This blue paper provides a brief overview on the opportunities a Blue Economy Framework and Strategy can bring to the Australian Economy highlighting specific opportunities for the development of rural and regional communities and Northern Australia.
1. Overview

The latest innovation to build economic, environmental and social capital and achieve sustainable economic development is that of The Blue Economy. It enables SUSTAINABLE PRODUCTIVITY and GROWTH for virtually every part of the economy and its 100+ innovations inspired by nature with zero waste, are set to generate 100 million new jobs in 10 years.

To date it has seen investment in excess of EUR 4B in projects and an estimated 3 million new jobs that are as diverse as they are profitable, disruptive and game changing from growing mushrooms on coffee waste to making paper without trees or water using mining and building waste.

Thanks to game changing innovation in water technology, agricultural yields are up by approximately 25% using less water and fertilizer, aquaculture yields have been shown to increase 10 fold, river systems are being cleaned for release into our oceans and we can even eliminate lime scale build up in cooling towers and pipes, without the need for toxic chemicals - allowing reuse of water. In dry arid regions of Australia, this is a very attractive proposition. And these are just the tip of the iceberg.

For example we are now making rubbish bins and house frames from cigarette butts and ash - and growing thistles to generate oils 8 different oils that generated $600m in sales year one.

In countries like China, the Blue Economy is essential learning to support a new generation of problem solvers. In cities like Detroit who were bankrupt by the GFC, it’s reinvigorating the economy and building business.

In disadvantaged regions like the Corridors of Freedom in South Africa, it’s empowering communities, generating food, water, housing, energy, transport and job security.

The Blue Economy gives us the tools, innovation and inspiration to shape a positive vision of the future. It builds resilience and is an exceptional framework to create jobs especially in rural and regional communities.

The Blue Economy cascades value and generates zero waste.

The Blue Economy transforms business by using the resources available in cascading systems, where the waste of one product becomes the input to create a new cash flow. Physics, ecosystem emulation and systems thinking sit at the heart of the Blue Economy, which prioritises regional development and aims at creating jobs, building up social capital, increasing revenues and regenerating ecosystems.

According to Alan AtKisson (author of Believing Cassandra and The Sustainability Transformation) the new principles, strategies and practices in sustainability innovation have the potential to be “the biggest opportunity since the invention of money.”

The Blue Economy – the greatest ECONOMIC DEVELOPMENT and WEALTH CREATION opportunity of our time!

The Blue Economy (which includes the Circular Economy) incorporates all the elements of the current wave of global innovation. It uses radical recovery of resources, upcycling of waste (as opposed to burning or dumping) and renewable sources of energy along with green chemistry and green nanotechnology to restore ecosystems, to build the economy and generate prosperity for all.
Understanding and applying these innovations will enable Australia to become a global leader in innovation, game changing technologies, advanced business models and education.

![Diagram of Waves of Innovation](image)

*The Blue Economy contains all the elements of the 6th wave of innovation (as defined by the Natural Edge above.)*

Earlier this year, the World Economic Forum suggested **80% of the US$3.2 trillion value of the global consumer good sector is currently lost irrecoverably each year due to the current inefficient linear 'make, take waste' model.**

Two studies in recent months have put some hard figures to the economic benefits that a shift to the circular economy could bring across Europe. An independent report commissioned by resource management business Veolia and produced by Imperial College London, found that a combination of closing the loop on resource use and moving to a service rather than product based economy has the potential to add £29 billion to UK Gross Domestic Product over the next decade.

The **Growth Within report** by the Ellen MacArthur Foundation suggests a pan-European shift to a circular economy could create a net benefit of €1.8 trillion for European economies by 2030.

