DNB Markets

AGILYX

Completing the plastics cycle

Through its subsidiary Cyclyx, Agilyx is helping resolve a key bottleneck in chemical recycling: access to proper plastic-waste feedstock. This is increasingly understood by the industry, and underpinned by backing from strong industrial partners (ExxonMobil and LyondellBasell), reducing risk and ensuring solid economics for its recycling centres. We initiate coverage with a BUY and NOK40 target price based on five initial recycling centres, but see further upside potential in the event of a favourable market where more facilities are built.

Unlocking solutions to the plastic waste problem. Leveraging on two decades of technology development, Agilyx offers an integrated recycling solution across the value chain for chemical recycling: from collection to chemical characterisation, sorting and pre-treatment of plastic waste (Cyclyx, 50%-owned) to chemical recycling (Agilyx). Most of the focus is currently on Cyclyx, which offers the only large-scale initiative for sourcing of plastic waste for chemical recycling that we are aware of.

Lack of high-quality plastic feedstock a key industry bottleneck. Through its subsidiary Cyclyx, Agilyx helps resolve a key bottleneck in the chemical recycling industry, namely access to proper plastic-waste feedstock. While there are significant efforts being put into the chemical conversion of plastic waste to polymers, there is limited capacity for sourcing and sorting the plastic waste feedstock. The supply gap is expected to become more severe, with Woodmac estimating a supply deficit of 64% versus currently announced pyrolysis capacity by 2025 and 62% by 2030, despite seeing significant new plastic sourcing capacity coming on stream.

Attractive circularity centre economics. Investments from ExxonMobil and LyondellBasell in both Cyclyx and its circularity centres reduce risk and guarantee 15% unleveraged IRR plus royalty payments. With firm offtake agreements, we believe the facilities can attract financing at relatively high LTVs over time (~75%), resulting in IRRs north of 30%.

We initiate coverage with a BUY and NOK40 target price, based on an average of a risked DCF-based SOTP and discounted 2028e EV/EBITDA of 11x based on more mature industrial companies with a green profile. While we believe Cyclyx looks set for steep growth in the years ahead, we have not included any growth beyond the first five circularity centres, where offtake demand has been indicated. However, we could see significant further upside potential to our target price if more circularity centres are built.

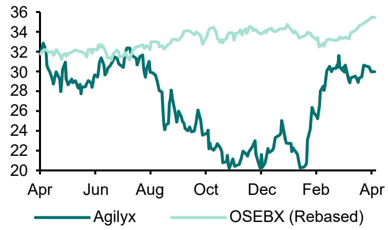
Year-end Dec	2020	2021	2022	2023e	2024e	2025e	2026e
Revenue (USDm)	4	5	16	15	14	34	42
EBITDA adj (USDm)	-6	-15	-21	-22	-8	2	8
EBIT adj (USDm)	-7	-16	-24	-29	-8	2	8
PTP (USDm)	-10	-17	-23	-24	-11	-3	14
EPS rep (USD)	-0.14	-0.21	-0.27	-0.26	-0.12	-0.04	0.15
EPS adj (USD)	-0.14	-0.21	-0.27	-0.26	-0.12	-0.04	0.15
DPS (USD)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Revenue growth (%)	nm	12.8	236.6	-11.3	-3.6	141.6	22.7
EBITDA growth adj (%)	nm	nm	nm	nm	nm	nm	332.7
EBITDA margin adj (%)	nm	nm	nm	nm	nm	5.7	20.0
P/E adj (x)	nm	nm	nm	nm	nm	nm	18.4
ROE (%)	nm	nm	nm	nm	nm	nm	7.7

Source: Company (historical figures), DNB Markets (estimates)

BUY

TP: NOK40.0

AGLX versus OSEBX (12m)



Source: FactSet

SUMMARY	
Recommendation	BUY
Share price (NOK)	29.8
Target price (NOK)	40.0
Upside/downside potential (%)	34
Tickers	AGLX NO
CAPITAL STRUCTURE	
No. of shares (m)	95.7
Market cap. (NOKm)	2,851
NIBD adj end-2023e (USDm)	-13
Enterprise value adj (USDm)	254
Net debt/EBITDA adj (x)	0.58
Free float (%)	53

Source: Company, DNB Markets (estimates)

Note: Unless otherwise stated, the share prices in this note are the last closing price.

NEXT EVENT	
Annual report 2023	23/04/2024

DNB Markets acted as Joint Global Coordinator and Joint Bookrunner in the recent private placement in Agilyx ASA

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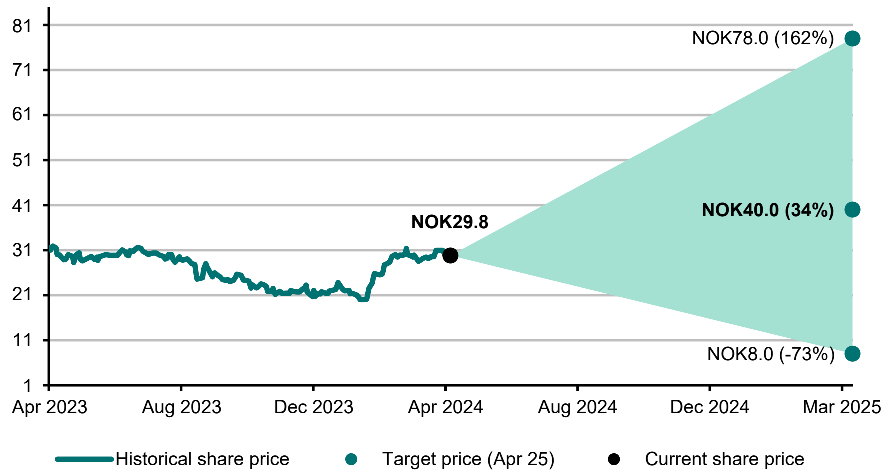
Investment case overview

Share-price performance, DNB Markets' target price, bear- and bull-case scenarios



Source: FactSet, DNB Markets

Target price methodology

- We base our target price on a combination of a risked DCF-based SOTP, as well as discounted 2028 EV/ EBITDA multiples for the company's chemical conversion business and five initial CCCs.
- Our bull-case fair value is based on an unrisked-DCF-based SOTP for 20 CCCs.
- Our bear case fair value is based on an 80% discount to our target price.

Source: DNB Markets

Downside risks to our investment case

- Slower than expected growth in the chemical recycling market on the back of weak project economics, a lack of policies and/or public opposition.
- The emergence of more efficient technologies than chemical conversion for recycling of plastics that cannot be mechanically recycled.
- Increasing competition putting pressure on margins.

Source: DNB Markets

DNB Markets investment case and how we differ from consensus

- We believe Agilyx, particularly through Cyclyx, looks set for industrial success with the sourcing and storing of waste plastics being a key bottleneck in the chemical recycling industry.
- We consider investments from ExxonMobil and LyondellBasell as risk-reducing for the equity story.

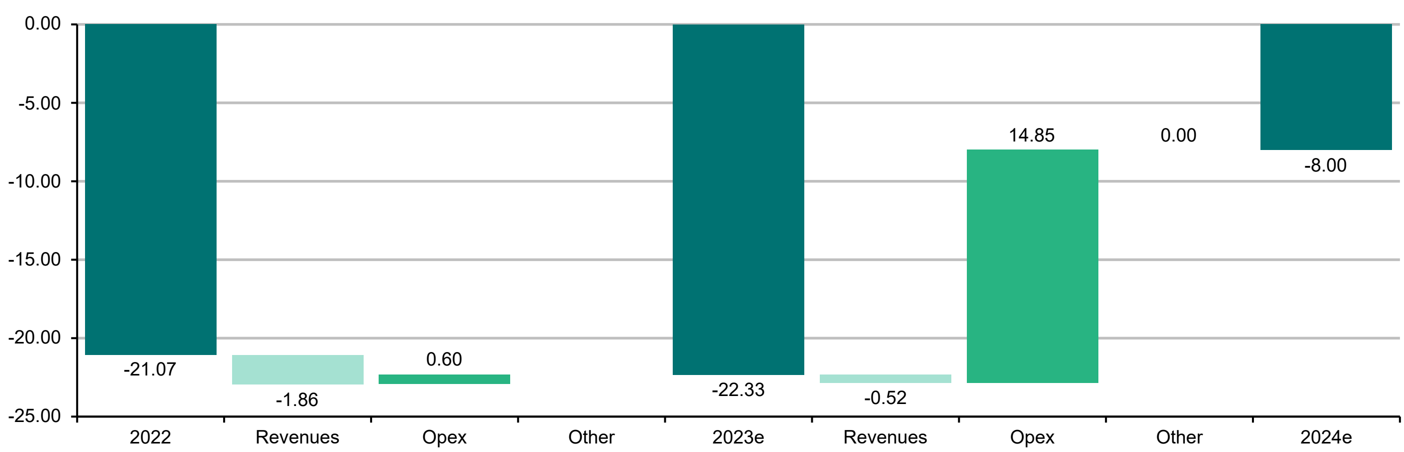
Source: DNB Markets

Upside risks to our investment case

- High growth in the market for chemical conversion of plastics, increasing demand for Agilyx's conversion technology.
- Cyclyx builds more than the initially indicated five CCCs.
- Strong demand for plastic waste feedstock, resulting in higher investible return than the guided 15% for CCCs.

Source: DNB Markets

EBITDA bridge 2022–2024e (USDm)



Source: Company (historical figures), DNB Markets (estimates)

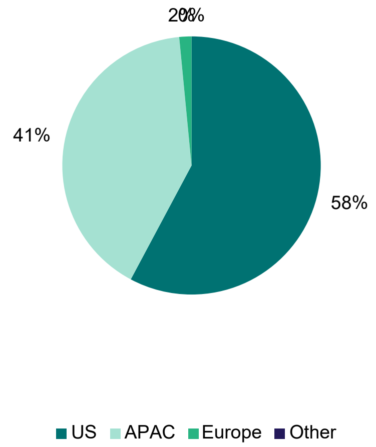
Company overview and SWOT analysis

Company description

- Agilyx offers an integrated recycling solution across the value chain for chemical recycling.
- Cyclyx (50%-owned) sources, sorts, and pre-treats plastic waste to provide custom blends for chemical recycling. It operates primarily under a build-own-operate model with ExxonMobil and LyondellBasell, but also can freely license the technology to third parties.
- Agilyx's conversion business focuses on areas with differentiated technology and has an asset-light business model.

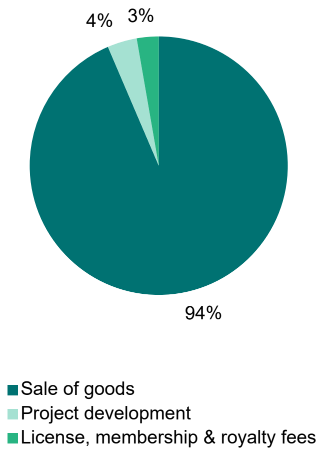
Source: DNB Markets

Sales by geography (2022)



Source: Company

Sales by product (2022)



Source: Company

Financial targets

- The company does not yet have any financial targets.

Source: Company

Key management

- Russell Main – CFO and interim CEO.
- Carsten Larsen – CCO.
- Chris Faulkner – CTO.
- Joseph Vaillancourt – CEO Cyclyx.

Source: Company

Largest shareholders

- Saffron Hill Ventures (41.6%).
- Mirabella Financial Services (19.9%).

Source: Company

SWOT analysis

Strengths

- Agilyx has built a proprietary plastic database and has a very good understanding on how to transform plastic waste into custom blend feedstock for chemical recycling.
- The company is backed by strong industrial partners, most notably with petrochemical companies ExxonMobil and LyondellBasell, which own 50% of Cyclyx, which reduces the risk and ensures solid project economics.
- Agilyx's conversion business has a capital-light business model that focuses on application areas with limited competition, generating low cash burn in periods with a slow market.

Weaknesses

- The capital-light business model for the company's conversion business has been buffeted by recent market headwinds.

Opportunities

- Agilyx operates in a market that is expected to see significant growth, driven by stricter plastics recycling regulations.
- Having an offering to resolve a key industry bottleneck of access to proper plastic waste feedstock, Agilyx's subsidiary Cyclyx looks very well placed to capitalise.

Threats

- The company operates in less established markets that will remain dependent on public policy.
- Reaching plastic recirculation targets taking longer than currently envisaged.
- Intensifying competition.

Source: DNB Markets

ESG overview

Sustainability assessment

	Positive	Negative
Conclusions	■ Offering sourcing and sorting capacity for plastic waste helps to solve a key bottleneck in the plastic-recycling value chain. As well as providing technology for chemical recycling, Agilyx looks well placed to capitalise on the growing push into plastics recycling.	■ Chemical recycling is considered by some to be controversial as it causes CO_2 emissions and chemical pollutants, arguing that the process is not circular due to lack of traceability and legitimisation of new virgin-plastic production.
Actions being taken by company	■ Agilyx offers solutions to increase the recycling of hard-to-recycle plastic waste. ■ The company has chosen three core sustainability areas of focus, where it has announced targets and tracks the annual progress: ■ **Circular/environmental.** The company aims to enable the conversion of at least 1,500tpd of post-use plastic by 2030. ■ **Climate.** The company has developed climate-change objectives, including measuring its own impact on the climate and strategies to mitigate climate-related impacts from its own technology. ■ **Societal.** The company targets five new collaborations with institutions, government authorities, NGOs and associations in 2025 and has several targets for gender equality.	■ Agilyx's business is related to the chemical recycling of plastics, which is considered by some to be controversial from an environmental point of view. ■ A ~5–10% share of the waste plastics sorted by Cyclyx will go to landfill and not be further recycled. ■ The company only tracks limited ESG-related data except TRIR, workforce composition and compensation, but says it plans to implement a more comprehensive ESG data management system in the future.
Key ESG drivers		
Short-term	■ Several supportive legislations in place for the use of post-consumer plastics in packaging. ■ Chemical recycling can increase the recycling rate of plastic, which reduces the problems of limited landfill capacity and high emissions associated with the incineration of plastic waste, as it is currently the only solution for recycling several types of plastics that cannot be mechanically recycled and mixed plastic waste. ■ Capacity for sourcing and sorting of proper plastic waste feedstock is a key bottleneck of the plastic recycling industry.	■ CO_2 emissions and chemical pollutants generated by the chemical recycling process can cause great harm to natural ecosystems. ■ Health and safety are key challenges in the chemical recycling industry. ■ Chemical recycling is not considered circular by some due to the lack of manufacturing traceability, recycled output can be used for fuel consumption, and chemical recycling also helping labelling virgin plastic consumption as green.
Long-term	■ Global plastic consumption is expected to more than double by 2060 (OECD estimate and increase from 460mt in 2019 to 1,231mt in 2060), further strengthening global incentives for recycling of plastic waste.	■ Increasing recycling rates could legitimise more virgin-plastic production and help keep a non-sustainable industry alive.

Source: DNB Markets

Contents

Investment case

Well placed in the chemical recycling value chain

Agilyx offers an integrated solution across the value chain for chemical recycling of plastics

Leveraging on two decades of technology development, Agilyx offers an integrated solution across the value chain for chemical recycling of plastics: from waste collection to chemical characterisation, sorting and pre-treatment to the chemical decomposition of the plastic resins. Its main focus is on the sourcing and sorting of waste plastics through its 50%-owned subsidiary Cyclyx, which resolves a key bottleneck in the chemical recycling industry, namely access to proper plastic waste feedstock for chemical recycling.

- **Cyclyx.** Cyclyx sources plastic waste through various collection channels, and sorts it based on its physical properties, contaminants and polymer recipes to provide custom plastic-waste feedstock blends based on customer requirements. Cyclyx will primarily operate under a build-own-operate model for its recycling facilities, called Cyclyx Circularity Centres (CCCs) based on its proprietary plastic database and off-the-shelf sorting technology, but the company is also able to license the technology freely to third parties. Cyclyx's CCCs are the only large-scale initiative for sourcing waste for chemical recycling that we are aware of.
- **Agilyx's conversion business.** The chemical conversion business focuses on areas where the company has a differentiated technology, e.g. monomer recycling with the conversion of plastic to a tradable product. This part of the company has an asset-light business model, with licensing of conversion technology.

Figure 1: Company overview and placement in waste plastics recycling value chain

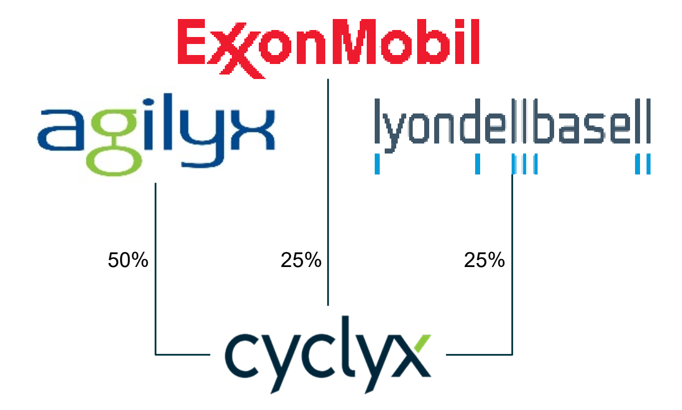
Source: Company (underlying data), DNB Markets (structuring)

Backed by strong industrial partners

Signed multiple MoUs with various petrochemical companies for offtake from future CCCs

Agilyx is well backed by strong industrial partners, with petrochemicals companies ExxonMobil and LyondellBasell owning the remaining 50% of Cyclyx, and the company has also signed multiple MoUs with other petrochemical companies for offtake from future CCCs. In addition, a variety of market participants have joined the Cyclyx consortium to help with the sourcing of feedstock for chemical recycling.

Figure 2: Cyclyx ownership overview



Source: Agilyx

Figure 3: Selected members of the Cyclyx consortium

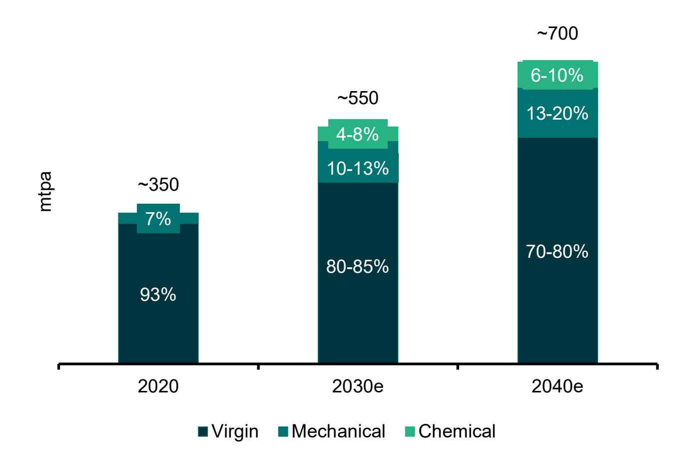
Source: Agilyx

Set to benefit from rapid growth in the chemical recycling market…

The plastics recycling industry is at an inflection point for growth, where tightening regulations put pressure on brand owners and plastic manufacturers to increase production of recycled plastics. Due to the limitations in mechanical traditional recycling with respect to the types of plastics that can be recycled and the recycling of mixed plastics, and too-low output quality, chemical recycling (conversion of plastic waste by changing its chemical structure) that does not have these limitations is needed. McKinsey estimates the share of polymer demand covered by chemical recycling to increase from virtually zero today to 4–8% in 2030 and 6–10% in 2040, corresponding to ~33mtpa and ~50mtpa, respectively. Emerging market growth is supported by chemical recycling capacity announcements of 5.4mtpa expected to come online over this decade.

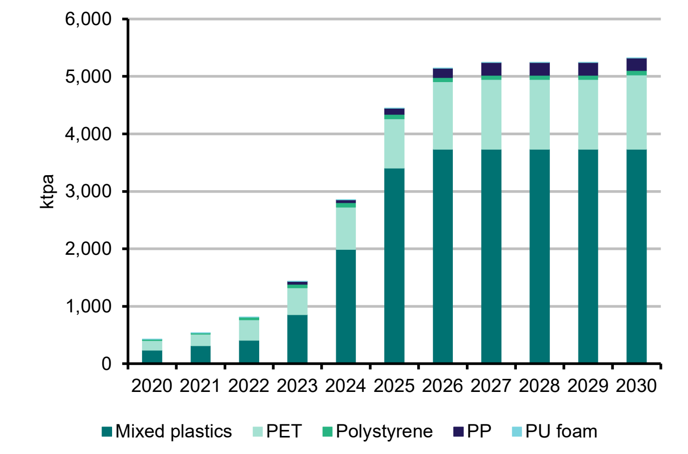
The plastics recycling industry is at an inflection point for growth

Figure 4: Global polymer demand by source of feedstock



Source: McKinsey

Figure 5: Cumulative chemical recycling capacity announcements by plastic type



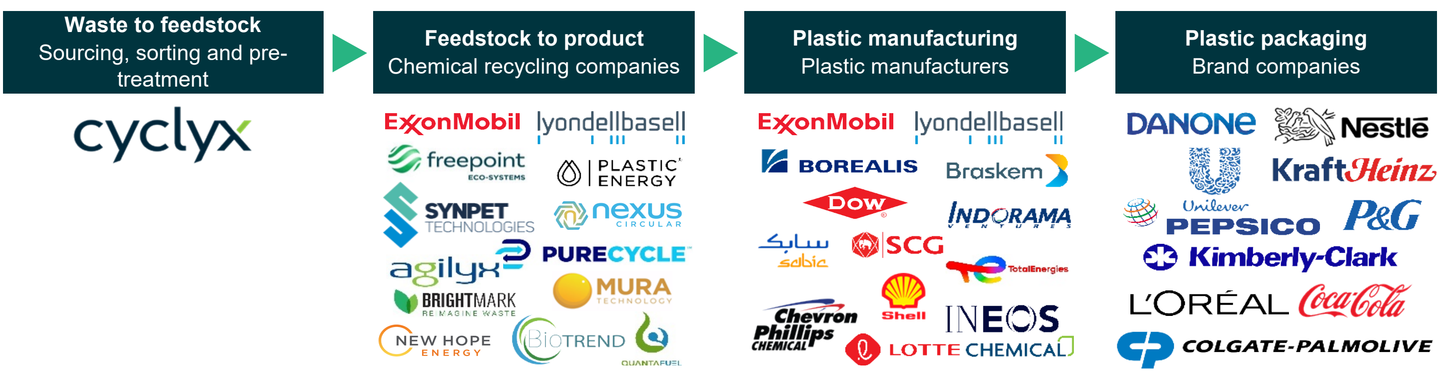
Source: BNEF

…and having the only large-scale initiative capable of resolving the industry bottleneck of the lack of plastic-waste feedstock

Access to suitable, sorted plastic waste at an affordable price is a prerequisite for the business case of chemical recycling, but sourcing of plastic waste meeting the required specifications remains a key industry challenge despite the abundance of plastic waste generated globally. While there are significant efforts being put into the conversion of feedstock into recycled plastic resins, there is limited capacity for sourcing and sorting of plastic-waste feedstock. Through its subsidiary Cyclyx, Agilyx is the only large-scale initiative we have identified, and we thus believe the company looks well placed to capitalise on market growth.

Agilyx looks well placed to capitalise on market growth

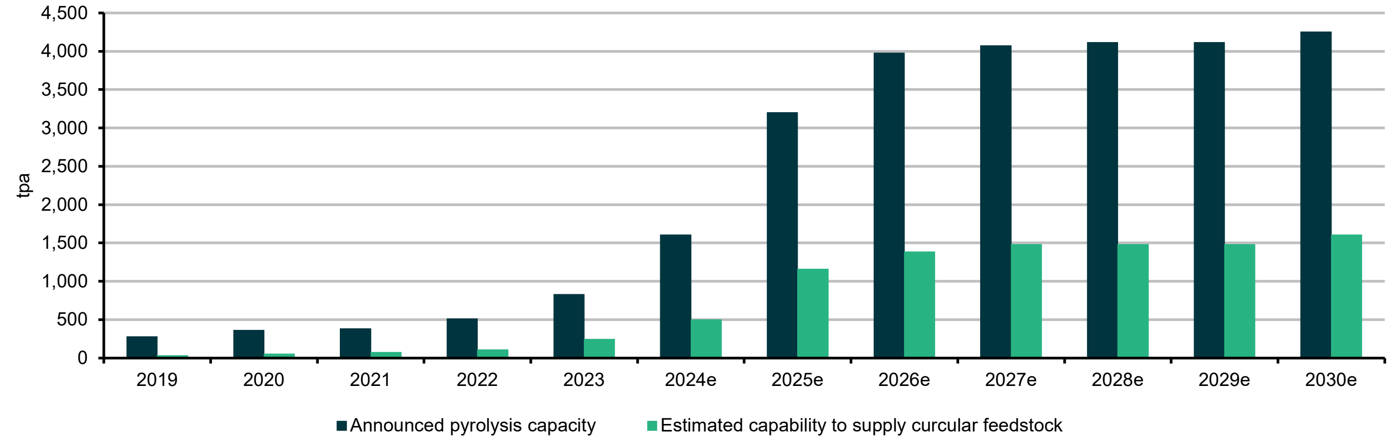
Figure 6: Companies in the chemical recycling value chain (not an exhaustive list)



Source: Companies

The waste-plastic supply gap is set to become more pronounced in the coming years, when additional chemical recycling capacity comes on stream. Despite expecting a significant increase in capabilities to supply circular plastic feedstock, Woodmac sees a 64% supply deficit, versus currently announced pyrolysis capacity by 2025e and a 62% deficit by 2030e.

Figure 7: Announced pyrolysis capacity versus capability to provide circular feedstock



Source: Woodmac

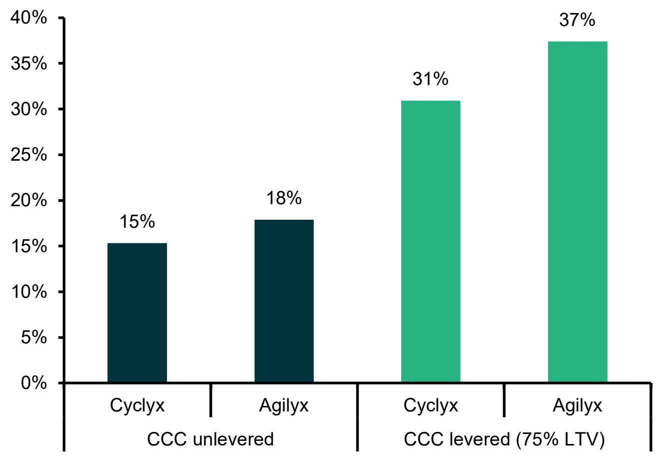
Attractive economics for Cyclyx Circularity Centres

Co-investments from ExxonMobil and LyondellBasell in the Cyclyx Circularity Centres reduce risk and guarantee 15% unleveraged IRR to Cyclyx plus royalty payments to Agilyx. With firm offtake agreements, we believe the CCCs can attract financing at relatively high leverage over time. Including 75% LTV, we arrive at project IRRs of 31% for Cyclyx alone and 37% when including royalties to Agilyx.

