ARROWHEAD
BUSINESS AND INVESTMENT DECISIONS

Due Diligence and Valuation Report

Arrowhead Code:	94-04-03
Coverage initiated:	September 14, 2023
This document:	May 20, 2024
Fair share value bracket:	CAD 3.9 - CAD 5.6
Share price (May 20, 2024):	CAD 1.33[i]

Analysts

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Company:	Aduro Clean Technologies Inc.
Ticker:	CSE: ACT; OTCQX: ACTHF; FSE: 9D50
Headquarters:	Ontario, Canada
Founder and CEO:	Ofer Vicus
CFO:	Mena Beshay
Chief Scientist:	Dr. Anil Jhawar
Website:	https://adurocleantech.com/

Market Data[ii]

52-Week Range:	CAD 0.85 – CAD 1.64
Average Daily Volume (3M Avg.):	92,530
Market Cap (May 20, 2024):	CAD 93.8 million (mn)

Company Overview: Aduro Clean Technologies Inc. (CSE:ACT), an Ontario-based early-stage clean technology company that has developed a highly flexible and disruptive chemical recycling platform called Hydrochemolytic™ Technology (HCT). The platform features three water-based technologies – Hydrochemolytic Plastics Upcycling (HPU), Hydrochemolytic Bitumen Upgrading (HBU), and Hydrochemolytic Renewables Upgrading (HRU).

Aduro's HCT technology uses readily available and inexpensive catalysts in the presence of water, and other bio-based materials to deconstruct and transform large molecules of low value into smaller, lighter molecules of higher value. The catalysts or the bio-based material HCT uses are available within the feedstock, making Aduro's process easier to configure and customizable to a specific feedstock composition.

Aduro originally developed HCT to upgrade heavy oil through its HBU application. However, its focus was later adjusted to also include upcycling of plastics and upgrading renewable oils, which led to the development of HPU and HRU. Of the three applications, Aduro is currently focused on the commercialization of HBU and HPU.

The ability to operate with higher rates of contamination at lower temperatures and the use of readily available non-exotic, and inexpensive catalysts and without the use and management of molecular hydrogen, allows HCT to produce a higher yield, (c. 80-90%), higher quality products at relatively lower cost. This also allows high configurability to address a variety of feedstocks at varying scales and capacity. All of this serves as a huge competitive advantage for Aduro.

The company owns, through acquisition and development, seven patents ring-fencing its HCT platform, with one additional patent pending and several others in the development phase.

Key Highlights: (1) Aduro generated revenue of CAD 235.3k and spent around CAD 1.9 mn on research and development (R&D) in 9M 2024; **(2)** The company aims to generate revenue by licensing its HCT technology, in addition to building its own plant under the 'own and operate' model; ACT's annual recurring revenue is expected to be c. CAD 95.0 mn with EBITDA margins of c. 82.2% by FY 2027; **(3)** Aduro partnered with Prospera on a pilot plant for the partial upgrading of bitumen, which is expected to generate a monthly fee of CAD 25,000, with total fees capped at CAD 125,000; **(4)** Aduro has on-boarded a global multinational food packaging company and a multinational building materials company to its Customer Engagement Program (CEP), taking the total active projects to seven; **(5)** ACT appointed Mr. Eric Appelman as its Chief Revenue Officer to leverage his experience in the waste plastic industry, his insights into customer needs and sector dynamics and his knowledge of the European market where Aduro plans to expand; **(6)** Sample test results from Aduro's continuous flow unit experimentation and optimization program have shown that up to 95% of the carbon in polyolefin feedstock can be converted into potential hydrocarbon feedstock for the production of new plastics and/or other chemicals; this demonstrates HCT's potential ability to outperform traditional chemical recycling methods, and offer a sustainable solution; **(7)** Appointment of Marie Grönborg as an independent director will be a valuable addition for Aduro, given her 30 years of experience in the clean-tech and chemical industries.

Key Risks: (a) As an early-stage company, Aduro could face risks from the adverse macro environment that might impact its growth strategy; **(b)** Any difficulties in raising adequate funds could delay the commercialization of its project; **(c)** Aduro's products are susceptible to rapid technological change and obsolency; **(d)** Fluctuations in commodity prices could make Aduro's projects uneconomical.

Valuation and Assumptions: Based on our due diligence and valuation estimates, Arrowhead believes that Aduro's fair market value per share is CAD 3.9 and CAD 5.6, derived using blended valuation.

See important disclosures on page 48 of this report.

Table of Contents

1. Investment Thesis

Arrowhead is updating coverage on Aduro Clean Technologies Inc. (ACT) with a fair value of CAD 3.9 per share in the low-bracket scenario and CAD 5.6 per share in the high-bracket scenario, derived using blended valuation. The fair value of CAD 4.0 on low-bracket scenario and CAD 5.9 on high-bracket scenario was derived using Discounted Cash Flow Methodology (DCF) while the fair value of CAD 3 .6and CAD 4.3 was derived using Relative Valuation methodology.

To tackle challenging environmental issues, Aduro Clean Technologies Inc. developed a flexible, novel, disruptive technology platform called Hydrochemolytic™ Technology. The technology can address the shortcomings of the prevailing traditional methods of recycling plastic waste and other applications such as partial upgrading of Bitumen and turning renewable oils into renewable fuels and is protected by several patents. Aduro's selection for the Shell GameChanger Program and its relationship with Brightlands Chemelot, a premier chemical hub in Europe and host organization for innovative chemical companies, is a testament to the technology's uniqueness and could prove to be a game-changer in its journey towards commercialization of HCT technology. Also, with strategic collaborations, the company is well-placed to leverage its technological prowess to meet surging demand in the future.

A burgeoning, large addressable market may provide significant tailwinds in the future

Aduro's HCT technology is specifically designed to transform lower-value feedstock, such as waste plastics, heavy bitumen, and renewable oils, into valuable resources. Aduro's latest invention, HPU, an advanced chemical recycling technology platform, can address some of the challenges in recycling of waste plastic. At present, the global recycling rate of waste plastic is c. 9%[iii]. As annual plastic production is increasing exponentially, the current recycling rate is insufficient and there is a strong need for a disruptive new approach like HPU. As many stakeholders globally strive to reach a global recycling rate of 30-50% in the next 10-20 years, a mere 5% increase from the current level would fetch an incremental 20 mn tons (Mt) of annually produced plastics with a potential economic value of c. USD 17.0 bn[iv]. The global plastic recycling market is estimated to grow at a CAGR of 7.4%, evolving from USD 52.1 bn in 2023 to reach USD 92.2 bn by 2031[v]. Furthermore, the global advanced recycling technologies market is expected to grow from USD 278.2 mn in 2022 to USD 8.9 bn by 2031 (at a CAGR of 47.2%)[vi], representing a major market opportunity for the company.

Another key application for Aduro is its HBU, which is designed to improve the properties of Alberta's heavy oil / bitumen in a more efficient and environmentally friendly manner. The technology helps reduce the need for diluent blending and its associated costs including transportation costs and increase the value of the crude oil. It minimizes the requirement for blending with an expensive diluent and frees up pipeline space, thereby improving the ease and economics of transport. Canada, with the world's third-largest oil resource, has an estimated 1.75 tn barrels of bitumen, of which the future recoverable volume is estimated at 315 bn barrels with a proven oil reserve of c. 168 bn barrels, presenting an enormous opportunity for future growth. As the world moves toward renewables and renewable oils, Aduro aims to capture the renewable oil market with its recently developed HRU, which could transform the renewable oils from crushed oil seed operations, poultry processing plants and existing biodiesel plants into renewable motor fuels, higher value renewable chemicals and so on. The global biofuels market, valued at USD 116.5 bn in 2022, is expected to evolve to USD 201.2 bn by 2030, registering a CAGR of 8.3%[vii].

The strategic applications operated by the company are expected to cater to the insatiable demand from end-users and provide a major opportunity for it to move forward.

Prevailing technologies such as Pyrolysis and Water Mediated Pyrolysis (WMP) have economic and chemical limitations

Pyrolysis and WMP, chemical recycling technologies, are processes of heating collected recycled plastic in a reactor to break down the molecules, in the case of WMP the process is in the presence of water. The major drawbacks of pyrolysis and WMP include higher energy usage, lower product quality, and lower product yield. The requirement for high energy usage, the lower yield of the final products and it's lower value also drives the need for expensive post treatment of the output. The overall net result is a challenged operation with known limitations that dictate certain operational and economic realities. Aduro's HCT, on the other hand, has the potential to revolutionize the future of energy as it can transform similar and/or lower-value and cheaper feedstocks into higher-value resources. The higher yield of high-quality output is processed more efficiently, with lower emissions and no need for molecular hydrogen. Aduro's sustainable chemical approach involves the addition of water (recycled and reused in the process), readily available metals and bio-based material to deconstruct the long molecules into smaller molecules. The activation of the unique properties of water, at relatively low temperatures, along with readily available and inexpensive catalysts, without competing for the cleanest and highest-priced waste feedstock due to its tolerance for a higher degree of contaminants,

makes the process a differentiator among its peers. Thus, Aduro's HCT technology addresses many of the economical or chemical shortcomings of pyrolysis and several other chemical recycling technologies, among the benefits are lower value feedstock selection, scalability, financial flexibility, emission savings, feedstock flexibility, higher yield and higher quality outputs which command a premium, a favorable operating environment.

Seven granted patents ring-fence the technology, creating high entry barriers

Aduro owns, through acquisition and development, eight patents (seven granted and one pending) which are a by-product of the company's creative, skilled team comprising R&D chemists led by the company's CTO and co-founder Mr. W. Marcus Trygstad, and with the assistance of Dr. Anil Jhawar and his research and operations teams. The company continues to develop newer applications of HCT, thereby unlocking more valuable innovations, resulting in additional patents and intellectual property. According to management, the patents are valued at more than CAD 100.0 mn, which has not been factored into its current valuation.

Collaborations with highly respected partners

In the last three years, Aduro has engaged with several highly respected partners, complementing its earnings capability and increasing its technological know-how. One notable collaboration is its partnership with Prospera, which is aimed at developing, building, and supplying a pre-commercial pilot plant to convert low-API bitumen to higher-value products, with a roadmap of commissioning a 3,000 bbl./day commercial facility. Prospera will pay Aduro a monthly fee of CAD 25,000 with the total fees capped at CAD 125,000.

Aduro's engagement with Chemelot Innovation and Learning Labs (CHILL) should also bring benefits, as the company will receive access to skilled researchers, specialized equipment for testing and analysis of data, and additional services, including access to CHILL's partner events and public relations campaigns. Furthermore, the company partnered with Brightlands Chemelot Campus (Brightlands), Europe's leading location for companies, research, and knowledge institutes in the field of chemistry and materials, located in Geleen, the Netherlands. This partnership aims to complete installation by applying HCT demonstrating tons per day scale for the conversion of polyethylene (PE) waste to useful feedstock for chemical processes.

The robust relationship with CHILL and Brightlands has led to the establishment of its European subsidiary i.e., Aduro Clean Technologies Europe BV (ACTE), in the Netherlands. ACTE formation not only marks important milestones of Aduro's international footprint expansion thereby demonstrating the Company's dedication towards implementing its global growth strategy, which will serve as Aduro's European hub and a conduit for achieving strategic goals in the region. Also, the partnership with SWITCH, a recycler that owns and operates the largest collection program for agricultural waste in Ontario, should benefit Aduro via the supply of waste plastic feedstock.

Shell GameChanger Program marks a step-change

Aduro was successfully inducted into the Shell GameChanger Program on November 3, 2022, for the application of Aduro's HCT for producing naphtha cracker feedstock from polyethylene, polypropylene and polystyrene, individually or on a mixed-feed basis. The Shell GameChanger Program is designed to partner with companies to deliver cutting-edge solutions, while providing non-dilutive funding. Shell's technical expertise will enable Aduro to develop a reliable process design and optimize HCT for commercial implementation. The GameChanger Program will also mentor Aduro in developing its commercial strategy and market position.

Experienced management and the board instill confidence in stakeholders

The foundation of any successful company is laid by its strong and experienced management. To tackle pressing environmental and energy issues, Aduro has built a team of industry experts with rich experience. The founder and co-founder, Mr. Ofer Vicus and Mr. William Marcus Trygstad, have c. 25 and 35 years of relevant experience, respectively. The company's COO, Mr. Gene Cammack, has over 35 years of experience in the Oil & Gas and Chemical sectors and the CFO, Mr. Mena Beshay, has 20 years of experience in senior financial leadership positions.

Furthermore, the company has recently hired several experienced personnel for key positions, of which the appointments of Ms. Stefanie Steenhuis as the new head of Brand and Marketing and Mr. Eric Appelman as the new Chief Revenue Officer are worth noting. Also, the company is in the process of hiring a key member of the Executive Leadership Team based out of Europe, who will enable the company to attract key talent in the region.

In November 2023, Aduro appointed Marie Grönborg as an independent director. Marie holds an M.Sc. in Chemical Engineering and has ~30 years of global experience in the chemical and clean-tech industries. She has held executive level positions in several companies and is currently on the board of SSAB (Swedish steel company), and Eolus (designing and construction of facilities for renewable energy and storage). Ms. Grönborg was also a board member of

Permascand, a provider of electrochemical solutions for global green transition, which was recently acquired by Altor. Her experience and exposure in the chemical and clean-tech industry will be a valuable addition to Aduro's board.

However, certain risks could impede growth plans

Aduro is yet to secure financing for the project

Aduro is in a pre-revenue stage, so it may require equity or debt financing to secure additional funds to meet its capital expenditures. Financing would be needed to support ongoing operations as well as implement its planned growth strategies. While it has managed to raise equity financing in the past, it is plausible that the company may not be able to raise further capital from the markets in the future due to unforeseen macro environment. The inability to secure sufficient funds could postpone or otherwise hamper the company's growth plans, leading to the delay or cancellation of certain activities or projects.

Technological obsolescence might hinder growth plans

Aduro's product offerings are dependent on advanced developments in its technologies, which are susceptible to the impact of rapid technological change. The company's product offerings might become obsolete as a result of such technological changes, resulting in the loss of contracts or reduced margins.

Investment thesis conclusion

Through its distinctive offering, Aduro plans to strategically position itself to answer the increasing environmental challenges faced by the world today. The company's partnerships with well-regarded names should help it in developing technical know-how and secure its financial position. Aduro's selection for the Shell GameChanger Program should drive a significant advantage for the company by boosting its technical expertise, paving the way for significant growth opportunities. However, on its way to becoming a reliable and preferred platform technology solution provider, it must overcome several hurdles, including threats arising from ever-changing technology and the need to raise adequate funds for technological development.

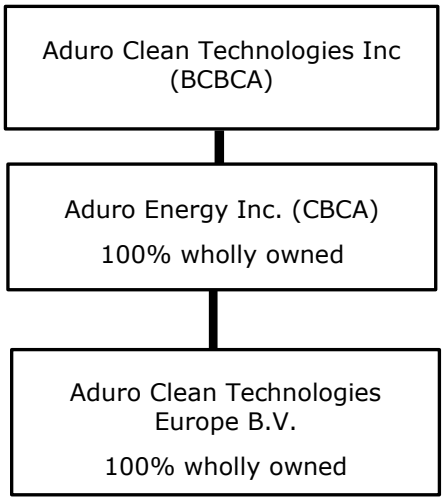
2. Business Overview

2.1 Introduction[viii]

Headquartered in Ontario, Canada, Aduro Clean Technologies Inc. (Aduro, ACT or the company) is an early-stage, clean-energy technology platform company. With an aspiration to address global environmental issues from petroleum production and processing, landfilling, waste incineration and unscrupulous dumping of waste plastics in the oceans, Aduro pioneered the development of a flexible, novel, patent-protected technology platform called Hydrochemolytic™ Technology (HCT). HCT transforms lower-value feedstock, such as waste plastics, heavy bitumen, renewable oils and waste rubber (tires) into valuable resources.

The versatility of HCT makes it stand out, as it can be implemented in stand-alone operations or integrated into the operational infrastructure at customers' existing plants, thereby marking its greatest economic relevance. One of the key advantages of HCT is its ability to operate on a smaller scale, which can later be efficiently and economically scaled up in a modular fashion when capacity needs to be increased. As a result, HCT presents both economic and operational flexibility, leading to minimized implementation risks and costs, while maximizing yield. Operating economically at a smaller scale also promotes the ability to have decentralized right-sized operations near the various sources of waste feedstock and reduces the need for transporting waste to a large-scale centralized processing plants or an intermediate collection facility further contaminating the waste feedstock. This ability reduces the environmental and economic costs associated with collection and transportation while improving the quality of the feedstock and operating economics.

Exhibit 1: Organizational structure[ix]



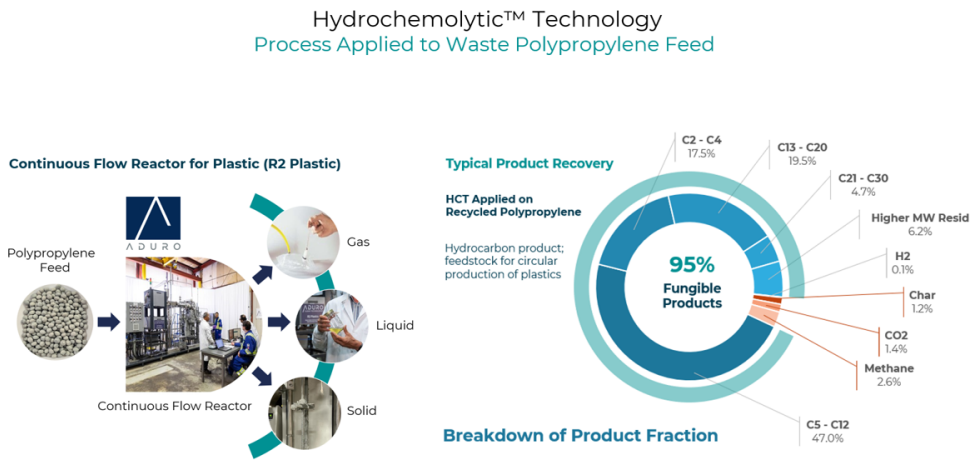
The company has its own dedicated R&D laboratory as well as research collaboration with Western University. However, to expedite its R&D capabilities and enhance its capacity to host potential customer trials and demonstrations, the company recently hired a team of six operational personnel that allow it to run efficiently all of its continuous flow processes. The company is also now in the final stages of expanding its laboratory facilities at the Newbold Business Park in London, Ontario which is scheduled to be completed by Q3 2023. With an area of 4,371 square feet (ft^2), the facility will house renovated offices, modern laboratory space and new and additional analytical equipment. The company also recently expanded its team by onboarding a total of eight process engineers and operators significantly augmenting its capabilities, including its ability to run several continuous flow processing units simultaneously and accelerate its planned CEP.

