

2021 Global Innovative Markets Forecast

3D Printing Materials

Market - Metals & Mining



Report Code - PHP310009

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<u>Country Name</u>	<u>Code</u>	<u>Country Name</u>	<u>Code</u>
Argentina	ARG	Mexico	MEX
Australia	AUS	Netherlands	NLD
Austria	AUT	Nigeria	NGA
Bangladesh	BGD	Norway	NOR
Belgium	BEL	Pakistan	PAK
Brazil	BRA	Philippines	PHL
Canada	CAN	Poland	POL
Chile	CHL	Puerto Rico	PRI
China	CHN	Romania	ROU
Czech Republic	CZE	Russian Federation	RUS
Denmark	DNK	Saudi Arabia	SAU
Egypt, Arab Rep.	EGY	Singapore	SGP
Finland	FIN	South Africa	ZAF
France	FRA	Spain	ESP
Germany	DEU	Sweden	SWE
Hungary	HUN	Switzerland	CHE
India	IND	Thailand	THA
Indonesia	IDN	Turkey	TUR
Ireland	IRL	United Arab Emirates	ARE
Israel	ISR	United Kingdom	GBR
Italy	ITA	United States	USA
Japan	JPN	Venezuela, RB	VEN
Korea, Rep.	KOR	Vietnam	VNM
Malaysia	MYS		

Users' Guide

Market - 3D Printing Materials

Market - Metals & Mining

Scope of the Report

Market - Materials

The market study aims at estimating the market size and the growth potential of this market. Topics analyzed within the report include a detailed breakdown of the global markets for 3d printing materials by geography and historical trend. The scope of the report extends to sizing of the 3d printing materials market and global market trends with market data for 2020 as the base year, 2021 and 2021 as the estimate years and forecast for 2023 with projection of CAGR from 2023 to 2028.

Product shipments include the total value of all products produced and shipped by all producers. For selected products, this can represent value of receipts, value of production, or value of work done. Market data is provided in U.S. dollar value at global and regional levels, as well as local currencies for all countries.

Users' Guide

Report Coverage

The report focuses a detailed calculation of original equipment manufacturers and the related system providers. The study forecasts the market value of the 3d printing materials market.

Published annually, this report provides a unique and accurate estimate on market sizing for this equipment/material using a proprietary economic model that integrates historical trends (horizontal analysis) and longitudinal analysis of incorporated industries (vertical analysis).

Regional summaries include North America, Europe, Asia-Pacific, Latin America, Africa, and Middle East. Percent shares are presented for each region as a share of the global market.

Product shipments values are also broken down by geographic areas in the countries in the report for regions, districts, provinces, states and cities.

This report does not list key players/companies in the market but focuses on a top-down and outlook view of the market despite the existing and entering of market companies.

Benefits of the Report

This report is primarily aimed at business professionals in fields related to the market. These may include manufacturers and their suppliers, financiers and investors, researchers with backgrounds in the market, marketing and sales professionals, and others.

This report may also prove valuable to professional analysts, investors, public policy advisors and others who are seeking a better understanding and definition of how 3d printing materials fit into the broader global market.

The report will help the market leaders and new entrants in this market with information on the closest approximations of the revenue numbers for the overall market. This report will help stakeholders understand the competitive landscape and gain more insights to better position their businesses and to plan market strategies. The report also helps stakeholders understand the opportunities of the market.

Methodology

Market - 3D Printing Materials

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Methodology

The Global Innovative Markets Forecast report series by Perry/Hope Partners features market sales of thousands of high-tech products and services in various industries such as transportation, hardware, electronics, electrical products, printing services and food products. The reports are published annually based on a unique methodology that uses robust data sources and detailed logarithms to estimate global markets for manufactured products. The main steps in the methodology are:

- Products and services definitions and historical data are primarily based on secondary data collected from Internet research which is updated annually. Data sources include trade association databases, trade journal articles, press releases, published research reports, and annual reports.
- Market sales for the global countries are used as a ratio to all other countries in the report by GDP and the percent of the total manufacturing sector as percent of the countries total GDP.
- Adjustments to estimates are both vertical (industry) analysis and horizontal (trend) analysis.
- Demographic breakdowns of regions, cities, states, districts and provinces are based on historical population and regional GDP data projected forward.

Executive Summary

Market - 3D Printing Materials

Market: Metals & Mining

Global Manufacturing Industries

The global manufacturing sector has dozens of manufacturing industries, all of which grow or contract at different rates based on consumer and industrial demand.

One database, Prodcod, categorizes the manufacturing industries into these divisions:

- Section C - Manufacture

Division 10 - Manufacture of food products

Division 11 - Manufacture of beverages

Division 12 - Manufacture of tobacco products

Division 13 - Manufacture of textiles

Division 14 - Manufacture of wearing apparel

Division 15 - Manufacture of leather and related products

Division 16 - Manufacture of wood and of products of wood and cork, except furniture

Division 17 - Manufacture of paper and paper products

Division 18 - Printing and reproduction of recorded media

Division 19 - Manufacture of coke and refined petroleum products

Division 20 - Manufacture of chemicals and chemical products

Division 21 - Manufacture of basic pharmaceutical products and preparations

Division 22 - Manufacture of rubber and plastic products

Division 23 - Manufacture of other non-metallic mineral products

Division 24 - Manufacture of basic metals

Division 25 - Manufacture of fabricated metal products, except machinery and equip.

Division 26 - Manufacture of computer, electronic and optical products

Division 27 - Manufacture of electrical equipment

Division 28 - Manufacture of machinery and equipment n.e.c.

Division 29 - Manufacture of motor vehicles, trailers and semi-trailers

Division 30 - Manufacture of other transport equipment

Division 31 - Manufacture of furniture

Division 32 - Other manufacturing

Division 33 - Repair and installation of machinery and equipment

Executive Summary

Market - 3D Printing Materials

Global Manufacturing Outlook (2020)

Perry/Hope Partners is forecasting 4.0 percent global GDP growth from 2020 to 2021, recovering from the global COVID-19 economic downturn. China's GDP forecast for 2020 to 2021 is 7.0 percent with India following closely behind at 6.0 percent. The United States will have one of the strongest economies of the mature, developed countries (4.5 percent). Germany, another mature, developed country is far behind the USA (2.0 percent) and Japan continues to struggle due to its government's debt and disappointing economic policies (1.5 percent).

Perry/Hope Partners is also forecasting 5.0 percent global manufacturing sector growth from 2020 to 2021. The industrial machinery manufacturing subsector will experience the highest growth of 10.0 percent.

GLOBAL MANUFACTURING INDUSTRY (USD Billion)	2021	2022	2027
MINING MATERIALS	122.8	126.1	158.4
FOOD MFG	5,469.2	5,667.4	7,166.2
TEXTILE MFG	326.5	337.2	439.3
APPAREL MFG	385.5	407.4	763.6
LUMBER MFG	523.3	558.6	907.7
PULP AND PAPER MFG	1,039.9	1,069.4	1,306.1
OIL AND GAS	2,602.1	2,697.5	3,902.4
CHEMICALS	1,281.6	1,328.6	1,922.1
PLASTIC MFG	869.0	915.6	1,273.0
METAL MFG	3,415.8	3,570.3	5,627.9
ELECTRONICS MFG	943.7	967.3	1,206.0
ELECTRICAL EQUIPMENT MFG	2,515.6	2,607.2	3,528.2
AGRICULTURAL MACHINERY MFG	1,685.0	1,770.3	2,449.6
METAL-WORKING MACHINERY MFG	979.5	1,031.0	1,593.9
INDUSTRIAL MACHINERY MFG	1,392.9	1,443.3	1,864.5
VEHICLE MFG	1,211.2	1,286.1	1,843.5
TOTAL	24,763.5	25,783.3	35,952.2

Executive Summary

Market - 3D Printing Materials

The largest industry, food manufacturing, will be \$5.4 trillion globally in 2020. The second largest industry, metal manufacturing will be \$3.4 trillion in 2020.

Chemical manufacturing is forecast to be \$1.2 trillion in sales for the world's countries. The vehicle manufacturing sector will be \$1.2 trillion globally in 2020 followed by machinery manufacturing (\$2.0 trillion).

GLOBAL MANUFACTURING INDUSTRY (Year to Year Change Rate)	CAGR	
	2021-2022	2022-2027
MINING MATERIALS	2.7%	5.1%
FOOD MFG	3.6%	5.3%
TEXTILE MFG	3.3%	6.1%
APPAREL MFG	5.7%	17.5%
LUMBER MFG	6.8%	12.5%
PULP AND PAPER MFG	2.8%	4.4%
OIL AND GAS	3.7%	8.9%
CHEMICALS	3.7%	8.9%
PLASTIC MFG	5.4%	7.8%
METAL MFG	4.5%	11.5%
ELECTRONICS MFG	2.5%	4.9%
ELECTRICAL EQUIPMENT MFG	3.6%	7.1%
AGRICULTURAL MACHINERY MFG	5.1%	7.7%
METAL-WORKING MACHINERY MFG	5.3%	10.9%
INDUSTRIAL MACHINERY MFG	3.6%	5.8%
VEHICLE MFG	6.2%	8.7%
TOTAL	4.1%	7.9%

The global lumber manufacturing industry is highest growth industry with 6.8 percent from 2020 to 2021. The second highest growing industry is the global vehicle manufacturing industry (6.2 percent from 2020 to 2021).

The global metal manufacturing industry is another high growth industry with 4.5 percent from 2020 to 2021 followed by the global industrial manufacturing industry (3.6 percent from 2020 to 2021).

Executive Summary

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Executive Summary

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Political Factors Impacting Global Economics

The two largest countries in the world, the United States and China, are having intense trade wars that are disrupting many industries throughout the world. It is unclear whether either country will "win" these trade wars but China's economy slowed in 2019 and projected to rebound throughout 2020. This rebound may be due to the lifting tariffs on some Chinese products imported into the USA during the new Biden administration.

Political Factors Impacting Global Economics

The European market is also being disrupted by the United Kingdom from the European Union. UK leaders are having difficulty crafting a popular trade deal with the EU after Brexit however Perry/Hope Partners is forecasting some economic slowing after Brexit but that the UK, France and Germany will make beneficial trade deals with each other and other countries that keep exports and imports flowing near the previous levels.

Employment Factors Impacting Global Economics

Labor force levels in most developed countries are recovering from the 2020 COVID-19 pandemic. Working-age citizens are finding shelter on unemployment benefits and welfare programs but hopefully will venture into the labor force as global vaccinations take place and wage rates are climbing at the healthy rate.

Some sectors such as restaurants, hotels, entertainments, and personal services will lag in unemployment as many citizens will still be unwilling to consume these services after the year-long battle with the pandemic.

Executive Summary

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Monetary Factors Impacting Global Economics

Interest rates are at rock bottom in most of the largest countries in reaction to the pandemic. Global stock markets are becoming inflated with government "printing" money for economic stimulus.

Access to credit by both consumers and businesses has been as widely open as it was before the recent recession. Homebuying has been growing at a steady rate as well as capital expenditures on new equipment, buildings and inventories.

Business investment from infusions of stimulus money from governments (specifically in the USA) have buoyed business confidence.

Technology Factors Impacting Global Economics

Technology advancements continue to quickly change every industry and how they produced their products, interact with their customers and deliver their services.

The integration of the internet into every facet of a business' functions continues at a steady pace. Online shopping is displacing "brick and mortar" shopping in retail and providing services through online interactions is quickly replacing face-to-face interaction as many younger consumers prefer website or email communication.

Advertising and consumer communication through social media is rivaling broadcast and print media as the preferred way to reach and interact with customers.

