RECOMMENDATION
Buy

Target Price
€86

BIO-ON
Turn off pollution

Sector: Biotechnologies
Bloomberg negotiation code: ON IM

Price as of 12/12/2018
€53.60

Market Capitalisation:	€ 1,009,034,794
Number of shares:	€ 18,825,276
Shareholders equity 30.06.2018:	€ 44,467,390

Date and time of production:
13.12.2018 at 12:00

Date and time of first circulation:
13.12.2018 at 17:00

Equity Research Department

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Unilever chooses Bio-On

- Bio-On makes PHA (polyhydroxyalkanoates) bioplastics thanks to a technology it developed from agricultural by-products. The biopolymers are made from renewable plant sources with no competition with food supply chains and are 100% biodegradable.
- The Italian Group signed a strategic agreement with Unilever in November to develop, manufacture and sell oral care and sun care products that replace "microbeads" (microplastics) with PHAs developed alongside Bio-On. The agreement with Unilever, a world-leader in the personal care sector, opens up Bio-On to a market with great potential.
- A license was recently granted to the Russian Group "TAIF JSC" to build a PHA bioplastic production plant.
- The growing ban on the use of conventional plastic around the world should give even more momentum to the bioplastics market.
- Bio-On should end 2018 with a value of production of 39.5 million Euro, considerably higher than our previous estimates of 26.3 million Euro (+50%), thanks to a higher number of licenses sold. The EBITDA should rise to 32.8 million Euro compared to our previous expectation of 16.2 million Euro.
- For the period 2018-2022, we estimate an average annual growth for the value of production of 86.46%. The EBITDA should grow at a CAGR of 86.06% while the net operating income should rise from 11.8 million Euro expected in 2018 to 112.162 million Euro in 2022.

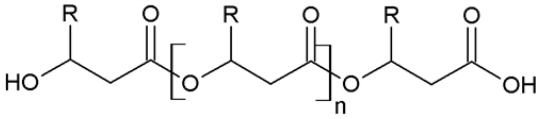
Year to 31/12 (k €)	2017A	2018E	2019E	2020E	2021E	2022E
Value of Production	12,088	39,517	64,596	82,780	141,970	217,750
Value Added	8,384	34,821	40,802	53,263	97,296	166,232
EBITDA	7,070	32,835	35,836	48,039	90,445	157,632
EBIT	6,230	31,785	30,320	42,423	84,829	152,016
Net income	4,911	11,844	14,697	25,538	58,172	112,162
Cash-flow	5,751	13,144	20,763	31,904	64,588	118,728
NFP	24,233	-24,696	-34,579	-12,416	28,688	159,741
ROE	10.19	20.07	20.19	25.82	36.68	41.30

Source: Bio-On; Estimates: Banca Finnat

Reference Market

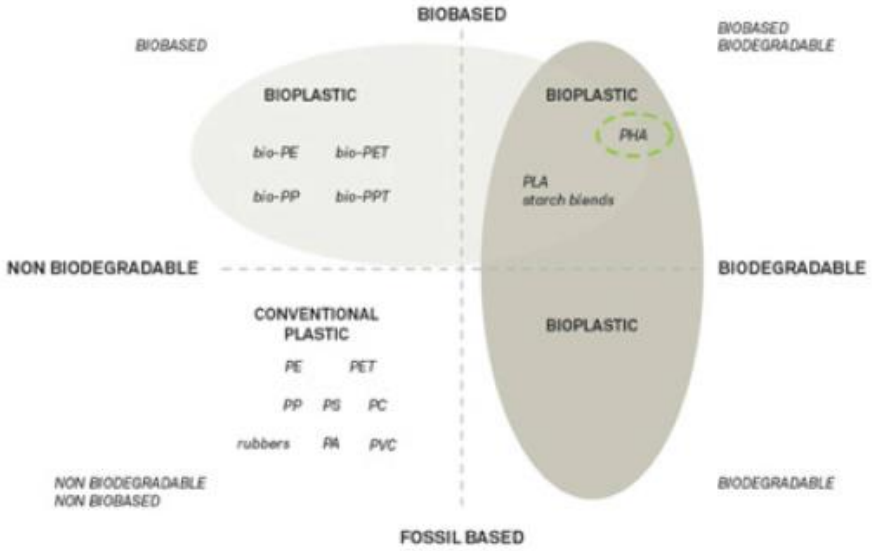
Bio-On operates internationally in the modern biotechnologies sector.
The company makes PHA (polyhydroxyalkanoates) bioplastics using a technology it developed, which uses renewable plant sources derived from "non-food" products, therefore causing no competition with food supply chains.
Bio-On's PHAs are 100% biodegradable and require no further treatment, such as composting for example.

The general structure for polyhydroxyalkanoates (PHAs)



In recent years, the bioplastics market has seen sharp growth and strong diversification.
According to "European Bioplastics", a plastic can be defined as "bioplastic" if it is biobased, biodegradable, or both.
The term "biobased" indicates that the material or product is derived from biomass such as maize, oil, sugar or cellulose. Biodegradation is a natural chemical process during which microorganisms present in the environment convert organic matter to natural substances such as water and carbon dioxide. Composting, on the other hand, involves a process of assisted biodegradation. The bioplastic, together with the wet material obtained through waste recycling, is converted to fertiliser or compost (without the need for artificial additives).
Various families of bioplastic exist with different properties and applications:

- biobased or partially biobased, non-biodegradable plastics such as bio-PE (polyethylene), bio-PA (polyamide) or bio-PET (polyethylene terephthalate);
- plastics that are both biobased and biodegradable, such as PLA (polylactic acid) and PHA (polyhydroxyalkanoates);
- plastics that are made from fossil resources and are biodegradable.



