



policy brief

# An Industry Policy for Queensland

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**M**any countries are pursuing innovation-led industry policies engaging in long-run strategic investments to create and shape industry trajectories rather than just responding to problems of industry decline. This has required public agencies to lead and direct the creation of new technological opportunities and innovations. The predictable response from bureaucrats and politicians steeped in economic liberalism (that industry policy is not an appropriate instrument of public policy) must face rebuttal as both economically ill-informed and unjustified by evidence. This paper provides an overview of the key issues exemplifying the development of industry policy in many of the advanced economies and draws an outline map of how they might be applied to the Queensland economy.

## Introduction

The structure of the Queensland economy has changed significantly in the past decade. Manufacturing, as a component of Gross State Product, has declined from 10.4 per cent in 2004-5 to 7.2 per cent in 2014-5. The sector's contribution to State employment has declined from 10 per cent to 7.2 per cent. Likewise, mining's contribution to Gross State Product has fallen from a peak of 14.8 per cent in 2008-9 to 7.3 per cent in 2014-5 while its contribution to employment has increased only slightly from 2 per cent to 2.8 per cent. Underlying these figures are significant changes in industry and occupations: a freefall in

heavy manufacturing offset in part by new ‘advanced’ manufacturing processes; a downturn in mining construction and housing associated with the mining industry; a substantial growth in some but not all of the disparate occupations involved in the services sector. These changes in economic activity and employment have happened, if not serendipitously, then without a great deal of political oversight or direction.

The challenges currently facing Queensland’s economy and society require policy responses at odds with the narrow frame of reference in which they are generally cast. Some political attention has recently been focused on rebalancing the economy with new sources of innovation and productivity to offset diminishing industry sectors associated with commodity exports and heavy manufacturing. What is at stake in these deliberations is the need to develop a public policy competence taking cognizance of the need to foster regional economic development, employment growth in a high skill, high wage economy and an equitable distribution of income.

The contemporary process of policy formulation in this context takes as axiomatic the proposition that markets, in the absence of regulatory impositions, normally generate optimal outcomes for economic development and employment. These assumptions inspire policies aimed at the removal of impediments through deregulation of product and labour markets and privatisation of public enterprises. More disappointingly, they determine an emphatic rejection of enhanced regulation and industry support by government (see Banks 2008).

Based on a review of research evidence over several decades, this paper takes a contrary view. We argue for a more integrated, strategic industry policy which emphasises both demand management intervention through using government capital expenditure to provide the infrastructural support for private investment, as well as interventionist supply-side measures designed to influence the level and composition of Queensland's investment and productivity. The aim is to give direction to and accelerate the transformation of Queensland's industrial structure from one based on resource-based exports whose terms of trade are declining to internationally trade knowledge-intensive manufacturing and services.

## Why does an Industry Policy Matter?

### Policy versus the market

Historically, the approach to industry policy in Australia involved tariff protection for the manufacturing sector together with an arbitration system overseeing a fair distribution of the returns to industry and labour. Several reports in the mid-to-late 1970s made a case for reduction in tariffs which accelerated throughout the 1980s. These reductions were rarely accompanied by any coherent structural adjustment policy framework. The era was dominated by the influence of neo-classical economics which reached its zenith with the so called microeconomic reforms of the 1980s and 1990s. This involved what were deemed to be major 'efficiency' benefits to the Australian economy through the removal of impediments to the operation of markets (see Hampson 2012).

In this view, the state is conceived of as imposing a burden of taxation and regulation upon capital amounting to a disincentive to invest and a brake on economic activity and growth. There is no consideration of the disjunction between what is privately profitable and what is socially desirable. There is no connotation governments may have a role to play in guiding the otherwise capricious nature of private investment which usually produces major fluctuations in employment, living standards and social inequality.

The policy implications are clear cut: social and economic welfare is maximised when production and exchange is determined solely by unfettered markets. The role of government is limited to the provision of ‘public goods’ and redressing a variety of ‘market failures’, which by definition are assumed to be both limited in extent and remedied through policies such as taxes and incentives which are “market conforming” (Green and Roos 2012).

Many economists and other adherents to market orthodoxy assert industry policy is tantamount to ‘picking winners’ (that is, predicting which industries might prosper) as opposed to allowing market mechanisms to determine which firms/industries are successful based on ‘the market’s perceptions’ of rates of return on capital. Unfortunately, for proponents of this view, there is no evidence that such mechanisms produce socially or economically beneficial outcomes. The market is amoral and makes no judgements about social consequences. Nevertheless, proponents of market mechanisms tacitly reject decision-making by policy makers who can make principled judgements taking into account

national social and economic outcomes. The preoccupation with microeconomic reform still dominates the current policy agenda.

