

THE GLOBAL
**STATE OF
HEMP**

2019 INDUSTRY OUTLOOK

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EXECUTIVE SUMMARY

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THE GLOBAL HEMP

revolution has begun. Hemp markets are developing, expanding, and impacting agriculture and retail markets around the world. The time is now to review, analyze, and seize the opportunities in this dynamic, emerging market.

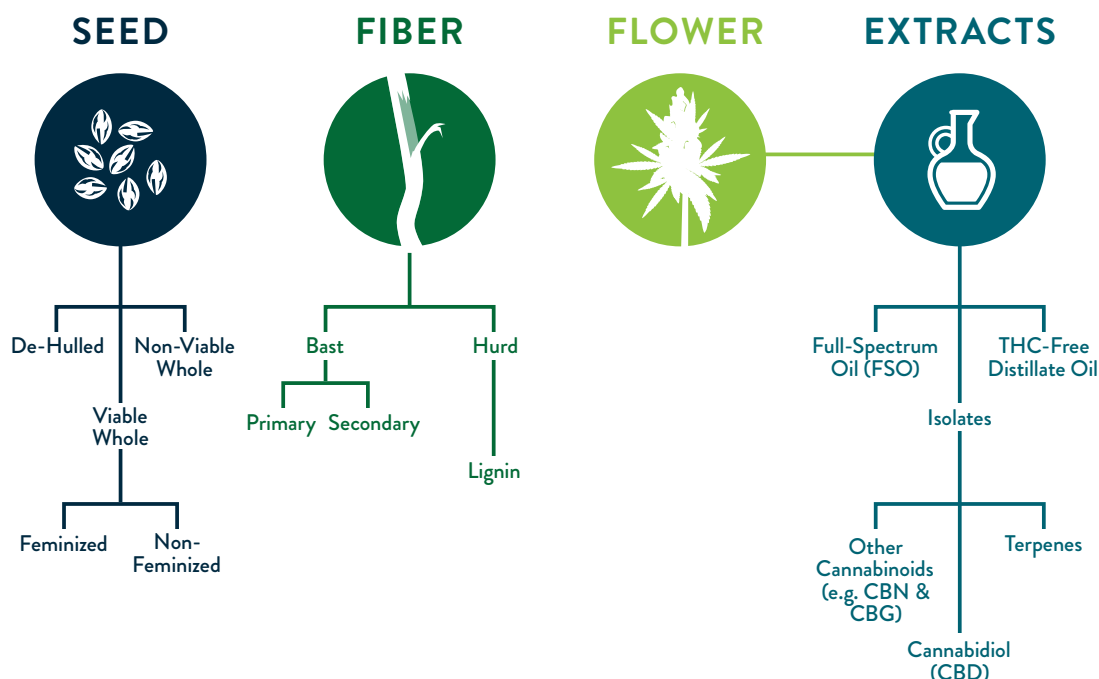
What is Hemp?

Hemp is a fast-growing, environmentally friendly plant with a low cost to produce. It is one of the most diversely applied and sustainable crops in the world. Hemp has many uses and byproducts that have driven farmers to embrace the crop as a hedge against lower-value crops like soy, cotton, canola, and alfalfa.

As an agricultural commodity, hemp is grown for its seed, fiber, and flower, or as a multicrop (i.e., hemp

grown for both seed and fiber). The seed, stalk, and flower are all used commercially. A hemp seed (or grain) is smooth, hard, and about ¼ of an inch long. The stalk is comprised of a short woody interior (called hurds), while the plant's outer part consists of long fibers (called bast fiber). Flowers (and to a small degree other parts of the plant such as the leaves) are used to create hemp extracts, oils and cannabinoid isolates.

Biologically, hemp belongs to a family and genus of plants with wide chemotypic diversity. The genus Cannabis (hemp and marijuana) is part of the Cannabaceae family of plants, which includes a total of 170 species. Interestingly, a primary ingredient of beer, Humulus (hops), is also from the Cannabaceae family, making hops and cannabis genetic cousins.



Cannabis contains three primary subspecies — Sativa, Indica and Ruderalis — and has a record of use dating back thousands of years. Indeed, recent discoveries suggest that hemp may have been among the first plants humans domesticated, over 10,000 years ago. Historical data shows how past cultures of Asia, India, and Europe utilized hemp for industrial and medical benefits. Ancient documents from Egyptian and Greek physicians illustrate hemp's use both for medical and industrial purposes.

