by the way other capital assets are used. And this is where the precautionary principle should play a critical part in asset use, especially with respect to climate warming, water flow and use, and the environment especially biodiversity.

2. Human Capital

Another process at work was the way in which human capital contributed to the pastoralist enterprises. The meme of toughening up young people on a cattle property as a jackaroo or occasionally jillaroo, perhaps to go droving, as they embarked on life's journey – somewhat equivalent to today's gap year for young people as they traverse through their formal educational journey – was a labour input that kept the mythology of the "great outback" in the public's consciousness.

This was a source of cheap labour along with that of the Indigenous Aboriginal workers as stockmen or house maids, with no or little direct wages paid, which the state often held. When the Whitlam Government introduced legislation that meant a real wage had to be paid to these workers, this source of relatively free human capital input to the pastoralist enterprise dried up, markedly affecting both the "employment" prospects of the Indigenous communities and the profitability of the cattle industry.

The Rangelands also has developed its own special unique narrative of the Royal Flying Doctor Service; schools of the air; birth of Qantas and the Labour Party; robust, oft recited poetry and songs; the careful recording of life and the weather on the stations in diaries; mammoth fencing and clearing exercises without tractors; shearing shed tales and novels of cattlemen and Aboriginal people being close to the land; dampers and swagmen and ringers etc. This Rangelands culture countered the meme of the "other" coastal folk that the Outback was one big wasteland to be mined (Traill and Stafford Smith 2020). The preservation of this Outback culture or social capital, an inimical part of Australia's identity, will require a different way of doing business and injection of funds into new enterprises and ways of managing the land, and supporting people's livelihoods. The ways fiscal policy is needed to underpin this change while preserving the culture are explored in section 4 and 6.

The Rangelands have developed a narrative of the way the west was conquered through epic tales of large holdings of millions of hectares (eg Kidman properties and AACo established in 1824 as one of Australia's oldest agribusiness companies). Linked to this were tales of "major" events that favourably captured the general public's imaginations, such as droving large herds of cattle over several months along the "long paddock" of stock routes (a public capital good supplied for the pastoralists) from the northern holdings to the south for sale, There have been recent moves to reduce the input by Councils and Government to maintain the extent and condition of this public commons good, another deterioration of a Rangeland capital asset.

3. Economics

Once this process of land development established a viable agricultural production system in the Rangelands then Says Law[3] https://en.wikipedia.org/wiki/Say%27s_law (Rees 2019) initially operated, with the supply of agricultural goods promoting a demand

for them in the Australian community and countries such as the UK which imported surplus supply. From the first days of Australian colonisation, agricultural goods produced by pastoralists particularly wool were exported, supporting wealth creation in the Australia economy and allowing for investment of capital by landholders to expand and/or improve their holding and Governments to increase productivity particularly from agricultural research and extension. Once refrigeration became available then meat and dairy exports particularly to the UK, increased.

However, as production became more efficient with skill and technology capital inputs, supply started to outstrip demand. This was in part because the export markets demand reduced in size as Europe and the UK recovered from the second world war and increased their productivity, no longer requiring Australian goods to the same extent. The viability of cattle and sheep industries was then supported by an increase in the live export trade from the 1980s but which had been in existence for over 150 years. https://www.agriculture.gov.au/export/controlled-goods/live-animals/livestock/history

Engels law[4] describes the low-income elasticity for food purchases (Rees 2019). As communities get wealthier the amount of money needed to be spent on food decreases as humans have a low elasticity of demand for food ie we can only eat so much hence the problem of food waste because food prices are relatively low compared to peoples incomes and people buy and prepare more food than they can eat before it spoils. Australia hedged against this effect of increased supply to an extent, with population increases and export, but that became more difficult as importing countries increased their supply with efficiencies in local production or from other markets (countries). This in part was countered by the growth in the population of the middle-income classes in Asia and consequent increases in demand for meat and wool.

However, a new constraint on introduced herbivore production is the need to reduce methane and nitrogen oxide(s) evolution across the production system (eg MLA target of zero emissions in the livestock industry by 2030 https://www.mla.com.au/research-and-development/Environment-sustainability/carbon-neutral-2030-rd/cn30/#). This will need to be driven by research, innovation, new inputs of technology capital and monetary capital for their development and uptake (potentially supported/underwritten by a Rural Reconstruction and Development Board as discussed later) and a production and net value level commensurate with this emissions goal (Section 6).

Bromoform chemical produced by *Asparagopsis* species of seaweed inhibits ruminant methane producing enzymes and has promise, but the challenge is to isolate the chemical in quantity, or to grow and then transport the seaweed, to where it is fed (Li et al 2016). Quicker turn-off of cattle from earlier and more reliable calving in northern properties and their finishing in feedlots usually in the south, coupled with better nutrition with legumes such as leucaena, stylos and desmanthus, also reduces the lifecycle methane production of cattle (Harrison et al 2015; Mayberry et al 2019; Suybeng et al 2019; Weidemann et al 2015).

4. Government Support for Development of the Rangelands

The different levels of governance did provide some capital inputs in support of Rangeland development, through an understanding of their duty of care for the people they govern and the environment, and the need for that capital (fiscal) allocation to support growth of peoples livelihoods through the input of their personal capital (labour and money flows associated with producing goods to sell and to support living

expenses) by the Rangelands occupants. This was manifested through investment of capitals for the

I. Provision of roads and railways, electricity, water,

II. Schools and distance education, tertiary education especially skills-oriented training in agricultural colleges,

III. Banking, postal and telegraph and radio and tv and internet services,

IV. Medical services including hospitals and the recent understanding of the need for mental health services,

V. Systems for the allocation and transfer of titles to occupy and use land especially through leases,

VI. Support through development of land use knowledge through research at Universities and Government organisations and research stations and transfer of the knowledge generated by the extensive system of district agricultural researcher/advisors especially extension officers,

VII. Establishment of a national park system including training and employment of rangers to support maintenance of biodiversity,

VIII. Governments recognising the need to manage and maintain the natural capital assets at a level that enabled their continued use well into the future and established a legal and regulatory framework through the Environment Protection Act, the Planning Acts, and Departmental support,

IX. Social and financial support through Centre Link administered social security payments,

X. Drought assistance programs,

XI. Monetary Capital provision through targeted loan and grant schemes to help land managers cope with the effect of weather cycles on land productivity and sustainability,

XII. International trade agreements (especially the free trade mantra; see separate paper in this series) including export regulations especially of live herbivore trade which affect the return from export of production,

XIII. Regulations around the harvesting of kangaroos,

XIV. Feral animal management (support for wild dog (dingo) fences) and weed control eg woody weeds – *Parkinsonia aculeata*, thorny acacia (*Acacia nilotica*) and mesquite (*Prosopis* spp.), herbaceous weeds such as parthenium and fireweed, cactus and the research supporting the control actions eg for introduction of biocontrol agents from centre of origin of the weeds as specific for the declared pest,

XV. Mining leases and infrastructure support for mining – roads, rail, town amenity support. Royalty payments legislated and payments provide considerable Queensland Government fiscal budget support

XVI. Fiscal schemes supporting payment for carbon abatement and land regeneration.

5. Demand Management

These activities listed above represent a considerable investment in provision of fiscal budgetary inputs to money flow in support of these activities and management support through regulation. Much of this process was initiated by the thinking behind the perceived need for full employment and the concept of a living (social) wage which led to the minimum wage arbitration system (Harvester Decision of 1907) and stimulation of the economy post the great depression and the world wars (through Keynsian aggregate demand management approaches) as evidenced by the establishment in 1942 of the Department of Post-War Reconstruction followed by the White Paper on Full Employment in Australia 1945 and the Vernon Report 1965[5].

