

Carbios

H1 results

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Carbios (ALCRB) has reported H1 results that support our full-year forecast and delivered key milestones towards scaling up for industrialisation with the launch of its pre-pilot production facility for biodegradable plastics. Our valuation range remains unchanged, at €23-37 per share.

Year end	Revenue (€m)	PBT* (€m)	EPS* (c)	DPS (€)	P/E (x)	Yield (%)
12/13	0.9	(3.1)	(57.8)	0.0	N/A	N/A
12/14	0.7	(3.3)	(59.4)	0.0	N/A	N/A
12/15e	0.5	(3.6)	(72.5)	0.0	N/A	N/A
12/16e	0.4	(4.0)	(87.7)	0.0	N/A	N/A

Note: *PBT and EPS are normalised, excluding intangible amortisation, exceptional items and share-based payments.

Move towards industrialisation

Carbios has achieved key milestones towards industrialisation, having concluded the enzyme production stage and launched its pre-pilot production platform for biodegradable plastics. This has finalised the third stage of its development, following collaborative research and proof-of-concept. It is an important step towards scaling up as well as commercial licensing development. Importantly, it will enable the company to eventually file for IP protection for each individual end-product – a very strong cornerstone to long-term IP. Carbios has also produced a second biodegradable plastic, PLA-based, which shows that its string of processes continues to progress as targeted. In H1, it strengthened its board by appointing Professor Alain Marty as chief science officer and Jean Falgoux, whose industrial and governance experience should be of great benefit.

H1 expense and cash control in line

H1 results support our full-year forecast. The reported net operating loss of €1.9m is in line with our full-year expectation for an operating loss of €3.6m. We have adjusted our tax credit forecast on the back of the current run rate. As a result, our 2015e EPS increases to -€0.73 from -€0.79. Carbios had cash of €9.6m at the end of June, after net cash spend of €1.5m. This supports our forecast of net cash spend of €3.1m for the full year and year-end net cash of €7.8m.

Valuation: Unchanged at €23-37 per share

We value Carbios on a DCF methodology with risk-adjusted cash flows. We value the most advanced processes individually based on potential market sizes, achievable royalty rates and market shares to 2030. Our fair value range is unchanged at €23-37 per share (WACC 20%). Commercialisation and licensing will be key to de-risking cash flows.

Alternative energy

9 October 2015

Price €11.79

Market cap €44m

Net cash (€m) at 30 June 2015 9.6

Shares in issue 3.75m

Free float 20%

Code ALCRB

Primary exchange Alternext Paris

Secondary exchange N/A

Share price performance



% 1m 3m 12m

Abs 2.7 (3.7) (6.4)

Rel (local) 1.2 (3.9) (17.2)

52-week high/low 14.1p 11.0p

Business description

Carbios develops enzyme-based processes for biodegradation and bioproduction of plastics, with a long-term aim to displace current recycling and production practices.

Next event

FY15 results March 2016

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H1 results confirm solid progress

Carbios has reported H1 results that support our full-year expectations and demonstrate good progress in driving its key technology platforms towards industrialisation and commercialisation. It has finalised the third key stage of the Thanaplast project, ie enzyme production, and is now approaching validation of its plastic production process.

Well on the way to industrialising key processes

Carbios' recent announcement of the start-up of its plastic production pre-pilot plant marks a further key step in its development towards industrialisation.

Carbios has built up its pre-pilot production platform for biodegradable plastics in Auvergne (see our note [Pilot production facility launch](#), published September 2015) and launched production in July. This follows the build-out of the biological process platform from 2014, which was the third key stage in its development, after initial research and proof-of-concept. This closes the enzyme production stage and moves the company to the important industrial build-up stage. Post scale-up, it will be apply for additional patents. Carbios' IP is based on three pillars: enzymes, processes and end application. It will now be able to develop formulations for the most important applications, mulching films and plastic bags, and aim to achieve full proprietary IP protection. This is important for the company's long-term ability to defend its intellectual property.