Since the 1980s and early 1990s, there have been few constructive developments towards a comprehensive and coherent productivity-enhancing agenda. Labor governments have often provided rhetorical support but have fought over whether industry policy should represent a new protectionism or market-enhancing development policy. The Coalition in opposition and in office has generally opposed the idea of industry policy, but has continued to support ad hoc and costly policy interventions notably in agriculture (see Conley & van Acker 2011).

### The rationale for industry policy

In the current economic environment, the primacy given to market forces has inhibited the essential foundations of a much needed debate about industry policy and cast the debate in unfavourable terms about ‘picking winners’ and industry protection. An effective industry policy for Queensland needs to adopt a different trajectory to the current preoccupation with knee-jerk opposition to any initiative involving picking winners. ‘Picking winners’ misses the point that industry policy cannot be made on an industry-sector by industry-sector basis, but rather has to focus on the inter-industry linkages and complementarities underpinning clusters of technological innovations. It must engage with other areas of policy concerned with science and innovation, higher education and skill development, employment and industrial relations.

Despite the assertions of the majority of Australian and Queensland policy makers, almost all developed and developing countries pursue forms of industry policy. Indeed, while most countries now condone general assistance to all industries, rather than specific assistance to selected industries, no developed country has abandoned all forms of sectoral assistance (Green 2015). The following sections provide a short summary of the arguments underpinning the case for industry policy.

Essentially, industry policy involves interventions, first to affect the industrial structure of an economy, including the share of different industries within an economy, and second, to improve the performance of firms and clusters of firms within and across these industries. Industry performance is influenced by factors such as the removal of barriers to product and process innovation. In turn, this reflects the technological ‘absorptive capacity’ of firms and the supporting educational, training and research institutions; access to efficient capital markets; access to cost-effective information regarding suppliers and markets; and implementation of work-organization systems encouraging quality and continual improvement. The goals of industry policy typically include employment growth, per capita income growth, technological advancement, defence, correction of trade imbalances, equity, and community cohesion (Green & Howard 2015).

An industry policy for Queensland needs to build on and guide a transformation of the State’s economic structure from resource-based exports whose terms of trade will continue to decline to

knowledge-intensive advanced manufacturing (in areas such as nano-electronics, materials design, bio-manufacturing, agri-science and advanced robotics) (Queensland Government Department of State Development 2016) and internationally competitive services (in digital technologies, education, health and scientific and technical services). Such a policy framework needs more than assertions concerning the ‘four pillars of the economy’. It requires a more integrated strategic approach to economic policy combining active macro-economic demand management with interventionist microeconomic supply-side measures designed to facilitate networking and cross-fertilisation of private sector producers.

While the supply side of research, particularly publicly-funded research, will always be important in supporting the capacity of firms to innovate, there should also be an increased policy focus on the demand side. The fundamental difference between supply-side and demand-side policy is that supply-side tends to drive *activity* and tends to be preferred by policy-makers grounded in the neoclassical view. Demand-side policy tends to drive *outcomes* and is generally preferred by policy-makers grounded in a more macroeconomic view of industry development.

The case for a concerted approach to the development of industry policy priorities and their implementation, and particularly to building or enhancing management and innovation capability in our manufacturing firms, organizations and networks, is compelling (Toner & Stilwell 2014). Left to the market, it is highly unlikely such capability will be developed in the areas and



to the extent required. However, it is also clear increasing innovation capability and performance must be a central ‘delivery mechanism’ by which Queensland’s industry policy framework can be made to contribute to the development of both a dynamic, knowledge-based manufacturing sector and a competitive services sector.

### Key elements of an industry policy

Industry policy confronts policy makers with the challenge of building a collaborative framework between government and private enterprise to facilitate policy proposals outside the taken-for-granted strictures of the free-market model. There is no self-evident reason why a competitive model characterised by weakly organised business groups and unions, a highly competitive labour market, a financial system heavily dependent on capital markets providing ready access to high-risk capital, a strong emphasis on competition, and an unwillingness by the state to interfere with the investment and production decisions of private firms will lead either to private profit or public prosperity.

