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OUTLOOK '12: Bio-based chemicals to attract investment

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By **Doris de Guzman**

NEW YORK (ICIS)--The busts in the biofuels and solar sectors are looking like silver linings for bio-based chemicals and materials as investors increasingly turn their attention to a potentially more lucrative space.

Financings, grants, initial public offerings (IPOs), partnerships and acquisitions have dotted the renewable chemicals landscape in 2011 – much more so than in 2010. Despite investor fatigue creeping into 2012, attributed to overall economic uncertainties, industry analysts remain optimistic about the sector's financing future.

"Accessing financing will continue to be an obstacle through 2012, due to persistent economic uncertainty," US-based consulting firm Pike Research analyst Mackinnon Lawrence said. "With that said, renewable chemicals remain a hot market and we expect renewable chemical-related investments to increase over the coming year."

Robert Bettigole, managing partner at Elm Street Ventures, a seed and early-stage venture capital firm based in New Haven, Connecticut, US, said: "We see the 2012 investment landscape for renewable chemicals as excellent. I've spoken with a handful of venture capitalists at larger clean-technology venture capital funds so far, but I gather that they are looking for alternatives to energy investments that are still within their charter from their own investors/limited partners."

Elm Street Ventures has invested in a newly formed Connecticut-based green chemistry company called P2 Science, which will focus on carbohydrate-based surfactants called C-glycosides.

"While many of the people investing in green businesses care about sustainability, etc., their investment decisions are entirely driven by economics," Bettigole said. "We'd all prefer to find companies that offer products with better performance at lower prices than alternatives. Price performance is key."

P2 Science's newly appointed CEO, Neil Burns, is also on the operating advisory boards of two private equity funds – GenNx360 Capital Partners and Linley Capital. He noted the prospects of attractive returns in renewable chemicals.

"Given that a component of the economic uncertainty is energy and resource related, the renewables area presents an opportunity that is seen to address problems inherent in many economies," he said. "There is a lot of research activity going on in public or semi-public laboratories. There is also a lot of privately-funded research often assisted by contracts from government activities. This is giving rise to a host of investable ideas and I am seeing the best ones being courted and competed for by the clean-tech-oriented investment funds."

Since 2004, the average deal size in venture transactions has more than doubled from $8.2m (€6.3m) to $20m today, reflecting both increasing interest in the bio-based chemicals and materials space as well as the number of later-stage deals, according to a September 2011 report by US consulting firm Lux Research. The annual number of investments has made a steady rise from six in 2004 to more than 30 this year, the report's lead analyst, Mark Bunger, said. Lux Research estimates a total of $3.1bn in venture-capital investment between 2004 and the third quarter of 2011.

"Green materials and chemicals – whether they be bio-based, renewable, recyclable or some combination of the three – are a booming business," Bunger said.

"The technology has captured attention from developers and investors, regulators and consumers, and corporations tied to petrochemicals because of platform technologies capable of transforming biomass to money," he added. "Government support and consumer sentiment for clean, green materials and renewable feedstock is becoming a hedge for corporations against rising commodity prices."

Partnerships with well-known corporations, especially in the consumer markets, are added incentives for further exposure to the investment community.

The biggest to date is Coca-Cola Company's announcement in December that it is to partner with US firms Virent and Gevo and Netherlands-based Avantium to help the US beverage firm commercialise a 100% plant-based polyethylene terephthalate (PET) bottle packaging under the trademark PlantBottle.

Coca-Cola is already marketing the packaging, which contains 30% sugar-based monoethylene glycol (MEG) and 70% petroleum-based purified terephthalic acid (PTA) by weight. Virent, Gevo and Avantium will each develop bio-based materials to replace the PTA.

Since introduced in 2009, more than 10bn PlantBottle packages have been sold in 20 countries worldwide, according to Coca-Cola.

Around 30% of the global PET market, which is estimated at 54m tonnes and valued at more than $100bn, is used for plastic bottles, according to Gevo.