Source: Bio-On

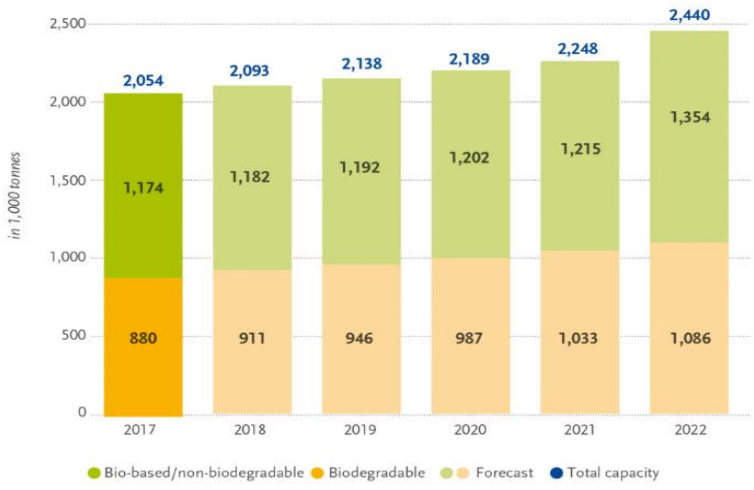
	Petrochemical	Partly bio-based	Bio-based
Non-biodegradable	PE, PP, PET, PS, PVC	Bio-PET, PTT	Bio-PE
Biodegradable	PBAT, PBS(A), PCL	Starch blends	PLA, PHA, Cellophane

Source: Wageningen Food & Biobased Research 2017

Bioplastics currently make up just 0.64% of the 320 million tons of plastics produced worldwide every year. The growing need for eco-compatible products that also have excellent technical characteristics may lead to approximately 85% of current plastic being replaced with biobased bioplastic.

In 2017, 2,054 million tonnes of bioplastic was produced, including 1,174 million tonnes of non-biodegradable biobased plastic and 880 thousand tonnes of biodegradable plastic.
It is estimated that bioplastic production could reach 2,440 million tons in 2022, with non-biodegradable bioplastic rising to 1,354 million tons and biodegradable plastic to 1,086 million tons.

Global production capacities of bioplastics

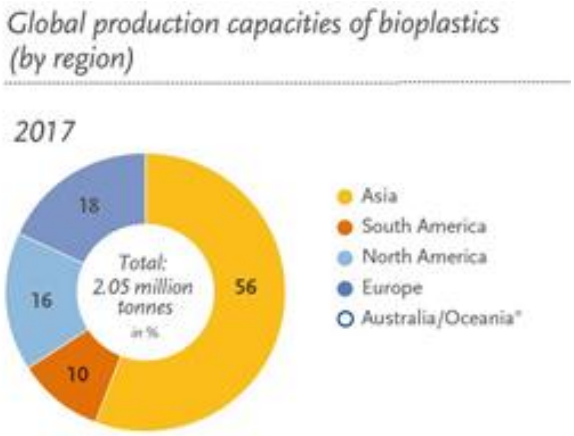


Source: European Bioplastics, nova-Institute (2017).
*More information: **www.bio-based.eu/markets** and **www.european-bioplastics.org/market***

The main driver for this growth (from 2.1 million tons to 2.44 million tons in the period 2018-2022) will be the initiatives from different countries aimed at encouraging the partial or total elimination of non-biodegradable plastics.
One example of this kind of government initiative was the ban on importing non-industrial waste plastic into China, which came into effect on 1 January 2018, as a result of which a new destination must be found for the 122 million tons of plastic produced globally - a situation that risks placing considerable strain on the entire waste management system and the recycling industry around the world.
India intends to ban all single-use plastics by 2022. It is worth pointing out that Asian countries, such as China, Indonesia, Philippines, Thailand and Vietnam, are responsible for 80% of marine litter. Europe is estimated to be responsible for just 1%.
At the end of October, the European Union decided to ban the use of disposable plastic, which accounts for 70% of marine litter. The ruling should be definitively approved on 18 December 2018. The ban covers products such as cutlery, cotton buds, plates, straws, drink stirrers and balloon sticks.

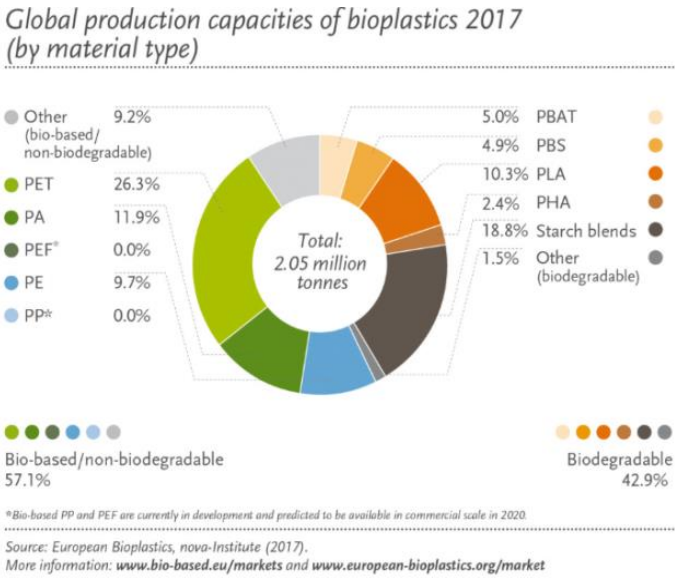
Also covered are lightweight plastic carrier bags, plastic items, oxo-degradable plastics (neither biodegradable nor compostable) and expanded polystyrene fast-food containers. The regulation should also cover plastic-containing cigarette butts, the quantity of which must be cut by 50% by 2025 and 80% by 2030 (with tobacco manufacturers required to absorb the costs of treatment and collection).
The European Union also intends to introduce an obligation for disposable plastic manufacturers to cover the cost of managing and reclaiming waste, and the cost of awareness-raising measures; the obligation to apply a clear, standardised label indicating how the products must be disposed of, their negative impact on the environment and the percentage of plastic contained; the imposition for member states to collect, by 2025, 90% of single-use plastic drinks bottles.
The United Kingdom also intends to become a "plastic free" country. On 9 January 2018, it introduced a ban on the production of cosmetics containing plastic microbeads, which are widely used in exfoliation creams, toothpastes and shower gels.
The same ruling came into force in the USA in 2015 and Canada and New Zealand are expected to follow suit by the end of this year.
Google and Apple have developed an app, "Beat the Microbead 3.0", which checks for microbeads in a variety of products.
Other factors behind the growth of the bioplastics market are the growing trend among consumers to purchase low-impact products, greater awareness of the effects of global warming, the higher price of fossil fuels and the economy's dependence on them.