Industry policy requires mechanisms for eliciting information about the constraints markets face, and hence closer collaboration between the government and the private sector. However, the capacity to design and implement industry policy requires both independence from potentially self-serving vested interests as well as ‘embeddedness’ in the environment where the policies are to be implemented. The following demand side elements need to be considered within this context:

- An ‘anticipatory approach’ to industry policy which involves a willingness on the part of the state to regulate private firms and markets in the pursuit of broader social goals including the promotion of high quality and high paid work (Coleman 1997).
- The future success of trade-exposed industries in a high-cost economy depends to a large extent on strategic investment and coordination by government, research and business to promote global opportunities for emerging knowledge based enterprises, particularly in advanced manufacturing (Green 2015; Mazzarol 2012).
- A great deal of private investment activity depends on a foundation of public investment. Public capital expenditure provides the infrastructural support (e.g. transport and communications enhancements) for private sector activity. Critically, such public investment in infrastructure must be assessed in terms of its contribution to public criteria of social and economic development rather than its contribution to a particular industry or enterprise (Boreham, Dow & Leet 1999).
- By subsidising specific private investments in the development of innovative capability, knowledge diffusion and inter-firm linkages and networks, including those which include research and educational institutions, policy makers can seek to reconcile and increase both private and social returns (Mazzucato 2016).
- Public policy support is also required for the development of clusters and networks, which will be a powerful attraction to foreign direct investment and provide a platform to participate in global markets and supply chains (Green & Howard 2015).

- There is an important role for industry policy via public procurement, which may be deployed as it has in Europe to encourage cross-fertilisation and innovation and the development of local supplier capability (Green & Roos 2012).

Interventionist supply-side measures are needed to broaden and deepen the available shared concentration of knowledge, capabilities and resources within an industrial sector. Such concentrations are not the property of individual enterprises but are spread out over many organizations – normally within a localised area or region. It is essential that sectoral intervention should target skill intensive and competitive sectors and be allocated evenly within the sector, rather than to one or several preselected firms. The following supply-side elements need to be considered within this context:

- The creation and sponsorship of *clusters of collaborative industry groups* (vertical, horizontal, sectoral) for the dissemination and use of knowledge central to economic activity including information sharing, joint production and joint problem-solving. This should also involve sponsoring targeted support for the integration of firms and clusters into domestic and global supply chains (Boreham et al 2008).
- The interdependence of production provides opportunities for the development of *networks and collaborative organizations* by firms and with public agencies and research institutions. Networks should embrace plans for fostering innovation through public-private and private-private cooperation in research and development, linking facilities to research centres

and promoting data sharing, demonstration and information provision. It should intensify the engagement of industry with research institutions (Mazzucato 2016; Toner & Stilwell 2014).

- It has long been recognized that workplaces have a key role in driving innovation and productivity growth, and new measures are required to build *management capability* and to engage employees in strategic decisions and their implementation. Innovation is embodied in improvements in the efficiency and performance characteristics of enterprises. Collaborative models should also encourage non-technology innovations such as new business models, systems integration, industry clustering, high performance work and management practices and the constructive engagement of workforces in change and innovation (Green & Howard 2015).
- Workplaces will need to be supported to develop greater *absorptive capacity*, to allow them to integrate and diffuse new and existing technologies, production processes and skills. Ad hoc practices of knowledge and information retrieval and utilisation need to be replaced by targeted, publicly supported information systems and practices. Because innovation is risky and expensive, and information is costly to acquire and use, government has a role in reducing risk and encouraging the uptake of new technologies and skills (Green 2015).
- There is a need to integrate policies concerning the efficiency and performance characteristics of enterprises with public policies influencing the quality and availability of highly-skilled labour including industrial-relations policies, active

labour-market policies and, in particular, training policies (Boreham et al 2008).

- There is a compelling case to reconsider the role of *tripartite (government, management, union) partnerships* in the development of industry policy. The aim would be to embed the principles of democratic participation and accountability in best practice work organization, and to encourage representatives of employees to commit to a responsible long term view of new policy initiatives and to prioritize productive and non-speculative investment in the future of industry (Boreham, Dow & Leet 1999). Workplaces have a key role in driving innovation and productivity growth, and new measures are required to build management capability and to engage employees in strategic decisions and their implementation.
- In becoming more globalised, knowledge-intensive and interdependent with service design, robotics and digitisation, manufacturing matters more than ever for advanced economies (Roos 2014). This is because it drives innovation and technological change. Without a policy for *advanced manufacturing*, there is a real prospect of losing even more of the science and engineering expertise in research and production which may have taken generations to nurture (Stanford 2016). These skills are not only critical to new growth industries but are part of the core infrastructure on which every modern economy depends (Green 2015).
- The development of industry policy must be determined within a clear and socially agreed set of parameters taking into account factors such as employment retention and generation, regional

economic development requires policy makers and sectoral leaders to take into account urban and regional demographic patterns, social and environmental factors and distinctive industry structures (Queensland Government, Department of Science, Information Technology and Innovation 2016).