This Government policy during and post the second world war was enacted through considerable Government investment (spending) incurring considerable budget deficits which were reduced over time by productivity gains and increased tax returns. The establishment of the Commonwealth Bank (Act in 1911) and the Reserve Bank (Act 1959) provided the Commonwealth and State Governments with monetary support of fiscal policy (money to support spending during periods of fiscal budget deficits) through issue of (guaranteeing) Government Bonds and "buying" of Government debt and the provision of cash to banks who leveraged this, along with deposits, for commercial lending.

The Harvester Decision established the concept of a social or minimum wage which led to a system of arbitration to establish wages.

The Vernon report (1965) of the Committee of Economic Enquiry was set up to recommend ways to grow the economy out of the recession in 1960. The report stated "we reject any implication that some unemployment fosters efficiency to an extent sufficient to offset the negative effects on growth." The Committee said that "the maintenance of full employment" (defined as between 1.0 and 1.5% registered unemployed is "an overriding responsibility" and would be achieved through increasing the proportion of GNP devoted to national production through government expenditure.

Government fiscal support for "services in the bush" has been attenuated since the mid1980s by the "conservative fiscal rule book" of austerity budgets which established the mantra of balanced Government budgets under which the relative and actual level of capital flow to the Rangelands from Governments was severely curtailed leading among other things to a reduction of R, D & E support and a general cut to the numbers of public servants and the consequent ability of the Public Service to advise Governments on ways to fulfill their mandate.

This was coupled with the growth of political advisors to Government Ministers which prioritised the management of the story of Government and especially the need for balanced budgets, which inevitably led to cuts in public services often contrary to Government Department advice and need, as articulated by NRM groups, Regional Councils, and sometimes farmer lobby groups such as NFF, QFF, AgForce. This growth in Ministerial Advisers to 423 in 2015 was accompanied by a decline in the influence of the public service (Ng 2016).

This need for creating demand and for managing agricultural production was also recognised in the land and rural support programs in the US under the New Deal continued to the present through the USDA Agriculture Improvement Act of 2018[6]
https://en.wikipedia.org/wiki/Agricultural_Adjustment_Act:
https://livinghistoryfarm.org/farminginthe30s/water_10.html

The **US Agricultural Improvement Act** (Farm) of 2018 costing US$428bn over 2019-2023 https://www.ers.usda.gov/topics/farm-economy/farm-commodity-policy/farm-bill-spending/# covers both Mandatory Funding that is not subject to annual budgetary considerations eg the Supplemental Nutrition Assistance Program (c.75% of the outlays under the Act), c. 9% for Crop Insurance and c. 7% for Conservation Programs including land stewardship which effectively takes land out of production and changes land use to conservation, and Discretionary Funding mainly for research and rural development programs. These programs manage both the supply and demand components of the agricultural production system and an understanding of the process to establish them and their outcomes could provide guidance to the evolution of improved Australian Rangelands Management particularly the retirement of land from production enterprises.

The **Treaty of Rome** setting out the European Common Market principles dealt with Common Agricultural Policy (CAP)[8] in Articles 38 to 47. The CAP was based on the understanding that agriculture faces permanent market instability because of conditions controlling supply and to stabilise the industry governments through the CAP need to regulate markets and support farmers incomes. https://ec.europa.eu/romania/sites/romania/files/tratatul_de_la_roma.pdf .

The **World Trade Organisation**[9] rules for agriculture and land and environment management recognised that "Measures with minimal impact on trade can be used freely — they are in a "green box" ("green" as in traffic lights). They include government services such as research, disease control, infrastructure and food security. They also include payments made directly to farmers that do not stimulate production, such as certain forms of direct income support, assistance to help farmers restructure agriculture, and direct payments under environmental and regional assistance programmes."

Productivity Commission 2019 Report[10] "Government Drought Support" recommended fiscal income support for all farmers and farm related households businesses facing hardship through access to a Farming Family Income Support Scheme in conjunction with programs to provide counselling, grants for training and professional advice.

By contrast to the US, EU and recommendations of the WTO, in Australia there has been a gradual reduction of Government (both Federal and State) funding support for agriculture from changes in CSIRO (eg Marlow 2020), and the axing by the Federal Government of the Australian Collaborative Rangelands Information System ACRIS providing support for Rangelands. The Queensland Government cut back Rangeland scientist and extension activities and replaced it with The Long Paddock a very worthy endeavour but not providing the same support that helped keep the loneliness of the Rangelands landholder at bay and provided them with knowledge support.

This was coupled with the **free trade** mantra espoused by both Government and agricultural industry groups (see Paper in this series by Edwards 2020), and led to downward pressure on the net value of production with minimal improvement since 1970 (eg Rees 2020) while the gross value of production and rural debt increased. With the increasing indebtedness of the landholders (Queensland beef producer rural debt in 2019 >$10bn with 7,559 borrowers largely unserviceable (MLA 2020) and financial

distress deepening, the banks have “skin in the game”, but seem reluctant to engage in policy dialogue that might provide a humanitarian solution.

Ways to cancel debt and capital rundown and enable creditors to move to a new way of working and living in the Rangelands that is more conducive to a life well lived are not yet on the agenda, although Governments in the past have cancelled the fiscal debt of those they induced to take up unviable “blocks” post war. How can borrowers and lenders deal with uncontrollable external events since insurance is not considered a viable option? Unfortunately, the establishment of a Rural Development Bank[11] has been taken off the agenda.

The production increases were sought by using more capital, both monetary and land, and often by exploiting the natural pastoral resource by overstocking beyond levels recommended by research and experience through best farm management practice (with consequent decrease in animal production, McLean et al. 2020), to maintain pasture production and soil health over the long-term weather cycles in a warming climate with long term droughts. This has led to an unsustainable increase in debt covered by inflated farm asset value (3.9% pa compounded since 1978) but not covered adequately by production returns, for c.70% of northern beef producers with only about 30% of production from herd sizes less than 1600 animals. These landholders often only “get by” with off farm work.

Enterprises with larger area of holding(s) and numbers of cattle account for most of the production (MLA 2014; MLA 2016; MLA 2020; McLean et al 2020). Larger holdings use the variation in ecosystems land condition on their holdings often over multiple locations, to move cattle to optimise pasture use especially production over time. These holdings are also able to reduce stock numbers while retaining core breeding herds and their improved genetics.

Decline in number of holdings and output/debt and number of farmers is dealt with in the companion papers in this series by Phelps (2020) and Douglas (2020). Farm size increase leads to less farm labour requirement leading to youth unemployment.

