AGILYX
(AGLX NO)

21 March 2023

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Price (NOK)	**29.55**
Shares in issue (m)	85
Mkt Cap (NOKm)	2,517
Net debt (NOKm)	-158
EV (NOKm)	2,359
BVPS (NOK)	30.5

Share price performance

1m	-1.0%
3m	-6.8%
12m	-9.5%
12 m high/low	37.1/18.9
Ave daily vol (30D)	37,122

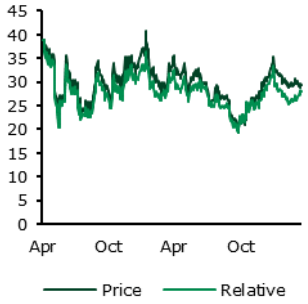
Shareholders

Saffron Hill Venture	42.8%
Six Sis Ag	7.5%
Clearstream	5.4%
Norris Peter Michael	4.4%
Dnb Asa	3.5%
Nordea Bank Abp	1.8%
Mp Pensjon Pk	1.8%
First Fondene As	1.7%
Morgan Stanley	1.7%
Bnp Paribas Sa	1.5%
Total for top 10	72.1%
Free float	46.7%
Source: Bloomberg	*21 Mar 23*

Next news Finals Q2

Business description

Plastic waste recycling technology and feedstock management



PLASTIC FANTASTIC

Agilyx is building significant traction in plastic waste recycling in both its core technology licencing business and also in its unique feedstock services business. With a growing awareness of the impact of micro plastic waste on global warming we see the company facing a growing market with increased policy support. We see Agilyx as an attractive way to play this theme and one of the very few to offer comfort on its technology with over 16,000 operating hours. We initiate coverage with a central case valuation of NOK 115.

A proven technology

Agilyx has successfully operated its plastic waste pyrolysis technology since 2018. The catalyst free technology improves efficiency and use of renewable electricity supply means projects can offer lifecycle carbon savings. We see this as a differentiated and proven technology giving Agilyx a major competitive advantage.

A unique feedstock management business

The creation of the Cyclyx feedstock management business in a joint venture with ExxonMobil gives Agilyx a unique position in the market. The membership model is gaining traction with 37 members and 320 in negotiation. It allows Agilyx to identify and manage opportunities across the plastic waste spectrum.

Low capital needs and growing traction

Agilyx is already constructing its second project. This is with Toyo of Japan and Agilyx is prioritising a further 33 projects with partners such as Virgin, Ineos and Mitsubishi. The initial development scale project is now 50% owned by AmSty and going forward Agilyx will not own projects but will take development, equipment, licence, royalty and service fees allowing it attractive returns for minimal capital outlay.

Central case valuation of NOK 115

We have valued the company based on development of the currently identified projects and continued growth at Cyclyx. Valuing only immediate projects with conservative timings and low growth at Cyclyx gives us a value of NOK 36. Including all identified projects and better growth at Cyclyx gives a central valuation of NOK 115 while additional projects and Cyclyx hitting its long-term target gives NOK 178.

US$,000 Dec	**2021a**	**2022e**	**2023e**	**2024e**	**2025e**	**2026e**
Sales	4,889	20,624	33,696	141,795	250,504	185,046
EBITDA	-14,205	-19,376	-8,923	31,109	18,973	5,942
PBT	-13,903	-19,765	-9,447	30,444	18,183	5,016
EPS	-0.2	-0.2	-0.1	0.3	0.1	0.0
CFPS	-0.2	-0.2	-0.1	0.3	0.1	0.1
DPS	0.0	0.0	0.0	0.0	0.0	0.0
Net Debt (Cash)	-18,298	-14,975	-6,820	-29,278	-40,220	-38,831
Debt/EBITDA	1.3	0.8	0.8	-0.9	-2.1	-6.5
P/E	-16.8	-13.0	-29.0	10.2	20.0	-86.1
EV/EBITDA	1.3	0.8	0.7	-0.9	-2.1	-6.5
EV/sales	-3.7	-0.7	-0.2	-0.2	-0.2	-0.2
FCF yield	-0.1%	-0.1%	0.0%	0.1%	0.0%	0.0%
Div yield	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

INVESTMENT SUMMARY

Agilyx has developed and proven a plastic waste recycling technology based on catalyst free pyrolysis. It has also developed an upstream feedstock management business, Cyclyx, which matches feedstocks and recycling requirements optimising the upstream element of the recycling process. As a result, it is building a strong pipeline of plastic recycling projects which will feed up front development fees and longer-term licence and royalty payments. Additionally, Cyclyx is seeing growing traction in feedstock fees. We see the company as being at a key stage of transformation towards a full commercial revenue model. We initiate coverage with a central case valuation of NOK 115.

A proven technology for recycling waste plastic into new plastic polymer

The advanced plastics recycling space has seen many failed solutions. Agilyx stands out in having demonstrated that it can operate its proprietary technology with over 16,000 hours of proven running completed. We see this itself as an important barrier to entry with a better designed solution and know-how built on real world experience.

A better solution for recycling waste

Lower carbon intensity than traditional manufacturing means that Agilyx can offer lifecycle carbon savings compared with existing solutions. The use of renewable energy to power the process combined with a solution that does not require catalysts means that the Agilyx solution further stands out against the competition and is more acceptable as a complete waste solution.

Plastic recycling is likely to rise up the political agenda

A growing body of research on the impact of microplastics on the ocean sequestration of carbon dioxide is showing that plastic waste could be a major contributor to global warming. We think the implications of this have not yet been fully considered by policymakers. As this issue becomes more widely understood we see all solutions that limit plastic leakage into the environment being actively supported.

Recycling rates remain low

Global plastic recycling rates are low at just 9% of waste generated. The US rate is worse at 4% and the EU average is 14%. But these are still low. Germany is ahead of the game at 45% which shows how much room there is for improvement. Much of the problem with recycling plastic waste is the complexity inherent to plastic waste: many different plastic types and contamination of plastic in the waste stream. Only PET and HDPE see consistent recycling rates of more than 10%. The Agilyx solution by contrast is robust and can handle the complexity of plastic waste including contaminated plastic.

Optimising feedstock

Through the Cyclyx joint venture with ExxonMobil, Agilyx is providing an important solution to issues of upstream plastic waste management in a way that can improve recycling rates and make the process more manageable for waste generators. The membership business model has already attracted 37 signatories including major names such as LyondellBasell, Dow and Sabic. With c.320 in membership discussions this business can grow significantly from the $5.1m revenue generated in the half year to June 2022.

A low capital business model

Agilyx is following a model where it receives fees for development services at the start of a project including consultation on feedstocks, and then the sale of key equipment including the pyrolysis reactor vessel. There will then be an up-front licence payment on financial close and an ongoing royalty payment based on project output. An ongoing service income stream will also be generated. The model allows the company to benefit from its technology without the need to deploy large amounts of project capital, this being provided by the project developers.

From proven technology to building traction

Having proven the technology and its efficient operation, Agilyx is now forming relationships with developers. The initial project has already been farmed down with AmSty taking 50% and a second project is in construction with Toyo of Japan. 33 projects are now being prioritised with partners including Virgin, A-eon and Ineos. The 66 ktpa project with Kumho Petrochemical is moving rapidly towards licencing, in order to meet Kumho's target of commercial operations in 2026.

BULL POINTS

- Proven, superior technology
- Upstream integration with feedstock management (Cyclyx)
- Market demand set to grow
- Real traction developing

BEAR POINTS

- Regulatory resistance to pyrolysis technology
- Projects take time to finance and develop

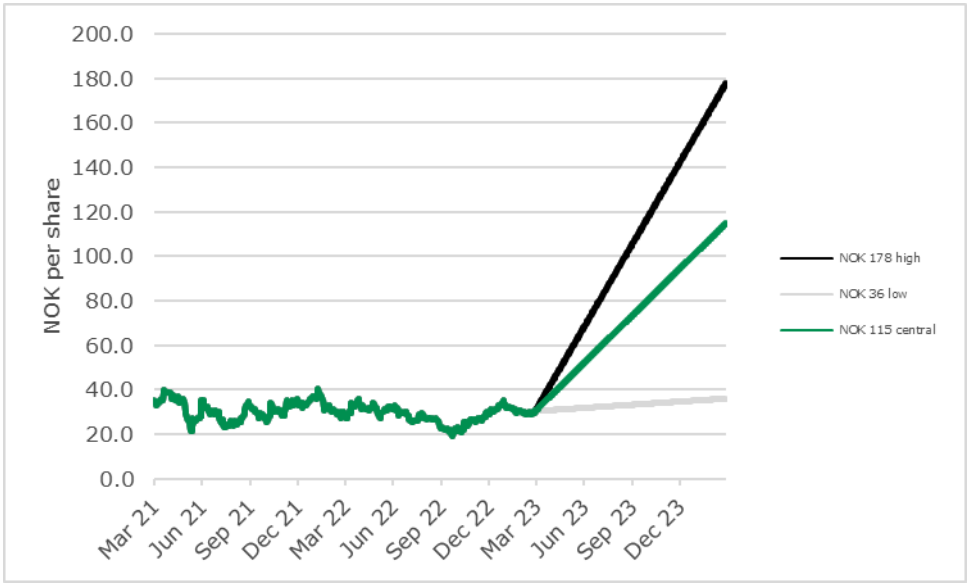
CATALYSTS

- Continued project wins
- New project milestone
- Cyclyx traction

VALUATION

We have based our valuation on a DCF model as the early stage of the advanced plastic recycling industry makes a comparative multiples-based valuation difficult. We have used a WACC of 11.7% to derive a central case valuation of NOK 115 per share based on the assumption that the identified projects all come to fruition on conservative timings and that Cyclyx hits 4,000ktpa of feedstock sales. A low case assumes that only the immediate development projects come to fruition and Cyclyx delivers just 2,000 ktpa to give a valuation of NOK 36. A high case of NOK 178 assumes an extended scenario with additional project additions out to 2035 and Cyclyx sales of 6,000ktpa.

Share price performance and valuation outlook



Source: Longspur Research, Bloomberg

RISKS

The key risks to our valuation are delays, policy uncertainty and technology disruption. The first two are both about delays rather than outright failure of business. We see the growing demand for the solution that Agilyx has to offer as protecting the company from both these risks. Most rival technologies are at an earlier stage and often do not compete head to head, targeting different niches of the potentially very large recycling market.

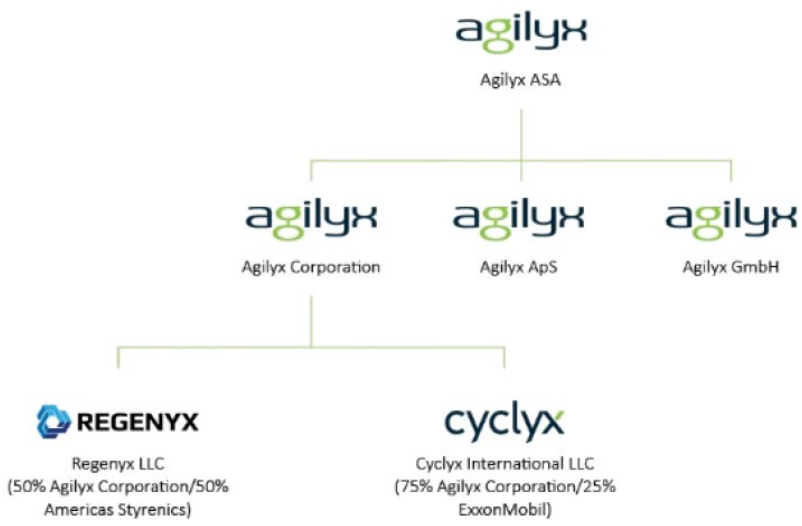
AGILYX – COMPANY INTRODUCTION

Agilyx offers a pyrolysis technology proven for handling plastic waste including difficult waste and waste combinations. Unlike many competing solutions it has over 16,000 successful operating hours under its belt at its Regenyx project in Tigard, Oregon. The company is now pursing an asset-light licencing model based on its proven operating reference site.

