

A role for algae to combat future food scarcity

August 10 2017, by Professor Peter Ralph



Algae by-products can be processed into foodstuffs, 'green' plastics and textiles, fertiliser, fine chemicals and renewable transport fuels. Credit: Lochlan de Beyer

Borrowing from Al Gore, it may be an "inconvenient truth" but the world is facing two massive global challenges – food and energy security.

By 2050 we will need to feed 10 billion people. That will require a 70 per cent increase in food production and a doubling of our energy supply, while decreasing our carbon footprint. Existing agricultural and industrial production systems are incapable of meeting these demands. Something radically different and incredibly efficient is needed right now.

Could algae farming be the answer?

A report released today by Australia21, an independent not-for-profit think tank, answers this question by predicting that [algae](#) farming will grow into a major new [industry](#) worth tens of millions of dollars to regional economies annually. Ultimately, it will become a multi-billion-dollar industry.

The report, "Opportunities for an expanded algal industry in Australia," came out of a roundtable, to which I was invited, to explore the opportunities that exist in Australia for an expanded algae industry. There was a real sense of excitement as the diverse group of 24, with expertise in science, policy and entrepreneurship gathered to explore the potential of algae farming.

As someone who has spent almost a lifetime studying algae, I was aware the participants appreciated the immense potential for the use of algae in a wide range of products and industries. Although the report acknowledges the industry is in its infancy, the recommendations about how to take algae farming mainstream are an important step in converting our excitement into progress.

Ahead of the meeting though, the big challenge was the seeming inability of Australian companies to establish something similar to the vibrant and dynamic suite of algal-based industries seen in Europe and the US. Apart from Australia's small population, and fewer small to

medium business, there must be something more that has constrained growth. After all, this is a country with all the natural advantages required for algae farming. My question was: if the algae industry hadn't established itself over the past 30 years, why would it be any different now?

As the meeting progressed it became clear things have changed. I'm convinced that over the next two to five years we'll see a raft of enterprises across sectors ranging from agriculture to pharmaceuticals that will use algae both as a raw material and as a platform for new industries.

Why the lack of progress with small and medium businesses?

Like any new entrant, algae as a raw material must disrupt the status quo that often subsidises existing businesses and supply chains. The fact that algae is a sustainable, planet-friendly product doesn't help the financial bottom line – at this stage, at least. This is where the science, research and development, and entrepreneurship need to connect to improve the efficiencies along the algal production chain.

At the University of Technology Sydney (UTS) we are addressing the issue of connectivity with a recently funded NSW government initiative called the Deep Green Biotech Hub, where innovators, universities, business and government can meet. This catalyst for innovation has significantly increased the visibility of algal-based biotechnologies.

There was general agreement at the Australia21 roundtable that a roadmap is needed to articulate strategy with government and potential investors to demonstrate how algal farming can benefit Australia. Although algae-based biofuels may get us some way along the path to

our goal, it's clear the production and extraction of high-value products for new industries will get us closer to our desired destination. That's a prospect that is both exciting and also within reach.

More information: Opportunities for an expanded algal industry in Australia: Report of a roundtable of stakeholders in the Algal industry. [australia21.org.au/wp-content/... Australia-Report.pdf](https://australia21.org.au/wp-content/uploads/2017/08/Australia-Report.pdf)

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