Innovations in cattle production management are occurring through introduction to the Rangelands of new technology capital including virtual fencing, genetic testing for herd improvement, legume fodder plants (see Section 7).

6. Financing the Rangelands

However, while Government fiscal or budgetary support of expenditure (capital) for maintaining the support systems underpinning the functioning of the rural sector declined, in parallel the financial institutions were freed up to provide more capital funding to rural enterprises. This led to increased debt levels as the terms of trade for exports declined leading to a decline in net value of production as increased borrowings, and cost of concomitant interest repayments, were required to provide a living wage and an attempt to increase or even maintain production in a weather pattern of recurring droughts.

Although Reserve Bank interest rates have recently decreased to record lows, there is a lag period in reductions of the historical rate of interest charged by commercial banks for farm operation and personal loans. These rates usually reflect the equity position of

the borrower in the property as it is held as a guarantee against the loan(s). The need to borrow more to cope with drought for instance and the interest rates charged reflect changes in the equity position of the borrower. Hence the personal distress and mental health issues with unsustainable debt levels.

The recurring droughts elicited humanitarian fiscal inputs from State and Federal Governments through a large array of support packages. The current Australian Government Drought Response, Resilience and Preparedness Plan lists 22 programs of "immediate action" in support of affected landholders, and 8 community support programs, and 9 programs of long-term resilience and preparedness programs. The Queensland Government has a Drought Relief Assistance Scheme with support for cattle and water transport and dam building. With such a plethora of options, the dilemma faced is "how and what to do".

Surely in the face of climate warming and the likelihood of increased frequency of drought and extreme weather events such as the cyclone induced floods there is another way to manage the distress of the "settlers" (landholders?) and to provide development support for long term outcomes. Rural capital stabilisation especially natural capital and restoration of natural assets via reconstruction and stewardship projects is a necessary alternative to use of fiscal support.

Liberalisation of money provision for investment was initiated by relaxing bank rules around borrowing money from overseas on the international market in the 1980s and intertwining of fiscal government budget policy and regulation dealing with foreign investment rules, and what financial institutions can do including with superannuation following the 1983 Prices and Incomes accord followed by the introduction of compulsory superannuation in 1992; floating of the dollar in 1983; and monetary policy of Reserve Bank input of money into the economy covering Government deficits by buying debt through bond issues and managing employment through cash injections and managing inflation through interest rates banks charged for money provided to them and the amount of leverage of that cash.

The new ease in borrowing money with increased money supply from fiscal policies, supported sales of holdings and amalgamation of adjacent holdings and/or an increase in the number of holdings in separate locations. The change in the leasehold conditions also enabled an acceleration of this process. Along with injection of technology capital eg use of helicopter mustering systems and trucking to move cattle around between properties, this led to an increase in labour productivity and a reduction in the demand for labour resulting in part for the large scale youth unemployment and a depopulation of the Rangelands communities (see papers in this series by Heather Douglas and David Phelps).

There is an opportunity cost of this unemployment or non-use of labour (Quiggin 2019; 2020) that is rarely taken into account in current fiscal management but this does not need to be so as this paper argues for capital investment to enable development of alternative enterprises in the Rangelands to utilise that labour productively. At the same time this would improve the quality of life for both the individual who now has meaningful use of, and payment for, their labour and for the community through the flow of the wages into the local communities through local spending for consumption.

Ways to overcome the reduction of Government support for R, D & E in the Rangelands was addressed at the Biennial Conference of the Australian Rangelands Society in 2019. Taylor et al (2020) detail ways to rebuilding this human capital support for the

Rangelands (through support for developing human capacity, capability and future leaders). Executing this road map would help redress the current major imbalance between the need to better manage the Rangelands environment to prevent/reduce further degradation and the level of Government support provided.

The flow of financial capital required for the development of the Rangeland Management policies outlined in these series of papers, could be undertaken by establishment of a Bank for Rural Reconstruction and Development managed as a third Board within the Reserve Bank of Australia. This amendment to the Reserve Bank Act 1959 was proposed by Bob Katter in 2019 but lapsed at the second reading stage when Parliament was dissolved before the election. "The Australian Reconstruction and Development Board (ARDB)[11] will provide a means of identifying and resolving serious financial imbalances, sectoral stresses and development shortfalls that, if left unaddressed, might impair the prosperity and welfare of the people of Australia, the maintenance of full employment or the stability of the currency of Australia." "The development task means the task of developing and offering funding arrangements to contribute to the development of Australian agriculture, associated industries and infrastructure."

As the Reserve Bank has "guaranteed" to cover the debt associated with the fiscal measures related to the COVID pandemic and the current fiscal budget aimed to stimulate economic activity, so would the ARDB within the RB act similarly in support of the agricultural industry.

Specifically, Australian Reconstruction and Development Board (ARDB) activities related to agriculture and associated industries and infrastructures will help develop:

- the resilience, capabilities and ongoing financial viability of Australia's food and natural fibre systems;
- a profitable farming sector exercising good stewardship of the resources associated with production;
- effective ways to mitigate the impacts of adverse events, particularly those associated with natural disasters, market failures and inadequate commercial financial arrangements; and
- the capability of agriculture to contribute more fully, responsibly and reliably to the economic prosperity and welfare of the people of Australia and the peoples of other nations.

7. Land Capital Management

The Newman Queensland Government legislative changes to the ways Lease Hold land can be transferred by sale to independent parties including foreign investors, hedge and venture capital funds that are not part of the family group originally granted the lease, is enabling a change in the character of land ownership in the Rangelands that is now being played out (GHPL 2020). The ready availability of capital from banks and sometimes from financial institutions supports these buy outs, and amalgamations of adjacent properties and purchase of multiple holdings across Queensland. This often changes the way the land is managed, sometimes with large scale chain and crawler tractor tree clearing ostensibly for cropping, and soil blading to kill shrubs and disturb the top soil and along with deep ripping disturb any hard pan, but likely at the same time increasing the rate of soil organic matter mineralisation, soil respiration and carbon loss albeit stimulating regrowth of pasture, sown or from the seed bank .

Capital gain aspects of Rangeland pastoral holdings are an important component of Queensland Government fiscal and monetary policy. The increasing size in area and capital value of some grazing landholdings in the Rangelands is affecting landholder and then town populations as sold up landholders move out of the Rangelands and the larger holdings use fewer workers. While the market real estate value of the property increases beyond the valuation based on return on capital from production, the value of houses in the depopulated towns also decreases as businesses close and services are withdrawn eg banks.

This buy up of landholdings has been enabled by the Newman Government change in leasehold conditions to allow a change of the GHPL Grazing Homestead Perpetual Lease to Freeholding Lease allowing sales of what were in effect family landholdings to independent parties including foreign investors, hedge and venture capital funds that are not part of the family group originally granted the lease. This is enabling a change in the character of land ownership in the Rangelands that is now being played out (eg McLean et al 2020).

The definition of full employment since the second world war has changed to support Governments' political agenda and the way neoliberal economics deals with the relationship between the number of jobs available and the number of unemployed or underemployed, and the Morrison Government's attitude towards peoples willingness or ability to work (have a go to get a go) as opposed to being supported by Government social security policy payments including the dole, notwithstanding the real lack of opportunity and available jobs or what is regarded as gainful employment.