CCCs built together with ExxonMobil and LyondellBasell have solid project economics with guaranteed 15% unleveraged IRRs plus royalty payments

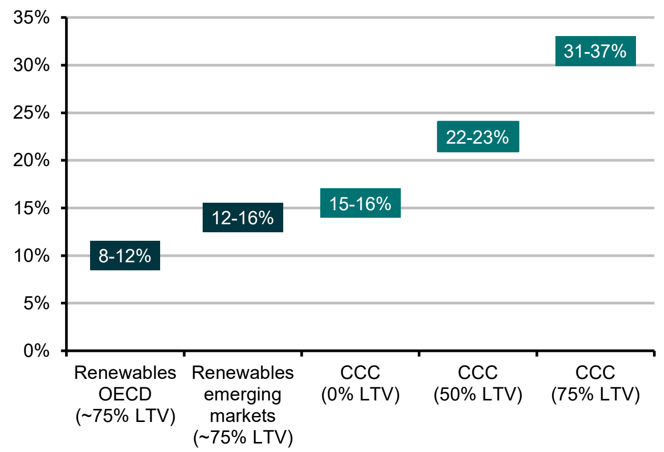
The CCC returns also screen attractively versus other green investments. Unleveraged CCC returns are in line with the high end of leveraged renewable energy asset returns in riskier geographies. When adding 75% leverage, CCC returns are 2x and 3x the returns of leveraged renewable energy assets in emerging market OECD countries, respectively. While we acknowledge that the risk profile of Cyclyx and its CCCs is higher than for mature renewable energy assets and that this should warrant higher returns, we find the risk/return profile attractive.

Figure 8: Illustrative project IRRs for CCC (15 years lifetime)



Source: Agilyx (underlying data), DNB Markets (further calculations)
Note (1): For CCCs with ExxonMobil and LyondellBasell, based on 7% cost of debt
Note (2): The uplift in Agilyx's IRR related to annual USD2.5m in royalty payments

Figure 9: Equity IRR versus renewable energy assets

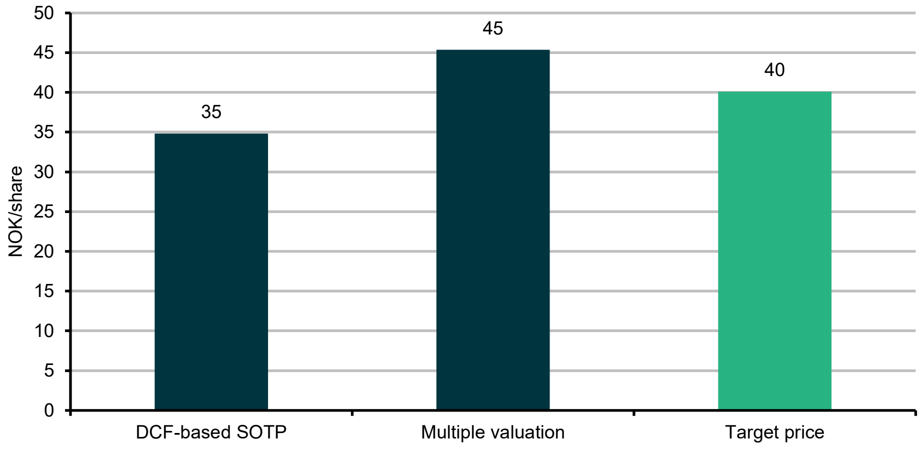


Source: DNB Markets
Note: CCC leveraged IRR based on 7% cost of debt

We initiate coverage with a BUY and NOK40 target price

We have focused our valuation on a combination of a risked DCF-based SOTP, as well as discounted 2028e EV/EBITDA multiples based on more mature industrial companies with a green angle. Although we believe Cyclyx in particular looks set for steep growth in the years ahead, we have not included any contribution for plastic sorting facilities beyond the five first five circularity centres where offtake demand has been indicated. On this basis, we arrive at a target price of NOK40, and thus initiate coverage with a BUY recommendation.

Figure 10: Valuation overview



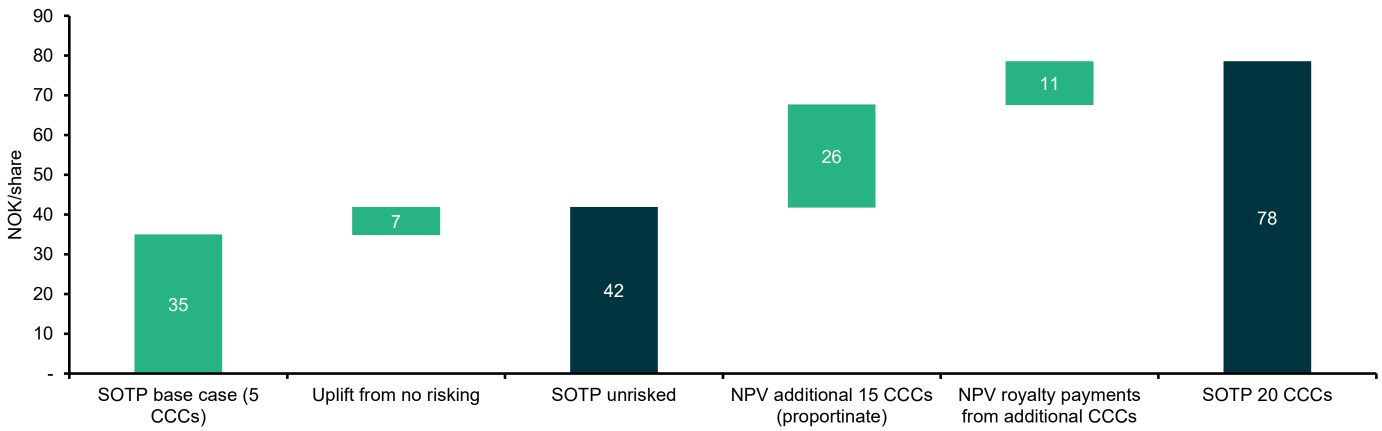
Source: DNB Markets

'What if' scenario

If the market for chemical recycling takes off, we believe there could substantial potential demand for Cyclyx's waste plastics management services beyond the first five CCCs. Hence, we have carried out an analysis on how the value of Agilyx might be affected by adding another 15 CCCs by 2041 to the initial five (20 CCCs correspond to a market share of 4% in 2040 based on McKinsey's market forecast). Including this, we arrive at a fair equity value of NOK78/share, suggesting that there could be significant upside potential beyond our target price.

If the market for chemical recycling takes off, we could see significant upside potential beyond our target price

Figure 11: SOTP upside potential with no risking and 20 CCCs



Source: DNB Markets
Note: Assume 15% unlevered IRR for the CCCs over 15 years of operations. With 75% LTV at 7% interest this corresponds to 30% levered IRR

DNB Markets' estimates

We expect Cyclyx to be the key earnings generator in Agilyx, both in the form of the Cyclyx Circularity Centres' stand-alone project economics and the royalty payments to Agilyx. As Agilyx has a 50% ownership stake in Cyclyx, contributions from the former are not consolidated but rather recognised with the equity method. Hence, Cyclyx's stand-alone financials have no direct impact on reported EBITDA for Agilyx, but the contribution is shown in net income. Below, we assess Cyclyx and Agilyx's conversion business separately, before showing consolidated numbers on a group level.

We expect Cyclyx to be the key earnings generator in Agilyx

Cyclyx

We expect the majority of Cyclyx's financials to be made up of contributions from the five CCCs that the company plans to build in US metropolitan areas over the next few years.

CCC assumptions

The first CCC reached FID in December 2023 and will have a capacity of 178ktpa. We assume subsequent CCCs to have similar sizes. Based on provided numbers by the company reflecting 15% unlevered IRRs for CCCs (we understand ExxonMobil and LyondellBasell have committed to this over the first 15 years of CCC operations, except for CCC1, where Agilyx is not putting in any capex), we assume a 20-year lifetime, proportionate capex of USD50m from CCC2 onwards, proportionate working-capital build of USD10m, annual proportionate cash flow for Agilyx's 50% share in Cyclyx of USD3.5m for the first CCC and USD11.5m thereafter, and USD2.5m in annual royalties to Agilyx per CCC.

The first CCC reached FID in December 2023 and will have a capacity of 178ktpa

With the first CCC not yet being operational when taking FID on the second (FID expected indicated around mid-2024), we assume the CCCs are not yet bankable and that the entire capex for CCC2 will be covered by equity from Agilyx, ExxonMobil and LyondellBasell. However, we expect Agilyx to fund parts of its CCC2 equity portion with debt. From CCC3, we assume that investments will be partly covered by debt. With offtake agreements covering volumes and prices with ExxonMobil and LyondellBasell, we estimate an LTV of 75% could be achieved. We assume an annual all-in cost of debt of 7%. These are our current assumptions on leverage, and we see uncertainty related to the LTV and cost of debt being achieved.

From CCC3, we assume investments will be partly covered by project debt

Figure 12: Key assumptions for Agilyx's ownerships in CCCs with ExxonMobil and LyondellBasell

	CCC1	CCC2	Further CCCs (levered)
Output capacity (ktpa)	178	178	178
Lifetime (years)	20 (15+5)	20 (15+5)	20 (15+5)
Capex (USDm)	0	50	50
Working capital needs	7	10	10
Annual cash flow (USDm)	3.5	11.5	11.5
LTV (%)	0%	0%	75%
Cost of debt (%)	n.a.	n.a.	7%
Annual royalty payments to Agilyx (USDm)	2.5	2.5	2.5

Source: Agilyx (underlying data), DNB Markets (assumptions about LTV and cost of debt)

Although we see the potential for many CCCs given the solid growth prospects of chemical recycling, we have only included the first five CCCs that the company has indicated demand for in our estimates. Of these, we see higher certainty for the two first with ExxonMobil and LyondellBasell. Given historical delays in additional chemical recycling capacity in recent years on the back of market and technology scaling headwinds, delaying industry growth, we see greater uncertainty for any subsequent CCCs. However, the company has seen strong interest in its offtake, with nine petrochemical companies having signed MoUs for 25–100% of offtake from CCCs.

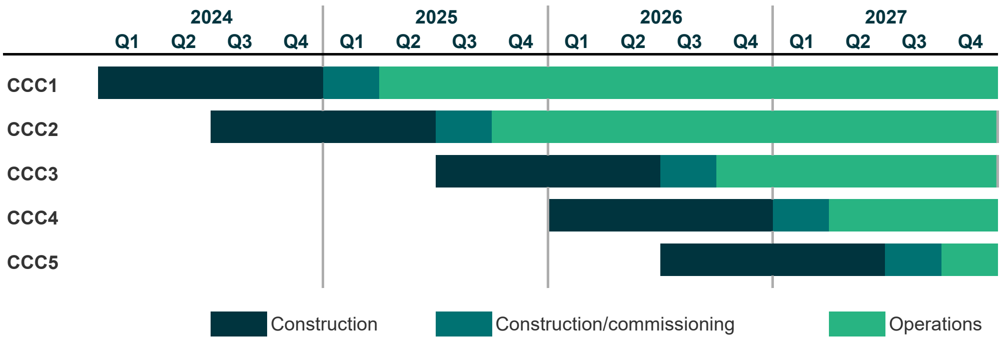
We have only included the first five CCCs that the company has indicated demand for in our estimates

From a timing perspective, we assume the first CCC to become operational in early Q2 2025, reflecting the high end of the indicated construction time of 14–16 months. In line with company guidance, we assume an FID for CCC2 around mid-2024. Given the market uncertainty and our belief that attracting project financing for subsequent CCCs after CCC1 has become operational, we first model FID for CCC3 around mid-2025. We model FID for CCC4–5 in late

We assume the first CCC to become operational in early Q2 2025

2025 and mid-2026, respectively. This would, combined with 16 months of construction time, result in five operational CCCs in Q3 2027.

Figure 13: Timeline for CCC build-out



Source: Company (information about CCC1 and CCC2), DNB Markets (estimates for further CCCs)

Cyclyx financials

Based on the buildout plan for the first five CCCs with the project economics above, some minor opex and earnings for Cyclyx outside of the CCCs, we arrive at the below financials. Agilyx is attributable to half of these earnings, which we show in the proportionate chart below. Note that no tax is paid in Cyclyx, but rather in its parent companies.

Figure 14: Cyclyx P&L and contribution to Agilyx

USDm	2024e	2025e	2026e	2027e	2028e	2029e	2030e
EBITDA CCCs	**-**	**4**	**39**	**86**	**112**	**112**	**112**
Revenues ex. CCCs	13	11	8	8	8	8	8
Opex ex. CCCs	15	13	8	4	3	3	3
EBITDA ex. CCCs	**(2)**	**(3)**	**0**	**4**	**6**	**6**	**6**
EBITDA	**(2)**	**1**	**39**	**89**	**118**	**118**	**118**
Depreciation CCCs	-	3	11	20	25	25	25
EBIT	(2)	(2)	28	69	93	93	93
Net financials	-	(2)	(8)	(13)	(13)	(12)	(11)
Income before tax	**(2)**	**(3)**	**19**	**56**	**80**	**81**	**82**
Agilyx' ownership in Cyclyx	50%	50%	50%	50%	50%	50%	50%
Agilyx' share in result from associated companies (Cyclyx)	**(1)**	**(2)**	**10**	**28**	**40**	**40**	**41**

Source: DNB Markets (estimates)

Assuming guided capex of USD100m per CCC, USD20m of working capital build-up per CCC, 75% LTV for CCC3, CCC4 and CCC5 and some minor cash flows from Cyclyx's membership contributions, we arrive at the below cash flow for Cyclyx. We estimate that Cyclyx would need further equity injections from its owners to fund the construction of and working capital for CCC2 (USD125m) and further capex for CCC3 and overhead opex until CCC2 has commenced operations (USD95m). After this, the company should be fully financed for our modelled growth with the operational cash flow from operating CCCs.

We estimate that Cyclyx would need further equity injections from its owners to fund the construction of CCC2

Figure 15: Cyclyx balance sheet and cash flow highlights

USDm	2024e	2025e	2026e	2027e	2028e	2029e	2030e
Net debt							
Interest-bearing debt	-	76	182	193	182	170	157
Cash	126	58	2	47	141	234	328
NIBD	**(126)**	**18**	**180**	**146**	**41**	**(65)**	**(171)**
Cash flow							
Net profit	(2)	(3)	19	56	80	81	82
D&A	-	3	11	20	25	25	25
Changes in working capital	(22)	(33)	(33)	(12)	-	-	-
Other	-	-	-	-	-	-	-
Cash flow from operations	**(24)**	**(34)**	**(2)**	**64**	**105**	**106**	**107**
Investments - CCCs	(110)	(200)	(160)	(30)	-	-	-
Divestments and other	-	-	-	-	-	-	-
Cash flow from investments	**(110)**	**(200)**	**(160)**	**(30)**	**-**	**-**	**-**
Debt additions	-	83	120	23	-	-	-
Debt repayments	-	(6)	(14)	(11)	(11)	(12)	(13)
Equity issued	120	90	-	-	-	-	-
Dividend payments	-	-	-	-	-	-	-
Cash flow from financing	**120**	**166**	**106**	**11**	**(11)**	**(12)**	**(13)**
Change in cash and cash equivalents	**(14)**	**(68)**	**(56)**	**45**	**93**	**93**	**93**

Source: DNB Markets (estimates)

Agilyx stand-alone

The stand-alone Agilyx is set to have two key sources of revenues: a) from chemical conversion contracts; and b) from royalty fees from licensing technology to CCCs.

Conversion contract economics

On the conversion side, Agilyx helps its partners during the development, construction and operations of chemical plastics conversion facilities. We assume average capacity of 100tpd for contracted conversion facilities, although the current contract with Toyo Styrene is for a smaller facility. See below for further details about our assumptions for the different phases:

We assume average capacity of 100tpd for contracted conversion facilities

- **Development.** We model development revenues of USD1m, below the previously guided USD3m–5m, to reflect a weaker market for conversion projects. Initially we do not model any margin on this, but assume a gross margin of 10% from mid-2025. We model an evenly split percentage of completion over the development period, which we estimate at 1.5 years.
- **Construction.** Under the construction phase, Agilyx receives revenues from conversion equipment sales as well as a licensing fee. With most of the equipment sold early in the construction phase and the licensing sale happening shortly after FID, we model revenues skewed to the front end of the construction phase. We model a combined gross margin of 30% for the period.
- **Operations.** During operations, we model the company to receive royalties for its technology licence of USD1m per year, as well as some minor contributions from O&M. Assuming limited costs related to these revenue streams, we forecast a relatively high gross margin of 80% related to these revenues.

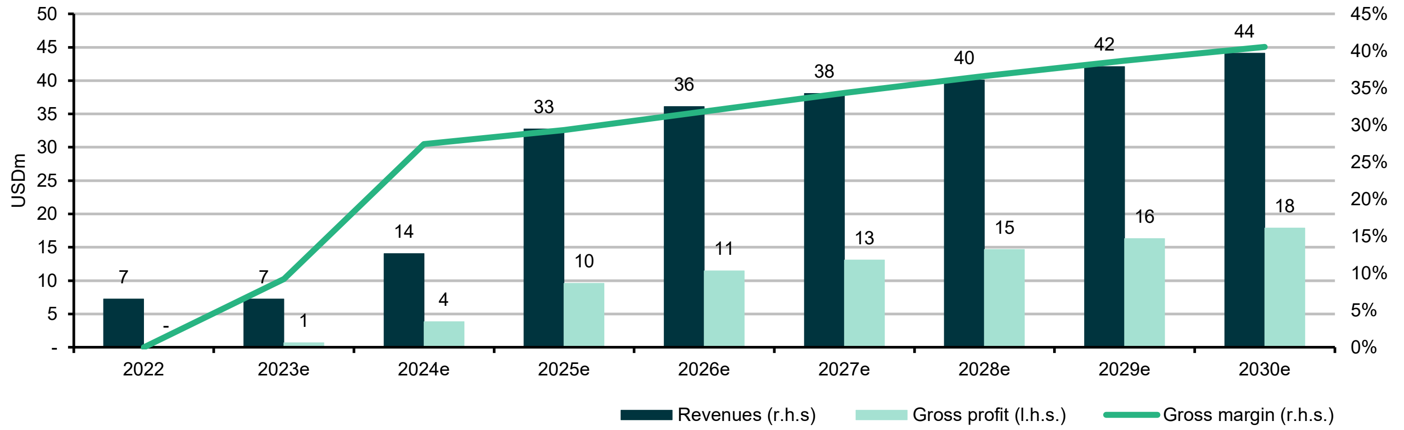
Figure 16: Key assumptions for conversion contracts

Contract phase	Capacity	Time	Revenues	Gross margin	Percentage of completion					
					Q1	Q2	Q3	Q4	Q5	Q6
Development	100tpd	1-2 years	USD1m	0-10%	17%	33%	50%	67%	83%	100%
Construction	100tpd	1-2 years	USD16m	25%	10%	50%	67%	75%	90%	100%
Operations	100tpd	20 years	USD1m p.a.	80%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Source: Agilyx (underlying data), DNB Markets (estimates)

Based on the above, we arrive at the revenues and gross profit from Agilyx's conversion business as shown below, when assuming that the company gets two contacts per year.

Figure 17: Revenues, gross profit and gross margins from conversion contracts

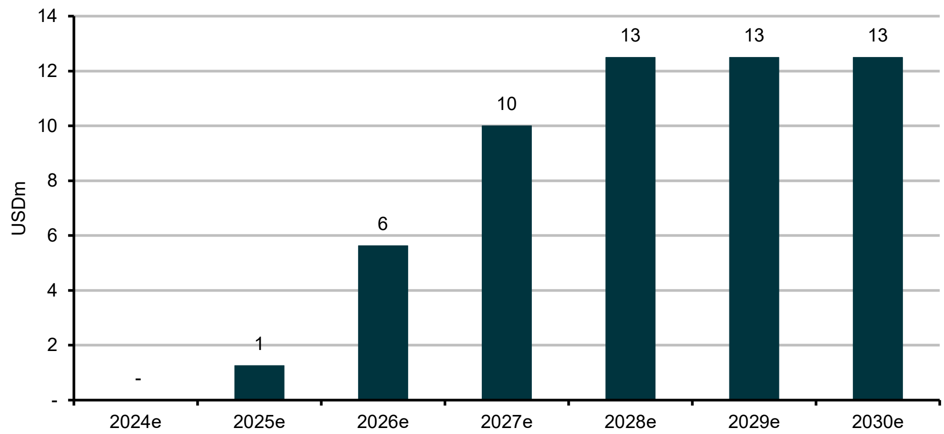


Source: Agilyx (historical data), DNB Markets (estimates)

Royalty fees from CCCs

In addition to the conversion contracts, Agilyx is entitled to royalty revenues of USD2.5m per year per 178kta CCC. The five first CCCs should thus result in annual revenues of USD12.5m when operational. We expect very limited costs related to these revenues.

Figure 18: Revenues from CCC royalty fees



Source: Agilyx (historical data), DNB Markets (estimates)

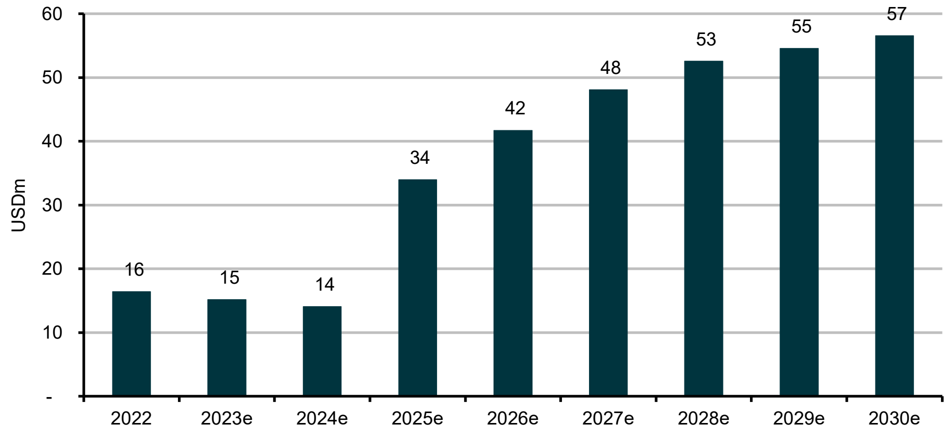
Group financials

Revenues

We forecast revenues of USD14m, USD34m and USD42m for 2024–2026e

Based on revenues from assumed conversion contracts and royalties from CCCs, we forecast revenues of USD14m, USD34m and USD42m for 2024–2026e. The decline in 2024e is due to the deconsolidation of Cyclyx. The large uptick in 2025e is primarily due to our assumptions of higher construction activity in the conversion business, but also helped by royalty payments from CCC1.

Figure 19: Agilyx consolidated revenues



Source: Agilyx (historical data), DNB Markets (estimates)

EBITDA and profitability

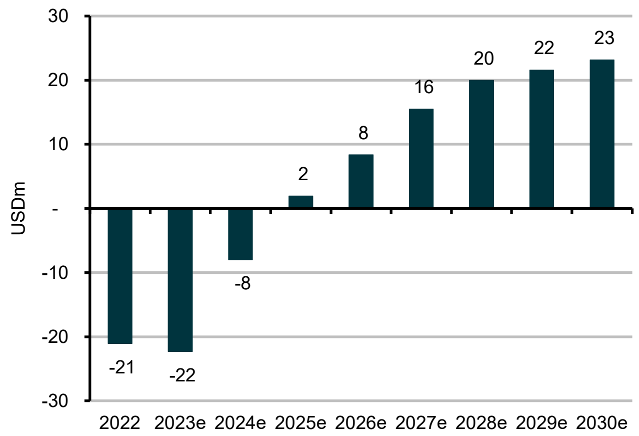
Based on the above numbers and some modest opex, we model EBITDA for the stand-alone Agilyx of USD-8m, USD2m and USD8m for 2024–2026e. Note that this does not include any contribution from Cyclyx other than the royalties paid from CCCs directly to the company, as this is consolidated with the equity method.

We model EBITDA for the stand-alone Agilyx of USD-8m, USD2m and USD8m for 2024–2026e

We also find it useful to look at a proportionate EBITDA for Agilyx that includes the contribution from its 50% stake in Cyclyx to assess the profitability of the entire company. When including Agilyx's pro-rata share of the EBITDA generated in Cyclyx, we arrive at proportionate EBITDAs of USD-5m, US2m and USD28m for 2024–2026e (we estimate that Cyclyx has three CCCs in operations at end-2026). We expect the proportionate EBITDA to continue to grow until 2028e as more CCCs enter operation, with the share of EBITDA from Agilyx's conversion business to decline in magnitude.

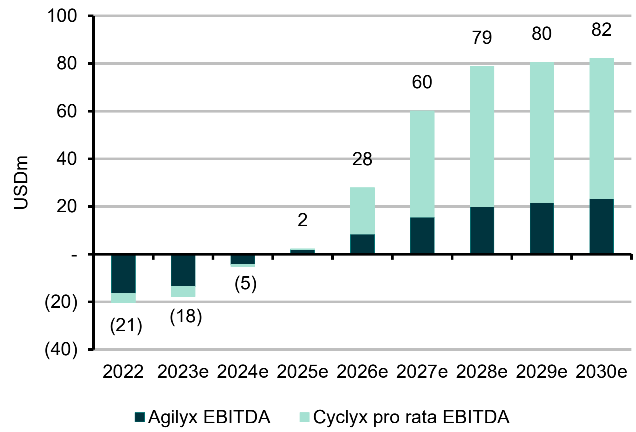
We expect the proportionate EBITDA to continue to grow until 2028e as more CCCs enter operation

Figure 20: Agilyx consolidated EBITDA



Source: Agilyx (historical data), DNB Markets (estimates)

Figure 21: Agilyx proportionate EBITDA

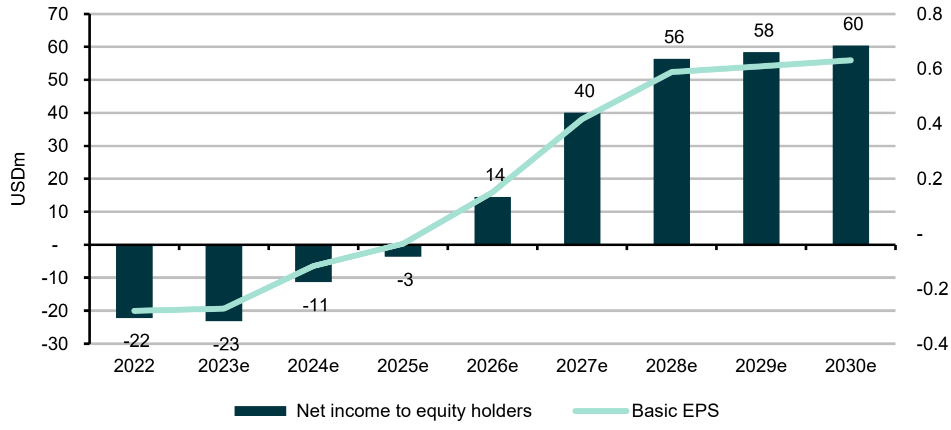


Source: Agilyx (historical data), DNB Markets (estimates)

Net profit and EPS

After equity consolidating Agilyx's 50% stake in Cyclyx and subtracting financial expenses, we arrive at the below net profit and EPS.

