



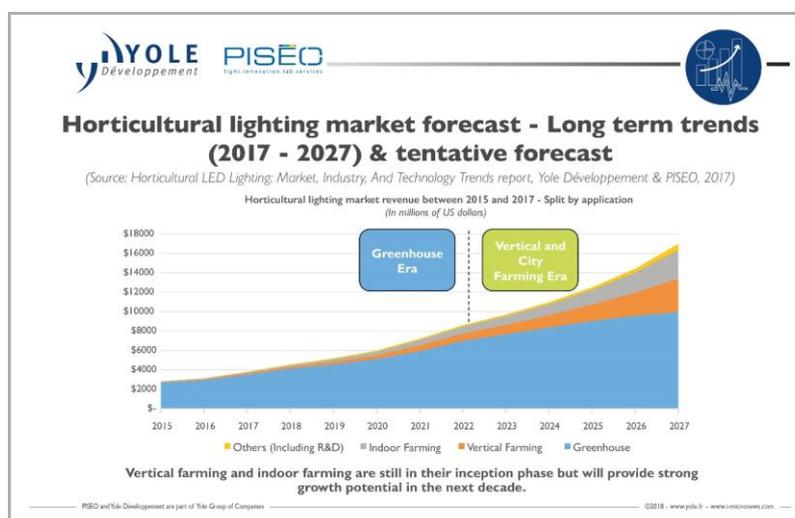
## FOR IMMEDIATE RELEASE:

### Amazon's investment throws light on horticultural lighting

Extracted from: Horticultural LED Lighting: Market, Industry, And Technology Trends report, Yole Group of companies including PISEO and Yole Développement, November 2017

**LYON, France – February 19, 2018:** The horticultural LED<sup>1</sup> lighting market reached almost US\$3.8 billion in 2017, currently driven mainly by greenhouse applications. The future should be different however. Indeed [Yole Développement \(Yole\)](#) and [PISEO](#), both part of the Yole Group of companies, investigated this domain and analyzed related LED-based technologies and market demands. According to their Horticultural LED Lighting report<sup>2</sup>, greenhouse applications will not maintain their leadership in the mid and long term and are only the tip of the iceberg. Emerging applications, including urban farming, are likely to make the horticultural lighting market boom with a 16.4% CAGR<sup>3</sup> between 2018 and 2023.

In this context, it is not surprising to discover Jeff Bezos' support for a vertical farms project in China. In a recent article, a journalist announced a 300 vertical farms project in China, supported by **Amazon Chief Executive Jeff Bezos and Alphabet Executive Chairman Eric Schmidt**<sup>4</sup>. According to this article, a start-up named [Plenty](#) has raised more than \$200 million, thanks to the Softbank Group and investment funds. Entering the Chinese market, Plenty hopes to tap into the country's growing demand for organic foods...



<sup>1</sup> LED: Light Emitting Diode

<sup>2</sup> Source : [Horticultural LED Lighting: Market, Industry, And Technology Trends report](#), Yole Développement & PISEO, 2017

<sup>3</sup> CAGR: Compound Annual Growth Rate

<sup>4</sup> Source : Quartz Media - [A startup is about to build 300 vertical farms in China, thanks in part to Jeff Bezos](#) (Written by Chase Purdy - Posted On Jan. 26, 2018)

*“Vertical farms, especially developed in cities, is probably the most relevant solution we found to produce fresh food and vegetables”, comments **Pierrick Boulay, Technology & Market Analyst at Yole.** “The world population is growing and almost 80% of the world’s population will live in cities and megacities by 2050. As a consequence, vertical farms will clearly be part of our future.”*

*“LED technology is a key enabler for the development of the vertical farming industry”, adds **Joël Thomé, General Manager at PISEO.** “Thanks to optical radiation versatility, easier integration, and long-life span, crop yields under artificial LED lighting will increase dramatically.”*

Indoor farming should develop strongly in the largely urbanized Asian areas, especially in China, as this region faces severe soil and water pollution. The Plenty start-up is but one example.