This paper argues for other ways of doing business by investing in people's willingness to work in a wide range of activities once they are assured of a living wage, and for undertaking jobs for example in businesses linked to Renewable Energy Hubs, and in land stewardship for Landcare Australia or as Rangers to look after an increased area of National Parks, protected areas and nature reserves to adequately cover the need for protection of all bioregions at a sustainable and representative level (Sattler 2002; 2020). Restoration of degraded land especially in more humid areas of the Rangelands is also a most effective and cheap way of sequestering carbon and increasing threatened wildlife populations (Strassburg et al 2020).

One option for Governments and banks is to explore payments for environmental services which are "allowed" under the WTO rules[9] and widely adopted in the EU and USA. Managing land or land stewardship in an ecologically sustainable manner independently of a conventional product (eg beef and wool) is an option that has been explored in other countries but little in Australia despite the interventions of Landcare.

There is a need to expand the area of National Parks if Queensland is to appropriately and adequately "gazette" the 9 Rangeland bioregions totalling 900,000ha which do not yet reach the internationally accepted area required for sustainable representation of the bioregion. NGO schemes such as those supported by The Nature Conservancy, Australian Bush Heritage and the Australian Wildlife Conservancy have increasingly large areas under stewardship management. This would further support the expansion of tourism and especially ecotourism as well as providing employment of rangers.

The fiscal solution to the pastoralist debt problem might be the option to cancel debt with a change of land management to a stewardship model. This has worked in the

prairies of the US and Canada. This requires a different management of the fiscal flows into a community from Government, banks, NGOs that the Productivity Commission Transitioning Regional Economies Report (2017) examined in a fashion. How much extra money flowing into Rangelands might be needed (if any) to change the land management and associated rural population/town support endeavours and provide for livelihoods. A different arrangement for managing mining revenues (royalties) and workers' living conditions would enable this also. WA for example makes explicit Regional reinvestment of mining royalties.

Improvements in cattle property productivity and environment integrity likely to be supported by the introduction of virtual fencing[12] through use of GPS solar powered collars on animals that operate to warn cattle with a sound and then mild shock when approaching a virtual fence. The signal for this is wireless transmitted from a control tower when the fence is approached. The system uses NB-lot; 3G/4G, satellite. Individual animal movement data is logged via an internet cloud-based storage. This system has been developed by CSIRO research starting in 2005 and now being developed by the Agersens company as eShepherd.
https://www.nswfarmers.org.au/NSWFA/Posts/The_Farmer/Innovation/Virtual_fences_to_improve_labour_efficiency_for_farmers.aspx
https://www.csiro.au/en/Research/AF/Areas/Livestock/Virtual-fencing and

A similar system Nofence, has been developed in Norway and by Vence a San Diego California based company which undertook testing in Australia
https://www.inc.com/kevin-j-ryan/farmers-control-livestock-from-phones-vence.html
and is now being rolled out commercially on a property near Augathella on 500 cattle by Natural Capital Holdings. Vence hires out collars at $15-25US per collar per annum. It is likely the cost of virtual fencing will decrease as its use increases. Current use is still in the validation stage through products from these three commercial companies.

Virtual fencing has the potential to revolutionise cattle management in the Rangelands, with ability to adopt cell grazing on large size "virtual paddocks" and muster and move cattle through virtual signals. It will allow better management of riparian zones and through better pasture growth, including use of legumes, lead to increase in carbon sequestration which proponents of the virtual fencing are seeking to monetize.

While cell grazing *per se* in the more humid tropical Rangelands pastoral systems in the NT did not lead to increased productivity (Schatz et al. 2020), CSIRO and Department of Agriculture and Forestry research has established better ways to manage cattle through the life cycle with knowledge about optimal paddock sizes and walking distance to watering points where they are monitored (eg walk in weighing), better nutrition through improved pastures and supplements, genetics, monitoring of cattle condition at watering points with walk over weighing systems etc. R, D & E in production systems in the Rangelands pays off in terms of both productivity and environmental integrity/sustainability and should be appropriately funded, not the subject of austerity cuts in the budget.

An area of considerable R & D is the use of drones and satellites with appropriate sensors to measure the changes in soil and above ground carbon sequestration and greenhouse gas emissions including gases such methane and nitrogen compounds from feed lots. The use of machine learning and artificial intelligence approaches are being developed to use the large data sets that will be produced and to model amounts of fluxes over locations, area and time. Ground truthing will be needed to validate these

developments but they promise to support improved management processes in the Rangelands.

These changes to cattle grazing management processes promise to enable much better management of pasture growth and soil cover.

Judicious use of **Indigenous peoples traditional burning practice** to maintain a savanna woodland also has merit through controlling tree and shrub development, providing a stimulation of regrowth of improved nutritional quality grass through enrichment of the topsoil with non-combustible nutrients such as phosphorus, and managing successional changes. Because the rate of carbon accumulation in these pastures is greater than in the senescent pasture burnt, there is a possibility that the budget of total amount of sequestered carbon is improved thereby mitigating global warming (eg Russell-Smith and Whitehead 2015; Russell-Smith and Sangha 2018, 2019; McLean and Holmes 2019).

Similarly trees such as mulga, brigalow and eucalypts sequester carbon dioxide and judicious use (set aside) of woodlands in the Rangelands can make a significant contribution to mitigation of global heating and may return $ C credits under an emissions reduction trading scheme. Improvement in soil health through pasture improvement also has a potential to sequester soil carbon but at a slower rate than for above ground vegetation.

Professor Ross Garnaut has written enthusiastically about this potential of "carbon farming" particularly for the semi-arid Rangelands which he estimated to have potential to sequester 25 million tonnes and forest regeneration to sequester 140 million tonnes per annum of CO_2 (Garnaut 2019). Another optimistic estimate suggests rehabilitating 200 million ha of overgrazed rangelands could sequester 100 million tonnes of CO_2 per year over 40 years with a fifth of this from restoration of degraded mulga lands (Peeters and Butler 2014). These values are obtained because of the large areas involved even though annual increases per ha might be small. Because of this, the changes in the soil C stock are difficult to measure and hence may be difficult to monetize although there are serious endeavours in this space.

This is the reason that the Queensland Government Land Restoration Fund emphasises co-benefits of carbon accumulation processes as a major way to monetize the restoration. EU Carbon credits are estimated to be worth 32 Euro/tonne of CO_2 (c. AUD$52) in 2030 under the current legislated emissions reductions target. https://www.edie.net/news/6/EU-carbon-price-set-to-rise-to-EUR32-by-2030--but-experts-say-EUR81-necessary-to-achieve-net-zero-in-theUK/

Australia's targets for greenhouse gas reduction are the subject of much political uncertainty despite the science indicating a need for major reductions (and see the paper by Gutteridge in this collection). If this occurs the value of Australian carbon credits will undoubtedly increase and they may also be sold on a voluntary carbon market although their value on this market is small at present and not dissimilar to the Australian Government value.