The proprietary process can handle multiple waste streams including mixed plastic but Agilyx has also partnered with Technip Energies on polystyrene recycling and with Mitsubishi Chemical on acrylic recycling.

Agilyx also offers a unique upstream feedstock management business through its Cyclyx joint venture with ExxonMobil. This offers a unique and differentiated approach, analysing and sourcing feedstock under a membership scheme allowing participants to maximise the effectiveness of recycling programmes. There are 26 current members including Corning, Dow and Chevron Phillips and 320 membership discussions are ongoing.

Agilyx corporate structure



Source:Agilyx

Investment in the company's 18 year history is over US$150m. Sales in FY 21 were US$4.9m and H1 22 were US$7.8m. The company reported a positive gross profit contribution in the third quarter of FY 22. The mid-term goal for 2025/26 is to generate sales of between US$200m and US$300m.

HISTORY

Agilyx was founded as Plas2fuel in Longview, Washington in 2004 focusing on converting plastic waste to liquid fuel by pyrolysis. It refined its technology through several generations and expanded to Tigard, Oregon in 2009. In 2013 pushing towards commercial deployment it received TSCA registration from the EPA and at that stage had processed 8m lbs of mixed waste plastic. In 2018 it developed the first polystyrene to styrene monomer facility. It has formed JVs with AmSty and with ExxonMobil. It listed on the Merkur Market in 2020 and on the main Olso list in 2022.

In addition to the core IP protected pyrolysis reactor the company has IP protected proprietary systems in feedstock preparation and in plastics management. The pyrolysis process is catalyst free which improves efficiency and yield.

The main business is following a licencing model which delivers revenues for project design and implementation as well as data-driven expertise for ongoing improvement but with minimal capital outlay.

The company initially developed the Tigard project as a reference plant, selling down to a 50% holding in Regenyx with polystyrene major Americas Styrenics (AmSty) as a partner. The polystyrene plant capacity is 3.3ktpa and has been in operation since 2018 and run a total of more than 16,000 hours.

A similar sized plant now in construction with Toyo of Japan as the first proper licenced project. This modular plant size has capex of US$100 to US$200m and is expected to deliver a project IRR of 12% to 20% to the project owner.

The feedstock management business, Cyclyx, is a joint venture with ExxonMobil who have 25%. It undertakes upstream plastic waste feedstock management using proprietary artificial intelligence from GE to improve waste to feedstock efficiency, identifying the right feedstock for the end uses and improving recycling rates as a result.

Project under exclusivity and in origination

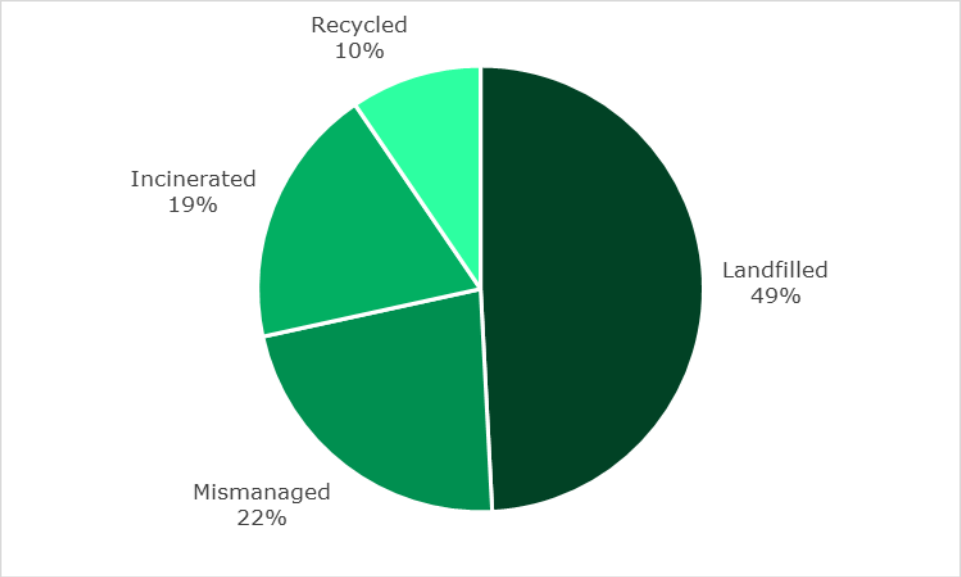
Year	Event
2004	Company founded by Kevin DeWhitt in Longview, Washington State, USA, as Plas2Fuel focused on converting non-recyclable plastics into a crude oil.
2006	First demonstration scale oil produced and brands its ASCO.
2009	First shipment of ASCO to offtake partner, USOR.
2013	Agilyx receives the TSCA registration from EPA for ASCO.
2014	Joint development agreement reached with INEOS Styrolution.
2019	
May	Multi-tiered relationship with AmSty including Regenyx JV
October	Formalisation of feedstock management program and incorporation of Cyclyx.
December	Agilyx and INEOS Styrolution announce they are advancing the development of a polystyrene (PS) chemical recycling facility in Channahon, Illinois.
2020	
January	Reorganization the company also carried out a private placement of 101,496 shares, raising gross proceeds of approximately NOK 95 million.
April	Agilyx exceeds 1 million lbs of RSM sold to AmSty through Regenyx.
April	Agilyx announces the licensing of its technology to Toyo Styrene Co., LTD (Toyo Styrene), an affiliate of Denka Company Limited.
May	Worldwide exclusive license agreement with Lucite International to use the Agilyx depolymerization technology for the recycling of PMMA.
September	Agilyx, AmSty and INEOS announce that AmSty will be partnering with INEOS Styrolution to develop the 100 TPD RSM plant in Channahon, IL.
September	The Company completes a NOK 300 million private placement, and its shares are admitted to trading on Euronext Growth.
December	Launched mixed waste plastics project with A.Eon.
December	Launched mixed waste plastics project with Braskem.
2021	
January	Launch of Cyclyx International LLC, a joint venture with ExxonMobil, as an innovative consortium-based plastic feedstock management company.
July	Technip Energies partnership for integrated waste to pure styrene solution.
August	Agilyx and Kumho announce collaboration to explore the development and construction of a chemical recycling project in South Korea.
December	Agilyx and Mitsubishi Chemical announce successful results of a full-scale production trial for PMMA; commonly called acrylic.
December	Cyclyx develops of a first of its kind customized plastic recovery facility for ExxonMobil's advanced recycling projects on the Gulf Coast.
2022	
January	Toyo Styrene Enters into Construction phase of chemical recycling facility.
February	Virgin Group and Agilyx form strategic partnership for low carbon fuel.
July	Project under development for commercial scale Polystyrene Chemical Recycling in Southern Europe with leading petrochemical company.
September	Agilyx ASA and a leading UK based global petrochemical major sign MoU for development of European Chemical Recycling Facility
September	Private placement of 6,265,250 new shares at a subscription price of NOK 24, raising gross proceeds of NOK 150 million (USD 15 million)

Source: Corre Energy

THE PLASTIC WASTE PROBLEM

Globally only 10% of plastic waste is recycled and 22% is mismanaged, ending up in the environment.

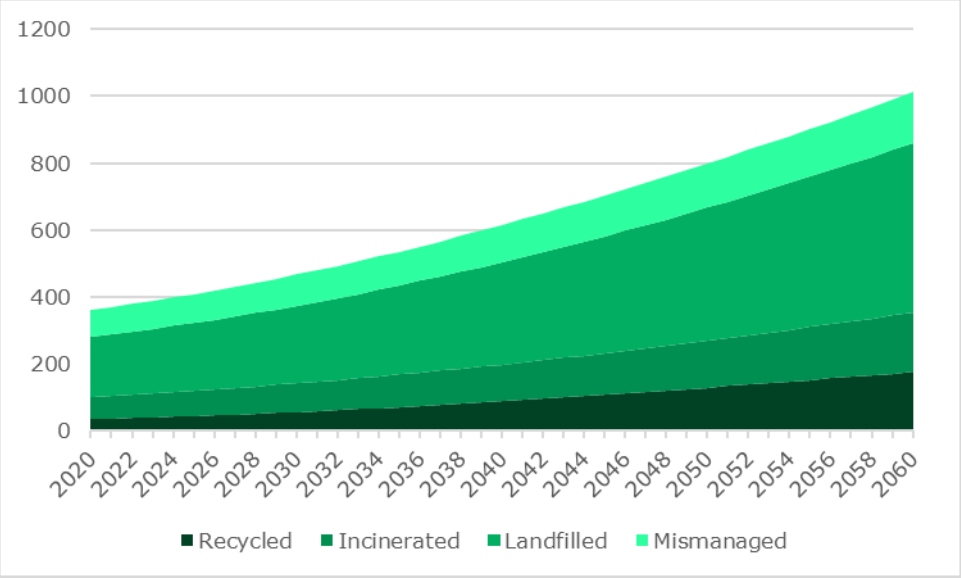
Global waste destinations



Source: OECD

The OECD forecasts plastic leakage to the environment to continue to grow annually out to at least 2060 without any new policy moves to prevent it. This is despite bans on single use plastic in over 120 countries.

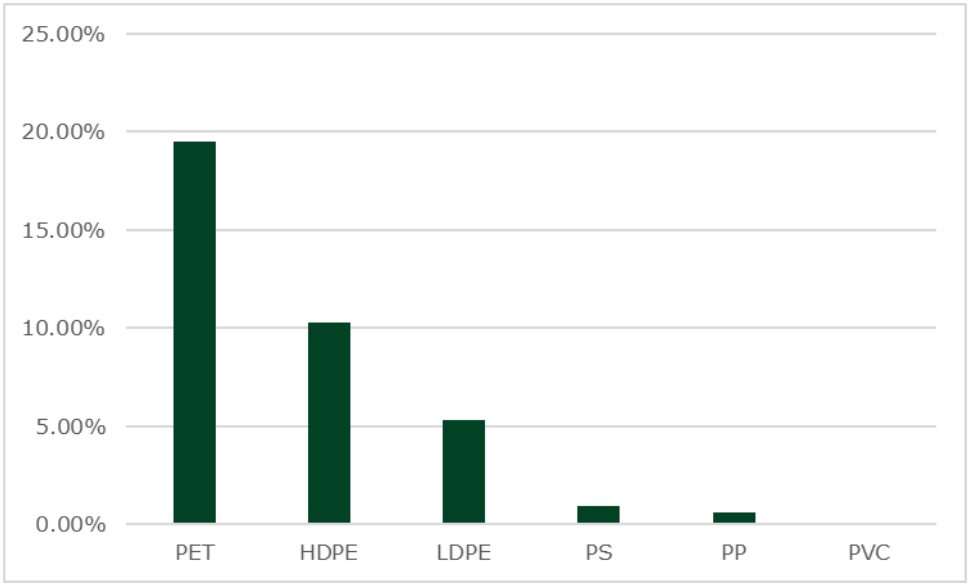
Forecast waste destinations



Source:OECD

At present only PET and HDPE see significant levels of recycling.

