



Liquid Carbon Dioxide markets of DMT Environmental Technology

Author: Martin Bakardzhiev (MSc Sustainable Entrepreneurship)

Background

Carbon dioxide, popular as a pollutant and main contributor to the global greenhouse effect, carries capabilities of utilization in a number of industries, changing its impact on the planet. A biogas upgrading technology market leader seeks ways of adding value and sustainability to its products, by adding to them a carbon dioxide capture and liquefaction system providing liquid carbon dioxide ready for utilization in strategic markets, dominated by demand for the product.

Objective

By means of gathering marketing intelligence through in-depth interviews with key informants, and accredited online sources, this research project sheds light on 'What market factors DMT Environmental Technology could consider before entering the liquid carbon dioxide industry in three strategically chosen regions, namely Australia, Ireland and Mexico?'

Introduction

Carbon dioxide (CO₂) is an odourless, colourless gas which is produced by aerobic breathing, fermentation or combustion and is consumed by photosynthesizing plants. The landscape of industrial CO₂ utilization is complex and diverse. It involves a wide selection of applications: greenhouses, fire extinguishers, carbonated drinks (soft drinks, beer, wine, champagne), decaffeinating coffee, stunning animals, sustainable paint removal, stabilizing blood oxygen levels and other.

Biogas upgrading to biomethane is the second largest industrial source of CO₂. The CO₂ is produced as a by-product during the purification of biogas to more efficient and sustainable biomethane.



Figure 1.1. Liquid Carbon Dioxide is a vital ingredient in carbonated drinks such as beer.

Biogas upgrading to Renewable Natural Gas

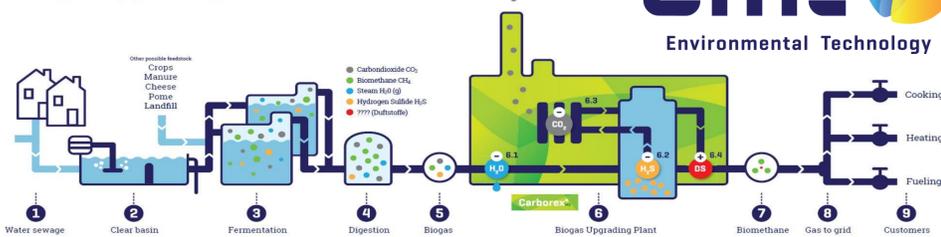


Figure 1.2. Biogas upgrading to biomethane, while carbon dioxide (CO₂) is produced as a by-product from the process.

Once captured and liquified the CO₂ is stored and transported more efficiently.



Figure 1.3. Liquid Carbon Dioxide is stored in specially designed tanks.

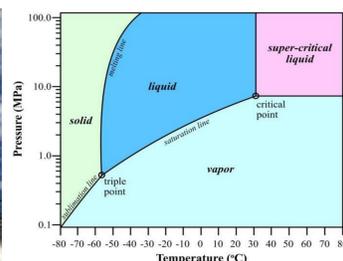


Figure 1.3. Carbon Dioxide is stored under low temperature and high pressure in its liquid state.

Results

DMT Environmental Technology has chosen an attractive industry to be interested in. The liquid carbon dioxide industry is novel, growing, sustainable and difficult to enter, but it certainly is worth the effort. Taking in-country transport into consideration, the lowest price of LCO₂ is expected to be available at the nearest place to the manufacturing plant, as the specialized trucks required to transport this pressurized cryogenic liquid are costly to buy and run. This means that if DMT wishes to enter the industry with competitive prices it must position its manufacturing plant as close as possible to its end clients, at a radius of no more than 150 km.

SWOT analysis table with Strengths, Weaknesses, Opportunities, and Threats.

Figure 2.1. SWOT analysis of the LCO₂ industry in Australia (AU), Ireland (IE) and Mexico (MX).

The lack of transparency in the industry is something which DMT should consider both as an opportunity and a threat. The industry lacks transparency likely from the fact that it is highly competitive and profitable. With no transparency, potential customers are likely to prefer large market brands, and assume that they get the best possible products for the best possible value, yet this could not always be the case. Should DMT observe the lack of transparency as an opportunity, it could rise miles ahead of competitors.

Porter's Five Forces framework table with Threat of new entrants, Supplier power, Buyer power, Threat of substitutes, and Competitive rivalry.

Figure 2.2. Porter's Five Forces framework on the LCO₂ industry according to primary data gathered from Australia (AU), Ireland (IE), Mexico (MX) and DMT Environmental Technology (DMT).

Conclusions

- The industry is sustainable, profitable and growing.
The demand for the product is originating mainly from the food & beverage industry.
The whole supply chain of the product is regulated strictly by safety authorities.
Seasonal shortages of supply open- up gaps for entrepreneurs in the examined regions.