Figure 22: Net profit and EPS



Source: Agilyx (historical data), DNB Markets (estimates)

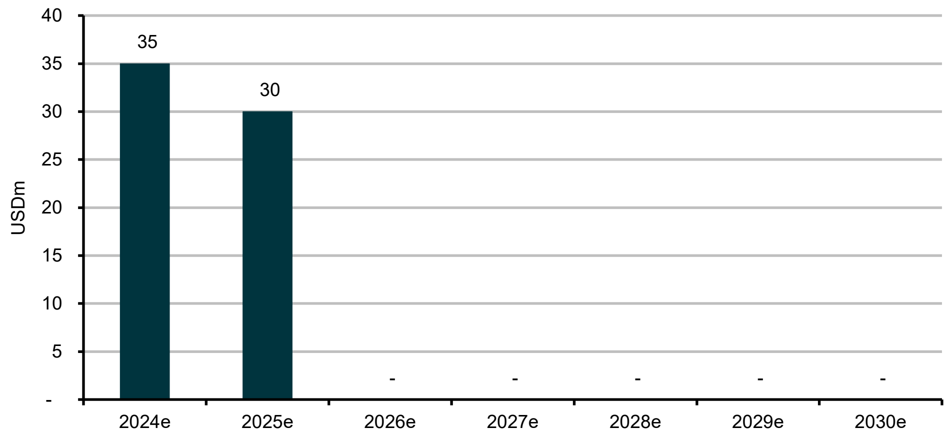
New capital needed to fund development

After switching to a BOO business model, the growth in Cyclyx has become more capital-intensive

After switching to a build-own-operate business model, the growth in Cyclyx has become more capital-intensive. We estimate that Cyclyx will need around USD210m in equity contribution before becoming self-funding. Half of this (USD105m) represents Agilyx's pro-rate share. We expect that some of the company's capital contributions into Cyclyx related to CCC2 that will not have any project debt could be financed by debt in Agilyx. Hence, we model the company to take up USD30m of debt in Q2 2024 at an interest rate of 12%, slightly below the company's repaid USD5m credit facility.

In addition, we estimate the company will need to raise USD57m in equity to finance its equity portion of the capex in CCC2 and CCC3. However, this will be highly sensitive to the amount of leverage taken on in Agilyx, future CCC LTVs, the pace and capital intensity of the growth in Cyclyx, as well as the development of the company's conversion business, which we forecast to become EBITDA-positive in 2025e.

Figure 23: Estimated equity need in Agilyx



Source: DNB Markets (estimates)

Valuation

We see a higher risk than for more mature industries

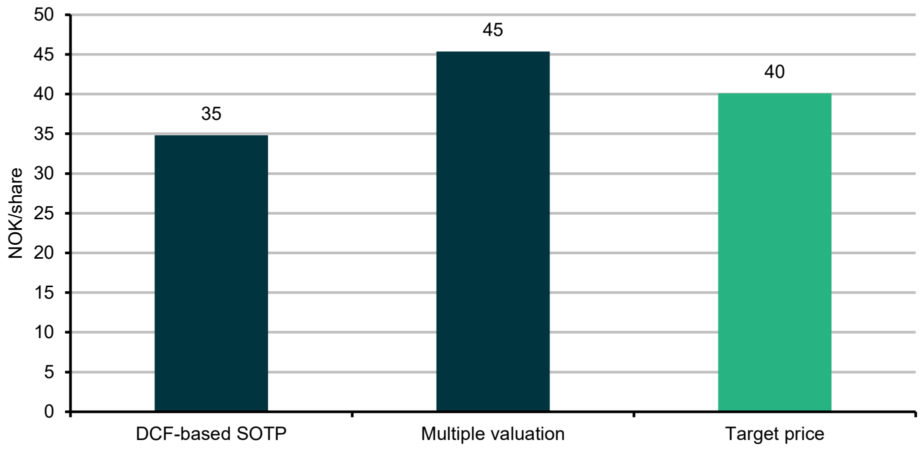
The valuation of Agilyx, and other companies involved the chemical recycling industry or other green and emerging industries, is subject to several uncertainties and external factors, including policymaking, cost development and technology scaling, which should ultimately affect the pace of market development. The plastic recycling industry has supportive growth prospects, with policymakers putting pressure on plastic manufacturers, driving new recycling capacity targets. However, the chemical recycling industry is only in its infancy; capacity is limited, and many of the technologies are still developing and scaling. Hence, we see a higher risk than for more mature industries.

We initiate coverage with a BUY and NOK40 target price

We have focused our valuation on a combination of a DCF-based SOTP, as well as discounted 2028e EV/EBITDA

We have focused our valuation on a combination of a DCF-based SOTP, as well as discounted 2028e EV/EBITDA multiples based on more mature industrial companies with a green angle. While we believe Cyclyx in particular looks set for steep growth in the years ahead, we have not included any contribution from plastic recycling facilities beyond CCC5. On this basis, we arrive at a target price of NOK40 and thus initiate coverage with a BUY recommendation.

Figure 24: Valuation overview



Source: DNB Markets

DCF-based SOTP

In our DCF-based SOTP, we discount the cash flows to equity for the stand-alone Agilyx as well as its 50% ownership in Cyclyx. When adjusting for the net cash position, positive effects from deferred tax assets, and a dilutive effect, we arrive at a fair equity value of NOK35/share.

Figure 25: DCF-based SOTP

Asset/segment	Status	Interest (%)	Weight	CoE	NPV (USDm)	NPV weighted (USDm)	NOK/ share
CCC1	Under construction	50%	100%	11%	26	26	2.9
CCC2	FID mid-2024	50%	100%	11%	24	24	2.7
CCC3	DNBe	50%	80%	11%	34	27	3.1
CCC4	DNBe	50%	80%	11%	32	26	2.9
CCC5	DNBe	50%	80%	11%	31	25	2.7
Royalty payments from CCCs to Agilyx		100%	88%	11%	88	78	8.7
NPV other Cyclyx		50%	100%	11%	4	4	0.5
Cash (net debt) position end-2023 ex. capex for first CCC		50%	100%	n.a.	21	21	2.4
Sum Cyclyx				**11%**	**260**	**230**	**25.8**
NPV of cash flows from Agilyx (ex. CCC royalty payments)		100%	70%	13%	149	104	11.7
Cash (net debt) position end-2023		100%	100%	n.a.	12	12	1.3
Sum stand-alone Agilyx				**13%**	**160**	**116**	**13.0**
NPV of deferred tax asset through 2030e (discounted at 12%)			100%		6	6	0.7
SOTP excl. dilutive effect					**427**	**352**	**39.4**
Dilutive effect							(4.7)
SOTP incl. dilutive effect							**34.8**

Source: DNB Markets

See below for a description of the different elements in our SOTP:

Cyclyx

For Cyclyx, we apply a cost of equity of 11%, as well as a 20% risking of the latter three CCCs

For Cyclyx, we apply a cost of equity of 11%, which reflects a risk-free rate of 4%, a market risk premium of 4.5%, a beta of 1 and a 1% technology risk premium to reflect that the company has not yet built CCCs at scale yet, although off-the-shelf sorting machines are applied, as well as a 1.5% liquidity risk premium. With the CCCs having offtake agreements with a guaranteed return on investment, we have not added any premium related to merchant risk.

Based on the first five CCCs (where we risk the latter three with 20% due to higher uncertainty) the overhead costs in Cyclyx, the royalty payments to be paid directly to Agilyx from the CCCs, and our assumed cash position in Cyclyx per end-2023, we arrive at an equity value of NOK26/share from Agilyx's 50% stake in Cyclyx.

Agilyx's conversion business

We arrive at a fair value of USD104m for the conversion business

For the stand-alone Agilyx excluding contributions from royalty payments, we have carried out a DCF through 2030e when we apply an exit EV/EBITDA multiple of 11x, in line with the peer-group multiples shown below for mature 'green' industrial companies. We apply a CoE of 13%, higher than that for Cyclyx, to reflect the higher underlying risk related to conversion contracts and less proven technology. Based on this, a 30% risking and an estimated net cash position of USD12m at end-2023, we arrive at a fair value of USD104m for the conversion business.

We stress that a DCF analysis of Agilyx's conversion business would be sensitive towards a number of uncertainties

We stress that a DCF analysis of Agilyx's conversion business would be sensitive towards a number of uncertainties, including market growth trajectory, its assumed market share, future profitability and margins, required investment levels and working capital trends. In addition, with limited consensus available and different business models for Agilyx and peers, we find it difficult to benchmark our valuation to listed chemical conversion companies in a proper manner.

Yet, when taking a very simplified approach looking at our value of Agilyx's conversion business versus the market cap of Nordic listed chemical conversion companies, we find our valuation to largely be in line. Quantafuel had a market cap of USD167m before de-listing in February 2024, while the market cap of Pyrum Innovations is USD142m. However, Pryme is trading well below this at USD48m.

Figure 26: Valuation of Agilyx's conversion business (unrisked)

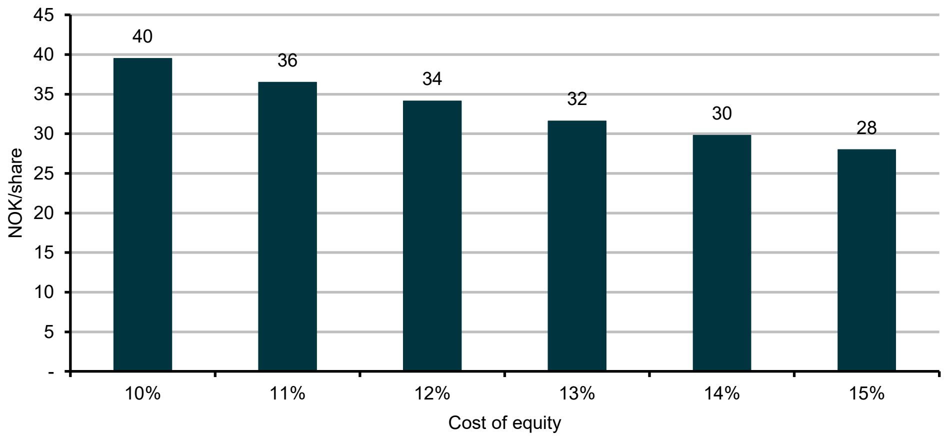
USDm	2024e	2025e	2026e	2027e	2028e	2029e	2030e	Exit multiple	Terminal
EBITDA	**-4**	**2**	**8**	**16**	**20**	**22**	**23**	11.0x	**255**
- Tax	1	0	-1	-3	-3	-4	-4		
- Capex	-1	-1	-1	-1	-1	-1	-1		
- Change in working capital	0	-1	-3	-1	0	0	0		
- Interest cost	-2	-4	-4	-4	-4	-4	-4		
- Debt repayments	0	0	0	0	0	0	0		
FCFF	**-6**	**-4**	**0**	**8**	**12**	**13**	**14**		**255**
Discount factor	100%	88%	78%	69%	61%	54%	48%		48%
FCFF present value	**-6**	**-3**	**0**	**5**	**7**	**7**	**7**		**122**
NPV 2024e-2030e									17
Terminal value									122
Mid-year adjustment									9
Value conversion business									**149**

Source: DNB Markets (estimates)

Sensitivity

Below, we have carried out a sensitivity analysis based on changes to the company's cost of equity. Assuming costs of equity of 11% and 13% for Cyclyx-related cash flows and Agilyx's conversion business, respectively, our base case CoE is 11.7%.

Figure 27: Fair equity value sensitivity to changes in CoE



Source: DNB Markets

Earnings multiples valuation

As peak profitability for Agilyx and Cyclyx is some years out in time, and the market growth looks to be strong, we have carried out an EV/EBITDA valuation based on 2028e, when the company has a full-year contribution from its first five CCCs on our estimates.

As there are a lack of relevant EV/EBITDA multiples among chemical recycling peers, we have looked at more mature industrial companies with a green profile. We believe this makes sense as chemical recycling will likely be more mature a few years out in time, but further growth opportunities will still be present. These are trading on EV/EBITDAs of 13.8x–10.0x for 2024–2026e on average.

As there are a lack of relevant EV/EBITDA multiples among chemical recycling peers, we have looked at more mature industrial companies with a green profile

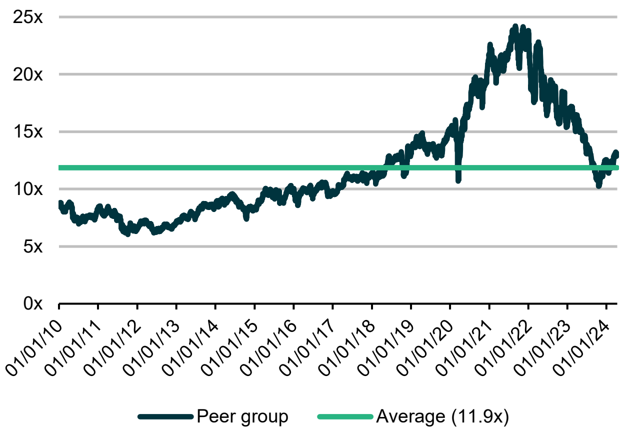
Figure 28: Green industrials peer group

Company	Mkt. Cap. (USDm)	EV/EBITDA (x) 2024e	EV/EBITDA (x) 2025e	EV/EBITDA (x) 2026e	EV/EBIT (x) 2024e	EV/EBIT (x) 2025e	EV/EBIT (x) 2026e	P/E (x) 2024e	P/E (x) 2025e	P/E (x) 2026e	EBITDA margin (%) 2024e	EBITDA margin (%) 2025e	EBITDA margin (%) 2026e
Tomra Systems	4,162	16.1x	13.3x	11.5x	25.8x	20.2x	16.9x	36.5x	27.8x	23.1x	20%	22%	22%
Envipco	309	11.9x	7.6x	5.0x	17.4x	10.4x	6.3x	23.4x	13.9x	8.6x	18%	20%	22%
Neste	23,119	7.8x	6.8x	6.4x	11.2x	9.3x	8.8x	12.1x	10.3x	9.3x	13%	14%	14%
Vestas	27,916	14.4x	9.4x	7.8x	28.8x	14.1x	11.4x	43.2x	20.8x	16.4x	10%	13%	14%
Beijer Ref	7,333	19.0x	17.5x	15.3x	24.1x	22.0x	19.4x	33.0x	29.5x	26.1x	13%	13%	13%
Rockwool	7,301	8.7x	8.1x	7.5x	13.2x	12.2x	11.3x	17.7x	16.4x	15.1x	21%	21%	21%
NKT Cables	4,689	13.1x	12.7x	10.3x	19.2x	18.4x	15.4x	25.7x	24.2x	22.3x	11%	12%	12%
Nibe	9,742	16.5x	13.6x	12.5x	22.6x	17.8x	15.2x	27.4x	22.1x	19.3x	16%	17%	17%
Average		**13.8x**	**11.6x**	**10.0x**	**20.3x**	**15.9x**	**13.5x**	**27.0x**	**20.8x**	**17.8x**	**16%**	**17%**	**18%**
Median		**14.4x**	**12.7x**	**10.3x**	**20.2x**	**17.8x**	**15.2x**	**25.7x**	**22.1x**	**19.3x**	**16%**	**17%**	**17%**

Source: Bloomberg (underlying data), DNB Markets (further calculations)
Note: Share prices as of 9 April 2024

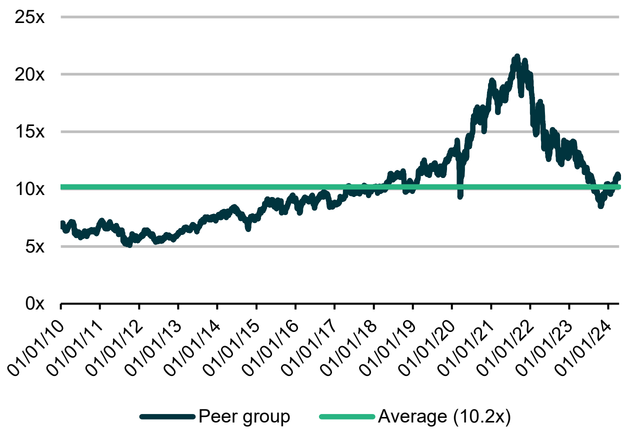
This is largely in line with where the peer group has traded historically, with an average one-year forward EV/EBITDA of 11.9x and an average two-year forward figure of 10.2x since 2010.

Figure 29: One-year forward EV/EBITDA green industrial peer group



Source: Bloomberg (underlying data), DNB Markets (further calculations)
Note: Share prices as of 9 April 2024

Figure 30: Two-year forward EV/EBITDA green industrial peer group



Source: Bloomberg (underlying data), DNB Markets (further calculations)
Note: Share prices as of 9 April 2024

Based on the above peer group, we apply 11x EV/EBITDA as our base case. With Cyclyx's underlying EBITDA not being consolidated, we apply the multiple to a proportionate EBITDA including 50% of Cyclyx's EBITDA, which is discounted back to today at 10% (13% for Agilyx's conversion business and 8.6% for Cyclyx), see appendix for further details about the WACCs applied. We then adjust for the net present value of future capex needs and the company's deferred tax asset (discounted at 6%), the current net debt level and the dilutive effect from forecast future equity raises, options and warrants to arrive at the equity value. In our base case, we arrive at a fair value of NOK45/share.

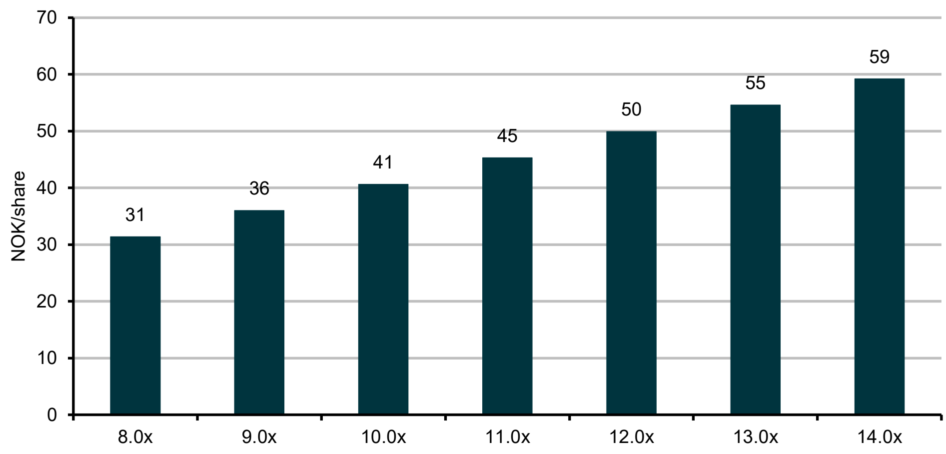
Figure 31: Discounted 2028e EV/EBITDA valuation

USDm	Agilyx	Cyclyx pro rata	Combined	Combined (NOK/share)
2028e EBITDA	20	59	79	8.8
Discount rate	13.0%	8.6%	10%	10%
2024e EBITDA	**12**	**42**	**55**	**6.1**
EV/EBITDA	11.0x	11.0x	11.0x	11.0x
2024e EV	**135**	**466**	**601**	**67.3**
Net debt end-Q4/23e	-12	-21	-33	-3.7
NPV of remaining capex end-Q4/23e (discounted at 6%)	-15	189	174	19.5
NPV of deferred tax asset end-Q4/23e (discounted at 6%)			16	1.8
Equity value	**162**	**298**	**476**	**53.3**
Dilutive effect				-8.0
Equity value incl. dilutive effect				**45.3**

Source: DNB Markets (estimates)

Below, we show sensitivities for a 2028e EV/EBITDA range of 8–14x.

Figure 32: Fair value sensitivity to 2028e EV/BITDA



Source: DNB Markets (estimates)

‘What if’ scenario

If the market for chemical recycling takes off…

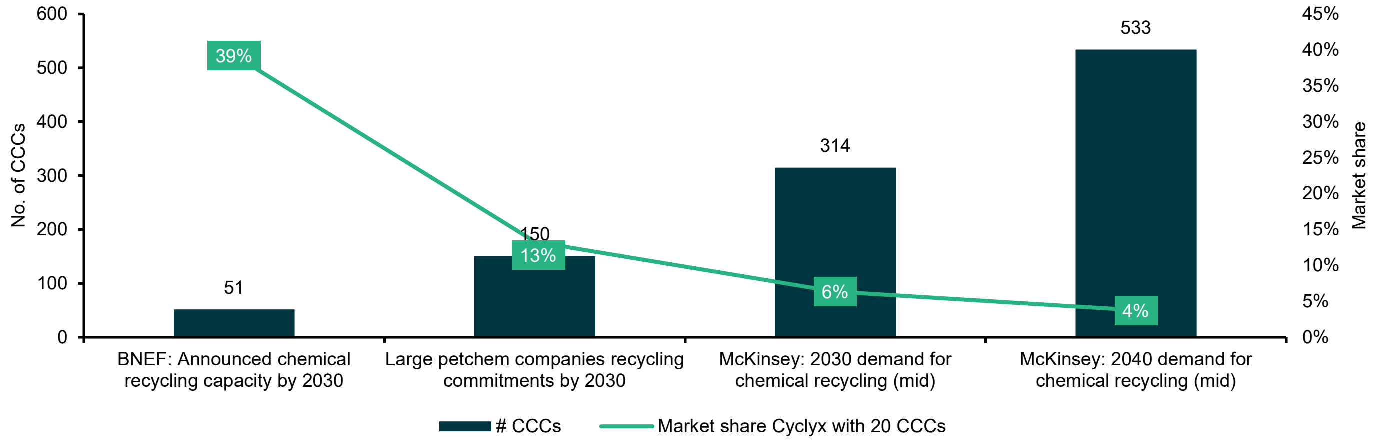
If the market for chemical recycling takes off, we believe there could be substantial potential demand for Cyclyx’s waste plastics management services beyond the first five CCCs. Further demand is well supported by the expected market development:

- Announced chemical recycling capacity of 5.4mtpa by 2030 suggests demand for 51 CCCs;
- Identified commitments by petrochemical companies (see names in note in chart below) of 15.8mtpa by 2030 suggests demand for 150 CCCs; and
- McKinsey estimates demand for chemical recycling of 33mtpa, or 314 CCCs by 2030 and 55mtpa or 533 CCCs by 2040.

…assuming that Agilyx builds another 15 CCCs…

Hence, we have carried out an analysis of how the value of Agilyx would be affected by more CCCs with similar returns, as indicated by the company for the first five CCCs. We have assumed that Agilyx builds another 15 CCCs, which together with the five near-term CCCs already indicated brings the total number to 20. We estimate that these CCCs become operational in 2028–2041. The 20 CCCs correspond to a market share of ~40% based on already announced chemical recycling capacity, but to relatively modest market shares based on large petrochemical companies’ demand by 2030 and McKinsey’s market forecasts.

Figure 33: CCC demand versus market share for 20 CCCs

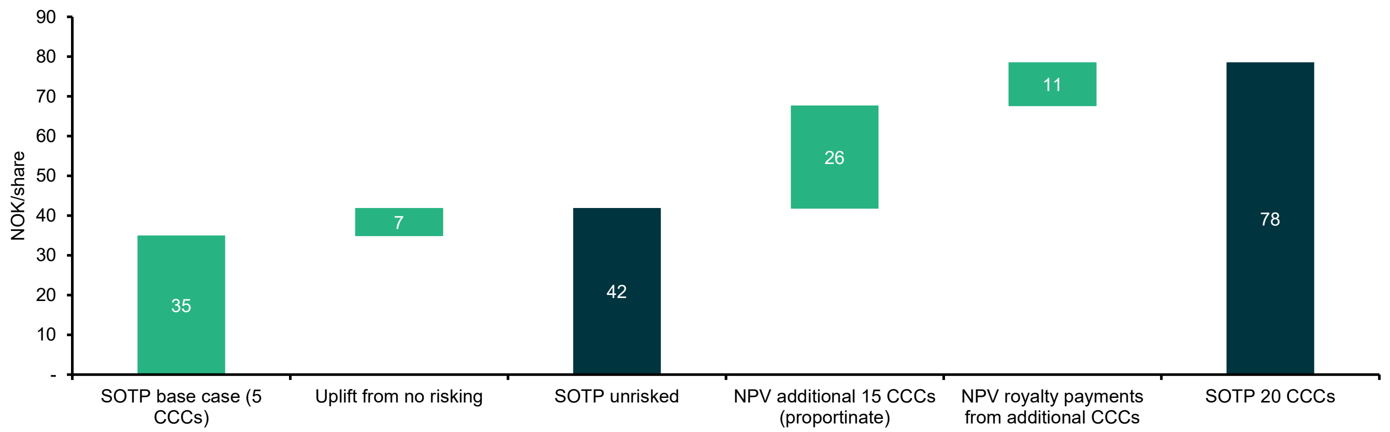


Source: BNEF, McKinsey, and companies (underlying data), DNB Markets (further calculations)
Note (1): Assume CCC capacity of 178ktpa, with output of 105kpta for chemical recycling, in line with company indications
Note (2): Large petrochemical companies include: Dow, LyondellBasell, Borealis, Indorama Ventures, Braskem, SCG, TotalEnergies, SABIC, Lotte Chemical, INEOS, ExxonMobil, Advanced Drainage Systems, Chevron Phillips Chemical

When not risking our base-case SOTP, and adding the net present value of 15 CCCs to our SOTP with 15% unleveraged IRR over 15 years of operations and the net present value of the royalty payments from the additional CCCs, we arrive at an equity value of NOK78/share. This suggests there could be significant upside potential to our NOK40 target price if demand is higher than for the initial five CCCs. With solid cash flow generation from operative CCCs, we believe the company should have sufficient balance sheet capacity to fund this growth.