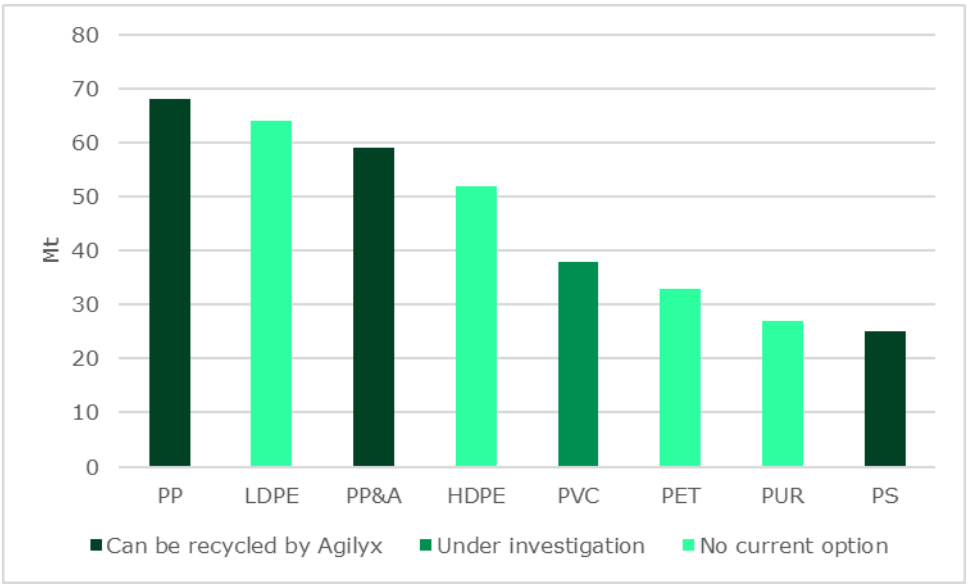
Recycling rates of different plastics in the US



Source:EPA

Agilyx technology is able to recycle c. 60% of polymers in the current market including many of those with low recycling levels at present.

Plastic market size by polymer type



Source:OECD

The OECD's Global Plastics Outlook shows how plastic waste has grown in recent times.

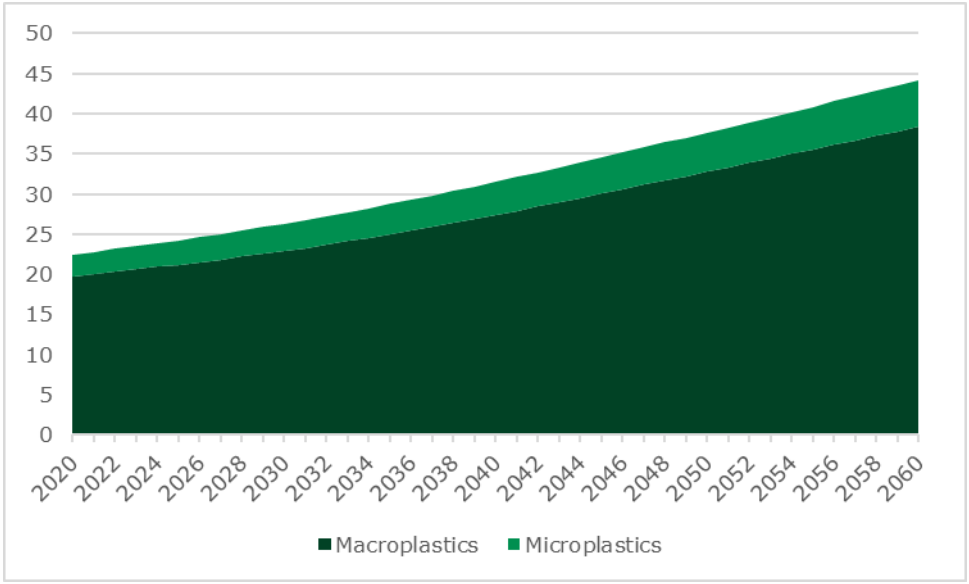
- Plastic consumption has quadrupled over the past 30 years, driven by growth in emerging markets. Global plastics production doubled from 2000 to 2019 to reach 460 million tonnes(Mt)

- Global plastic waste generation more than doubled from 2000 to 2019 to 353 million tonnes.

- Plastics account for 3.4% of global greenhouse gas emissions.

- In 2019, 6.1 Mt of plastic waste leaked into aquatic environments and 1.7 Mt flowed into oceans. There is now an estimated 30 Mt of plastic waste in seas and oceans, and a further 109 Mt has accumulated in rivers.

Forecast plastic waste split between marcoplastics and microplastics



Source:OECD

WHY THIS IS AN EMISSIONS ISSUE

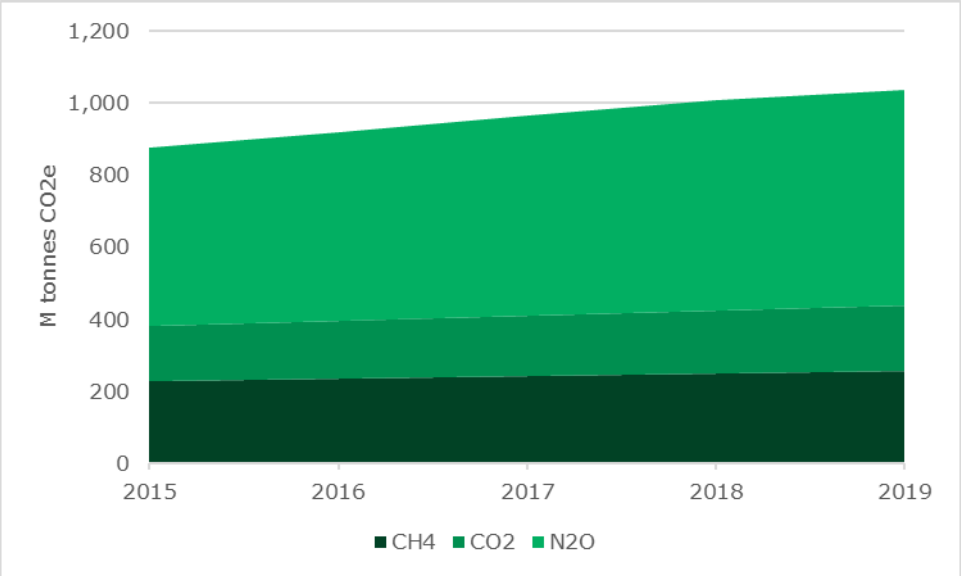
Plastics accounts for 3.4% of global emissions. 90% of this comes from the production and conversion of fossil fuels into new plastic. Recycling can replace this with a lower or even zero emission source of polymers.

Research has increasingly focused on the greenhouse gas impact of plastic waste. Plastic degradation in the environment occurs in four ways:

- photodegradation
- thermo-oxidative degradation
- hydrolytic degradation
- biodegradation by micro-organisms

Photodegradation and biodegradation are key sources of greenhouse gases. Photodegradation of plastic in sunlight sees it giving off ethylene and methane with the latter a powerful greenhouse gas. As plastic degrades at sea it breaks down into smaller and smaller particles which are then metabolised by micro-organisms to release CO2.

Greenhouse gas emissons resulting from plastic waste



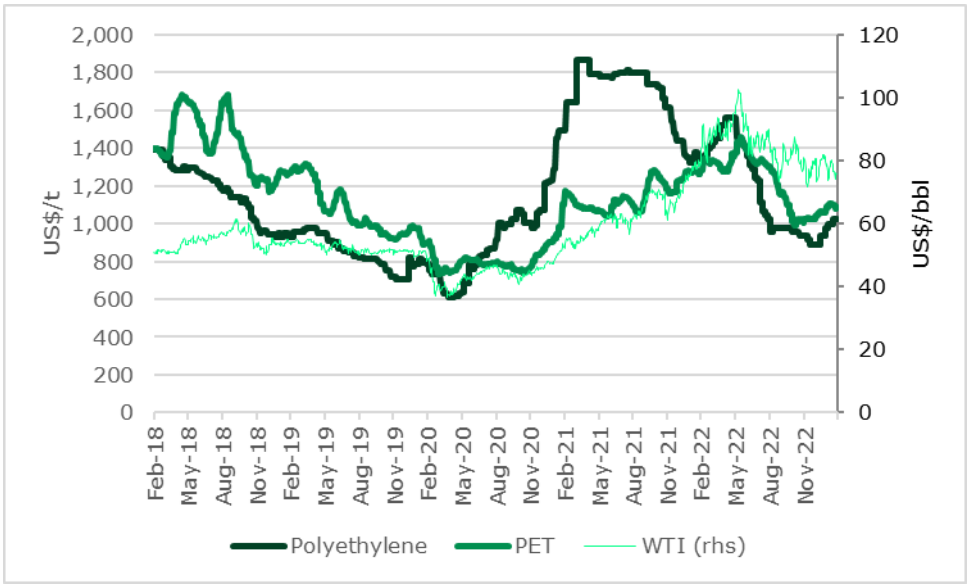
Source:OECD

While these effects are smaller than those associated with the production of plastics, new research is beginning to draw attention to a potentially more threatening and significant impact of plastic waste on global warming. This has impact of microplastic waste on plankton. Plankton currently sequesters between 30bn tonnes and 50bn Tonnes of CO2 roughly 40% of annual emissions. Its ability to do this after ingesting microplastics is severely impaired potentially damaging the most important carbon sink on the planet.

VIRGIN PLASTIC COST EVOLUTION

Recycling economics are clearly referenced against the pricing of plastic made from virgin material. This is tends to follow the oil price.

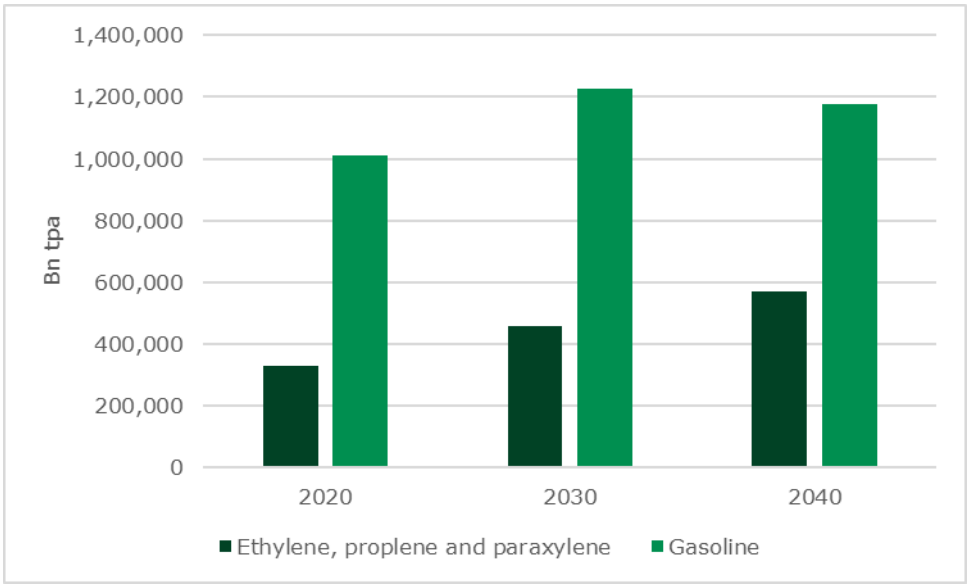
Polyethylene, PET and WTI prices



Source: Bloomberg

However, the impact of the refinery product slate is also important and we see this developing in such a way as to put pressure on virgin plastic prices. Oil refineries are likely to see chemical products demand for plastic feedstock growing while gasoline demand should fall as decarbonisation initiatives take effect.

Global chemicals demand projections



Source: S&P Global

To meet increasing petrochemical demand, naphtha yields will increase for the current 12% to 19% by 2040. However, as gasoline demand starts to decrease, less by-product naphtha will be available.

This means refiners will either have to invest in new greenfield refineries, optimised for petrochemical yield, or to retrofit brownfield sites with technology to increase petrochemical production.

Either way we see a cost implication which is likely to increase the cost of traditional plastic production relative to recycling.

WHY PYROLYSIS IS NOT INCINERATION

Pyrolysis has come in for criticism because of the energy required in the process. Much of this is aimed at pyrolysis in waste to energy applications where the energy required for the process can sometimes outweigh the energy produced.

The criticism suggests that because the process requires energy which is usually provided by the burning of gases produced in the process, it is technically incineration and therefore a contributor to greenhouse gas emissions. While this is technically true, the amount of greenhouse gas emissions are generally outweighed by the greenhouse gas savings created by the process.