The feasibility for increasing water availability for agriculture from the wetter north Queensland to the more arid western regions in the Rangelands is currently being investigated by an expert panel established by the Queensland Government and chaired by Professor Garnaut (https://www.dnrme.qld.gov.au/__data/assets/pdf_file/0019/1503244/bradfield-panel-

terms-reference.pdf ; https://www.brisbanetimes.com.au/politics/queensland/ross-garnaut-to-decide-if-super-river-can-deliver-or-idea-has-run-dry-20200901-p55rdd.html

A commitment for a similar development (the New Bradfield Irrigation Scheme) has been made by the LNP if they are in office.

8. Mining as Employment and Exploitation of Natural Capital

At present, royalties[13] from sale value obtained by being able to extract (mine) Government controlled resources of minerals and gas, natural capital that belongs to all of us, make a major contribution to the Queensland Fiscal Budget ($5.18bn in 2019 or about 8.6% of total Queensland Government revenue, and a total export of coal and minerals value of $63bn; 73.3% of the total export value of $87bn; beef export 6.7% amounting to $5.8bn https://www.tiq.qld.gov.au/queensland-export-values-rise-17-1-in-2018-19/).

Most of the mining extraction companies are majority foreign owned meaning that the dividends or wealth developed goes overseas with little benefit accruing back to the Rangelands. Thermal coal mining through the flow-on effect of greenhouse gases emissions when this coal is burnt contribute significantly to the effect of global heating on Rangelands climate and weather. Queensland Rangelands are also a source of coking coal for steel making for which a need will continue until systems using hydrogen produced by renewable energy are in use, particularly relevant if produced in the Rangelands. The feasibility of this "Renewable Energy Push" is currently being investigated by RAPAD through a consultancy by Prof Ross Garnaut (https://www.rapad.com.au/news/blog/rapad-renewable-energy-push-powers-ahead/ . Solar Farms with flow on effects for a range of associated enterprises to use the energy they produce, will be the focus.

The Queensland Government has also committed to invest in a renewable energy hub at Barcaldine which includes the production of hydrogen. Such a renewable energy hub can be replicated at other locations in the Rangelands with potential to provide many more jobs than the mining and gas industry with minimal effect on environmental values. Coal mining currently employs 30,000 people in Queensland and mineral mining around 15,000 people. Agriculture in Queensland employs about 60,000 people (2016 census and QFF https://www.qff.org.au/blog/2016-census-shows-growth-queensland-agricultural-employment/).

Development of Government fiscal support for an electrical transmission grid system "that is up to the task" eg the proposed grid connecting Mt Isa to renewable energy solar and wind "farms" has large employment implications for the "North West Minerals Province" https://statements.qld.gov.au/statements/87692 under the North West Queensland Economic Diversification Strategy. http://www.dsdmip.qld.gov.au/resources/plan/nwqeds-implementation-plan.pdf . Similar developments in Rangelands are under development in WA and NT. A massive renewable energy scheme with WA Government and Traditional Owner support, the Asian Renewable Energy Hub in the Pilbara Rangelands is a proposed $30bn investment producing 15GW due to come to investment closure in 2025 and production in 2027/28 https://asianrehub.com/ . Environmental Approval has been recommended. Another major RE project in the Rangelands, a $20bn investment, the proposed Sun Cable RE Australian-ASEAN Power Link project (AAPL) in the Barkly Region near Tenant Creek would also include the world's largest battery and supply electricity via a DC cable to

Singapore. The project has Federal Government support. https://www.mining-technology.com/features/mapping-renewable-energy-projects-at-australian-mines/

Several mining companies are developing Renewable Energy production systems to reduce their energy costs and greenhouse gas emissions, particularly in WA but also in Queensland (Cannington silver and lead mine at McKinlay which would cut annual emissions by an estimated 6000 tonnes. https://www.mining-technology.com/features/mapping-renewable-energy-projects-at-australian-mines/

Fiscal policy supporting/encouraging the requisite capital investment is needed to capitalise on this considerable potential for economic growth around Renewable Energy hubs. This will most likely stimulate private investment in infrastructure and businesses.

Thermal coal exports from Queensland particularly to Japan, China, India and Korea have declined considerably this year with COVID but also as renewable energy production increases in those countries as planned. Metallurgical (coking) coal exports, which generate about 87% of the royalties for coal received by the Queensland Government, will continue until RE hubs and Hydrogen production become established but other minerals are needed to sustain a clean energy economy and hence mining will continue to play an important part in the Rangelands economy.

9. Indigenous initiatives for the Rangelands economy.

Some new Aboriginal development schemes such as YACHATDAC Gracevale (Brown and Thompson 2020 in press) and Kowanyama Biofuture Enterprise project (2020) provide an integrated approach that has much promise for the future of those communities. Both these schemes seek to develop the natural capital, in the case of Gracevale rehabilitating a 8,870 ha cattle property 120 km north of Barcaldine, and developing ecotourism around indigenous artifacts such as rock paintings and springs, and supporting local culture.

The Koyanyama project in the gulf country is a “commercial, sustainable, environmentally sound, irrigation project” that would be a vertically and horizontally integrated agro-processing enterprise encompassing sugar, pulse legume, cattle, fish, timber and energy production that would be owned by Traditional Owners and the Queensland Investment Corporation “green fund”. The production would be net greenhouse gas neutral and the income generated would cover all water storage and distribution, environment repair, all energy from renewable sources, strengthen disadvantaged local communities, all infrastructure, all transport and be cyclone, flood, drought and fire proof (Koyanyama 2020).

Appropriate fiscal support for sustainable development under Aboriginal Land Rights is necessary across the Rangelands. Land stewardship linked to ecotourism is already making a considerable impact on communities and under the scenarios indicated in this paper scheduled for an increased contribution. There is a major role for Aboriginal communities to play in managing controlled savanna burning as carbon sequestration and grass regeneration method. Ways to avoid fire killing perennial fodder legumes in improved pastures may need to be sought (avoid??).

A Government fiscal “Keynsian” stimulus policy could provide much more support for investment to support the Rangelands Management policies outlined in this series of papers including increases in Government spending providing jobs in new capital works projects and social jobs in service industries which would also affect the Rangelands

communities eg positions in aged and child care, health, for youth employment that would at the same time increase the level of women's participation in the work force and off farm employment to supplement family incomes, an increase in jobs beyond the current level and what the private sector is offering. This is also labelled a Modern Monetary Theory approach and addresses the opportunity cost of unemployment in the Rangelands. Other components of the increased fiscal support are addressed in section 11.

10. Modern Monetary Theory

There are 2 major parts:

- Functional finance and
- Monetary sovereignty

Functional Finance, FF, originally due to A P Lerner (1944), says that macro-economic policy actions must be judged by their effects and not by some arbitrary standard. FF is based on a Keynesian view of the economy (Keynes – in the short term the aggregate level of economic activity is determined by the total amount of spending in the economy – consumption, investment (capital expenditure and government. The goals of economic policy are 2: low inflation and 2. high utilisation of resources ('full employment'.) (Keynes 1936)

If there is less than 'full employment, aggregate demand should be increased by more government expenditure, reduced taxation. Changes in government expenditure should be judged only by its effect on employment. Rules such as 'balance the budget' or 'don't incur debt' are irrelevant or if pursued harmful.