The legal definitions and differences between cannabis, marijuana and hemp vary worldwide based on varying levels of the psychoactive cannabinoid, tetrahydrocannabinol (THC). In most countries, hemp is defined as cannabis with less than 0.3% THC on a dry weight basis, while in several countries (including Switzerland), hemp is defined as less than 1.0% THC. As such, the distinction between hemp and marijuana is a legal construct applied to the same genus of plants, cannabis.

In this report, cannabis refers to the plant species *Cannabis sativa* L and all of its industrial, medicinal,

and recreational varieties. The terms hemp and industrial hemp are used interchangeably, and the term marijuana refers to the plant used as a medicinal or recreational drug.

In the early 1990s there were less than 10 countries growing hemp as part of an organized, commercial market. Today, approximately 30 countries commercially grow hemp, with 15 countries conducting research. In all, there are nearly 50 countries now growing hemp, and many more considering whether to permit its cultivation.

Global Markets

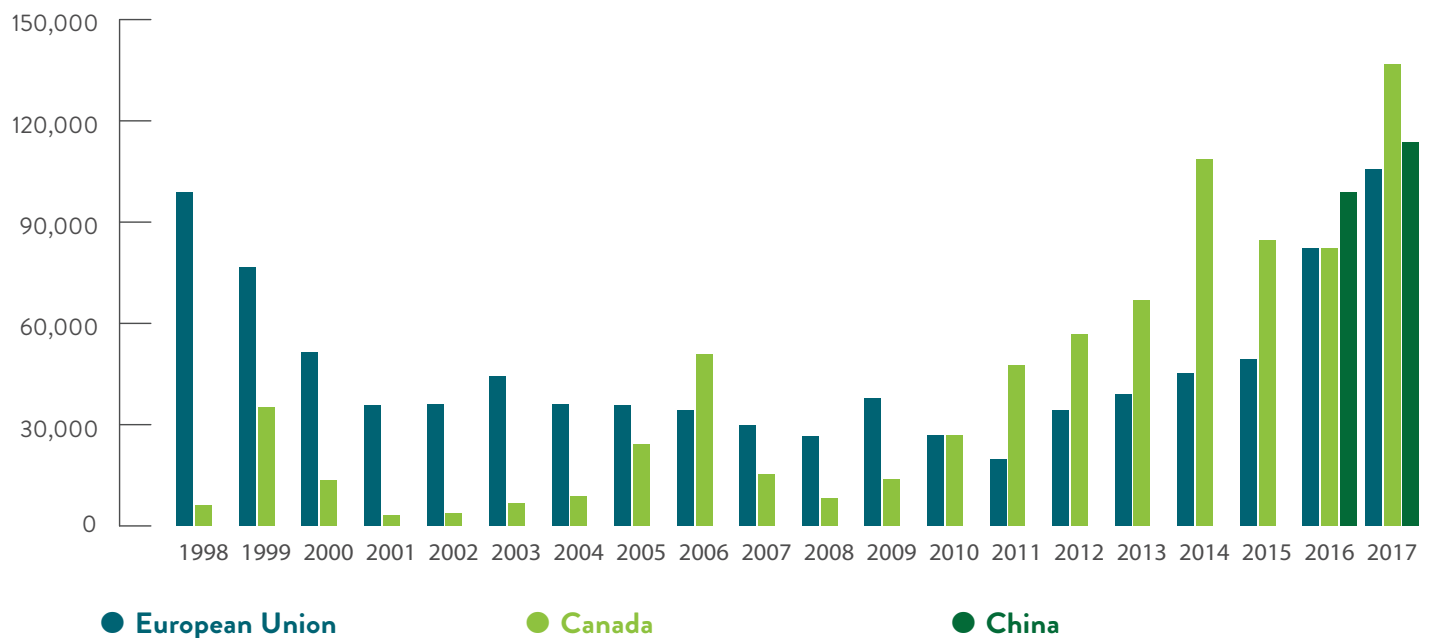
Currently, there are three mature hemp producer markets: China, Canada, and the European Union. As of the publication of this report, most regions have not reported their 2018 cultivation numbers (except the United States). According to Health Canada, there were 137,000 acres of hemp planted in Canada in 2017, with Saskatchewan leading all provinces (with nearly 56,000 acres planted), followed by Alberta (with almost 45,000 acres planted), and Manitoba (with 30,000 acres planted). Most of Canada's hemp products are exported for sale in other countries, primarily the United States.