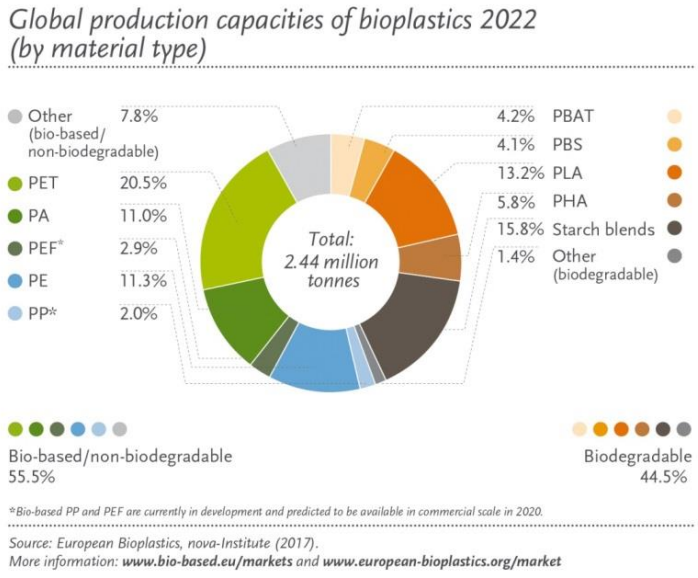
Globally, in 2017, bioplastic production was concentrated mainly in Asia, with a 56% share (1.15 million tons).
The Asian region is one of the fastest-growing markets in the bioplastics sector and China is the main contributor.
It is also expected that high bioplastic production capacities, especially in China and India, will drive market growth. Particularly interesting is the emerging trend in the automotive industry towards a more or less fast transition to "lightweight vehicles", which could boost consumption of bioplastics in this sector.
In the "Asia Pacific" area, bioplastic production is forecast to grow at a CAGR of 22% between 2017 and 2022 due to the wide availability of raw materials, a large quantity of agricultural waste and strong support from governments.
Europe is currently responsible for 18% (0.36 million tons) of global bioplastic production. The region's strict standards and regulations are the driving force in the market.
North America also has a sizeable bioplastics market, with 16% (0.33 million tons). The new regulations that will help promote the use of biobased materials are the main drivers of business in the region.
Finally, Latin America, with a 10% production share (0.21 million tons), should grow considerably due to the development of the packaging industry, particularly in Brazil and Argentina. Furthermore, Latin American countries are expected to become increasingly aware of environmental issues and government support is expected to increase.



Source: European Bioplastics

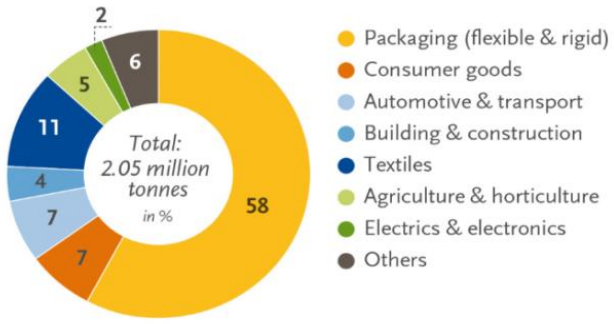
Of the approximately 2.05 million tons of bioplastic produced in 2017, 57.1% (1.17 million tons) was made up of non-biodegradable biobased bioplastic (including 26.3% PET, 11.9% PA, 9.7% PE, 9.2% others), while the remaining 42.9% (0.88 million tons) was made up of biodegradable bioplastic (18.8% maize/starch blends, 10.3% PLA, 5% PBAT, 4.9% PBS, 2.4% PHA, 1.5% others).
Bioplastic production capacity is forecast to rise to 2.44 million tons by 2022. Specifically, PHA and PLA are expected to grow by 3.4% and 2.9% respectively, whereas PET and PBS are expected to contract by 5.8% and 0.6% respectively.





In 2017, approximately 58% of the bioplastic produced worldwide was used in packaging, 11% in textiles, followed by consumer goods and automotive, both with a 7% share. The building and construction sector used 4% of production while agriculture used 5%. A residual share (2%) was used by the electrical sector, while the remaining 6% of production was split amongst various other sectors.

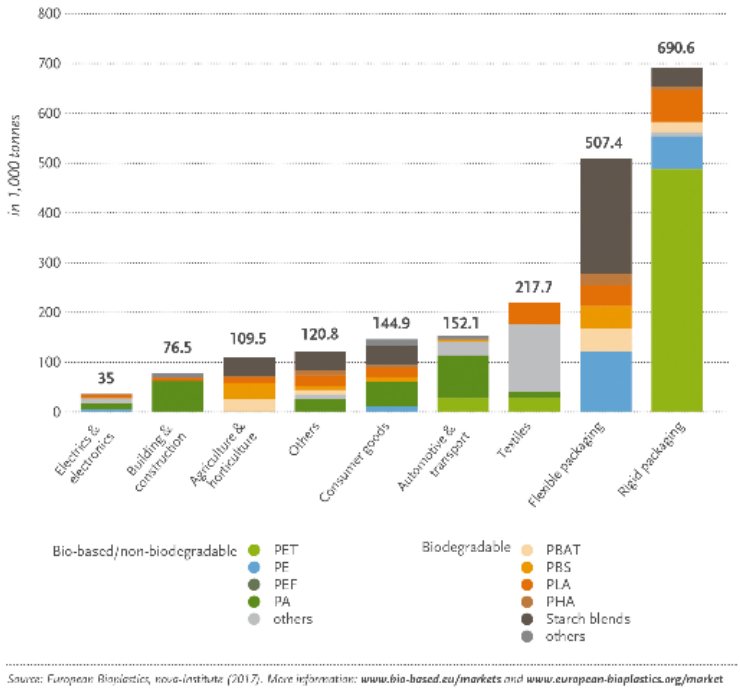
Global production capacities of bioplastics in 2017 (by market segment)



Source: European Bioplastics, nova-Institute (2017). More information: ***www.bio-based.eu/markets*** *and* ***www.european-bioplastics.org/market***

Non-biodegradable bioplastics are more widely used in the rigid packaging sector, textiles, construction and the automotive sector. Biodegradable bioplastics such as PHA and PLA are mainly used in flexible packaging, agriculture and consumer goods. A minimal share is also used in the electrical, textile and rigid packaging sectors.

Global production capacities of bioplastics 2017 (by market segment)



Source: European Bioplastics, nova-Institute (2017). More information: ***www.bio-based.eu/markets*** *and* ***www.european-bioplastics.org/market***

Nationally, the distribution of companies operating in the biotech sector puts Lombardy in first place with 155 companies (28.7% of the overall market), followed by Emilia Romagna and Lazio with 54 companies (10%) and Piedmont with 53 companies and a 9.8% market share.