In 2023, Aduro commissioned its continuous flow plastic reactor (R2 Plastic) which successfully turns waste polymers into higher-value liquid hydrocarbons. Since then, the company has conducted over 240 test runs on a variety of feedstock compositions, with the longest test stretching to 36 hours. The unit is committed to conduct experiments both for its CEP and to achieve research goals, working with a broad variety of feedstocks and advancing the design of the next generation process. The key observations related to the test runs of waste polypropylene using the continuous flow plastic reactor unit are as follows:

- Up to 95% of the carbon in polyolefin feedstock is converted into potential hydrocarbon feedstock for the production of new plastics and/or other chemicals
- Less than 5% of input ends up as non-recyclable material (carbon and fuel gas)
- All feedstock is highly saturated, minimizing or avoiding the need for costly post-hydrogenation

Achieving a high yield of total fungible products from waste plastics is one of the main advantages of HCT and achieving supportive testing results on the R2 Plastic is a strong validation of the considerable progress achieved to date. This is a clear demonstration of HCT's ability to outperform traditional chemical recycling methods, potentially offering a sustainable solution with strong environmental and economic benefits to Aduro's customers. Less than 5% of carbon recovery efficiency positions HCT as a pivotal technology in the conversion of plastic waste and carbon footprint reduction.

Exhibit 2: Continuous Flow Reactor for Plastic[x]



As a result of its extensive focus on R&D, at present, Aduro has eight patents of which seven have already been granted. The company is currently developing several new patents that might unlock further valuable innovations and result in additional patents and intellectual property.

Aduro Clean Technologies Inc, which was formerly named Dimension Five Technologies Inc. (D5), was incorporated under the Business Corporations Act (British Columbia) (BCBCA) on January 10, 2018. After the successful completion of a reverse merger on April 23, 2021, the company changed its name from Dimension Five Technologies Inc. to Aduro Clean Technologies Inc. The company is the holding company of Aduro Energy Inc., which was incorporated on December 15, 2011, under the federal laws of Canada. On June 15, 2023, Aduro Clean Technologies Inc. established its European subsidiary Aduro Clean Technologies Europe BV ("ACTE"), based in Geleen, Netherlands. ACTE marks the expansion of Aduro's international footprint and will serve as Aduro's European hub. The primary goal of ACTE is the future construction of a demonstration unit at the Brightlands Chemelot site, showcasing the Company's patented Hydrochemolytic™ platform technology for tackling hard-to-recycle mixed plastics.

The company is listed on the Canadian Securities Exchange (CSE) under the ticker "ACT," on the OTCQX under the ticker "ACTHF" and on the Frankfurt Stock Exchange under the ticker "9D50".

2.2 Hydrochemolytic™ Technology (HCT)[xi]

HCT is a technology platform that transforms large, stubborn molecules of low value into smaller, lighter molecules of higher value at a relatively low temperature and cost. The process can be configured to address multiple market applications transforming a problem into a resource of high value – a step toward the circular economy. Aduro's HCT process can be reconfigured to unlock and maximize the value from different families of waste plastics with different value propositions.

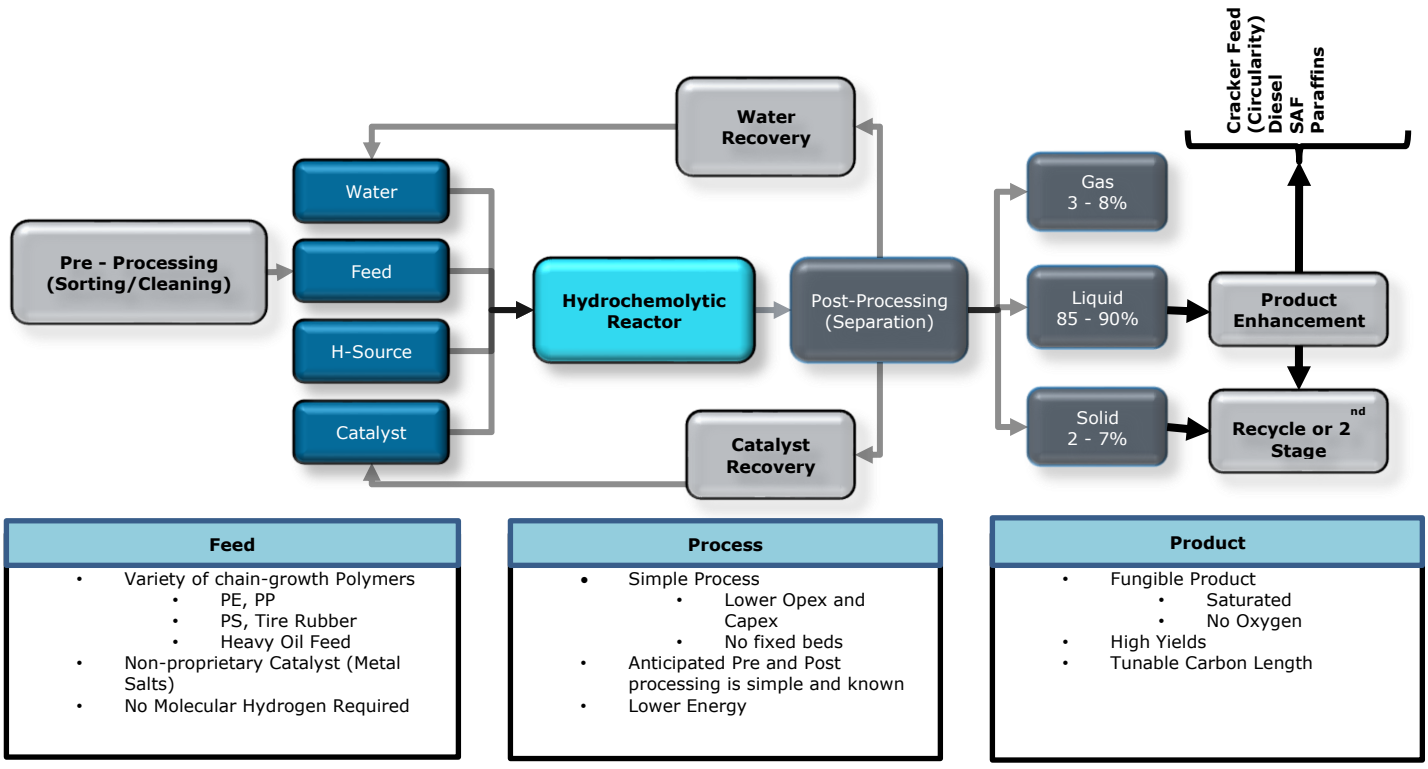
The detailed process is as follows:

- The core of the technology is the reactor, which operates below 400°C.
- The process commences with the introduction of post-consumer plastics, waste rubber, renewable oils or heavy bitumen into a set of reactors, each with varying severity levels from low to high – depending on the complexity of the feedstock. The process breaks down the larger molecules to increase the output yield.
- Water, an integral part of the process, is used as a medium for chemical reactions. It is also used for transferring heat, transporting the coagents and maintaining suspension of the liquid intermediates and coagents/catalysts in

the reactor. The amount of water used in HCT is significantly less than competing technologies such as hydrothermal technologies, and the water is recycled and reused in the process.

- HCT uses cheap, bio-based material sources such as biomass, to create hydrogen equivalents which improve the product quality. Note that the HCT does not use molecular hydrogen – the production of molecular hydrogen has negative environmental impact and requires complex infrastructure and capex. For hydrogen equivalents, the company initially started with glycerol and has since developed many other sources of hydrogen equivalents, such as cellulose, ethanol and methanol. In the case of mixed waste plastics, the company can use elements existing in the waste feedstock and considered as contaminants as H-source, byproduct of waste PET for example. The technology can use various bio-based materials, which is a testament to its operational flexibility to adjust to varying customer needs, feedstock composition and market conditions.
- Another key step is the addition of readily available low-value catalysts that are fed into the reactor to reach the necessary concentration level. Metals which already exist in the bitumen are used as catalysts in the HBU process only. Although the HCT platform uses readily available and inexpensive catalysts to run its chemistry, catalysts are readily available in the feedstock itself and/or added as needed.
- Water carrying the hydrogen equivalent, and the catalyst enters the reactor and is mixed with the liquid intermediates.
- The upgrading reaction results in the simultaneous deconstruction of molecules followed by saturation of the broken chains, thereby significantly simplifying the process.
- The liquid product from the reactor is sent to a separator where the water and gas are separated from the final output.
- Due to the low severity condition, including operating below cracking temperature, the amount of gas produced in the reactor is relatively low, which is pivotal to driving higher liquid yield and a lower environmental footprint. Also, a significant amount of the generated gas (estimated at 60%) can be used as fuel to help offset the cost of purchased energy for the process, making the technology a gold standard for its CO_2 footprint.
- The liquid output is almost fully saturated (approximately 95% saturation) and, therefore, does not require any further hydrogenation. It can be sold as input oil for industries such as refineries or to produce new plastic.

Exhibit 3: Hydrochemolytic™ Process Flowchart[xii]



Note: The above flowchart represents HPU and Hydrochemolytic process in general. The flowchart would differ for each application and should not be misrepresented as a general flowchart diagram combining all applications.

2.3 How HCT is different from Current Technology

With an overall global recycling rate of less than 10% of waste plastics, our environment is in dire need of a disruptive new approach that can tackle the pressing issue of continuous growth of annual plastic production. The currently available technologies are not fully capable of resolving the issue as it suffers from two major chronic limitations:

- Mechanical recycling technologies, where the plastic is essentially melted and converted to product without changing its structure suffers from the mixed nature of waste streams, which compromise product quality. Also, waste is often contaminated with everything else that is thrown away, like food, medication, cleaning products. Mechanical recycling must include very rigorous cleaning and its products often remain excluded from major applications such as food contact. Whereas mechanical recycling is attractive from an energy and effort point of view, it can in practice only be used for a fraction of all plastic waste generated.
- Chemical recycling technologies can take on what mechanical recycling cannot, and a variety of technologies have been pursued. However, plastic being a highly diverse chemical material, while transforming creates many undesired chemical reactions, which results in a very small portion of waste plastics being recycled. Current technologies can process specific feedstocks or categories of plastics that are devoid of certain contaminants, such as paper or specific metals. Often, expensive pre-treatment / sorting and cleaning is required, in addition, in many cases the actual output requires significant post-processing treatments to improve the product quality, as lower-quality output often reduces the amount of revenue that can be earned from recycling. This has led to economic limitations, as the involvement of expensive sorting, pre-treatment processes, and post-processing treatment processes significantly increase costs. For this reason, companies using current technologies have to either collect more of the same materials (to maintain specific volumes), which is an expensive process, or apply an expensive post-processing treatment to deal with the reactivity of the feedstock to process very large volumes.
- **Economic:** With the choice of feedstock being the key issue in current technology, recycling companies incur costs such as expensive feedstock, high operating and energy consumption expenses, and extensive post-processing

treatment that produces a limited amount of low-quality yield, thereby limiting profit margins. An additional negative feature of legacy technology is the need to compete for the highest-quality waste feedstock (no contaminants and easier-to-recycle categories). As a result, waste plastics must be shipped from a variety of sources to support large-scale, low-margin operations. As competition for the highest-quality waste feedstock increases, the cost also increases, thereby pressuring margins. To escape these issues, different technology like HCT is needed.

HCT has demonstrated the following advantages over current technologies:

Exhibit 4: Difference between HCT ("HPU Application") and current approach[xiii]

Particulars	Current technology	HCT
Feedstock selection	Targets superior quality of feedstock	Feedstock-agnostic, i.e., can be configured to process a diverse set of feedstocks with target material at less than USD 200-300 per ton
Feedstock purity	High-purity feedstock is required In some cases, centralized locations for blending and treating feedstock are required, adding additional Opex / Capex to the process to maintain feedstock quality	Can better withstand impure products with a certain level of contamination that is above the threshold for current technologies
Operating temperature	High temperature (c. 400 - 1,100°C)	Low temperature below 400°C
Catalyst	May require an expensive catalyst to be used	Uses cheap and readily available catalysts
Scalability	Economic limitation dictates Minimum size > 60-100 tons per day	Modular and scalable with a starting scale of 25 tons per day to +500 tons /day Simpler technology, leveraging the core advanced chemical deconstructing technology, allows for smaller economies of scale, while also being scalable to larger facilities
Capex	High capex required for setting up large-scale centralized operations	Lower capex is required as it can involve setting up right-sized decentralized recycling operations, which can be implemented on a smaller scale; also, there is no requirement for externally sourced hydrogen, simplifying the buildout and capex requirements, while keeping higher value of final products
Opex	Chemical and economical limitations dictate larger sized operations driving higher opex Higher OPEX is incurred as it involves higher operating temperatures and additional process equipment and infrastructure (expensive sorting, pre-treatment and post-processing treatment processes)	Lower OPEX is incurred as lower operating temperatures and conditions are used and a simpler process is employed without the requirement for additional process equipment and infrastructure In case of B2B, the process can be hosted at the customer's site and be mainly operated by the existing team with minimum requirement for additional dedicated operators

Energy consumption	High	Lower due to less severe conditions and low energy consumption
Output flexibility	Cannot be configured to process a diverse set of feedstocks	Can be configured to process a diverse set of unified feedstocks on a smaller scale and a mix of feedstocks at a larger scale
Output quality	Low	High, commanding a premium in comparison to legacy technologies
Output yield	Typically, <70%	Targeting higher yield of fungible output products ranging from 80-90%
Post-processing byproduct	High	Low
Environments	Often operates in territories that already have high regulations and established collection and recycling framework and indirect government subsidies to lower the cost of pre-treatment processes, including collection/sorting	Can operate economically in territories with both a high level of regulations and unregulated environments B2B model, for example, implies that the waste material will never leave the producer's site regardless of the territory and respective regulations

Exhibit 5: Difference between HCT ("HBU Application") and current approach[xiv]

Particulars	Current technology	HCT
Usage of Co-processing Agent	Current processes often require hydrogen gas, which must be produced separately in installations that require high capex, typically use natural gas as an input, and catalyst	HBU process doesn't require a separate hydrogen production facility, reducing the capital required and ongoing use of an expensive catalyst. It uses a Biobased source for the creation of Hydrogen equivalent
Catalyst	Most alternative processes are not catalyzed and will require more severe conditions and yield lower quality products as a consequence. Some require costly catalyst	In the HBU application, catalysts (metals) are often readily available in the bitumen
Energy Requirement	Current Technologies need excess energy to run the process at elevated temperatures ranging from c. 400 - 1,100°C	The HBU process doesn't require excess energy for deconstruction of the heavy molecules or for hydrotreating. The operating temperature is below 400oC
Capex	High capex required for setting up large-scale centralized operations. These high capital projects require large economies of scale to be economic.	Lower capex is required as compared to traditional upgrading technologies, resulting in smaller economies of scale
Blending Cost	Cost of blending is relatively higher than the HBU process	Significantly lower blending cost
Emission footprint	High	Lower due to less severe conditions and low energy consumption
Output yield	Range < 90%** with many technologies having uneconomic yields	Yield of 80-90% of fungible output products and strong economic performance.

Economies of Scale	Feasible for Large projects	Feasible for both large and small projects; Small projects range from 10,000 barrels per day onward

***Cokers run at 80-85% yield but then hydrotreat to swell the liquids to 85-90%. Hydrocracking adds yield, so nominally there is 102-106% yield, but they need a pre-step that removes 7-15% of the heaviest portion first (paraffinic separation). Other technologies do have low yields, but they are not economic.*

Note: Crude densities are described by their American Petroleum Institute (API) gravity, where an API of 10° represents a crude density equivalent to water. Anything greater than 10° is lighter than water. Crudes with an API gravity in the range of 42° to 50° are sometimes referred to as Super Light. Condensates typically have an API gravity greater than 50°. Sweet crudes contain less than 0.5% sulfur. Crudes with a higher sulfur content are referred to as sour.

2.4 HCT Development: Phase-wise[xv]

The phase-wise evolution for Aduro's HCT process is as follows:

Exhibit 6: Phase-wise development[xvi]

Year	Key Development
2023	• Pilot scale continuous flow reactor for Hydrochemolytic™ Plastic Upscaling (HPU) is operational and generating data. • Pilot scale continuous flow reactor for Hydrochemolytic™ Bitumen Upgrading (HBU) and Flash drum used to concentrate heaviest components in bitumen to allow maximum conversion expected to be operational in Q3 2023. • Expanded Research and Operations capabilities by onboarding and training process engineers, process operators, and project management personnel, more than doubling the team size. • New expanded laboratory facilities to enhance the company's research capabilities and ability to accelerate technology development and stakeholder engagement is expected to be completed in Q3 2023. • Became member of Chemistry Industry Association of Canada (CIAC) as part of their Plastics Division joining 70 members consisting of leaders in the plastic industry. As a member, Aduro brings expertise in advanced chemical recycling innovation and technological advancement, which is crucial to achieving the Division's goals. • Aduro partners with Chemelot Innovation and Learning Labs (CHILL) to execute an experimentation program at the Brightlands Chemelot Campus in the Netherlands, with the aim to optimize HPU and accelerate the Company's path to commercialization.
2022	• Completed mechanical design and Assembly of the continuous-flow Plastic, Bitumen and Flash drum units. • Successful selection of the company into the Shell Gamechanger program to apply HCT to produce sustainable Naphtha Cracker feedstock from polyethylene, polypropylene, and polystyrene, individually or on a mixed basis. In addition to non-dilutive funding, Shell GameChanger will also mentor Aduro in developing their commercial strategy and market position. • In partnership with Western University, a joint research project to evaluate the effects of intrinsic and extrinsic contaminants present in plastic feedstocks and to optimize pre-and post-processing techniques was awarded $1.15 M in non-repayable grant funding. • Obtained independent third-party validation of HCT when applied to bitumen in a continuous flow reactor.
2021	• Aduro completed work to support that HCT, proven by Aduro in small-scale batch reactors, is viable for use in continuous-flow reactors commonly used in commercial applications constructed and submitted a report for independent third-party validation. • Aduro entered discussions to partner with Brightlands Chemelot Campus, a premier chemical hub in Europe, to develop HCT and complete an installation that applies HCT to demonstrate, on a tons per day scale, the conversion of waste plastics to useful feedstock for chemical processes.

	• Aduro engaged with engineering company, Exergy Solutions, for technological process design work on the next stage of HCT development.

2.5 Key Application Areas[xvii]

The company started working on the technology process in 2011, with a focus on upgrading heavy bitumen, which was then named Hydrothermal Upgrading Technology.

Based on five years of working on bitumen upgrading, Aduro's expertise started to grow. With extensive laboratory work, the company learned many lessons, such as the importance of metals as coagents/catalysts in bitumen upgrading reactions, and so on. The company went on to apply its lessons to renewables, and over the next three years, Aduro developed another key application in the renewable oil category: HRU. From 2019 to 2021, the company added another vertical, which can transform low-value cheap feedstock (waste plastics) into a valuable resource called HPU.

Today, HCT implies "**one technology, many applications**", which is the culmination of lessons learned from bitumen, renewables and plastics, which are essential drivers of the HCT platform.