China planted approximately 113,000 acres in 2017, representing about a 15% growth from 2016. The extent to which cultivation is expanding in China remains unconfirmed, with many hemp cultivators preferring to remain anonymous due to fear of being falsely connected to illegal marijuana growing activities. While 113,000 acres of hemp cultivation was confirmed, a more accurate estimate may be as high as 200,000-250,000 acres. The China hemp market remains the global leader, driven by its domi-

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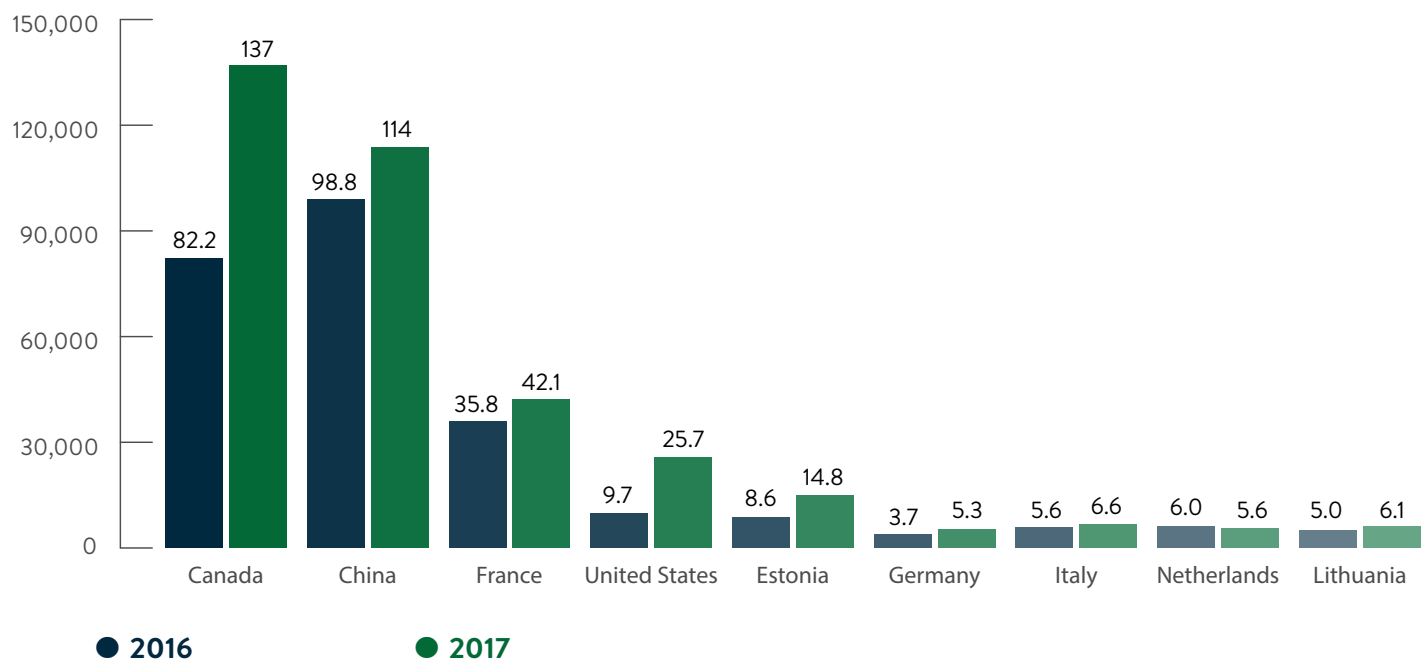


DEVELOPED GLOBAL MARKETS: HEMP ACREAGE COMPARISON



Source: Nova-Institut and EIHA (European Union), Health Canada (Canada) and FOASTAT. Cultivation in China predates 2016, but historic data is sparse and inconclusive, and Hemp Business Journal did not begin tracking until 2016.

GLOBAL HEMP CULTIVATION LEADERS: ACREAGE



Source: Health Canada, EIHA, FOASTAT, Vote Hemp and Hemp Business Journal



nant textile market. The country is poised for explosive growth once the domestic extract market opens, and Chinese companies begin developing nutraceutical and pharmaceutical products with CBD.