The pilot production also shows the company's expertise when it installs and ramps-up equipment with future Plastics licensing partners.

Production of a second biodegradable plastic, PLA-based, at pre-pilot stage also illustrates the company's consistent progress on pushing its processes through the relevant development stages.

H1 results show expense and cash control

H1 revenues were €452k, entirely made up of grants and subsidy payments. Carbios receives non-reimbursable grants and reimbursable subsidy payments on completing key milestones. The payments received in H1 related to stage three of six of the Thanaplast project. The company's cost base consists essentially of R&D expenses. With that, the H1 reported operating loss of €1.9m is a run rate that is in line with our full-year expectation for an operating loss of €3.6m. We have increased our forecast for the company's tax credit on the back of the H1 run rate. This feeds through to our loss per share, reducing to €0.73 from €0.79.

Carbios' balance sheet and cash flow are in line with our expectations. End-June 2015 net cash was €9.6m, down from €10.9m at end 2014. Net cash spend in the six months was €1.5m, of which €0.5m related to equipment spend for the pilot production facility. This is in line with management's target for net cash burn of €3-4m pa and our forecast of net cash outflow of €3.1m for 2015, leaving our forecast year-end net cash position of €7.8m.

Long-term financials

The Thanaplast project, ie the company's current activities (see our [Initiation](#) of August 2015 for more detail), is scheduled to run through 2017. Beyond that, the company moves to an industrial and commercial licensing model. Our model therefore has two components: the grant and expenses-based accounts through 2017; and a long-term model based on individual forecasts for the most important applications through to 2030, in which actual market revenues drive earnings and all advanced processes should have reached sufficient maturity to discern realisable revenues in the respective markets. The latter is the basis for our DCF valuation (see below). We have included key assumptions for PET, PLA, plastic bags, mulching films and rigid packaging in the tables below.

Our PET model is based on industry expectations for the market to more than double over the next 15 years, on the back of global plastic consumption growth. Our royalty rate is based on the fact that PET is a relatively advanced process for Carbios. With that, we derive long-term free cash flows in excess of €120m pa that underlie our risk-adjusted DCF valuation for the business.

Exhibit 1: Long-term financials – PET

		2015e	2016e	2017e	2018e	2019e	2020e	2025e	2030e
Global market	mt	16	17	18	19	20	21	26	34
% chge y/y		2.5%	4.5	4.5	4.5	5.0	5.0	5.0	5.0
Px/kg	€/t	1000	1005	1015	1025	1038	1050	1114	1183
% chge y/y		0.0	0.5	1.0	1.0	1.2	1.2	1.2	1.2
Global recycling market	€m	16,400	17,224	18,179	19,187	20,388	21,664	29,349	39,759
Market share (%)		0	0	0	2	2	3	6	8
Royalty rate (%)		2.5	2.5	2.5	2.5	2.5	2.5	3.0	5.0
Upfront	€m	0	0.5	0.8	5.0	5.0	8.0	12.0	25.0
Revenues	€m	0.00	0.03	0.12	8.2	11.8	19.4	66.2	186.1
Free cash flow	€m	0	0	0	0.3	2.4	4.7	32.0	120.2

Source: Plastics Europe, GBI Research, Edison Investment Research

PLA is much less advanced than PET and the market size is correspondingly smaller. However, it could become a very important long-term product that could even substitute many existing plastic products. We have also reflected the early-stage nature of the market and Carbios' process through a weaker royalty rate, leading to cash flows more heavily weighted towards the very long term.