Exhibit 7: Evolution of HCT[xviii]

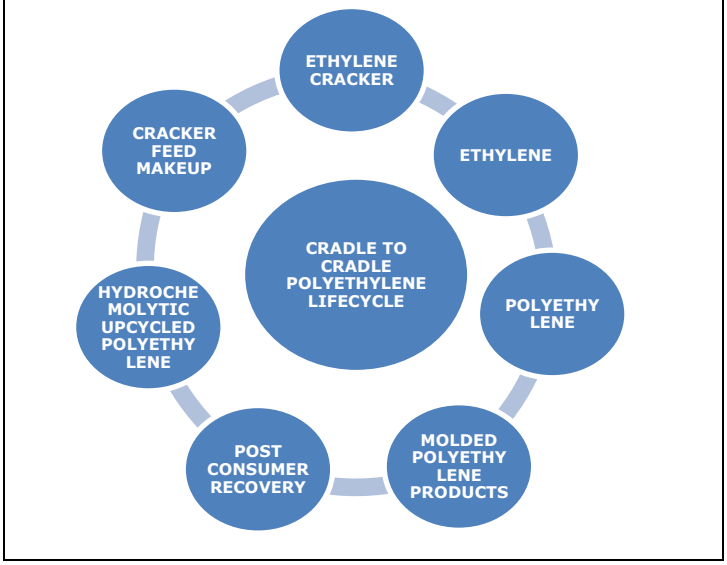
2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
HBU- Hydrochemolytic Bitumen Upgrading												
			HRU- Hydrochemolytic Renewable Upgrading									
					HPU- Hydrochemolytic Plastics Upgrading							

Aduro's HCT is not a single-purpose technology – it can be applied in multiple ways. At present, the company, with the help of experienced scientists and engineers, has enhanced its technology toward the following key principle application areas:

- **HPU:** One of the newest and most important applications of HCT is its capability to transform waste plastics, foam, and waste rubber into high-value resources, where HPU can process Chain Growth Polymers, these are the most commonly used and harder to recycle polymers. Other polymers included in the feedstock are considered contaminants and are managed as part of the process as the HPU can handle relatively high rates of contaminants. Chain Growth Polymers represent +70% of total plastic waste and are highly resistant to chemical recycling[xx]. While other recycling technologies are constrained by the quality of the feedstock they can process (ability to only process expensive pre-sorted and pre-treated high-quality feedstock) or the type of resin they can process (ability to process a single type of resin such as the case with Mechanical recycling). In both cases, very large volumes are needed to maintain sufficient margins and to overcome economic issues like higher operating costs, lower yield and lower quality output. Aduro's HPU thrives by addressing the challenges involving feedstock selection with the ability to operate on lower quality and lower cost resins while using less expensive pre- and post-processing treatments but generating liquid products of superior purity and yield commanding a premium sales price, and some of which can also be used in the production of new plastics, foams, paints and coatings, detergents, and other products. The company can implement its HPU process in a wide range of end-user industries such as oil refineries and small and large waste disposal sites.

  The exhibit on the right demonstrates the usage of HPU technology, where an ethylene cracker, a plant that produces ethylene (the building block of plastics) processes ethylene to form polyethylene, which is used to produce plastic

Exhibit 8: Steps Toward a circular economy[xix]



products. After consumption, the plastics as feedstock are fed as an input material into Aduro's HPU platform, which is used to produce high-value feedstocks.

- **HBU:** Traditional industry upgrading approaches employed to deal with the movement and/or upgrading of heavy oil require extensive investment in capital to build and operate massive multi-billion-dollar processing plants to support the large economies of scale, thereby resulting in high capital costs. These large projects have proven to be difficult to manage, resulting in large cost overruns. As a result, there have been no new upgrades planned. One alternative is to blend the bitumen with diluent, a lighter hydrocarbon that allows the transport of the product. The blending itself does not add value to the bitumen but is purchased in a tight market at a premium supply cost and takes up a significant volume in the tight pipeline systems. Another way is by improving the quality of bitumen as close as possible to the wellhead before the need to blend it and without the need to use large CAPEX on other facilities to upgrade the bitumen. Alberta's heavy oil industry faced immense pressure to develop more efficient and environmentally friendly methods to transport heavy crude oils. Aduro's HBU provided a paradigm shift, allowing producers to recover profit margins by reducing crude blending costs, while increasing the value of the final product and gaining significant environmental benefits over existing and available technologies. Principally directed toward upstream bitumen operations (in both Alberta and refineries globally – as HBU is applicable to refiners' reside operations also, that look to drive more value from the heavier components of the crude. This process transforms heavy crude oil and heavy bitumen into lighter crude, enhancing its yields from the bottom-of-the-barrel. The process involves the use of an H-source, such as biobased cellulose, glycerol, ethanol, methanol or components from a recycled plastic resin, which is processed with heavy oil/bitumen at a low temperature, thereby reducing its blending costs and increasing the value of crude oil, a key differentiator from traditional upgrading approaches. This minimizes the requirement for blending with an expensive diluent, improving the ease and economics of transport.
- **HRU:** A platform technology used to transform renewable oils from crushed oil seed operations, poultry processing plants and biodiesel plants into renewable motor fuels, bio-jet fuel and specialty chemicals at relatively low temperatures without the need for molecular hydrogen from external sources.

2.6 Business Model[xxi]

Aduro's future business model is based on licensing, royalties and R&D, where the company will monetize its technology. Aduro is working with industry partners in order to monetize its technology and expand significantly without the need for major capital (raised through debt or equity). The end-users or customers will incur costs by setting up plant and machinery (reactors, equipment, etc.) based on Aduro's specifications. The equipment and machinery that Aduro delivers or suggests is similar to that used in the legacy approach or other petrochemical processes. Aduro's revenue generation would be dependent on the tonnage of feedstock that is processed.

Exhibit 9: Use case illustration of licensing model economics – HPU on Polyethylene (PE) feedstock [xxii]

Particulars	Tons per day	No. of train reactors	No. of days in a year	Tons per year	Estimated capex (CAD mn)	Estimated opex (CAD mn)	Estimated revenue (CAD mn)	Estimated gross profit (CAD mn)	Aduro's estimated share of revenue (CAD mn)
Scenario 1	25	1	340	8,500	22.5	2.8	7.7	4.9	1.5
Scenario 2	25	9	340	76,500	202.5	21.9	69.7	47.8	13.9

Note: All the numbers are based on the management's calculations.

However, in the future, under the appropriate circumstances, the company plans to build and operate its own plant, as part of an 'own and operate' model. As the economics seem to be promising, Aduro has already launched discussions on access to applicable feedstock and potential plant location. A detailed comparison between the two models is shown below.

Exhibit 10: Use case illustration of economics – licensing model vs own-and-operate model (PE) [xxiii]

Particulars	Licensing	Owned and Operated
Revenue (CAD mn) *	7.7	7.7
Capex requirement (CAD mn)	22.5	22.5
Operating expense (CAD mn)	(2.8)	(2.8)
Feedstock acquisitions (CAD mn)**	-	(1.7)
Aduro's licensing fees (CAD mn)	(1.5)	-
Gross profit (CAD mn)	3.4	3.2

Gross profit margin	44%	42%
Payback years	6.67	6.98
For Aduro		
Gross profit (CAD mn)	1.5	3.2
Gross profit margin	100%	42%
Capex required (CAD mn)	NA	22.5
Payback years	NA	6.98

***The cost of washed and ready-to-process feedstocks of polyethylene in North, Central and Latin America ranges from CAD 50 – 250 per ton, depending on various factors. The above use case illustrations assume a cost of c. CAD 200 per ton of feedstock.*

** Revenue is calculated on the assumption that the output yield is 80% (vs 90%) and the licensing fee is calculated based on 20% of the gross revenue of the customers.*

2.7 Patents and Grants[xxiv]

2.7.1 Patents

With more than 10 years of extensive lab experiments that explored early Hydrochemolytic concepts, Aduro Energy Inc. currently has seven patents and one patent pending. The details of the patents (both granted and pending) are as follows:

Exhibit 11: Patent details[xxv]	
1. System and Method for Controlling and Optimizing the Hydrothermal Upgrading of Heavy Crude Oil and Bitumen	
US Patent Number	9,783,742 B2
Type	Original filing
Inventor(s)	W. Marcus Trygstad
Assignee	Aduro Energy Inc.
Filed	October 28, 2013
Issued	October 10, 2017
Expires	December 8, 2035 (anticipated)
Foreign	Canada, Germany, France, Italy, Russian Federation, UK
2. System and Method for Controlling and Optimizing the Hydrothermal Upgrading of Heavy Crude Oil and Bitumen	
US Patent Number	9,644,455 B2
Type	Continuation in part from US 9,783,742 B2
Inventor(s)	W. Marcus Trygstad
Assignee	Aduro Energy Inc.
Filed	March 18, 2014
Issued	May 9, 2017
Expires	November 4, 2034 (anticipated)
Foreign	Canada, Germany, France, Italy, Russian Federation, UK
3. Method for Extracting and Upgrading Heavy and Semi-Heavy Oils and Bitumen	
US Patent Number	8,372,347 B2
Type	Original filing
Inventor(s)	Brian Berkowitz, Stephen R. Dunn and Ishai Dror
Assignee	Yeda Research and Development Co. Ltd.
Owner	Aduro Energy Inc. (by legal agreement)
Filed	April 11, 2011
Issued	February 12, 2013
Expires	November 14, 2025 (anticipated)

Foreign	Canada
4. System and Method for Producing Hydrothermal Renewable Diesel and Saturated Fatty Acids	
US Patent Number	11414606
Type	Original from Provisional 62/757,520 filed November 8, 2018
Inventor(s)	W. Marcus Trygstad, Anil K. Jhawar, Muhammad B. I. Chowdhury and Shaun J. Fraser
Assignee	Aduro Energy Inc.
Filed	November 7, 2019
Issued	August 16, 2022
Expires	2039 anticipated
5. System and Method for Hydrothermal Upgrading of Fatty Acid Feedstock	
US Patent Number	10,900,327
Type	Continuation in part from US 10,323,492
Inventor(s)	W. Marcus Trygstad
Assignee	Aduro Energy Inc.
Filed	November 20, 2017
Issued	January 26, 2021
Expires	2037 (anticipated)
6. System and Method of Controlling and Optimizing the Hydrothermal Upgrading of Heavy Crude and Bitumen	
US Patent Number	10,323,492
Type	Continuation of US 9,644,455
Inventor(s)	W. Marcus Trygstad
Assignee	Aduro Energy Inc.
Filed	May 5, 2017
Issued	June 18, 2019
Expires	2037 (anticipated)
7. Method for Extracting and Upgrading of Heavy and Semi-Heavy Oils and Bitumen	
US Patent Number	7,947,165
Inventor(s)	Brian Berkowitz et al.
Assignee	Aduro Energy Inc.
Filed	September 14, 2005
Issued	May 24, 2011
Expires	2033 (anticipated)
8. Chemolytic Upgrading of Low-Value Macromolecule Feedstocks to Higher-Value Fuels and Chemicals	
US Application No.	Serial No.: 17494360
Type	Original Filing from two Provisionals
Inventor(s)	W. Marcus Trygstad and Anil K. Jhawar
Assignee	Aduro Energy Inc.
Status	Pending

2.7.2 Grants

Since its inception, the company has received c. CAD 1.1 mn out of the total approved grant of c. CAD 2.3 mn for research, the details of which are provided below:

Exhibit 12: Patent Details[xxvi]	
1. National Sciences and Engineering Research Council ("NSERC") Alliance and Mitacs Accelerate Grants Program ("Mitacs"):	
Amount (CAD)	1,147,500
Project	Tuning Supercritical Fluids for Polymer Recycling to Monomers and Chemicals
Project type	NSERC/MITACS Collaborative Research Grant in partnership with the University of Western Ontario
Duration	36 months (November 1, 2022, to October 31, 2025)
2. NSERC of Canada	
Amount (CAD)	25,000
Project	Development of a Hydrochemolytic Pilot Unit for Upgrading Asphaltene and Waste Plastics
Project type	Engage Grants for colleges
Duration	6 months (January 1, 2021, to June 1, 2021)
Amount (CAD)	448,000
Project	Hydrothermal Upgrading of Non-Food Corn Oil into High-Value Alternative Fuels
Project type	NSERC Collaborative Research Grant
Duration	24 months (January 1, 2018, to January 1, 2020)
3. Bio Industrial Innovation Canada	
Amount (CAD)	250,000
Project	NA
Project type	NA
Duration	20 months (January 10, 2020, to January 7, 2022)
4. BIOFuelNet Canada	
Amount (CAD)	10,000
Project	BioFuelNet Knowledge Translation Program
Project type	Knowledge Translation Program
Date	April 3, 2017
Amount (CAD)	22,500
Project	BioFuelNet Cycle 1 Application R&D
Project type	Techno-Economic Analysis
Duration	6 months (October 1, 2016, to March 31, 2017)
Amount (CAD)	145,600
Project	BioFuelNet Supercritical Catalysis of Biofuels
Project type	Supercritical Catalysis of Biofuels
Duration	24 months (January 1, 2015, to January 1, 2017)
5. Ontario Centers of Excellence	
Amount (CAD)	150,000
Project	Hydrothermal Upgrading of Non-Food Corn Oil into High-Value Alternative Fuels
Project type	Voucher for Innovation and Productivity II (VIP II)
Duration	24 months (October 1, 2016, to September 30, 2018)
Amount (CAD)	32,500
Project	Hydrothermal Upgrading of Bitumen with Green Solvents

Project type	TalentEdge Fellowship Program (TFP)
Duration	15 months (December 1, 2015, to February 28, 2017)
Amount (CAD)	50,000
Project	Novel Technology for the Hydrothermal Upgrading of Heavy Oil
Project type	Collaborate to Commercialize (C2C)
Duration	12 months (October 1, 2013, to September 30, 2014)
6. Alberta Innovates – Energy and Environment Solutions	
Amount (CAD)	15,000
Project	New Technology to Process Bitumen and Heavy Oils
Project type	NA
Duration	6 months (January 1, 2012, to June 1, 2012)

2.8 Recent Collaborations and Partnerships[xxvii]

- Aduro ongoing Customer Engagement Program is aimed at cultivating partnerships with key industry stakeholders to enable them to gain in-depth knowledge about HCT, cater to their specific waste management needs and collaborate on targeted future commercial projects. The company had added two new participants to this program, who are global leaders in the chemicals and plastics sector and are expected to provide funding to Aduro for further experimentation and for advancing the HCT technology. In early March, Aduro onboarded a global multinational food packaging (MFP) company to its CEP. The MFP company is dedicated to recycling or recovering 90% of its solid waste and aims to reduce plastic use, increase the use of biodegradable and recycled materials, and minimize the use of virgin plastic. The collaboration will allow Aduro to conduct direct tests of HCT on the specific types of plastic waste produced by the MFP company and help showcase the effectiveness of the HCT and develop a customized chemical recycling solution tailored to the specific needs for recycling food packaging plastic waste. More recently, Aduro onboarded a multinational building materials (MBM) company to its CEP. The MBM company has extensive manufacturing operations across over 20 countries and has a global distribution reach with an extensive product line that includes solutions for infrastructure, energy systems, municipal sewer, ventilation, and water treatment. The collaboration will include a technical evaluation project focused on assessing the potential of HCT for recycling cross-linked polymers, a key material in the client's product range. Aduro continues to have ongoing discussions with other potential participants and expects to add more participants to the CEP in the coming months.
- To boost Aduro's marketing strategy, the company partnered with Common Cents Media, Social Purpose Corporation of Gig Harbor, WA (Common Cents Media) on April 10, 2023, for providing marketing services through increased social media presence and online media distribution. The agreement provides for a fee of USD 15,000 for the initial six-month period.
- On March 02, 2023, Aduro partnered with CHILL, for carrying out an experimentation program at the Brightlands Chemelot Campus in Geleen, the Netherlands. The objective of the program is to optimize its next-generation chemical recycling platform and accelerate the company's path to commercialization. The partnership has been mutually beneficial for both Aduro and CHILL, as Aduro is providing financial support to CHILL through a Platinum Partnership, while in return, Aduro has access to skilled researchers, specialized equipment for testing and analysis of data and additional services including access to CHILL partner events and public relations campaigns.
- The Shell GameChanger Program, an accelerator program, is designed to partner with companies to deliver cutting-edge solutions that have a significant potential to influence the future of energy and the transition toward net-zero emissions. Aduro's successful inclusion into the Shell GameChanger Program on November 3, 2022, for the application of Aduro's HCT for producing naphtha cracker feedstock from polyethylene, polypropylene and polystyrene, individually or on a mixed-feed basis, should provide a boost to its HCT platform, potentially becoming a cornerstone for the circular economy. During the program, Aduro will benefit from Shell's contribution of non-dilutive funding. Aduro is entitled to a payment on meeting the objectives set for each phase as the total contribution is spread over six project phases. Aduro is currently in the third phase of the Shell GameChanger Program. Shell's technical expertise should help Aduro develop a reliable process design and optimize HCT for commercial implementation. The GameChanger Program can also mentor Aduro in developing its commercial strategy and market position.
- Aduro and the University of Western Ontario entered into a joint research project to evaluate the effects of contaminants (both intrinsic and extrinsic) present in plastic feedstocks under varying conditions to maximize

output, quality and yield. The research is also aimed at improving pre- and post-processing techniques while optimizing the strategies to minimize the need for expensive sorting and separation systems for pre-processing treatment. The project is expected to advance and augment the implementation of HCT for chemical recycling of mixed post-consumer industrial and consumer plastics.

- Prospera, a Canadian heavy oil operator in the exploration, development and production of crude oil and natural gas in Western Canada, partnered with Aduro on September 13, 2022, by signing a letter of intent (LOI) outlining an 18-month plan with three phases, where the collaboration aims to jointly develop a pilot plant for the partial upgrading of heavy bitumen. Phase one includes the testing of bitumen feedstocks and evaluation of the economics. Phase two includes preliminary engineering, identification of the pilot plant site and a review of licenses and permits, as well as detailed budgeting and agreement to proceed with construction. The third phase includes the procurement, fabrication, construction, commissioning and operation of a 50 bbl./day pilot plant, which can be gradually ramped up to a 3,000 bbl./day commercial facility. Aduro will charge a monthly fee of CAD 25,000 for the services provided in phase one. However, the total fees upon completion and delivery of phase one scope are capped at CAD 125,000 (including taxes). Recently, the company announced that Phase 1 of the collaboration is well underway in Q3 2023 and is scheduled to be completed by December 2023. During these five months, the engagement aligns with Company's customer engagement plans, focusing on evaluating, testing, and reporting on the application of HBU technology to various customer feedstocks. During Phase 1, Prospera will be providing Aduro with an analysis of diluent blending and transportation costs, site operation economics, and details of the crude properties to be upgraded including supplying six barrels of low API crude sourced from its heavy oil properties for comprehensive testing. Later on, the company will execute a set of design experiments, utilizing the Aduro laboratory and the continuous flow Bitumen Reactor ("R2 Bitumen") and Flash Drum. Phase 1 will define a future business model, establishing a robust relationship framework, and evaluating the technical, economic, and environmental viability of the pilot plant project and later on a comprehensive summary of results and expert recommendations will provide a solid foundation for subsequent phases, setting the stage for further progress and success.
- On March 29, 2022, Aduro signed an LOI with Switch Energy Corp., a recycler and operator participating in Canada's agricultural and industrial film recycling program. Switch owns and operates the largest collection program for agricultural waste in the province of Ontario. The purpose of the partnership is to develop, build and supply a pre-commercial pilot plant to convert waste agricultural polyethylene into high-value products. The first phase will include the design and development of a pre-treatment process and unit to handle agricultural waste plastics, test runs, and process optimization and the provision of the feedstock required. The penultimate phase includes the design, building and commissioning of the pilot plant. The last phase, phase three, will detail the framework for the expansion of the pilot project into the commercial phase. Aduro has already successfully conducted the necessary laboratory testing on polyethylene. The project is now moving into the continuous flow testing phase on the company's continuous-flow plastic upcycling unit.
- To develop HCT for the chemical recycling of waste plastic, Aduro, on February 02, 2021, partnered with Brightlands Chemelot Campus, an international shared innovation community located in Limburg, the Netherlands. The objective of the partnership is to initiate a project to complete an installation that applies HCT to demonstrate, on a tons-per-day scale, the conversion of polyethylene waste into useful feedstock for chemical processes. The companies are continuing their discussions while evaluating the optimal strategy and timeline for the potential partnership and related project.