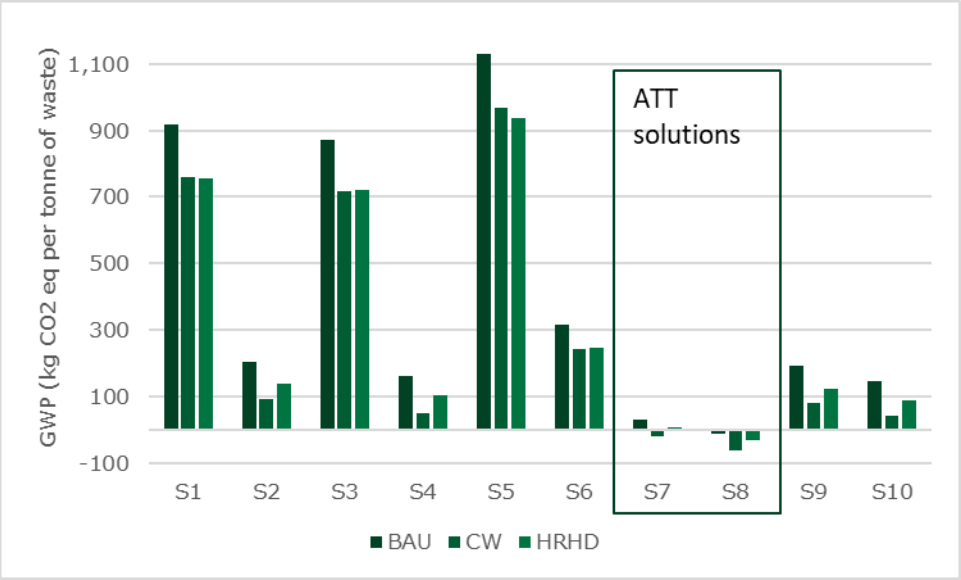
A review of thirteen life cycle analyses (LCAs) of pyrolysis and other advanced recycling projects by the City University of New York showed that:

"Compared to processes which use virgin fossil-based feedstock, advanced recycling technology can be used to produce in-demand chemicals and plastics with a global warming potential (GWP) ranging from an increase of 22% to a decrease of 185%, with the majority of the data indicating reduction in GWP."

Note that the reported decreases of over 100% represent cases where emissions using baseline technologies are prevented.

Research by University College London looked at a number of integrated waste management options for treating municipal solid waste arising from the 2012 London Olympics. The results showed that integrated processes that used advanced thermal treatment (ATT) as a significant part of the process had the lowest greenhouse gas emissions in every case they considered. Gasification is one of the leading ATT technologies.

Global warming potential of different integrated waste solutions



Source: UCL

To quote the UCL research:

"it can be seen that [integrated waste management strategies] with landfill as the primary waste treatment technology have the highest direct and indirect burdens and the lowest avoided burdens. [Strategies] with Advanced Thermal Treatment as the primary technology have the lowest impacts regarding GWP. These results can be explained by the fact that the amount of electricity generated from landfill gas (0.369 MJ/tonne MSW) is significantly less than the amount of energy generated from the EfW or ATT plants (1.03 and 2.95 MJ/tonne MSW respectively). At the same time, the GHG emissions associated with landfill process are higher than those resulting from other waste treatment facilities."

Notably ATT was a better option than landfill or incineration. While incineration has been a solution in the UK waste industry for over a hundred years, cleaner solutions are likely to be favoured going forward. Additionally further opportunity is likely to be created when existing incineration plants come to the end of their working lives.

POLICY SUPPORT

Both the US and the EU have recycling targets and a number of policies to support these. However policy tends to remain target based and we think there is room for more direct policy support.

US

In the US, the National Recycling Strategy of November 2021 set a recycling rate target of 50% by 2030. Currently recycling is at 32.1% although plastic recycling lags at just 9%. The strategy has a number of elements all aimed at improving recycling.

- Improve Markets for Recycling Commodities.
- Increase Collection and Improve Materials Management Infrastructure.
- Reduce Contamination in the Recycled Materials Stream.
- Enhance Policies to Support Recycling.
- Standardize Measurement and Increase Data Collection.

The US Recover Act provides US$500m in recycling infrastructure grants. The money is front end loaded and will remain available beyond the year in question until it is all expended.

US Recover Act recycling infrastructure grants

	US$m
2021	150
2022	125
2023	100
2024	75
2025	50

Source: US Library of Congress

EU recycling targets

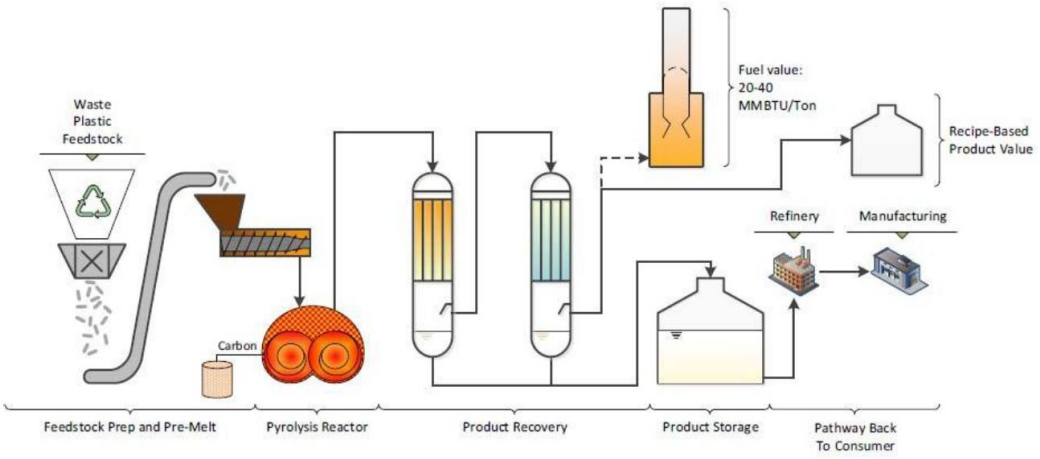
The Waste Framework Directive sets targets for recycling municipal waste and the Packaging and Packaging Waste Directive defines targets for recycling packaging waste. In total, EU waste legislation includes more than 30 binding targets for the period 2015-2030.

The EU plastic recycling target is for 50% by 2025 and 55% by 2030. Currently recycling is at 46% although there remains considerable variation across member states. Eight European countries recycle more than half their waste but seven recycle less than 20%. Perhaps more critically the overall level of recycling has not changed significantly since 2014.

TECHNOLOGY OUTLINE

The core Agilyx technology depolymerizes plastic waste using a continuous pyrolysis process at moderate temperatures. It is designed to operate in a controlled manner maximising useful conversion yields. There are three main stages to the process; feedstock preparation, pyrolysis reaction, and product separation and storage. Supporting ancillary systems include raw feedstock receipt, solids by-product handling, emissions controls for non-condensable process gases, liquid product storage system and normal process utilities.

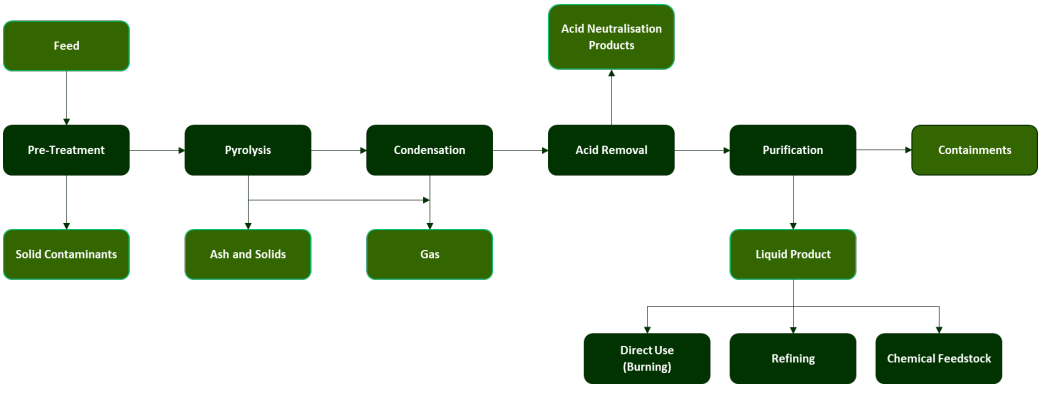
Agilyx process schematic



Source:Agilyx

The patented process uses a pyrolysis reactor without catalysts with a unique dual screw conveyor and a self-cleaning design. The reactors are available as 10 tonnes per day (TPD) or 50 TPD units with installations deployed in multiple trains to deliver the required scale of processing.

Pyrolysis flow diagramme



Source:Agilyx

The avoidance of a catalyst allows contaminated feedstocks which would otherwise degrade any catalyst. Additionally, the electrified reactor reduces reliance on pyrolysis gas and thus reduces emissions. If the electricity feed can be from renewable sources, emissions are significantly reduced.

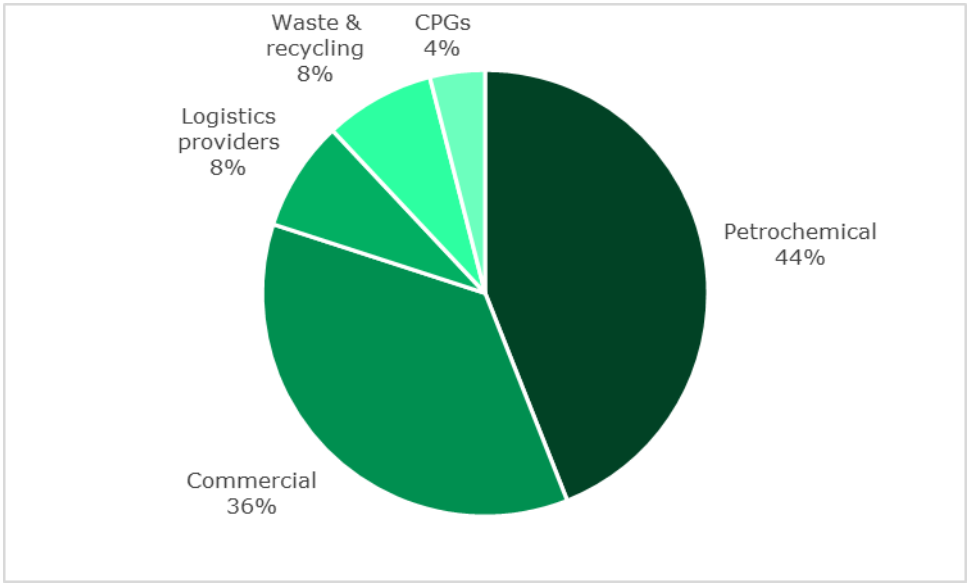
CYCLYX PROCESS

Maximising the yield of the pyrolysis process starts with the waste feedstock. The pyrolysis oil needs to meet the specification of advanced recycling technologies and product pathways and this is largely determined by the feedstock. Meeting these requirements has been a challenge for the industry given the chemical complexity of the various polymers and compounds. Agilyx draws on a chemical database of plastics which it has been developing since 2004. This allows it to fully understand the chemical profile of different plastic products and their ability to be used in different conversion technologies. Agilyx adds this capability to the formation of the Cyclyx joint venture to solve the feedstock challenge through active management.

Cyclyx operates a consortium-based model with non-shareholding membership open to companies looking to recycle waste plastic. Membership allows these companies to identify the right recycling options for their waste following full analysis and then to establish take back programmes to regularise feedstock supply chains and maximise their potential. It can provide enough feedstock certainty to underpin the development of new processing facilities.

Cyclyx now has 37 members and is involved in c.320 further membership discussions.