**How much could it be worth to Australia – specifically your community?**

A Blue Economy framework for sustainability includes or considers:

- Inspiration – Engagement – Inclusiveness
- Comprehensiveness
- Cradle to cradle and circular economy principles
√ The rights of humanity and nature to co-exist in a healthy, supportive, diverse and sustainable condition
√ The consequences of design decisions upon human well-being, the viability of natural systems and their right to co-exist
√ Measurability and Transparency
√ Clarity and Shared Mental Model
√ Credibility and Integrity (Defensibility)
√ Flexibility and Responsiveness
√ Stakeholder Impact
√ System integration and impact (See Addendum A for the Systemic Production Model)
√ Localisation and regionalization to complement globalization
√ Effective ocean and coral reef management

And is the most comprehensive framework to assist individual businesses, government and or local communities achieve their Sustainable Development Goals (formerly Millennium Development Goals).

To achieve it’s goals, the Blue Economy uses the following practices:

√ Advanced Resource Productivity: Using natural resources much more productively — efficiently — is both profitable and better for the environment.
√ Whole-Systems Design: Whole-systems design reveals lasting, elegantly frugal solutions with multiple benefits.
√ Market-Oriented Solutions: We believe in working with markets, not against them.
√ End-use/Least-cost Approach: What are we trying to do, and what’s the best (harmless) and cheapest way to do it?
√ Biological Insight: Nature offers extraordinary design solutions honed by 3.8 billion years’ rigorous testing.
√ Corporate Transformation: The Blue Economy views the corporate world, which environmental groups often dismiss as "the problem," as an essential part of the solution.
√ The Pursuit of Interconnection: The Blue Economy believes strongly in the importance of a "vision across boundaries."
The Blue Economy is led by 21 principles and aims to:

√ Create safe objects of long-term value so as not to burden future generations with requirements for maintenance or vigilant administration of potential danger due to the careless creation of products, processes or standards.

√ Eliminate the concept of waste by evaluating and optimising the full life-cycle of products and processes inspired by the state of natural systems, in which there is no waste.

√ Rely on natural energy flows and the sun (as free energy sources).

√ Understand the limitations of design. No human creation lasts forever and design does not solve all problems. Those who create and plan should practice humility in the face of nature. Treat nature as a model and mentor, not as an inconvenience to be evaded or controlled.

√ Seek constant improvement by the sharing of knowledge. Encourage direct and open communication between all stakeholders from workers to customers and suppliers to link long term sustainable considerations with ethical sourcing and re-establishing the integral relationship between natural processes and human activity.

Einstein reminds us: “We can’t solve our problems with the same thinking we used when we created them.” We need a new set of lenses to view our challenges so we can devise holistic systemic solutions that work with not against nature to build capital in all its forms. The Blue Economy provides that lens.

2. History of the Blue Economy

The concept of the Blue Economy was seeded by the UN University in 1994 (3 years prior to the adoption of the Kyoto Protocol) when the Rector of the UN University Heitor Gurgulino de Souza supported by the Japanese Government invited Belgian born economist and entrepreneur Gunter Pauli to establish a think tank, which was to create a new economic system that generated no waste and no emissions, yet created jobs, contributed to social capital and did not entail a higher cost of goods, to sit alongside the Kyoto Protocol.

As part of the process, Pauli established the Zero Emissions Research and Initiatives (ZERI) in Switzerland with the sole objective to implement pioneering cases that could demonstrate a scientifically feasible and economically viable model of product and consumption. Some 3000 cases were identified to help move industry and commerce towards sustainability – independent of subsidies or tax breaks. Their focus was on innovation that could be bundled into a system, that could work as ecosystems do, clustering innovations...
developed by diverse players, making a more efficient use of all the existing, unfailing forces described by the law of physics.

In 2004, 340 innovations were ultimately shortlisted, submitted to a team of corporate strategists, academics, financiers, investigative journalists and public policy makers. Innovations were to be shortlisted to a top 100 – but within 2 years financial markets collapsed and developing countries lost 50 million jobs.

Pauli went back to the drawing board, as what was conceived, was now inadequate.

A new team undertook a complete reassessment of all the information before them and examined the dynamics of the current economic model’s demise in the light of the innovations they had catalogued. They spotted the phoenix of new growth that seemed to shift the logic of short term results and bonuses to one that give a world constrained by limited resources, the ability to respond to people’s basic needs with what they already had available locally. One that would change the dominate business paradigm driven by cutting costs and economies of scale to one that added value and created jobs.