Activities and Strategies

Bio-On is active in the biotechnologies sector. In particular, it finds innovative solutions for the production of 100% naturally biodegradable bioplastic made using "non-food" products such as agricultural by-products like sugar cane, sugar beet, crude glycerol (biodiesel waste) and potato processing waste, and, more recently, waste frying oil. This is the first time a fat is being used as the carbon source in the biopolymer production process.
In the near future, raw materials such as carbon dioxide, wood waste, wet waste, domestic waste, and agro-industrial production waste carbon sources in general could be used.
The company has created a "PHA" (*polyhydroxyalkanoates*) bioplastic using its own in-house technology.
In addition to ***research and development***, aimed at identifying innovative methodologies for the production and application of completely biodegradable materials, the company also ***grants licenses and offers ancillary services*** for the production of "*PHA*" for applications to date in the following sectors: automotive, beverages, electronics, packing, textiles, medical, pharmaceutical and cosmetics.
In previous years, licenses have been granted in Italy (SECI – Maccaferri Group) and France (Cristal Union).
In October 2018, Bio-On signed an agreement with the Russian Group "TAIF JSC", operating in the conventional petrochemical sector, granting it a license to build, in the Republic of Tatarstan, the Russian Federation's first PHAs bioplastic production plant. The agreement is worth 17.6 million Euro, including 5.6 million for the Bio-On technology license and the remaining 12 million Euro for designing and supplying high-tech fermenters and components developed by Bio-On for the new plant.
The TAIF JSC Group will invest a further 90 million Euro in the new production hub, with a view to building a 10 thousand tons/year production site expandable to 20 thousand tons/year in the future. The plant should be operational in 2020.
By the end of this year, Bio-On should grant a further license to another major industrial group for a 5 thousand tons/year plant.
The company's new business model also envisages entering into joint ventures with major industrial partners in specific sectors. The main purpose of the JVs is to accelerate and consolidate the application of PHA in the respective sectors of reference. In 2018 three licenses were granted to new joint ventures (Amt Labs, U-coat, Eloxel) and a fourth license is expected to be granted by 31.12.2018.

In addition to research and development and granting licenses, Bio-On, starting this year, now ***produces its own PHAs***, aiming to boost the cosmetics sector and create a standard of reference.
In June Bio-On inaugurated its first own production plant designed to produce special PHAs for the cosmetics sector. The natural and biodegradable bioplastic, "Minerv Bio Cosmetics", aims to replace polluting microbeads currently contained in the majority of cosmetics products.
The new plant, located in Castel San Pietro Terme (Bologna) and run by the subsidiary Bio-On Plants, will also be the site of the laboratories of the CNS (Cosmetic, Nanomedicine and Smart Materials) and RAF (Recovery and Fermentation) divisions.
Investment in the production hub and new laboratories was initially set at 20 million Euro, but higher than expected costs and the acquisition of adjacent land, ahead of a future expansion, have increased the overall investment to approximately 35 million Euro.
Investments in new patents of approximately 7.3 million Euro are added to this figure.

Once fully operational, the annual production capacity should be 1,000 tons, with the possibility of significant expansion in the relatively short term.
Bio-On Plants should thus be able to produce and sell special PHAs bioplastic micro powders for the cosmetics industry starting from next year.
In October 2018 Bio-On was awarded the "Best Practices" prize by "Frost & Sullivan" for the most innovative component for the cosmetics industry made from renewable plant sources.
In November 2018 Unilever and Bio-On announced a strategic partnership to develop, produce and sell hygiene and personal care products, particularly oral care and sun protection, that do not contain "microbeads" (microplastics contained in many personal care products that end up going down the drain and eventually into the sea). These microplastics will be replaced by PHAs developed alongside Bio-On. Unilever is present in over 190 countries worldwide and reaches 2.5 billion consumers. It is therefore a very interesting potential market outlet for the Italian Group, although its size is not easily quantifiable at present.

In the future, in addition to the first plant in Castel San Pietro Terme, a second production plant will be dedicated to "theranostics" (diagnosis and treatment using nanoparticles) and "bioremediation" (decontamination of polluted soil, particularly from hydrocarbons).
The Group currently has 5 research laboratories: Hawaii, Minerbio, Bentivoglio, the University of Bologna and Castel San Pietro Terme (BO). A sixth laboratory is expected to open at a location yet to be finalised.

The company recently reorganised its structure by setting up 6 new Business Units:

bio-on plants

Bio-On Plants manages and develops the production plant, future extensions and new special productions of PHAs bioplastic for cosmetics or other cutting-edge and high added value applications.

bio-on/cns

Bio-on CNS (Cosmetic, Nanomedicine & Smart Materials) will develop and sell biomaterials for the Cosmetics, Biomedical, Nutraceutical, Bioremediation, Organic Electronic and Smart Materials sectors.

bio-on/smd

Bio-On SMD (Structural Materials Development) conducts research and development of structural materials to make granules and/or pellets.

bio-on/raf

Bio-On RAF (Recovery & Fermentation) develops and researches new types of agricultural waste to be used in fermentation to produce PHAs biopolymers.

bio-on/eng

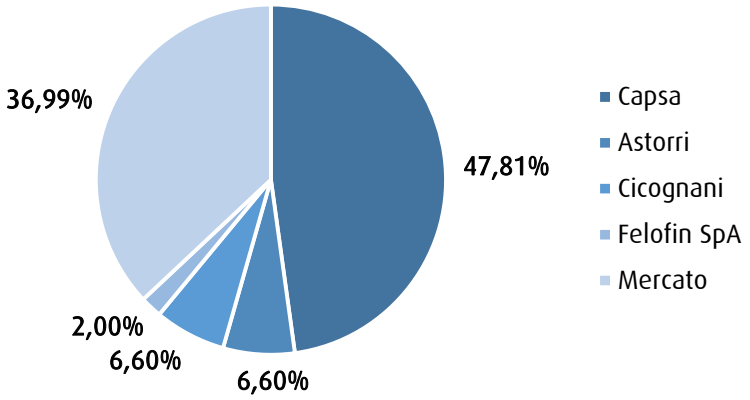
Bio-On Eng (Engineering) develops and provides comprehensive documentation on dedicated and bankable industrial feasibility studies and Process Design Packages for the granting of licenses and relative implementation of plants.

bio-on/fdm
Fashion Development Materials

Bio-On Fdm (Fashion Development Materials) develops new high-tech materials for the fashion and luxury sector using "Minerv PHAs" bioplastic.

Share ownership

Bio-On S.p.A.'s share capital is currently made up of 18,825,276 shares for an overall amount of 188,252.76 Euro.
47.81% is held by "Capsa S.r.l." (owned by Messrs Astorri and Cicognani), followed by equal shares of 6.6% held directly by Marco Astorri and Guido Cicognani. Felofin S.p.a. (Kartell's parent company) has a 2% share while the remaining 36.99% of the capital is floated on the market.



Source: Bio-On

Business model

a) Granting of licenses and/or concession of exploitation of developed applications.