Penetration of this market by Amazon and Alphabet is not an isolated example and must be strongly considered by others in the future. According to Yole and PISEO, the horticultural lighting market is expected to reach US\$17 billion by 2027 thanks to a boom in indoor and vertical farming applications. Such figures clearly highlight the attractiveness of this sector.

Amazon’s new positioning confirms the added-value of vertical farms in answer to the evolution of the world’s population and food resources. But it is also strong confirmation of the diversification strategy of the giant Amazon in penetrating the whole foods grocery chain. Let us see what the next step will be!

A detailed description of the Horticultural LED Lighting report is available on [i-micronews.com, solid-state lighting reports section](http://i-micronews.com/solid-state-lighting-reports-section).



## **HORTICULTURAL LED LIGHTING: MARKET, INDUSTRY, AND TECHNOLOGY TRENDS**

*Urban farming and LED technology adoption will drive unprecedented growth in the horticultural lighting market.* - Produced by Yole Group of Companies including PISEO and Yole Développement.

### **Companies cited in the report:**

Adura LED Solutions, Aerofarms, Agritecture Consulting, Agrolux, AltaLED, American Society for Agricultural and Biological Engineers, ApacheTech, Apollo Horticulture, Asia Grow, Association for Vertical Farming, AT&S, Beijing Ieda Protected Horticulture Co Ltd, Biolites Co., BrightLED, California Lightworks, Certhon, Citizen, Creative Commons, Cree, Edison Opto, Epistar, Everlight, Flip Chip Opto, FloraLED... [Full list](#)

### **Authors:**

- **Pierrick Boulay** works as Market and Technology Analyst in the fields of LED, OLED and Lighting Systems to carry out technical, economic and marketing analysis at Yole Développement, the “More than Moore” market research and strategy consulting company. He has experience in both LED lighting and OLED lighting. In the past, he has mostly worked in R&D department for LED lighting applications. Pierrick holds a master degree in Electronics (ESEO - France).
- **Joël Thomé** holds a Master Degree in mechanical engineering and has more than 25 year experience in the lighting industry. He spent many years working for Philips Lighting where he held lately various global Marketing and R&D senior management position with a strong focus on Lighting Controls and LED based luminaires. Before heading PISEO he was Associate Director at INGELUX Lighting Consultants.
- **Dr. Olivier Andrieu** is in charge of R&D related projects and technical consultancy at PISEO. He holds an engineering degree, a Master and PhD. His career allowed him to exercise different responsibilities in R&D in the automotive industry before joining Philips Lighting where he was from 2011 to 2014 in charge of LED lighting platforms R&D projects at global level. In this capacity he designed many LED lighting systems involving mechanical, electronic, optical and thermal issues.



### **ABOUT PISEO**

PISEO is a unique technical center of its kind. Specializing in design and characterization of innovative optical systems, the team creates value for customers of various business sectors by carrying out missions in the fields of strategic analysis, research, innovation, expertise, testing and training. More information on [www.piseo.fr](http://www.piseo.fr); Contact: Joël Thomé, ([thome.joel@piseo.fr](mailto:thome.joel@piseo.fr))



### **ABOUT YOLE DEVELOPPEMENT**

Founded in 1998, Yole Développement has grown to become a group of companies providing marketing, technology and strategy consulting, media and corporate finance services, reverse engineering and reverse costing services and well as IP and patent analysis. With a strong focus on emerging applications using silicon and/or micro manufacturing, the Yole group of companies has expanded to include more than 80 collaborators worldwide covering MEMS and image sensors, Compound Semiconductors, RF Electronics, Solid-state lighting, Displays, software, Optoelectronics, Microfluidics & Medical, Advanced Packaging, Manufacturing, Nanomaterials, Power Electronics and Batteries & Energy Management.

The “More than Moore” market research, technology and strategy consulting company Yole Développement, along with its partners System Plus Consulting, PISEO and KnowMade, support industrial companies, investors and R&D organizations worldwide to help them understand markets and follow technology trends to grow their business. . For more information, visit [www.yole.fr](http://www.yole.fr) and follow Yole on [LinkedIn](#) and [Twitter](#).

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