Global Sales

Market - 3D Printing Materials

Market Sales by Countries (USD Millions)

Country Name	2017	2018	2019	2020	2021	2022	2023	2028
Argentina	7.8	7.0	6.8	7.0	7.7	8.3	8.9	11.2
Australia	19.4	23.6	25.8	27.2	33.1	39.2	46.3	102.8
Austria	5.7	7.0	7.8	8.2	10.1	12.1	14.5	36.2
Bangladesh	2.9	3.5	4.5	5.1	6.8	8.8	11.5	43.3
Belgium	7.5	9.0	10.4	10.8	13.2	15.9	19.0	47.4
Brazil	27.9	28.8	33.2	34.9	42.2	49.8	58.7	128.0
Canada	23.1	26.8	31.5	33.1	40.8	49.1	58.9	140.9
Chile	3.5	4.2	4.6	5.2	6.5	8.0	9.9	26.5
China	134.1	172.8	216.8	240.3	314.7	404.9	520.2	1,839.4
Czech Republic	2.5	3.2	4.0	4.4	5.6	7.2	9.1	30.1
Denmark	4.7	5.6	6.3	6.6	8.0	9.5	11.3	27.2
Egypt, Arab Rep.	2.6	3.0	4.3	5.5	6.5	7.5	8.7	15.8
Finland	3.4	4.0	4.5	4.7	5.7	6.8	8.2	19.7
France	39.5	47.3	53.5	57.5	71.1	85.9	103.7	253.7
Germany	49.3	59.1	67.9	73.6	92.1	112.4	137.1	353.6
Hungary	1.6	2.1	2.6	2.9	3.8	4.9	6.3	20.8
India	27.6	31.3	40.0	43.8	56.5	71.6	90.5	296.3
Indonesia	9.5	11.0	13.8	15.6	20.4	26.1	33.3	107.9
Ireland	3.9	5.1	6.4	6.4	7.9	9.5	11.5	29.8
Israel	5.3	6.2	7.9	8.4	10.7	13.4	16.7	51.2
Italy	28.4	33.4	37.2	39.8	48.8	58.4	69.9	163.3
Japan	73.0	82.2	99.8	104.5	120.0	141.8	167.3	386.5
Korea, Rep.	19.0	22.3	26.3	29.0	36.9	45.8	56.9	159.5
Malaysia	3.5	4.5	5.5	6.1	8.0	10.2	13.0	41.2
Mexico	15.3	18.0	21.3	22.1	27.1	32.4	38.7	90.5
Netherlands	12.7	15.5	17.8	18.9	23.3	28.3	34.2	89.9
Nigeria	4.7	5.7	6.2	6.7	7.9	9.3	10.8	20.1
Norway	4.9	6.1	6.6	7.3	9.1	11.1	13.5	34.6
Pakistan	3.4	4.0	4.2	4.5	5.5	6.5	7.7	17.1
Philippines	4.2	5.0	6.4	7.1	9.3	11.8	15.1	48.6
Poland	6.4	8.0	9.6	10.1	12.6	15.4	18.9	52.4
Puerto Rico	1.1	1.2	1.4	2.0	2.4	2.8	3.3	6.6
Romania	2.5	3.2	4.1	4.9	6.8	9.2	12.5	53.3
Russian Federation	19.1	22.8	25.5	27.4	33.7	40.7	49.1	127.3
Saudi Arabia	7.8	10.3	11.2	14.7	20.5	27.8	37.7	165.7
Singapore	5.2	6.3	7.4	8.3	10.6	13.3	16.6	48.7

Global Sales

Market - 3D Printing Materials

Market Sales by Countries (USD Millions)

Country Name	2017	2018	2019	2020	2021	2022	2023	2028
South Africa	4.7	5.4	6.0	6.5	8.0	9.6	11.6	27.6
Spain	19.0	22.9	26.5	27.4	33.4	40.0	47.8	117.6
Sweden	7.7	8.8	9.8	10.5	12.8	15.3	18.3	42.2
Switzerland	10.5	12.1	14.7	15.1	18.4	22.0	26.3	61.1
Thailand	5.4	6.8	8.9	9.8	12.9	16.7	21.6	78.7
Turkey	9.9	10.0	12.0	12.1	14.1	16.2	18.5	31.6
United Arab Emirates	3.9	5.0	6.3	7.2	9.5	12.1	15.4	62.4
United Kingdom	40.9	48.7	56.2	59.9	72.5	86.2	102.3	209.2
United States	322.5	381.4	463.6	499.3	632.2	780.7	963.2	2,633.5
Venezuela, RB	4.4	4.7	5.1	4.9	5.0	5.2	5.3	8.2
Vietnam	1.9	2.4	3.1	3.4	4.4	5.6	7.1	24.3
GLOBAL	1,023.8	1,217.4	1,455.2	1,570.5	1,969.0	2,425.4	2,986.8	8,383.4

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Regional Sales

Market - 3D Printing Materials

The market for this equipment in North America is estimated to be \$0.9 billion dollars in 2022 and is expected to change by 23.2 percent from 2021 to 2022. The market in the Asia-Pacific region for this equipment is estimated to be \$0.8 billion in 2022 and is forecast to change by 25.3 percent from 2022 to 2023. The European market is \$0.5 billion in 2022.

Market Size by Year (US\$ Millions)

	2017	2018	2019	2020	2021	2022	2023	2028
North America	361.0	426.2	516.4	554.5	700.0	862.2	1,060.9	2,864.9
Latin America	35.6	35.8	40.0	41.9	49.9	58.1	67.6	139.2
Europe	213.8	256.6	294.6	314.8	388.6	469.3	566.3	1,382.2
Asia-Pacific	323.5	392.6	480.5	523.6	661.5	828.6	1,037.6	3,253.9
Middle East	9.9	10.0	12.0	12.1	14.1	16.2	18.5	31.6
Africa	9.4	11.2	12.3	13.2	15.9	18.9	22.3	47.7
GLOBAL	943.8	1,121.1	1,343.5	1,446.8	1,814.2	2,234.4	2,750.9	7,671.8

Regional Distribution

	2017	2018	2019	2020	2021	2022	2023	2028
North America	38.2%	38.0%	38.4%	38.3%	38.6%	38.6%	38.6%	37.3%
Latin America	3.8%	3.2%	3.0%	2.9%	2.7%	2.6%	2.5%	1.8%
Europe	22.7%	22.9%	21.9%	21.8%	21.4%	21.0%	20.6%	18.0%
Asia-Pacific	34.3%	35.0%	35.8%	36.2%	36.5%	37.1%	37.7%	42.4%
Middle East	1.0%	0.9%	0.9%	0.8%	0.8%	0.7%	0.7%	0.4%
Africa	1.0%	1.0%	0.9%	0.9%	0.9%	0.8%	0.8%	0.6%
GLOBAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Year-to-Year Change

	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2028
North America	18.1%	21.2%	7.4%	26.3%	23.2%	23.0%	170.0%
Latin America	0.3%	11.7%	4.8%	19.1%	16.5%	16.4%	105.8%
Europe	20.0%	14.8%	6.8%	23.4%	20.8%	20.7%	144.1%
Asia-Pacific	21.4%	22.4%	9.0%	26.3%	25.3%	25.2%	213.6%
Middle East	1.5%	20.3%	0.7%	16.6%	14.6%	14.5%	70.3%
Africa	18.9%	9.8%	7.5%	21.0%	18.5%	18.3%	113.5%
GLOBAL	18.8%	19.8%	7.7%	25.4%	23.2%	23.1%	178.9%

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Argentina

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	7,777.7	0.76%		
2018	7,006.8	0.58%	2017-2018	-9.9%
2019	6,771.2	0.47%	2018-2019	-3.4%
2020	7,010.5	0.45%	2019-2020	3.5%
2021	7,688.1	0.39%	2020-2021	9.7%
2022	8,285.7	0.34%	2021-2022	7.8%
2023	8,917.0	0.30%	2022-2023	7.6%
2028	11,158.6	0.13%	CAGR 2023-2028	5.0%

<u>Pesos</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Pesos 000s)</u>	<u>Year-to-Year Change</u>	
2017	287,656.9		
2018	259,145.4	2017-2018	-9.9%
2019	250,431.5	2018-2019	-3.4%
2020	259,281.3	2019-2020	3.5%
2021	284,342.5	2020-2021	9.7%
2022	306,443.0	2021-2022	7.8%
2023	329,790.5	2022-2023	7.6%
2028	412,695.1	CAGR 2023-2028	25.1%

In 2022, sales for this service in Argentina is forecast to be \$8.3 million dollars.

Sales are forecast to change by 7.6 percent in the next year (2022 to 2023). In 2022, sales will be 306.4 million Pesos and will change by 7.8 percent in the next year (2022 to 2023).

In 2028, sales for this service in Argentina is forecast to be \$11.2 million dollars.

The compound annual growth rate is projected to change by 5 percent from 2023 to 2028. In 2028, sales will be 306.4 million Pesos and will change by 7.8 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Argentina

Service - 3D Printing Materials

Market Sales by Regional Provinces (USD 000s)

	2021	2022	2023	2028
Buenos Aires	2,969.3	3,199.7	3,442.9	4,303.7
Catamarca	75.6	81.9	88.7	114.1
Chaco	205.6	221.7	238.7	299.4
Chubut	104.2	113.1	122.6	159.2
Ciudad Autónoma de Buenos Aires (497.9	530.6	564.6	667.5
Córdoba	625.4	672.8	722.7	895.5
Corrientes	192.8	207.8	223.7	280.0
Entre Ríos	234.7	252.6	271.4	337.0
Formosa	107.5	116.3	125.7	160.2
Jujuy	133.3	144.1	155.5	197.0
La Pampa	61.4	66.1	71.1	88.7
La Rioja	71.6	77.9	84.7	111.3
Mendoza	333.7	359.6	386.8	483.2
Misiones	223.9	242.7	262.7	338.0
Neuquén	115.2	125.1	135.7	176.1
Río Negro	123.3	133.0	143.3	180.3
Salta	249.8	270.8	293.2	378.2
San Juan	134.1	144.8	156.1	197.0
San Luis	92.5	100.7	109.4	144.0
Santa Cruz	61.5	67.4	73.8	100.7
Santa Fe	588.6	631.7	676.9	828.8
Santiago del Estero	170.9	184.5	198.9	250.9
Tierra del Fuego	30.5	33.6	36.9	51.1
Tucumán	284.7	307.2	331.0	416.6

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Australia

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	19,430.4	1.90%		
2018	23,614.0	1.94%	2017-2018	21.5%
2019	25,799.5	1.77%	2018-2019	9.3%
2020	27,226.6	1.73%	2019-2020	5.5%
2021	33,060.5	1.68%	2020-2021	21.4%
2022	39,160.0	1.61%	2021-2022	18.4%
2023	46,337.4	1.55%	2022-2023	18.3%
2028	102,807.3	1.23%	CAGR 2023-2028	24.4%

<u>Dollars</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Dollars 000s)</u>	<u>Year-to-Year Change</u>	
2017	26,967.9		
2018	32,774.5	2017-2018	21.5%
2019	35,807.8	2018-2019	9.3%
2020	37,788.6	2019-2020	5.5%
2021	45,885.6	2020-2021	21.4%
2022	54,351.3	2021-2022	18.4%
2023	64,313.0	2022-2023	18.3%
2028	142,689.1	CAGR 2023-2028	121.9%

In 2022, sales for this service in Australia is forecast to be \$39.2 million dollars.

Sales are forecast to change by 18.3 percent in the next year (2022 to 2023). In 2022, sales will be 54.4 million Dollars and will change by 18.4 percent in the next year (2022 to 2023).

In 2028, sales for this service in Australia is forecast to be \$102.8 million dollars.