While China and Canada are the oldest and most established hemp markets in the world, there are several up-and-coming disruptive markets. The United States recently passed the 2018 Farm Bill, with U.S. commercial cultivation expected to increase dramatically due to the historic legislation.

According to the European Industrial Hemp Association (EIHA), France led European cultivators with over 42,000 acres of hemp produced, representing a 17.5% increase in production from 2016. While France has consistently been Europe's hemp cultiva-

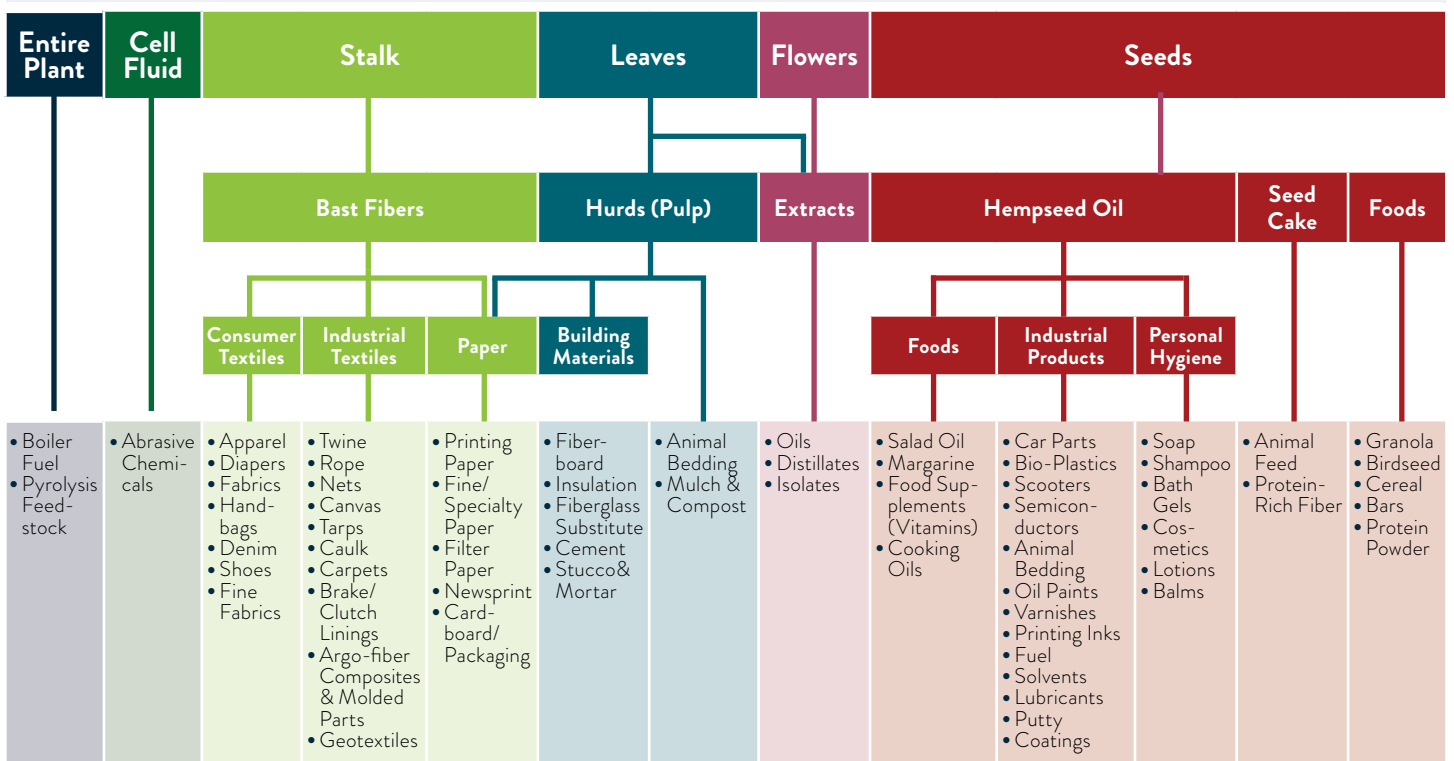
tion leader, in just two years Estonia has emerged to become Europe's second leading cultivator, followed by Italy, Lithuania, the Netherlands, and Germany, respectively. New Frontier Data predicts that France will continue to lead the European market as Germany grows to displace Estonia as Europe's second biggest cultivator by 2019.

Other leading cultivators around the world include Russia, Chile, and South Korea.