2.9 Markets and Customers[xxviii]

The table below showcases the key customers for the respective applications:

Exhibit 13: Key customers[xxix]

Applications	Key customers
HPU	Refineries, polymer producers, energy companies (both global and local), remote communities, waste collection companies (both national and international), municipalities and governments
HBU	Heavy oil producers (both Canadian and international) and refineries
HRU	Ethanol producers, seed crushing plants that produce renewable oils, biodiesel plants, farmers and poultry producers

2.10 Business Strategy and Outlook

2.10.1 Strategy[xxx]

Going forward, Aduro's strategy will be built on the following:

- **Business model:** The future business model will be based on licensing, royalties and R&D, where the company will be monetizing its technology, thereby reducing the need for significant capital infusions. In the long term, the company might look to expand its business model through its 'own & operate' model.
- **Expansion:** Aduro's strategy would aim at commercializing HCT from lab-scale batch reactors into bench-scale, small-scale continuous-flow processing units. This would facilitate its commercialization program, thereby providing the necessary tools to accelerate stakeholder engagement and the building of a commercial pipeline. To support this effort, the company is looking to expand its laboratory facilities, which would increase its pilot space, to accelerate research and scale up capabilities, thereby hosting the new continuous flow units and increasing the capacity to host customer trials and demonstrations.
- **Customer acquisition:** Aduro is devising a strategy for the development of commercial partnerships through demonstration projects, as the strategy has been potent on a small scale by securing customer feedstock and funding commitments. Typically, these projects comprise a detailed report on technology, performance, key parameters and operational variables (including chemical characterization of the feedstock and products), economic considerations covering product value and operational costs, operational considerations, and emission footprint. As a result, Aduro is expected to gain a better perception of geographical territories, behaviors and characteristics along with the potential impact of the technology based on environmental, social, and governance (ESG) criteria.
- **Marketing:** To accelerate Aduro's market engagements, the company appointed Ms. Stefanie Steenhuis as the new head of Brand and Marketing. The company started featuring in respected industry publications and at conferences and trade events, such as:
    - "Revolutionary Environmentally Friendly Water-Based Platform Improving the Structure of Low-Value Hydrocarbons to Make Them More Useful" – by Lynn Fosse, published on March 2, 2020[xxxi]
    - "A New Water-Based Solution for Recovering Add-On Value from Plastic Waste" – by Mark Stephen, published on July 26, 2021[xxxii]
    - "Chemical Recycling Makes Global Progress" – by Peter Mapleston, published on November 2021[xxxiii]
    - "A Novel Solution to Plastic Pollution" – by Robert Rapier, published on October 10, 2021[xxxiv]
    - "What's New in Chemical Recycling Projects": Global Insights, February 2022 – by Peter Mapleston (pg. 13)[xxxv]
    - "Advanced Recycling: Beyond Pyrolysis" – by Sreeparna Das, published on November 24, 2022[xxxvi]
    - "How One Company is Working to Transform More Plastic Waste into a 21st Century Resource" - by Tania Amardeil, published on June 15, 2023[xxxvii]

  The partnership with Common Cents Media, Social Purpose Corporation of Gig Harbor, WA on April 10, 2023, to provide marketing services through an increased social media presence (via Twitter[xxxviii], LinkedIn[xxxix], Instagram[xl] and YouTube[xli]) and online media distribution is a case in point. Aduro has also revamped its social media presence and is currently building a new website to host its business content and serve as an information repository. The company wants to create awareness about itself and its technology and become a household name in clean technology.
- **Expanding International Footprint:** The formation of Aduro Clean Technologies Europe BV ("ACTE"), its European subsidiary marks an important milestone towards expanding its international footprint, thereby demonstrating the Company's dedication to its global growth strategy. ACTE is headquartered in the Netherlands, which was selected due to the Company's robust regional relationships, including its successful partnerships with Brightlands and CHILL. ACTE will serve as Aduro's European hub and a conduit for achieving strategic goals which involves advancing HPU within the European market. Aduro targets to construct a future demonstration unit at the Brightlands site, and in the process, the Company is engaging in partnership discussions with local stakeholders on the project. Following are the key objectives that Aduro has decided to pursue once preliminary data from R2 plastic are available:
    - Facilitate robust partnerships, stimulate customer engagement, and propel corporate development with European-based stakeholders;

- Building a consortium of local partners for supporting the regional demonstration unit and accelerating the commercialization of HPU;
- Accelerate the process of building demonstration units and commercialization of HCT by leveraging local and European government grants;
- Creation of alliances with local service providers, which includes engineering companies, feedstock suppliers, and offtake vendors;

The Company is already in the process of assembling the European counterparts and is in advanced discussions to bring on board key personnel, which is expected to have a significant impact on the implementation of the Company's strategy in Europe and globally, aligning with its business plan of becoming a global leader in the sustainable transformation of waste plastics, heavy bitumen, and renewable oils.

- **Funding/financing:** The company's strategy is to secure funding of c. CAD 150k to 300k per customer for research activities (this could vary depending on the size of the customer). In the future, the company might look to finance its expansion plans with green bonds, grants, and through other means.

Exhibit 14: Commissioning timelines[xlii]

Target	CY 2023	CY 2024	CY 2025	CY 2026	CY 2027
Continuous-flow processing unit					
Semi-commercial unit					
Commercial unit (low-tonnage pilot)					
Launch of licensing model					
Full-scale processing plant (capacity of c. 392,000 tpa)					

2.10.2 Outlook[xliii]

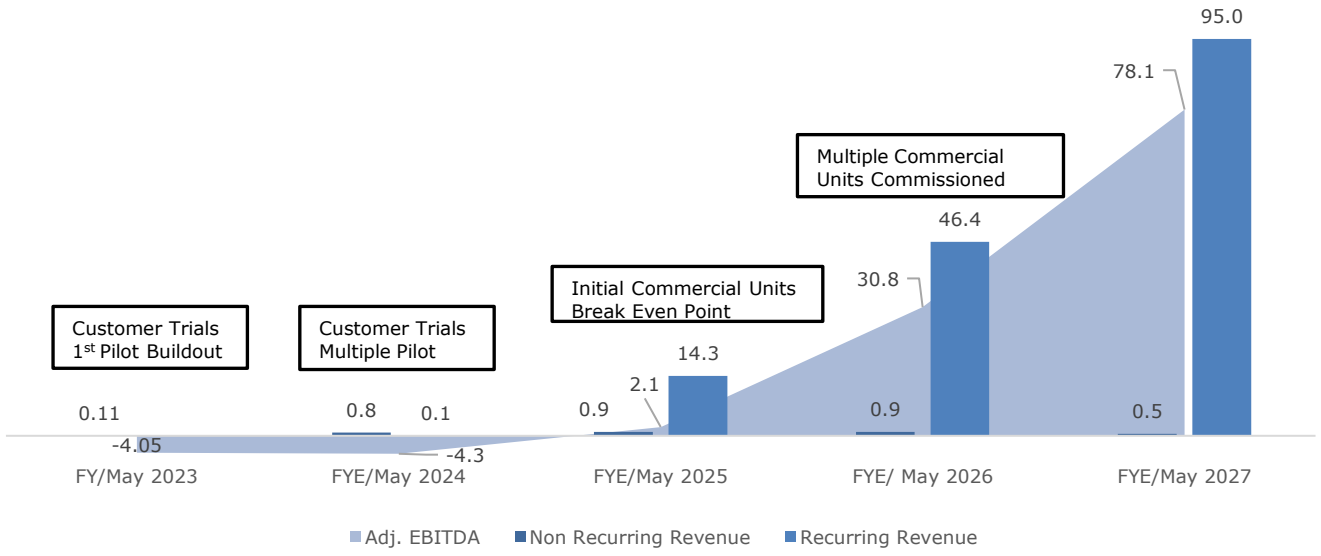
As part of its strategic planning, Aduro has set stakeholder engagement, through technology demonstration, customer trials, and research projects, as one of its key goals to support and advance its commercialization program. The company expects growth from year 2026 onward, with year 2025 being the break-even year for the company with forecasted recurring revenue of CAD 14.3 mn, while the recurring revenue for 2027 is forecasted to increase c. 6x to CAD 95.0 mn. Adjusted EBITDA is expected to turn positive from FY 2025, which is expected to be c. CAD 2.1 mn, while in subsequent years (until FY 2027), adjusted EBITDA should increase at a CAGR of 460.7% to CAD 78.1 mn in FY 2027.

Some of the strategic goals for calendar year 2024 include:

- The company has started the development phase of the next generation process system with the project plan, experimentation work, some materials and component scoping for the unit expected to be completed in H1 2024, with procurement, fabrication, and assembly expected in the calendar year 2024.
- ACT aims to progress the five ongoing technology evaluation projects, solidifying key relationships, and completing initial project scope in preparation for discussions including expanded project scope and collaboration projects.
- Aduro plans to accelerate and expand its customer and industry partner engagement by continuing to provide technology demonstrations, data analysis, and customer trials, to increase service revenue, gain access to diverse real-life feedstocks and understand the unique customer needs, and solidify a future commercial pipeline of projects.
- It is also working to expand its strong patent and intellectual property portfolio. Continued refinement of chemical and process technology will further enhance the company's capability to implement and optimize commercial solutions, significantly expanding its intellectual property in the form of proprietary know-how and filings of new patent applications.

The forecast model that the company has developed is based on discussions with small and medium-sized organizations. However, in the last 12 months, Aduro has engaged with several large organizations and key industry players, where the signing of a commercial engagement of that stature could meet the FY 2027 forecast target from a single agreement.

Exhibit 15: Proforma Financial Forecast (CAD mn)[xliv]



2.11 Financials

In 9M 2024, Aduro generated revenue of CAD 235.3k pursuant to collaboration agreements with two confidential publicly traded organizations for execution of a proof of concept and evaluation of its HPU technology. The company incurred operating expenses of CAD 4.6 mn of which CAD 1.9 mn was related to R&D.

The available cash and cash equivalents at the end of Q3 2024 stood at CAD 2.16 mn, while the net proceeds from the exercise of warrants and options subsequent Q3 2024 amounted to CAD 2.08 mn. The company believes that the working capital funds are sufficient to meet its obligations for the next twelve months.

2.12 Company Milestones

Exhibit 16: Aduro's Milestone Timelines[xlv]

Year/ Period	Event
2011	• Aduro Energy Inc. was incorporated • Started working on the technology with a focus on upgrading bitumen, called Hydrothermal Upgrading Technology • Filed two patents with patent nos. 8,372,347 B2 and 7,947,165
2013	• Filed two patents with patent nos. 9,783,742 B2 and 8,372,347 B2
2014	• Filed patent with patent no. 9,644,455 B2
2017	• Received approval for patent nos. 9,783,742 B2, 9,644,455 B2, 10,900,327, 10,323,49
2019	• Non-binding LOI with Emergent Waste Solutions Inc. • Filed patent with patent no. 11414606 • Received approval for patent no. 10,323,492
2020	• Signed an LOI with Dimension Five Technologies Inc. for a reverse merger

2021	• Changed its name from Dimension Five Technologies Inc. to Aduro Clean Technologies Inc. and relisted on CSE with the ticker name of "ACT" • Engaged engineering company Exergy Solutions Inc. to assist with the pre-production and development of HCT • Received approval for trading on the OTCQB® Venture Market, under the ticker "ACTHF" • Announced listing of its common shares on FSE, under the trading symbol "9D50" • Extended its process design and engineering work on HBU to polyethylene upcycling • Partnered with Brightlands Chemelot Campus to complete an installation that applies HCT to demonstrate, on a tons per day scale, the conversion of plastic waste to useful feedstock for chemical processes. • Partnered with Switch to build a pilot plant in Ontario, demonstrating HCT for chemical recycling of agricultural plastic waste
2022	• Appointed Gene Cammack as COO • Received independent validation of HCT, confirming the continuous flow of Alberta bitumen through the small-scale continuous flow reactor and the upgrade to lighter crude compared to the feedstock • Appointed James E. Scott as an Independent Director • Signed LOI with Switch to build a pre-commercial pilot plant for the conversion of waste agricultural polyethylene into high-value products and also for the supply of waste plastic feedstock • Received c. CAD 2.4 mn as gross proceeds from private placement to facilitate working capital needs • Appointed Mena Beshay as Chief Financial Officer • Joined Canada Plastics Pact (CPP) as a Signatory Partner • Expanded into Mexico and established a local presence with a newly hired country manager • Received c. CAD 1.9 mn as gross proceeds from private placement to facilitate research work and team expansion and to complete bitumen upgrading and plastic upcycling continuous flow pilots • Entered into the final stages of completion of its pilot-scale HCT continuous flow bitumen (Smaller Scale Continuous Flow Bitumen Unit) reactor • Signed LOI with Prospera Energy Inc. for developing, building and supplying a pre-commercial pilot plant to convert low-API bitumen to higher-value products • Received a grant of c. CAD 1.15 mn from NSERC Alliance and Mitacs • Selected for Shell GameChanger Program • Completed construction and mechanical assembly of Smaller Scale Continuous Flow Plastic Unit • Received c. CAD 1.1 mn from the exercise of warrants and stock options to accelerate laboratory expansion activities and ongoing projects, including the commissioning of the continuous-flow pilot units
2023	• Collaborated with CHILL to execute an experimentation program at the Brightlands Chemelot Campus to optimize its chemical recycling platform, thereby accelerating the company's path to commercialization • Joined the Chemistry Industry Association of Canada (CIAC) as part of their Plastics Division to promote advanced chemical recycling • Commissioned small-scale continuous flow plastic unit for converting waste chain growth polymers into valuable resources • Received c. CAD 3.9 mn as gross proceeds from private placement to facilitate its R&D activities and for general administrative and working capital expenses • Appointed Stefanie Steenhuis as the new head of Brand and Marketing • Received c. CAD 1.5 mn from the exercise of warrants and stock options to accelerate R&D activities • Established its European subsidiary named Aduro Clean Technologies Europe BV ("ACTE"), based in Geleen, Netherlands • Aduro's new facility in London Ontario is scheduled to be completed by Q3 2023 • Commissioning of R2 Plastic • Appointed Mr. Eric Appelman as the new Chief Revenue Officer • Upgraded trading tier to the OTCQX Best Market from OTCQB Venture Market

	• Appointed Marie Grönborg as an independent director • Added two new participants (global leaders in the chemicals and plastics sector) to the Customer Engagement Program, who are expected to provide funding for targeted projects and experimentation using diverse waste polymers sourced from different locations and businesses supporting the company's established scale-up program and further advancing its HCT technology
2024	• Featured on Viewpoint with Dennis Quaid documentary series • Sample test results from R2 Plastic Reactor have shown that up to 95% of the carbon in polyolefin feedstock can be converted into potential hydrocarbon feedstock to produce new plastics and other chemicals • Onboarding of a multinational food packaging company to its CEP • Onboarding of a multinational building materials company to its CEP

2.13 Company Premiums[xlvi]

a) Disruptive technology: To address challenges posed by petroleum production and processing, landfilling, waste incineration, and unscrupulous dumping in the oceans, Aduro, after over 10 years of extensive research work, has pioneered a platform technology, called HCT, that can address many of these challenges. HCT is a chemical recycling platform capable of transforming low-value feedstocks into high-value resources at relatively low temperatures and cost (both capex and opex) – a feature that distinguishes HCT from other technologies. HCT's implementation in both standalone and existing operational infrastructure might prove to be a preferable choice in the future. At present, HCT already has multiple key applications, namely HPU (Plastics Upcycling), HBU (Bitumen Upgrading), and HRU (Renewables Upcycling), and is in the process of developing other key application areas, demonstrating HCT's versatility.

b) Superiority over traditional approach: Aduro's distinctive offerings offer many benefits, such as scalability, where distributed, small-scale implementation is possible; financial flexibility, via low opex and capex with the flexibility to expand on demand; emission savings, with lower emissions than traditional methods; flexibility – from the ability to process a diverse set of feedstocks with minimal pre- or post-processing treatment; high yield – a superior yield of c. 80-90%, compared to the traditional methods; environment – it can operate in both regulated and unregulated environments. Because of these noteworthy benefits, Aduro's HCT stands out from the rest of the traditional approaches such as pyrolysis, solvolysis, and so on. As a result, Aduro's HCT has the potential to build on its core competency, thereby creating high entry barriers.

c) Issued patent and pipelines: With over 10 years of extensive research work from its creative, skilled team of R&D chemists and engineers, the company has eight patents, of which seven have been granted, with one pending approval. The company is currently developing several new patents, potentially unlocking valuable innovations that could lead to additional patents and intellectual property. Management reports that the estimated total value of the patents stands in excess of CAD 100.0 mn.

d) Shell GameChanger Program: Following a rigorous selection process, Aduro was selected by the Shell GameChanger Program to apply HCT to produce sustainable naphtha cracker feedstock from polyethylene, polypropylene and polystyrene, individually or on a mixed basis, where HCT's output would then be directly used for the production of new plastics, demonstrating full circularity. Shell will contribute funding (non-dilutive) and the technical know-how to develop reliable process designs, potentially providing a 'head start' advantage toward commercial implementation. The Shell GameChanger Program has the potential to become a cornerstone of Aduro's successful commercialization in the coming years.

e) Asset-light business model: The future business model of Aduro is based on licensing, royalties and R&D, where the company is licensing its technology, which reduces its need for capital. This could provide a pathway to commercialization, as it is believed to be relatively straightforward, timely and capital efficient.

f) Significant assistance through grants: There is a significant increase in investment from governments and research institutes for the transition to a circular economy. Benefitting from a supportive government, regulatory framework and research institutes, Aduro has been granted a total of c. CAD 2.3 mn from a number of agencies and institutes, of which the company has already received c. CAD 1.1 mn.

g) Experience management: The foundation of any successful company is a strong and experienced management team. To tackle pressing environmental and energy issues, Aduro has built a team of industry experts with rich experience. The founder and co-founder, Mr. Ofer Vicus and Mr. William Marcus Trygstad, have c. 25 and 35 years

of relevant experience, respectively. The company's COO, Mr. Gene Cammack, has over 35 years of experience in the Oil & Gas and Chemical sectors and the CFO, Mr. Mena Beshay, has 20 years of experience in senior financial leadership positions. Furthermore, the company recently hired several experienced personnel for key positions, including Ms. Stefanie Steenhuis as the new head of Brand & Marketing and Mr. Eric Appelman as the new Chief Revenue Officer.