Cyclyx membership breakdown

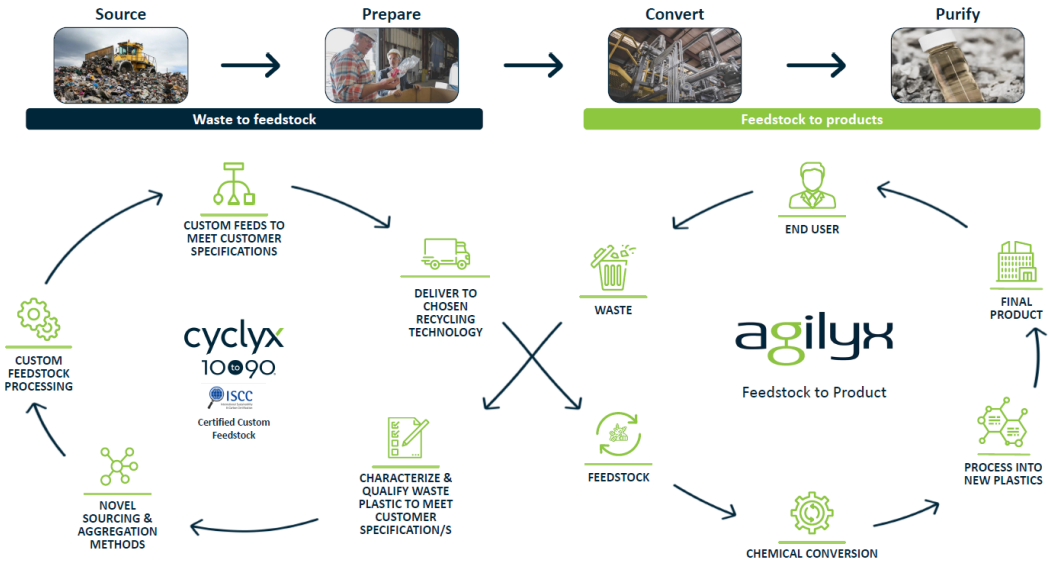


Source:Agilyx

CIRCULAR PROCESS

The Cyclyx feedstock management service integrates with the downstream chemical conversion technology resulting in a truly circular economy solution.

The Agilyx processes



Source:Agilyx

TARGET MARKETS

While Agilyx can recycle all plastic waste, at this stage it is focusing on three key markets based on feedstock and output product. We see this as sensible in order to allow it to build market presence in key segments and to deploy differentiated conversion technology to deliver customer focused outcomes.

Polystyrene to styrene monomer

Agilyx has formed a partnership with Technip Energies who add a proprietary purification step after pyrolysis that results in pure styrene monomer output. It has also partnered with AmSty on development of the initial project and as a provider of key technology elements.

PMMA to MMA

The company is working in partnership with Mitsubishi Chemical UK on the recycling of acrylics, specifically polymethyl methacrylate. This also delivers a pure MMA monomer.

Mixed waste plastic to synthetic crude

Agilyx is working with a number of EPC companies to provide a mixed waste solution for clients including Virgin and Aeon. Cyclyx is also part of the offering for mixed waste plastic.

A PROVEN TECHNOLOGY

Agilyx has operated the 3.3ktpa Regenyx project at Tigard in Oregon since 2018. Over that period, it has logged 16,000 hours of commercial operation.

ALTERNATIVE TECHNOLOGIES

Mechanical recycling is the recycling of plastic without changing the chemical properties of the waste feedstock. It involves the sorting, washing, and drying of the waste plastic which is then ground down and re-granulated before being compounded back into useable material. It is the major recycling technology in use today. Because it is difficult to separate mixed plastics it focuses on only two polymers, PET and high density polyethylene which are relatively homogeneous materials. However, it is difficult to get even these relatively homogeneous materials up to the contamination specifications needed for food-contact or medical grade use.

Advanced recycling technologies comprise thermal depolymerisation and chemical depolymerisation. Thermal depolymerisation includes pyrolysis, gasification and co-gasification or reforming. The latter two produce syngas which is used to produce hydrogen or efuels rather than polymer feedstock. Chemical depolymerisation technologies include methanolysis, glycolysis and hydrolysis. These tend to be feedstock or product specific with methanolysis used to recycle PET products like fibers and films that mechanical recycling cannot handle and hydrolysis can break down nylon. Hydrolysis is being developed to handle a wider variety of feedstocks.

Advanced recycling technologies

Technology	Input	Output	Final Product
Thermal Conversion	Utilises heat and catalysts to break the bonds of polymer chain		
Pyrolysis	Mixed Plastic (E.g., PE,PP,PS,PET,PVC*)	Pyrolysis Oil	Mixture of chemicals I.e: •Paraffinic Waxes •Base chemicals (methanol, BTX, hydrochloric acid, alkene monomers, olefins) •Hydrocarbon feedstocks (naptha) •Fuels(e.g., diesel, hydrogen) •Elemental carbon products
Gasification	Mixed Plastic (E.g., PP,PS,PET,PVC*)	Syngas	
Reforming/Co-Gasification	Mixed plastic (Plastic types 1,2,4-7,PVC*)	Syngas	
Chemical Depolymerisation (i.e., Solvolysis	Utilises solvents. Reverse polymerisation reactions transform mono-material waste plastic into monomers, which can be re-polymerised into new products		
Glycolysis	PET, Coloured polysters	EG, PTA/BHET	Specific chemical outputs I.e.: •PET pellets and yarn •Monomers for PET production •(EG, PTA, BHET) •Speciality low molecular weight polypropylene wax •Monomers for polystyrene production (styrene)
Hydrolysis	PET, PA, Coloured polysters	EG, PTA/BHET	
Methanolysis	PET, Coloured polysters	DMT, EG	

Source: Earth Engineering Center, City University of New York

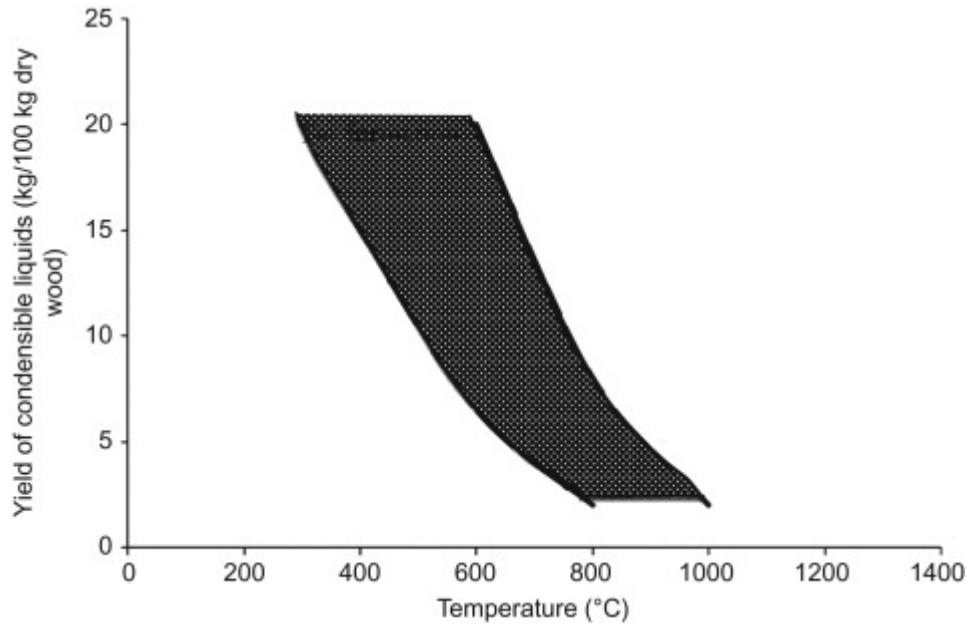
A COMPLEX PROCESS CREATES BARRIERS

Variability of feedstock is a major challenge for pyrolysis. Different polymers behave in different ways with molecules with high degrees of branching being more easily cracked than those with linear structures. This means that different polymers decompose at different temperatures with polypropylene cracking at 378oC to 456oC and high-density polyethylene at 452oC to 489oC. As most feedstock will contain a mix of plastics, the pyrolysis temperature must be set high enough to ensure all the polymers in a feedstock batch will be broken down.

However too high a temperature can result in an inefficient yield. Pyrolysis units produce liquid pyrolysis oil as their key output and this can be upgraded to naphtha for the formation of plastics. However, there is also some gas and some solids. The gas is normally propane or similar which can be used to fuel the reactor and the solids are normally biochar which can be sold as a soil additive. A typical output would be 77% pyrolysis oil, 10% gas and 3% char. However, waxes and solids can also be produced. Waxes which require further treatment to be useful and tars can cool to form a liquid or semisolid substance that fouls the system.

Tar has been a major cause of project failure although it can be managed and minimised by process design. Generally, the higher the temperature the less tar is an issue.

Tar Yield by Temperature



Source: Baker, Brown, Elliott, Mudge, AIChE 1988 Summer National Meeting, Denver, CO.

However, high temperatures and long reactor residence times might cut wax output and yield more pyrolysis oil, but they also create more gases that have limited utility. They can also lead to dehydrogenation, cyclization, aromatization, and Diels-Alder reactions, creating more aromatics. In a waste to energy configuration this might be acceptable but it is less useful in waste to product applications.

Other feedstock issues that need managed include the creation of impurities in the output. PET contains oxygen which forms CO2, PVC contains chlorinated compounds and many plastics have inorganic additives.

All these issues vary as the feedstock itself varies making management of the process a highly active process.

"We kind of joke sometimes that every day we need to make a birthday cake, but the ingredients keep changing all the time, and the birthday cake better be good and taste the same."

Eric Hartz, cofounder, Nexus Circular

LESSONS FROM OIL REFINING

Process is essential to the pyrolysis process. We see a very appropriate analogy with the process in a petroleum refinery. Both take a variety of feedstocks. The oil industry has to deal with very different types of crude whose make up will affect the running of the refinery. The mix of different crude types in a particular refinery at any one time is referred to as its crude slate.

There is an initial separation phase where the crude is fractionally distilled and this process can be managed to optimise the resulting slate of intermediate products. These see further processing in a conversion stage with heavier distillation fractions in particular being cracked into lighter products using processes including hydrocracking, fluid catalytic cracking, alkylation and reforming.

Finally, finishing treatments including blending and the use of additives are completed to optimise the final products for their intended end use. The refinery will attempt to optimise its mix of products – the product slate – to meet market conditions

Designing a refinery for the likely crude and product slates is critical. Once constructed, being able to optimise the refinery to take the slate on offer and match it with product demand while maintaining an efficient operation are key to refinery management. Refineries will use a number of optimisation tools including linear programming, logistics scheduling models and process unit simulators.

Similarly, the pyrolysis process starts with an initial separation phase. Through Cyclyx, Agilyx has developed advanced waste processing facilities (CCCs) which can accurately characterise waste plastics and customize feedstock for the next stages. Agilyx can then custom design the conversion stages for expected feedstock and manage the pyrolysis and downstream processes.

The downstream pyrolysis process is catalyst free which minimises the impact of any impurities which would otherwise degrade any catalyst. Pyrolysis oil is then further processed in ways similar to the conditioning stage of oil refining.

Just as with oil refining, optimisation for a particular feedstock and product specification can be achieved by active management. Agilyx has an advantage here using its experience and technology including artificial intelligence from GE at the feedstock processing stage.

INTELLECTUAL PROPERTY

Agilyx currently has 10 US patents and a licence to one other and seven patents in Europe, Canada India, Mexico and the UAE. However just as important given the complexity of the process is the company's know-how and trade secret knowledge. With an operational history going back to 2006 the build-up of knowledge gives the company a major barrier to entry in our view.

TECHNOLOGY ECONOMICS

Agilyx has guided investors in project economics with an illustrative cashflow profile of a 33ktpa plant. There are also a number of publicly available analyses of pyrolysis plant. We have combined theses sources to look at typical project economics.

We have based our model on published research; Zabaniotou, A.; Vaskalis, I. "Economic Assessment of Polypropylene Waste (PP) Pyrolysis in Circular Economy and Industrial Symbiosis." Energies 2023, 16, 93. https://doi.org/10.3390/en16020593.

The paper actually shows an IRR of 81% for a 200ktpa project which is clearly attractive. However, in this the capex assumed seems on the low side and there is no royalty payment for the technology provider as there would be with Agilyx. Agilyx will be able to charge far higher prices for output targeted to bespoke recycling needs but this can only be done as a result of the additional capex. Assuming a project size of 33ktpa with life of 20 years and with capital costs at $100m and $200m, adding in royalties brings returns down to 20% and 10% respectively.