Global Hemp Sales

Hemp is a unique plant, with over 25,000 identified uses. Indeed, the uses and derivative products of hemp are so diverse that hemp globally intersects more markets and industries than any other crop.

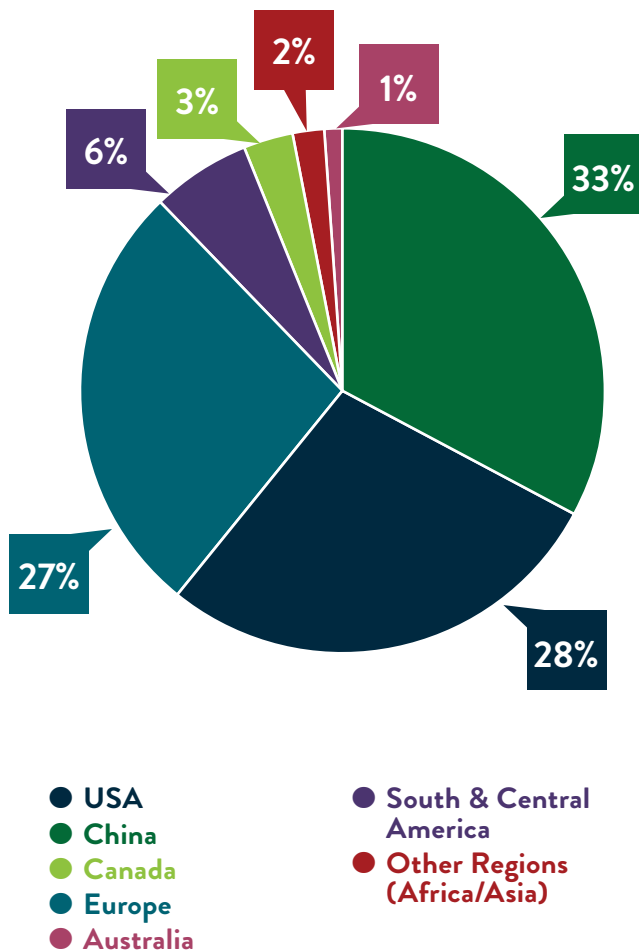
USES FOR HEMP



INDUSTRY SECTORS BREAKDOWN

Food	Supplements	Personal Care	Consumer Textile	Other Consumer	Industrial Applications	"Hemp" CBD
<ul style="list-style-type: none"> • Dairy • Bread • Grains • Beverages • Snack Foods • Packaged Foods • Prepared Foods • Condiments 	<ul style="list-style-type: none"> • Dietary Supplements with hemp that do not contain CBD 	<ul style="list-style-type: none"> • Soap • Beauty Products • Lotions • Balms • Salves 	<ul style="list-style-type: none"> • Clothing • Uniforms • Socks • Blankets • Other 	<ul style="list-style-type: none"> • Pet Food • Pet Supplements • Household Cleaners • Paper • Jewelry/Crafts • Other 	<ul style="list-style-type: none"> • Automotive • Green Building • Industrial Textiles • Bedding Materials • BioFuels • BioPlastics • Oil Wells • Other 	<ul style="list-style-type: none"> • Supplements • Topicals • Food/Drink • Pet Products

\$3.7 BILLION GLOBAL HEMP-BASED PRODUCT SALES BY REGION 2018



Source: New Frontier Data

To assess the global hemp market, sales were aggregated from every country where commercially significant quantities of hemp products were sold. Import and export data were analyzed and benchmarked with national gross domestic product in countries where retail data did not exist. Retail sales data was collected in the United States from SPINS, and interviews of leading companies were conducted to assess consumer behavior and demand in major country markets.

The global market was analyzed across seven geographic regions:

1. The United States
2. Australia
3. Canada
4. China
5. The European Union
6. South and Central America
7. Africa/Other

Sales from each region were then analyzed across Hemp Business Journal's (HBJ's) seven industry sectors: Hemp Food, Industrial Applications, Consumer Textiles, Consumer Products, Personal Care, Hemp-Derived CBD, and other Supplements.