Exhibit 2: Long-term financials – PLA

		2015e	2016e	2017e	2018e	2019e	2020e	2025e	2030e
Global market	mt	0.85	1.00	1.18	1.40	1.65	1.94	4.01	6.28
% chge y/y		0.18	0.18	0.18	0.18	0.18	0.18	0.15	0.08
Px/kg	€/t	1378	1385	1399	1413	1430	1447	1536	1630
% chge y/y		0.0	0.5	1.0	1.0	1.2	1.2	1.2	1.2
Global market	€m	1171	1389	1655	1972	2355	2813	6161	10232
Market share (%)		0	0	0	0	2	5	11	15
Royalty rate (%)		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Upfront	€m	0.0	0.2	0.6	1.4	2.1	5.8	18.4	40.8
Revenues	€m	0.00	0.21	0.63	1.41	3.32	9.30	35.38	79.13
Free cash flow	€m	0.00	0.00	0.00	0.05	0.67	2.24	17.12	51.12

Source: Plastics Europe, GBI Research, Edison Investment Research

Plastics, which is experiencing strong growth, is one of the most important end-markets for Carbios' technology. However, it is competitive and likely to command lower royalty rates. We have reflected this in our long-term DCF model, as laid out in the table below.

Exhibit 3: Long-term financials – plastic bags

Bags		2015e	2016e	2017e	2018e	2019e	2020e	2025e	2030e
Global market	mt	12.30	12.73	13.18	13.64	14.11	14.61	17.35	20.61
% chge y/y		2.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Px/kg	€/t	2500.00	2500.00	2500.00	2500.00	2500.00	2500.00	2500.00	2500.00
% chge y/y		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Global market	€m	30750	31826	32940	34093	35286	36521	43376	51517
Market share (%)		0	0	0	1	1	2	3	3
Royalty rate (%)		2.5	2.5	2.5	2.5	2.5	2.5	3.2	3.5
Upfront	€m	0.0	0.5	0.8	5.0	5.0	8.0	12.0	25.0
Revenues	€m	0.0	0.0	0.2	5.5	10.7	18.7	53.9	93.2
Free cash flow	€m	0.0	0.0	0.0	0.2	2.1	4.5	26.1	60.2

Source: Plastics Europe, GBI Research, Edison Investment Research

The market for mulching films is niche and narrow. As such, its size is limited, but Carbios is likely to be a leading actor. Therefore, we have assumed a relatively high royalty rate and market share for our long-term forecast DCF cash flows, as below.

Exhibit 4: Long-term financials – mulching films

		2015e	2016e	2017e	2018e	2019e	2020e	2025e	2030e
Global market	mt	1.02	1.03	1.05	1.06	1.08	1.09	1.18	1.27
% chge y/y		0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Px/kg	€/t	3000	3015	3045	3076	3113	3150	3343	3549
% chge y/y		0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Global market	€m	3045	3106	3184	3264	3353	3444	3938	4504
Market share (%)		0	0	0	2	5	8	15	25
Royalty rate (%)		2.5	2.5	2.5	2.5	2.5	2.5	3.0	3.8
Upfront	€m	0.0	0.0	0.0	1.6	4.2	6.9	17.7	42.8
Revenues	€m	0.0	0.0	0.0	1.6	4.2	6.9	17.7	42.8
Free cash flow	€m	0.0	0.0	0.0	0.1	0.8	1.7	8.6	27.6

Source: Edison Investment Research

Rigid packaging could be a very important market, due to the many variations in modern consumption patterns. Yet, the market is in a very early stage, so still small. Carbios' process in relation to rigid packaging is very early stage, which is the reason underlying our royalty rate at the low end of the typical industry range. If and when the process becomes mature, the company could command higher royalty rates and our DCF cash flows could increase correspondingly.