…there could be significant upside potential to our target price

Figure 34: SOTP upside potential with no risking and 15 additional CCCs



Source: DNB Markets
Note: Assume 15% unlevered IRR for the CCCs over 15 years of operations. With 75% LTV at 7% interest, this corresponds to 30% levered IRR

Attractive returns versus renewable energy assets

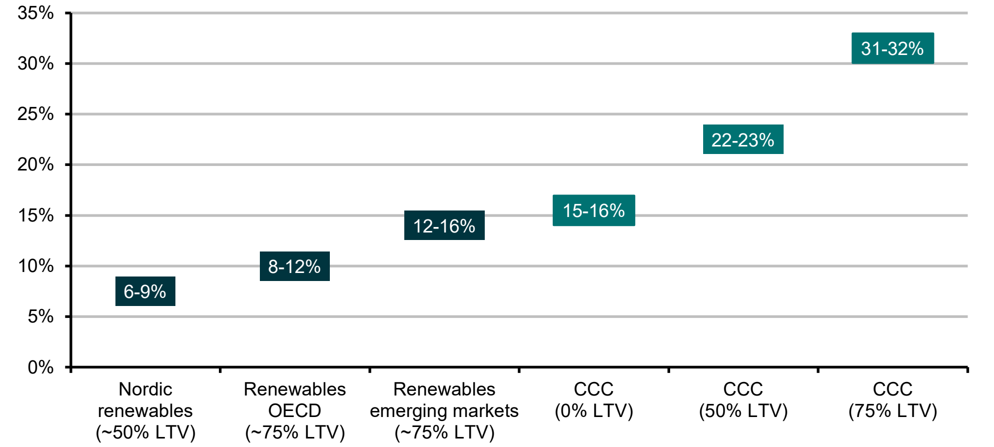
With Cyclyx's CCCs having offtake agreements covering volumes and prices over the majority over their lifetime to lock in a specific return on investment, we see clear parallels to renewable energy-producing assets. Hence, we find it relevant to compare asset returns.

Below, we have set up an overview of equity IRRs for renewable energy investments versus Cyclyx's CCCs. Leveraged returns for renewable energy assets in OECD countries are normally in the 6–12% range, depending on leverage, and higher in emerging markets due to higher country-specific risks. Here, we estimate leveraged IRRs of 12–16% at ~75% LTV. As a result, the high end for power plants in emerging markets equals the guaranteed unleveraged return of 15% for the CCCs Cyclyx is building with ExxonMobil and LyondellBasell.

CCC risk/return profile attractive versus renewable energy assets

When adding leverage to the CCCs, which we understand Cyclyx is allowed to do from CCC3 and onwards, the return on equity increases, and we estimate equity IRRs of 22–23% at 50% LTV and an interest rate of 7%, and 31–32% for 75% LTV. This means 2x returns for renewable energy assets in emerging markets, and 3x returns in OECD countries for projects with a similar LTV. Note that the returns only include pure-project returns to Cyclyx, and royalty payments made directly to Agilyx from the CCCs would come on top of this. While we acknowledge that the risk profile of Cyclyx and its CCCs is higher than for mature renewable energy assets, and that this should warrant higher returns, we consider the risk/return profile attractive.

Figure 35: Equity IRR by technology and LTV



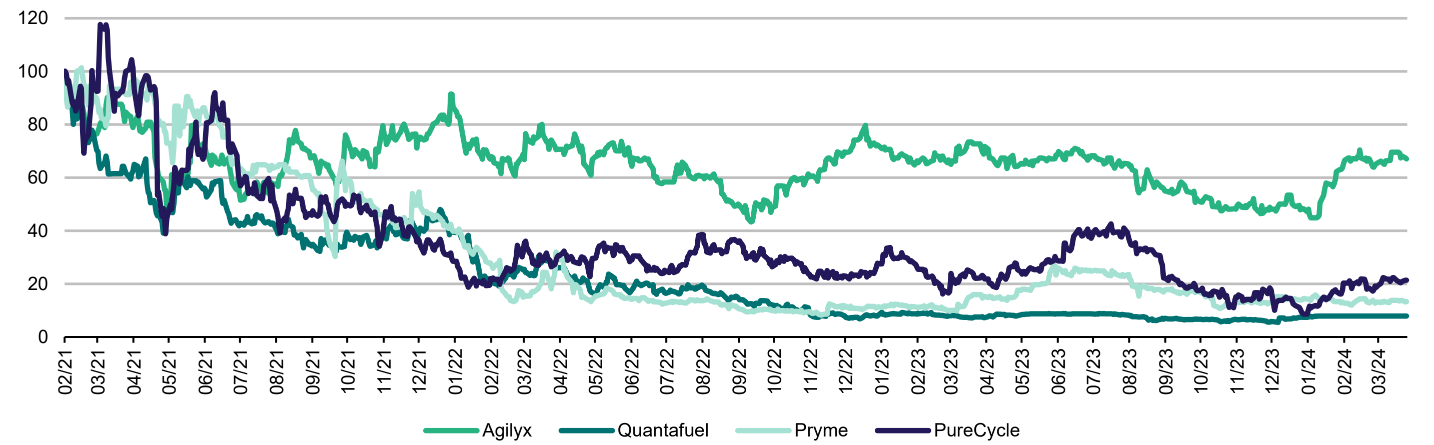
Source: DNB Markets
Note: CCC leveraged IRR based on 7% cost of debt

Chemical recycling in the capital markets

Along with the rest of the green industries, chemical recycling stocks benefitted from low interest rates and increasing focus on and capital flows toward renewable investments in 2020–2021. Since then, they have sold off on the back of higher interest rates, market headwinds and broken promises to the capital markets. As seen in the chart below, there are large differences in how the companies have traded. While Agilyx has held up relatively well, trading 33% below peak levels, other listed names with exposure to the chemical recycling industry have declined by 80%+ from peak.

Since 2021, chemical recycling stocks have sold off on the back of higher interest rates, market headwinds and broken promises to the capital markets

Figure 36: Share price development for listed chemical recycling companies (indexed)



Source: Bloomberg (underlying data), DNB Markets (further calculations)
Note: Share prices as of 9 April

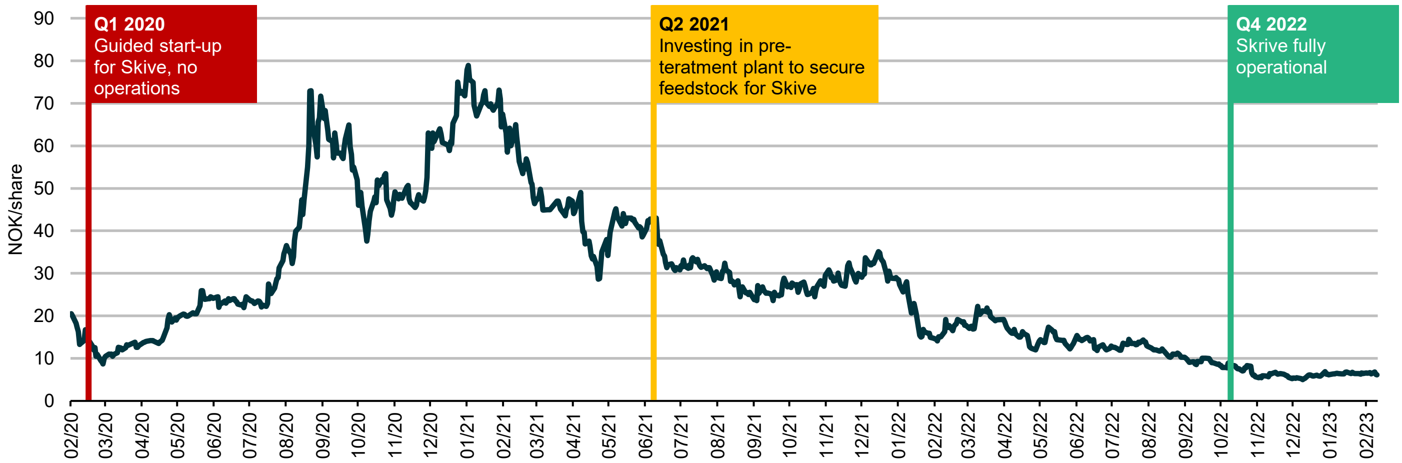
The rise and fall of Quantafuel

We consider Quantafuel the most well-known chemical recycling name in the Nordic capital markets. As shown in the share price chart below, the company benefitted from the beneficial market for green stocks in 2020–2021. Then, the stock took several hits from broken promises related to its pyrolysis plant in Skive, Denmark. When listed in Q1 2020, Quantafuel guided for an operational start-up in the same quarter. However, the start-up process proved to be much lengthier than expected on a combination of equipment failures, operational challenges due to lack of proper feedstock, and Skive did not become fully operational until late 2022.

We believe Quantafuel's story has been important in the capital markets' perception of chemical recycling companies. It shows that there can be many bumps in the road to scaling chemical conversion technology, and that access to properly sorted feedstock has been one of them.

There can be many bumps in the road to scaling chemical conversion technology

Figure 37: Quantafuel share price and key milestones of Skive pyrolysis plant



Source: Bloomberg (underlying data), DNB Markets (further calculations)

Agilyx has a different business model from other listed chemical recyclers

Being a part of the chemical recycling market, Agilyx is subject to a lot of the same market drivers as other listed names in the space. However, we believe that its high focus on Cyclyx in the 'waste to feedstock' part of the value chain differentiates it from the pure-play pyrolysis companies in terms of technological and commercial risks.

We believe that its high focus on Cyclyx in the 'waste to feedstock' part of the value chain differentiates it from the pure-play pyrolysis companies…

Technology risk

Pyrolysis plants have proven more expensive and difficult to scale up than initially thought, illustrating the high technological risk associated with companies that build, own and operate such plants. With the stand-alone Agilyx having a capital-light business model with licencing of technology, we see a somewhat lower risk than for the companies having full plant responsibility. Cyclyx uses off-the-shelf sorting technology together with its proprietary plastic database, leaving limited technology scaling risk. Investments from ExxonMobil and LyondellBasell eliminate capex risk for the first CCC, and co-investments also reduce the risk for the subsequent CCCs.

…whose operations have proven more expensive and difficult to scale up than initially thought

Commercial risk

High interest rates and project costs have put pressure on project economics for pyrolysis companies, resulting in project delays. On the back of the challenging project economics in recent years, as well as high competition in the pyrolysis space (see Market Overview section), the commercial risk seems high, in our view.

We see low commercial risk for Cyclyx's initial two CCCs, which have offtake agreements with ExxonMobil and LyondellBasell in which offtake volume and price are pre-determined. We view the commercial risk as higher for CCCs to be built for other parties, and believe limited new pyrolysis capacity could constrain growth. That said, the limited competition within feedstock sourcing, access to proper plastic feedstock being a key bottleneck in the industry and Cyclyx having the flexibility to work with a broad variety of plastic manufacturers and pyrolysis companies (i.e. not only ExxonMobil and LyondellBasell) lead us to believe it has several avenues for growth.

We see low commercial risk for Cyclyx's initial two CCCs, which have offtake agreements with ExxonMobil and LyondellBasell

Figure 38: Differences in business models of chemical recycling companies

	Cyclyx	Agilyx (conversion)	Quantafuel	Pryme	Pyrum
Placing in value chain	Waste to feedstock	Feedstock to product	Feedstock to product	Feedstock to product	Feedstock to product
Plastic focus	All	Polystyrene, PMMA, BTX	Mixed waste plastics	Mixed waste plastics	Tyres
Business model	Build-own-operate/ licensing	Licensing of technology	Build-own-operate	Build-own-operate	Build-own-operate
Strategic partners/owners	Yes	To some extent	Yes	Yes	To some extent
Technological risk	Low	Medium	High	High	High
Commercial risk	Medium	High	High	High	High

Source: DNB Markets

Company overview

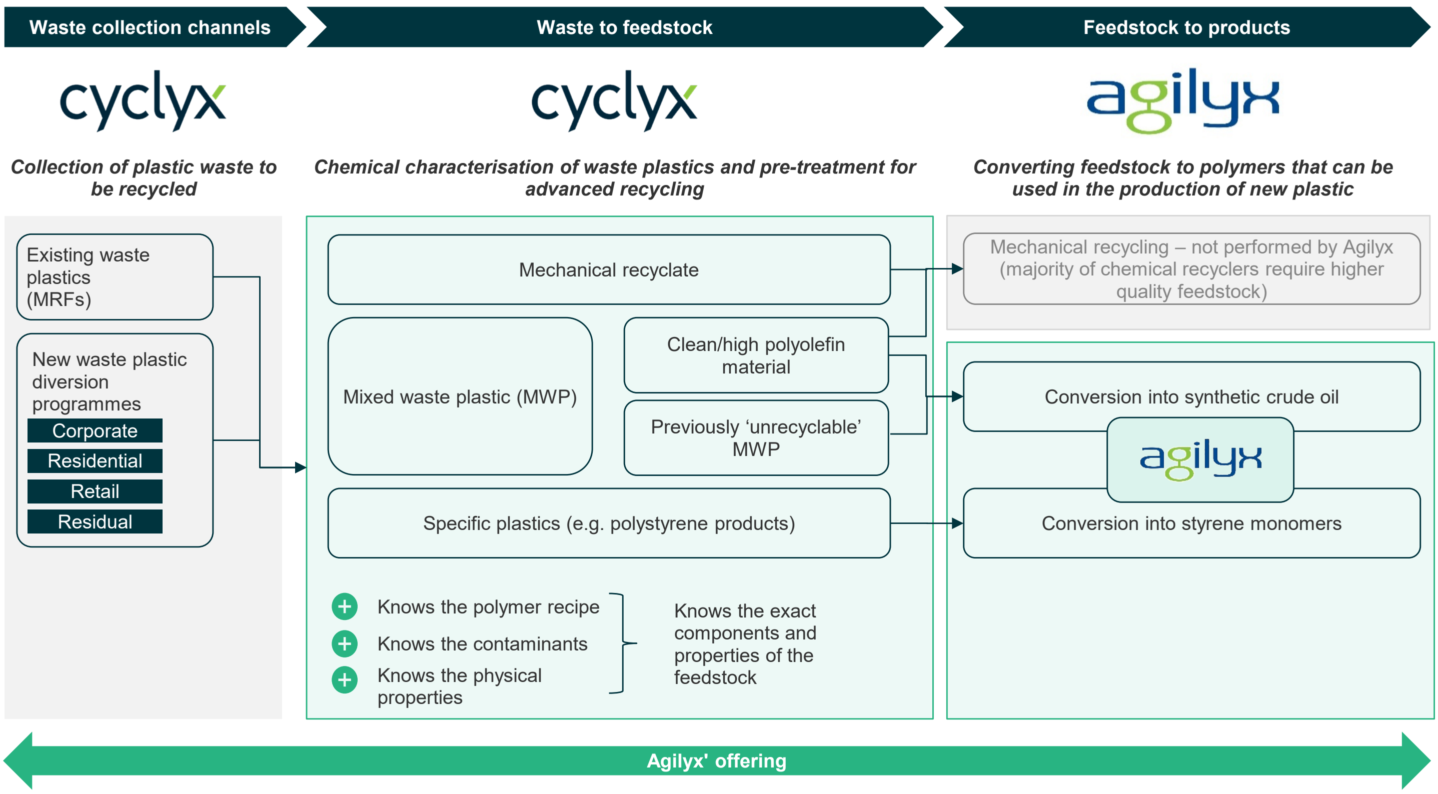
Leveraging on two decades of technology development, Agilyx offers an integrated solution across the value chain for chemical recycling of plastics: from waste collection to chemical characterisation, sorting and pre-treatment to the chemical decomposition of the plastic resins. The main focus of the company is on the sourcing and sorting of waste plastics through its 50% owned subsidiary, Cyclyx, which resolves a key bottleneck in the chemical recycling industry, namely access to proper plastic waste feedstock for chemical recycling.

Agilyx offers an integrated solution across the value chain for chemical recycling of plastics

- **Cyclyx.** Cyclyx sources plastic waste through various collection channels, and sorts it based on its physical properties, contaminants and polymer recipe to provide custom plastic waste feedstock blends based on customer requirements. Cyclyx primarily operates under a build-own-operate model for its circularity centres based on its proprietary plastic database and off-the-shelf sorting technology called Cyclyx Circularity Centres (CCCs), which is the only large-scale initiative for sourcing waste for chemical recycling that we are aware of. However, it is also free to license the technology to third parties.
- **Agilyx's conversion business.** The chemical conversion business focuses on areas where the company has a differentiated technology, e.g. on monomer recycling with conversion of plastic to a tradable product. This part of the company has an asset-light business model with licensing of conversion technology.

The company has 117 employees and a global presence, with offices across the US and several locations in Europe, and operations in North America (Portland and Houston) and Asia, with its first commercial chemical recycling plant about to enter operation in Japan.

Figure 39: Company overview



Source: Company (underlying data), DNB Markets (structuring)

Shift in focus from conversion technology to 'waste to feedstock'

Despite only being a listed company since 2020, Agilyx builds on two decades of history and technology development since the foundation of Plas2Fuel in 2004. From its inception through 2015, the company focused on developing its technology platform for converting non-recyclable mixed waste plastics into high-quality synthetic crude oil.

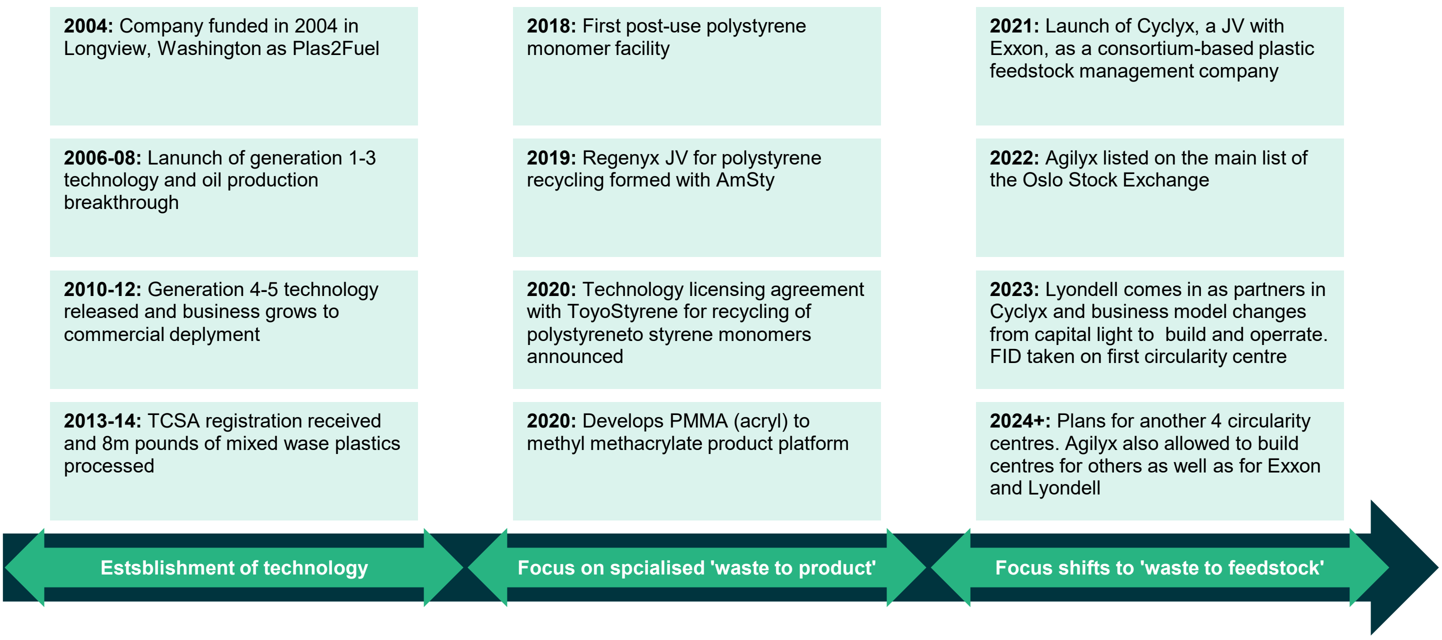
Agilyx builds on two decades of history and technology development

However, with declining crude oil prices, the company shifted its focus to petrochemical products, by designing systems to convert various waste plastics back into virgin-equivalent plastics. The company particularly focused on converting polystyrene into styrene monomer oil that could be purified and then used for any virgin-equivalent application such as food-grade polystyrene, for which it created a JV with AmSty (Regenyx). The company also developed a PMMA (acryl) to methyl methacrylate product platform with Mitsubishi.

Recently, focus has shifted more towards the 'waste to feedstock' part of the business that sits in the 50%-owned subsidiary Cyclyx that was established in 2021. Through Cyclyx, the company started addressing the challenge of how to source and process plastic waste, which is currently one of the key bottlenecks in the chemical recycling industry. At first, the Cyclyx business was thought to be capital-light, similar to the conversion business, but there was a change in strategy last year when the company, with partners ExxonMobil (25% ownership) and LyondellBasell (25% ownership) decided on a build-own-operate model. With Cyclyx looking set for rapid growth in the years ahead, Agilyx is moving strategically to deploy capital and management resources towards the scaling of Cyclyx.

Agilyx is moving strategically to deploy capital and management resources towards the scaling of Cyclyx

Figure 40: Company history and key focus



Source: Company (underlying data), DNB Markets (structuring)

Cyclyx well placed to grow in the 'waste to feedstock' market

With sourcing of proper plastic feedstock being a key bottleneck in the plastics recycling industry, we consider Cyclyx well placed to scale in the 'waste to feedstock' market. The company plans to build multiple advanced plastic feedstock processing assets for chemical and mechanical plastic recycling based on a proprietary plastic database with detailed information about contaminants, chemical recipes and conversion pathways, as well as conventional sorting technology (Cyclyx Circularity Centres, CCCs). This is the only large-scale initiative for sourcing waste for chemical recycling that we are aware of. Co-investments in Cyclyx itself and the circularity centres by ExxonMobil and LyondellBasell reduce risk and guarantee 15% unleveraged IRR plus royalty payments to Agilyx for facilities where they are involved provide solid project economics, in our view.

Co-investments in Cyclyx and the circularity centres by ExxonMobil and LyondellBasell reduce risk and guarantee 15% unleveraged IRR plus royalties

Cyclyx Circularity Centres

See below for a more detailed description of the CCC 'waste to feedstock process'.

Waste collection

Cyclyx utilises its knowledge about plastic properties, built over two decades, and predicative AI modelling to source suitable plastic waste to its CCCs. The centres can accept plastics across the entire mixed waste plastic market. They are designed to handle all types (types 1–7 and non-classified plastics), as well as all physical properties (films, foams and rigids). However, the type of plastic input can be customised to the customer's requirement.

Its CCCs can accept plastics across the entire mixed waste plastic market as well as all physical properties

Quality insurance/sorting

The CCCs use off-the-shelf sorting technology, but the company adds value though its chemical database that it has developed over 20 years. This helps sorting based on physical properties, contaminants as well as the polymer recipe and allows for building customer recipes based on individual customer requirements. There is no one-size-fits-all when inputting for chemical conversion, and different technologies and output products call for different plastic waste inputs. The main focus for CCCs is plastic waste that can be used for chemical recycling, and the mechanical recyclate and other commodities are separated during the sorting process and can be sold separately.

The company adds value though its chemical database that it has developed over 20 years

Processing

After the plastic waste is sorted, it is processed and sent by trucks to begin the chemical conversion process. Cyclyx has the ability to certify ISC+ compliance from source through prepared feedstock delivery. When arriving at the conversion site, feedstock should meet the chemical and physical requirements of the further downstream processes.

Figure 41: The Cyclyx circularity centre waste to feedstock process

1. **Waste collection:** Plastic waste entering the Circularity Centre by truck
2. **Quality ensurance:** Plastic waste entering on-site lab for spot testing
3. **Waste sorting:** Off-the-shelf plastic sorting machines used for sorting based on: Polymer recepie, contminants, and physical properties
4. **Processing:** Processing of the sorted plastics such as shredding. The processed plastics is then shiped by trucks the chemical or mechanical recycling

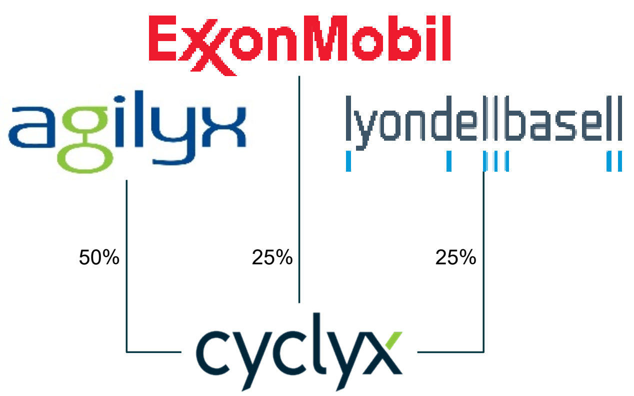
Source: Agilyx

Strong backing from industrial partners…

Our impression of access to proper feedstock being a key industry bottleneck is backed by the strong interest in Cyclyx from plastics manufacturers, pyrolysis and brand companies. The biggest interest is seen from petrochemicals companies ExxonMobil and LyondellBasell, which are at the forefront of pyrolysis technology. Both have co-invested in Cyclyx, owning 25% each. In addition, a variety of market participants have joined the Cyclyx consortium to help with sourcing of feedstock for chemical recycling. We believe these are potential new CCC clients.

A variety of market participants have joined the Cyclyx consortium to help with sourcing of feedstock for chemical recycling

Figure 42: Cyclyx ownership overview



Source: Agilyx

Figure 43: Selected members of the Cyclyx consortium

Source: Agilyx

…reduces the risk of Cyclyx's business case

ExxonMobil and LyondellBasell are investing both in Cyclyx and directly into the CCCs. In our view, the investments validate the Agilyx-developed know-how about plastic contaminants and chemistries and significantly reduce construction and operational risks. For the first CCC, ExxonMobil and LyondellBasell cover all of the USD120m in capex and working capital. The companies also take all the operational risk, leaving Agilyx only with risk related to the sourcing of plastic waste, for which agreements were in place prior to the FID. For future CCCs, Agilyx will invest its pro-rata capex, but will not take operational risk on the CCCs with ExxonMobil and LyondellBasell. However, Cyclyx is able to build or license CCCs for other customers, where feedstock is sold at market prices. This entails a higher risk, but also likely higher returns.