Longspur project economics estimates

	Based on Zabaniotou and Vaskalis	Based on figure 5 low capex	Based on figure 5 high capex
Item	**Amount (US$,000)**	**Amount (US$,000)**	**Amount (US$,000)**
Output (p-oil) capacity (ktpa)	200	33	33
Utilisation	90%	90%	100%
Plant life	25	20	20
Oil yield	77%	77%	77%
Gas yield	20%	20%	20%
Char yield	3%	3%	3%
Tax	21%	21%	21%
Gearing	0%	0%	0%
Grant income	0%	0%	0%
CoD	6%	6%	6%
CoE	10%	10%	10%
WACC	10.00%	10.00%	10.00%
Styrene or pyrolysis oil (kt)	180	30	33
Gas produced (kt)	47	8	9
Carbon black produced (kt)	7	1	1
Waste input (ktpa)	234	39	43
Energy input (MWh)	5,035	831	923
Pyrolysis oil price (US$/t)	500	1,250	1,250
Carbon black price (US$/t)	100	0	0
Waste price (US$/t)	150	150	150
Energy price (US$/MWh)	20	40	40
Royalty (US$/t)	0	50	50
Variable opex (US$/t)	68	68	68
Fixed opex (US$/ktpa)	3,000	3,000	3,000
Capital cost	42,939	100,000	200,000
Debt	0	0	0
Pyrolysis oil sales	90,000	37,125	41,250
Carbon black sales	701	0	0
Total revenue	90,701	37,125	41,250
Waste cost	35,065	5,786	6,429
Energy cost	101	33	37
Royalty cost	0	1,485	1,650
Opex	16,500	5,228	5,228
Depreciation	1,718	5,000	10,000
Total costs	53,383	17,531	23,343
Revenue	90,701	37,125	41,250
EBITDA	39,036	24,594	27,907
EBIT	37,318	19,594	17,907
Interest	0	0	0
PBT	37,318	19,594	17,907
Tax	7,837	4,115	3,760
Interest tax shield	0	0	0
Ungeared cashflow	**31,199**	**20,479**	**24,147**
Annuity factor	9	9	9
PV of cashflows	283,193	174,348	205,573
Less capex = EV	240,254	74,348	5,573
Less debt = MV	**240,254**	**74,348**	**5,573**
IRR (by iteration)	72.7%	19.9%	10.4%

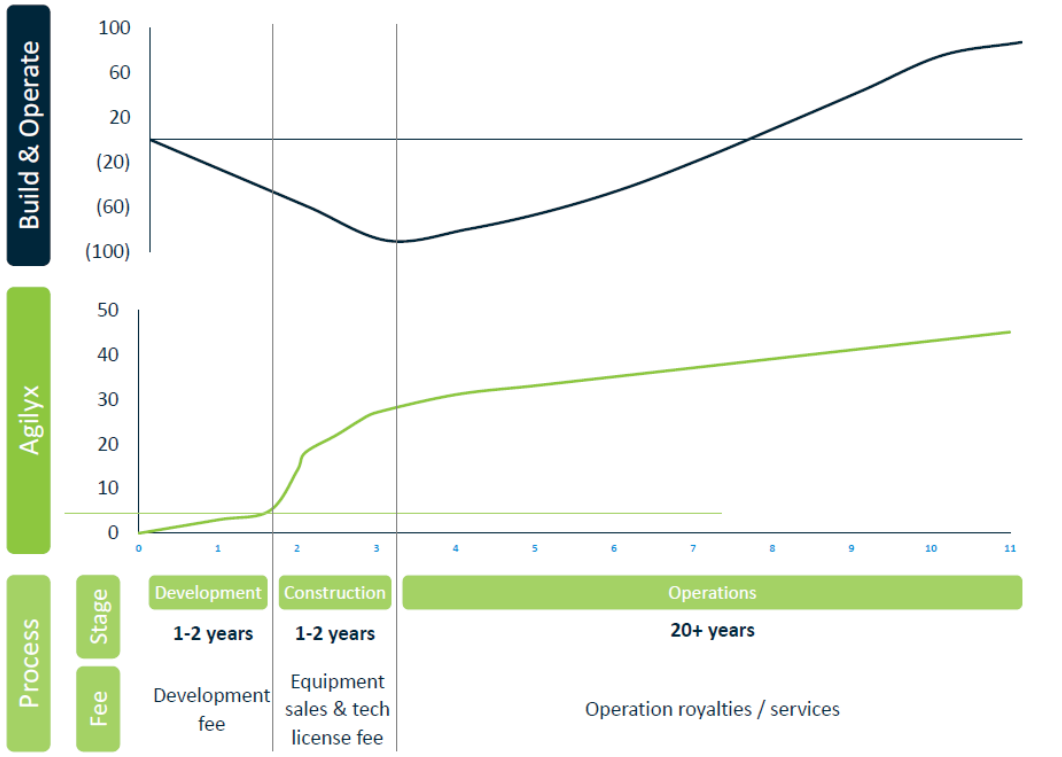
Source: Longspur Research

BUSINESS MODEL

Agilyx is adopting a technology licencing model with three key offerings.

In the first two years of project development Agilyx will seek development fees in assisting in the design of the project and also for feedstock analysis. Once construction begins, Agilyx will take a technology licence fee and will also supply equipment. This will be manufactured under contract but designed and supplied by Agilyx and it will take a margin on this. Finally post completion the company will take operation royalties based on the volume of output together with service fees, spares and maintenance.

Illustrative cashflows at project and company level



Source:Agilyx

The benefits of this model are firstly that it requires less capital from the company to build out the technology into the market, potentially allowing an accelerated roll-out not constrained by fund raising requirements. It also means the business is cashflow positive early on. By basing the royalties on output volumes, the company is not dependent on oil or other commodity pricing. Overall, the model has less risk than that of developing projects itself.

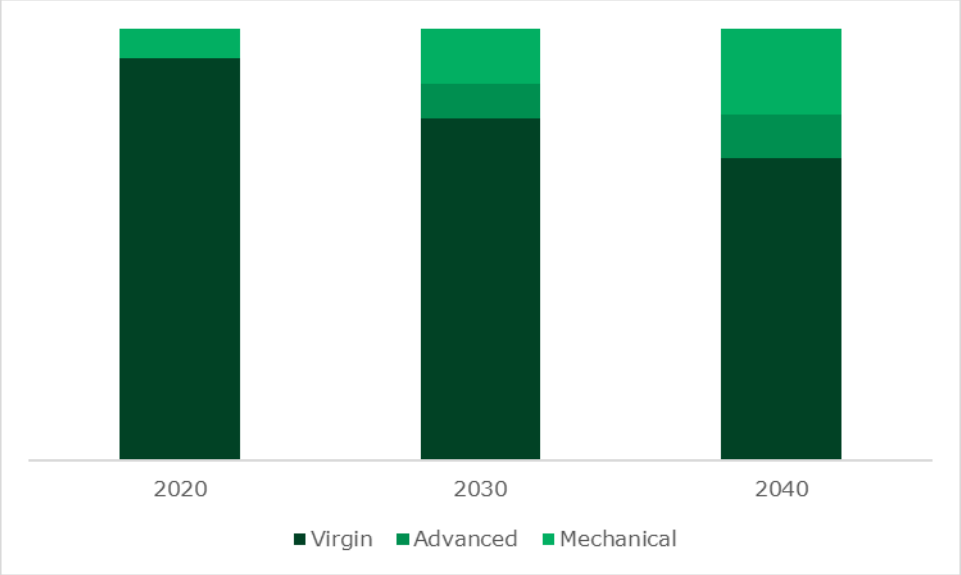
This model is not uncommon in the clean technology space although often companies self-develop first-of-a-kind projects to prove the model. Agilyx has already done this with the Regenyx project which we see as having delivered a strong operating history and is able to act as a concept reference point for third party developers.

The different timing of payments means that the company will benefit from some early income during project development, at financial close and on start up and also over the life of the projects.

MARKET SIZE

McKinsey has forecast that advanced recycling could account for between 4% to 8% of global polymer demand by 2030 with mechanical recycling taking 10% to 13%. By 2040 advanced recycling could have increased to between 6% and 10% with mechanical between 13% and 20%. McKinsey estimates total polymer demand to be c.500mt in 2030 and c.700mt in 2040 so advanced recycling could account for 20mt to 40mt in 2030 and 42mt to 70mt in 2040.

Forecast advanced recyling share of market



Source:McKinsey

The OECD's baseline scenario forecast for recycling has 56mt by 2030 and 88mt by 2040. Their Regional Action Policy scenario has an additional 25mt in 2030 and an additional 54mt in 2040. We can assume that this additional recycling is harder to recycle material more suited for advanced recycling and therefore represents the market for these technologies. As such it of the same order of magnitude as the McKinsey work. We are happy to take the slightly lower OECD numbers as a good indication of total addressable market in each of these years.

The OECD publish forecasts for each year and using our argument above we can posit market size estimates for each year.

Market size estimates

Mt pa	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Baseline	34	36	38	40	42	44	46	49	51	53	56
Regional action policy	34	36	41	46	51	56	61	65	70	75	81
Delta to baseline	0	0	3	6	9	12	14	17	19	22	25
5% market share	0.0	0.0	0.2	0.3	0.5	0.6	0.8	0.9	1.0	1.2	1.3

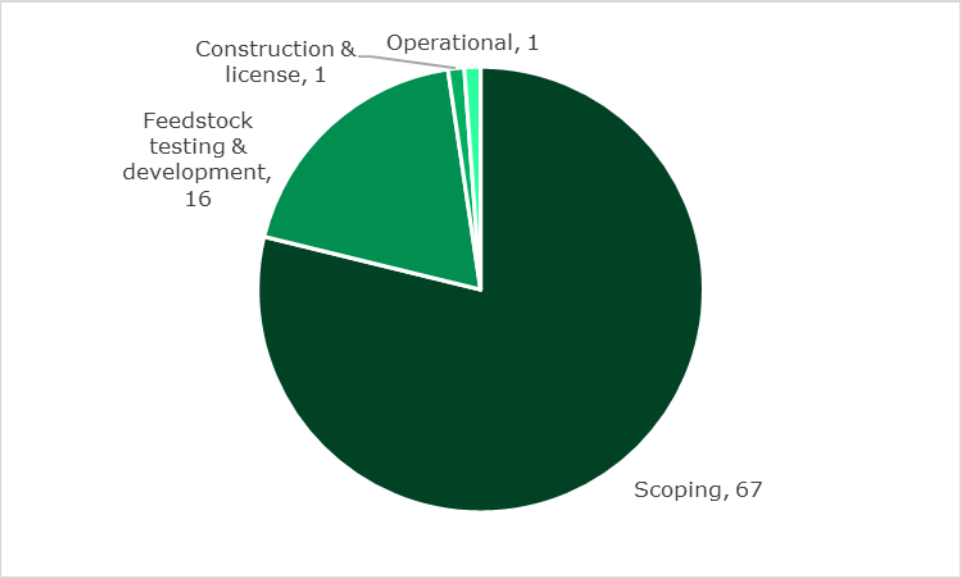
Source: Longspur Research

This suggests a market size in 2023 of 6mtpa. Agilyx has disclosed six of its 16 projects in feedstock testing and development and these combine with the operating and under construction projects have a combined capacity of 322ktpa. Against a market in 2023 of 6Mt this gives just over 5% market share. We see this as a sensible share target for Agilyx going forward.

PROJECT PIPELINE

Agilyx now has a pipeline of 85 projects with 1 operational, 1 under construction, 16 in feedstock testing and development and 67 in scoping. Together these represent a total project capacity of 1,220ktpa.