In the current context, the pandemic has led to reduced demand and reduced employment; the response according to FF is to increase government expenditure to shore up demand, and to subsidise jobs.

If the rate of inflation is too high, the response is to reduce demand by increasing taxes to reduce consumer spending or to cut back on government spending.

The second part states that a sovereign country which issues its own fiat currency (no intrinsic value) and does not borrow in foreign currency denominated debt cannot go bankrupt or broke and can always pay its debts by issuing more money. (An extreme version is that the government does not need to borrow at all but just issue money.) The limits to issuing money is that if aggregate demand exceeds aggregate supply, inflation will result.

A sovereign country is NOT analogous to a household or a company which can go broke and which cannot issue their own currency.

This is the strong innovation of MMT. Australia has reached this point only recently. In the past money was backed by gold, government debt was denominated in sterling (in the Great Depression). Although Australia borrows from foreign institutions with the loans specified in Australian dollars.

MMT contrasts sharply with the current government's view of "debt and disaster." The debt must be paid off or leave 'own grand children with a "burden".

In current terms the facts that the deficit has increased and amount of bonds on issue are irrelevant – what is relevant is whether policy can maintain a low rate of inflation and 'full employment'. There is a limit to issuing bonds which is when investors will not buy them – but we are a long way from this.

A further point is that a country can use its monetary policy to determine interest rates as the Reserve Bank is doing now as setting interest rate targets and intervening in the market to buy bonds by creating money (electronic entries on its balance sheet.)

MMT is completely at variance with neoliberal views of money and debt. The neoliberal view of macroeconomics is that it cannot operate for any time at levels below full employment and that involuntary unemployment cannot exist. The unemployed are unemployed because of personal failings – laziness, inadequate skills etc and there are always jobs available for those willing to work (but at what wage or conditions).

Most of the ideas of MMT are not modern (in fact, Keynesian macroeconomics is not modern.) It has been said that Lerner's (1944) exposition of welfare economics was more Keynesian than Keynes. The idea of a sovereign monetary country is relatively new and this understanding needs to be more widely understood in the broader community and became particularly important once the Bretton Woods accord pegging of currencies to the gold standard was abandoned .

The importance of MMT is that it reminds us not to worry about money but about unemployment and loss of output which are real losses. Instead, MMT says concentrate on the 'real deficit' of lack of secure employment, the real deficit of lack of modern infrastructure, the real deficit of inadequate age care and so on.

These news articles[14] are worth reading:
https://www.abc.net.au/news/2020-07-17/what-is-modern-monetary-theory/12455806

11. Options for consideration for the way forward

1. Establish a consensus in the Rangelands Community about the need to change the way fiscal and monetary support is provided to the Rangelands, at all levels of Government, based on the understanding that such a stimulus investment to create a vibrant, diverse, productive and fully employed community, a rehabilitated environment with biodiversity protected, where all components of the Rangeland contribute to the economy equitably (adequately? appropriately? sufficiently?) for their use of the natural and social capital, will be "repaid" by sustainable growth in the economy.

   This Keynsian stimulus investment is underpinned by the understanding of fiscal debt and money supply advanced by the establishment of a Reserve Bank Board for Rural Reconstruction and Development and Modern Monetary Theory. A component of this would be the introduction of a universal living wage to support transition in the use of labour. This fiscal stimulus will also increase private capital investment eg in renewable energy and associated industry made possible by lower energy costs, in industry including mining and in climate mitigation.

2. Components of such Government investment (support) are listed in this paper. They include
   - Infrastructure, including internet that works

   - Service provision, especially medical and education through schooling, Tafe level and tertiary level so that young people in the Rangelands are not disadvantaged compared to their peers in more populated areas. (as emphasised

   - R, D & E on rangelands management, whereby Government employs again sufficient research staff focused on the Rangelands to undertake the research needed in support of the changes in the way the Rangelands are being used particularly in response to climate heating. Properly trained extension staff are needed to liaise with individual landholders to collectively develop a holding management plan that conforms to the relevant Planning, Environment and Vegetation Management Acts so that the landholder can operate a sustainable business without anxiety about legal challenges.

     This will involve proper mapping of the resources on the holding and recording them digitally as a record for monitoring and evaluating progress on land rehabilitation if that was required and to support co-benefits of any carbon management plan. (as emphasised along with education and training in the Productivity Commission Inquiry Report on Drought Relief ppXL- XL111 (2009). This would best start with a particular region as a model perhaps the Desert Uplands who have been active in Landcare and with land restoration projects already although the funding was of such a short time frame that impact was limited. A long haul is needed by all players in this change to Business as Usual.

   - Properly funded scientific research on climate warming at both national (CSIRO and Bureau of Meteorology) and State Government level in partnership with Universities.

   - Capital investment in renewable energy hubs for RE production including hydrogen and ammonia for export, batteries and pumped hydro and repurposed electricity transmission grid, for local use and export of electricity.

   - Climate change mitigation measures eg improved management of pastures such as introduction of legumes, and forests, and recognition of the co-benefits of carbon storage as in the Land Restoration Fund.

   - Support for subsidised development with landholders of vegetation management plans including control of weeds and feral animals with accredited and appropriately trained consultants or Public Servants, consistent with the Vegetation Management Act 1999 that provide exempt development options under the Environment and Planning Acts and VMA. A comprehensive analysis of such planning activity processes in Queensland is outlined in England (2019).

- Increase fiscal support for weed and feral animal control.

- Environmental stewardship and biodiversity conservation including increases in the areas of the diverse bioregions and their connectivity, designated as National Parks and/or protected areas such as wildlife refuges and riparian zones, training and funding of land management stewards and rangers, control of feral animals and weeds.
- Support for integrated Indigenous community development programs such as development of Gracevale by YACHATDAC and Koyanama Biofutures Development

- Working with financial institutions and eNGOs to develop mechanisms for buyback (retirement) of landholding accrued debt, which are linked to repurposed use of the landholding and use of labour associated with the holding eg as land stewards supported by appropriate training and funded by Government or biodiversity credits

- Support for tourism of various kinds particularly ecotourism particularly with infrastructure support

- Management of water flows both overland, and from aquifers especially the Great Artesian Basin and the effects of mining on these.

- Further development and expansion of a kangaroo meat production system

- Forest and savanna woodland development for carbon accumulation *per se* as well as for the potential to produce timber eg from *Kaya senegalensis*, Eucalyptus spp such as *E. camaldulensis,* Acacia *spp* where the climate permits. This will require development of a system to transport logs or timber to the bulk handling (rail or shipping

Paper prepared by Peter Dart p.dart@uq.edu.au with contributions from Jon Stanford and Mark McGovern with thoughtful comments from Ben Rees, for the Rangelands Policy Dialogue. The paper is intended to capture some of the material uploaded to the Rangelands Management Dialogue blog.

23/10/2020

Notes

1. "Fiscal policy refers to the use of government spending and tax policies to influence economic conditions, especially macroeconomic conditions, including aggregate demand for goods and services, employment, inflation,

and economic growth." (Chappelow 2020). In conjunction with fiscal policy, monetary policy operating through the Reserve Bank, determines the amount of money flowing through the economy.