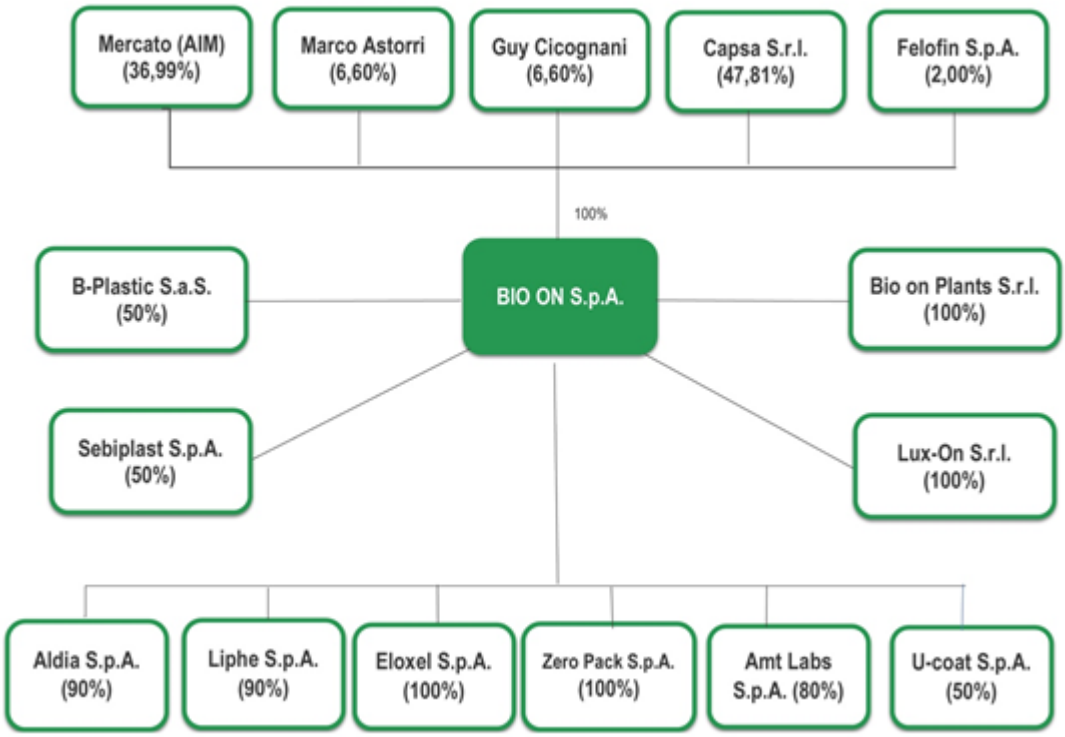
b) PHAs production at Castel San Pietro Terme (BO) plant for a maximum production capacity of 2,000 tons per year.

c) Formation of joint ventures with major industrial partners to jointly develop new PHAs and specific new applications requested by individual partners.

As a general rule, research and development costs are sustained entirely by Bio-On. Therefore, all joint ventures, in their initial phase, should break even or have only minor losses.
Running royalties from PHAs production will be due to Bio-On in the future.
Production should, for now, take place at Bio-On's Castel San Pietro Terme (BO) plant, which has a maximum production capacity of 2,000 tons per year.

In addition to the B-Plastic S.A.S and Sebiplast S.p.A. joint ventures already in the Group's perimeter, Bio-On also set up four newcos in late 2017: Aldia S.p.A., Liphe S.p.A., Eloxel S.p.A. and Zero Pack S.p.A. designed to welcome new partners into the capital.
During the accounting period about to close, three further joint ventures, Amt Labs S.p.A., U-Coat S.p.A. and Lux-On S.r.l., were formed with major industrial partners.
Six other joint ventures may be formed in the period 2019-2022.

Current Group structure:



Source: Bio-On

- **B-Plastic S.A.S:** French corporation recorded in the financial statement with the shareholders equity method. Since 31 December 2015 it has been held in joint control with French company "Cristal Union". Bio-On's contribution to the joint venture consists in the commercial and applicative development of the technology and in creating new product applications for the French market.

- **Sebiplast S.p.A.:** set up by Maccaferri Group in September 2015; jointly owned with Bio-On and set up to built a PHA plant integrated into the site owned by "Eridania SECI-SADAM S.p.A.", a beet sugar producer. Bio-On's contribution focuses on technological and commercial development and product marketing. The company is recorded in the financial statement with the shareholders equity method.

- **Bio-On Plants S.p.A.:** 100% owned by Bio-On and fully consolidated. Manages the Group's production activity and will provide training to licensees.

- **Lux-on:** set up in December 2018 and entirely owned by Bio-On (100%). Starting in April 2019, Bolognese multi-utility company Hera may acquire 10% of capital (with the possibility of subsequently rising to 49.9%). The joint venture will develop technology to produce biopolymers from CO2 (carbon dioxide).

- **Aldia S.p.A.:** 90% owned by Bio-On and 10% owned by a financial partner (fully consolidated). Together with Liphe, it is dedicated to Unilever and develops, produces and sells sun care products. Microplastics are widely used in oral care as well as the sun care sector.

Conventional sun creams release many chemical substances into water and facilitate the growth of viruses. The new ingredients (micro powders made from biodegradable bioplastic microscopic spheres or capsules) will not only replace conventional microplastics but are also designed to significantly reduce the percentage of UV filters used in sun protection products and boost their water-resistance. The sun care sector is estimated to grow globally at an average annual rate of 5% in the period 2018-2022, taking 2.85 billion in sales by the end of the forecast period. Unilever will buy the production through sub-licenses and has options to acquire up to 100% of the company within a determined period of time.

- **Liphe S.p.A.:** 90% owned by the parent company and the remaining 10% owned by a financial partner (fully consolidated). Together with Aldia it develops, produces and sells PHAs for Unilever's oral care products. The microplastics widely used in the oral care sector will be increasingly banned in the coming years.
  The oral care market made global sales of 28 billion dollars in 2017. In 2017 Europe and Asia Pacific accounted for over half of the entire oral care market. By 2023 it is forecast that the European market will take 15.2 billion dollars in sales.
  This market is forecast to grow, in the period 2018-2025, at an average annual rate of 5%, to 40.9 billion dollars, driven not only by the elimination of microbeads in products but also by a growing awareness of the importance of oral hygiene and by rising dental pathologies. These demands have encouraged the entry of innovative products such as PHAs with specific characteristics.
  Unilever will buy the production through sub-licenses and has options to acquire up to 100% of the company within a determined period of time.