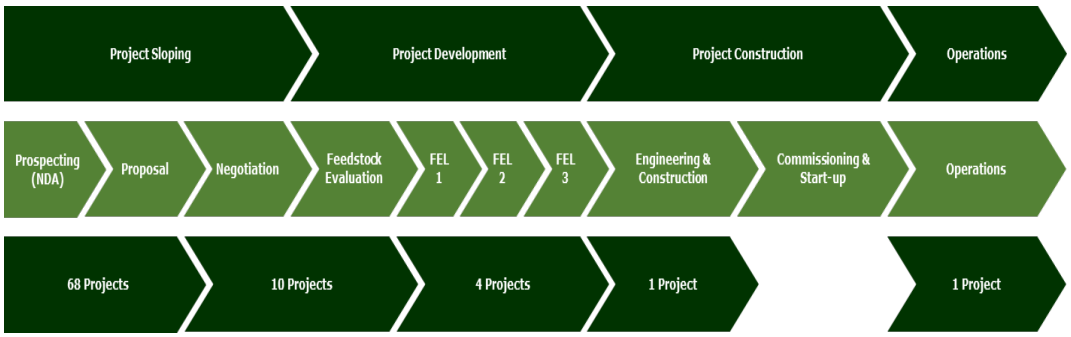
Agilyx project pipeline



Source:Agilyx

The immediate future sees the 3.3ktpa Toyo Styrene project already delivering development revenue of $2.1m in H1 22 with more expected in H2. We expect the project to commence operations by 2024. The company also has three projects in advanced development with another polystyrene project with AmSty at 33ktpa, a similar project with Ineos and a third in Europe. A 17ktpa acrylics project is also under development with Mitsubishi Chemicals. Additionally in November, Agilyx announced that the 33ktpa recycled styrene (RSM) project with Kumho was targeting the commercialisation of RSM products in 2026.

Pipline timeline



Source:Agilyx

Further out the company has a number of projects under evaluation with partners including Virgin and Aeon.

We recognise that precise timings can be difficult with these types of project but for modelling purposes we have conservatively assumed the following commercial operation dates with a presumption of back end weighting for some of the larger projects.

Modelling assumptions of pipeline projects

Project	Capacity	CoD
Regenyx	3.3	Aug-18
Toyo Styrene	3.3	Dec-24
Mitsubishi	17	Jan-26
Kumho Petrochemical	33	Jan-27
AEON	17	Jul-27
Ineos Styrolution	33	Jul-30
AmSty	33	Jul-31
Braskem	66	Jul-31
Project A	17	Aug-31
Project B	17	Jan-32
Project C	17	Jul-32
Virgin	66	Jul-32

Source: Agilyx, Longspur Research

We then use these assumptions to determine capacity at the key stages of development which trigger milestone payments to Agilyx. We have assumed payments as follows.

Development fees – capacity entering front end engineering and design (FEED)

Technology licence – capacity at final investment decision (FID)

Royalties – annually on operating capacity from commercial operations date (CoD)

Service - annually on operating capacity from commercial operations date (CoD)

Equipment sales – capacity at first completion date (FCD)

The build up of capacity by stage is driven from our CoD assumptions and gives the profile shown in the table below with mechanical completion date (MCD) also shown.

Project capacity starts by development stage

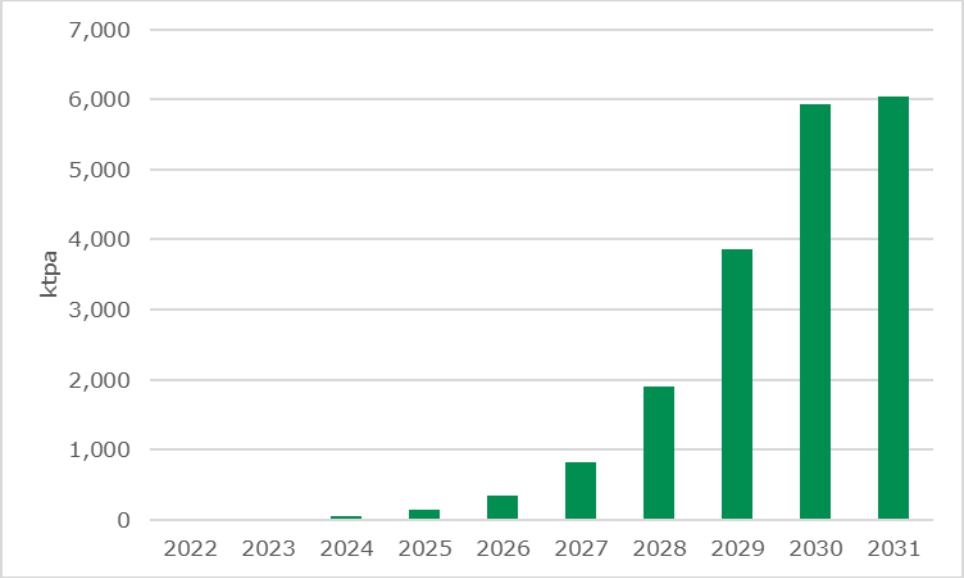
ktpa	2022e	2023e	2024e	2025e	2026e	2027e	2028e	2029e	2030e
FEED	0.0	17.0	0.0	0.0	33.0	133.0	17.0	0.0	0.0
FID	0.0	17.0	17.0	0.0	0.0	33.0	116.0	34.0	0.0
FCD	3.3	0.0	17.0	17.0	0.0	0.0	33.0	116.0	34.0
MCD	0.0	3.3	0.0	17.0	17.0	0.0	0.0	33.0	116.0
CoD	0.0	0.0	3.3	0.0	17.0	17.0	0.0	0.0	33.0

Source: Longspur Research

Cyclyx is also growing and now has 37 current members and c.320 ongoing membership discussions. Existing members include Braskem, Dow, ADS, LyondellBasell, Sabic and Sonoco all with major recycling commitments.

Agilyx forecasts demand from existing customers reaching over 6,000ktpa by 2031 from c. 5ktpa in 2022. While the company has presented this as a straight line increase, we expect that a more conservative outlook would see an "S" curve of sales and we have postulated such a curve using a Bass Diffusion model with standard coefficients.

Modelling assumptions of Cyclx feedstock demand



Source: Longspur Research

FINANCIALS

EARNINGS OUTLOOK

Based on our assumptions we expect the current year (FY22) to build on the revenue reported for H1 and Q3 and deliver strong double digit sales. Much of this will come from Cyclyx feed stock sales but there will also be development and equipment sales associated with the Toyo project. Against this we think there will still be a negative margin at Cyclyx although somewhat reduced and moving in the right direction. We also see higher operating costs as the company builds to meet the demands of new order traction. As a result, we see a higher loss at the EBITDA level. In FY 23 we expect Cyclyx to continue to grow and to start to deliver a positive margin. We see project development income as being minimal with the assumption that the next group of projects are a year away. However, some licence income will appear with at least one project reaching FID.

From FY 24 we see more sustained growth across the business as more projects hit key milestones and Cyclyx continues to grow. Profitability should improve with positive EBTIDA in FY 24 and with minimal depreciation or debt this largely feeds through to net profit.

BALANCE SHEET

Following a $15m equity raise on listing, Agilyx is in a reasonably strong financial position, building on net cash of $18m at December 2021. We expect cash outflow in FY 22 to be c.$19m leaving $14m at the year end. FY 23 is likely to see cash outflow fall as Cyclyx sales grow and some initial project licence income becomes available. We see December 2023 as the cash low point and forecast a figure of $6.4m at that point which gives some cushion. From then we think the company will generate cash.

VALUATION

While there are competitors with similar pyrolysis to product solutions in the market most are private. A number of early stage waste to energy companies exist as do some recycling providers using different technologies. PE and EV/EBITDA multiples tend to be unusable given the early stage of most of these companies leaving EV/Sales as the main metric on which to make comparisons. These vary widely. As a result, we think a valuation approach should concentrate on a well-constructed DCF valuation.

We have modelled the company based on the identified projects listed by the company. We see this as conservative but a realistic view of what the market is prepared to value ahead of exclusivity on other projects. We have only modelled the Regenyx project explicitly as this is the only direct project exposure the company has. The main cashflows come from Cyclyx and project development, licencing and royalty fees.

We have used a weighted average cost of capital of 11.7%. This is based on the high end of the most recent UK's Competition and Markets Authority assessment on cost of capital. We see this as one of the best contemporary estimates based on thorough work that if required must be able to stand the scrutiny of a judicial review. This gives a risk-free rate of -1.0% which with a 2.5% inflation assumption gives 1.5%. The market premium is 8.5% based on historical ex-post market returns going back to 1900. We have used a beta of 1.2 based on the median beta from the comparator group. With no debt this gives us a WACC of 11.7%.

Weighted average cost of capital

Risk free rate	1.5%
Market premium	8.5%
Loan margin	3.0%
Marginal tax rate	25.0%
After tax cost of debt	3.4%
Debt/total capital	0.0%
Beta	1.2
Cost of equity	11.7%
Weighted cost of capital	11.7%

Source: Longspur Research, CMA

We have forecast cashflows to 2030 based on our discussion under earnings outlook above. We then calculate a terminal value in 2030 based on Gordon's growth model and assuming that long-term cashflows are flat in nominal terms. The terminal EV/EBITDA on this basis is 4.2x which we do not see as onerous.

DCF Valuation – central case

US$'000	2022e	2023e	2024e	2025e	2026e	2027e	2028e	2029e	2030e
Operating cash inflow	-17,532	-7,217	23,884	22,401	11,969	61,606	211,367	386,175	449,079
Cash from associates	-620	-696	-1,113	-3,465	-8,359	-18,894	-39,686	-72,831	-100,868
Tax paid	0	0	0	-7,611	-4,546	-1,254	-20,339	-65,484	-110,232
Interest tax shield	0	0	0	0	0	0	0	0	0
Capex & investments	-2,076	-2,128	-2,181	-2,235	-2,291	-2,348	-2,407	-2,467	-3,429
Free cashflow	-20,227	-10,040	20,590	9,089	-3,227	39,110	148,935	245,393	234,549
Terminal growth	0.0%								
Terminal valuation	2,004,692								
Terminal EV/EBITDA	4.4								
Implied EV	932,295								
Implied market cap.	947,271								
Implied share price	**11.1**								
In NOK	**115**								

Source: Longspur Research

This gives a base case valuation of NOK 115 per share.

SCENARIOS

Our central case assumed that the identified projects all come to fruition and that Cyclyx hits 4,000ktpa of feedstock sales. Cyclyx is targeting 6,000ktpa and Agilyx is already developing projects beyond those identified. We have built scenarios based on only the immediate early development projects coming to fruition and also on an extended scenario with additional project additions out to 2035. In each case we also assume varying levels of Cyclyx sales from 2,000ktpa up to the target 6,000ktpa.

DCF Scenarios (NOK/share)

	Cyclyx sales in 2030 (ktpa)		
	2,000	4,000	6,000
Agilyx projects			
Early development	**36**	81	127
Identified	69	**115**	160
Identified plus	86	132	**178**

Source: Longspur Research

COMPARATIVE MULTIPLES

Comparative multiples are fairly meaningless as the industry is in early stages with companies still developing business models and jostling for market share. We believe Agilyx is extremely well placed against the competition both in terms of its offering and also the advantages of building capacity early. Agilyx is trading roughly at the median in terms of forward EV/sales and below the median in EV/EBITDA.

Comparative multiples

	EV/Sales Hist.	EV/Sales Prosp.	EV/EBITDA Hist.	EV/EBITDAPros p.
Agilyx Asa	12.7	4.2	na	na
Quantafuel As	21.8	6.7	na	na
Eqtec Plc	4.8	1.1	na	18.4
Tomra Systems Asa	3.8	3.5	18.9	16.6
Purecycle Technologies	na	25.7	na	na
Mean	10.8	8.2	18.9	17.5
Median	8.7	4.2	18.9	17.5
Max	21.8	25.7	18.9	18.4
Min	3.8	1.1	18.9	16.6

Source: Bloomberg

MANAGEMENT

BOARD

Chair of the Board, Jan Secher

Jan Secher brings deep chemical industry executive experience and served as CEO of Swedish specialty chemical company Perstorp Group before recently selling it to Petronas. He also has significant public company experience, having served as the CEO of Clariant (SWX: CLN), and as a current board member of Elekta AB (Nasdaq Stockholm: EKTA B). Mr. Secher held a variety of senior executive roles at ABB including membership on its Executive Committee. He is currently a Board Director of the European Chemical Industry Council.