The compound annual growth rate is projected to change by 24.4 percent from 2023 to 2028. In 2028, sales will be 54.4 million Dollars and will change by 18.4 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Australia

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Adelaide	1,959.2	2,305.2	2,709.3	5,806.7
Brisbane	3,744.8	4,462.5	5,312.1	12,134.3
Cairns (Northern Beaches)	260.3	309.7	368.0	833.4
Canberra (NSW)	722.8	854.6	1,009.3	2,216.8
Central Coast (Gosford)	559.7	662.0	782.0	1,719.7
Darwin	186.8	220.7	260.5	570.2
Geelong	257.0	302.4	355.5	763.1
Gold Coast (NSW)	1,104.3	1,322.1	1,581.2	3,697.3
Hobart	304.1	357.9	420.7	902.2
Melbourne	7,054.7	8,357.2	9,889.6	21,931.7
Newcastle	533.4	625.7	733.2	1,547.8
Perth	3,346.4	3,994.0	4,761.7	10,961.0
Sunshine Coast (Caloundra)	433.1	517.5	617.7	1,429.9
Sydney	7,032.4	8,285.7	9,751.8	21,046.0
Toowoomba	170.7	200.5	235.2	499.7
Townsville (Thuringowa)	311.8	371.4	441.9	1,006.7
Wollongong	426.9	501.1	587.5	1,244.5

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Austria

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	5,719.7	0.56%		
2018	6,950.9	0.57%	2017-2018	21.5%
2019	7,816.4	0.54%	2018-2019	12.5%
2020	8,241.7	0.52%	2019-2020	5.4%
2021	10,068.7	0.51%	2020-2021	22.2%
2022	12,086.4	0.50%	2021-2022	20.0%
2023	14,484.8	0.48%	2022-2023	19.8%
2028	36,189.7	0.43%	CAGR 2023-2028	30.0%

<u>Euros</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Euros 000s)</u>	<u>Year-to-Year Change</u>	
2017	4,986.3		
2018	6,059.6	2017-2018	21.5%
2019	6,814.1	2018-2019	12.5%
2020	7,184.9	2019-2020	5.4%
2021	8,777.6	2020-2021	22.2%
2022	10,536.6	2021-2022	20.0%
2023	12,627.5	2022-2023	19.8%
2028	31,549.2	CAGR 2023-2028	149.8%

In 2022, sales for this service in Austria is forecast to be \$12.1 million dollars. Sales are forecast to change by 19.8 percent in the next year (2022 to 2023). In 2022, sales will be 10.5 million Euros and will change by 20 percent in the next year (2022 to 2023).

In 2028, sales for this service in Austria is forecast to be \$36.2 million dollars. The compound annual growth rate is projected to change by 30 percent from 2023 to 2028. In 2028, sales will be 10.5 million Euros and will change by 20 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Austria

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Amstetten	60.3	72.3	86.6	215.6
Baden	67.4	80.9	97.1	243.6
Bregenz	77.2	92.9	111.6	281.8
Dornbirn	120.7	145.3	174.6	441.5
Feldkirch	90.0	108.8	131.3	340.2
Graz	554.5	661.9	788.9	1,915.6
Hallein	57.5	69.5	83.9	216.9
Innsbruck	289.5	346.3	413.5	1,013.9
Judenburg	23.0	27.3	32.4	76.8
Kapfenberg	55.8	66.4	79.0	189.7
Klagenfurt am Wörthersee	243.4	292.1	349.9	872.0
Klosterneuburg	70.3	84.6	101.5	255.9
Krems an der Donau	63.1	75.7	90.7	225.7
Kufstein	45.8	55.3	66.7	171.6
Leoben	55.1	65.3	77.2	181.0
Leonding	66.4	80.1	96.5	246.7
Linz	451.2	538.2	641.0	1,551.6
Lustenau	57.9	69.8	84.0	214.3
Mödling	56.7	68.2	81.8	205.1
Saalfelden am Steinernen Meer	50.7	61.6	74.7	198.0
Salzburg	384.3	461.0	552.0	1,373.0
Spittal an der Drau	45.4	54.6	65.6	165.8
St. Pölten	125.4	150.0	179.2	440.2
Steyr	104.0	124.6	149.1	369.6
Telfs	54.6	67.1	82.3	230.8
Traun	66.6	80.1	96.2	243.3
Villach	162.8	195.9	235.3	594.6
Wels	161.3	194.2	233.5	592.0
Wien [Vienna]	4,097.4	4,911.8	5,878.2	14,578.8
Wiener Neustadt	104.2	125.2	150.3	378.5
Wolfsberg	68.7	82.5	99.0	247.5

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Note: Sales for 2018-2019 are forecasts and sales for 2020-2025 projections

Bangladesh

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	2,908.2	0.28%		
2018	3,547.8	0.29%	2017-2018	22.0%
2019	4,473.7	0.31%	2018-2019	26.1%
2020	5,107.9	0.33%	2019-2020	14.2%
2021	6,775.5	0.34%	2020-2021	32.6%
2022	8,830.8	0.36%	2021-2022	30.3%
2023	11,491.0	0.38%	2022-2023	30.1%
2028	43,323.5	0.52%	CAGR 2023-2028	55.4%

<u>Takas</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Takas 000s)</u>	<u>Year-to-Year Change</u>	
2017	243,993.8		
2018	297,660.9	2017-2018	22.0%
2019	375,335.4	2018-2019	26.1%
2020	428,551.3	2019-2020	14.2%
2021	568,454.4	2020-2021	32.6%
2022	740,898.2	2021-2022	30.3%
2023	964,082.6	2022-2023	30.1%
2028	3,634,799.6	CAGR 2023-2028	277.0%

In 2022, sales for this service in Bangladesh is forecast to be \$8.8 million dollars.

Sales are forecast to change by 30.1 percent in the next year (2022 to 2023). In 2022, sales will be 740.9 million Takas and will change by 30.3 percent in the next year (2022 to 2023).

In 2028, sales for this service in Bangladesh is forecast to be \$43.3 million dollars.

The compound annual growth rate is projected to change by 55.4 percent from 2023 to 2028. In 2028, sales will be 740.9 million Takas and will change by 30.3 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Bangladesh

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Barisal	180.2	232.5	299.3	1,069.2
Chittagong	671.4	875.2	1,139.1	4,295.3
Brahmanbaria	65.1	84.6	109.9	410.0
Chittagong	185.1	241.8	315.2	1,199.9
Comilla	124.4	161.9	210.3	785.8
Noakhali	73.2	95.5	124.4	470.5
Dhaka	892.0	1,168.3	1,527.6	5,896.3
Dhaka	341.3	453.9	602.7	2,510.6
Gazipur	92.2	122.7	163.1	682.3
Kishoreganj	65.9	85.5	110.8	408.1
Narayanganj	74.7	98.3	129.2	511.2
Tangail	79.7	103.2	133.3	485.1
Mymensingh	249.3	323.5	419.1	1,544.6
Jalpur	51.4	66.6	86.1	314.8
Mymensingh	116.7	151.6	196.6	728.5
Netrakona (Netrokona)	51.1	66.4	86.0	318.6
Khulna	356.3	461.9	597.7	2,191.0
Jessore	64.1	83.4	108.2	402.5
Khulna	52.0	67.2	86.6	312.0
Satkhira	45.3	58.7	76.0	279.0
Rajshahi	424.9	552.2	716.4	2,659.5
Bogra	77.2	100.3	129.9	479.8
Naogaon	57.9	75.0	97.0	353.5
Pabna	57.9	75.3	97.7	363.6
Rajshahi	61.7	80.4	104.5	393.5
Sirajganj	73.0	95.2	123.8	465.4
Rangpur	364.5	473.9	615.2	2,290.5
Dinajpur	69.4	90.3	117.3	437.2
Gaibandha	52.9	68.5	88.6	323.6
Kurigram	47.0	61.1	79.2	293.4
Rangpur	67.2	87.4	113.6	424.3
Sylhet	237.2	310.1	404.7	1,547.5
Habiganj	48.7	63.5	82.6	310.4
Sunamganj	58.9	77.0	100.4	382.5
Sylhet	84.5	110.9	145.4	568.0

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Note: Sales for 2018-2019 are forecasts and sales for 2020-2025 projections

Belgium

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	7,537.3	0.74%		
2018	9,013.4	0.74%	2017-2018	19.6%
2019	10,369.2	0.71%	2018-2019	15.0%
2020	10,827.1	0.69%	2019-2020	4.4%
2021	13,222.4	0.67%	2020-2021	22.1%
2022	15,866.4	0.65%	2021-2022	20.0%
2023	19,008.2	0.64%	2022-2023	19.8%
2028	47,405.8	0.57%	CAGR 2023-2028	29.9%

<u>Euros</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Euros 000s)</u>	<u>Year-to-Year Change</u>	
2017	6,570.8		
2018	7,857.6	2017-2018	19.6%
2019	9,039.6	2018-2019	15.0%
2020	9,438.8	2019-2020	4.4%
2021	11,527.0	2020-2021	22.1%
2022	13,831.9	2021-2022	20.0%
2023	16,570.8	2022-2023	19.8%
2028	41,327.1	CAGR 2023-2028	149.4%

In 2022, sales for this service in Belgium is forecast to be \$15.9 million dollars.

Sales are forecast to change by 19.8 percent in the next year (2022 to 2023). In 2022, sales will be 13.8 million Euros and will change by 20 percent in the next year (2022 to 2023).

In 2028, sales for this service in Belgium is forecast to be \$47.4 million dollars.

The compound annual growth rate is projected to change by 29.9 percent from 2023 to 2028. In 2028, sales will be 13.8 million Euros and will change by 20 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Belgium

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Vlaams Gewest [Flanders]	3,828.1	4,594.1	5,504.3	13,733.9
Antwerpen [Antwerp]	1,064.8	1,277.8	1,531.0	3,819.6
Limburg	524.6	630.7	757.0	1,905.7
Oost-Vlaanderen	865.1	1,037.1	1,241.4	3,082.3
Vlaams-Brabant	671.0	806.4	967.7	2,432.4
West-Vlaanderen	703.8	843.5	1,009.2	2,501.4
Wallonia	2,133.6	2,559.3	3,065.1	7,631.4
Brabant Wallon	251.4	303.7	366.2	943.4
Hainaut	776.4	928.8	1,109.4	2,725.2
Liège	645.9	774.3	926.8	2,300.8
Luxembourg	170.0	204.7	246.1	624.2
Namur	294.5	354.0	424.8	1,068.6
Brussels Gewest [Brussels]	646.6	775.9	929.6	2,318.4
Bruxelles-Capitale [Brussels]	646.6	775.9	929.6	2,318.4

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Brazil

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	27,868.0	2.72%		
2018	28,758.0	2.36%	2017-2018	3.2%
2019	33,195.3	2.28%	2018-2019	15.4%
2020	34,859.7	2.22%	2019-2020	5.0%
2021	42,180.6	2.14%	2020-2021	21.0%
2022	49,787.4	2.05%	2021-2022	18.0%
2023	58,705.9	1.97%	2022-2023	17.9%
2028	127,979.9	1.53%	CAGR 2023-2028	23.6%

<u>Reals</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Reals 000s)</u>	<u>Year-to-Year Change</u>	
2017	102,982.8		
2018	106,271.6	2017-2018	3.2%
2019	122,669.0	2018-2019	15.4%
2020	128,819.4	2019-2020	5.0%
2021	155,872.9	2020-2021	21.0%
2022	183,983.0	2021-2022	18.0%
2023	216,940.3	2022-2023	17.9%
2028	472,933.6	CAGR 2023-2028	118.0%

In 2022, sales for this service in Brazil is forecast to be \$49.8 million dollars.

Sales are forecast to change by 17.9 percent in the next year (2022 to 2023). In 2022, sales will be 184 million Reals and will change by 18 percent in the next year (2022 to 2023).

In 2028, sales for this service in Brazil is forecast to be \$128.0 million dollars.

The compound annual growth rate is projected to change by 23.6 percent from 2023 to 2028. In 2028, sales will be 184 million Reals and will change by 18 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Brazil

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Acre	183.5	219.6	262.6	614.0
Alagoas	668.8	787.2	925.6	1,988.4
Amapá	184.8	223.7	270.6	669.3
Amazonas	855.0	1,020.5	1,216.6	2,802.0
Bahia	2,956.7	3,472.2	4,073.3	8,653.2
Ceará	1,850.5	2,184.1	2,575.3	5,611.0
Distrito Federal	619.7	738.7	879.5	2,012.6
Espírito Santo	802.9	949.8	1,122.3	2,472.5
Goiás	1,421.8	1,689.5	2,005.7	4,521.0
Maranhão	1,434.9	1,694.2	1,998.1	4,360.0
Mato Grosso	710.0	843.4	1,000.9	2,252.3
Mato Grosso do Sul	557.4	659.9	780.4	1,725.9
Minas Gerais	4,232.2	4,982.5	5,859.6	12,604.1
Pará	1,769.5	2,103.2	2,497.3	5,635.4
Paraíba	794.9	933.7	1,095.6	2,330.2
Paraná	2,272.1	2,675.2	3,146.5	6,772.2
Pernambuco	1,901.1	2,238.3	2,632.4	5,663.8
Piauí	655.8	770.7	904.8	1,928.8
Rio de Janeiro	3,450.9	4,063.6	4,780.2	10,295.0
Rio Grande do Norte	702.8	829.8	978.8	2,136.3
Rio Grande do Sul	2,258.2	2,650.7	3,108.2	6,587.3
Rondônia	357.6	423.2	500.4	1,105.1
Roraima	123.9	149.6	180.4	440.1
Santa Catarina	1,432.9	1,696.6	2,006.8	4,442.3
São Paulo	9,194.5	10,853.4	12,798.4	27,899.7
Sergipe	465.9	551.2	651.6	1,437.2
Tocantins	322.2	382.7	454.0	1,020.2

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Canada

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	23,128.3	2.26%		
2018	26,766.2	2.20%	2017-2018	15.7%
2019	31,502.3	2.16%	2018-2019	17.7%
2020	33,099.4	2.11%	2019-2020	5.1%
2021	40,799.9	2.07%	2020-2021	23.3%
2022	49,058.7	2.02%	2021-2022	20.2%
2023	58,928.9	1.97%	2022-2023	20.1%
2028	140,940.9	1.68%	CAGR 2023-2028	27.8%

<u>Dollars</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Dollars 000s)</u>	<u>Year-to-Year Change</u>	
2017	30,680.2		
2018	35,506.0	2017-2018	15.7%
2019	41,788.5	2018-2019	17.7%
2020	43,907.0	2019-2020	5.1%
2021	54,121.9	2020-2021	23.3%
2022	65,077.4	2021-2022	20.2%
2023	78,170.4	2022-2023	20.1%
2028	186,961.2	CAGR 2023-2028	139.2%

In 2022, sales for this service in Canada is forecast to be \$49.1 million dollars.