2.14 Company Risks[xlvii]

a) **Early-stage platform technology company:** Aduro's HCT is an early-stage technology platform developed to upgrade lower-value feedstocks into higher-value feedstocks. The company faces the risks of product and technology failure, unforeseen R&D delays, weak market acceptance, and others, which would have a negative impact on its anticipated future cash flows and growth strategy.

b) **Financing:** Aduro is currently in a pre-revenue stage. It will have to raise significant amounts of funds to pursue its business strategy. While it has raised the required financing in the past (mainly through grants), it is plausible that it might not be able to meet its future requirements due to unpredictable circumstances, such as adverse market conditions and economic downturns, which might limit the availability of funds, thereby leading to short-term headwinds.

c) **Technological obsolescence:** Aduro's product offerings depend on advanced developments in its technologies, which are susceptible to rapid technological change. The company's product offerings might become obsolete as a result of such technological changes. With the meteoric rise in new technologies, it is plausible that Aduro might face severe competition from new players entering the market using new cutting-edge technologies with lower cost structures, thereby gaining market share. Also, by the time the company offers its product, the market may already have an alternative similar to Aduro's, but at a cheaper cost, resulting in a loss of contracts or reduced margins.

d) **Commodity price:** Any significant fluctuations in renewable fuel or other commodity prices could make continued commercial production impracticable and may render refining uneconomical, resulting in short-term headwinds for the company.

2.15 Shareholding Pattern[xlviii]

The company had 70,516,965 shares of common stock outstanding as on May 20, 2024. The shareholding pattern is as follows:

Exhibit 17: Top shareholding pattern (May 20, 2024)

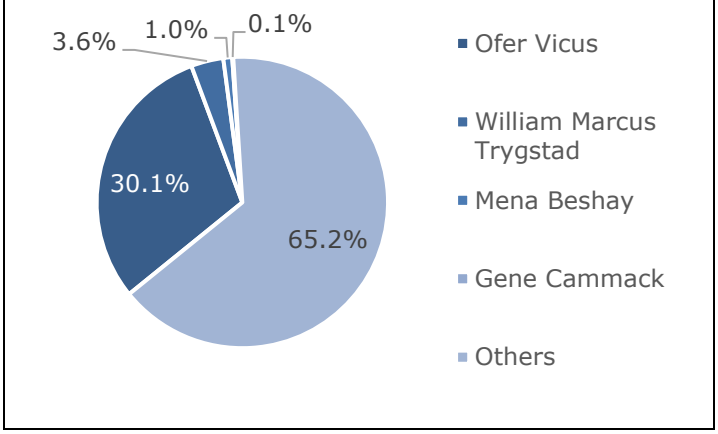


Exhibit 18: Top shareholding pattern (May 20, 2024)

Shareholders	Shares outstanding
Ofer Vicus	21,258,450
William Marcus Trygstad	2,533,146
Mena Beshay	696,000
Gene Cammack	78,900
Others	45,950,469
Total	**70,516,965**

2.16 Listing and contact details

Aduro Clean Technologies Inc. is publicly listed on the CSE under the symbol "ACT", on the OTCQX under the symbol "ACTHF" and on FSE under the symbol "9D50".

Company contacts

Home Office

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Contact No: +1 604-362-7011

Website: https://adurocleantech.com/

Email Id: ir@adurocleantech.com

3. News[xlix]

- **Onboarding of multinational building materials company to its CEP:** On March 27, 2024, Aduro announced that it has onboarded a multinational building materials (MBM) company to its CEP. The MBM company has extensive manufacturing operations across over 20 countries and has a global distribution reach with an extensive product line that includes solutions for infrastructure, energy systems, municipal sewer, ventilation, and water treatment. The collaboration will include a technical evaluation project focused on assessing the potential of HCT for recycling cross-linked polymers, a key material in the client's product range. HCT's ability to recover these materials will not only improve conversion yields but also signal a major shift in how the industry views waste management and material recovery, opening up new avenues for innovation and profitability.

- **Onboarding of global multinational food packaging company to its CEP:** On March 05, 2024, Aduro announced the onboarding of a leading global multinational food packaging company to its CEP. MFP company is a prominent player in the global food processing and distribution sector, and operates in over 15 countries, generating multi-billion-dollar annual revenues. The company is dedicated to recycling or recovering 90% of its solid waste and aims to reduce plastic use, increase the use of biodegradable and recycled materials, and minimize the use of virgin plastic. This collaboration will be used to conduct direct tests of HCT on the specific types of plastic waste produced by MFP company to showcase the technology's effectiveness and gain a deeper understanding of the unique waste management challenges faced by the food industry.

- **Shares sample test results from its continuous flow unit experimentation and optimization program:** On February 15, 2024, Aduro provided an update that it had conducted over 240 test runs on a variety of feedstock compositions, with the longest test stretching to 36 hours. The unit was committed to conduct experiments both for the CEP and to achieve research goals, working with a broad variety of feedstocks and advancing the design of the next generation process.

- **Appoints Marie Grönborg to Board of Directors:** On November 08, 2023, Aduro announced the appointment of Marie Grönborg as an independent director of the company. Marie holds an M.Sc. in Chemical Engineering and has almost 30 years of global experience in the chemical and clean-tech industries. She currently holds board positions with SSAB (the Swedish steel company), and with Eolus (an international company with a main business to design and construct facilities for renewable energy and energy storage). Ms. Grönborg was also a board member of Permascand (a provider of electrochemical solutions for global green transition) which was recently acquired by Altor. Ms. Grönborg replaced Chris Parr, who had resigned as a director of the company.

- **Upgraded to OTCQX Best Market:** On October 31, 2023, Aduro announced that it upgraded its trading tier on the OTC markets to OTCQX Best Market from the OTCQB Venture Market. Graduating to the OTCQX marked an important milestone for Aduro and will increase visibility, liquidity, and investor access, thereby providing an excellent platform for the company to enhance its prominence among US investors. Aduro will now trade on the OTCQX under the symbol "ACTHF".

- **Addition of two new participants to Aduro's Customer Engagement Program:** On October 11, 2023, Aduro announced the addition of two new participants to its customer engagement program, taking the total active projects to five. The CEP enables interested organizations to conduct controlled technology evaluation sessions and gain in-depth knowledge of the HCT technology and collaborate on future targeted commercial projects. The newly added participants are global leaders in the chemical and plastics sector. As part of the paid engagement, the participants will contribute funding to support further innovation and experimentation being conducted by Aduro. The company continues to have ongoing discussions with other potential participants and expects further additions to the CEP in the upcoming few months.

- **Appointed Eric Appelman as the Chief Revenue Officer:** On September 12, 2023, the company announced the appointment of Mr. Eric Appelman as the new Chief Revenue Officer, effective from September 01, 2023. The addition of Mr. Appelman to the executive team signifies Aduro's strategic move toward commercial engagement and strategic partnerships. His understanding of the waste plastic industry, combined with his insights into customer needs and the ever-evolving sector dynamics, positions him as a pivotal addition to Aduro. The company believes that Mr. Appelman's appointment comes at an opportune time as Aduro embarks on its European expansion. His understanding of the European market will be advantageous in gaining access to key service providers, European grants, strategic partners and research collaborators.

- **Update on Shell Game Changer Program:** On September 05, 2023, the company announced that it has reached the halfway mark of the program post successful completion of the first three of six phases, which involved evaluation

of the performance of HCT using pure and mixed plastic feeds, measuring the impact of HCT using contaminants, and understanding and optimizing the key additives in the process for effectiveness and economics. The company currently is in phase four of the Shell GameChanger program, which will involve demonstrating the efficiency of R2 Plastic thereby focusing on operability, product quality, and yield. Moreover, the company will also be examining the process transitioning from batch to a continuous system and evaluating the 'tunability' to maximize naphtha cracker feed yield. The company is targeting to complete sixth phase by December 2023.

- **Corporate Update:** On July 06, 2023, the company announced its progress on the operational and strategic plans, where Aduro's new facility in London Ontario is nearing completion which is scheduled to be completed by Q3 2023. The continuous flow plastic reactor has been commissioned and is operational which successfully turned waste polymers into higher-value liquid hydrocarbons. Furthermore, Aduro has taken a significant stride towards the continuous flow bitumen reactor (scheduled to be commissioned by Q3 2023). Aduro is now focused on conducting its planned experimentation program which is aimed towards generating comprehensive data to support the design of a tons-per-day unit for plastics upcycling. Moreover, R2 Plastic will be utilized to accelerate the Company's customer engagement program including running third-party feedstock in the continuous flow R2 Plastic process.
- **Establishing Subsidiary in the Netherlands, Expanding in Europe:** On June 15, 2023, the company announced the establishment of its subsidiary in Geleen, Netherlands. The European-based subsidiary is called Aduro Clean Technologies Europe BV (ACTE) and acts as an important step in demonstrating the company's dedication to its global growth strategy. ACTE will serve as Aduro's European hub and a conduit for achieving strategic goals in the region. The Netherlands was selected due to the company's robust regional relationships.
- **Appointed Stefanie Steenhuis as head of Brand and Marketing:** On May 11, 2023, the company announced the appointment of Stefanie Steenhuis as the new head of Brand and Marketing, with international experience in marketing, communication, and change management. She positioned companies such as Siemens and IBM in the global Oil & Gas and IT sectors, respectively, with her leadership expertise focused on managing multinational and remote teams and effective team management. Aduro should benefit from Steenhuis's marketing and branding expertise, by raising awareness of the company's cutting-edge technology and its commitment to a circular economy and greener processes for bitumen, thereby creating a unique market positioning for Aduro.
- **Started commissioning phase of the continuous-flow plastic reactor:** On March 30, 2023, the company announced that it had begun the commissioning phase of the pilot-scale Hydrochemolytic™ continuous-flow plastic reactor, designed to handle various plastic feedstocks such as polyethylene, polypropylene, and polystyrene. The crucial information produced by this system will assist the company's established optimization and scale-up of the program for the pre-commercial system. Additionally, this system will act as a significant tool for stakeholder engagement to build a pipeline of commercial projects.
- **Collaborated with CIAC's Plastic Division to promote advanced chemical recycling:** On March 16, 2023, the company joined the plastic division of the Chemistry Industry Association of Canada ("CIAC") with an aim to expand the reach of HCT to bring more plastics into the circular economy.
- **Collaboration with CHILL:** On March 2, 2023, the company announced its partnership with CHILL for the execution of an experimentation program at the Brightlands Chemelot Campus in Geleen. Under this program, the company will be providing financial assistance to CHILL, and in return, Aduro will gain access to various skilled researchers, specialized equipment for testing and analysis of data, and more benefits such as access to CHILL partner events and public relations campaigns.
- **Selected for Shell GameChanger Program:** On November 3, 2022, the company was selected for the Shell GameChanger Program. Shell GameChanger was created to collaborate with companies to provide cutting-edge technologies that might have a significant influence on the future of energy and the transition towards net-zero emissions.
- **Signed LOI to collaborate with Prospera:** On September 13, 2022, the company announced that it signed an LOI to develop, build and supply a pre-commercial pilot plant to convert low-API bitumen into higher-value products. The LOI outlined an 18-month plan with three phases, where the last phase would end with the commissioning and operation of a 50 bbl./day pilot plant, which could later be ramped up to a 3,000 bbl./day commercial facility.
- **Announced readiness of scaled-up continuous-flow bitumen reactor:** On September 7, 2022, the company announced that Aduro was in the final stage of completion of its pilot-scale continuous-flow bitumen reactor. To advance potential customer engagements and feedstock trials, Aduro accelerated the work on its laboratory facilities and testing capabilities to initiate potential customer trials and demonstrations.

4. Management and Governance[I]

Exhibit 19: Management and governance

Name	Position	Experience
Ofer Vicus	Founder, Chief Executive Officer (CEO) and Director	• Founder, CEO and Director at Aduro Energy Inc. since November 2011 • Over 25 years of experience in developing and marketing innovative technologies • Previously worked in various leadership positions in companies such as Spectronix Ltd., Qualion NMR and Curapipe System before launching Aduro • Holds a bachelor's degree in industrial engineering and an executive MBA (Northwestern Kellogg / Tel Aviv Recanati University)
W. Marcus Trygstad	Co-founder, Chief Technology Officer (CTO) and Director	• Co-Founder, CTO and Director at Aduro Energy Inc. • Over 35 years of experience in building and applying advanced strategies in industrial processes • His knowledge and focus on fundamental process chemistry led to the foundation of Aduro Intellectual Property and early patent application • Inventor and author of patent applications in advanced monitoring technology • Worked in various renowned organizations such as ABB Ltd, Invensys Plc. and Yokogawa Electric Corporation • Holds a master's degree in chemistry, material science & engineering and chemometrics
Mena Beshay	Chief financial Officer (CFO) and Secretary	• Over 20 years of experience in senior financial leadership positions • Recently appointed as Director at Charbone Hydrogen • Was CFO and Global Head of Corporate Development at CloudMD; also worked in finance, audit and compliance roles at Enercare, Domtar and Deloitte • Graduated from McGill University and is a Chartered Professional Accountant
Gene Cammack	Chief operating Officer (COO)	• Over 35 years of experience in management and technical roles • Worked with several small and international companies such as Siemens Energy • Prior experience in operational functions and project development
Eric Appelman	Chief Revenue Officer	• Over 35 years of experience as a seasoned chemical engineer in diverse relevant sectors and multinational corporations • Started his career with Unilever and held various positions, such as Technical Director for Marine and Protective coating at Sigma Coatings and Executive Vice President at Perstorp • Most recently he worked as Business Development Director and Chief Technology Officer at Brightlands Chemelot Campus in the Netherlands, where he evaluated several innovative sustainable processes and products within the chemical industry • Contributed to various start-ups in non-executive capacities
Peter Kampian	Director	• CEO of Edge Financial Consulting Services Corp. and a director of Harborside Inc. • Leadership roles in various startups and established companies, such as DionyMed Brands Inc., Mettrum Health Corp and Algonquin Income Fund; also held board positions in various prominent companies • Graduated in business administration from Wilfrid Laurier University and is a Canadian Chartered Accountant

Marie Grönborg	Independent Director	• Almost 30 years of global experience in the chemical and clean-tech industries • Held executive level positions at various companies such as TreeToTextile (a textile tech company), Purac (a provider of solutions for water treatment and biogas production) and Perstorp (a specialty chemicals company) • Currently on the board of SSAB (Swedish steel company) and Eolus (designing and construction of facilities for renewable energy and storage) • Holds an M.Sc. in Chemical Engineering
James E. Scot	Director	• More than 20 years' experience in entrepreneurship and investing • Managing Partner of the Scott Company LLC and Littlehorn Investments LLC; also served as President of Qube Visual and CEO of Receptra Naturals • Graduated in finance and operations management
Dr. Anil Jhawar	Chief Scientist	• Over 10 years of experience in process engineering and R&D, specializing in reactor and process design, supercritical fluid systems, renewable fuels and extractions • Over five years of experience in engineering project management and engineering consulting • Worked as a research engineer at Western University for more than eight years

5. Industry Overview

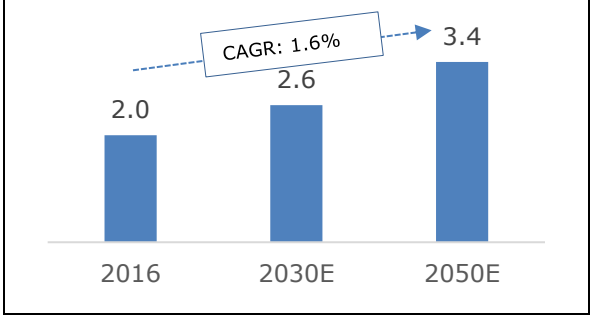
5.1 Plastics and Related Opportunities

5.1.1 Solid Waste[lii]

5.1.1.1 Total Solid Waste Generation

Waste generation is a natural by-product of urbanization, economic development and population growth. As nations and cities become more populated and prosperous, offer more products and services to citizens and participate in global trade and exchange, they face huge amounts of waste to manage through treatment and disposal.

Exhibit 20: Estimated waste generation (bn tons/year)[li]



Based on the latest data available, global waste generation in 2016 was estimated at 2.0 bn tons, of which at least 33% was not managed in an environmentally safe manner. Global waste generation by 2030 is expected to reach c. 2.6 bn tons, while by 2050 it is expected to reach c. 3.4 bn tons. Worldwide, waste generated per person per day stood at 0.74 kg, but ranged widely, from 0.11 to 4.54 kg. While they only accounted for 16% of the world's population, high-income countries generated about 34%, or 683 Mt, of the world's waste in 2016.

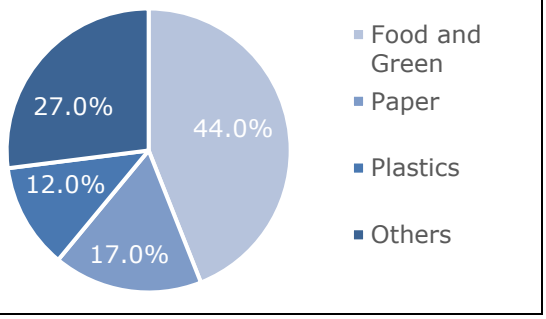
Overall, there is a positive correlation between waste generation and income levels, where the daily per capita waste generation in high-income countries is projected to increase at a CAGR of 19% by 2050, while the low- and middle-income countries are expected to register a CAGR of c. 40%. Waste generation initially decreases at the lowest income levels and then increases at a faster rate for incremental income changes at low-income levels than at high-income levels.

5.1.1.2 Solid Waste Composition

Waste composition by type is mainly divided into categories such as food and green, paper, plastics and others, inclusive of metals, glass, wood, waste rubber and leather.

Generally, waste composition differs across income levels, reflecting varied patterns of consumption. High-income countries generate relatively less food and green waste, at 32% of total waste, and generate more dry waste that could be recycled, while middle and low-income countries generate 53% and 57% of food and green waste, respectively. In low-income countries, materials that could be recycled account for only 20% of the waste stream.

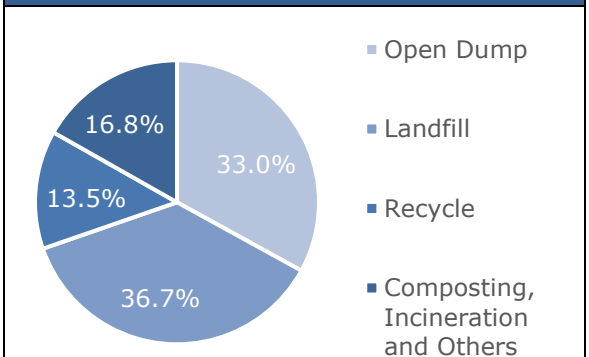
Exhibit 21: Worldwide solid waste composition[liii]



5.1.1.3 Waste Treatment and Disposal

Waste treatment and disposal includes recycling, composting, anaerobic digestion, incineration, landfilling, open dumping and dumping in marine areas or waterways. Globally, c. 40% of waste is disposed of in landfills, while 13.5% undergoes material recovery through recycling and 11% and 5.5% are treated through modern incineration and composting, respectively. However, globally, 33% of waste is still openly dumped.

Exhibit 22: Global waste treatment and disposal[liv]



Waste disposal practices vary significantly by income level and region. Open dumping is a preferred option in lower-income countries, where landfills are not yet available. Around 93% of waste is burned or dumped on roads, open land or waterways in low-income countries, whereas only 2% of waste is dumped in high-income countries. Likewise, c. 3% of waste is deposited in landfills in low-income countries, as compared to 54% of waste sent to landfills in upper- and middle-income countries. High-income countries tend to put greater focus on material recovery through recycling, composting and incineration than low-income countries.