Cyclyx is able to build or license CCCs for other customers, where feedstock is sold at market prices

Solid project economics for circularity centres

Although Cyclyx has flexibility in its business model, allowing for both build-own-operate (BOO) and licencing, it is our base case that the initial CCCs with ExxonMobil and LyondellBasell will be under a BOO model, and that a licencing model will be applied for third parties.

Our base case is that the initial CCCs with ExxonMobil and LyondellBasell will be under a BOO model

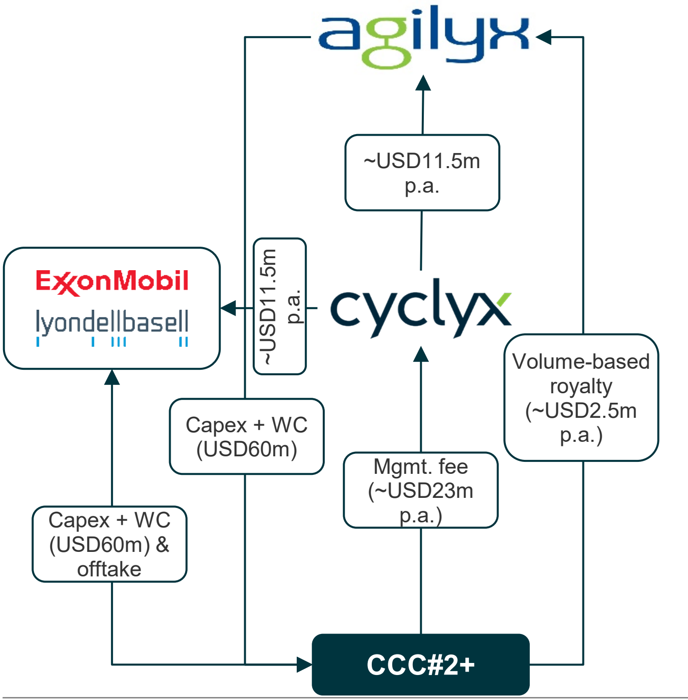
The first CCC reached FID in December and will have capacity of 178ktpa. Of this, the company expects 105ktpa of output feedstock for chemical recycling and 31ktpa for mechanical recycling. With no capex risk as ExxonMobil and LyondellBasell bear all the capex, returns for the first CCC will be lower for Agilyx than for subsequent CCCs, where the company is expected to take its pro-rata share of the capex. Here, the CCC will pay an annual USD7m in management fees to Cyclyx, where Agilyx is entitled to 50%. On top of this, Agilyx receives USD2.5m in annual royalties for use of intellectual property. We expect the CCC to have a lifetime of 20 years.

For subsequent CCCs with ExxonMobil and LyondellBasell, Agilyx looks set to contribute its pro-rata share of the capex. Parts of Agilyx's capex are likely to be funded by project or debt finance. We understand that ExxonMobil and LyondellBasell have committed to an IRR (to EV) for Cyclyx of 15% for future CCCs over the first 15 years of operations. Based on this and USD100m in capex, annual cash generation is guided at USD23m, and therefore USD11.5m for Agilyx. This reflects prices below market terms to take account for ExxonMobil and LyondellBasell guaranteeing the offtake. Agilyx estimates potential cash flow generation of ~USD30m per year if all feedstock were to be sold at market rate. All CCCs would generate a volume-based royalty. This corresponds to around USD2.5m per year for a 178ktpa facility.

For subsequent CCCs with ExxonMobil and LyondellBasell, Agilyx looks set to contribute its pro-rata share of the capex…

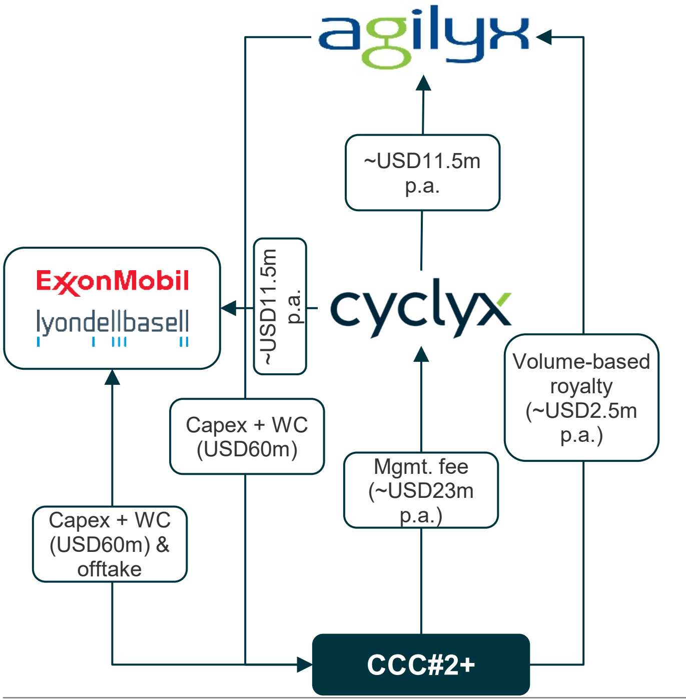
…likely to be part-funded by project or debt finance

Figure 44: Expected cash flow structure CCC1



Source: Agilyx

Figure 45: Expected cash flow structure CCC2 onwards



Source: Agilyx

See below for our key assumptions applied for CCCs.

Figure 46: Key assumptions for Agilyx's proportionate share in CCCs with ExxonMobil and LyondellBasell

	First CCC	Further CCCs (unlevered)	Further CCCs (levered)
Output capacity (ktpa)	178	178	178
Lifetime (years)	20 (15+5)	20 (15+5)	20 (15+5)
Capex (USDm)	0	50	50
Annual cash flow (USDm)	3.5	11.5	11.5
LTV (%)	0%	0%	75%
Cost of debt (%)	n.a.	n.a.	7%
Annual royalty payments to Agilyx (USDm)	2.5	2.5	2.5

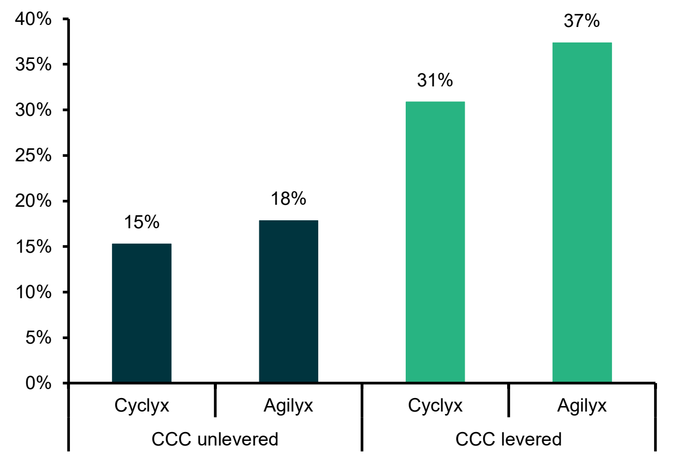
Source: Agilyx (underlying data), DNB Markets (assumptions about LTV and cost of debt)

Based on the data above, we estimate 15% unlevered IRR for the CCCs on a stand-alone basis for Cyclyx when assuming 15 years of operational lifetime. When including Agilyx's royalty payment, we estimate that it could achieve an IRR of 18%. This corresponds to payback times of 5.4 and 4.8 years, respectively, versus the expected facility lifetime of 15–20 years.

We estimate IRRs of 31% for Cyclyx stand-alone and 37% for Agilyx when including royalty payments

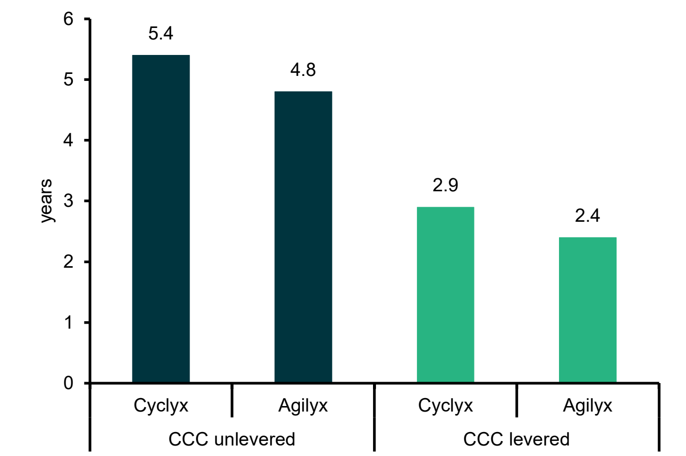
We consider it likely that part of Agilyx's investments will be covered by debt for subsequent CCCs after the first CCC has commenced operations and de-risked the operational risk. Given the offtake agreements with ExxonMobil and LyondellBasell, where both volumes and prices are pre-determined, we believe the CCCs can attract relatively high LTVs and have applied 75% in our calculations below. With this and an assumed cost of debt of 7%, we estimate IRRs of 31% for Cyclyx stand-alone and 37% for Agilyx when including royalty payments. We forecast even shorter payback times for the equity investments, of 2.9 years for Cyclyx and 2.4 years for Agilyx.

Figure 47: Illustrative project IRRs for CCC (15 years lifetime)



Source: Agilyx (underlying data), DNB Markets (further calculations)
Note (1): For CCCs with ExxonMobil and LyondellBasell
Note (2): The uplift in Agilyx's IRR related to annual USD2.5m in royalty payments

Figure 48: Illustrative project payback times for CCCs



Source: Agilyx (underlying data), DNB Markets (further calculations)
Note (1): For CCCs with ExxonMobil and LyondellBasell
Note (2): The uplift in Agilyx's IRR related to annual USD2.5m in royalty payments

Chemical conversion

The technology has been proven in its operational facility in Oregon and secured by 20 patents

Chemical conversion is the part where Agilyx converts waste plastic into virgin-grade products, allowing for circular recycling of plastics that cannot be recycled mechanically. The technology has been proven in its operational facility in Oregon and secured by 20 patents. The company provides asset-light plastic recycling solutions in the form of licensing, supply of equipment, and provision of technical services. As the market has been slower lately – driven by cost increases and high interest rates – Agilyx has specialised in the areas where it has the most differentiated product (waste-to-product), and growth expectations are revised down. The company now targets three new projects per year.

Technology offering

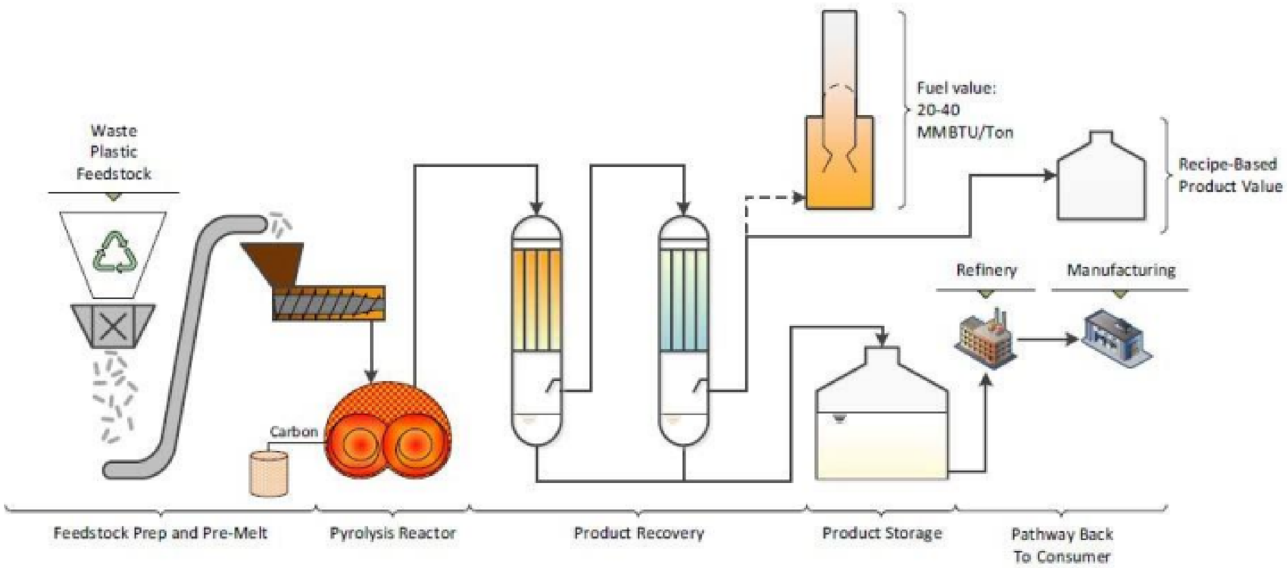
More specifically, Agilyx's technology depolymerises plastics into monomers (the building blocks of polymers or plastics) or synthetic chemicals that can be used in refinery applications or further purified for application in other chemistries. The conversion process is performed without catalysts, resulting in a more flexible process. Although catalysts tend to give better yields, they restrict operating conditions and feedstock use. Hence, using no catalyst makes it easier to handle different sources of plastic streams, resulting in more conversion pathways. There are several conversion pathways viable, including mixed plastics to synthetic fuels, polystyrene to styrene monomer, and PMMA (acrylics) to MMA monomer. However, the company has focused its efforts on specific waste-to-product pathways where it has a unique value proposition or where competition is limited such as recycling of polystyrene an PMMA.

Agilyx depolymerises plastics into monomers or synthetic chemicals that can be used in refinery applications or further purified for application in other chemistries

The conversion technology consists of three primary systems: feedstock preparation, pyrolysis reaction, and product separation and storage. The core systems are supported by ancillary systems such as raw feedstock receipt, solids by-product handling, control of emissions for non-condensable process gases, liquid product storage system and common industrial process utilities. The reactor module is differentiated by its dual screw-converting system and self-cleaning design. The company has developed designs for two reactor sizes: 10tpd and 50tpd of feed capacity. However, the systems can be deployed in parallel to achieve larger processing scales.

The conversion technology consists of three primary systems: feedstock preparation, pyrolysis reaction, and product separation and storage

Figure 49: Simplified overview of Agilyx's technology



Source: Agilyx

Partner-driven approach

With an asset-light business model, the company collaborates with EPC companies as well as the customers to which it will licence the technology. Among others, it has taken on Technip Energies as an exclusive licence partner to produce purified styrene monomers. The partnership leverages on Agilyx's conversion technology and Technip Energies' purification process. This allows for the use of more challenging waste, thus allowing for a greater scope of sourcing material. Under the agreement, Technip Energies markets and licenses the integrated solution. Within PMMA, the company has partnered with Mitsubishi to further develop and scale its solution. The company also collaborates with BioBTX on aromatic chemicals.

With an asset-light business model, the company collaborates with EPC companies as well as the customers to which it will licence the technology…

Figure 50: Partnerships

Feedstock	Partner	Example customers	
Polystyrene	T.EN Technip Energies	Toyo Styrene, INEOS Styrolution, Kumho Petrochemical	**Focus area:** Waste to product pathways
PMMA	Mitsubishi Chemical	Mitsubishi Chemical	
Mixed plastic waste	BioBTX	BioBTX	
Mixed plastic waste	Various EPC companies	Virgin	

Source: Agilyx

Asset-light business model

…which reduces risk while allowing for a scalable business

The company has an asset- and capital-light business model for its conversion business, with a combination of licensing, project development and provision of critical equipment. This reduces risk while allowing for a scalable business. See below for a description of scope and revenues during the development, construction and operational phases of a project:

- **Development.** The development phase typically lasts 1–2 years. During this period, customers pay development fees up front for various phases of the development. Agilyx has indicated revenues of around USD3m–5m during the development phase. To our understanding, development revenues have been lower due to subdued demand and the company helping the customer through development to help push projects through FID.
- **Construction.** Revenues step up during the construction phase as the company both sells the technology licence and delivers critical equipment for the chemical recycling facility. As such equipment are long lead-time items, cash inflow and revenue recognition are skewed towards the first part of the construction phase. The company has indicated total revenues of USD15m–20m during construction.
- **Operations.** When the project moves into the operational phase, the company earns royalty revenues based on processed input, as well as revenues for the provision of services such as maintenance, spare parts and operational support. For a 100tpd facility, the company estimates around USD1m in annual revenues.

Figure 51: Scope and expected revenues in different contract phases

Development (1-2 years)	**Construction** (1-2 years)	**Operations** (20+ years)
• Feasibility studies and engineering support • Identification and characterisation of plastics	• Technology license sale • Sale of Axilyx conversion equipment • Feedstock recipe matched to conversion technology and product	• Royalties technology license • Operations and maintenance (O&M) • Feedstock optimisation
Revenues USD3m-5m	**Revenues** USD15m-20m	**Revenues** USD1m per year (per 100t/d)

Source: Agilyx

Projects and pipeline

Agilyx currently has one contract with Toyo Styrene, an affiliate of Denka Company, Nippon Steel Chemical & Material, and Daicel. Having carried out the initial engineering, in January 2022 Agilyx announced that a licence agreement for the 10tpd chemical facility had entered construction, which was completed in March. Agilyx has received fees for licensing and equipment sales under construction, and will receive royalties based on feedstock volumes as well as fees for operational support. The company also has several projects in its pipeline, and we understand that the ongoing licence discussions with Kumho and BioBTX (which also include equipment deliveries) are in the most advanced stages.

The company has several projects in its pipeline

Figure 52: Key projects and pipeline

Project	Project status
Toyo Styrene	• Construction completed in March 2024
Ineos	• TruStyrenix development with Technip • Final stage of engineering to be completed in Q1 2024
Kumho Tire	• TruStyrenix development with Technip • License discussing ongoing
Mitsubishi	• PMMA (plexiglass) circularity • Ongoing evaluation, decision expected soon
BioBTX	• BTX (aromatic chemicals), ~40% of petchem market • Fast-track engineering underway ahead of licensing and construction

Source: Agilyx

The roadmap to commercial success

The chemical recycling industry is only in its infancy, and a rapid scaling is expected over the coming years. Thus, we see higher risk than in more mature industries, both technologically and commercially. However, we believe Cyclyx has several elements in place that lower the risk and that the company is one of the better places to be in the chemical recycling industry: it has a well-developed plastics database (built over 20 years), as well as an operational sorting capacity of 70ktpa that delivers feedstock to ExxonMobil. Although the company will further scale the sorting capacity for its CCCs to ~178ktpa, we consider the off-the-shelf sorting equipment to be used risk-reducing. In addition, capex and operational risk will be borne by ExxonMobil and LyondellBasell. For subsequent CCCs, they will also bear the commercial risk.

We believe Cyclyx has several elements in place that lower the risk and that the company is one of the better places to be in the chemical recycling industry…

Despite the industry being in its early days, there is already demand for Cyclyx's 'waste to feedstock' offering, exemplified by ExxonMobil and LyondellBasell investing in both Cyclyx and the first CCC. We believe there could be high demand for Cyclyx's offering in the future given the ambitious recycling requirements among plastic manufacturers and the limited competition in feedstock sourcing and preparation, but this is pending a successful scaling of the chemical recycling industry. With historical technological issues for pyrolysis companies when scaling up and the current market environment putting pressure on project economics, we see continued delays in the industry as the key risk for the commercial success of Cyclyx.

…although we see the key risk for the commercial success of Cyclyx as continued delays in the industry

Figure 53: The roadmap to commercial success for Cyclyx

	Development	Proof of concept	Scaling up	End-market development
Cyclyx	Two decades spent on building plastic database, and five years spent on preparing Cyclyx for scale	Cyxlyx has existing capacity of sourcing 70ktpa of waste plastic, with 2.6kta in H1 2023 generating USD3.5m in revenues	Off-the shelf sorting technology reduces scaling risk. Capex and operational risk covered by Exxon and Lyondell covered for first CCC (operational risk covered on sequent ones too)	Despite the industry being it its infancy, there is already significant demand, but this is pending clients' technology scaling abilities
Clients	Chemical recycling builds on a well-established pyrolysis technology	Several small scale pyrolysis plants operational	Scaling of pyrolysis has proven to be more difficult than originally thought, but large-scale capacity set to come on stream in the coming years. Project economics dependent on 'green' premiums on products	

Source: DNB Markets

Chemical recycling market overview

In this section, we cover elements of the chemical recycling market that we believe are relevant to companies in the industry. We address general topics pertinent to macro drivers such as the plastic waste abundancy problem, and why this cannot be resolved by conventional mechanical recycling technology, as well as key drivers for growth in the years ahead. We also take a deeper dive into the economics of and the value chain of chemical recycling to better understand the key opportunities and challenges in the industry, which underpin Agilyx's business case with its 'waste to feedstock' offering.

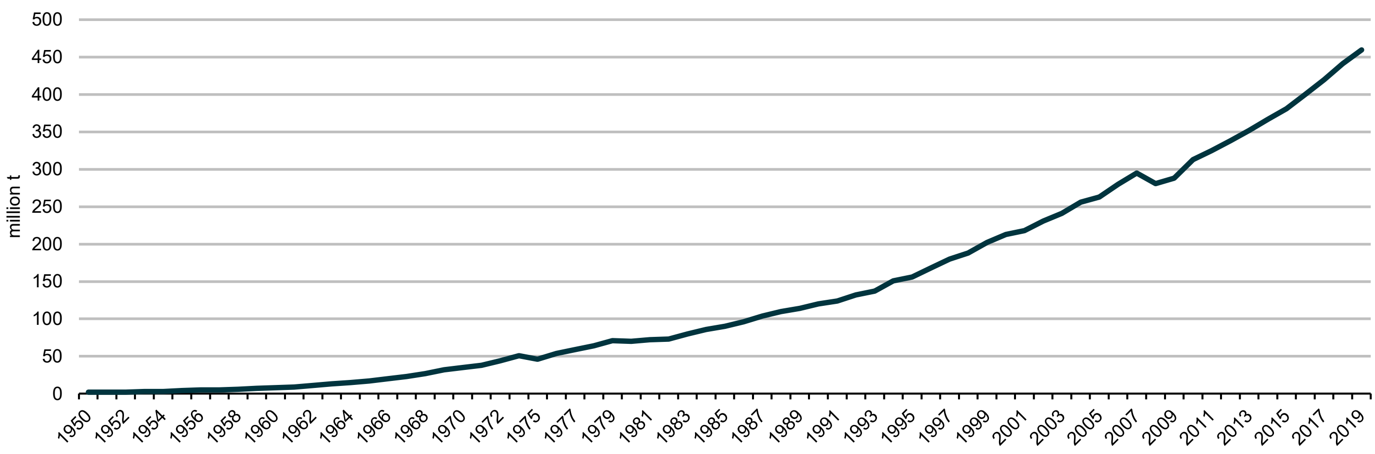
The plastic waste problem

Increasing amount of plastic waste

Over the past 20 years, the amount of global plastic waste generation has more than doubled, driven by its attractive properties such as high durability and resistance to degradation, as well as economic growth. The same properties that make plastics so useful also make them very difficult for nature to break down. Hence, the world has an increasing problem with plastic waste that needs to be handled.

The same properties that make plastics so useful also make them very difficult for nature to break down

Figure 54: Global plastics production



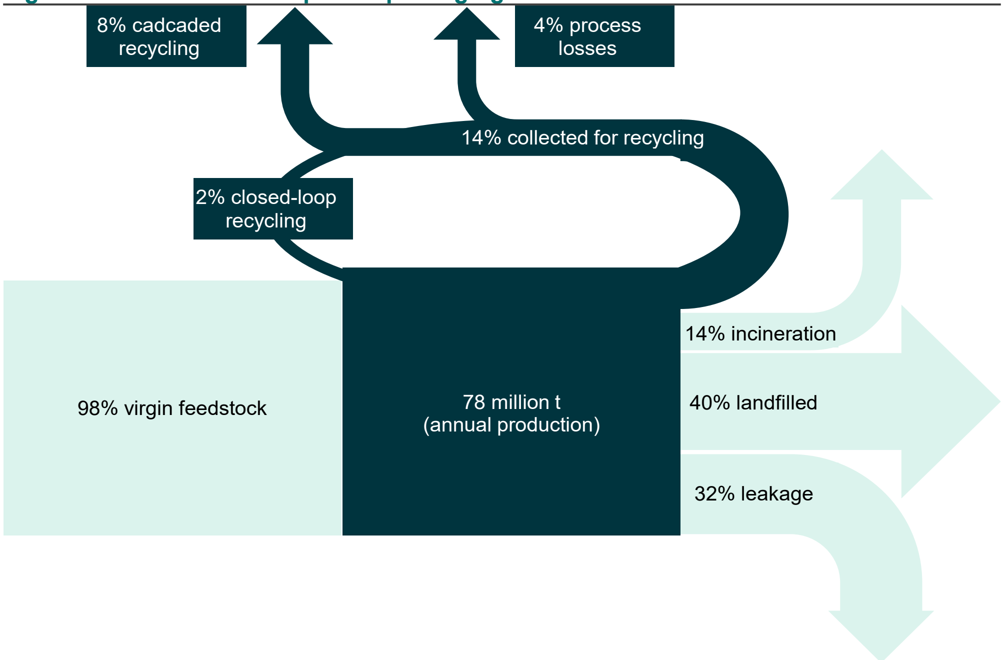
Source: Our World in Data

Recycling needed to reduce plastic waste

There are currently three alternatives for handling plastic waste, namely recycling it, placing it in landfill, and incineration. Of these, landfill and incineration are the most common solutions, making up ~40% and ~14% of plastic packaging material, respectively, while ~32% is leaked into the ocean. Recycling makes up only ~10%. Landfill is not a viable long-term solution, and there are significant carbon emissions associated with incineration. Hence, the recycling rate needs to increase materially. To facilitate this, stricter regulations have been introduced, resulting in higher recirculation targets among packaging companies and plastics manufacturers.

There are currently three alternatives for handling plastic waste, namely recycling it, placing it in landfill, and incineration

Figure 55: Global flows of plastic packaging materials



Source: Ellen Macarthur Foundation

Chemical recycling resolves the issues with traditional mechanical recycling

There are significant limitations in traditional mechanical recycling with respect to the types of plastics that can be recycled as well as recycling blended plastics, resulting in difficulties in recycling a high share of today's waste plastics. These issues can be resolved by chemical recycling, which breaks the waste down chemically to create virgin-like feedstock that both expands the number of plastics that can be recycled and allows for high-quality applications such as packaging for food or medical. However, the technology is still in its early days, and is still developing and scaling.