Sales are forecast to change by 20.1 percent in the next year (2022 to 2023). In 2022, sales will be 65.1 million Dollars and will change by 20.2 percent in the next year (2022 to 2023).

In 2028, sales for this service in Canada is forecast to be \$140.9 million dollars.

The compound annual growth rate is projected to change by 27.8 percent from 2023 to 2028. In 2028, sales will be 65.1 million Dollars and will change by 20.2 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Canada

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Alberta	4,937.9	5,998.0	7,278.1	18,306.2
British Columbia	5,346.2	6,428.7	7,722.2	18,465.7
Manitoba	1,470.2	1,766.0	2,119.0	5,040.3
New Brunswick	820.7	977.4	1,162.7	2,648.8
Newfoundland and Labrador	571.8	681.4	811.1	1,853.7
Northwest Territories	48.7	58.1	69.4	160.4
Nova Scotia	1,030.2	1,227.1	1,460.3	3,331.3
Nunavut	43.3	52.5	63.5	157.9
Ontario	15,766.2	18,954.3	22,763.3	54,374.2
Prince Edward Island	166.3	199.2	238.5	560.6
Québec [Quebec]	9,273.3	11,122.0	13,325.4	31,454.5
Saskatchewan	1,281.5	1,541.1	1,851.4	4,429.9
Yukon	43.8	52.9	64.0	157.2

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Chile

Market - 3D Printing Materials

Market Sales by Country

US Dollars	Market Sales	Pct. of Global		
Year	(USD 000s)	Market	Year-to-Year Change	
2017	3,476.5	0.34%		
2018	4,210.7	0.35%	2017-2018	21.1%
2019	4,594.2	0.32%	2018-2019	9.1%
2020	5,168.2	0.33%	2019-2020	12.5%
2021	6,519.6	0.33%	2020-2021	26.1%
2022	8,022.6	0.33%	2021-2022	23.1%
2023	9,862.0	0.33%	2022-2023	22.9%
2028	26,477.1	0.32%	CAGR 2023-2028	33.7%

Pesos	Market Sales		
Year	(Pesos 000s)	Year-to-Year Change	
2017	2,343,684.6		
2018	2,838,640.8	2017-2018	21.1%
2019	3,097,183.5	2018-2019	9.1%
2020	3,484,124.4	2019-2020	12.5%
2021	4,395,131.2	2020-2021	26.1%
2022	5,408,386.6	2021-2022	23.1%
2023	6,648,429.9	2022-2023	22.9%
2028	17,849,389.3	CAGR 2023-2028	168.5%

In 2022, sales for this service in Chile is forecast to be \$8.0 million dollars.

Sales are forecast to change by 22.9 percent in the next year (2022 to 2023). In 2022, sales will be 5408.4 million Pesos and will change by 23.1 percent in the next year (2022 to 2023).

In 2028, sales for this service in Chile is forecast to be \$26.5 million dollars.

The compound annual growth rate is projected to change by 33.7 percent from 2023 to 2028. In 2028, sales will be 5408.4 million Pesos and will change by 23.1 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Chile

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Antofagasta	226.0	279.1	344.4	941.8
Arica y Parinacota	81.9	100.6	123.5	328.9
Atacama	107.6	132.4	162.6	435.3
Aisén	38.5	47.4	58.3	156.2
Biobío (Bío Bío)	746.4	914.3	1,118.9	2,936.3
Coquimbo	283.0	349.8	431.8	1,183.6
La Araucanía	350.9	430.3	527.0	1,389.0
O'Higgins	338.3	416.2	511.5	1,372.1
Los Lagos	305.9	376.2	462.3	1,238.0
Los Ríos	138.8	169.7	207.3	539.6
Magallanes y de la Antártica	59.4	72.7	88.8	231.4
Maule	381.2	467.9	573.7	1,519.8
Región Metro. de Santiago	2,668.2	3,288.0	4,047.7	10,942.4
Tarapacá	130.8	163.6	204.4	594.4
Valparaíso	662.6	814.4	999.9	2,668.3

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

China

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	134,085.7	13.10%		
2018	172,800.4	14.19%	2017-2018	28.9%
2019	216,812.5	14.90%	2018-2019	25.5%
2020	240,278.7	15.30%	2019-2020	10.8%
2021	314,661.3	15.98%	2020-2021	31.0%
2022	404,894.2	16.69%	2021-2022	28.7%
2023	520,154.7	17.41%	2022-2023	28.5%
2028	1,839,395.9	21.94%	CAGR 2023-2028	50.7%

<u>RMBs</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(RMBs 000s)</u>	<u>Year-to-Year Change</u>	
2017	907,540.5		
2018	1,169,575.5	2017-2018	28.9%
2019	1,467,464.9	2018-2019	25.5%
2020	1,626,292.5	2019-2020	10.8%
2021	2,129,741.0	2020-2021	31.0%
2022	2,740,469.5	2021-2022	28.7%
2023	3,520,594.1	2022-2023	28.5%
2028	12,449,693.3	CAGR 2023-2028	253.6%

In 2022, sales for this service in China is forecast to be \$404.9 million dollars.

Sales are forecast to change by 28.5 percent in the next year (2022 to 2023). In 2022, sales will be 2740.5 million RMBs and will change by 28.7 percent in the next year (2022 to 2023).

In 2028, sales for this service in China is forecast to be \$1,839.4 million dollars.

The compound annual growth rate is projected to change by 50.7 percent from 2023 to 2028. In 2028, sales will be 2740.5 million RMBs and will change by 28.7 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

China

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Anhui	13,241.1	16,971.2	21,716.0	75,241.1
Beijing	4,990.8	6,529.2	8,527.4	32,730.7
Chongqing	6,364.0	8,137.4	10,387.7	35,565.2
Fujian	8,712.8	11,239.4	14,474.4	51,788.6
Gansu	5,939.6	7,639.6	9,809.9	34,589.9
Guangdong	26,136.2	34,016.4	44,198.7	165,332.0
Guangxi	10,325.8	13,255.6	16,988.2	59,324.8
Guizhou	7,887.7	10,118.5	12,958.7	45,094.5
Hainan	2,027.0	2,618.0	3,375.8	12,153.7
Hebei	16,543.5	21,297.5	27,371.9	96,945.4
Heilongjiang	8,252.5	10,568.9	13,513.1	46,634.9
Henan	21,296.7	27,347.2	35,058.2	122,605.5
Hubei	13,039.3	16,720.7	21,405.8	74,344.6
Hunan	14,537.0	18,640.7	23,862.9	82,865.1
Jiangsu	17,738.6	22,806.0	29,272.3	102,998.4
Jiangxi	10,097.0	12,992.4	16,690.3	58,975.8
Jilin	6,125.8	7,858.9	10,065.6	35,038.7
Liaoning	9,688.8	12,429.2	15,918.1	55,394.3
Nei Menggu [Inner Mongolia]	5,573.3	7,161.9	9,188.1	32,251.2
Ningxia	1,545.9	2,003.1	2,591.2	9,479.4
Qinghai	1,289.9	1,663.9	2,142.7	7,665.5
Shaanxi	8,455.5	10,865.3	13,938.7	48,916.1
Shandong	21,582.4	27,731.7	35,573.6	124,803.2
Shanghai	5,669.1	7,393.8	9,627.1	36,389.4
Shanxi	8,329.7	10,741.6	13,828.9	49,398.9
Sichuan	14,915.4	18,886.9	23,876.1	77,859.8
Tianjin	3,026.5	3,923.8	5,078.8	18,634.9
Xinjiang	5,374.8	6,974.1	9,034.1	33,282.8
Xizang [Tibet]	730.2	945.7	1,222.8	4,463.1
Yunnan	10,794.3	13,922.0	17,926.0	64,082.7
Zhejiang	12,214.9	15,746.7	20,265.8	72,272.8
Zhejiang	12,214.9	15,746.7	20,265.8	72,272.8

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Czech Republic

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	2,517.0	0.25%		
2018	3,185.5	0.26%	2017-2018	26.6%
2019	4,024.8	0.28%	2018-2019	26.3%
2020	4,355.7	0.28%	2019-2020	8.2%
2021	5,630.7	0.29%	2020-2021	29.3%
2022	7,152.1	0.29%	2021-2022	27.0%
2023	9,069.9	0.30%	2022-2023	26.8%
2028	30,062.1	0.36%	CAGR 2023-2028	46.3%

<u>Korunas</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Korunas 000s)</u>	<u>Year-to-Year Change</u>	
2017	56,074.1		
2018	70,966.0	2017-2018	26.6%
2019	89,664.5	2018-2019	26.3%
2020	97,035.4	2019-2020	8.2%
2021	125,439.3	2020-2021	29.3%
2022	159,333.4	2021-2022	27.0%
2023	202,056.6	2022-2023	26.8%
2028	669,716.8	CAGR 2023-2028	231.5%

In 2022, sales for this service in Czech Republic is forecast to be \$7.2 million dollars. Sales are forecast to change by 26.8 percent in the next year (2022 to 2023). In 2022, sales will be 159.3 million Korunas and will change by 27 percent in the next year (2022 to 2023).

In 2028, sales for this service in Czech Republic is forecast to be \$30.1 million dollars. The compound annual growth rate is projected to change by 46.3 percent from 2023 to 2028. In 2028, sales will be 159.3 million Korunas and will change by 27 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Czech Republic

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
South Bohemian Region	341.4	433.6	549.9	1,822.3
South Moravian Region	627.2	796.8	1,010.8	3,354.5
Karlovy Vary Region	158.6	201.0	254.3	834.1
Hradec Králové Region	291.6	369.6	467.7	1,533.2
Liberecký kraj [Liberec Region]	235.3	298.9	379.1	1,257.4
Moravian-Silesian Region	641.8	812.4	1,026.6	3,343.4
Olomouc Region	338.0	428.7	542.8	1,786.2
Pardubice Region	278.0	353.2	448.2	1,489.1
Plzeňský kraj [Plzeň Region]	307.4	390.6	495.4	1,643.6
Praha [Prague]	677.4	861.6	1,094.1	3,650.4
Central Bohemian Region	715.6	914.2	1,166.0	3,976.9
Ústecký kraj [Ústí Region]	436.7	553.8	701.2	2,305.3
Vysočina	270.7	343.2	434.3	1,425.1
Zlínský kraj [Zlín Region]	311.2	394.6	499.5	1,640.6

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Denmark

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	4,736.1	0.46%		
2018	5,617.1	0.46%	2017-2018	18.6%
2019	6,290.1	0.43%	2018-2019	12.0%
2020	6,592.2	0.42%	2019-2020	4.8%
2021	7,990.9	0.41%	2020-2021	21.2%
2022	9,517.7	0.39%	2021-2022	19.1%
2023	11,317.7	0.38%	2022-2023	18.9%
2028	27,194.7	0.32%	CAGR 2023-2028	28.1%

<u>Kroners</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Kroners 000s)</u>	<u>Year-to-Year Change</u>	
2017	30,818.3		
2018	36,551.1	2017-2018	18.6%
2019	40,930.3	2018-2019	12.0%
2020	42,896.5	2019-2020	4.8%
2021	51,998.0	2020-2021	21.2%
2022	61,932.9	2021-2022	19.1%
2023	73,645.9	2022-2023	18.9%
2028	176,959.4	CAGR 2023-2028	140.3%

In 2022, sales for this service in Denmark is forecast to be \$9.5 million dollars.