The final section of this paper locates these elements of an industry policy framework in the context of Queensland economy and society. However, we first turn to an overview of the features that have characterised Queensland's industry policy development over past decades.

## Building on Previous Industry Policy Initiatives in Queensland?

Prior to 1998 and for considerable periods thereafter, Queensland's approach to industry policy has been partial rather than comprehensive, mired in a vocabulary of market-led development (while offering support in an unmediated and piecemeal fashion to politically favoured sectors and industries). There has generally been only lip-service paid to the more integrated, strategic industry policy framework designed to influence the level and composition of Queensland's investment, employment and productivity that we have advocated above. The following section provides a brief assessment of the policies that have endeavoured to drive industry development in Queensland over the past two decades.

### The 'Smart State' agenda

The most fully developed model of state-development strategy was, arguably, realised from 1999 with the advent of the Beattie government's 'Smart State' agenda. As a strategic vision of Queensland's future industry development and economic progress, it aimed to recast the state's economy by adding value to the traditional sectors of mining and agriculture, and turning a focus on developing a knowledge-based, research-led integration of the State's commercial, educational and industrial institutions (Salisbury 2011). Over the course of the following dozen or so years, under Peter Beattie's and later Anna Bligh's leadership, game-changing investments were directed at supporting new industry sectors (notably biotechnology and life sciences), building new research infrastructure and attracting leading scientific and biomedical researchers to Queensland.

The Beattie government's Smart State program invested substantial funds into the state's universities and technological hubs to create world-class research institutes and support ground-breaking research endeavours. It also invigorated collaborative funding schemes to new and existing research fields (Dodgson & Staggs 2012); for its share, the state government pumped substantial funding into biotechnology and life sciences research, and a special research project fund was established to support proposals from the research community across the state. This expenditure on research infrastructure created a highly visible element of the government's agenda, proving to be critical in attracting and retaining a viable research community.



The Beattie and Bligh governments (1998-2012) ultimately spent more per capita and almost more in absolute terms on extensive and targeted investments in research capacity and infrastructure than any other state or territory government in Australia in this period. Government funds amounting to almost \$5 billion were expended on research and innovation programs, often leading but in conjunction with federal research funding schemes and significant investments from philanthropic and private sector interests. This alignment of objectives allowed for many millions of dollars in research funds to leverage off each other, in tandem with university, federal government and industry investments. Such targeted funding laid the foundations for the development of a ‘future-focused’, knowledge-based economy in Queensland, where marketable research activity and research translation helped underpin the government’s economic strategies. In this novel (for Queensland) policy framework, knowledge-intensive industries and a highly skilled workforce were considered key components of economic growth and increased productivity. Unprecedented capital expenditure built new institutes of research excellence and innovation, or updated existing ones, and furnished them with the resources and expertise to create flourishing research environments, resulting in an eventually measurable boost to the state’s economic output.

Key enduring facilities built under the auspices of the Smart State strategy include: the Institute of Molecular Bioscience; the Queensland Brain Institute; the Translational Research Institute; the Institute for Health and Biomedical Innovation; the Australian Institute for Bioengineering and Nanotechnology; the Institute of



Glycomics; the Tropical Science and Innovation Precinct; the Creative Sciences Precinct; and the Cancer Research Centre at the Queensland Institute of Medical Research.

Industry policy under the Beattie government also saw almost \$200 million outlaid on industry assistance, leading to over \$750 million worth of business investment and an estimated 30,000 jobs being created or retained in Queensland by 2007. Smart State represented a revision of past approaches aimed at expanding the state's economic base. And while it was born out of a conventional political agenda to create jobs and reduce unemployment through strategic leadership from a policy-invigorated Premier's Department, it soon morphed into a program aiming to create 'smarter', higher-skilled and better-paying jobs in new and innovative industries (Mintrom, Salisbury & Luetjens 2014).

In this strategic vision, higher education, biotechnology and other research-intensive sectors were positioned alongside the traditional sectors, as foundations of a progressive knowledge-based economy in Queensland. The government's increased focus on technologically intensive industries and the research and education sectors subtly redirected the state's future economic development, and in ways that primary production and mining – the erstwhile lynchpins of the state's economy – could not have hoped to do alone.