Prominent consumer goods companies jumping on to the renewable chemicals bandwagon for their packaging include US-based PepsiCo and Procter & Gamble, Netherlands-based Unilever, Switzerland-based Nestle and France-based Danone.

Traditional chemical companies are also taking notice. In November, Saudi Arabia-based SABIC formed a global venture-capital arm called SABIC Ventures based in the Netherlands. The firm will cover investments in start-up companies focusing on areas such as alternative feedstocks for chemicals and materials, alternative energy and clean technology, and advanced materials and composites.

Early in 2011, France-based chemical firm Rhodia acquired an equity stake in Phoenix Venture Partners – an investment fund focused on the financing and development of start-companies based mostly in North America and, to a lesser extent, in Europe and Asia.

The venture firm said it will now include Rhodia's strategic priorities in the area of green chemistry, bio-sourced materials or advanced materials when scouting start-up candidates. Rhodia itself is investing in US-based bio-isobutanol producer Cobalt Technologies to develop and market sugar-based isobutanol in the Latin America markets.

Given some of the maturing renewable chemical technologies, the venture-capital arm of Dutch chemical firm DSM noted the increasing shift from traditional venture capital (VC) to corporate venture capital investors who tend to come in after a proof-of-concept phase.

DSM Venturing has invested in start-up renewable chemical firms such as US-based Novomer, Segetis and Verdezyne.

"There is a general trend to investing in later-stage companies due to factors such as economic uncertainty over the current debt crisis, as well as venture-capital investment fatigue caused by ever-increasing times that investors have to stay in a particular investment before an exit is possible," DSM Venturing's senior investment manager, Erik Rutten, said.

"Venture capital groups are also having significant difficulties raising new funds, which could lead to a shortage of VC money during the years to come," he added. "This could mean that corporate VCs will become an even more important source of venture-capital money."

In 2011, the IPO space has given some of the renewable chemical companies access to capital for the build-out of production-level capacity needed to generate revenue.

Growing impatience among early investors such as VCs who are seeking exit is a likely factor for the influx of IPOs such as US-based firms Amyris, Gevo, Solazyme, Genomatica, Myriant, Elevance Renewables and BioAmber, Canada-based EcoSynthetix, France-based Global Bioenergies and China-based Cathay Industrial.

"Generally, the valley of death has proven to be much wider and fraught with many more unexpected challenges than one could have predicted several years ago," Pike Research's Lawrence said. "The IPOs are allowing some companies to march forward towards commercialisation."

The reception for companies that successfully filed for IPOs in 2011 was positive. But, with the present general market concerns, their stock valuations have slowly come down as most have yet to turn a profit.

According to G Steven Burrill, CEO of Burrill & Company, a global life sciences financial services firm: "Markets are risk averse and want to see commercialisation traction, so they have retreated with the general market concerns and rewarded those with more certainty about their near-term commercial results".

Burrill expects more IPOs to come out next year. Companies nearing commercialisation, which requires large amounts of capital to finance construction of demonstration and semi- to full-scale facilities, will be the most impacted in terms of accessing funding amid uncertain financial markets.

"If the IPO window closes, these companies will need to scale down plans and look to their current investors to help bridge the financing gap," Burrill said. "The good news is that significant amounts of venture and growth capital are available for development across start-up to commercialisation stage."

A case in point is the recently formed early-stage VC firm First Green Partners, based in Minnesota, US, with $355m in its arsenal supplied by US-based private equity firm Warburg Pincus.

First Green will invest in early-stage companies that focus on developing methods to convert renewable carbon, such as non-food biomass and carbon dioxide, to fuels and chemicals, and applications of clean or green technologies in the conventional energy process.

First Green said it will make initial investments of $500,000 to $10m in each emerging technology and up to $100m in a single business as it commercialises.

($1 = €0.77)

*Doris de Guzman examines alternative processing, new technology, R&D and other sustainability initiatives in **Green Chemicals***

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