Sales are forecast to change by 18.9 percent in the next year (2022 to 2023). In 2022, sales will be 61.9 million Kroners and will change by 19.1 percent in the next year (2022 to 2023).

In 2028, sales for this service in Denmark is forecast to be \$27.2 million dollars.

The compound annual growth rate is projected to change by 28.1 percent from 2023 to 2028. In 2028, sales will be 61.9 million Kroners and will change by 19.1 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Denmark

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Hovedstaden [Capital Region]	2,504.5	2,989.0	3,561.5	8,644.0
Midtjylland [Mid Jutland]	1,817.1	2,165.4	2,576.3	6,206.6
Nordjylland [North Jutland]	817.0	971.2	1,152.6	2,742.7
Sjælland [Zealand]	1,158.0	1,377.1	1,634.9	3,897.3
Syddanmark [South Denmark]	1,694.3	2,015.0	2,392.3	5,704.1

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Egypt

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	2,551.6	0.25%		
2018	3,026.0	0.25%	2017-2018	18.6%
2019	4,279.7	0.29%	2018-2019	41.4%
2020	5,476.0	0.35%	2019-2020	28.0%
2021	6,468.5	0.33%	2020-2021	18.1%
2022	7,509.1	0.31%	2021-2022	16.1%
2023	8,704.6	0.29%	2022-2023	15.9%
2028	15,794.7	0.19%	CAGR 2023-2028	16.3%

<u>Pounds</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Pounds 000s)</u>	<u>Year-to-Year Change</u>	
2017	45,695.9		
2018	54,191.5	2017-2018	18.6%
2019	76,643.0	2018-2019	41.4%
2020	98,066.1	2019-2020	28.0%
2021	115,841.4	2020-2021	18.1%
2022	134,476.4	2021-2022	16.1%
2023	155,886.5	2022-2023	15.9%
2028	282,859.5	CAGR 2023-2028	81.5%

In 2022, sales for this service in Egypt is forecast to be \$7.5 million dollars.

Sales are forecast to change by 15.9 percent in the next year (2022 to 2023). In 2022, sales will be 134.5 million Pounds and will change by 16.1 percent in the next year (2022 to 2023).

In 2028, sales for this service in Egypt is forecast to be \$15.8 million dollars.

The compound annual growth rate is projected to change by 16.3 percent from 2023 to 2028. In 2028, sales will be 134.5 million Pounds and will change by 16.1 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Egypt

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Ad-Daqahiyah [Dakahlia]	438.5	508.1	587.9	1,056.2
Al-Baḥr al-Aḥmar [Red Sea]	26.5	31.2	36.6	71.3
Al-Buḥayrah [Beheira]	418.7	485.3	561.7	1,011.0
Al-Fayyūm [Fayoum]	248.5	290.1	338.3	632.3
Al-Gharbiyah [Gharbia]	336.9	389.4	449.5	798.4
Al-Iskandariyah [Alexandria]	350.7	406.3	470.0	843.5
Al-Ismā'īliyah [Ismailia]	90.6	105.8	123.4	230.3
Al-Jīzah [Giza]	597.5	697.3	812.6	1,513.2
Al-Minūfiyah [Monufia]	291.2	337.7	391.0	705.0
Al-Minyā	378.4	440.0	510.9	934.6
Al-Qāhirah [Cairo]	639.2	737.3	849.1	1,491.1
Al-Qalyūbyah [Qalyubia]	387.2	450.8	524.0	963.6
Al-Uqṣor [Luxor]	85.4	99.2	115.0	208.8
Al-Wādī al-Jadīd [New Valley]	16.7	19.4	22.5	41.3
Ash-Sharqiyah [Sharqia]	490.6	570.6	662.7	1,213.8
As-Suways [Suez]	49.8	58.0	67.5	125.0
Aswān	100.6	116.5	134.8	241.7
Asyūt	299.9	347.8	402.7	726.5
Banī Suwayf [Beni Suef]	216.5	252.0	293.0	539.4
Būr Sa'īd [Port Said]	50.7	58.8	68.1	123.1
Dumyāṭ [Damietta]	101.6	118.1	137.1	250.1
Kafr ash-Shaykh [Kafr el-Sheikh]	227.3	263.2	304.3	544.8
Maṭrūḥ [Matrouh]	30.8	36.1	42.3	80.8
Qinā [Qena]	216.4	250.9	290.5	523.6
Sawḥāj [Sohag]	338.9	393.4	456.1	827.2
Sīnā' al-Janūbiyah [South Sinai]	7.9	9.1	10.6	19.1
North Sinai	31.3	36.5	42.5	78.7

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Finland

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	3,358.5	0.33%		
2018	4,017.6	0.33%	2017-2018	19.6%
2019	4,519.9	0.31%	2018-2019	12.5%
2020	4,729.1	0.30%	2019-2020	4.6%
2021	5,741.2	0.29%	2020-2021	21.4%
2022	6,848.6	0.28%	2021-2022	19.3%
2023	8,156.4	0.27%	2022-2023	19.1%
2028	19,749.0	0.24%	CAGR 2023-2028	28.4%

<u>Euros</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Euros 000s)</u>	<u>Year-to-Year Change</u>	
2017	2,927.8		
2018	3,502.4	2017-2018	19.6%
2019	3,940.4	2018-2019	12.5%
2020	4,122.7	2019-2020	4.6%
2021	5,005.0	2020-2021	21.4%
2022	5,970.5	2021-2022	19.3%
2023	7,110.5	2022-2023	19.1%
2028	17,216.6	CAGR 2023-2028	142.1%

In 2022, sales for this service in Finland is forecast to be \$6.8 million dollars.

Sales are forecast to change by 19.1 percent in the next year (2022 to 2023). In 2022, sales will be 6 million Euros and will change by 19.3 percent in the next year (2022 to 2023).

In 2028, sales for this service in Finland is forecast to be \$19.7 million dollars.

The compound annual growth rate is projected to change by 28.4 percent from 2023 to 2028. In 2028, sales will be 6 million Euros and will change by 19.3 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Finland

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Åland [Åland Islands]	30.8	36.8	44.0	107.8
Etelä-Karjala [South Karelia]	132.5	156.9	185.6	433.6
South Ostrobothnia	194.7	230.8	273.2	641.1
Etelä-Savo [South Savonia]	149.1	176.0	207.4	475.8
Kainuu	74.3	87.5	103.0	234.1
Kanta-Häme [Tavastia Proper]	180.8	215.4	256.1	615.3
Central Ostrobothnia	70.5	83.8	99.4	235.9
Keski-Suomi [Central Finland]	287.0	341.8	406.4	975.4
Kymenlaakso (Kymmenedalen)	179.4	212.3	250.9	584.1
Lappi [Lapland]	181.2	214.4	253.2	587.4
Päijät-Häme [Päijänne Tavastia]	207.9	247.2	293.4	698.6
Pirkanmaa	536.3	641.5	766.0	1,878.5
Pohjanmaa [Ostrobothnia]	186.3	221.7	263.4	629.9
Pohjois-Karjala [North Karelia]	165.6	196.1	231.9	541.1
North Ostrobothnia	432.4	516.7	616.5	1,505.6
Pohjois-Savo [North Savonia]	251.2	297.8	352.5	827.7
Satakunta	224.3	265.5	313.9	731.8
Uusimaa (Nyland)	1,758.9	2,112.0	2,531.9	6,331.7
Southwest Finland	498.2	594.3	707.9	1,713.6

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

France

Market - 3D Printing Materials

Market Sales by Country

US Dollars	Market Sales	Pct. of Global		
Year	(USD 000s)	Market	Year-to-Year Change	
2017	39,505.0	3.86%		
2018	47,301.2	3.89%	2017-2018	19.7%
2019	53,475.9	3.67%	2018-2019	13.1%
2020	57,459.2	3.66%	2019-2020	7.4%
2021	71,149.0	3.61%	2020-2021	23.8%
2022	85,940.0	3.54%	2021-2022	20.8%
2023	103,699.7	3.47%	2022-2023	20.7%
2028	253,708.7	3.03%	CAGR 2023-2028	28.9%

Euros	Market Sales		
Year	(Euros 000s)	Year-to-Year Change	
2017	34,439.3		
2018	41,235.8	2017-2018	19.7%
2019	46,618.8	2018-2019	13.1%
2020	50,091.3	2019-2020	7.4%
2021	62,025.7	2020-2021	23.8%
2022	74,920.1	2021-2022	20.8%
2023	90,402.5	2022-2023	20.7%
2028	221,176.1	CAGR 2023-2028	144.7%

In 2022, sales for this service in France is forecast to be \$85.9 million dollars.

Sales are forecast to change by 20.7 percent in the next year (2022 to 2023). In 2022, sales will be 74.9 million Euros and will change by 20.8 percent in the next year (2022 to 2023).

In 2028, sales for this service in France is forecast to be \$253.7 million dollars.

The compound annual growth rate is projected to change by 28.9 percent from 2023 to 2028. In 2028, sales will be 74.9 million Euros and will change by 20.8 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

France

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Auvergne - Rhône - Alpes	8,626.1	10,428.5	12,594.5	30,945.4
Bourgogne [Burgundy]	3,073.7	3,699.6	4,448.2	10,690.1
Bretagne [Brittany]	3,590.4	4,338.5	5,237.2	12,838.2
Centre - Val de Loire	2,897.4	3,496.8	4,215.8	10,269.4
Corse [Corsica]	350.0	424.2	513.4	1,276.1
Grand Est	6,112.4	7,360.7	8,854.9	21,336.0
Hauts-de-France	6,568.7	7,907.2	9,508.7	22,867.8
Île-de-France	13,419.8	16,213.4	19,568.4	47,926.5
Normandie [Normandy]	3,721.9	4,487.9	5,405.8	13,109.7
Nouvelle-Aquitaine	6,414.5	7,745.8	9,343.7	22,824.8
Pyrénées-Méditerranée	6,472.3	7,849.1	9,509.0	23,730.7
Pays de la Loire	4,079.3	4,935.5	5,965.4	14,715.6
Provence - Alpes - Côte d'Azur	5,822.4	7,052.8	8,534.6	21,178.3

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Germany

Market - 3D Printing Materials

Market Sales by Country

US Dollars	Market Sales	Pct. of Global		
Year	(USD 000s)	Market	Year-to-Year Change	
2017	49,270.4	4.81%		
2018	59,119.0	4.86%	2017-2018	20.0%
2019	67,869.7	4.66%	2018-2019	14.8%
2020	73,596.4	4.69%	2019-2020	8.4%
2021	92,098.1	4.68%	2020-2021	25.1%
2022	112,425.0	4.64%	2021-2022	22.1%
2023	137,097.7	4.59%	2022-2023	21.9%
2028	353,601.9	4.22%	CAGR 2023-2028	31.6%

Euros	Market Sales		
Year	(Euros 000s)	Year-to-Year Change	
2017	42,952.6		
2018	51,538.3	2017-2018	20.0%
2019	59,166.9	2018-2019	14.8%
2020	64,159.3	2019-2020	8.4%
2021	80,288.6	2020-2021	25.1%
2022	98,008.9	2021-2022	22.1%
2023	119,517.9	2022-2023	21.9%
2028	308,260.3	CAGR 2023-2028	157.9%

In 2022, sales for this service in Germany is forecast to be \$112.4 million dollars. Sales are forecast to change by 21.9 percent in the next year (2022 to 2023). In 2022, sales will be 98 million Euros and will change by 22.1 percent in the next year (2022 to 2023).