### Other Queensland industry policy initiatives

The Bligh government's 'Toward Q2' strategy, in a way, expanded even further on the ultimately broad, bold scope of Smart State, but (perhaps reflecting its generalised ambiguity) failed to gain traction. The Newman government entertained an even broader vision encompassed in its wide-reaching 'Queensland Plan', which was more an exercise in stakeholder engagement to create a set of popular aspirations for the state's future development. In terms of specific industry agendas, Campbell Newman's administration was rather more conventional in ambition, with an oft-repeated dedication to support the traditional primary and established service industries represented in its 'four pillars' economic mantra, but in reality stepping back from much government intervention to allow industry to decide its future for itself (Salisbury 2015).

Labor's 'Advance Queensland' initiative under the current Palaszczuk government emphasises the need to move beyond the 'construction phase' (to borrow a resources-sector metaphor) of investing in new research infrastructure to a 'production phase' where inputs are matched to outputs in the form of recognisable and measurable outcomes, such as commercialised products and improved technical or medical services. Sections of the early Advance Queensland policy documents, however, read like a collection of fairly tame 'motherhood' statements, rather than statements of real intent and purposeful policy. There was an impression that, in place of an actual plan or strategy going forward, the initiative simply harked back to the Beattie government period of visionary infrastructure building (Salisbury

2014). But the next phase of activity in the promotion and support of a knowledge economy needs to move beyond recent achievements and build upon them (or what remains of them).

It seems both sides of politics struggle at times to grasp the dynamics of the ‘innovation system’, preferring to use blunt policy levers of investment in large public infrastructure and scientific institutions rather than precise policy tools encouraging industry clusters and networks to enable industry sectors and research institutions to more readily collaborate and support each other. While there are celebrated examples of success, most past and many present examples of industry policy indicate a broader failure of policy settings and in firm-level innovation capability and performance. The list is increasingly familiar – failure to turn public research into commercial outcomes, to generate higher levels of business R&D, to adapt and diffuse new technologies and skills, and to participate effectively in global value chains (Green and Roos 2012).

A finer-grained policy response is required to unravel and conceptualise the dynamics of how innovation systems work and the mechanisms by which key people located in firms (small and large) can be connected with the research infrastructure and specialists around them. This also involves the types of training and skills development required to translate and commercialise the production of knowledge and break through institutional barriers impeding collaboration between research institutions and industry. Government needs to play a central role in encouraging the growth of research-friendly businesses through collaborative

funds and industry incentive schemes, and also by promoting research activity across a variety of sectoral areas and ‘marketing’ it to desirable collaboration and partnership locations.

## Policy Implications: What would a Queensland Industry Policy look like in 2016?

The development and implementation of a State industry policy should not underestimate the determination and resilience required in the face of political and bureaucratic resistance and inertia. Policy makers face significant issues in an environment characterised by an ideological predisposition for small government, balanced budgets and an aversion to planning. Progress requires the defence of alternative, non-austerity focused economic policies, attention to nurturing clusters and networks of private sector enterprises and the integration of the strategic focus of government departments.

Only by properly understanding the distinctive qualities of Queensland’s economy and demography are policy makers able to shape policy goals which will be locally relevant and beneficial but significant state-wide. Queensland’s economic activity is highly decentralised with dependence on mining, agriculture and tourism resulting in a significantly lower level of urbanization than other states with a much greater proportion of its population living in regional areas. Because of its export orientation the Queensland economy is susceptible to the volatility which often characterises international markets precipitating employment insecurity. The state also has a comparatively large indigenous population living to a greater extent in regional and remote areas

which are relatively poorly served by public services thus exacerbating inequalities across the states regions.

The key elements of a successful industry policy must be determined within a politically agreed set of social and economic parameters taking into account factors such as employment generation and retention, regional economic development, and the promotion of high quality and high paid work. The State needs to demonstrate a willingness to apply interventionist policies in the pursuit of these broader social goals.

These industry policy goals will be more likely to succeed to the extent that key participants are formally involved in determining social and industry strategies and outcomes. This requires representatives of government and employer and trade union peak bodies to be encouraged and supported through publicly sponsored forums to work collaboratively to promote outcomes relevant to their industries as well as to the broader community.

Industry policy must enable and intensify the engagement of industry with research institutions. Queensland currently hosts a range of internationally competitive research and training institutions in domains such as: Health and biomedical research; Bioengineering and nanotechnology; Molecular bioscience; Agriculture and food innovation; Cancer research; Environmental research; Tropical and coral reef sciences; and Robotics. Industry policy needs to facilitate their integration into the state economy and labour market.