Board Member, Ranjeet Bhatia

Mr. Bhatia advises Saffron Hill Ventures and in 2009 led Agilyx´ first institutional investment round. Other notable ESG investments include Coyuchi, and Marrone Bio (NASDAQ: MBII) where Saffron Hill was an early investor. In addition to Agilyx, he currently serves on the Boards of Coyuchi, Faceware Technologies, and Image Metrics.

Chair, Audit Committee, Carolyn Clarke

In 2015 Ms. Clarke moved to take on an in-house Head of Audit, Risk and Control role with Centrica plc, the largest utility and energy company in the UK. Carolyn founded and leads a boutique consultancy focused on assurance, risk, governance and control activities, Brave Consultancy.

Chair, Compensation Committee, Martha Crawford

Martha Crawford has extensive executive experience commercializing R&D as well as expertise in both ESG and waste industry businesses. She was a senior lecturer at Harvard Business School and currently serves as an operating partner at Macquarie Infrastructure.

Board Member, Steen Jakobsen

Mr. Jakobsen joined Saxo Bank in 2000 and serves as Chief Investment Officer. Prior to joining Saxo Bank, he worked with Swiss Bank Corp, Citibank, Chase Manhattan, UBS and served as Global Head of Trading, FX and Options at Christiania (now Nordea).

Board Member, Peter Norris

Mr. Norris is Chairman of Virgin Group Holdings Limited. He has over 37 years of experience in investment banking and business management. Prior to becoming Chairman of Virgin, Mr. Norris acted as an adviser to the Group from 1996 and had chaired Virgin Active from 2002 to 2007.

Chair, ESG Committee, Catherine C. Keenan

An executive with 32 years of experience in the Chemical and Plastics industry, Catherine Keenan has deep experience in strategy development, government and public affairs, sustainability, crisis management, stakeholder engagement, branding and reputation management.

SENIOR MANAGEMENT

Chief Executive Officer, Tim Stedman

Nearly 30 years of experience in the chemical industry covering plastics, elastomers and basic chemicals, such as olefins. He has held positions in operations, sales and marketing, global supply chains, business leadership as well as strategy and corporate development.

Chief Financial Officer, Russell Main

Mr. Main held the role of Chief Financial Officer at Agilyx since May 2020. Before joining Agilyx, Russel was CFO of Abode Systems Inc. Prior, he worked for Tyco International for over 23 years, assuming senior financial leadership positions in their corporate group and their North and Latin America divisions.

Chief Technology Officer, Chris Faulkner, Ph.D

Dr. Faulkner brings over 15 years of technical and organizational expertise on the engineering, process, analytics and administrative fronts to deliver products and operating assets. Dr. Faulkner sits on the board of directors of Regenyx.

Senior VP of Engineering and Execution, Mark Barranco

Mr. Barranco brings over 30 years of petrochemical industry experience in a variety of technical and business roles. Mr. Barranco serves as General Manager of Regenyx, a joint venture chemical recycling facility between Agilyx and Americas Styrenics (AmSty).

Chief Commercial Officer, Carsten Larsen

Mr. Larsen brings more than 25 years of industrial expertise, most recently having served as commercial director, Plastics Circularity EMEA & APAC for Dow Inc.

General Counsel, Isabel Charlotte Hacker, Ph.D

Dr. Hacker has over 25 years of legal expertise in business, corporate, commercial, and M&A law, covering plastics and chemicals, manufacturing and consumer goods.

Senior VP of Investor Relations and Sustainability, Louise Bryant

Louise brings a wealth of investor relations experience to Agilyx, most notably serving as director of corporate affairs at Aggreko PLC.

VP of Human Resources, Stephen Hamlet

Most recently Stephen led the Human Resources team for NeuroLogica/Samsung Medicine and helped the company through their rapid growth and operational development over the past three years.

VP of Communications and Government Affairs, Kate Ringier

Ms. Ringier brings 20 years of strategic communications expertise, including crisis communications, media relations, branding, message creation, as well as speechwriting and change management experience.

RISK

The key risks to our valuation are delays, policy uncertainty and technology disruption. The first two are both about delays rather than outright failure of business. We see the growing demand for the solution that Agilyx has to offer as protecting the company from both these risks. Most rival technologies are at an earlier stage and often do not compete head to head, targeting different niches of the potentially very large recycling market.

PROJECT DELAYS

We think project delay rather than outright failure is the major risk to our valuation of the company. The technology is now proven with operating hours on the clock. Project development timelines could however lead to slower roll out than planned, limiting the company's ability to grow as expected.

POLICY UNCERTAINTY

There is some criticism of the fact that an element of the waste stream is converted into energy to fuel the pyrolysis process and this represents the effective incineration of waste giving rise to greenhouse gas emissions. In the case of Agilyx this is minimised by the use of renewable energy for some of the energy requirements of the process. Additionally, life cycle analysis shows that the process has a net positive impact. However there remains risk in the criticism. We think as the impact of waste on marine carbon capture is increasingly realised this criticism becomes less relevant.

TECHNOLOGY RISK

The entire advanced thermal treatment sector has been beset by technology failures although usually in first-of-a-kind, unproven projects. Agilyx stands out here given it has over 16,000 operating hours with relatively high utilisation. New projects still have some residual technology risk but we tend to see the successful operation of the Regenyx plant as a major mitigating factor here.

FINANCIAL MODEL

Profit and Loss Account

US$,000, Dec	2021a	2022e	2023e	2024e	2025e	2026e
Turnover						
Project development	2,787	14,939	2,928	57,419	170,864	5,009
Licence, membership, royalties	131	165	17,169	50,347	355	1,302
Sale of goods	1,971	5,520	13,599	34,029	79,284	178,735
Other	0	0	0	0	0	0
Total	4,889	20,624	33,696	141,795	250,504	185,046
Operating profit						
Project development	0	0	0	0	0	0
Licence, membership, royalties	0	0	0	0	0	0
Sale of goods	0	0	0	0	0	0
Other	-12,399	-17,873	-7,571	32,308	20,017	6,830
Operating profit	-12,399	-17,873	-7,571	32,308	20,017	6,830
P&L Account	**2021a**	**2022e**	**2023e**	**2024e**	**2025e**	**2026e**
Turnover	4,889	20,624	33,696	141,795	250,504	185,046
Operating Profit	-12,399	-17,873	-7,571	32,308	20,017	6,830
Investment income	-2,077	-1,904	-1,885	-1,868	-1,852	-1,838
Net Interest	574	12	9	4	18	24
Pre Tax Profit (UKSIP)	-13,903	-19,765	-9,447	30,444	18,183	5,016
Goodwill amortisation	0	0	0	0	0	0
Exceptional Items	0	0	0	0	0	0
Pre Tax Profit (IFRS)	-13,903	-19,765	-9,447	30,444	18,183	5,016
Tax	0	0	0	-7,611	-4,546	-1,254
Post tax exceptionals	0	0	0	0	0	0
Minorities	958	1,273	1,180	750	-1,631	-6,545
Net Profit	-12,944	-18,492	-8,267	23,583	12,006	-2,783
Dividend	0	0	0	0	0	0
Retained	-12,944	-18,492	-8,267	23,583	12,006	-2,783
EBITDA	-14,205	-19,376	-8,923	31,109	18,973	5,942
EPS (c) (UKSIP)	-0.17	-0.22	-0.10	0.28	0.14	-0.03
EPS (c) (IFRS)	-0.17	-0.22	-0.10	0.28	0.14	-0.03
FCFPS (c)	-0.20	-0.23	-0.11	0.25	0.15	0.06
Dividend (c)	0.00	0.00	0.00	0.00	0.00	0.00

Source: Company data, Longspur Research estimates

KEY POINTS

- FY 22 benefits from growing Cyclyx feedstock sales and Toyo project development
- FY 23 sees continued Cyclyx growth but lower development fees
- FY 24 and FY 25 see strong development fees but these drop again in FY 26
- Cyclyx grows across period and gross margin improves
- Company moves into profit in FY 24

Balance Sheet

US$,000, Dec	2021a	2022e	2023e	2024e	2025e	2026e
Fixed Asset Cost	1,381	2,037	2,710	3,399	4,106	4,830
Fixed Asset Depreciation	-484	-885	-1,418	-2,087	-2,894	-3,845
Net Fixed Assets	897	1,152	1,292	1,313	1,212	986
Goodwill	0	0	0	0	0	0
Other intangibles	4,398	4,398	4,398	4,398	4,398	4,398
Investments	1,510	1,025	595	219	-105	-376
Stock	0	1,695	2,770	11,654	20,589	15,209
Trade Debtors	1,670	5,085	8,309	34,963	61,768	45,628
Other Debtors	562	562	562	562	562	562
Trade Creditors	-1,447	-6,498	-10,617	-44,675	-78,926	-58,302
Other Creditors <1yr	-2,195	-2,195	-2,195	-2,195	-2,195	-2,195
Creditors >1yr	-37	-37	-37	-37	-37	-37
Provisions	0	0	0	0	0	0
Pension	0	0	0	0	0	0
Capital Employed	5,357	5,188	5,076	6,201	7,266	5,872
Cash etc	19,570	14,975	6,820	29,278	40,220	38,831
Borrowing <1yr	1,272	0	0	0	0	0
Borrowing >1yr	0	0	0	0	0	0
Net Borrowing	-18,298	-14,975	-6,820	-29,278	-40,220	-38,831
Share Capital	1,183	6,480	6,480	6,480	6,480	6,480
Share Premium	89,051	98,754	98,754	98,754	98,754	98,754
Retained Earnings	-67,620	-84,840	-91,927	-67,593	-57,218	-66,546
Other	0	0	0	0	0	0
Minority interest	1,042	-231	-1,411	-2,161	-531	6,015
Capital Employed	5,357	5,188	5,076	6,201	7,266	5,872
Net Assets	23,656	20,163	11,897	35,480	47,486	44,703
Total Equity	23,656	20,163	11,897	35,480	47,486	44,703

Source: Company data, Longspur Research estimates

KEY POINTS

- Cash in FY 22 benefits from equity raise
- Working capital expands with sales growth although payment cycle relatively efficient

Cashflow

US$,000, Dec	2021a	2022e	2023e	2024e	2025e	2026e
Operating profit	-12,399	-17,873	-7,571	32,308	20,017	6,830
Depreciation	272	401	533	669	808	950
Provisions	0	0	0	0	0	0
Other	726	0	0	0	0	0
Working capital	-1,283	-60	-179	-9,092	1,576	4,188
Operating cash flow	-12,685	-17,532	-7,217	23,884	22,401	11,969
Tax paid	0	0	0	0	-7,611	-4,546
Capex (less disposals)	-640	-656	-673	-689	-707	-724
Investments	-1,978	-1,419	-1,455	-1,491	-1,529	-1,567
Net interest	0	1,284	1,189	754	-1,613	-6,521
Net dividends	0	0	0	0	0	0
Residual cash flow	-15,303	-18,323	-8,155	22,458	10,941	-1,389
Equity issued	725	15,000	0	0	0	0
Change in net borrowing	17,730	3,323	8,155	-22,458	-10,941	1,389
Adjustments	148	0	0	0	0	0
Total financing	18,603	18,323	8,155	-22,458	-10,941	1,389

Source: Company data, Longspur Research estimates

KEY POINTS

- Operating cashflow becomes positive from FY 24
- Working capital moves heavily dependent on project timings
- Low capex reflects licencing business model
- Investments to support Cyclyx

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