In 2028, sales for this service in Germany is forecast to be \$353.6 million dollars. The compound annual growth rate is projected to change by 31.6 percent from 2023 to 2028. In 2028, sales will be 98 million Euros and will change by 22.1 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Germany

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Baden-Württemberg	12,325.8	15,079.1	18,428.4	48,043.6
Bayern [Bavaria]	14,608.0	17,885.8	21,876.4	57,267.4
Berlin	3,926.6	4,797.6	5,855.7	15,168.4
Brandenburg	2,780.9	3,389.2	4,126.2	10,554.9
Bremen	749.8	915.0	1,115.5	2,872.7
Hamburg	2,028.2	2,481.6	3,033.1	7,912.1
Hessen [Hesse]	6,946.5	8,488.3	10,361.5	26,855.8
Western Pomerania	1,753.2	2,126.7	2,577.1	6,439.6
Niedersachsen [Lower Saxony]	8,916.5	10,888.5	13,282.9	34,315.9
North Rhine-Westphalia	19,960.1	24,351.5	29,678.5	76,314.7
Rheinland-Pfalz	4,568.1	5,579.3	6,807.3	17,600.4
Saarland	1,096.0	1,331.9	1,616.9	4,076.9
Sachsen [Saxony]	4,442.6	5,392.5	6,538.6	16,389.3
Sachsen-Anhalt [Saxony-Anhalt]	2,398.0	2,898.0	3,498.7	8,580.1
Schleswig-Holstein	3,254.0	3,980.4	4,864.0	12,673.0
Thüringen [Thuringia]	2,343.7	2,839.7	3,437.0	8,537.0

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Hungary

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	1,645.5	0.16%		
2018	2,095.9	0.17%	2017-2018	27.4%
2019	2,579.4	0.18%	2018-2019	23.1%
2020	2,899.9	0.18%	2019-2020	12.4%
2021	3,814.5	0.19%	2020-2021	31.5%
2022	4,894.6	0.20%	2021-2022	28.3%
2023	6,273.9	0.21%	2022-2023	28.2%
2028	20,764.5	0.25%	CAGR 2023-2028	46.2%

<u>Forints</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Forints 000s)</u>	<u>Year-to-Year Change</u>	
2017	461,486.3		
2018	587,806.2	2017-2018	27.4%
2019	723,401.5	2018-2019	23.1%
2020	813,286.7	2019-2020	12.4%
2021	1,069,787.5	2020-2021	31.5%
2022	1,372,679.3	2021-2022	28.3%
2023	1,759,527.7	2022-2023	28.2%
2028	5,823,428.3	CAGR 2023-2028	231.0%

In 2022, sales for this service in Hungary is forecast to be \$4.9 million dollars.

Sales are forecast to change by 28.2 percent in the next year (2022 to 2023). In 2022, sales will be 1372.7 million Forints and will change by 28.3 percent in the next year (2022 to 2023).

In 2028, sales for this service in Hungary is forecast to be \$20.8 million dollars.

The compound annual growth rate is projected to change by 46.2 percent from 2023 to 2028. In 2028, sales will be 1372.7 million Forints and will change by 28.3 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Hungary

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Bács-Kiskun	197.8	253.5	324.5	1,066.9
Baranya	142.8	182.7	233.4	760.1
Békés	131.6	167.9	214.0	688.6
Borsod-Abaúj-Zemplén	253.3	323.6	413.1	1,337.9
Budapest	656.7	839.8	1,072.8	3,489.2
Csongrád	157.0	201.2	257.5	845.2
Fejér	164.9	211.9	272.0	906.2
Győr-Moson-Sopron	179.8	231.6	298.0	1,005.5
Hajdú-Bihar	209.2	268.6	344.5	1,142.8
Heves	115.4	147.7	188.8	616.3
Jász-Nagykun-Szolnok	144.5	184.8	236.0	767.8
Komárom-Esztergom	116.3	149.2	191.1	630.0
Nógrád	74.5	95.1	121.3	392.2
Pest	512.1	665.1	863.0	3,033.2
Somogy	118.3	151.4	193.4	630.7
Szabolcs-Szatmár-Bereg	217.9	279.7	358.7	1,189.7
Tolna	85.6	109.5	139.8	454.1
Vas	98.0	125.5	160.7	527.5
Veszprém	133.4	170.9	218.7	717.5
Zala	105.5	135.0	172.5	562.9

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

India

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	27,557.6	2.69%		
2018	31,335.8	2.57%	2017-2018	13.7%
2019	40,041.8	2.75%	2018-2019	27.8%
2020	43,808.2	2.79%	2019-2020	9.4%
2021	56,487.9	2.87%	2020-2021	28.9%
2022	71,569.0	2.95%	2021-2022	26.7%
2023	90,529.0	3.03%	2022-2023	26.5%
2028	296,270.8	3.53%	CAGR 2023-2028	45.5%

<u>Rupees</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Rupees Mills)</u>	<u>Year-to-Year Change</u>	
2017	1,950.3		
2018	2,217.7	2017-2018	13.7%
2019	2,833.8	2018-2019	27.8%
2020	3,100.4	2019-2020	9.4%
2021	3,997.7	2020-2021	28.9%
2022	5,065.0	2021-2022	26.7%
2023	6,406.9	2022-2023	26.5%
2028	20,967.5	CAGR 2023-2028	227.3%

In 2022, sales for this service in India is forecast to be \$71.6 million dollars.

Sales are forecast to change by 26.5 percent in the next year (2022 to 2023). In 2022, sales will be 5.1 million Rupees and will change by 26.7 percent in the next year (2022 to 2023).

In 2028, sales for this service in India is forecast to be \$296.3 million dollars.

The compound annual growth rate is projected to change by 45.5 percent from 2023 to 2028. In 2028, sales will be 5.1 million Rupees and will change by 26.7 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

India

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Andhra Pradesh	2,231.8	2,811.8	3,536.7	11,251.4
Arunāchal Pradesh	65.6	83.4	105.9	352.9
Assam	1,439.2	1,821.1	2,300.7	7,481.0
Bihār	4,966.9	6,317.9	8,023.3	26,776.5
Chandīgarh	52.5	66.9	85.1	286.0
Chhattīsgarh	1,173.5	1,486.7	1,880.4	6,150.3
Goa	66.4	83.8	105.5	336.7
Gujarāt	2,825.8	3,582.2	4,533.7	14,875.1
Haryāna	1,210.4	1,537.5	1,949.7	6,461.3
Himāchal Pradesh	315.2	398.3	502.4	1,621.0
Jammu & Kashmīr	601.6	765.2	971.7	3,242.8
Jhārkhand	1,545.1	1,960.7	2,484.0	8,191.1
Karnāataka	2,803.2	3,544.1	4,473.6	14,484.2
Kerala	1,487.7	1,870.1	2,346.9	7,383.0
Madhya Pradesh	3,415.0	4,332.5	5,487.5	18,075.5
Mahārāshtra	5,259.7	6,662.2	8,424.8	27,529.4
Manipur	134.4	170.8	216.6	717.7
Meghālaya	142.5	181.5	230.8	774.8
Odisha (Orissa)	1,917.2	2,421.9	3,054.5	9,848.3
Punjab	1,286.4	1,627.1	2,054.6	6,666.6
Rājasthān	3,271.5	4,156.9	5,273.3	17,505.2
Tamil Nādu	3,234.3	4,080.9	5,140.7	16,477.3
Telangana	1,610.7	2,035.8	2,568.8	8,303.8
Tripura	167.6	211.8	267.1	861.9
Uttarākhnd (Uttaranchal)	465.7	589.7	745.4	2,430.8
Uttar Pradesh	9,452.8	11,998.5	15,204.7	50,208.1
West Bengal	4,194.3	5,300.9	6,688.6	21,615.9

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Indonesia

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	9,536.9	0.93%		
2018	10,976.5	0.90%	2017-2018	15.1%
2019	13,845.8	0.95%	2018-2019	26.1%
2020	15,577.8	0.99%	2019-2020	12.5%
2021	20,406.6	1.04%	2020-2021	31.0%
2022	26,076.8	1.08%	2021-2022	27.8%
2023	33,288.4	1.11%	2022-2023	27.7%
2028	107,928.1	1.29%	CAGR 2023-2028	44.8%

<u>Rupiahs</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Rupiahs Mill.)</u>	<u>Year-to-Year Change</u>	
2017	134,564.5		
2018	154,877.5	2017-2018	15.1%
2019	195,362.3	2018-2019	26.1%
2020	219,800.4	2019-2020	12.5%
2021	287,934.7	2020-2021	31.0%
2022	367,940.2	2021-2022	27.8%
2023	469,695.0	2022-2023	27.7%
2028	1,522,849.3	CAGR 2023-2028	224.2%

In 2022, sales for this service in Indonesia is forecast to be \$26.1 million dollars.

Sales are forecast to change by 27.7 percent in the next year (2022 to 2023). In 2022, sales will be 367.9 million Rupiahs and will change by 27.8 percent in the next year (2022 to 2023).

In 2028, sales for this service in Indonesia is forecast to be \$107.9 million dollars.

The compound annual growth rate is projected to change by 44.8 percent from 2023 to 2028. In 2028, sales will be 367.9 million Rupiahs and will change by 27.8 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Indonesia

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Aceh	403.9	517.5	662.3	2,175.0
Bali	344.5	442.2	567.0	1,879.4
Banten	950.9	1,220.4	1,564.5	5,179.7
Bengkulu	157.3	202.2	259.7	868.0
Gorontalo	89.6	114.7	146.5	477.0
Jakarta	795.8	1,013.5	1,289.4	4,107.5
Jambi	287.9	371.3	478.4	1,622.6
Jawa Barat [West Java]	3,677.9	4,697.7	5,993.9	19,376.4
Jawa Tengah [Central Java]	2,654.9	3,373.1	4,281.1	13,477.3
Jawa Timur [East Java]	3,065.5	3,897.8	4,950.9	15,647.0
West Borneo	395.2	506.4	648.3	2,130.9
South Borneo	328.4	421.8	541.2	1,799.6
Central Borneo	213.7	275.9	355.9	1,215.0
East Borneo	294.5	380.7	491.7	1,688.1
North Borneo	46.4	58.9	74.7	234.8
Bangka Belitung Islands	110.3	141.7	182.0	607.4
Kepulauan Riau [Riau Islands]	164.0	212.9	276.0	966.0
Lampung	654.2	835.8	1,066.8	3,453.1
Maluku [Moluccas]	114.4	144.2	181.5	549.4
Northern Moluccas	91.8	117.6	150.5	494.5
Western Lesser Sunda Islands	396.9	508.1	649.9	2,126.9
Eastern Lesser Sunda Islands	425.7	547.3	702.9	2,347.0
Papua (Irian Jaya)	270.7	351.7	456.4	1,606.0
Papua Barat [West Papua]	70.6	91.0	117.3	397.7
Riau	544.2	705.7	914.3	3,189.1
Sulbar [West Sulawesi]	102.1	130.9	167.7	552.5
[South Sulawesi]	665.5	847.1	1,077.1	3,421.5
Central Sulawesi	245.7	316.7	407.8	1,378.9
Southeast Sulawesi	217.3	281.1	363.2	1,250.3
North Sulawesi	173.5	219.0	276.1	841.4
Sumatera Barat [West Sumatra]	411.6	525.2	669.4	2,152.2
South Sumatra	627.9	801.0	1,020.6	3,277.9
North Sumatra	1,123.2	1,435.2	1,831.8	5,932.4
Yogyakarta	290.6	370.3	471.4	1,505.9

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Ireland

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	3,897.5	0.38%		
2018	5,103.8	0.42%	2017-2018	31.0%
2019	6,397.5	0.44%	2018-2019	25.3%
2020	6,374.6	0.41%	2019-2020	-0.4%
2021	7,850.0	0.40%	2020-2021	23.1%
2022	9,498.6	0.39%	2021-2022	21.0%
2023	11,474.7	0.38%	2022-2023	20.8%
2028	29,835.7	0.36%	CAGR 2023-2028	32.0%

<u>Euros</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Euros 000s)</u>	<u>Year-to-Year Change</u>	
2017	3,397.7		
2018	4,449.3	2017-2018	31.0%
2019	5,577.2	2018-2019	25.3%
2020	5,557.2	2019-2020	-0.4%
2021	6,843.4	2020-2021	23.1%
2022	8,280.6	2021-2022	21.0%
2023	10,003.3	2022-2023	20.8%
2028	26,009.9	CAGR 2023-2028	160.0%

In 2022, sales for this service in Ireland is forecast to be \$9.5 million dollars.