Creating opportunities for the development of networks and collaborative arrangements by private sector enterprises and public agencies and research institutions is a key element of a successful industry policy. Networks must be designed to foster innovation through public-private cooperation in research and development, linking facilities to research centres and promoting data sharing and information exchange. Industry policy needs to facilitate the creation and sponsorship of clusters of collaborative industry groups (vertical, horizontal, sectoral) for the dissemination and use of knowledge central to economic activity including information sharing, joint production and joint problem-solving. This should also involve sponsoring targeted support for the integration of firms and clusters into domestic and global supply chains.

Because innovation is risky and expensive, and information is costly to acquire and use, government has a role in reducing risk and encouraging and facilitating access to committed private investment and venture capital. A Queensland industry policy must recognize that a great deal of private investment activity depends on a foundation of public investment. Strategically targeted public capital expenditure on education and research facilities, telecommunications, environmentally sustainable energy sources, and transport provides necessary infrastructural support for the growth of private sector activity. Nevertheless, public investment in infrastructure must be assessed in terms of its contribution to State social and economic development rather than its support for particular industries or enterprises. This is

particularly important for private sector initiated proposals referred to as ‘market-led proposals’.

The future success of Queensland industry depends to a large extent on strategic investment and coordination by government, research institutions and business to promote global opportunities for emerging knowledge based enterprises, particularly in advanced manufacturing. By subsidising specific private investments in the development of innovative capability, knowledge diffusion and inter-firm linkages and networks, especially including those which include research and educational institutions, the state can seek to reconcile private and social returns and to increase both. An important step that begins to address these issues is the recently announced 10-Year Advanced Manufacturing Roadmap, developed with the support of a newly established Industry and Manufacturing Advisory Group (IMAG), to guide the development of the sector. The IMAG has the potential to provide the government with high level industry advice on strategic matters in building the sector in Queensland. The longer term success of such an initiative will depend on the extent to which it is institutionally embedded in the policy process and is not seen as a window dressing exercise.

In becoming more globalised, knowledge-intensive and interdependent with service design, robotics and digitisation, manufacturing matters more than ever for advanced economies. This is because it drives innovation and technological change in fields such as nano-electronics, lightweight composite and new electronic materials, bio-manufacturing, and advanced robotics.



Unless industry policy comprehensively addresses advanced manufacturing industry development, Queensland faces the prospect of losing science and engineering expertise in research and production that has taken generations to nurture. These skills are not only critical to new growth industries but are the core infrastructure skills on which every modern economy depends.

It is essential for industry policy makers to recognize that the integration of research and industry works in both directions. R&D in manufacturing, for example, can lead to innovations in engineering processes, new materials technologies and micro-processing. It provides significant opportunities for capital investment and jobs growth. In addition industry policy must ensure that, where possible, public procurement supports manufacturing industry engaged in new value-added activities and innovation.

Workplaces have a key role in driving innovation and productivity growth and building management capability. Innovation is embodied in improvements in the efficiency and performance of enterprises. Collaborative models should also encourage non-technological innovations such as new business models, systems integration, industry clustering and high performance work and management practices and the constructive engagement of workforces in change and innovation. Workplaces will need to be supported to develop greater absorptive capacity to identify, access and take up innovative, knowledge based practices to allow them to integrate and diffuse new and existing technologies, production processes and skills. Industry policy



must be targeted with precision and through the use of accurate data to integrate key elements of policies concerning the efficiency and performance characteristics of enterprises with public policies that influence the quality and availability of highly-skilled labour including industrial relations policies, active labour market policies and, in particular, training and skill development policies. Ad hoc practices of knowledge and information retrieval and utilisation need to be replaced by targeted, publicly supported information systems and practices.

Many countries are pursuing innovation-led, industry policies which aim to bring together public and private sector bodies to engage in long-run strategic investments to create and shape markets rather than just responding to problems of industry development. This has required public agencies not only to engage directly with the private sector, but also to lead and direct the creation of new technological opportunities and innovations. The predictable response from bureaucrats and politicians steeped in economic liberalism that industry policy is not an appropriate instrument of public policy must face rebuttal as ill-informed by history, and unjustified by evidence. This paper has provided an overview of the key issues that exemplify the development of such industry policy in many of the advanced economies and drawn an outline map of how they might be applied to the Queensland economy.

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