5.1.2 Plastics

5.1.2.1 Definition[lv]

Plastics are mainly polymers with large molecules made of repeating units of smaller molecules called monomers linked together by chemical bonds to form long chains.

Polymers can be made by connecting a single type of monomer, such as those commonly found in packaging, pipes and toys (e.g., polyethylene (PE), polypropylene (PP), polystyrene (PS) or polyvinyl chloride (PVC)), or because of the reaction between two different types of monomers, such as those commonly found in carpets and clothes (e.g., Polyethylene Terephthalate (PET), or nylon).

Furthermore, plastics can be characterized as:

- Thermosets – hard, durable and non-recyclable
- Thermoplastics - less rigid than thermosets, which become soft when heated and can be reshaped. These include PE, PS and PP

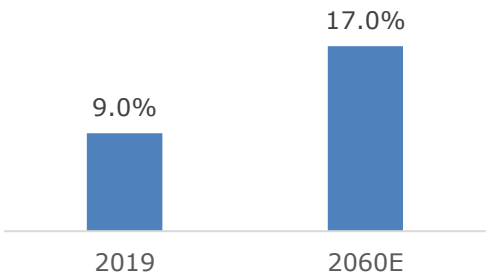
In most of the economies, chemical and petrochemical (oil and gas) companies are major players in the plastics sector, since they produce crude oil, natural gas liquids and natural gas, which are refined into petrochemicals that make plastic polymers.

5.1.2.2 Global Plastic Production and Recycling[lvii]

Global plastic production has seen an exponential increase since the mid-20th century. Plastic production increased from c. 2.0 Mt in 1950 to 460 Mt in 2019. Driven by the surge in economic and population growth, global plastics production is projected to almost triple, from 460 Mt in 2019 to 1,231 Mt in 2060.

The exponential increase in plastic production will lead to an increase of similar magnitude in plastic waste. Global plastic waste increased from 252 Mt in 2016 to 353 Mt in 2019. It is projected to grow to 1,014 Mt by 2060.

Exhibit 23: Global plastic recycling rate[lvi]



Recycling is projected to outpace all other waste management approaches, with recycling rates increasing from 9% in 2019 to 17% in 2060. Even so, recycling will still make up a smaller share of waste management than incineration (18%) and sanitary landfilling (50%).

Exhibit 24: Global plastic production (Mt)

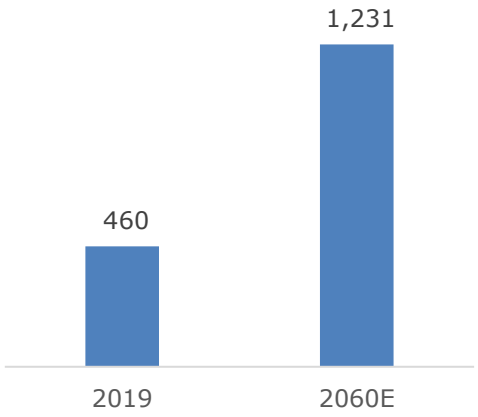
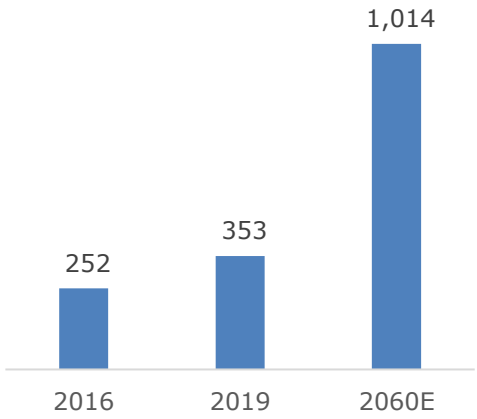
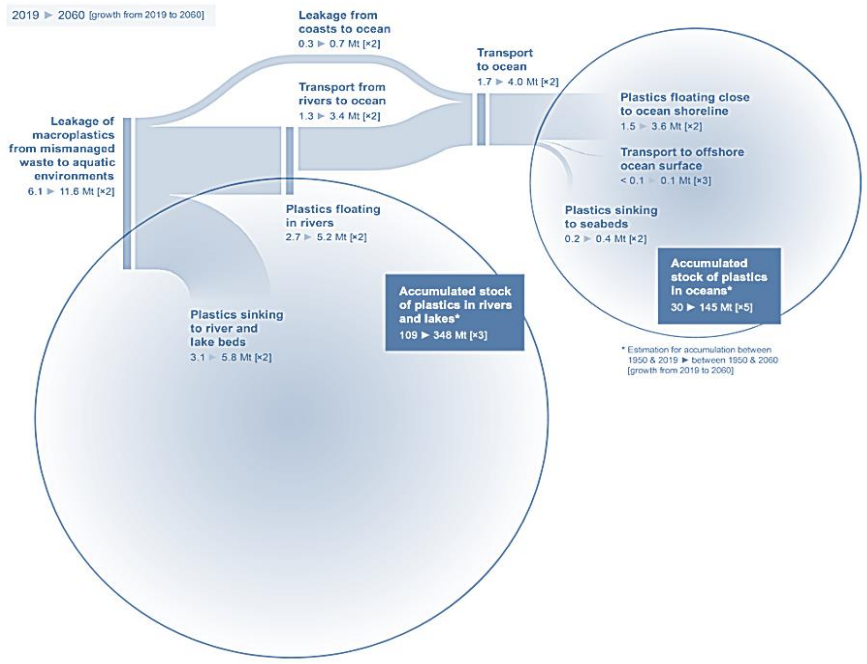


Exhibit 25: Global Plastic Waste Production (Mt)



Although decoupling is projected to occur between plastics use and leakage globally, the leakage of plastics into the environment is still projected to almost double from 22 Mt in 2019 to 44 Mt in 2060. Leakage into aquatic environments, such as streams, rivers, lakes, seas and the ocean, is projected to more than triple from 140 Mt in 2019 to 493 Mt in 2060. Flows into aquatic environments are also projected to double over the period, aggravating an already serious environmental challenge. Geographical differences in contributions to aquatic leakage are expected to evolve further. Countries such as China, India, other Asian economies and Sub-Saharan Africa together could account for 79% of all aquatic leakage. While China alone is projected to be the largest emitter of plastic into freshwater environments, other emerging economies in Asia may contribute significantly to plastic leakage into marine environments.

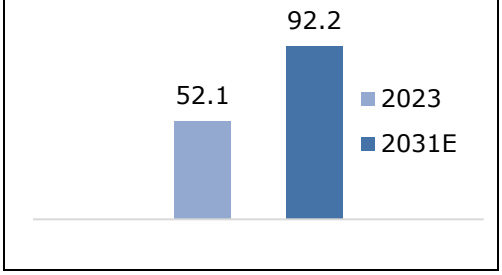
Exhibit 26: Leakage into aquatic environments is projected to double between 2019 and 2060[lviii]



5.1.2.3 Opportunity[lix]

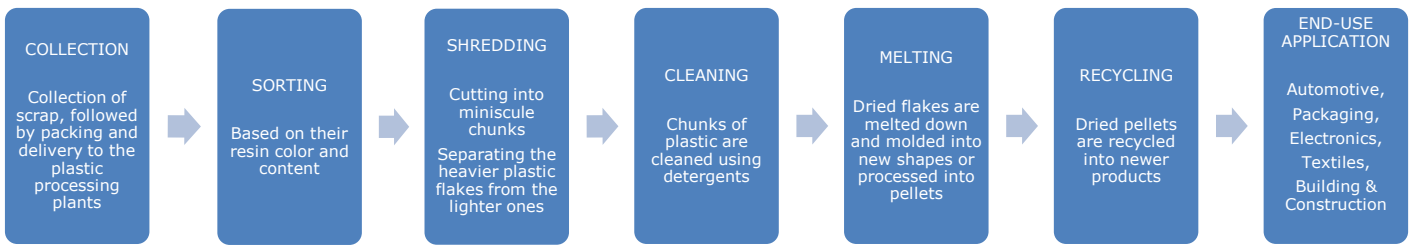
Plastic has become a major environmental problem, and with the rise in consumer awareness, the need for recycling is becoming increasingly urgent. Elements such as expanding urbanization and industrialization and the decreased effect on the environment of plastic recycling have boosted the demand for recycled plastics in the market. Rising interest in sustainable and green packaging solutions has been driven mainly by the progress in customer education and increasing awareness about health and the environment, which has generated new opportunities for the recycled plastics business. The market is expanding on the rising preference for recycled plastics over pure plastics as a result of high pollution caused by the disposal of plastics in oceans and the scarcity of landfill areas in various parts of the world. Factors such as the rising use of recycled plastics in new applications in the packaging, automotive, and the electrical and electronics industry and several favorable initiatives promoting the use of recycled plastics provide lucrative opportunities for the growth of the global recycled plastics market. The global plastic recycling market is estimated to expand at a CAGR of 7.4%, rising from USD 52.1 bn in 2023 to USD 92.2 bn by 2031.

Exhibit 27: Global plastic recycling market



5.1.2.4 Recycling Process[lx]

Exhibit 28: End-to-end recycling process



5.1.2.5 Recycling Techniques

Recycling is the process of collecting waste materials, transforming them into raw materials and processing them into new products. The recycling process involves three basic techniques:

- **Mechanical recycling:** One of the most widely adopted methods to recycle plastics, paper and glass, is where the residues of all these materials are mechanically transformed into new materials without changing their chemical structures. Mechanical recycling includes processes such as grinding, washing, separating, drying, re-granulating and compounding. This process allows the recycling of material back into the same application. However, there are materials, such as plastic, which after being recycled more than once become degraded and lose their quality. This phenomenon is called downcycling, which results in a lower-quality final product. This is the most widely used technology for PE and PP.
- **Energy recycling:** Another option is energy recycling. This approach only works with plastic waste. It consists of converting plastic into both thermal and electrical energy by leveraging, through incineration, the heat released by these materials in the form of fuel. The process starts with the collection, followed by the sorting of feedstock, which is followed by the burning process, which involves burning plastics and converting them into solid and gaseous waste and energy. This type of recycling is very popular in some countries since it allows optimization of the space available in heavily populated cities with little room for landfills. This solution is widely used in Europe and Japan, but it is not financially sustainable because of the need for major investment and the engagement of public authorities. In the 1970s and 1980s, energy recycling was negatively perceived because of the emissions it produced. Today, clearer rules have been set for incineration equipment to ensure that emissions are more environmentally friendly. For example, newly built waste incineration plants for energy recycling use catalyzers to withhold emissions.
- **Chemical recycling:** The most complex process is where plastics are reprocessed, and their chemical structure is modified to obtain raw material for different industries or as a basic input for manufacturing new plastic products. The process starts with the collection, followed by the sorting of feedstock, which is followed by heating. Depending on the output feedstock requirement, a hydrogenation, gasification or pyrolysis process is used. This process is more expensive and requires large amounts of plastic to be economically feasible.

5.1.2.6 Chemical Recycling[lxi]

Another name for chemical recycling is advanced recycling. Currently, the chemical recycling process is still under development and in the early stages. The process is complex and requires major technological development. There are three primary types of chemical recycling processes that are in use: pyrolysis, gasification and solvolysis. With the rapid rise of technology, the industry is striving to achieve processes that are greatly superior to the current ones. A case in point is Aduro Clean Technologies Inc., which has developed its own patent-protected technological solution called HCT.

Some of the basic types of chemical recycling processes are:

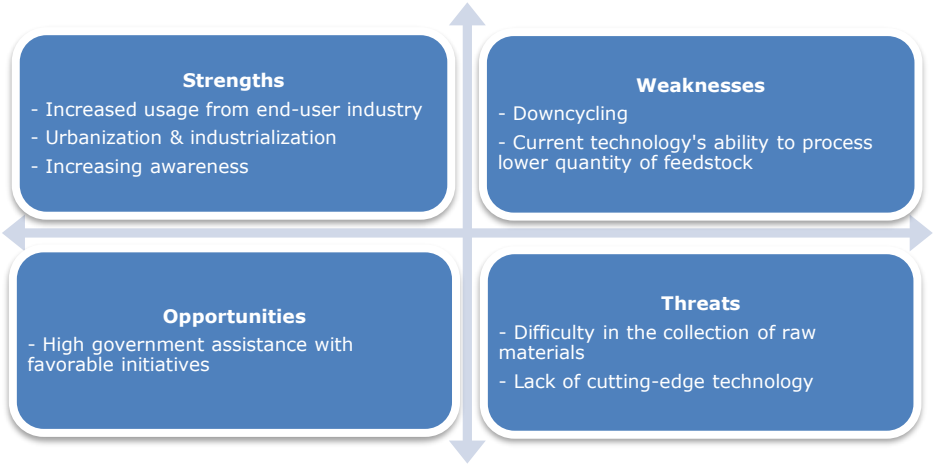
- **Pyrolysis and WMP:** This process primarily targets PE and PP. It involves heating the collected recycled plastic without oxygen in a reactor to break down the molecules. In the case of WMP this happens in the presence of water. The process may also involve an expensive catalyst used to reduce reaction temperature and provide the desired output. The output feedstock is a naphtha-like liquid called pyrolysis oil. Depending on the output/yield quality of the pyrolysis oil, the usage is determined. If the yield is of high quality, it goes to an industrial steam cracker at a polymer production facility, where it is cracked into monomers such as ethylene and propylene, and repolymerized into polyethylene, thus making the process circular. One of the advantages is that the plastic made through pyrolysis is essentially virgin and contaminant-free, as compared to mechanical recycling, which might have some color or odor contamination. However, some of its disadvantages include the requirement for a high amount of sorting, a low yield, and a moderate carbon footprint.
- **Gasification**: The process involves treating the polymers at high temperatures in a controlled oxygen environment, thereby reverting the plastics to their base components of hydrogen and carbon monoxide (referred to as syngas), which are then typically converted into methanol. Methanol is used to manufacture fertilizer but could also be turned back into polymers and made circular. The major advantage of gasification is less sorting and the wide availability of feedstock. However, gasification is not widely practiced because it is very costly to build back the molecules into liquid and therefore requires large capital outlays. Also, the process has a high carbon footprint.

- **Solvolysis**: Also known as glycolysis, methanolysis, or hydrolysis, this is a solvent-based process with a focus on recycling PET. Companies such as Procter & Gamble have developed a solvent-based recycling platform for recycling thin PP films, and PureCycle Technologies is scaling up this solvolysis-based recycling technology to help improve the circularity of polypropylene. The advantage of this approach is that the output can be used in food contact and other critical applications, while its biggest disadvantage is its capital-intensive nature compared to mechanical recycling and the need for extra sorting to gather the desired feedstock quality for effective operations.
- **Chemolysis**: Pioneered by Aduro, the latest chemical recycling process leverages the unique properties of water to transform lower-value feedstock into higher-value feedstock. The process involves the addition of water, naturally occurring metals and bio-based materials, such as glycerol or cellulose, to deconstruct long molecules into smaller molecules at low operating temperatures without the use of exotic, expensive catalysts, thereby addressing all the challenges of the traditional process. The biggest advantage of HCT is its feedstock flexibility combined with scalability, low cost, and high yield with a lower carbon footprint.

It is estimated that the global advanced recycling technologies market will expand from USD 278.2 mn in 2022 to USD 8.9 bn by 2031 at a CAGR of 47.2%.

5.1.2.7 SWOT Analysis

Exhibit 29: SWOT Analysis of the Industry



5.2 Renewables and their opportunities

5.2.1 Definition, Types and Market size[lxii]

Biofuel is a fuel that is produced over a short time span from biomass such as plants or from agricultural, domestic or industrial biowaste. Biofuels are mostly used for transportation, but they can also be used for heating and electricity and are regarded as a renewable energy source.

The global biofuels market was valued at USD 116.5 bn in 2022 and is expected to rise to USD 201.2 bn by 2030, registering a CAGR of 8.3%. At present, the global biofuel demand in 2022 stood at 9,100 mn liters per year (MLPY), registering growth of 6% over 2021[lxiii].

There are four different types of biofuels:

- Biodiesel
- Bioethanol/ethanol
- Renewable diesel
- Bio-jet

Exhibit 30 (a): Production and consumption of biofuel types in 2022 (MLPY)

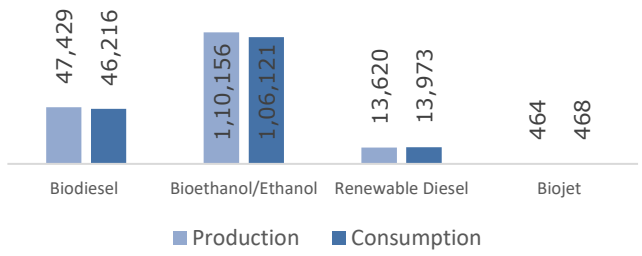
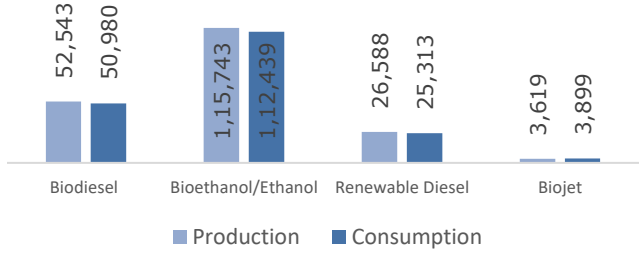


Exhibit 30 (b): Estimated Production and consumption of biofuel types by 2027 (MLPY)



Renewable diesel contributed the largest share of growth on a YoY basis, primarily attributed to attractive policies in the US and Europe. Blending requirements and financial incentives have also supported growth in emerging countries such as India and Brazil, while Indonesia's 30% biodiesel blending requirement has further accentuated its biodiesel usage.

Exhibit 31 (a): Biofuel demand by fuel and region in FY 2022 (MLPY)

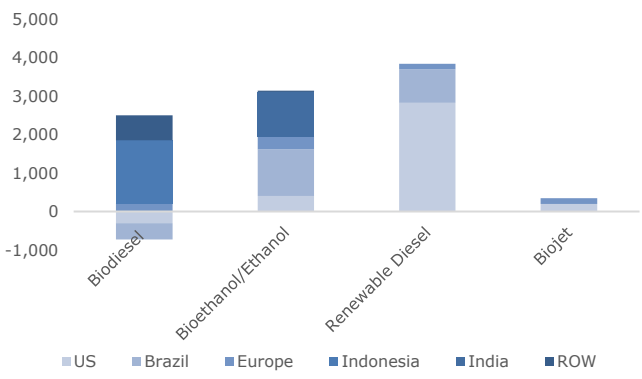
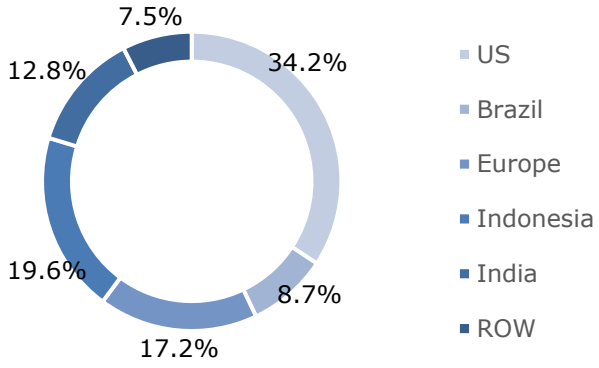


Exhibit 31 (b): Global biofuel demand growth by region in FY 2022



Total global biofuel demand is expected to expand by 35,000 MLPY in the next five years. The growth in renewable diesel and bio-jet fuel is expected to be driven by advanced economies, underpinned by policies designed to reduce greenhouse gas (GHG) emissions. Meanwhile, usage of ethanol and biodiesel is driven mainly by emerging economies, to reduce oil imports while also maximizing the use of indigenous resources to benefit the local economy. By 2027, biodiesel, renewable diesel and bio-jet fuel demand is expected to evolve to 2.5 exajoule (EJ), surpassing the energy demand of 2.4 EJ for ethanol.