- **Eloxel S.p.A.:** 100% owned by Bio-On and fully consolidated. The company develops PHAs for the organic electronics sector. An electronic device is defined as organic if its operation depends on organic semiconductors, i.e. conductive polymers or small carbon-based molecules. These materials can be synthesised to control their various semiconductive properties for applications such as lighting (LED), load transport and mobility (transistors) and light absorption (photodiodes and photovoltaic cells).
  The organic electronics market is in an advanced stage of international development with turnover of over 26 billion in 2016. This market will enable companies to produce low-cost, sustainable electronic devices with an initial investment aimed at design for recycling, i.e. retrieving and reusing their component materials.

- **Zero Pack S.p.A.:** 100% owned by the holding company and fully consolidated. It will develop, produce and sell food packaging for the fruit and vegetable sector. In 2017, with approximately 1.2 million tons, the packaging sector absorbed approximately 60% of the total demand for bioplastic. With the law on biodegradable disposable carrier bags for fruit and vegetables, a growing number of consumers avoid carrier bags and have switched to pre-packed produce. The first quarter of 2018 saw a 3.5% drop in loose fruit and vegetables and an 11% rise in fresh, pre-packed produce. The rising demand for pre-packed fruit consequently leads to more bioplastic being used.

- **Amt Labs S.p.A.:** "AMT Labs S.p.A." (Advanced Materials Tobacco Labs), 20% owned by "Gima TT" (with a 2.2 million Euro investment) and 80% owned by Bio-On, was set up in May 2018. The equity investment is recorded in the financial statement with the shareholders equity method. The aim of the new company is to research and develop new 100% biodegradable materials for the tobacco sector. Gima TT is owned by "IMA S.p.A." (a world leader in the design and manufacture of automatic machines for the processing and packaging of pharmaceuticals, cosmetics, food, tea and coffee).
  An estimated 5.6 billion cigarette butts are left in the environment every year.
  This has led to the big tobacco multinationals becoming interested in developing new, less harmful products, not only for the smoker's health but also for the environment.

- **U-coat S.p.A.:** at the end of May 2018 Maire Tecnimont signed an agreement with Bio-On governing the subsidiary "Maire Green Chemicals" taking a stake in "U-COAT" (recorded in the financial statement with the shareholders equity method), a company set up to sell biodegradable fertilisers. Its fertilisers are urea-based and 100% biodegradable, leaving no trace in the soil. Maire Green Chemicals has an equal interest in the company. The parent company Maire Tecnimont will be the sole global contractor for building turn-key plants based on this innovative technology.
  U-coat will pay running royalties to Bio-on for every quantity produced or sub-licensed on the fertilisers market.
  Many of the fertilisers used today contain microplastics, which accumulate in the soil and groundwater.
  In November 2018 the European Union introduced a new regulation on fertilisers facilitating single market access for fertilisers made from organic or recycled materials and setting limits on the use of cadmium (a heavy metal).
  The regulation also introduces limits for other heavy metals in phosphatic fertilisers; it facilitates market access for innovative organic fertilisers and promotes more widespread use of recycled materials for fertiliser production.
  U-coat's solution uses PHA in concentrations of a few percentage points with a potential market of between 2 and 8 million tons per year.
  In Italy in 2017, approximately 340 thousand tons of organic fertiliser was distributed out of a total of 4.713 million tons. Therefore, this market segment should offer large growth margins.

Bio-On therefore operates on the biodegradable bioplastics market, which in the coming years is expected to see strong growth, backed not only by increasingly stringent legislation but also by increased consumer awareness of nature and their health.
Collaborations with major industrial partners should facilitate the development of highly specialised PHAs and open up access to ever larger markets.
In particular, the strategic collaboration with Unilever should represent a major growth driver. The British Group is present in over 190 countries and reaches 2.5 billion consumers. The potential of this future market for Bio-On is not yet fully visible and not clearly quantifiable at present.
However, let us assume that in 2019/2020 Bio-On's entire output can saturate the production capacity of the Castel San Pietro Terme (BO) plant and be sold, at a high price bracket, to the cosmetics sector, including the supply to Unilever.
Considering the future volume of this potential market, the aforesaid quantities may not be sufficient to meet the demand, forcing Bio-On to increase its production capacity or grant licenses to build new production facilities.

SWOT Analysis

- **Strengths**

- High barriers to entry
- Use of "non-food" by-products
- GMO free
- No use of organic solvents
- Low logistics costs
- Lower energy costs than other bioplastic manufacturers

- **Weaknesses**

- Still a considerable "gap" between cost of producing conventional plastics and bioplastics
- Greater diffusion of bioplastic expected only in the mid-long term
- Bioplastic also requires collection at end of life cycle
- Geographic dependency - bioplastic production depends on availability of raw material

- **Opportunities**

- The technology developed has potential applications in all industrial sectors
- Exclusive agreements with industrial partners for the development of new "characterisations"
- The bioplastic market is a niche market but has high growth potential
- More regulation favourable to bioplastics nationally and internationally
- Growing focus on the environment

- **Threats**

- Increasing competition in the bioplastics sector
- Drop in oil price, making conventional plastics increasingly competitive

Results on 30.06.2018

EUR (K)	1H 2017	1H 2018	VAR %
Sale of licenses	514	6,052	*1,077*
Sales revenue	514	6,052	*1,077*
Other revenue and income	108	71	*-34.26*
Value of production	622	6,123	*884.40*
Raw materials	22	112	*409.10*
%	*3.54*	*1.83*	
Services	1,408	2,106	*49.57*
%	*226.37*	*34.40*	
Value Added	-808	9,905	-
%	-	*63.77*	
Personnel	854	1,592	*86.42*
%	*137.30*	*26.00*	
Other operating expenses	99	319	*222.22*
%	*15.92*	*5.22*	
EBITDA	-1,761	1,994	-
%	-	*32.55*	
Depreciation & Write downs	189	177	*-6.35*
EBIT	-1,950	1,817	-
%	-	*29.67*	
Financial expenses (income)	38	(4)	
Adjustments to equity investments	-	-4,370	
Pre-Tax Profit	-1,988	-2,549	-
%	-	-	
Taxes	132	409	
Tax rate (%)	-	-	
NET INCOME	-2,120	-2,958	-
Minorities	-	*-0.1*	
GROUP NET INCOME	-2,120	-2,958	-
%	-	-	
Cash Flow	-1,931	-2,781	
%	-	-	
NFP	24,226*	7,763	
GROUP SHAREHOLDERS EQUITY	47,423*	44,462	

Source: Bio-On; (*) data at 31.12.2017

Bio-On ended the first half of 2018 with a value of production of 6.12 million Euro compared to 622 thousand Euro in the comparison period thanks to a new license being granted to Amt Labs for bioplastic applications in the tobacco sector.
The sale of the license enabled the gross operating income (EBITDA), despite higher personnel costs (+86.42%) and costs for services (+49.57%) in line with business development, to close on 2 million Euro compared to the negative value of 1.8 million Euro recorded at 30.06.2017.
The net operating income (EBIT) stands at 1.8 million Euro compared to a 1.9 million Euro operating loss in the comparison period.
With regards to the Joint Ventures established this year by Bio-On and evaluated in equity, accounting adjustments were necessary for 4.4 million Euro (adjustments to equity investments).
The six-monthly financial statement therefore closed with the Group losing 2.96 million Euro compared to the net negative income of 2.12 million Euro recorded on 30 June 2017.
The net financial position is 7.8 million Euro compared to the 24 million Euro at 31.12.2017. The considerable drop is due to investments necessary for building the Group's first production plant.