2. The Reserve Bank of Australia (RBA) is Australia's central bank and derives its functions and powers from the *Reserve Bank Act 1959*. Its duty is to contribute to the stability of the currency, full employment, and the economic prosperity (wages) and welfare of the Australian people. It does this by conducting monetary policy to meet an agreed medium-term inflation target, working to maintain a strong financial system and efficient payments system, and issuing the nation's banknotes.
   The RBA provides certain banking services as required to the Australian Government and its agencies, and to a number of overseas central banks and official institutions, and to Australian commercial and savings banks. Additionally, it manages Australia's gold and foreign exchange reserves. https://www.rba.gov.au/about-rba/ The Reserve Bank as part of its management of money in the economy, also makes cash allocations to banks who then leverage this along with customer deposits (to c.100 fold) to increase the amounts they can lend to promote economic activity. The Reserve Bank also works with the commercial and savings banks to ensure they have sufficient liquidity if there is a run (spate of cash withdrawals) on the banks.
3. Say's Law of Markets. William Mitchell, Randall Wray and Martin Watts Macroeconomics (2019) p170 " ….supply creates its own demand. …and relies on the recognition that the act of producing generates income equal to the total cost of production."
   https://en.wikipedia.org/wiki/Say%27s_law Say's law has been one of the principal doctrines used to support the laissez-faire belief that a capitalist economy will naturally tend toward full employment and prosperity without government intervention.

   Ben Rees (2019) Rural debt and viability: a conference summary. Proceedings of the Royal Society of Queensland 127, 15-19. http://www.royalsocietyqld.org/wp-content/uploads/2020/Proceedings%20127/Rees_Web.pdf

   Say's Law of Markets By Jim Chappelow. Updated Jan 30, 2020 https://www.investopedia.com/terms/s/says-law.asp

   Say's Law of Markets comes from chapter XV, "Of the Demand or Market for Products" of French economist Jean-Baptiste Say's 1803 book, *Treatise on Political Economy*. It is a classical economic theory that says that the income generated by past production and sale of goods is the source of spending that creates demand to purchase current production. Modern economists have developed varying views and alternative versions of Say's Law.

   - Say's Law of Markets is theory from classical economics arguing that the ability to purchase something depends on the ability to produce and thereby generate income.

- Say reasoned that to have the means to buy, a buyer must first have produced something to sell. Thus, the source of demand is production, not money itself.
- Say's Law implies that production is the key to economic growth and prosperity and the government policy should encourage (but not control) production rather than promoting consumption.

4. Engel's Law https://www.investopedia.com/terms/e/engels-law.asp
By Adam Hayes Updated Jun 12, 2020. Engel's Law is an economic theory introduced in 1857 by Ernst Engel, a German statistician, stating that the percentage of income allocated for food purchases decreases as income rises. As a household's income increases, the percentage of income spent on food decreases while the

   Engel's Law is a 19th century observation that as household income increases, the percentage of that income spent on food declines on a relative basis.

- This is because the amount and quality of food a family can consume in a week or month is fairly limited in price and quantity.
- As food consumption declines, luxury consumption and savings increase in turn.

   Ben Rees (2019) Rural debt and viability: a conference summary. Proceedings of the Royal Society of Queensland 127, 15-19. http://www.royalsocietyqld.org/wp-content/uploads/2020/Proceedings%20127/Rees_Web.pdf

5. Social wage. See for example the article by John Quiggin. https://theconversation.com/forget-jobseeker-in-our-post-covid-economy-australia-needs-a-liveable-income-guarantee-instead-141535

6. New Deal. AAA, the Agricultural Adjustment Act of 1933; CCC, the Civilian Conservation Corps of 1933: FSA, the Farm Security Administration of 1935 and 1937: SCS, the Soil Conservation Service of 1935; and the REA, Rural Electrification Administration) and the continuing support for rural communities eg through the land use change ("land retirement from production") schemes which reduced downward pressure on prices for agricultural products induced by the competitive overproduction by individual farmers trying to make a living wage, but which also used up the natural environmental capital of the soils ploughed for crops leading to dust storms and the loss of the natural soil capital.
   The ability to till more land more often for weed control through the input of the technology capital of tractors also led both to more production in the short term but also to massive dust storms. The dry weather also contributed to this increased tilling as crops failed and more tilling and new plantings took place resulting in soil structure break down (loss of natural capital) leading also to more land area needed to be used for production in order to produce

sufficient income to pay debts and buy food etc accumulated during the dry weather period the farmers were facing (Cook et al 2020).
This pattern of land degradation has similarities to the Rangelands situation where dry weather induces overstocking and degradation of the pasture natural capital leading also to dust storms and loss of topsoil and pressure to "push" mulga trees for more feed.

7. USDA Agriculture Improvement Act of 2018. This act covers a range of economic support inputs that underpins the US land use for agricultural production and the environment. https://www.ers.usda.gov/agriculture-improvement-act-of-2018-highlights-and-implications/#:~:text=The%20Congressional%20Budget%20Office%20projects,fund%20all%20other%20programs%2C%20including

   https://www.ers.usda.gov/agriculture-improvement-act-of-2018-highlights-and-implications/conservation/

8. The Treaty of Rome European Common Market of 1958 and rational for the Common Agricultural Policy https://www.europarl.europa.eu/factsheets/en/sheet/103/the-common-agricultural-policy-cap-and-the-treaty was argued as follows "….intervention in agriculture reflected the broad consensus regarding the specific characteristics of the sector – that is to say that it is highly dependent on climate and geography and prone to systemic imbalances between supply and demand, and hence substantial fluctuations in prices and incomes.

   Demand for food is inelastic; in other words, price fluctuations have little bearing on it. Moreover, the length of production cycles and the unchanging nature of certain inputs mean that farmers themselves have scant control over the global supply of farm produce. Under these conditions, an increase in supply automatically forces prices down, whereas a decrease forces them up. All these factors create permanent market instability. Faced with this situation, governments have always been keen to regulate agricultural markets and to support farmers' incomes, a tendency inherited by the CAP.

   Although today farming accounts for only a small part of the economies of developed countries, even in the EU (fact sheet 3.2.10, Table II), state intervention has increased of late, in the form of agricultural and rural policies which have added new dimensions, such as sustainable development, combating climate change, land and countryside management, diversification and renewal of the rural economy and the production of energy and biomaterials, to support for the industry's traditional primary activity, namely food production.

   Article 39.1 sets out the specific objectives of the CAP:
   https://www.europarl.europa.eu/ftu/pdf/en/FTU_3.2.1.pdf

   a. To increase agricultural productivity by promoting technical progress and ensuring the optimum use of the factors of production, in particular labour;

   b. To ensure a fair standard of living for farmers;

c. To stabilise markets;

d. To ensure the availability of supplies;

e. To ensure reasonable prices for consumers

Lastly, a derogation has been granted from competition policy principles for agricultural products and trade in such products, in view of the unique structure of the farming industry (Article 42).

Article 40.3 The common organisation established …may include all measures required to attain the objectives set out in Article 39, in particular regulation of prices, aids for the production and marketing of the various products, storage and carry-over arrangements and common machinery for stabilising imports or exports.