The US, Canada, Brazil, Indonesia and India account for c. 80% of global expansion in biofuel use, as all five countries have comprehensive policy packages that support growth. By 2027, biofuel demand across Brazil, Indonesia and India is expected to expand by 19,300 MLPY, while the introduction of new policies in the US and Canada should support 9,500 MLPY of new biofuel. Demand in Europe is expected to expand to 1,400 MLPY, driven by the increasing stringency of existing country-level policies. The share of transport demand in the US is expected to increase to 8% from 6%, while the market shares in Canada and Europe should rise from c. 4% to 7%, and from 5.9% to 6.5%, respectively, by 2027, thereby paving the way for an increased share of biofuel usage globally to 5.4% by 2027 from 4.3% in 2022.

Exhibit 32 (a): Global biofuel demand[lxiv]

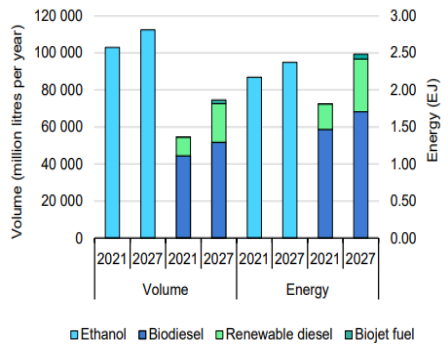


Exhibit 32 (b): Global biofuel forecasted growth by country[lxv]

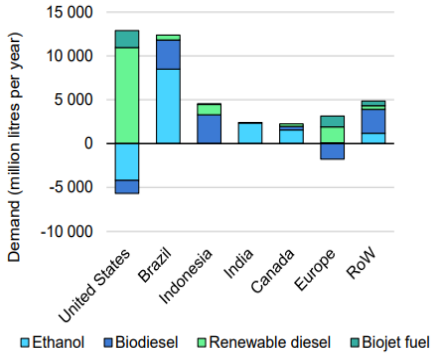
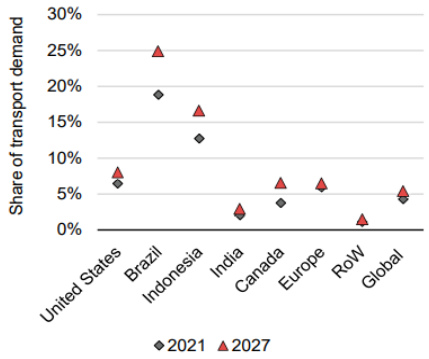


Exhibit 32 (c): Global biofuel share of transport[lxvi]



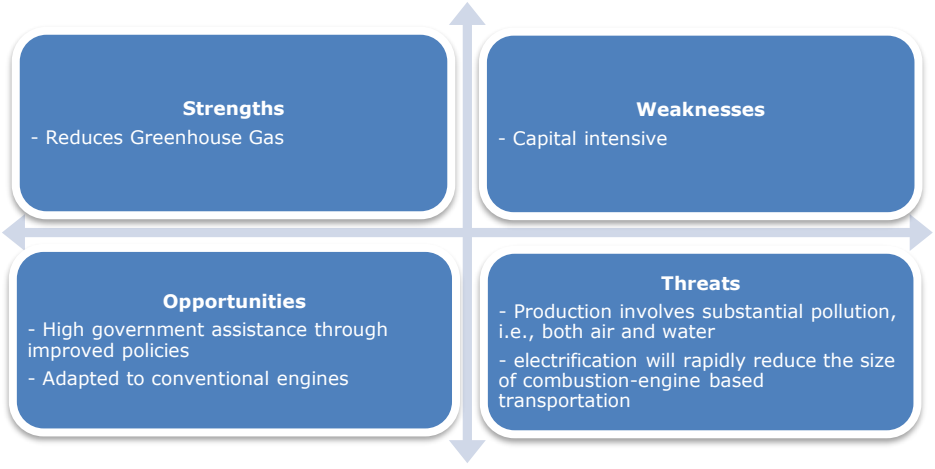
5.2.2 Emergence of Bio-Jet Fuel[lxvii]

To propel higher demand, countries globally are amending their existing policies and implementing new ones. As a result, global bio-jet fuel demand is expected to rise to 3,900 MLPY by 2027. The main impetus should come from the US and Europe, where demand is expected to rise to 2,000 MLPY and 1,300 MLPY, respectively, by 2027. In Asia, Japan targets the use of 65 MLPY and a lower GHG emissions intensity in 2025.

In terms of production, bio-jet fuel production depends primarily on the availability of waste and residue oils and fats, which contribute c. 52%, while vegetable oils contribute c. 43%, and the remainder is provided by ethanol, woody residues and wastes.

5.2.3 SWOT Analysis

Exhibit 33: SWOT Analysis of the Industry



5.3 Heavy oil[lxviii]

5.3.1 History and Formation of Oil Sands

Canada is home to the world's third-largest oil reserves, mainly located in oil sands (specially the Western Canada). Oil sands deposits can be found all over the world, including Kazakhstan, Russia, Madagascar and the US, with varied properties. Canada's oil sands are concentrated mostly in Alberta, extending over an area of c. 142,000 km², only 3% of which is mineable (which are sufficiently shallow to extract by mining the sands).

Hydrocarbons, called bitumen, are contained in a sand-based formation, forming Alberta's oil sand deposits, which consist primarily of sand, shales and clay, water and bitumen in about 85%, 5% and 10% respective proportions. However, the bitumen content can be as high as 20% (by volume), while the water content can also vary greatly from 0-9% (by volume) in some areas. In general, the higher the water content, the lower the bitumen content, and vice versa. Bitumen from the Alberta oil sands has a high sulfur content, typically 4-5% by weight, second only to Boscan crude from Venezuela, which contains about 5.5% sulfur.

Canadian oil sand deposits are concentrated in three regions, characterized by one of three basins — Athabasca, Peace River and Cold Lake. The Athabasca basin is the largest, spanning 40,000 km², where all mineable oil sands are located north of Fort McMurray, where the deposit can be found very close to the surface. Cold Lake basin spans an area of about 22,000 km², where the oil sands deposit is located 300 to 600 meters below the surface, making mining economically unfeasible and requiring "in-situ" recovery and production technologies. Peace River basin is by far the smallest of the three, covering an area of c. 8,000 km², with the oil sands deposit located c. 300 to 770 meters below the surface.

It is estimated that 1.75 tn barrels of bitumen are contained in the oil sands, but less than 10% can be economically recovered with current technology. The future recoverable volume from the oil sands is estimated at 315 bn barrels with a proven oil reserve of c. 168 bn barrels[lxix].

Exhibit 34 (a): 2021 crude oil production of top 7 countries (Mn barrels per day)[lxx]

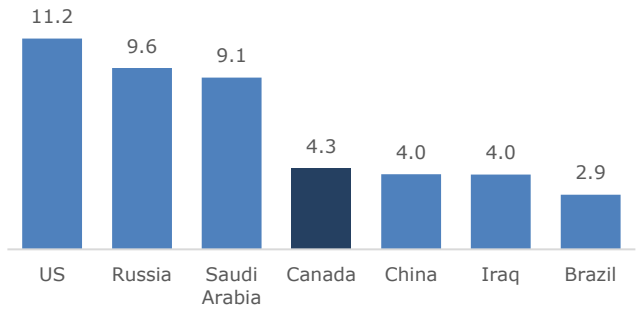
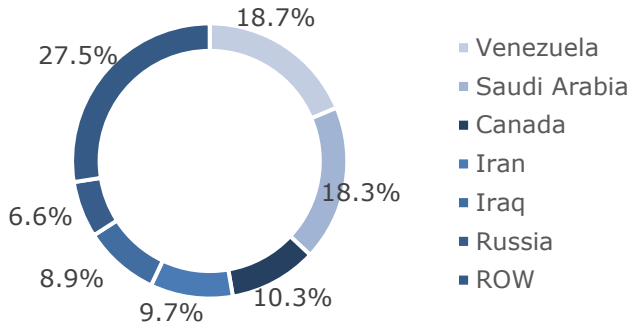


Exhibit 34 (b): 2020 World Oil Proven Reserves[lxxi]



5.3.2 Bitumen and its Extraction

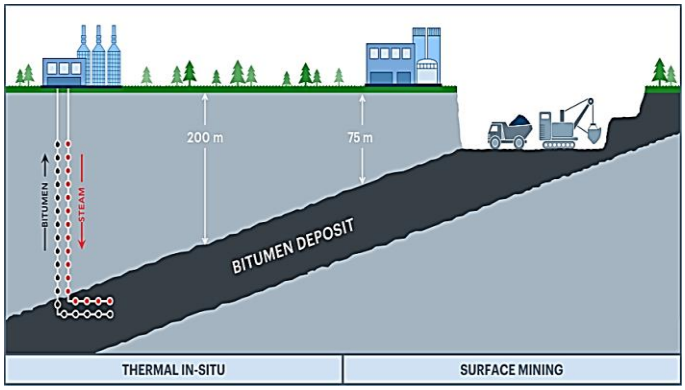
Bitumen is a hydrocarbon compound with a long and complex molecular structure with low hydrogen and a high amount of carbon and heavy metals such as nickel and vanadium, as well as sulfur.

The heavier components of bitumen can be separated into two organic compounds:

- Asphaltenes
- Maltenes

Asphaltenes have extremely complex molecular structures, imparting a high viscosity to the oil, thereby making bitumen sticky and heavy, carrying with it nickel, sulfur and vanadium. As a result, this reduces the quality of the crude

Exhibit 35: Bitumen extraction: Mining vs in-situ[lxxii]



and makes bitumen much harder to refine. The remaining portion of the bitumen is in the form of maltenes, which can be further separated into saturates, aromatics and resins.

To produce a marketable crude product, bitumen needs to be extracted from the oil sands deposit, leaving behind all the sand, water and fine clays. Extraction happens either through surface mining or through thermal in-situ extraction. Deposits located at a depth of less than 75 meters can be surface mined, where the bitumen is gravity separated using hot water. In-situ extraction is used for deposits located deep underground. This process injects steam into the formation, mobilizing the bitumen, which is then pumped to surface. The method used depends on the depth of the deposit. Less than 20% of Alberta's recoverable bitumen reserves are close enough to the surface to be mined, while the majority of deposits can only be recovered in situ.

5.3.3 Dilbit or Diluted Bitumen

The mined bitumen has a high fraction of heavy components and a high sulfur content. Bitumen, due to its high density and viscosity, does not meet pipeline specifications for transportation over long distances, nor can it be processed through refineries that are designed for a light, sweet (sulfur-free) feedstock.

Since pure bitumen is so viscous, significant volumes of diluent such as natural gas condensate, and lighter conventional crudes are added to meet pipeline specifications. The resulting blended crude is called Diluted Bitumen or 'Dilbit'. The required specification ensures the crude can be transported in the main pipeline systems. Alternatively, producers also have the option to upgrade the bitumen on site, thereby producing a lighter transportable crude without the need for diluent.

5.3.4 Bitumen Upgrading Process

Upgrading is a process by which bitumen is transformed into light oil by fractionation and chemical treatment, removing virtually all traces of sulfur and heavy metals. The process involves the following:

- **Fractionation**: This process involves the removal of the higher-valued light-end crude to concentrate the heavy or resid portions of the crude for further processing.
- **H:C ratio upgrading:** This step involves improving the hydrogen-to-carbon (H:C) ratio, through carbon rejection (coking) or hydrogen addition (hydro-conversion). A higher H:C ratio is indicative of a better-quality crude.
- **Hydrotreating:** The penultimate step removes impurities, and saturates the cracked materials, thereby enhancing the quality and marketability of the final crude oil product and adding volume to the product, since hydrogen is added to the product.
- **Synthetic Crude Oil (SCO) Blending:** The final stage involves recombining the lighter-end crude, separated at the start of the process, with the upgraded heavy crude portions. The upgraded product is called SCO, which is then shipped to refiners.

Exhibit 36 (a): Alberta oil production by type (Mn barrels/day)[lxxiii]

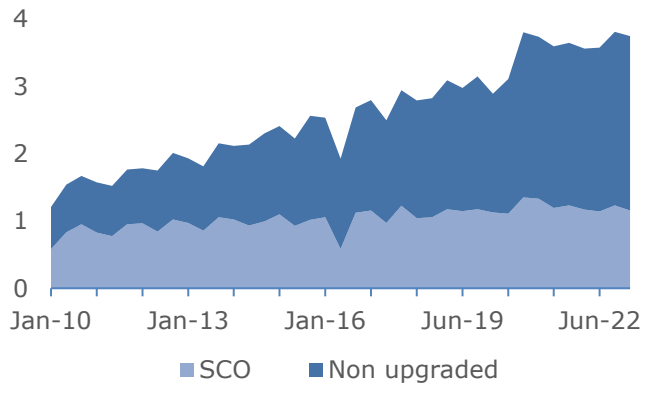
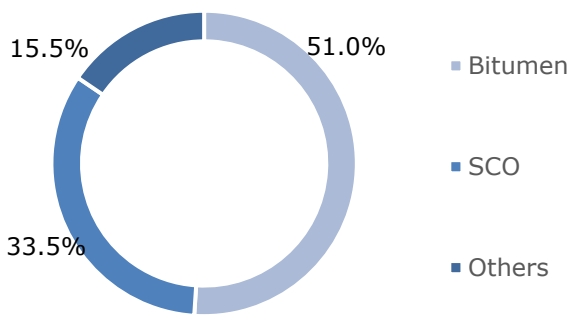


Exhibit 36 (b): Alberta oil production by type in March 2023 [lxxiv]



About 65% of bitumen produced from the oil sands is diluted, mainly with natural gas condensate, and sold to refineries as a heavy/sour blend. The remaining 35% is upgraded into a light SCO before being sold to downstream refineries.

5.3.5 Types of Marketable Crude and Pricing Differentials

There are three main marketable crude oil blends derived from the oil sands.

- **Dilbit:** A clean bitumen containing less than 0.5% water and solids is diluted with diluent, in the order of 20-40% by volume, and is processed through a high-conversion refinery as it is too heavy/sour for a simple refinery.
- **SCO**: A light sweet crude produced through the upgrading of bitumen. It has low sulfur content. As a result, SCO can be sold to a conventional (less complex) refinery.
- **Synbit:** A mixture of synthetic crude and bitumen, typically a 50:50 blend. SCO is used in place of conventional diluents when the supply in constrained.

The most commonly referenced benchmarks are West Texas Intermediate (WTI), representing the US benchmark, and Brent, the international crude benchmark. Western Canadian Select (WCS) and Canadian Light Sweet (CLS) are the benchmarks used in Canada, where WCS represents the benchmark for heavy crudes from Western Canada, and CLS more closely resembles WTI specifications.

Exhibit 37 (a): Properties of common benchmark crudes[lxxv]

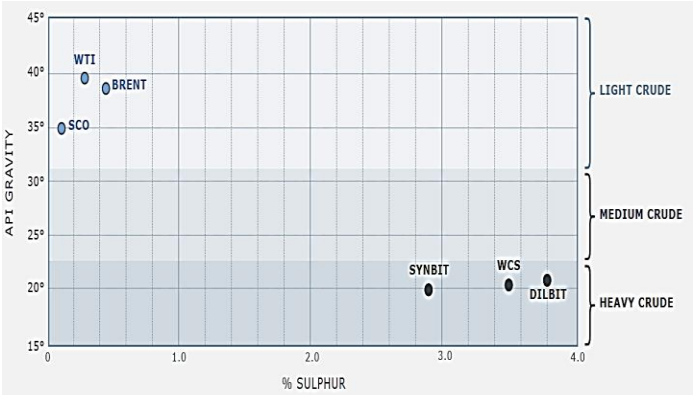
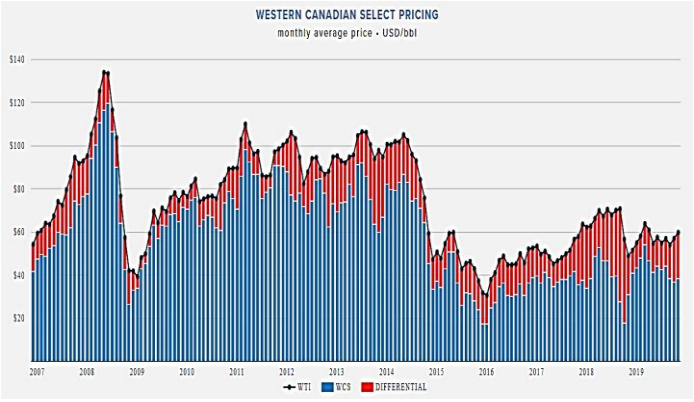


Exhibit 37 (b): WCS Price differential with WTI[lxxvi]



Note: Crude densities are described by their American Petroleum Institute (API) gravity, where an API of 10° represents a crude density equivalent to water. Anything greater than 10° is lighter than water. Crudes with an API gravity in the range of 42° to 50° are sometimes referred to as Super Light. Condensates typically have an API gravity greater than 50°. Sweet crudes contain less than 0.5% sulfur. Crudes with a higher sulfur content are referred to as sour.

Unlike other benchmark crudes, the WCS price reflects the differential to WTI, which is often referred to as the Canadian Heavy Oil Discount. WTI or light sweet crude oil requires less capital, operation and energy to refine, thereby commanding a premium, and is also considered to be of better quality. The markets that WCS seeks to access are in the USA and the Gulf of Mexico (GOM), which has a large portion of the world's resid processing capacity, since setting up of resid processing capacity in the Gulf is far more economical than in regions such as Alberta. Alberta exports the majority of heavy and medium grade to markets such as Midwest and GOM that have a healthy appetite for heavy and medium grades.

5.3.6 End-user Market

Alberta's oil sands produced over 1.8 mn barrels (bbl.)/day of diluted bitumen in 2019. Only 7% (c. 125,000 bbl./day) was processed in Canada, while the rest (93%) of the province's marketable bitumen production (1.7 mn bbl./day) was exported to more complex refineries primarily in the US.

Alberta's bitumen upgraders produced 1.1 mn bbl./day of SCO in 2019. About 25% was refined within the province, and another 25% was sold to other provinces, primarily Ontario and Quebec, while the remaining 50% was exported to the US.

5.3.7 Problems of using Diluent

Upgraded SCO is a superior product to heavy diluted bitumen, but the rising volumes of light and ultra-light oil being produced from US shale unfavorably impacting the price of Canadian light/sweet crudes. Heavy diluted bitumen has sufficient demand but is crippled mainly due to:

- **High cost associated with diluent:** The price that a bitumen producer will receive for its bitumen depends on many factors, out of which product type, blending ratio, transportation cost of both diluent and final product are the main issues. The high cost of diluent is due to supply shortages in the WSB, and producers have to pay a premium to gain access to diluent that is being imported. The actual value of the diluent is significantly less than what the producers have to pay, thereby creating burden on the producers.
- **Reduced pipeline volume:** The second-biggest drawback associated with the use of diluent is that it takes up 30% of pipeline volumes, increasing transport costs for the shipper and limiting pipeline capacity.