The final 100 innovations drew inspiration from the ability of ecosystems to always evolve to higher levels of efficiency with readily available resources, to cascade nutrients and energy, to leave nothing to waste – to utilize the ability of all contributors and respond to the basic needs of all. This was laid out as a Report to the Club of Rome in 2010 titled “The Blue Economy”.

The Blue Economy is now available in some 38 languages, and is supported by 365 children’s fables – breaking down the complexity of the concepts into simple stories to help future generations understand the concepts of systems thinking, physics and innovation inspired by nature. New case studies depicting Blue Economy innovation clusters are being produced monthly – providing new business models to inspire entrepreneurs to shape a new economy based on competitive innovations, creating JOBS and SOCIAL CAPITAL. Blue Economy experts have unprecedented direct access to Blue Economy innovation, case studies and research and the opportunity to promote new case studies from Australia to a global market.

It’s a global movement and one that can bring great advantages to Australia if governments embrace it.

The opportunity to emulate the productive and evolutionary interactions of natural ecosystems, where the waste of one is food for another – excited not just Pauli, it engaged more than 3,000 scholars and academics who over the past 20 years have contributed to initiatives around the world, spearheaded by some 900 implementers (who make up the do tank) – applying the theory and creating jobs. Today, an international community of companies, innovators and scientists support the concept, which targets to improve natural ecosystems and quality of life.
The do-tank in Australia is spearheaded by Sustainability Advisor and Blue Economy Expert Anne-Maree Huxley (nee McInerney), who hosted Australia’s Inaugural CSR Summit in 2005, and subsequently founded Models of Success and Sustainability (MOSS) [www.moss.org](http://www.moss.org) an industry body for Corporate Responsibility and Sustainability who supports business, government and community organisations through education, training, diagnostics, tools, networking and advice to drive sustainability and competitive business success.

Anne-Maree and her team is committed to finding opportunities, looking resolutely forward, focusing on the implementation of initiatives that carry the broadest possible stakeholders’ support, inspiring the next generation of entrepreneurs and intrapreneurs, pioneering beyond what we thought was possible.

From the regeneration of 100 million corals around the Caribbean Island of Bonaire to growing food in the desert with no fresh water or fossil fuels, Blue Economy experts along with the ZERI network is on a constant quest to change the rules of the game, bringing more benefits to people and nature with local resources.

3. **Education is key**

“Education is the most powerful weapon you can use to change the world.”

* Nelson Mandela

Teaching foreign students is Australia’s fourth-biggest export earner, generating $15 billion a year in income and employing about 100,000 Australians. Growth in this industry has increased expertise and infrastructure, creating economies of scale and above those usually available to a nation of 23 million people.

The future potential is also enormous, as the emerging economies of today will become the knowledge Economies of tomorrow. **Global demand for educational services is about to soar** as a result, and is expected to swell by about 7% a year between now and 2020. The rise of China and India, in particular, will be central to the growth in globally mobile students.

With Australia poised to become the educational epicenter for the next generation of professionals across the Asia Pacific, it’s an ideal time to focus on Blue Economy education, policy, investment and project implementation.

4. **The Blue Economy can be a driver of job creation – especially in rural and regional communities.**

With Northern Australia poised to be a food bowl for Asia, and an economic powerhouse of the tropics, although no investment has yet been made to undertake formal identification of new industries and jobs, a quick scan of the stranded assets and or sectors briefly identified more than 50 opportunities that could improve efficiency, create significant employment and keep money circulating locally, especially in rural and regional communities.

Three diverse examples are:

1. **Establishment of a bio-refinery** by converting an existing or soon to be defunct refinery, which uses feedstock such as thistles grown on low value unproductive water scare land to produce valuable oils. Thistles currently make up 50% of the feedstock for a new generation bio-refinery in Sardinia. Year one generated $600m in oil sales.
Oil from thistles is blended with other sources including olive oil residue and used cooking oils, to form the basis of third-generation Mater-Bi biopolymers. After extracting oil from the seeds, the remaining material is used by local farmers as animal feed, while the biomass is used to fuel the plant itself.