Article 40.4 ……in order to attain its objectives, one or more agricultural guidance and guarantee funds may be set up.

Article 41 a) (a) an effective co-ordination of efforts in the spheres of vocational training, of research and of the dissemination of agricultural knowledge; this may include joint financing of projects or institutions;
(b) joint measures to promote consumption of certain products.

Article 43.3 notes the interdependence of the matters in support of the agriculture support measures.

Article 44. indicates that a minimum price shall take account of the average national production costs and that this may be influenced by technical progress.

Article 45. prices of imported products should approximate that of the domestic production prices of member states.

9. The World Trade Organisation https://www.wto.org/english/tratop_e/agric_e/ag_intro01_intro_e.htm likewise established the Agreement on Agriculture Annex 2 articles 1 to 13 pp 59-64 which provide a clear outline of the considerable Government domestic support for agriculture and environmental programs that countries can, and are expected to support, and the exemptions which fall outside the reduction commitments to reduce "Total Aggregate Measurement of Support". The Australian Government has been reluctant to fully support these domestic programs placing Australian farmers at a disadvantage in their seeking improvements in productivity. This support encompasses
Article 2) "General Service Programmes"
(a) research, including general research, research in connection with environmental programmes, and research programmes relating to particular products;
(b) pest and disease control, including general and product-specific pest and disease control measures, such as early-warning systems, quarantine and

eradication;
(c) training services, including both general and specialist training facilities;
(d) extension and advisory services, including the provision of means to facilitate the transfer of information and the results of research to producers and consumers;
(e) inspection services, including general inspection services and the inspection of particular products for health, safety, grading or standardization purposes;
(f) marketing and promotion services, including market information, advice and promotion relating to particular products but excluding expenditure for unspecified purposes that could be used by sellers to reduce their selling price or confer a direct economic benefit to purchasers; and
(g) infrastructural services, including: electricity reticulation, roads and other means of transport, market and port facilities, water supply facilities, dams and drainage schemes, and infrastructural works associated with environmental programmes. In all cases the expenditure shall be directed to the provision or construction of capital works only, and shall exclude the subsidized provision of on-farm facilities
8. Government financial participation in income insurance and income safety net programmes.
9. Structural adjustment assistance through resource (eg land) retirement programmes
12. Payments for environmental programmes.
13. Regional assistance programmes.
https://www.wto.org/english/docs_e/legal_e/14-ag_02_e.htm#annII

10. Productivity Commission Inquiry Report. Government Drought Support (2009). Recognised that
"while it is hard to separate the social impacts of drought from long-term trends contributing to decline in some rural populations, drought adversely impinges on the well-being of farm families and communities
Policy needs to address the social needs of farm families, rural businesses and communities in ways that do not inhibit the efficiency of agricultural industries.
The connection between the farm as a place of work, residence and family tradition has important implications for the effectiveness of institutional support."
Recommendation 9.1 "Income support for farm and farm-related households" pL

11. Rural Development Bank
"The Australian Reconstruction and Development Board (ARDB) responsibilities include the ability to facilitate, and when necessary manage, rural adjustment and financial reconstruction activities. The Australian Reconstruction and Development Board (ARDB) is also able to tailor funding and financial arrangements to meet identified needs of nationally- important industries operating in particularly uncertain or risky environments.

The Australian Reconstruction and Development Board (ARDB) will also play a vital role in researching and monitoring industries to provide advance warning of emerging problems and to initiate reconstruction, development or other activities as deemed necessary.

The Australian Reconstruction and Development Board (ARDB) will provide a means of identifying and resolving serious financial imbalances, sectoral stresses and development shortfalls that, if left unaddressed, might impair the prosperity and welfare of the people of Australia, the maintenance of full employment or the stability of the currency of Australia.
the Board and the regulatory activities of the Payments System Board through Australian Prudential Regulation Authority (APRA).

12. Virtual fencing. System components are being imported from Canada by Natural Capital Holdings (NCH) company. https://www.abc.net.au/news/rural/2016-12-08/gps-cattle-collars-for-virtual-fencing-expected-in-2017/8102912 .

https://www.nofence.no/en/about-us norwegian 2020 17550 collars 30m hrs on pastures 1700 customers Bit pricey

Vence San Diego California based, testing in Australia https://www.inc.com/kevin-j-ryan/farmers-control-livestock-from-phones-vence.html ; hires collars $15-25US per collar

Invested in carbon Martha Mintz The Furrow
https://www.johndeerefurrow.com/2020/09/04/invested-in-carbon/

Virtual fence Collared Beef
https://www.johndeerefurrow.com/2020/02/18/collard-beef/

13. However, the royalty rates are small and not comparable to many overseas or even other state levels. https://www.business.qld.gov.au/industries/mining-energy-water/resources/minerals-coal/authorities-permits/payments/royalties/calculating/rates For coal, across both the lower value thermal coal such as Adani Carmichael mine would produce and much higher value coking coal, there is only one royalty schedule which is deemed to be progressive as the value increases with the first $100 per tonne attracting a 7% royalty rate, from $100 to $150 per tonne it attracts a 12.5% royalty, and beyond $150 per tonne it attracts a 15% royalty. This is about a 17% discount compared to the royalty charges at $100 per tonne or less sale value in NSW (The Australia Institute 2019 Swann, T and Campbell R. Free coal contest. Royalty subsidies to Queensland coal mines. 14pp)
https://www.tai.org.au/sites/default/files/P749%20Free%20coal%20contest%20%5BWEB%5D_0.pdf).
https://www.tai.org.au/sites/default/files/P749%20Free%20coal%20contest%20%5BWEB%5D_0.pdf). Even with these low rates of royalty required to be paid, the Adani Mine Project has been given a substantial discount and an undisclosed value of royalty to be paid and a payment holiday for an undisclosed time period (ABC News 2020 https://www.abc.net.au/news/2020-10-01/adani-carmichael-coal-mine-royalties-deferred-qld-election/12716272)

14. - Modern Monetary Theory - Uncovering the smokescreen of ignorance. Alan Kohler/ Bill Mitchell podcast https://youtu.be/9ldmpmVfSoM

- The economist who believes the government should just print more money. This is the New Yorker article on Stephanie Kelton https://www.newyorker.com/news/news-desk/the-economist-who-believes-the-government-should-just-print-more-money

- Meet the livable income guarantee: a budget -ready proposal that would prevent unemployment benefits falling of a cliff. Quiggin et al The Conversation 1/10/2020 https://theconversation.com/meet-the-liveable-income-guarantee-a-budget-ready-proposal-that-would-prevent-unemployment-benefits-falling-off-a-cliff-146990
- MMT: Radical innovation or a trap for the left. Quiggin 7/8/2020 Independent Australia reported on 26/9/2020 https://independentaustralia.net/politics/politics-display/mmt-radical-innovation-or-trap-for-the-left,14178
- Could Frydenburg ease this crisis by printing money. Mike Secombe The Saturday Paper Aug 1 2020 https://www.thesaturdaypaper.com.au/news/economy/2020/08/01/could-frydenberg-ease-this-crisis-printing-money/159620400010187

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