5.3.8 Solution

To address the drawbacks of using diluent, the industry should look for a more sustainable option. This could involve the implementation of cutting-edge technology, which will not only reduce the usage of diluent by improving the pipeline specifications while allowing more oil to be transported via pipeline, freeing up much-needed capacity.

6. Valuation

The fair market value of the company's shares stood between CAD 274.8 mn and CAD 394.3 mn on May 20, 2024. The fair market value for one of the company's publicly traded shares stood between CAD 3.9 and CAD 5.6 on May 20, 2024. The valuation approach followed is Blended Valuation.

6.1 DCF method

Valuation[lxxvii]	
Risk free rate (Rf)	3.6%
Levered Beta	0.92
Market return	10.4%
Cost of equity	10.8%
Cost of debt (after tax)	8.1%
WACC (discount rate)	10.2%

Year ending – May (CAD 000's)	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
FCFF (Low)									
Free cash flow to firm	(14,917.8)	(24,939.3)	(7,925.4)	26,291.3	25,349.0	28,010.0	36,006.6	37,646.7	39,079.1
Discount factor	0.9	0.9	0.8	0.7	0.6	0.6	0.5	0.5	0.4
Present value of FCF	(14,126.8)	(21,438.0)	(6,184.2)	18,622.4	16,298.5	16,347.9	19,076.2	18,105.0	17,059.9
FCFF (High)									
Free cash flow to firm	(14,525.7)	(23,463.0)	(1,850.8)	26,143.7	29,259.3	40,624.5	42,089.6	49,309.6	57,212.8
Discount factor	0.9	0.9	0.8	0.7	0.6	0.6	0.5	0.5	0.4
Present value of FCF	(13,759.6)	(20,185.9)	(1,446.2)	18,553.3	18,858.8	23,781.1	22,377.6	23,810.3	25,091.2

Arrowhead Fair Value Bracket	High	Low
Terminal Value (TV)	720,052.3	4,88,271.2
Present Value of TV	315,785.2	2,13,154.4
Present Value of FCF	97,080.5	63,760.9
Net Debt[lxxviii]	(3,888.7)	(3,888.7)
Equity Value Bracket	**416,754.3**	**2,80,803.9**
Shares O/S ('000s)	70,517.0	70,517.0
Fair Share Value Bracket (CAD)	5.9	4.0
Current Market Price (CAD)[lxxix]	1.3	1.3
Upside/(Downside)	344.4%	199.4%
Current Market Cap. (CAD '000s)	93,787.6	93,787.6
Target Market Cap. Bracket (CAD '000s)	**416,754.3**	**2,80,803.9**

Sensitivity Analysis

Sensitivity Table - High		WACC (%)				
		9.7%	9.9%	10.2%	10.4%	10.7%
GROWTH RATE (%)	1.0%	5.8	5.5	5.3	5.1	4.9
	1.5%	6.1	5.8	5.6	5.4	5.2
	2.0%	6.4	6.1	5.9	5.6	5.4
	2.5%	6.7	6.4	6.2	5.9	5.7
	3.0%	7.2	6.8	6.5	6.2	6.0

Sensitivity Table - Low		WACC (%)				
		9.7%	9.9%	10.2%	10.4%	10.7%
GROWTH RATE (%)	1.0%	3.9	3.8	3.6	3.5	3.4
	1.5%	4.1	4.0	3.8	3.6	3.5
	2.0%	4.3	4.2	4.0	3.8	3.7
	2.5%	4.6	4.4	4.2	4.0	3.8
	3.0%	4.9	4.7	4.4	4.2	4.1

Approach for DCF Valuation

Time Horizon: The Arrowhead fair valuation for Aduro Clean Technologies Inc. is based on the DCF method. The time period chosen for the valuation is 103 months (2024E-2032E).

Terminal Value: This is estimated using a terminal growth rate of 2.0%.

Prudential nature of valuation: It should be noted that Arrowhead's fair value bracket estimate is a relatively prudent estimate, as it discounts the eventuality of any new products being launched in the market or any significant change in the strategy.

6.2 Relative Valuation

Exhibit 38: Peer Set[lxxx]

Companies	Latest EV (CAD mn)	Latest Total Assets (CAD mn)	Latest Book Value (CAD mn)	EV/Total Assets	EV/BV
Agilyx ASA	359.5	348.6	33.3	10.5	36.3
Cielo Waste Solutions Corp.	33.4	35.9	29.4	0.0	2.4
Ecolomondo Corporation	33.3	71.2	44.0	1.6	27.4
Gevo, Inc.	226.4	(45.2)	948.1	(0.0)	(0.1)
Loop Industries, Inc.	173.6	165.4	55.2	3.0	3.6
Pryme N.V.	63.0	77.0	89.8	0.9	1.3
PureCycle Technologies, Inc.	1,200.4	1,588.6	1,165.4	1.4	2.3
Quantafuel AS	120.1	130.1	204.2	0.6	0.9
Velocys plc	107.4	102.7	50.3	2.0	3.8
Median				**1.4**	**2.4**

Particulars	High	Low
Book Value (4-Yr Forward)	82,600.9	67,912.0
PEER EV/ BV	2.4	2.4
Arrowhead Premium/(Discount)	50.0%	50.0%
Enterprise Value (Cal. Using EV/BV)	**300,714.5**	**247,238.5**
Less: Net Debt	(3,888.7)	(3,888.7)
Implied Equity Value	**304,603.1**	**251,127.2**
Shares o/s ('000s)	70,517.0	70,517.0
Intrinsic Value per share (CAD)	**4.3**	**3.6**
Current market Price (CAD)	1.3	1.3
Upside / (Downside)	244.8%	167.8%

6.3 Blended Valuation

Blended Valuation		High	Low
DCF (CAD)	Weightage - 80%	5.9	4.0
Relative Valuation (CAD)	Weightage - 20%	4.3	3.6
Blended Value (CAD)		**5.6**	**3.9**
Upside/(Downside)		320.4%	193.1%
Target Market Cap. Bracket (CAD '000)		394,324	274,869

Key Assumptions for Valuation:

- In the forecast period of 2024E-2032E, it is assumed that the customer trials are to commence from FY 2024 and are to continue until the end of the forecast period for both High and Low case. For pilot plants, the revenue will commence from FY 2024 onward in both High and Low cases. For commercial units ("Own & Operate" and Licensing Models), revenue will commence from FY 2025 onward. Timelines taken for valuation purposes are subject to change.
- In the forecast period of 2024E-2032E, the average selling price is estimated to be c. CAD 1,138.2 per ton for HPU in Low Case and CAD 1,200 per ton in High Case. Also, the cost savings per barrel in HBU is assumed to be c. CAD 12.0 per bbl. Moreover, during the forecasted period, the Licensing fee is assumed to be 20% while the downtime is assumed to be c. 7% in both High and low cases.
- In the forecast period of 2024E-2032E, the average operating cost is estimated to be c. CAD 260 per ton for HPU in the Low Case and CAD 240 per ton in the High Case. Also, the feedstock cost is assumed to be c. CAD 200.0 per ton in the Low Case and CAD 150.0 per ton in the High Case. We have assumed that the Operating cost and the cost of feedstock are to increase YoY by 5% in the Low Case and 2% in the High Case.
- In the forecast period of 2024E-2032E, the capacity utilization has been kept in a bracket of c. 50-100%. Also, the yield for the HPU project is assumed to vary between 70-80% in the Low case, while it is assumed to vary between c. 80-90% in the High case.
- It is assumed that if the company decides to diversify to its "Own & Operate" model, the capex requirement will be similar to the customers Aduro caters to.
- The capital raising of all the projects is assumed to commence from FY 2023. No equity dilution at the parent level is considered at this stage.
- The tax rate assumed in the later years is 27%.
- In the Relative Valuation methodology, many companies represent a legacy approach which is different from Aduro. Aduro developed HCT, which has the capability to address the majority of the economic and chemical limitations of current technologies, starting from being feedstock-selection-agnostic to developing multiple applications of HCT addressing the growing total addressable market. In the case of current technologies, the total addressable market is limited, and in some cases, it is shrinking due to the companies' inability to process a diverse set of feedstocks. Aduro's technological prowess has led to the development of Patents as compared to the comparable company, which licenses its technology from a third party. Also, Aduro's capital structure (until FY 2022) has very limited debt, while comparable companies have significant debt. Given the limitations in the selection of comparables due to the unique business model and non-availability of direct comparables, we have assumed the above-stated list as Aduro's peer set for finding the blended valuation of Aduro.

Important information on Arrowhead methodology

The principles of the valuation methodology employed by Arrowhead BID are variable to a certain extent depending on the subsectors in which the research is conducted, but all Arrowhead valuation research possesses an underlying set of common principles and a generally common quantitative process.

With Arrowhead Commercial and Technical Due Diligence, Arrowhead extensively researches the fundamentals, assets and liabilities of a company, and builds solid estimates for revenue and expenditure over a coherently determined forecast period.

Elements of past performance, such as price/earnings ratios, indicated as applicable, are present mainly for reference purposes. Still, elements of real-world past performance enter the valuation through their impact on the commercial and technical due diligence.

Elements of comparison, such as multiple analyses may be to some limited extent integrated in the valuation on a project-by-project or asset-by-asset basis. In the case of this Aduro Clean Technologies Inc. report, no multiple analyses are integrated in the valuation.

Arrowhead BID fair market value bracket

The Arrowhead Fair Market Value is given as a bracket. This is based on quantitative key variable analysis, such as key price analysis for revenue and cost drivers or analysis and discounts on revenue estimates for projects, especially relevant to those projects estimated to provide revenue near the end of the chosen forecast period. Low and high estimates for key variables are produced as a tool for valuation. The high-bracket NPV valuation is derived from the high-bracket key variables, while the low-bracket NPV valuation is based on the low-bracket key variables.

In principle, an investor who is comfortable with the high brackets of our key variable analysis will align with the high bracket in the Arrowhead Fair Value Bracket, and likewise in terms of low estimates. The investor will also take into account the company intangibles – as presented in the first few pages of this document in the analysis of strengths and weaknesses and other essential company information. These intangibles serve as supplementary decision factors for adding or subtracting a premium in the investor's own analysis. The bracket should be understood as a tool provided by Arrowhead BID for the reader of this report and the reader should not solely rely on this information to make his decision on any particular security. The reader must also understand that on one hand, global capital markets contain inefficiencies, especially in terms of information, and that on the other hand, corporations and their commercial and technical positions evolve rapidly: this present edition of the Arrowhead valuation is for a short to medium-term alignment analysis (one to twelve months). The reader should refer to important disclosures on page 48 of this report.

7. Appendix

7.1 Aduro Financial Summary

Exhibit 39: Financial Summary

Low bracket estimates

Year ending May	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
Revenue (CAD 000's)	1,333.6	14,794.3	39,233.3	87,913.6	98,447.8	1,08,749.3	1,26,791.6	1,36,742.7
Operating profit (CAD 000's)	(8,155.7)	(2,441.5)	18,575.6	64,996.9	72,830.5	80,164.9	95,139.8	1,01,797.4
Net income (CAD 000's)	(9,840.9)	(5,691.9)	15,156.0	49,219.7	50,878.7	56,447.7	67,592.7	72,664.3
EPS (CAD)	(0.1)	(0.1)	0.2	0.7	0.7	0.8	1.0	1.0
Growth rates (%)								
Revenue	1116.4%	1009.4%	165.2%	124.1%	12.0%	10.5%	16.6%	7.8%
Operating profit	NM	NM	NM	249.9%	12.1%	10.1%	18.7%	7.0%
Net income	NM	NM	NM	224.8%	3.4%	10.9%	19.7%	7.5%
EPS	NM	NM	NM	224.8%	3.4%	10.9%	19.7%	7.5%
EBITDA	NM	NM	NM	242.7%	12.4%	10.4%	18.8%	7.3%
Margins (%)								
Gross margins	2.9%	39.7%	74.1%	88.0%	88.2%	88.3%	88.9%	88.6%
Operating profit margin	(611.6%)	(16.5%)	47.3%	73.9%	74.0%	73.7%	75.0%	74.4%
Net profit margin	(737.9%)	(38.5%)	38.6%	56.0%	51.7%	51.9%	53.3%	53.1%
EBITDA margins	(597.1%)	(13.8%)	49.1%	75.1%	75.3%	75.3%	76.7%	76.3%
Ratios								
ROA	(85.2%)	(19.6%)	26.7%	50.5%	34.2%	28.0%	25.7%	21.8%
ROE	NM	NM	NM	118.6%	53.4%	36.9%	30.8%	24.7%
Debt/equity	NM	NM	3.7x	0.8x	0.4x	0.2x	0.2x	0.1x
Interest Coverage Ratio	NM	NM	5.4x	19.0x	23.2x	28.2x	37.4x	45.1x

Exhibit 40: Financial Summary

High Bracket Estimates

Year ending May	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
Revenue (CAD 000's)	1,903.4	18,349.9	49,044.6	97,179.6	1,08,968.4	1,31,185.4	1,40,026.7	1,57,841.6
Operating profit (CAD 000's)	(7,894.3)	(993.2)	27,404.0	74,774.9	84,787.8	1,04,874.9	1,11,211.6	1,26,464.6
Net income (CAD 000's)	(9,579.5)	(4,243.7)	23,984.3	53,512.3	59,607.5	74,486.0	79,325.1	90,671.4
EPS (CAD)	(0.1)	(0.1)	0.3	0.8	0.8	1.1	1.1	1.3
Growth rates (%)								
Revenue	1636.3%	864.0%	167.3%	98.1%	12.1%	20.4%	6.7%	12.7%
Operating profit	NM	NM	NM	172.9%	13.4%	23.7%	6.0%	13.7%
Net income	NM	NM	NM	123.1%	11.4%	25.0%	6.5%	14.3%
EPS	NM	NM	NM	123.1%	11.4%	25.0%	6.5%	14.3%
EBITDA	NM	NM	NM	169.8%	13.7%	23.8%	6.4%	13.9%
Margins (%)								
Gross margins	43.4%	66.2%	81.5%	90.3%	90.5%	91.5%	91.4%	91.8%
Operating profit margin	(414.7%)	(5.4%)	55.9%	76.9%	77.8%	79.9%	79.4%	80.1%
Net profit margin	(503.3%)	(23.1%)	48.9%	55.1%	54.7%	56.8%	56.6%	57.4%
EBITDA margins	(404.6%)	(3.2%)	57.3%	78.0%	79.1%	81.3%	81.1%	81.9%
Ratios								
ROA	(81.6%)	(14.0%)	37.9%	48.5%	35.4%	31.8%	25.5%	22.9%
ROE	NM	NM	NM	98.9%	52.2%	40.2%	29.8%	25.4%
Debt/equity	NM	NM	2.2x	0.7x	0.3x	0.2x	0.1x	0.1x
Interest Coverage Ratio	NM	NM	8.0x	21.8x	27.1x	36.9x	43.7x	56.0x

7.2 Aduro Clean Technology Inc. Balance Sheet Forecast

Exhibit 41: Consolidated balance sheet

All figures in CAD '000, unless stated differently

Low bracket estimates

Year Ending – May	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
Total current assets	5,634.2	10,421.3	12,357.4	38,982.5	60,217.0	84,790.8	1,18,150.8	1,53,826.6
Total non-current assets	9,898.0	32,164.0	58,681.9	84,927.6	1,13,600.7	1,44,945.6	1,79,065.6	2,16,428.0
TOTAL ASSETS	**15,532.2**	**42,585.2**	**71,039.2**	**1,23,910.1**	**1,73,817.7**	**2,29,736.4**	**2,97,216.4**	**3,70,254.6**
Total current liabilities	686.0	665.7	649.1	5,648.0	5,652.5	5,689.4	5,691.3	5,682.4
Total non-current liabilities	15,142.4	45,201.9	55,269.6	50,350.4	45,446.0	40,558.4	35,690.0	30,843.6
TOTAL LIABILITIES	**15,828.4**	**45,867.6**	**55,918.8**	**55,998.4**	**51,098.5**	**46,247.8**	**41,381.4**	**36,526.1**
Total shareholders' equity	(296.1)	(3,282.2)	15,120.7	67,912.0	1,22,719.6	1,83,489.0	2,55,835.6	3,33,729.2
TOTAL LIABILITIES & EQUITY	**15,532.3**	**42,585.4**	**71,039.5**	**1,23,910.4**	**1,73,818.1**	**2,29,736.8**	**2,97,217.0**	**3,70,255.2**

Exhibit 42: Consolidated balance sheet

All figures in CAD '000, unless stated differently

High bracket estimates

Year ending – May	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
Total current assets	5,994.8	12,413.8	20,461.6	46,858.2	71,875.2	1,09,036.7	1,48,214.9	1,95,446.0
Total non-current assets	9,898.0	32,164.0	61,368.4	92,064.6	1,25,590.9	1,62,232.1	2,02,135.7	2,45,817.8
TOTAL ASSETS	**15,892.8**	**44,577.8**	**81,829.9**	**1,38,922.7**	**1,97,466.2**	**2,71,268.8**	**3,50,350.6**	**4,41,263.8**
Total current liabilities	785.2	819.9	901.9	5,971.7	6,039.2	6,093.3	6,153.2	6,219.7
Total non-current liabilities	15,142.4	45,201.9	55,269.6	50,350.4	45,446.0	40,558.4	35,690.0	30,843.6
TOTAL LIABILITIES	**15,927.6**	**46,021.8**	**56,171.5**	**56,322.1**	**51,485.2**	**46,651.7**	**41,843.2**	**37,063.3**
Total shareholders' equity	(34.7)	(1,443.8)	25,658.6	82,600.9	1,45,981.4	2,24,617.6	3,08,508.0	4,04,201.1
TOTAL LIABILITIES & EQUITY	**15,892.9**	**44,578.0**	**81,830.2**	**1,38,923.1**	**1,97,466.6**	**2,71,269.3**	**3,50,351.2**	**4,41,264.4**

8. Analyst Certifications

I, Sumit Wadhwa, certify that all the views expressed in this research report accurately reflect my personal views about the subject security and the subject Company, based on the collection and analysis of public information and public Company disclosures.

I, Ayushi Saraswat, certify that all the views expressed in this research report accurately reflect my personal views about the subject security and the subject Company, based on the collection and analysis of public information and public Company disclosures.

Important disclosures

Arrowhead Business and Investment Decisions, LLC has received fees in 2023 and will receive further fees in 2024 from Aduro Clean Technologies Inc. for researching and drafting this report and for a series of other services to Aduro Clean Technologies Inc., including distribution of this report and networking services. Neither Arrowhead BID nor any of its principals or employees own any long or short positions in Aduro Clean Technologies Inc. Arrowhead BID's principals intend to seek a mandate for investment banking services from Aduro Clean Technologies Inc. in 2023 or beyond and intend to receive compensation for investment banking activities from Aduro Clean Technologies Inc. in 2023 or beyond.

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8. Notes and References

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