Chemical recycling expands the types of plastics that can be recycled and increases output quality

Figure 56: Mechanical versus chemical/advanced recycling

	Advantages	Limitations
Mechanical recycling Mechanical recycling relies on mechanical processes like grinding, melting and remolding to convert plastic into new objects	• Straigtforward process • Established technologies	• Items must be sorted, washed and dried • Limited applications for recycled material • Process hampered by contamination
Chemical/advanced recycling Advanced recycling down chemically to create virgin-like feedstock. This allows from processing of waste that isdifficult-to-recycle and not suitable for mechanical methods	• Ability to process difficult-to-recycle items • Extensive applications for recycled material • More tolerant contamination	• Increased energy required • Expensive and sophisticalted equipment • Emerging technologies

Source: Chevron Philipps Chemical, DNB Markets

Different types of plastics

Although most plastics seem similar at first glance, there are hundreds of different types of plastics or polymers with different properties and use cases. As a result, there is no one-size-

Hundreds of different types of plastics or polymers with different properties and uses fits-all when it comes to plastics recycling. Different resins or combinations of resins need to be treated differently. Some plastic types are thus much easier to recycle than others. See the table blow for a description of the most common types of plastics.

Figure 57: Plastic resins

Resin code/name	Properties	Product applications	Products made with recycled content
1 PET Polyethylene terephthalate	• Clear and optically smooth surfaces for oriented films • Excellent barrier for O_2, H_2O and CO_2 • High impact capability and shatter resistance • Excellent resistance to most solvents • Hot-filling capability	Packaging • Plastic soft drinks bottles • Food jars • Ovenable film and microwave trays Others • Textiles, carpet, films, engineering moulding	• Fibre for carpet, fleece jackets, comforter fill and tote bags • Containers for food, beverages (bottles), and non-food items • Films and sheets • Strapping
2 HDPE High-density polyethylene	• Excellent resistance to most solvents • Higher tensile strength compared to other PE forms • Relatively stiff material with useful temperature capabilities	Packaging • Plastic bottles for milk, juice, water and household cleaners • Retail and grocery bags • Cereal box liners Others • Injection moduling, extruded pipes, plastic wood composites, wire and cable covering	• Bottles for non-food items such as personal care and household cleaners • Plastic lumber for outdoor decking, fencing and picnic tables • Pipe, floor tiles, buckets, crates, flow pots, garden edging, film and sheet, and recycling bins
3 PVC Polyvinyl chloride	• High impact strength, clarity and processing performance • Resistance to grease, oil and chemicals	Packaging • Rigid: Bottles, blister packs and clamshells • Flexible: Medical and bedding bags, shrink wrap, deli wrap Others • Rigid: Permanent framework, pipe, window frames, fencing, siding, railing • Flexible: Medical products (blood bags, tubing), wire/cable insulations, carpet backing, coated fabrics and flooring	• Window pipes, decking, fencing, panelling, gutters, carpet backing, floor tiles and mats, resilient flooring, mud flaps, cassette trays, electrical boxes, cables, traffic cones, garden hose and mobile home skirting • Packaging, film and sheet loose-leaf binders
4 LDPE Low density polyethene	• Excellent resistance to acids, bases and vegetable oils • Toughness, flexibility and relative transparency • Good for packaging that requires heat sealing	Packaging • Bags for bread, dry cleaning, newspapers, frozen foods, fresh produce and household garbage • Shrink wrap and stretch film • Coatings for paper milk cartons and hot/cold beverage cups • Container lids • Squeezable bottles Others • Toys • Injection moulding, adhesives, sealants, wire/cable coverings	• Shipping envelopes, garbage bin liners, floor tile, panelling, furniture, film and sheet, compost bins, garbage bins, landscape timber and outdoor lumber
5 PP Polypropylene	• Excellent optical clarity in biaxially oriented films and stretch blow moulded containers • Low moisture vapour transmission • Inertness towards acids, alkalis and most solvents	Packaging • Containers for yoghurt, margarine, takeout meals • Medicine bottles • Bottle caps and closures Others • Fibres, appliances and consumer products • Durable applications such as automotive and carpeting	• Automobile applications such as battery cases, signal lights, battery cables, brooms and brushes, ice scrapers, oil funnels, and bicycle racks • Garden rakes, storage bins, shipping pallets, sheeting, trays
6 PS Polystyrene	• Excellent moisture barrier for short life products • Excellent optical clarity in general purpose form • Significant stiffness in both foamed and rigid form • Low density and high stiffness in foamed applications • Low thermal conductivity excellent insulation properties in foamed form	Packaging • Food service items such as cups, plates, bowls, cutlery, hinged takeaway containers (clamshells), meat and poultry trays and rigid food containers (with foamed or non-foamed PS) • Protective foam for packaging of delicate items • Packing peanuts (loose fill) • Compact disc cases Others • Agricultural trays, electronic housing, cable spools, building insulation, video cassette cartridges, coat hangers, medical products and toys	• Thermal insulation, thermometers, light switch panes, vents, desk trays, rulers and license plate frames • Cameras or video cassette trays • Foamed foodservice applications such as egg-shell cartons • Plastic moulding (i.e. wood replacement products) • Expandable polystyrene /EPS) foam protective packaging
7 Other	• Dependent on resin combination used	• Large reusable water bottles, some citrus bottles • Oven-baking bags, barrier layers and custom packaging	• Bottles and plastic lumber applications

Source: CSIRO

Mechanical recycling

Mechanical recycling is the dominant form of plastic recycling today. Here, the waste is processed into raw material or products without changing the chemical properties of the feedstock. Mechanical recycling typically involves the collection, sorting, chipping, washing and drying of the plastics, before the plastic is ground down, re-granulated and compounded back to useable material. See below for a more detailed description of the mechanical recycling process.

Mechanical recycling is the dominant form of plastic recycling today

Figure 58: Overview of mechanical recycling process

1. **Collection:** Recycling facilities gather recyclable materials from municipal waste collections, specialised recycling bins, and/or directly from the industry.
2. **Sorting:** Collected plastics is sorted, typically manually, according to its plastic resin code, some optical sorting.
3. **Chipping:** Sorted plastics is passed through a chipper which consists of a cylinder of blades that cut the plactis down to a predetermined grill size.
4. **Washing:** Melted chips are washed to remove any contaminants (dirt, glue, paper labels, product remnants etc.). The wash is typically performed using an alkaline, cationic detergent in water at elevated temperatures for short periods.
5. **Pelleting:** Clean and chipped plastic is put through an struder which melts the chips and shapes them into pellets, ready to use into new items.

Source: CSIRO

Limitations in mechanical recycling

Mechanical recycling is most effective with high-quality, relatively clean sorted waste. However, there are several challenges associated with it. It faces limitations such as limited pools of appropriate feedstock, primarily being efficient on resins that are relatively homogeneous such as PET and high-density polyethene. Hence, such applications are primarily covered by virgin plastics today. PET is the most common mechanically recycled plastic and can often be used in food-grade applications, depending on the quality of the waste feedstock.

Mechanically recycled output is often of a lower grade than the input, limiting end-market applications

Proper mechanical recycling of mixed plastics is not possible either. In addition, recycled output is often of a lower grade than the input, limiting end-market applications. Hence, it is difficult to get mechanically recycled plastics up to the high contamination specifications needed for plastics with food contact or medical grade use.

Chemical recycling

Chemical or advanced recycling is the term used for the group of technologies that can convert mixed and/or contaminated plastic waste back to virgin-like raw materials and thus allow for higher-grade recycled plastics. Hence, chemical recycling resolves the issues of mechanical recycling of plastics.

Chemical recycling resolves the issues of mechanical recycling of plastics

Different types of chemical recycling

Chemical recycling includes two primary chemical processes that are classified by the level they break plastics into:

- **Feedstock recycling:** returns plastic waste into its original petrochemical precursor that was used to produce the plastic originally. The main process for feedstock recycling is pyrolysis, which convers mixed plastics into a hydrocarbon mix like naphtha or diesel. This is by far the most common method for chemical recycling and, according to BNEF, accounts for over 77% of the chemical recycling capacity proposed to be commissioned by 2030.
- **Monomer recycling:** breaks polymers down to their individual carbon units (monomers) through chemical or thermal depolymerisation. Monomer recycling currently targets PET and PS resins.

Figure 59: Chemical/advanced recycling technologies

Technology	Technology	Input	Output
Feedstock recycling (polymer to feedstock)	• Pyrolysis • Gasification	Mixed or sorted plastics, typically requiring: • >90% polyolefins (PE, PP, PS) • No oxygen or chlorine (PET, PVC)	• Naphtha (plastic feedstock) • Synthetic crude oil, fuels, wax
Monomer recycling (polymer to monomer)	• Pyolysis/microwave	Sorted PS	• Monomer • Oligomer
	• Solvolysis	Sorted PET	• Monomer • Polyester polyols

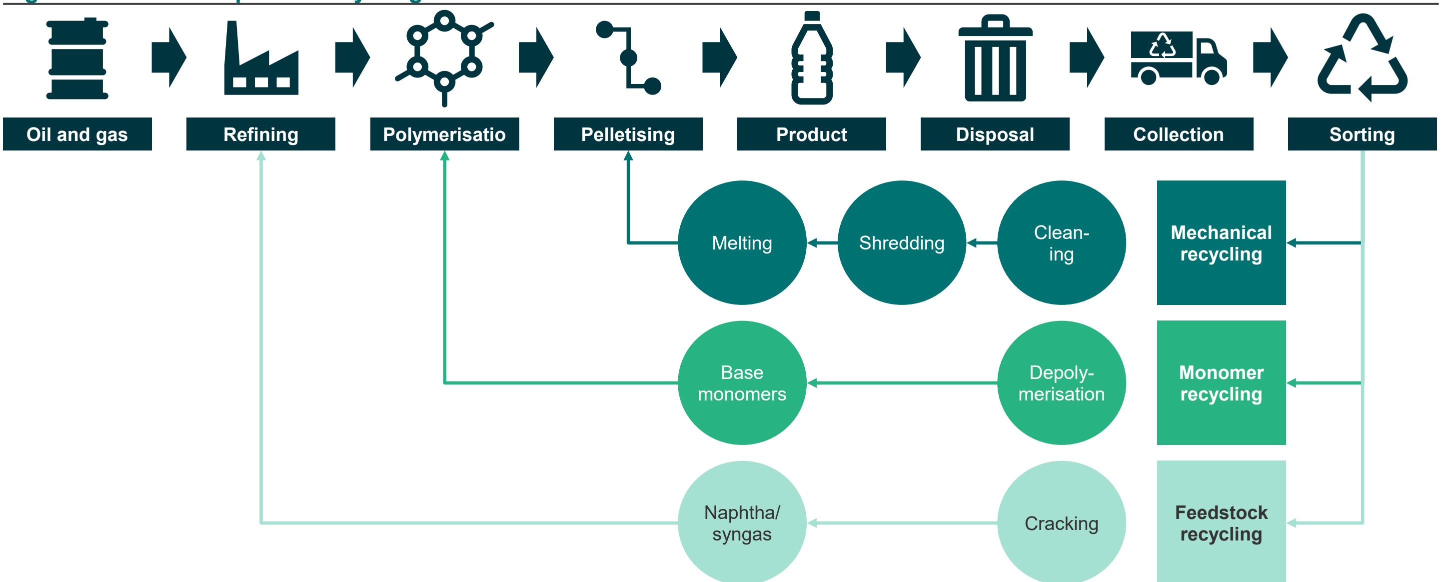
Source: McKinsey (underlying data), DNB Markets (structuring of data)

Chemical recycling expands the number and volume of plastics that can be recycled

Chemical recycling resolves the drawbacks of mechanical recycling, as it expands the types of plastics that are recyclable and is suitable for complex end-applications such as food contact and medical, or for safety-critical applications (such applications are particularly challenging due to safety concerns around contaminants). Chemical recycling can also accept waste with a high contamination level while still producing high-grade output.

Chemical recycling can accept waste with a high contamination level while still producing high-grade output

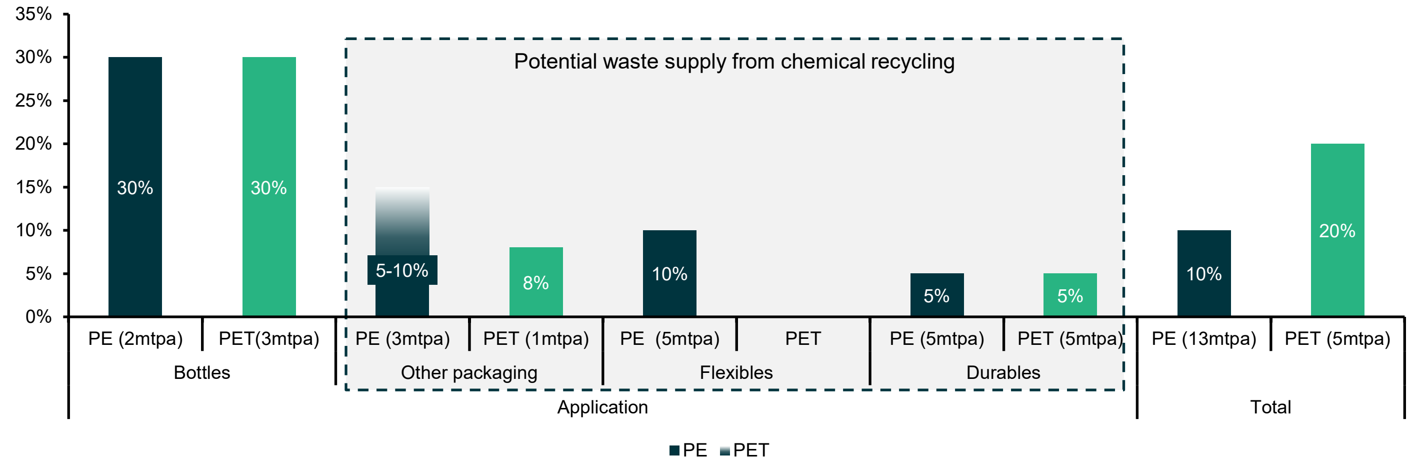
Figure 60: Paths for plastic recycling



Source: BNEF

An example of the expanded scope from adding chemical plastics recycling to mechanical is the additional potential to recycle US PE and PET resins. While McKinsey estimates a mechanical recycling rate of ~30% of PE and PET bottles corresponding to 5mtpa, it is hard to recycle other applications of the resins. However, if chemical recycling supplements mechanical, another 18mtpa of waste plastics can be recycled.

Figure 61: Recycling rate for US PE and PET resins



Source: Environmental Protection Agency, McKinsey

Significant growth within chemical recycling expected

The plastics recycling industry is at an inflection point, where policymakers and brand owners put pressure on plastics manufacturers to increase production of recycled materials, driving new recycling capacity targets. However, the chemical recycling industry is only in its infancy; capacity is limited, and many of the technologies are still developing and scaling. Hence, we expect significant growth on the back of the abovementioned policies as well as improving technology and profitability, but highlight that the risk is much higher than for more mature industries.

The plastics recycling industry is at an inflection point

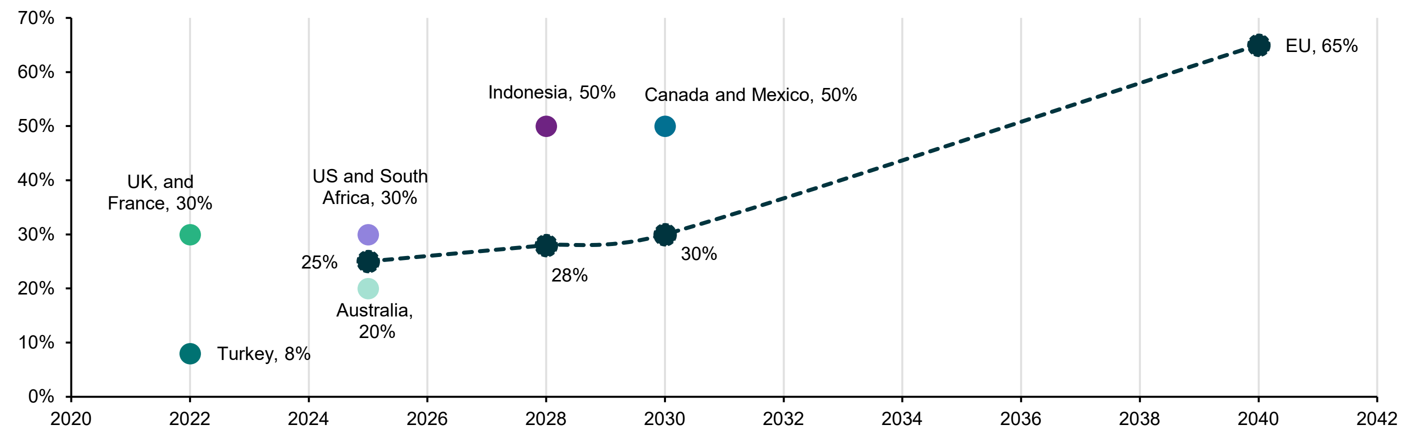
Key drivers for chemical recycling

Tightening public regulations for plastic use…

We consider public policy the most important driver for higher recycling rates. Several authorities have introduced policies for the share of post-consumer recycled plastic content in plastic packaging. For example, the EU has proposed the share of post-consumer recycled plastics in packaging to increase to 25%, 30% and 65% by 2025, 2030 and 2040, respectively. There are also other countries with strict policies, including the UK and France, which target 30% post-consumer plastic in packaging today, and the US and South Africa, which have the same target for 2025.

We consider public policy the most important driver for higher recycling rates

Figure 62: Targets for post-consumer recycled plastic content

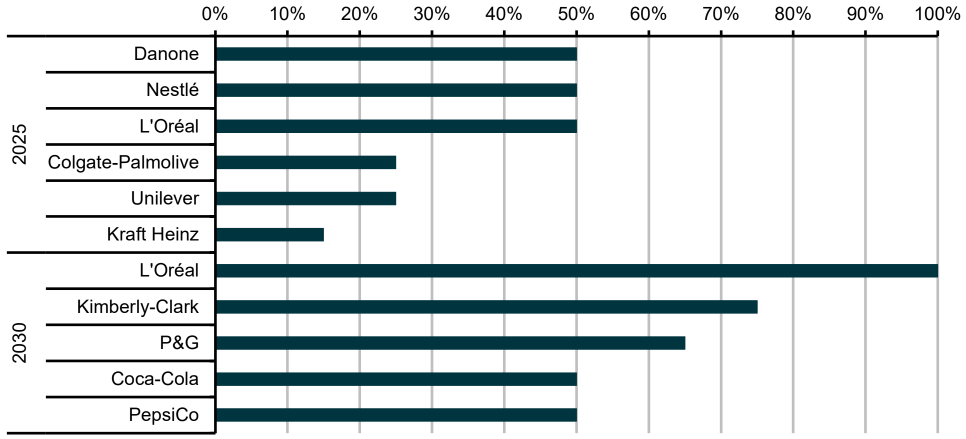


Source: BNEF

…and increasing recycling commitments from brand owners…

On the back of the stricter policies for recycled content in plastic recycling, multiple brand owners have launched ambitious recycled plastic content targets. Among those with the most ambitious targets near-term are Danone, Nestlé and L'Oréal, which are aiming for 50% of the plastic used in their packaging to come from recycled or bio-based sources by 2025. By 2030, several of the world's largest brand companies with plastic packaging have targets of 50%+ of recycled or bio-based plastic content.

Figure 63: Brand owner's recycled plastic content targets (not an exhaustive list)



Source: BNEF

…have resulted in ambitious targets for use of recycled feedstock by plastics producers

Growing demand for recycled plastics has resulted in ambitious targets by plastics producers aiming to increase production of recycled plastics. To meet the targets, plastics producers are either developing their own chemical recycling plants or forming partnerships with chemical recycling companies to replace fossil fuel-based naphtha with recycled feedstock. In the table below, we show the recycling commitments and targets among selected plastic producers.

To meet their targets, plastics producers are either developing their own chemical recycling plants or forming partnerships with chemical recycling companies

In total, the plastic producers target 15.8mtpa of recycled feedstock to be used as input in their plastics production by 2030. However, as some of the companies only have targets for 2025 and 2026, the number is likely to be higher by 2030. We also see demand for recycled feedstock from companies not included on the list.

Figure 64: Recycling commitments and targets among plastics producers (not an exhaustive list)

ktpa	2025	2026	2027	2028	2029	2030	Total
Dow						3,000	**3,000**
LyondellBasell						2,000	**2,000**
Borealis						2,000	**2,000**
Indorama Ventures	750					1,500	**1,500**
Braskem						1,000	**1,000**
SCG						1,000	**1,000**
TotalEnergies						1,000	**1,000**
Saudi Aramco (SABIC)						1,000	**1,000**
Lotte Chemical						1,000	**1,000**
INEOS	325					850	**850**
ExxonMobil		500					**500**
Advanced Drainage Systems						500	**500**
Chevron Philipps Chemical						450	**450**
Total							**15,800**

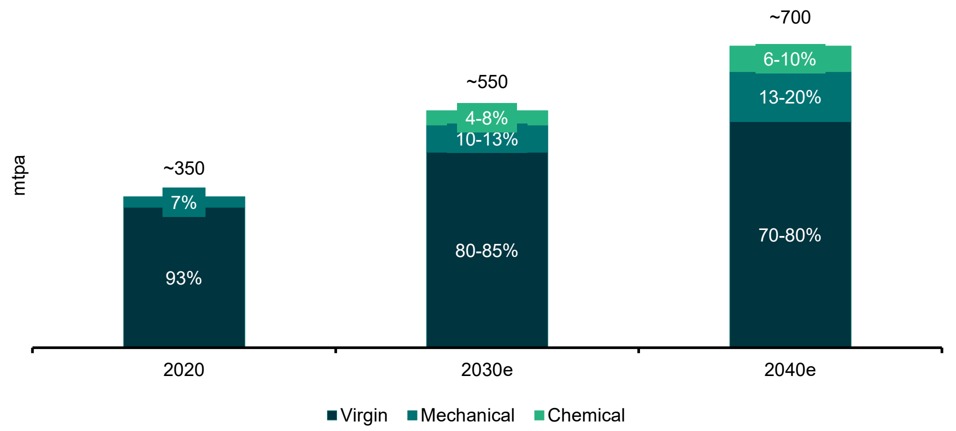
Source: Companies

Growing demand for chemical recycling

The increasing demand for high-grade recycled plastics suggests growing demand for chemical recycling capacity. McKinsey estimates that global polymer demand will increase by 1.6x by 2030 and 2.0x by 2040 relative to 2020. In addition, the share of chemical recycling is set to increase from virtually nothing to 4–8% and 6–10% over the same period, resulting in a demand for 33mtpa and 56mtpa of chemically recycled polymers in 2030 and 2040, respectively.

The share of chemical recycling is forecast to increase from virtually nothing in 2020 to 4–8% and 6–10% by 2024

Figure 65: Global polymer demand by source of feedstock



Source: McKinsey
Note: Assume capital intensity range of USD1.5k–3.0.k/t

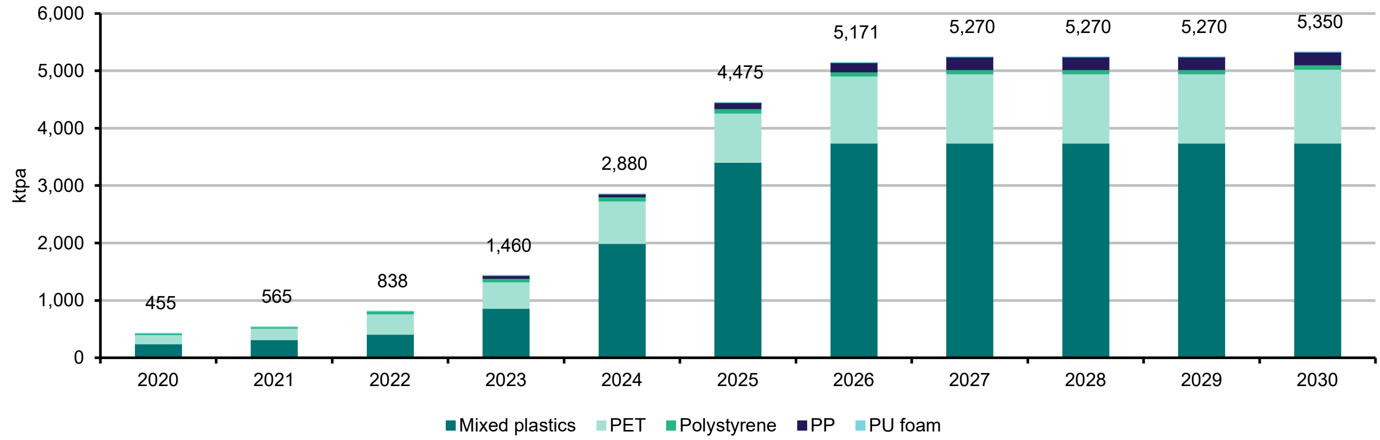
High market growth supported by capacity announcements

Higher demand for chemically recycled polymers has driven new capacity announcements. Before 2021, commissioned chemical recycling projects were primarily small-scale, often pilots or proofs of concept, as growth in the sector was hampered by permitting delays, feedstock sourcing challenges and other issues.

Over the past couple of years, announcements of new chemical recycling plants have surged, resulting in capacity looking to increase ninefold by 2030, up from 560kt in 2022. If all announced capacity comes online by 2030, BNEF expects 38m barrels of naphtha to be displaced by feedstock recycling. The US has seen the most capacity announcements. We have also started to see some plants coming online, including ExxonMobil's facility in Texas, with capacity of 36kt per year.

Over the past couple of years, announcements of new chemical recycling plants have surged

Figure 66: Cumulative chemical recycling capacity by plastic type



Source: BNEF

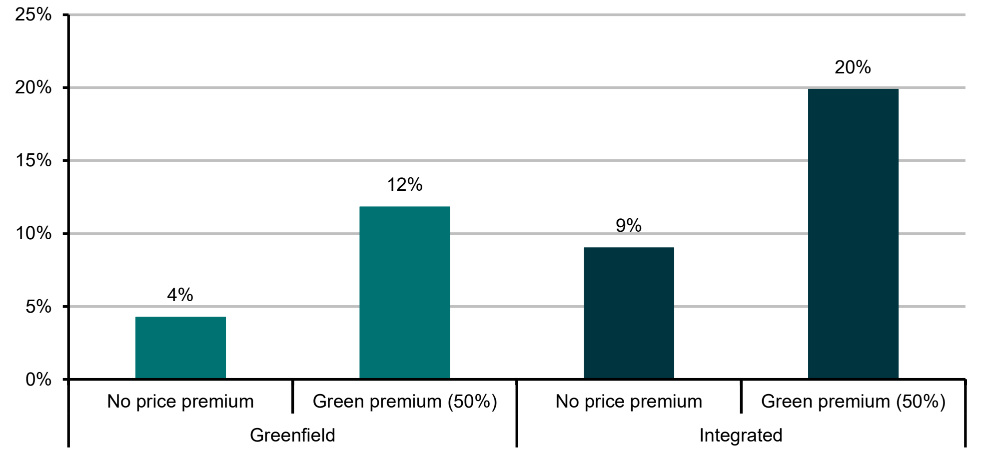
The economics of chemical recycling

As a provider of waste recycling and technology for chemical recycling, it is key for Agilyx that the financial business case of chemical recycling is strong enough for petrochemical companies to invest. According to BNEF, such companies typically have an IRR hurdle rate of 7–9%.