Exhibit 5: Long-term financials – rigid packaging

Packaging		2015e	2016e	2017e	2018e	2019e	2020e	2025e	2030e
Global market	mt	1.02	1.03	1.05	1.06	1.08	1.09	1.18	1.27
% chge y/y		1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Px/kg	€/t	2500	2513	2538	2563	2594	2625	2786	2957
% chge y/y		0.0	0.5	1.0	1.0	1.2	1.2	1.2	1.2
Global market	€m	2538	2588	2654	2720	2794	2870	3282	3753
Market share		0	0	0	0	0	1	2	5
Royalty rate		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Revenues	€m	0.0	0.0	0.0	0.0	0.1	0.4	1.6	4.7
Free cash flow	€m	0.0	0.0	0.0	0.0	0.0	0.1	0.8	3.0

Source: Edison Investment Research

Valuation: Unchanged at €23-37 per share

As Carbios is an early-stage company, we base our valuation on a DCF methodology with risk-adjusted cash flows. We value the most advanced processes as outlined above. Our fair value range is unchanged at €23-37 per share (WACC 20%). Commercialisation and licensing will be key to de-risking cash flows.

Exhibit 6: Financial summary

Year-end 31 December	€000s	2013	2014	2015e	2016e
		IFRS	IFRS	IFRS	IFRS
PROFIT & LOSS					
Revenue		900	664	508	410
Cost of Sales		(3,164)	(2,912)	(2,766)	(2,822)
Gross Profit		(2,264)	(2,248)	(2,258)	(2,412)
EBITDA		(3,077)	(3,283)	(3,488)	(3,895)
Operating Profit (before amort. and except.)		(3,116)	(3,364)	(3,577)	(3,995)
Intangible Amortisation		0	0	0	0
Exceptionals		9	16	0	0
Other		0	0	0	0
Operating Profit		(3,107)	(3,348)	(3,577)	(3,995)
Net Interest		(14)	48	0	2
Profit Before Tax (norm)		(3,130)	(3,316)	(3,576)	(3,993)
Profit Before Tax (FRS 3)		(3,121)	(3,300)	(3,576)	(3,993)
Tax		961	1,090	857	705
Profit After Tax (norm)		(2,169)	(2,226)	(2,720)	(3,288)
Profit After Tax (FRS 3)		(2,160)	(2,210)	(2,720)	(3,288)
Average Number of Shares Outstanding (m)		3.8	3.8	3.8	3.8
EPS - normalised fully diluted (c)		(57.8)	(59.4)	(72.5)	(87.7)
EPS - (IFRS) (€)		n/a	(0.6)	(0.7)	(0.9)
Dividend per share (c)		0.0	0.0	0.0	0.0
Gross Margin (%)		N/A	N/A	N/A	N/A
EBITDA Margin (%)		N/A	N/A	N/A	N/A
Operating Margin (before GW and except.) (%)		N/A	N/A	N/A	N/A
BALANCE SHEET					
Fixed Assets		243	1,048	1,362	1,665
Intangible Assets		72	130	130	130
Tangible Assets		14	740	1,054	1,357
Investments		157	178	178	178
Current Assets		16,113	12,684	9,784	6,222
Stocks		0	20	61	116
Debtors		1,401	1,402	1,590	1,678
Cash		14,598	11,099	7,970	4,265
Other		114	163	163	163
Current Liabilities		(1,110)	(196)	(330)	(359)
Creditors		(1,110)	(196)	(330)	(359)
Short term borrowings		0	0	0	0
Long Term Liabilities		(680)	(474)	(474)	(474)
Long term borrowings		(457)	(152)	(152)	(152)
Other long term liabilities		(223)	(322)	(322)	(322)
Net Assets		14,566	13,062	10,342	7,054
CASH FLOW					
Operating Cash Flow		(1,532)	(3,128)	(2,726)	(3,305)
Net Interest		(14)	48	0	2
Tax		0	0	0	0
Capex		(187)	(867)	(403)	(403)
Acquisitions/disposals		0	0	0	0
Financing		13,500	546	0	0
Dividends		0	0	0	0
Net Cash Flow		11,767	(3,401)	(3,129)	(3,705)
Opening net debt/(cash)		(2,374)	(14,141)	(10,947)	(7,818)
HP finance leases initiated		0	0	0	0
Other		0	207	0	0
Closing net debt/(cash)		(14,141)	(10,947)	(7,818)	(4,113)

Source: Carbios accounts, Edison Investment Research

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