Sales are forecast to change by 20.8 percent in the next year (2022 to 2023). In 2022, sales will be 8.3 million Euros and will change by 21 percent in the next year (2022 to 2023).

In 2028, sales for this service in Ireland is forecast to be \$29.8 million dollars.

The compound annual growth rate is projected to change by 32 percent from 2023 to 2028. In 2028, sales will be 8.3 million Euros and will change by 21 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Ireland

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Connacht	906.8	1,095.3	1,320.7	3,403.0
Leinster	4,371.6	5,300.1	6,415.2	16,843.4
Munster	2,077.8	2,505.9	3,017.4	7,717.4
Ulster (part of)	493.8	597.3	721.3	1,871.9

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Israel

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	5,329.4	0.52%		
2018	6,236.4	0.51%	2017-2018	17.0%
2019	7,857.1	0.54%	2018-2019	26.0%
2020	8,419.0	0.54%	2019-2020	7.2%
2021	10,712.8	0.54%	2020-2021	27.2%
2022	13,394.2	0.55%	2021-2022	25.0%
2023	16,719.6	0.56%	2022-2023	24.8%
2028	51,209.3	0.61%	CAGR 2023-2028	41.3%

<u>Shekels</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Shekels 000s)</u>	<u>Year-to-Year Change</u>	
2017	19,520.2		
2018	22,842.3	2017-2018	17.0%
2019	28,778.3	2018-2019	26.0%
2020	30,836.4	2019-2020	7.2%
2021	39,238.2	2020-2021	27.2%
2022	49,059.5	2021-2022	25.0%
2023	61,239.3	2022-2023	24.8%
2028	187,565.9	CAGR 2023-2028	206.3%

In 2022, sales for this service in Israel is forecast to be \$13.4 million dollars.

Sales are forecast to change by 24.8 percent in the next year (2022 to 2023). In 2022, sales will be 49.1 million Shekels and will change by 25 percent in the next year (2022 to 2023).

In 2028, sales for this service in Israel is forecast to be \$51.2 million dollars.

The compound annual growth rate is projected to change by 41.3 percent from 2023 to 2028. In 2028, sales will be 49.1 million Shekels and will change by 25 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Israel

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
HaDaron [Southern District]	1,694.7	2,131.8	2,677.2	8,446.5
HaMerkaz [Central District]	2,817.2	3,542.3	4,446.5	13,995.3
HaZafon [Northern District]	1,850.1	2,313.5	2,888.2	8,844.9
Hefa [Haifa]	1,258.9	1,564.2	1,940.2	5,753.8
Tel Aviv	1,677.0	2,069.6	2,549.8	7,310.2
Yerushalayim [Jerusalem]	1,415.0	1,772.9	2,217.7	6,858.6

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Italy

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	28,360.8	2.77%		
2018	33,403.8	2.74%	2017-2018	17.8%
2019	37,224.6	2.56%	2018-2019	11.4%
2020	39,799.7	2.53%	2019-2020	6.9%
2021	48,832.0	2.48%	2020-2021	22.7%
2022	58,445.0	2.41%	2021-2022	19.7%
2023	69,878.9	2.34%	2022-2023	19.6%
2028	163,299.7	1.95%	CAGR 2023-2028	26.7%

<u>Euros</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Euros 000s)</u>	<u>Year-to-Year Change</u>	
2017	24,724.1		
2018	29,120.5	2017-2018	17.8%
2019	32,451.3	2018-2019	11.4%
2020	34,696.2	2019-2020	6.9%
2021	42,570.4	2020-2021	22.7%
2022	50,950.7	2021-2022	19.7%
2023	60,918.4	2022-2023	19.6%
2028	142,360.1	CAGR 2023-2028	133.7%

In 2022, sales for this service in Italy is forecast to be \$58.4 million dollars.

Sales are forecast to change by 19.6 percent in the next year (2022 to 2023). In 2022, sales will be 51 million Euros and will change by 19.7 percent in the next year (2022 to 2023).

In 2028, sales for this service in Italy is forecast to be \$163.3 million dollars.

The compound annual growth rate is projected to change by 26.7 percent from 2023 to 2028. In 2028, sales will be 51 million Euros and will change by 19.7 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Italy

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Abruzzo	1,065.6	1,274.8	1,523.3	3,550.1
Basilicata	452.8	538.9	640.8	1,456.1
Calabria	1,552.9	1,849.4	2,200.2	5,014.7
Campania	4,697.0	5,613.8	6,702.5	15,551.5
Emilia-Romagna	3,628.1	4,353.2	5,217.9	12,345.8
Friuli-Venezia Giulia	980.1	1,170.9	1,397.4	3,235.0
Lazio [Latium]	4,703.7	5,644.3	6,766.1	16,017.1
Liguria	1,231.8	1,466.5	1,744.2	3,969.0
Lombardia [Lombardy]	8,144.2	9,770.3	11,708.9	27,680.1
Marche	1,257.6	1,506.4	1,802.6	4,229.8
Molise	245.9	292.8	348.2	792.2
Piemonte [Piedmont]	3,517.3	4,202.4	5,015.7	11,617.5
Puglia [Apulia]	3,257.6	3,889.3	4,638.8	10,706.3
Sardegna [Sardinia]	1,320.3	1,576.0	1,879.2	4,332.6
Sicilia [Sicily]	4,041.3	4,826.2	5,757.5	13,304.9
Toscana [Tuscany]	3,008.6	3,600.0	4,303.1	10,042.1
Trentino-Alto Adige	877.4	1,054.9	1,267.0	3,028.4
Umbria	723.8	867.3	1,038.0	2,438.4
Valle d'Aosta (Vallée d'Aoste)	103.6	124.2	148.6	348.9
Veneto [Venetia]	4,022.1	4,823.6	5,778.8	13,639.2

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Japan

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	72,968.1	7.13%		
2018	82,202.6	6.75%	2017-2018	12.7%
2019	99,832.5	6.86%	2018-2019	21.4%
2020	104,490.6	6.65%	2019-2020	4.7%
2021	120,018.4	6.10%	2020-2021	14.9%
2022	141,827.2	5.85%	2021-2022	18.2%
2023	167,326.2	5.60%	2022-2023	18.0%
2028	386,522.2	4.61%	CAGR 2023-2028	26.2%

<u>Yen</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Yen Mills)</u>	<u>Year-to-Year Change</u>	
2017	7,896,478.8		
2018	8,895,816.6	2017-2018	12.7%
2019	10,803,695.5	2018-2019	21.4%
2020	11,307,784.9	2019-2020	4.7%
2021	12,988,175.7	2020-2021	14.9%
2022	15,348,286.7	2021-2022	18.2%
2023	18,107,748.6	2022-2023	18.0%
2028	41,828,757.1	CAGR 2023-2028	131.0%

In 2022, sales for this service in Japan is forecast to be \$141.8 million dollars. Sales are forecast to change by 18 percent in the next year (2022 to 2023). In 2022, sales will be 15348.3 million Yen and will change by 18.2 percent in the next year (2022 to 2023).

In 2028, sales for this service in Japan is forecast to be \$386.5 million dollars. The compound annual growth rate is projected to change by 26.2 percent from 2023 to 2028. In 2028, sales will be 15348.3 million Yen and will change by 18.2 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Japan

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Aichi	7,200.3	8,539.3	10,110.6	23,771.0
Akita	936.7	1,097.0	1,282.6	2,831.8
Aomori	1,214.6	1,425.8	1,671.0	3,732.5
Chiba	5,990.4	7,100.5	8,402.6	19,702.5
Ehime	1,279.7	1,504.8	1,766.5	3,979.0
Fukui	734.2	864.8	1,016.9	2,310.4
Fukuoka	4,770.6	5,638.7	6,654.0	15,384.0
Fukushima	1,820.1	2,140.3	2,512.6	5,661.6
Gifu	1,914.8	2,258.0	2,658.2	6,073.6
Gumma (Gunma)	1,860.7	2,195.7	2,586.7	5,930.6
Hiroshima	2,627.4	3,098.6	3,648.2	8,340.3
Hokkaidō	4,989.5	5,874.1	6,904.2	15,647.4
Hyōgo	5,295.1	6,261.1	7,391.2	17,120.9
Ibaraki	2,748.2	3,243.3	3,821.1	8,765.0
Ishikawa	1,071.6	1,263.5	1,487.3	3,397.0
Iwate	1,184.5	1,391.5	1,632.0	3,659.0
Kagawa	901.6	1,061.6	1,248.0	2,830.2
Kagoshima	1,527.8	1,796.5	2,109.0	4,751.2
Kanagawa	8,882.1	10,545.6	12,500.1	29,553.6
Kōchi	680.3	799.2	937.2	2,100.6
Kumamoto	1,653.5	1,947.9	2,290.9	5,208.1
Kyōto	2,439.2	2,878.4	3,391.1	7,776.8
Mie	1,725.3	2,036.7	2,400.4	5,514.8
Miyagi	2,183.0	2,576.8	3,036.7	6,973.8
Miyazaki	1,023.4	1,204.6	1,415.5	3,204.7
Nagano	1,971.1	2,322.5	2,732.1	6,219.0
Nagasaki	1,252.5	1,470.0	1,722.5	3,843.9
Nara	1,276.1	1,503.3	1,768.0	4,019.1
Niigata	2,128.5	2,503.4	2,939.4	6,629.2
Ōita	1,082.3	1,274.5	1,498.4	3,400.6
Okayama	1,794.3	2,116.8	2,493.2	5,709.8
Okinawa	1,367.5	1,623.2	1,923.6	4,542.3
Ōsaka	8,197.2	9,676.3	11,403.5	26,193.0
Saga	764.9	900.1	1,057.4	2,391.3
Saitama	6,911.2	8,187.6	9,683.8	22,645.5

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

South Korea

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	19,028.1	1.86%		
2018	22,308.1	1.83%	2017-2018	17.2%
2019	26,298.4	1.81%	2018-2019	17.9%
2020	29,019.8	1.85%	2019-2020	10.3%
2021	36,930.2	1.88%	2020-2021	27.3%
2022	45,844.5	1.89%	2021-2022	24.1%
2023	56,852.3	1.90%	2022-2023	24.0%
2028	159,477.1	1.90%	CAGR 2023-2028	36.1%

<u>Won</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Won Mills)</u>	<u>Year-to-Year Change</u>	
2017	21,333.4		
2018	25,010.9	2017-2018	17.2%
2019	29,484.6	2018-2019	17.9%
2020	32,535.7	2019-2020	10.3%
2021	41,404.5	2020-2021	27.3%
2022	51,398.8	2021-2022	24.1%
2023	63,740.2	2022-2023	24.0%
2028	178,798.6	CAGR 2023-2028	180.5%

In 2022, sales for this service in South Korea is forecast to be \$45.8 million dollars. Sales are forecast to change by 24 percent in the next year (2022 to 2023). In 2022, sales will be 51.4 million Won and will change by 24.1 percent in the next year (2022 to 2023).