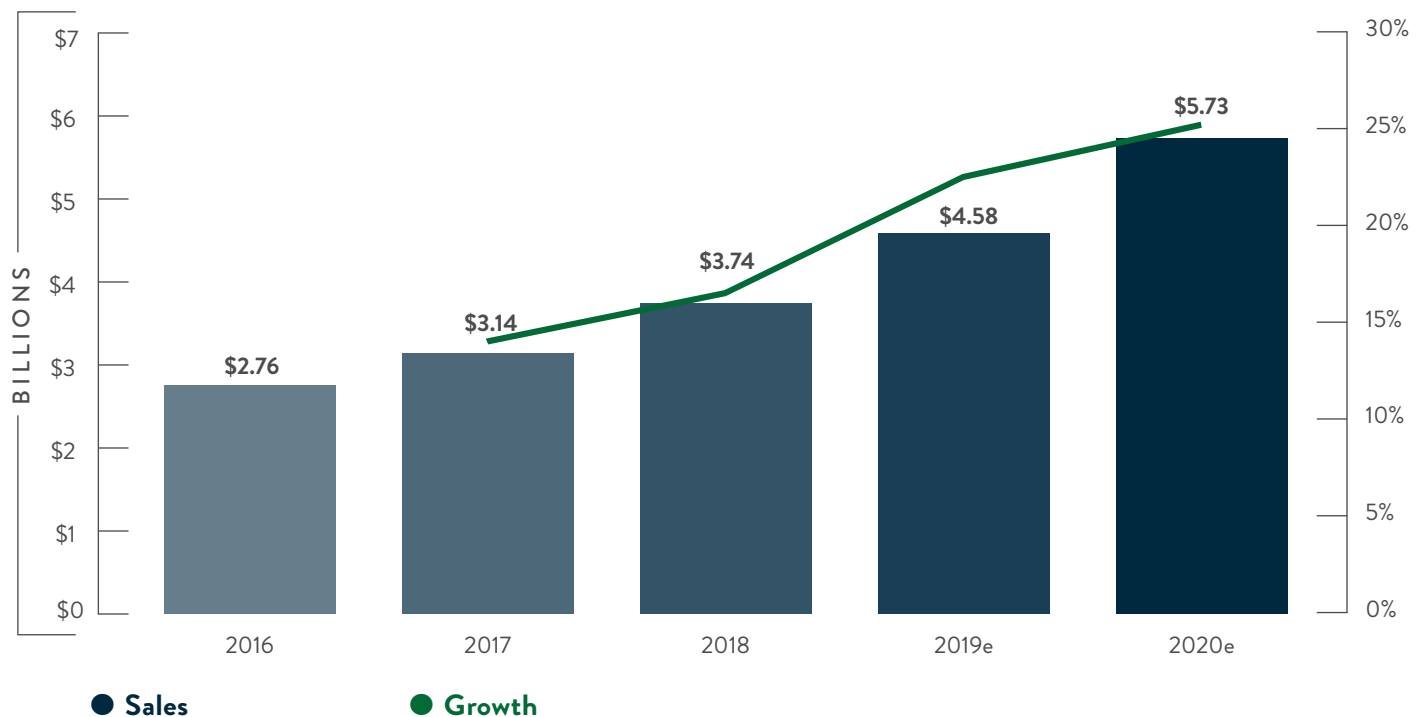
China led all countries with nearly \$1.2 billion in sales in 2018, followed by the United States (\$1.0 billion), Europe (\$980 million), and South and Central America (\$220 million).

In total, the global hemp market reached \$3.7 billion in retail sales in 2018, with an annual growth rate of 15% driven by continued strength in Chinese textiles, European industrials, Canadian foods, and the U.S. hemp-derived CBD market. The hemp CBD market is expected to quickly expand and be the primary driver of global industry growth.

By 2020, the global market is expected to reach \$5.7 billion across all markets, representing a three-year compound annual growth rate (CAGR) of 17.5%. The global growth in 2019 and 2020 is expected to be driven by the 2018 Farm Bill in the U.S., Epidiolex's going to market in the U.S. and Europe, Canadian licensed cannabis producers (LPs) entering the international hemp market, and the rise of the Chinese hemp CBD nutraceutical and supplement market.

Such convergent forces will propel the growth of hemp globally, and lay the foundation for a large, multisector industry, while leading other countries to include hemp within their agricultural economies.

GLOBAL HEMP SALES 2016-2020e



Source: *Hemp Business Journal* estimates (\$ bil., consumer sales)



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1400 I Street NW / Suite 350 / Washington, DC 20005

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535 16th Street / Suite 620 / Denver, CO 80202

✉ info@newfrontierdata.com 📞 844-420-D8TA

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