Despite the chemical recycling industry still being in its early days and projects having been hit by high inflation over the past couple of years, the economics look promising. Based on input from BNEF, we calculate that feedstock recycling projects using pyrolysis (which makes up the majority of chemical recycling projects) could be close to or even above that hurdle rate on a stand-alone basis, with an IRR of 4% for a greenfield project and 9% for an integrated one. Including green premiums for high-grade recycled plastics that have risen on the back of stricter recycling policies (currently at a ~50% premium to virgin naphtha prices), project economics look even better, with all IRRs well above the hurdle rate of investment.

We calculate that feedstock recycling projects using pyrolysis could be close to or even above that hurdle rate on a stand-alone basis

Figure 67: Project IRRs for feedstock recycling



Source: BNEF (underlying data), DNB Markets (further calculations)

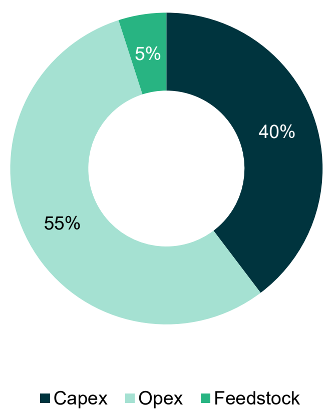
The levelised cost of chemical recycling

We find it useful to look at the levelised cost of pyrolysis, i.e. the present value per unit of output. BNEF estimates this to be USD502/t for a greenfield plant, but USD417/t for a plant that is located at a petrochemical site in the US. For both types of project, the levelised cost is lower than US virgin naphtha prices, which were USD705/t on average in 2023. Hence, pyrolysis plants are already profitable at current raw material prices.

Pyrolysis plants are already profitable at current raw material prices

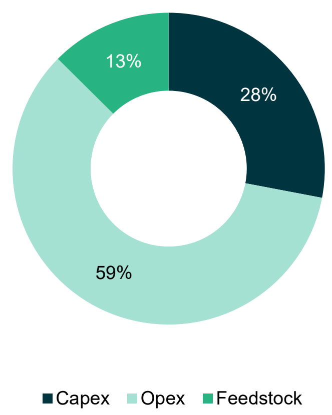
The cost of pyrolysis can be split into three key components: capex, opex and feedstock cost, with opex being the largest cost due to the labour and energy costs associated with the pyrolysis process. See below for a more detailed description of the key cost components, as well as prices obtained from output sales.

Figure 68: Levelised cost of feedstock recycling – greenfield project



Source: BNEF

Figure 69: Levelised cost of feedstock recycling – integrated project



Source: Bloomberg

Capex

Capex has almost doubled since 2019, and now accounts for USD1.6–2.0/t of recently announced greenfield projects, according to BNEF. This represents 40% of the levelised cost of a greenfield project and, while it only makes up 28% of the levelised cost of an integrated plant. Investment costs could fall as plants get larger than the current 30–70ktpa.

Feedstock cost

There is no real traded market for post-consumer mixed plastic waste, but the price of low-grade LDPE film waste can be used as a benchmark. As shown in the chart below left, prices for low-grade plastic waste have seen a substantial decline in recent years to ~USD15/t today, driven by China and other Asian countries banning scrap imports. This has boosted US domestic supply of low-grade plastic waste, although we believe the feedstock cost is well above this.

There is no real traded market for post-consumer mixed plastic waste, but the price of low-grade LDPE film waste can be used as a benchmark

Other opex

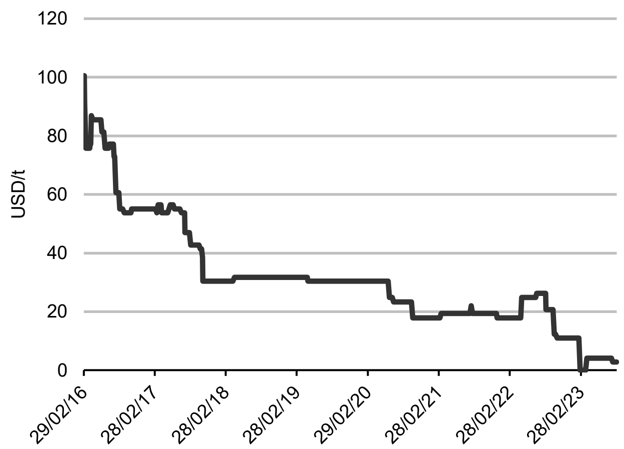
Accounting for more than 50% of the levelised cost of a pyrolysis plant, opex is the largest cost component for both greenfield and integrated pyrolysis projects due to the high energy and labour costs. Note that the opex component also includes additional sorting and preparation costs on top of feedstock cost.

Output price

As there is no traded market for pyrolysis oil with transparent prices, we instead look to prices of virgin naphtha due to the similar application and quality. This stood at USD705/t in the US in 2023. We understand that producers in the US can currently charge a USD352/t green premium (50%) to the price of virgin naphtha, due to the constrained supply relative to requirements set out by current policies. Nevertheless, the economics of chemical recycling plants are exposed to output price volatility as the price of their product is normally tied to crude oil or naphtha. The current high naphtha prices combined with declining feedstock prices provide attractive margins for chemical recyclers, but this may change if prices move in the wrong direction. However, as there is no traded market, most companies sign offtake agreements at fixed prices in the short to medium term, which lowers price volatility.

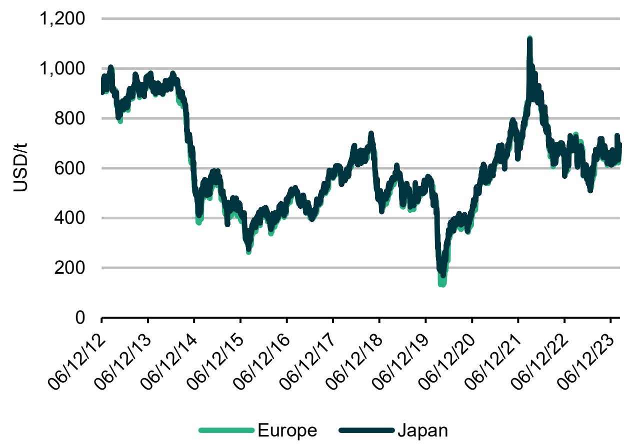
Similarly, there is no traded market for pyrolysis oil with transparent prices, so we look to prices of virgin naphtha due to the similar application and quality

Figure 70: Average price of low-grade LDPE film scrap (US)



Source: BNEF

Figure 71: Virgin naphtha prices



Source: Bloomberg

Key assumptions for our IRR calculations

To assess the economics of feedstock recycling, we have looked at two different plants in the US with an annual output capacity of 50kt: one greenfield pyrolysis plant located near a waste management site, as well as a pyrolysis facility located at an integrated petrochemicals site. While the former would benefit from low feedstock transportation costs due to its proximity to the waste, the latter would benefit from existing infrastructure such as pipes, power supply and co-located purification capabilities. See below for a summary of our other assumptions applied.

To assess the economics of feedstock recycling, we have looked at two different plants in the US with an annual output capacity of 50kt

We understand that producers in the US can currently charge an additional USD352/t of recycled naphtha, which corresponds to a 50% green premium. However, as we consider this uncertain longer-term and believe that chemically recycled plastic resins will eventually have to be cost-competitive with virgin plastics, we show calculations both with and without the green premium.

Figure 72: Key assumptions for project

Project type	Greenfield	Integrated	Comments
Operational lifetime (years)	20	20	
Development and construction (years)	2	2	
Inflation	2%	2%	
Annual capacity (t output /year)	50,000	50,000	
Conversion efficiency (%)	75%	75%	Assume to be in upper end of 60-80% range
Utilisation (%)	80%	80%	
Input capacity (t input/year)	66,667	66,667	
Devex (USDm)	19	10	Lower devex/capex for integrated plant due to benefits from existing infrastructure such
Capex (USDm)	171	100	as pipes, power supply, and co-located upgrade/purification capabilities
Development cost as % of capex (%)	10%	10%	
Virgin naphtha price (USD/t output)	705	705	US price in 2023, but sales price ~50% above this
Feedstock cost (USD/t output)	80	100	Lower transportation cost when plant is located near waste sorting facility
Fixed opex (USD/ t capacity)	72	72	
Variable opex (USD/t output)	158	158	
Rate of depreciation (%)	5%	5%	
Tax rate (%)	28%	28%	US corporate tax rate

Source: BNEF, DNB Markets

Project IRRs above investment hurdle

On this basis, we estimate the greenfield project in proximity to waste sorting would generate an IRR of 4%. If the output naphtha is sold at a 50% premium (which it is currently), the IRR is 12%, everything else being equal. The economics improves if the project is located at an integrated petrochemicals site where the capex should be lower. Here, we calculate a project IRR of 9% without a green premium and 20% including one. Hence, we find that pyrolysis plants have higher IRRs than the chemical companies' investment hurdle rates.

The economics improves if the project is located at an integrated petrochemicals site where the capex should be lower

Below, we show condensed IRR calculations for the integrated pyrolysis plant without any green premium.

Figure 73: IRR calculations for 50ktpa integrated pyrolysis project (no green premium)

USDm	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2045
Capacity													
Plant capacity (t)			50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Utilisation (%)			80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
Output volume (t)			**40,000**	**40,000**	**40,000**	**40,000**	**40,000**	**40,000**	**40,000**	**40,000**	**40,000**	**40,000**	**40,000**
Conversion efficiency (%)			75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
Input volume (t)			**66,667**	**66,667**	**66,667**	**66,667**	**66,667**	**66,667**	**66,667**	**66,667**	**66,667**	**66,667**	**66,667**
P&L													
Product price (USD/t output)			705	720	736	752	768	785	802	819	837	855	1,060
Revenues (USDm)			**28.2**	**28.8**	**29.4**	**30.1**	**30.7**	**31.4**	**32.1**	**32.8**	**33.5**	**34.2**	**42.4**
Feedstock cost (USD/t output)			-133	-136	-139	-142	-145	-148	-152	-155	-158	-162	-200
Feedstock cost (USDm)			**-5.3**	**-5.4**	**-5.6**	**-5.7**	**-5.8**	**-5.9**	**-6.1**	**-6.2**	**-6.3**	**-6.5**	**-8.0**
Fixed opex (USD/ t capacity)			-72	-74	-75	-77	-78	-80	-82	-84	-85	-87	-108
Fixed opex (USDm)			**-3.6**	**-3.7**	**-3.8**	**-3.8**	**-3.9**	**-4.0**	**-4.1**	**-4.2**	**-4.3**	**-4.4**	**-5.4**
Vaiable opex (USD/t output)			-158	-161	-165	-169	-172	-176	-180	-184	-188	-192	-238
Vaiable opex (USDm)			**-6.3**	**-6.5**	**-6.6**	**-6.7**	**-6.9**	**-7.0**	**-7.2**	**-7.3**	**-7.5**	**-7.7**	**-9.5**
EBITDA (USDm)			**12.9**	**13.2**	**13.5**	**13.8**	**14.1**	**14.4**	**14.7**	**15.0**	**15.4**	**15.7**	**19.5**
EBITDA (%)			*46%*	*46%*	*46%*	*46%*	*46%*	*46%*	*46%*	*46%*	*46%*	*46%*	*46%*
Depreciation (USDm)			-4.8	-4.8	-4.8	-4.8	-4.8	-4.8	-4.8	-4.8	-4.8	-4.8	-4.8
EBIT (USDm)			**8.2**	**8.5**	**8.8**	**9.1**	**9.4**	**9.7**	**10.0**	**10.3**	**10.6**	**11.0**	**14.7**
Tax (USDm)			-2.3	-2.4	-2.5	-2.5	-2.6	-2.7	-2.8	-2.9	-3.0	-3.1	-4.1
Net profit (USDm)			**5.9**	**6.1**	**6.3**	**6.5**	**6.7**	**7.0**	**7.2**	**7.4**	**7.6**	**7.9**	**10.6**
Cash flow													
EBITDA			12.9	13.2	13.5	13.8	14.1	14.4	14.7	15.0	15.4	15.7	19.5
Tax			-2.3	-2.4	-2.5	-2.5	-2.6	-2.7	-2.8	-2.9	-3.0	-3.1	-4.1
Cash flow from operations (USDm)			**10.7**	**10.9**	**11.1**	**11.3**	**11.5**	**11.7**	**11.9**	**12.2**	**12.4**	**12.6**	**15.3**
Cash flow from financing (USDm)	**-10.0**	**-100.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Cash flow	**-10.0**	**-100.0**	**10.7**	**10.9**	**11.1**	**11.3**	**11.5**	**11.7**	**11.9**	**12.2**	**12.4**	**12.6**	**15.3**
Cummulative cash flow (USDm)	*-10.0*	*-110.0*	*-99.3*	*-88.5*	*-77.4*	*-66.2*	*-54.7*	*-43.0*	*-31.0*	*-18.9*	*-6.5*	*6.2*	*147.0*
IRR	**9%**												

Source: BNEF (underlying data), DNB Markets (further calculations)

Access to feedstock is a key industry bottleneck

Access to suitable, sorted plastic waste at an affordable price is a prerequisite for the business case of chemical recycling. However, this remains a key industry challenge despite the abundance of waste generated globally. While there are significant efforts being put into the conversion of feedstock into recycled plastic resins, there is limited capacity for sourcing plastic waste feedstock to be used as an input for chemical recycling. The waste-plastic supply gap is only expected to become more severe in the coming years, when additional chemical recycling capacity comes on stream.

Access to suitable, sorted plastic waste at an affordable price is a prerequisite for the business case of chemical recycling

The chemical recycling value chain

The chemical recycling value chain spans from the collection of plastic waste to the chemical characterisation and sorting of it, to the conversion of feedstock, to polymers that can be used in the production of new plastics. See below for a more detailed description of the different phases and the companies operating within them.

Figure 74: Companies in the chemical recycling value chain (not an exhaustive list)

Waste to feedstock Sorting and pre-treatment	Feedstock to product Chemical recycling companies	Plastic manufacturing Plastic manufacturers	Plastic packaging Brand companies
Agilyx/Cyclyx	ExxonMobil	ExxonMobil	Danone
	LyondellBasell	LyondellBasell	Nestlé
	Plastic Energy	Braskem	L'Oréal
	Freepoint Eco-Systems	TotalEnergies	Colgate-Palmolive
	Nexus Circular	Dow	Unilever
	Mura Technology	Shell	Kraft Heinz
	PureCycle	SABIC	Kimberly-Clark
	Synpet Technologies	Nova Chemicals	P&G
	Brightmark	CP Chem	Coca-Cola
	Biotrend Energy	LG Chem	PepsiCo
	New Hope Energy	INEOS	
	Pyrum	Mitsubishi Chemical	
	Pryme	GS Caltex	
	Quantafuel	Petronas	

Source: Companies

Waste collection

Collection of plastic waste to be recycled. This could be from a broad variety of sources, including consumer and industrial plastic waste.

Waste to feedstock

'Waste to feedstock' is the process where the plastic waste is sorted based on a combination of optics and chemical characterisation and pre-treated for the pyrolysis. There are currently few companies focusing on this, with Cyclyx's (Agilyx's) circularity centres being the only large-scale initiatives seen in the market. We have seen some smaller initiatives for sourcing proper plastic waste, such as a household recycling programme for hard-to-recycle plastic films launched by Dow and WM.

'Waste to feedstock' is the process where plastic waste is sorted based by optics and chemical characterisation and pre-treated for pyrolysis…

Figure 75: The Cyclyx CCC waste-to-feedstock process

1 **Collection:** Plastic waste entering the Circularity Centre by truck	2 **Quality ensurance:** Plastic waste entering on-site lab for spot testing	3 **Sorting:** Off-the-shelf plastic sorting machines used for sorting based on: Polymer recepie, contminants, and physical properties	4 **Processing:** Porcessing of the sotred plastics such as shredding. The processed plastics is then shiped by trucks the chemical or mechanical recycling

Source: Agilyx

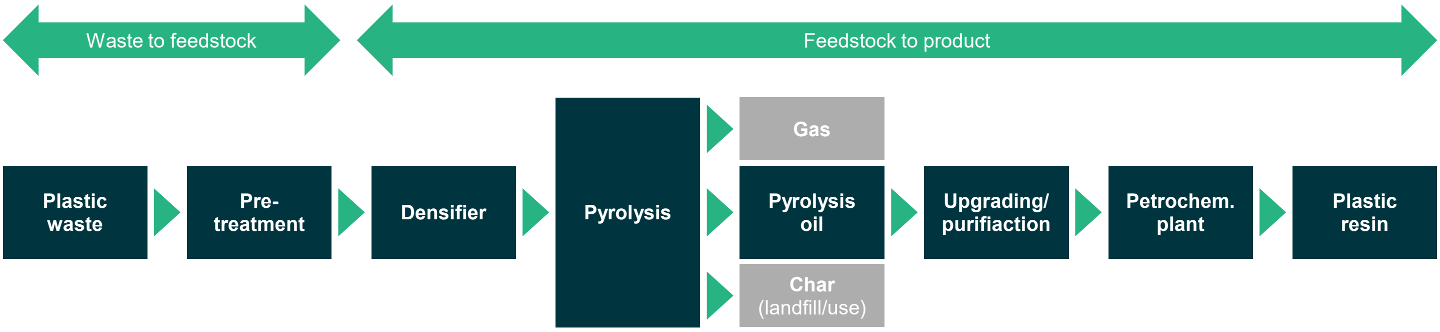
Feedstock to product

In the 'feedstock to product' part of the value chain, the pre-treated plastic waste is put through pyrolysis, decomposing the plastic waste through heat (typically around 500°C) without oxygen. This conditions and vaporises the plastic waste in the pyrolysis reactor. The waste is then condensed to produce pyrolysis oil together with gas and char. This is again upgraded/purified and pelletised before it is used as input in the production of new plastics.

…under which the plastic waste is decomposed through heat (typically around 500°C) without oxygen

There are a large number of companies in the pyrolysis part of the value chain, including chemical companies that have developed the conversion technology in-house such as ExxonMobil and LyondellBasell, as well as specialised pyrolysis companies such as Plastic Energy and PureCycle.

Figure 76: The chemical recycling process



Source: Milton Roy

Plastic manufacturing

Driven by stricter policies for post-consumer recycled plastic content, the major manufacturers have committed to increasing their share of recycled plastics content. As mentioned above, a few of the plastics manufacturers have developed their own pyrolysis technologies. The plastics-producing companies without in-house technology typically collaborate with the specialised pyrolysis companies to get access to recycled resins. Examples of such collaborations include TotalEnergies and Plastic Energy, and Dow and Mura Technology.

The major manufacturers have committed to increasing their share of recycled plastics content

Plastic packaging

With a higher share of recycled plastic resins, the brand companies can increase the share of post-consumer recycled plastics in their packaging.

Supply/demand imbalance in recycled plastics market

Increasing plastics recycling capacity requires the build-out of infrastructure for sourcing and sorting plastic waste. In addition, the optimisation of quantity and quality for the recycled plastic resins and process efficiency depends on plastic-waste feedstock consistency. Hence, the quality of the plastic waste sorting and preparations for chemical recycling are of great importance. However, securing a stable stream of sorted feedstock at a suitable price remains a challenge for chemical recycling companies. As a result, we have started to see plastics producers invest upstream in the value chain, such as the Cyclyx consortium – but much more activity is needed.

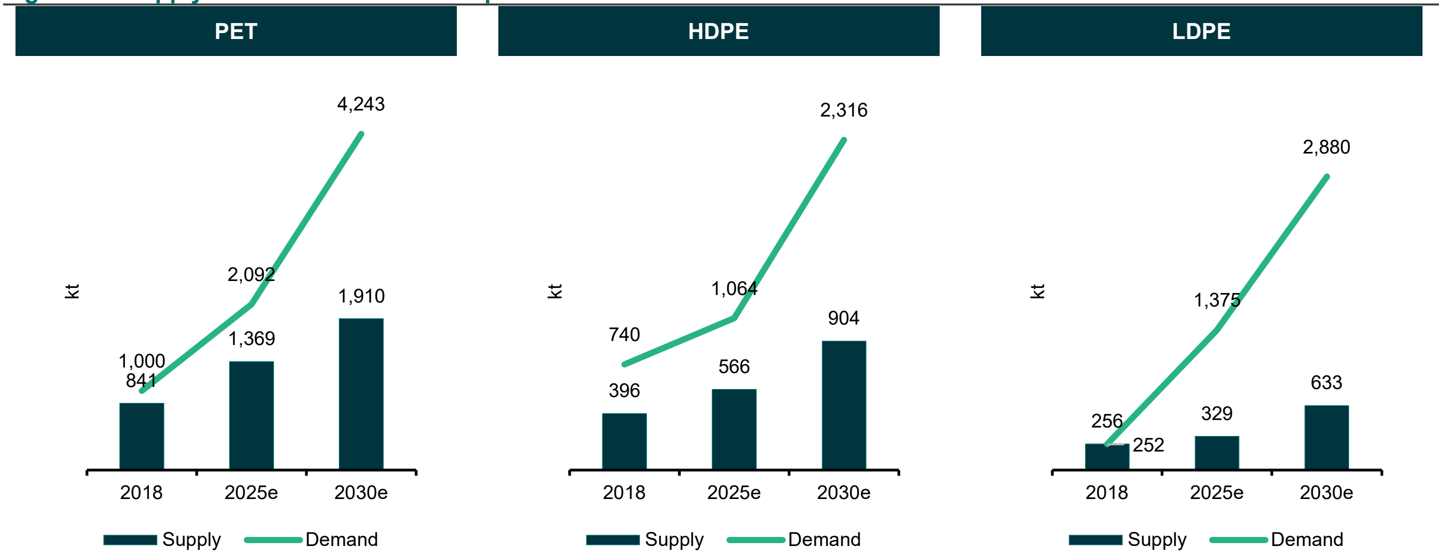
Access to low-cost feedstock is today limited by the logistics around waste collection, transportation and sorting, particularly for post-consumer materials. In addition, many waste streams are difficult to recycle, and quality yields from emerging technology such as chemical recycling still need to improve. However, issues with production yields are to a large extent due to recycled resins not meeting the same specifications (polymer recipe, contaminants and physical properties) as virgin resins. This can be much more challenging for post-consumer recycled resins and is to our understanding highly dependent on the precision in waste-sorting.

Access to low-cost feedstock is today limited by the logistics around waste collection, transportation and sorting, particularly for post-consumer materials

The waste-plastic supply gap is only likely to become more severe in the coming years, as additional chemical-recycling capacity comes on stream. Kearney sees 55%, 61% and 78% supply gaps for recycled PET, HDPE and LDPE, respectively, by 2030. While the competitive landscape for conversion technology seems crowded and dominated by large chemical companies such as ExxonMobil, Agilyx (through Cyclyx) is the only company we have identified with an extensive offering of feedstock sourcing.

Agilyx (through Cyclyx) is the only company we have identified with an extensive offering of feedstock sourcing

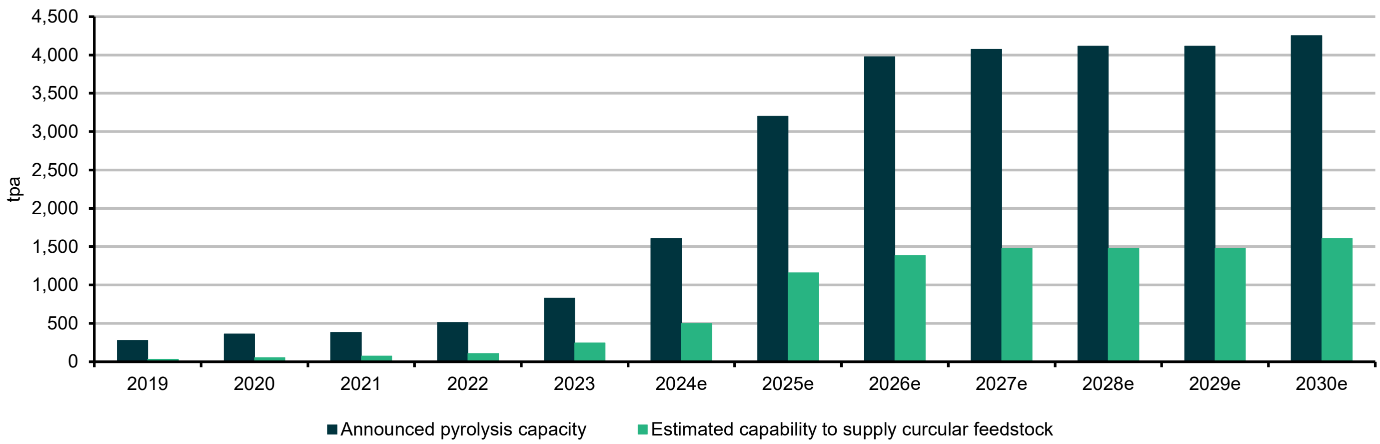
Figure 77: Supply/demand balance for US plastics market



Source: Kearney

Woodmac sees the same trend, highlighting that 'securing supply of suitable feedstock to support even a small commercial scale plant is the challenge'. The agency highlights that it will take long time for sorting companies to invest and establish facilities to pre-treat mixed plastic streams. Despite estimating a significant increase in capabilities to supply circular feedstock, it sees a 64% supply deficit versus currently announced pyrolysis capacity by 2025e and a 62% deficit by 2030e.

Figure 78: Announced pyrolysis capacity versus capability to provide circular feedstock



Source: Woodmac

Challenges of chemical recycling

The concept of chemical recycling is still in its early days. There are many challenges and risks associated with the business case, including policies and public opposition, too-high costs, and the technology risk itself, as well as the access to proper feedstock (elaborated on above). Through Cyclyx, Agilyx is trying to help increase the access to feedstock, but the rest of the uncertainties are outside the company's control.