Outlook 2018-2022

EUR (K)	2017A	2018E	2019E	2020E	2021E	2022E	CAGR 17/22
Value of production	12,088	39,517	64,596	82,780	141,970	217,750	86.46
Total Licensing Income	9,660	39,446	42,096	54,780	83,970	125,750	67.07
Licensing/Rights transfer	9,100	8,800	12,000	20,000	30,000	50,000	40.60
PDP	-	100	3,060	2,040	2,900	3,900	
Training	-	-	160	440	420	450	
Supervision	-	-	-	800	2,000	2,200	
Critical equipment	-	-	14,300	19,000	38,000	58,000	
Plant Design	125	-	-	-	-	-	
Trading/offtake	-	-	-	-	750	800	
Feasibility Studies	-	346	346	400	400	500	
O&M	-	-	-	-	-	-	
Technological improvements	435	-	-	-	-	-	
Options against payment	-	200	230	-	300	400	
Licenses/newcos on applications	-	30,000	12,000	12,000	6,000	4,000	
Newco applications running royalties	-	-	-	-	3,100	5,400	
Recurring	-	-	-	100	100	100	
Production Revenue	-	-	22,500	28,000	58,000	92,000	59.91
Other revenues	1,343	-	-	-	-	-	
Increases for internal projects	421	-	-	-	-	-	
Changes for work in progress to order	664	71	-	-	-	-	
Raw materials	73	406	2,115	2,618	2,658	2,750	106.69
%	0.60	1.03	3.27	3.16	1.87	1.26	
Services	3,380	41	4,029	5,022	5,033	5,055	8.38
%	27.96	0.10	6.24	6.07	3.55	2.32	
Equipment cost	-	-	9,240	12,290	24,564	30,250	
%	-	-	14.30	14.85	17.30	13.89	
Maintenance	-	-	500	500	500	600	
%	-	-	0.77	0.60	0.35	0.00	
External personnel and services	-	1,933	4,276	5,243	7,910	8,705	
%	-	4.89	6.62	6.33	5.57	4.00	
G&A	-	2,316	3,634	3,844	4,009	4,158	
%	-	5.86	5.63	4.64	2.82	0.00	
Value Added	8,384	34,821	40,802	53,263	97,296	166,232	81.74
%	69.36	88.12	63.16	64.34	68.53	76.34	
Personnel	1,036	1,896	4,467	4,594	5,711	7,250	47.57
%	8.57	4.80	6.92	5.55	4.02	3.33	
Other operating expenses	278	90	499	630	1,140	1,350	37.17
%	2.30	0.23	0.77	0.76	0.80	0.62	
EBITDA	7,070	32,835	35,836	48,039	90,445	157,632	86.06
%	58.49	83.09	55.48	58.03	63.71	72.39	
Depreciation & Write downs	840	1,050	5,516	5,616	5,616	5,616	46.23
EBIT	6,230	31,785	30,320	42,423	84,829	152,016	89.44
%	51.54	80.43	46.94	51.25	59.75	69.81	
Financial expenses (income)	-	-660	1,009	1,628	1,800	2,800	
Adjustments to equity investments	-	-15,000	-11,000	-9,000	-8,000	-4,000	
Pre-Tax Profit	5,988	16,125	20,329	35,051	78,629	150,816	90.65
%	49.54	40.81	31.47	42.34	55.38	69.26	
Taxes	1,078	4,031	5,082	8,763	19,657	37,704	
Tax rate (%)	18	25	25	25	25	25	
GROUP NET INCOME	4,911	11,844	14,697	25,538	58,172	112,162	86.96
%	40.62	29.97	22.75	30.85	40.97	51.51	
Cash Flow	5,751	13,144	20,763	31,904	64,588	118,728	83.22
%	47.57	33.26	32.14	38.54	45.49	54.52	
NFP	24,233	-24,696	-34,579	-12,416	28,688	159,741	
Equity	48,178	62,772	78,118	104,507	163,578	276,890	
NIC	23,945	84,968	110,097	114,223	132,090	114,149	
ROI	26.02	37.41	27.54	37.14	64.22	133.17	
ROE	10.19	20.07	20.19	25.82	36.68	41.30	

Source: Bio-On; Estimates: Banca Finnat

With regards to the full year forecast for 2018, Bio-On should end the period with a value of production of 39.5 million Euro, a considerable increase (+50%) on our previous estimate of 26.3 million Euro. The increase reflects the higher sales of licenses to major industrial partners made in the accounting period.

The high marginality arising from these sales should bring the gross operating income (EBITDA) to 32.8 million Euro compared to the 16.2 million Euro we previously forecast. In the light of our full year forecast for 2018, we have raised the expectations for the entire four-year period 2019-2022, due to the expected growth not only of license sales but also direct production.

For the forecast period 2018-2022, we estimate an average annual growth for the value of production of 86.46%, a considerable increase on the previously estimated CAGR of 52.8%.

We forecast that the value of production can reach, in 2019, 64.6 million Euro, up from 41.3 million Euro previously estimated, rising to 82.8 million Euro in 2020 from the previous estimate of 73.2 million Euro.

The 142 million Euro estimated for 2021 (previously 94.3 million Euro) and the 217.8 million Euro estimated for 2022 (compared to the 100.7 million Euro from the previous analysis) also reflects the considerable contribution from the agreement with Unilever.

Rising revenues from licenses and production should enable the gross operating income (EBITDA) to rise at an average annual rate of 86%, compared to the previous CAGR of 61.14%, for a marginality increasing from 58.49% in 2017 to 72.39% at the end of the forecast period.