2. **Establishment of a silk industry to support a new era in bio-medical products** that sees mulberry silk spun into the geometry of the Golden Orb Spider and used as an alternative to titanium in medical devices such as sutures, nerve repair, bone graft, cartilage repair and orthopedic devices. It can also be used to replace titanium in a range of consumer goods such as razor blades.

This innovation competes with mined titanium but saves energy, captures CO2 and generates jobs while planting trees and growing topsoil. And it does so at about 40% of the price of digging titanium out of the ground.

This industry can see the rejuvenation of degraded farming land and the generation of up to 15 million jobs in 10 years.

**Silk as an alternative to titanium requires a dedicated crop of mulberry trees to feed silk worms.**

- 100,000 metric tonnes of silk convert 6.25m acres of degraded land to fertile.
- 1kg of raw silk, generates 9kg of pure fertilizer (caterpillar droppings), generating 900,000 tonnes overall each year
- A decade of producing silk will produce sufficient topsoil from silk worm castings to support intercropping around the mulberry trees.
- The production process will capture 300 million tonnes of CO2 equivalents in trees, soil and silk and avoid high-energy mining, ore processing and the use of N2O from unnecessary fertilizers.
- It will reduce emissions in the order of 1 billion tonnes of CO2 while generating 2.4 jobs per acre, creating 15 million jobs in one decade.
3. **Establishment of one or more stone paper production facilities.** Stone paper is made without trees or paper – utilizing building and or mining waste. One plant (that can be built for around half the price of an equivalent paper pulp production plant), can provide employment for approximately 1,000 people.

Stone Paper is energy efficient, acid free paper that is neither synthetic nor wood pulp fibre based. Stone Paper is a natural product manufactured from calcium carbonate, CaCO3 powder using proprietary additives as a bonding agent. 80.9% of the paper is made up of waste from the building industry. Offcuts and waste stone rock, marble and tiles as well as waste material at existing limestone quarries are ground to recover Calcium Carbonate.

Stone Paper also has a low carbon emission. It uses significantly less energy to produce than wood fiber paper. It generates no effluent in its manufacture (airborne or solid), and requires no water, acid or bleach during production. Any trimmings or waste paper from production is recycled to make new paper. It is both recyclable and photodegradable /compostable.

**Northern Australia could be a Blue Economy innovation showcase for the Asia Pacific Region**

Northern Australia is already a highly sought after tourist destination, education hub and a key centre for research and development (especially relating to tropical medicine and knowledge). If Northern Australia focuses on innovation inspired by nature with zero waste that the Blue Economy brings, it can also be a showcase to Asia in terms of business innovation and best practice.

As outlined by the State of the Tropics Report in 2014, across a broad range of environmental, social and economic indicators, the Tropics emerges as a critical global region with a unique set of development challenges and opportunities.

It covers 40% of the world’s surface area, but hosts approximately 80% of its terrestrial biodiversity and more than 95% of its mangrove and coral reef-based biodiversity. The tropical world’s economy is growing 20% faster than the Rest of the World and many tropical nations are important contributors to world trade, politics and innovation. A focus on the Blue Economy can also contribute to this growth.

The Tropics is also home to 40% of the world’s population, and 55% of the world’s children under the age of five years old. By 2050, some 50 per cent of the world’s population and close to 60% of the world’s children are expected to reside in the Tropics.

Advances in technology are providing a platform for expanding business opportunities, enhancing prospects to reduce poverty, and improving education and health outcomes. Incomes are higher, infrastructure is more accessible and life expectancy is the highest it has ever been. While there have been rapid improvements, assessment of key indicators of wellbeing such as life expectancy and economic output per capita show that the Tropics still lags behind the Rest of the World. The region is therefore at a critical juncture.

There has never been a more important time to harness the Blue Economy as a driver of jobs, innovation, education and investment in Australia.
To tap into the networks, IP, knowledge base, innovation, frameworks and principles of the Blue Economy to support your local economy contact:

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