Project economics not yet good enough

Projects have been delayed as developers wait for costs to come down

Significant capex is needed to build large-scale plants, which has increased lately in light of the recent high inflation, with greater energy, construction and raw material costs. According to estimates from Loop Industries, the cost of building a PET depolymerisation plant increased by ~22% on average in 2021–2023, from USD325m to USD375m–425m, delaying projects as developers waited for costs to come down.

Recycled output competes with virgin feedstock, which is less expensive. Hence, a green premium is needed for recycled feedstock to generate desired returns. We have seen a willingness to pay such premiums for plastics producers and brand owners to meet recycled content targets, but believe costs will eventually need to come down for the chemical recycling industry to thrive.

Lack of policies, and public opposition

Permitting delays

Similar to other renewable technologies, permitting processes have been lengthy in the EU. This has caused delays, but not prevented plants from coming online.

Uncertainty around mass-balance approach

Governments have so far been hesitant to recognise allocation rules for the mass-balance approach in recycled plastics

The mass-balance approach says that a company's total production of green chemicals can be allocated across a large portion of its products rather than needing to be physically contained in a specific product. The approach is accepted in many industries, including the energy sector. Governments have however been hesitant to recognise allocation rules for the mass-balance approach in recycled plastics. As the process of tracking and tracing bio-based or recycled content in the chemicals industry is challenging and complex, an introduction of the mass-balance approach – under consideration in the UK and requested in the EU – should make this easier.

Public opposition to chemical recycling

In the US, projects have been considered controversial as local governments and environmentalists have raised concerns over the environmental benefits of chemical recycling, particularly for pyrolysis. Public opposition to chemical recycling has been driven by elements such as:

- **Chemical recycling not considered circular.** Not all consider the chemical recycling process as circular due to environmental concerns associated with the process and the lack of traceability in manufacturing.
- **Recycled output used for fuel consumption.** In the past, recycled naphtha was utilised as fuel in ships and trucks, in addition to recycled plastic production. As it can be difficult to track the application for naphtha output, there has been opposition to plastics pyrolysis. Plastic-to-fuel pyrolysis results in material leakage and is therefore not proper recycling, some argue. However, most output is now used in plastics production due to the accelerating demand for high-grade recycled plastics.
- **Classification of chemical recycling as 'manufacturing'.** In some US states, chemical recycling is classified as manufacturing instead of waste-handling. This benefits the projects' financial incentives such as tax breaks and government bonds to support construction, but may also result in weaker regulation and pollution standards relative to waste facilities.
- **Helps labelling virgin-plastic production 'green'.** As much of the recycled naphtha is blended at a small concentration with virgin feedstock, there are growing concerns that chemical recycling helps legitimise fossil fuel-based feedstock.

Risks

We highlight that any investment in securities involves risk linked to economic activity, financial market performance, taxation and other political factors, as well as accounting and regulatory changes. In addition, we see the following specific risks:

- **Slower-than-expected market growth.** If the market for chemical recycling follows a slower growth trajectory than we expect, demand for Agilyx's conversion technology and Cyclyx's circularity centres would be subdued. We believe the key market risks centre around:
  - **Lack of conversion technology scaling.** Several of the pyrolysis companies have seen issues with scaling up their technology to full-scale facilities.
  - **Lack of conversion technology cost-reductions.** Significant capex is needed to build large-scale plastic conversion plants, and recycled output competes with virgin feedstock that is less expensive. Hence, a green premium is needed for recycled feedstock to generate the desired returns. We have seen a willingness to pay such premiums for plastics producers and brand owners to meet recycled content targets, but believe costs will eventually need to come down.
  - **Policy risk.** The chemical recycling industry is still at an early stage and dependent on policies for plastics recycling. Without this, the recycling of plastics is a cost without benefits for the plastics value chain, and we would expect limited deployment.
  - **Public opposition risk.** Chemical recycling facilities are by some considered controversial due to concerns over the environmental benefits, chemical recycling not being considered circular due to the lack of traceability in the manufacturing and the fact that recycled output can be used for fuel consumption, as well as chemical recycling also helping labelling virgin plastic consumption as green.
  - **Weak macro environment.** A weak macro environment could reduce the willingness to invest in plants for chemical conversion of plastics and lower demand for Agilyx's products.
- **Operational risks.** Having a limited operating history with no large-scale circularity centres or conversion facilities operational yet, we see a higher risk of the company facing operational issues than more mature ones.
- **Technology replication.** Agilyx's business is dependent upon the company's proprietary technology, which is protected through a combination of patents, trade secrets, knowhow and confidential procedures. We see a risk of it losing its competitive advantage if it does not manage to protect its technology.
- **Emerging competition.** While the space for the chemical conversion of plastics seems crowded, there are few focusing on the waste-to-feedstock part of the value chain. However, emerging competition in both parts of the value chain could put pressure on margins and lower activity.
- **Interest rates.** Changes in interest rates would directly affect financial expenses.

Appendices

Calculations applied in valuation section

Cost of capital

Figure 79: Cost of capital applied

	Cyclyx	Agilyx	Comment
Risk free rate	4.0%	4.0%	DNB house assumption
Beta	1.00	1.00	
Market risk premium	4.5%	4.5%	DNB house assumption
Technology risk premium	1.0%	3.0%	Higher for chemical conversion technology than for sorting technology
Liquidity risk premium	1.5%	1.5%	
Cost of equity	**11.0%**	**13.0%**	CoE applied for SOTP
Risk free rate	4.0%	4.0%	
Company premium	3.0%	3.0%	DNBe
Cost of debt (pre tax)	**7.0%**	**7.0%**	
Tax rate	20.0%	20.0%	
Cost of debt (post tax)	**5.6%**	**5.6%**	
Debt to total capitalisation	45.0%	0.0%	75% LTV for CCC3-5
Cost of capital (WACC)	**8.6%**	**13.0%**	WACC applied for discounted multiples analysis

Source: DNB Markets

Dilutive effect

Figure 80: Dilutive effect calculations applied in DCF-based SOTP

Equity value old (NOK/share)	39
Share count old (m)	95.7
Market cap old (NOKm)	**3,775**
Required equity raise (USDm)	57
Required equity raise (NOKm)	**611**
Market cap new (NOKm)	**4,386**
Share price	30.0
New shares from equity raises (m)	20.4
New shares from warrants (m)	2.3
New shares from options (m)	7.7
Share count new	**126**
Equity value new (NOK/share)	34.8
Dilutive effect	**-4.7**

Source: DNB Markets

Management and board

Management

- **Russell Main – CFO and interim CEO.** Mr Main has been CFO in the company since May 2020, except for seven months in 2021 when he was CFO in Cyclyx. He has over 25 years of executive finance and operational experience. Before joining Agilyx, he was CFO of Abode Systems, and prior to that worked for Tyco for 23 years. Mr Main holds a Bachelor of Science degree in Economics/Finance from Bentley University.

- **Chris Faulkner – CTO.** Mr Faulkner has 15 years of technical and operational experience, having held engineering, management and scientist positions in the renewable energy and chemicals industry sectors. He is an inventor of novel polymer composite materials and has led the certification and commercialisation of the international product launch of a 5kWe combined heat and power fuel cell system. Dr Faulkner holds a doctorate in Chemical Engineering from Vanderbilt University.

- **Carsten Larsen – CCO.** Mr Larsen was appointed CCO of Agilyx in 2021. Prior to this he had 25 years' experience at plastics manufacturer Dow, most recently in Circularity EMEA & APAC, where he was responsible for developing new business models and growth strategies that monetise the plastic-waste recycling streams, including mechanical and chemical recycling platforms. He has also served on the boards of the American Chamber of Commerce in South Africa, the Chemical & Allied Industries' Association and Epoxy Industry Association. Mr Larsen holds a bachelor's degree in international business administration from Copenhagen Business School.
- **Mark Barranco – SVP, engineering and execution.** Mr Barranco joined Agilyx as SVP engineering and execution in 2020. Prior to this, he worked for over 30 years at ExxonMobil, where he progressed through numerous managerial and leadership assignments. Hence, he has extensive experience from the petrochemical industry in a variety of technical and business roles spanning basic chemical products, such as olefins and aromatics, to derivatives such as polymers and resins. Prior to ExxonMobil, Mr Barranco was a Commissioned Submarine Warfare Officer in the United States Navy. He holds a BS in Systems Engineering from the United States Naval Academy and an MBA from Rutgers University.
- **Stephen Hamlet – VP, human resources.** Mr Hamlet has been VP human resources at Agilyx since 2022. Prior to this, he led the Human Resources team for NeuroLogica/ Samsung Medicine and was director of HR for Crane Currency. He has also served as an Executive Coach for HR-ROI, NH, and led the HR function for four years at B/E Aerospace, where he managed the post-acquisition integration of 11 businesses into a single-divisional structure. Stephen holds a bachelor's degree in communications from North Carolina State University and a Master of Business Administration, specialising in Human Resources Management from Louisiana State University's online programme.

Board

- **Jan Secher – chair.** Mr Secher was CEO of Swedish specialty chemical company Perstorp Group before it was acquired by Petronas. He also has significant public company experience, having served as the CEO of Clariant, and as a current board member of Elekta. Mr Secher held a variety of senior executive roles at ABB, including membership of its Executive Committee. He is currently a board director of the European Chemical Industry Council. He holds an MSc in Industrial Marketing, Finance from Linkoping University.
- **Ranjeet Bhatia.** Mr Bhatia advises Saffron Hill Ventures and in 2009 led Agilyx's first institutional investment round. Other notable ESG investments include Coyuchi, and Marrone Bio, where Saffron Hill was an early investor. In addition to Agilyx, he serves on the boards of Coyuchi, Faceware Technologies, and Image Metrics. Mr Bhatia holds an MBA from UCLA's Anderson School of Business, an MA in International Relations and Economics from the Johns Hopkins University School of Advanced International Studies (SAIS), and a BA in Environmental Science from Occidental College.
- **Carolyn Clarke.** Ms Clarke is a chartered accountant and member of the council of the Chartered Institute of Internal Auditors. She spent 30 years in PwC in roles including external audit, transactions, internal audit, risk, governance, conduct and controls optimisation. 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. She chairs the board of Care International UK and is an independent director of Starling Bank where she chairs the Ethics and Sustainability Committee.
- **Steen Jakobsen.** Mr Jakobsen joined Saxo Bank in 2000 and serves as chief investment officer. As head of the SaxoStrats team, Saxo Bank's in-house team of experts, he is responsible for all research including the Quarterly Outlooks, and was the founder of Saxo Bank's renowned Outrageous Predictions. Prior to joining Saxo Bank, he worked at Swiss Bank Corp, Citibank, Chase Manhattan, and UBS, and served as Global Head of Trading, FX and Options at Christiania (now Nordea). Mr Jakobsen graduated from the University of Copenhagen in 1989 with an MSc in Economics.

- **Catherine C Keenan.** An executive with 32 years' experience in the Chemical and Plastics industry, Catherine Keenan has deep experience. She served as vice president, Public Affairs, Sustainability and Environment Health and Safety at Trinseo over 2010–2020. She began her career at The Dow Chemical Company and held a series of leadership roles with responsibilities including M&A integration, industry affairs, public policy issues management, media relations and marketing communications. She is a graduate of Lehigh University, with a Bachelor's degree in Journalism/Science Writing and a minor in Chemistry.
- **Peter Norris.** Mr Norris is chairman of Virgin Group Holdings Limited. He has over 37 years' experience in investment banking and business management. He has previous experience from Goldman Sachs and Barings, including as CEO of Barings Investment Banking Group. In 1995, Mr Norris established a corporate finance business, constructed around the needs of a client base of owner-entrepreneurs, which was merged with Quayle Munro Holdings in 2007, where he was appointed CEO. Mr. Norris graduated from Oxford University with a first-class degree in Modern History and Modern Languages.

Shareholders

Figure 81: Top 10 shareholders as of 9 April 2024

Shareholder	No. of shares (m)	Ownership (%)
Saffron Hill Ventures	39.8	41.6%
Mirabella Financial Services	19.0	19.9%
Caspla Securities	6.2	8.5%
Corvina Holdings	4.3	4.5%
Nordea	1.8	1.8%
MK Pensjon	1.5	1.5%
UFI	1.2	1.2%
Fondsfinans	0.7	0.8%
Joe Valliancourt	0.5	0.6%
Steen Jakobsen	0.4	0.5%
Others	20.3	19.2%
Total	**95.7**	**100%**

Source: Agilyx

Biannual numbers

(USDm)	H2 2020	H1 2021	H2 2021	H1 2022	H2 2022	H1 2023	H2 2023e	H1 2024e	H2 2024e	H1 2025e	H2 2025e
Revenues	**3**	**1**	**4**	**8**	**9**	**8**	**6**	**3**	**11**	**15**	**19**
Operating expenses	-7	-9	-11	-19	-19	-19	-18	-10	-12	-15	-17
EBITDA	**-4**	**-8**	**-7**	**-11**	**-10**	**-10**	**-12**	**-7**	**-1**	**0**	**2**
Depreciation	0	0	0	0	0	0	-6	0	0	0	0
Impairment of PPE	0	-1	1	-1	-2	-1	0	0	0	0	0
EBIT	**-4**	**-9**	**-6**	**-12**	**-13**	**-12**	**-17**	**-7**	**-1**	**0**	**2**
Net interest	-2	3	-5	2	-1	1	5	-1	-2	-3	-3
Net financial items	-2	3	-5	2	-1	1	5	-1	-2	-3	-3
PBT	**-6**	**-6**	**-11**	**-10**	**-14**	**-11**	**-13**	**-8**	**-3**	**-3**	**-1**
Net profit	**-6**	**-5**	**-11**	**-9**	**-13**	**-10**	**-13**	**-8**	**-3**	**-3**	**-1**
Adjustments to net profit	0	0	0	0	0	0	0	0	0	0	0
Net profit adj	-6	-5	-11	-9	-13	-10	-13	-8	-3	-3	-1
Avg. number of shares (m)	75	76	78	78	85	85	96	96	96	96	96
Per share data (USD)											
EPS	-0.07	-0.07	-0.14	-0.11	-0.17	-0.13	-0.14	-0.08	-0.03	-0.03	-0.01
EPS adj	**-0.07**	**-0.07**	**-0.14**	**-0.11**	**-0.17**	**-0.13**	**-0.14**	**-0.08**	**-0.03**	**-0.03**	**-0.01**
Growth and margins (%)											
Revenues, QOQ growth	75.9	-71.4	418.5	91.0	10.2	-5.6	-20.8	-59.3	336.2	34.9	20.1
Revenues, YOY growth	nm	-49.7	48.3	890.3	110.5	4.0	-25.2	-67.8	77.4	488.6	62.0
EBITDA adj margin	nm	nm	nm	nm	nm	nm	nm	nm	nm	0.0	10.4
Depreciation/revenues	-4.3	-16.2	-3.5	-4.7	-5.1	-5.0	-85.8	-3.2	-0.9	-0.4	0.0
EBIT adj margin	-142.8	-1165.3	-158.3	-152.2	-145.0	-146.9	-269.7	-268.9	-9.9	-0.4	10.4

Source: Company (historical figures), DNB Markets (estimates)

Adjustments to biannual numbers

(USDm)	H2 2020	H1 2021	H2 2021	H1 2022	H2 2022	H1 2023	H2 2023e	H1 2024e	H2 2024e	H1 2025e	H2 2025e
EBITDA	**-4**	**-8**	**-7**	**-11**	**-10**	**-10**	**-12**	**-7**	**-1**	**0**	**2**
EBITDA adj	-4	-8	-7	-11	-10	-10	-12	-7	-1	0	2
EBIT	**-4**	**-9**	**-6**	**-12**	**-13**	**-12**	**-17**	**-7**	**-1**	**0**	**2**
EBIT adj	-4	-9	-6	-12	-13	-12	-17	-7	-1	0	2
Net profit	**-6**	**-5**	**-11**	**-9**	**-13**	**-10**	**-13**	**-8**	**-3**	**-3**	**-1**
Net profit adj	-6	-5	-11	-9	-13	-10	-13	-8	-3	-3	-1

Source: Company (historical figures), DNB Markets (estimates)

Annual P&L

(USDm)	2020	2021	2022	2023e	2024e	2025e	2026e
Revenues	**4**	**5**	**16**	**15**	**14**	**34**	**42**
Operating expenses	-11	-20	-38	-37	-22	-32	-33
EBITDA	**-6**	**-15**	**-21**	**-22**	**-8**	**2**	**8**
Depreciation	0	0	-1	-6	0	0	0
Impairment of PPE	0	0	-3	-1	0	0	0
EBIT	**-7**	**-16**	**-24**	**-29**	**-8**	**2**	**8**
Net interest	-3	-2	1	5	-3	-5	6
Net financial items	-3	-2	1	5	-3	-5	6
PBT	**-10**	**-17**	**-23**	**-24**	**-11**	**-3**	**14**
Net profit	**-10**	**-16**	**-22**	**-23**	**-11**	**-3**	**14**
Net profit adj	-10	-16	-22	-23	-11	-3	14
Avg. number of shares	73	77	81	88	96	96	96
Per share data (USD)							
EPS	-0.14	-0.21	-0.27	-0.26	-0.12	-0.04	0.15
EPS adj	**-0.14**	**-0.21**	**-0.27**	**-0.26**	**-0.12**	**-0.04**	**0.15**
DPS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth and margins (%)							
Revenue growth	nm	12.8	236.6	-11.3	-3.6	141.6	22.7
EBITDA margin	nm	nm	nm	nm	nm	5.7	20.0
EBITDA adj margin	nm	nm	nm	nm	nm	5.7	20.0
Depreciation/revenues	-5.0	-5.6	-4.9	-40.7	-1.4	-0.2	0.0
EBIT margin	nm	nm	nm	nm	nm	5.5	20.0
EBIT adj margin	-154.3	-321.1	-148.4	-201.2	-58.2	5.5	20.0
PBT margin	nm	nm	nm	nm	nm	nm	34.7

Source: Company (historical figures), DNB Markets (estimates)

Adjustments to annual P&L

(USDm)	2020	2021	2022	2023e	2024e	2025e	2026e
EBITDA	**-6**	**-15**	**-21**	**-22**	**-8**	**2**	**8**
EBITDA adj	-6	-15	-21	-22	-8	2	8
EBIT	**-7**	**-16**	**-24**	**-29**	**-8**	**2**	**8**
EBIT adj	-7	-16	-24	-29	-8	2	8
Net profit	**-10**	**-16**	**-22**	**-23**	**-11**	**-3**	**14**
Net profit adj	-10	-16	-22	-23	-11	-3	14
Per share data (USD)							
EPS	-0.14	-0.21	-0.27	-0.26	-0.12	-0.04	0.15
Recommended adjustment	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EPS adj	-0.14	-0.21	-0.27	-0.26	-0.12	-0.04	0.15

Source: Company (historical figures), DNB Markets (estimates)

Cash flow

(USDm)	2020	2021	2022	2023e	2024e	2025e	2026e
Net profit	-10	-16	-22	-23	-11	-3	14
Depreciation and amortisation	0	0	1	6	0	0	0
Other non-cash adjustments	3	2	-1	-1	1	2	-10
Change in net working capital	0	-1	4	0	1	0	-3
Cash flow from operations (CFO)	**-7**	**-16**	**-15**	**-17**	**-10**	**-2**	**2**
Cash flow from investing (CFI)	**5**	**-3**	**-2**	**-104**	**-61**	**-46**	**-1**
Free cash flow (FCF)	**-2**	**-18**	**-18**	**-121**	**-71**	**-48**	**1**
Other	2						
Cash flow from financing (CFF)	**41**	**-1**	**12**	**120**	**65**	**47**	**0**
Total cash flow (CFO+CFI+CFF)	**39**	**-19**	**-6**	**-1**	**-6**	**-1**	**1**
FCFF calculation							
Free cash flow	-2	-18	-18	-121	-71	-48	1
Less: net interest	3	2	-1	-5	3	5	-6
Growth (%)							
CFO	nm	-126.0	2.6	-9.8	42.1	78.2	200.7
CFI	nm	-149.8	5.5	-4106.8	41.4	24.6	97.8
FCF	nm	-993.0	3.1	-581.3	41.5	31.9	102.4
CFF	nm	-102.6	1240.5	915.6	-45.9	-27.7	-100.0

Source: Company (historical figures), DNB Markets (estimates)

Balance sheet

(USDm)	2020	2021	2022	2023e	2024e	2025e	2026e
Assets	**46**	**28**	**25**	**127**	**183**	**228**	**242**
Inventories	0	0	2	1	1	3	4
Trade receivables	0	2	2	0	1	2	2
Other receivables	0	0	0	0	0	0	1
Cash and cash equivalents	39	20	14	13	7	6	7
Current assets	**39**	**22**	**18**	**14**	**10**	**11**	**14**
Property, plant and equipment	0	1	2	1	2	3	4
Other intangible assets	5	4	4	4	4	4	4
Investments in associates	2	0	0	107	166	209	219
Deferred tax assets	0	1	1	1	1	1	1
Non-current financial assets	0	0	0	1	1	1	1
Non-current assets	**7**	**6**	**6**	**113**	**173**	**217**	**228**
Total assets	**46**	**28**	**25**	**127**	**183**	**228**	**242**
Equity and liabilities	**46**	**28**	**25**	**127**	**183**	**228**	**242**
Total equity to the parent	37	14	6	105	128	172	186
Minority interests	2	1	1	9	9	9	9
Total equity	**39**	**15**	**7**	**114**	**137**	**181**	**196**
Trade payables	1	1	3	2	4	6	5
Other payables and accruals	2	2	8	6	6	6	6
Short-term debt	2	1	0	0	0	0	0
Total current liabilities	**5**	**5**	**11**	**8**	**10**	**12**	**11**
Long-term debt	1	0	0	0	30	30	30
Other non-current liabilities	1	8	7	5	5	5	5
Total non-current liabilities	**1**	**8**	**7**	**5**	**35**	**35**	**35**
Total liabilities	**6**	**13**	**18**	**13**	**45**	**47**	**46**
Total equity and liabilities	**46**	**28**	**25**	**127**	**183**	**228**	**242**
Key metrics							
Net interest bearing debt	-36	-18	-14	-13	23	24	23

Source: Company (historical figures), DNB Markets (estimates)

Valuation ratios

(USDm)	2020	2021	2022	2023e	2024e	2025e	2026e
Enterprise value							
Share price (USD)	4.92	4.08	3.47	2.34	2.79	2.79	2.79
Number of shares (m)							
Net interest bearing debt	-36	-18	-14	-13	23	24	23
Net interest bearing debt adj	-36	-18	-14	-13	23	24	23
Valuation							
EPS	-0.14	-0.21	-0.27	-0.26	-0.12	-0.04	0.15
EPS adj	**-0.14**	**-0.21**	**-0.27**	**-0.26**	**-0.12**	**-0.04**	**0.15**
DPS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
P/E	-35.6	-19.3	-12.8	-8.9	-23.8	-77.2	18.4
P/E adj	-35.6	-19.3	-12.8	-8.9	-23.8	-77.2	18.4
Average ROE		-60.4%	-204.6%	-38.2%	-9.0%	-2.2%	7.7%

Source: Company (historical figures), DNB Markets (estimates)

Key accounting ratios

	2020	2021	2022	2023e	2024e	2025e	2026e
Profitability (%)							
ROA		-44.1	-84.1	-30.4	-7.3	-1.7	6.2
Return on invested capital (%)							
Net PPE/revenues	8.1	17.1	9.8	8.1	14.2	8.6	9.4
Cash flow ratios (%)							
FCF/revenues	-38.6	-374.1	-107.7	-827.5	-502.3	-141.5	2.7
CFO/revenues	-160.0	-320.6	-92.7	-114.7	-68.9	-6.2	5.1
CFO/current liabilities	-139.0	-304.6	-141.8	-211.1	-97.1	-17.4	19.9
Cash conversion ratio	16.5	112.6	80.2	524.1	628.8	1391.4	7.8
OpFCF margin	-149.3	-315.5	-128.0	-153.0	-56.9	5.7	20.0
Leverage and solvency (x)							
Cash coverage	-1.88	-10.26	20.30	4.08	-2.62	0.36	-1.36
Net debt/EBITDA	5.57	1.19	0.65	0.58	-2.83	12.32	2.71
Total debt/total capital (BV)	0.06	0.05	0.00	0.00	0.16	0.13	0.12
Cash conversion cycle							
Receivables turnover days	14.7	152.1	62.4	11.9	30.5	21.8	21.7

Source: Company (historical figures), DNB Markets (estimates)

Important Information

Company:	Agilyx
Coverage by Analyst:	Helene Kvilhaug Brøndbo
Date:	10/4/2024

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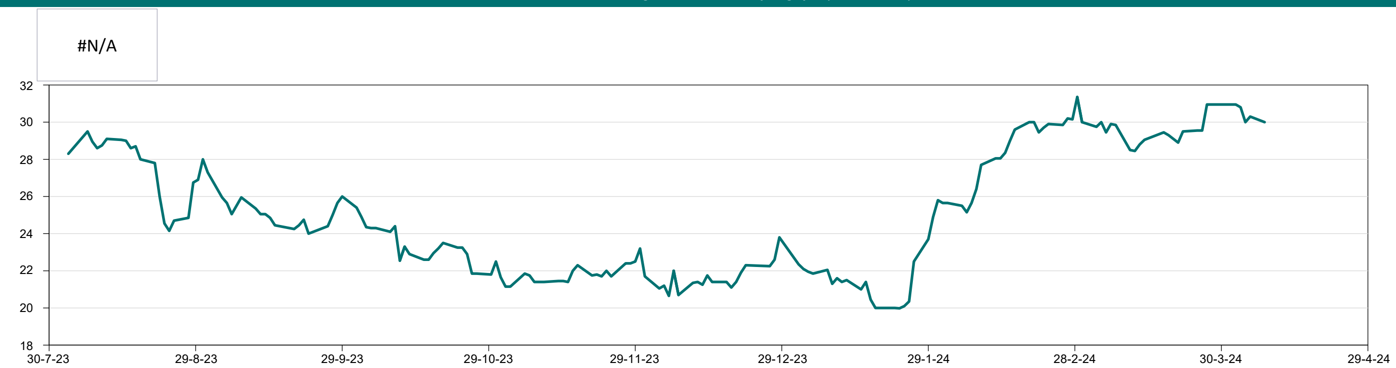
Price, Recommendation, and Target Price History Agilyx (AGLX NO) as of 9-4-24



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