The EBITDA should rise from 35.8 million Euro in 2019 (previous estimates stood at 26 million Euro) to 48 million Euro in 2020. In 2021 and 2022 the EBITDA should reach 90 million Euro (previously 72.6 million Euro) and 158 million Euro (previously 77 million Euro) respectively.

Group net income is now estimated to rise from 11.8 million Euro in the full year forecast for 2018 to 112.1 million Euro in 2022 at a CAGR of 86.96%.

Net financial position should be negative from 2018 (-24.7 million Euro) and remain so until 2020 (-12.4 million Euro). Cash generation will enable the net financial position to return positive starting in 2021 (28.7 million Euro), reaching 160 million Euro in 2022. ROE is forecast to stay above 20% in the period 19/20, rising to 37% in 2021 and 41% in 2022.

Valuation

For the purposes of valuation, we firstly update the operating cash flows we estimated for the period 2018-2022 at a WACC rate of 11.63%, comprising a Free Risk Rate of 3%, a Beta Coefficient equal to the unit and a Market Risk Premium of 8.63%.
To the sum of discounted cash flows we add a terminal value deduced from the application of a multiple equal to 9.3 x (average of EV/EBITDA multiples 2019/2020 recognised by the market to the 4 companies with greater marginality operating in the bioplastics sector – the Norwegian Borregaard, American DowDuPont, Danish Novozymes and Belgian Solvay - which we decided to use as comparables) to the EBITDA value we estimated for the end of 2022.
We obtain an Enterprise Value of 1.6 billion Euro and an **Equity Value** of **86 Euro** per share. Our recommendation is therefore to buy.

Cash Flow Model (K €)

	2018E	2019E	2020E	2021E	2022E
EBIT	31,785	30,320	42,423	84,829	152,016
Tax rate	25%	25%	25%	25%	25%
NOPAT	23,839	22,740	31,817	63,622	114,012
D&A	1,050	5,516	5,616	5,616	5,616
Capex	46,434	4,700	1,200	1,200	2,200
CNWC	-9,857	24,518	8,567	23,738	-14,850
FOCF	-11,689	-962	27,666	44,300	132,278

Estimates: Banca Finnat

DCF Model Valuation (k €)	
Cum. Disc. Free Operating Cash Flow	125,694
Terminal Value	1,465,978
Enterprise Value	1,591,672
Net financial position as of 30/06/2018	20,778
Equity Value	1,612,450
No. shares (k)	18,825
Value per share	**85.65**

Estimates: Banca Finnat

WACC Calculation (%)	
Risk free rate	3
Market risk premium	8.63
Beta (x)	1
Cost of Equity	**11.63**
WACC	**11.63**

Estimates: Banca Finnat

Historical recommendations and target price trend

Date	Rating	Target Price	Market Price
04.05.2018	Buy	€ 37.00	€ 30.60
29.09.2017	Buy	€ 33.42	€ 27.5
31.03.2017	Buy	€ 22.69	€ 17.48

Key to Investment Rankings (12 Month Horizon)

BUY: Upside potential at least 15%

HOLD: Expected to perform +/- 10%

REDUCE: Target achieved but fundamentals disappoint

SELL: Downside potential at least 15%

INCOME STATEMENT (Eur k)	2017A	2018E	2019E	2020E	2021E	2022E
Value of production	12,088	39,517	64,596	82,780	141,970	217,750
Materials	73	406	2,115	2,618	2,658	2,750
Services	3,380	41	4,029	5,022	5,033	5,055
Equipment cost	-	-	9,240	12,290	24,564	30250
Maintenance	-	-	500	500	500	600
External personnel and services	-	1,933	4,276	5,243	7,910	8705
G&A	-	2,316	3,634	3,844	4,009	4,158
Value Added	8,384	34,821	40,802	53,263	97,296	166,232
Personnel	1,036	1,896	4,467	4,594	5,711	7250
Management Costs	278	90	499	630	1,140	1,350
EBITDA	7,070	32,835	35,836	48,039	90,445	157,632
Depreciation & Write downs	840	1,050	5,516	5,616	5,616	5,616
EBIT	6,230	31,785	30,320	42,423	84,829	152,016
Financial expenses (income)	-	-660	1,009	1,628	1,800	2,800
Adjustments to equity investments	-	-15,000	-11,000	-9,000	-8,000	-4,000
Pre-Tax Profit	5,988	16,125	20,329	35,051	78,629	150,816
Taxes	1,078	4,031	5,082	8,763	19,657	37,704
Tax rate (%)	18	25	25	25	25	*25*
Group Net Income	4,911	11,844	14,697	25,538	58,172	112,162
Cash Flow	5,751	13,144	20,763	31,904	64,588	118,728
BALANCE SHEET (Eur k)	2017A	2018E	2019E	2020E	2021E	2022E
Total Shareholders Equity	48,178	62,772	78,118	104,507	163,578	276,890
Group net shareholders equity	48,178	60,272	75,518	101,807	160,778	273,890.35
NFP	24,233	-24,696	-34,579	-12,416	28,688	159,741
Net Invested Capital	23,945	84,968	110,097	114,223	132,090	114,149
Total Shareholders Equity	48,178	62,772	78,118	104,507	174,828	310,640
EBITDA margin	58.49	83.09	55.48	58.03	63.71	72.39
EBIT margin	51.54	80.43	46.94	51.25	59.75	69.81
Net margin	40.62	29.97	22.75	30.85	40.97	51.51
ROI	26.02	37.41	27.54	37.14	64.22	133.17
ROE	10.19	20.07	20.19	25.82	36.68	41.30
GROWTH (%)	2017A	2018E	2019E	2020E	2021E	2022E
Value of production	116.66	226.90	63.46	28.15	71.50	53.38
EBITDA	640.29	364.44	9.14	34.05	88.27	74.28
EBIT	-	410.20	-4.61	39.92	99.96	79.20
Net Profit	7,537.43	141.17	24.09	73.77	127.78	92.81
Cash Flow	458.71	0.00	57.97	53.66	102.44	83.82
VALUATION METRICS	2017A	2018E	2019E	2020E	2021E	2022E
P/E	268.33	83.43	66.18	38.38	17.11	8.92
P/CF	229.14	76.77	48.60	31.63	15.62	8.50
P/BV	27.35	16.74	13.36	9.91	6.28	3.68
EV/SALES	107.01	26.16	16.16	12.34	6.91	3.90
EV/EBITDA	182.96	31.48	29.12	21.26	10.84	5.39
EV/EBIT	207.63	32.52	34.42	24.08	11.56	5.59

Source: Bio-On; Estimates: Banca Finnat

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