In 2028, sales for this service in South Korea is forecast to be \$159.5 million dollars. The compound annual growth rate is projected to change by 36.1 percent from 2023 to 2028. In 2028, sales will be 51.4 million Won and will change by 24.1 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

South Korea

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Busan (Pusan)	2,224.1	2,717.7	3,316.9	8,568.4
North Chungcheong	1,113.1	1,376.7	1,700.6	4,667.0
South Chungcheong	1,429.2	1,770.5	2,190.7	6,060.7
Daegu (Taegu)	1,723.9	2,121.7	2,608.2	6,985.0
Daejeon (Taejŏn)	1,188.5	1,479.3	1,839.0	5,209.3
Gangwon-do (Kangwŏn-do)	1,033.7	1,272.4	1,564.4	4,191.9
Gwangju (Kwangju)	1,161.4	1,444.9	1,795.3	5,073.2
Gyeonggi-do (Kyŏnggi-do)	10,675.4	13,498.3	17,047.3	52,249.5
North Gyeongsang	1,781.3	2,187.1	2,682.1	7,096.8
South Gyeongsang	2,361.2	2,924.5	3,617.9	10,000.5
Incheon (Inch'ŏn)	2,051.1	2,547.8	3,161.0	8,864.9
Jeju-do (Cheju-do)	391.0	483.2	596.3	1,629.1
Jeollabuk-do [North Jeolla]	1,179.1	1,443.9	1,766.1	4,612.2
Jeollanam-do [South Jeolla]	1,081.5	1,315.3	1,597.7	4,031.1
Sejong	57.9	71.4	87.9	237.1
Seoul (Sŏul)	6,654.9	8,169.5	10,017.0	26,484.1
Ulsan	822.8	1,020.4	1,263.9	3,516.4

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Malaysia

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	3,538.8	0.35%		
2018	4,468.7	0.37%	2017-2018	26.3%
2019	5,531.3	0.38%	2018-2019	23.8%
2020	6,133.9	0.39%	2019-2020	10.9%
2021	8,005.0	0.41%	2020-2021	30.5%
2022	10,190.6	0.42%	2021-2022	27.3%
2023	12,959.8	0.43%	2022-2023	27.2%
2028	41,231.3	0.49%	CAGR 2023-2028	43.6%

<u>Ringgits</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Ringgits 000s)</u>	<u>Year-to-Year Change</u>	
2017	14,502.6		
2018	18,313.8	2017-2018	26.3%
2019	22,668.4	2018-2019	23.8%
2020	25,138.0	2019-2020	10.9%
2021	32,806.1	2020-2021	30.5%
2022	41,763.3	2021-2022	27.3%
2023	53,111.9	2022-2023	27.2%
2028	168,974.0	CAGR 2023-2028	218.1%

In 2022, sales for this service in Malaysia is forecast to be \$10.2 million dollars.

Sales are forecast to change by 27.2 percent in the next year (2022 to 2023). In 2022, sales will be 41.8 million Ringgits and will change by 27.3 percent in the next year (2022 to 2023).

In 2028, sales for this service in Malaysia is forecast to be \$41.2 million dollars.

The compound annual growth rate is projected to change by 43.6 percent from 2023 to 2028. In 2028, sales will be 41.8 million Ringgits and will change by 27.3 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Malaysia

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Johor	924.5	1,174.6	1,490.8	4,689.3
Kedah	525.7	665.8	842.2	2,606.0
Kelantan	429.2	542.8	685.9	2,109.6
Kuala Lumpur	434.4	548.8	692.7	2,118.9
Labuan	24.6	31.3	39.8	125.6
Melaka [Malacca]	226.7	288.3	366.2	1,156.8
Negeri Sembilan	274.1	347.0	438.8	1,355.2
Pahang	402.3	509.0	643.1	1,979.1
Perak	588.9	740.1	929.1	2,766.6
Perlis	59.6	75.0	94.3	283.0
Pinang (Pulau Pinang) [Penang]	424.7	537.9	680.4	2,105.1
Putrajaya	27.1	36.8	49.9	218.5
Sabah	974.7	1,247.5	1,594.9	5,202.5
Sarawak	676.1	857.0	1,085.1	3,372.9
Selangor	1,726.0	2,226.8	2,869.5	9,740.2
Terengganu	286.3	361.9	457.0	1,402.1

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Mexico

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	15,318.7	1.50%		
2018	17,977.6	1.48%	2017-2018	17.4%
2019	21,255.8	1.46%	2018-2019	18.2%
2020	22,056.0	1.40%	2019-2020	3.8%
2021	27,060.7	1.37%	2020-2021	22.7%
2022	32,386.9	1.34%	2021-2022	19.7%
2023	38,721.7	1.30%	2022-2023	19.6%
2028	90,474.7	1.08%	CAGR 2023-2028	26.7%

<u>New Pesos</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(New Pesos 000s)</u>	<u>Year-to-Year Change</u>	
2017	290,734.9		
2018	341,197.7	2017-2018	17.4%
2019	403,415.9	2018-2019	18.2%
2020	418,603.1	2019-2020	3.8%
2021	513,587.3	2020-2021	22.7%
2022	614,672.7	2021-2022	19.7%
2023	734,901.2	2022-2023	19.6%
2028	1,717,124.2	CAGR 2023-2028	133.7%

In 2022, sales for this service in Mexico is forecast to be \$32.4 million dollars.

Sales are forecast to change by 19.6 percent in the next year (2022 to 2023). In 2022, sales will be 614.7 million New Pesos and will change by 19.7 percent in the next year (2022 to 2023).

In 2028, sales for this service in Mexico is forecast to be \$90.5 million dollars.

The compound annual growth rate is projected to change by 26.7 percent from 2023 to 2028. In 2028, sales will be 614.7 million New Pesos and will change by 19.7 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Mexico

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Aguascalientes	308.0	371.3	447.0	1,080.5
Baja California	879.5	1,065.6	1,289.7	3,201.7
Baja California Sur	186.7	228.2	278.6	722.4
Campeche	203.5	244.1	292.4	689.9
Chiapas	1,214.6	1,460.7	1,754.8	4,196.4
Chihuahua	823.2	983.9	1,174.7	2,723.5
Ciudad de México	1,911.3	2,260.9	2,671.6	5,882.4
Coahuila	669.3	802.0	960.1	2,255.3
Colima	161.5	194.0	232.8	553.5
Durango	367.9	437.8	520.4	1,180.4
Guanajuato	1,303.7	1,559.7	1,864.1	4,343.9
Guerrero	770.7	917.5	1,091.2	2,481.6
Hidalgo	635.7	761.1	910.4	2,129.8
Jalisco	1,754.9	2,098.5	2,506.6	5,825.8
México	3,795.6	4,553.8	5,457.6	12,896.8
Michoacán	958.0	1,138.0	1,350.3	3,035.4
Morelos	421.9	504.3	602.2	1,397.1
Nayarit	249.2	297.5	354.9	818.5
Nuevo León	1,163.9	1,398.0	1,677.4	3,986.6
Oaxaca	876.1	1,044.0	1,242.9	2,840.0
Puebla	1,409.2	1,686.7	2,016.7	4,709.9
Querétaro	492.9	596.4	720.8	1,777.0
Quintana Roo	439.2	540.9	665.6	1,794.0
San Luis Potosí	599.5	714.8	851.3	1,949.2
Sinaloa	629.2	748.5	889.5	2,015.2
Sonora	650.1	779.4	933.4	2,197.8
Tabasco	543.1	650.9	779.2	1,831.4
Tamaulipas	819.2	983.2	1,178.8	2,791.2
Tlaxcala	297.0	357.1	428.8	1,023.4
Veracruz	1,718.4	2,043.6	2,427.9	5,491.2
Yucatán	480.1	575.2	688.4	1,615.6
Zacatecas	327.7	389.2	461.8	1,037.2

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Netherlands

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	12,675.7	1.24%		
2018	15,480.8	1.27%	2017-2018	22.1%
2019	17,817.0	1.22%	2018-2019	15.1%
2020	18,877.7	1.20%	2019-2020	6.0%
2021	23,297.1	1.18%	2020-2021	23.4%
2022	28,250.5	1.16%	2021-2022	21.3%
2023	34,201.3	1.15%	2022-2023	21.1%
2028	89,890.9	1.07%	CAGR 2023-2028	32.6%

<u>Euros</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Euros 000s)</u>	<u>Year-to-Year Change</u>	
2017	11,050.3		
2018	13,495.7	2017-2018	22.1%
2019	15,532.3	2018-2019	15.1%
2020	16,457.0	2019-2020	6.0%
2021	20,309.8	2020-2021	23.4%
2022	24,628.0	2021-2022	21.3%
2023	29,815.8	2022-2023	21.1%
2028	78,364.4	CAGR 2023-2028	162.8%

In 2022, sales for this service in Netherlands is forecast to be \$28.3 million dollars. Sales are forecast to change by 21.1 percent in the next year (2022 to 2023). In 2022, sales will be 24.6 million Euros and will change by 21.3 percent in the next year (2022 to 2023).

In 2028, sales for this service in Netherlands is forecast to be \$89.9 million dollars. The compound annual growth rate is projected to change by 32.6 percent from 2023 to 2028. In 2028, sales will be 24.6 million Euros and will change by 21.3 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Netherlands

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Drenthe	669.5	810.1	978.5	2,543.2
Flevoland	581.6	711.4	868.9	2,386.0
Fryslân (Friesland)	878.0	1,061.7	1,281.7	3,321.4
Gelderland	2,790.6	3,381.7	4,091.3	10,716.3
Groningen	788.5	953.7	1,151.6	2,986.9
Limburg	1,495.2	1,802.9	2,170.3	5,544.6
Noord-Brabant [North Brabant]	3,419.7	4,144.1	5,013.7	13,131.9
Noord-Holland [North Holland]	3,844.1	4,670.9	5,666.4	15,043.9
Overijssel	1,566.5	1,897.9	2,295.6	6,005.7
Utrecht	1,786.2	2,176.2	2,647.1	7,122.8
Zeeland [Zealand]	517.2	625.1	754.3	1,950.6
Zuid-Holland [South Holland]	4,960.1	6,014.8	7,281.9	19,137.6

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Nigeria

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	4,735.2	0.46%		
2018	5,742.0	0.47%	2017-2018	21.3%
2019	6,234.8	0.43%	2018-2019	8.6%
2020	6,673.3	0.42%	2019-2020	7.0%
2021	7,927.6	0.40%	2020-2021	18.8%
2022	9,255.1	0.38%	2021-2022	16.7%
2023	10,789.5	0.36%	2022-2023	16.6%
2028	20,139.5	0.24%	CAGR 2023-2028	17.3%

<u>Nairas</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Nairas 000s)</u>	<u>Year-to-Year Change</u>	
2017	1,722,800.6		
2018	2,089,114.9	2017-2018	21.3%
2019	2,268,417.0	2018-2019	8.6%
2020	2,427,965.4	2019-2020	7.0%
2021	2,884,323.7	2020-2021	18.8%
2022	3,367,310.2	2021-2022	16.7%
2023	3,925,569.2	2022-2023	16.6%
2028	7,327,385.7	CAGR 2023-2028	86.7%

In 2022, sales for this service in Nigeria is forecast to be \$9.3 million dollars.

Sales are forecast to change by 16.6 percent in the next year (2022 to 2023). In 2022, sales will be 3367.3 million Nairas and will change by 16.7 percent in the next year (2022 to 2023).

In 2028, sales for this service in Nigeria is forecast to be \$20.1 million dollars.

The compound annual growth rate is projected to change by 17.3 percent from 2023 to 2028. In 2028, sales will be 3367.3 million Nairas and will change by 16.7 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Nigeria

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Abia	144.7	167.2	192.8	340.6
Adamawa	173.1	201.5	234.2	430.6
Akwa Ibom	224.4	262.2	305.9	572.6
Anambra	225.0	261.8	304.1	557.4
Bauchi	267.9	313.0	365.2	684.1
Bayelsa	92.9	108.2	125.8	231.4
Benue	234.6	273.4	318.1	587.7
Borno	240.8	281.5	328.6	616.7
Cross River	157.5	183.4	213.2	392.1
Delta	231.8	270.5	315.2	586.6
Ebonyi	127.5	150.2	176.5	343.5
Edo	172.7	200.8	233.2	426.6
Ekiti	133.7	155.9	181.5	336.3
Enugu	180.0	209.7	244.0	450.5
Federal Capital Territory	156.3	190.7	232.3	540.5
Imo	221.1	258.0	300.6	558.9
Jigawa	237.6	276.6	321.6	591.6
Kaduna	337.6	393.5	457.9	846.8
Kano	536.5	626.6	730.8	1,366.0
Katsina	320.0	372.9	433.9	801.7
Kebbi	181.8	212.0	246.9	458.3
Kogi	182.7	212.9	247.7	457.6
Lagos	514.1	600.0	699.2	1,301.6
Niger	227.9	266.4	310.9	582.7
Ogun	213.7	249.6	291.0	543.3
Ondo	190.7	222.1	258.5	477.2
Osun	192.5	224.6	261.7	486.7
Oyo	320.9	374.8	437.3	818.2
Plateau	172.2	200.4	233.0	427.8
Rivers	299.5	350.0	408.4	765.4
Sokoto	203.7	237.3	276.1	509.3
Taraba	125.0	145.6	169.3	311.4
Yobe	135.3	158.3	184.8	347.8
Zamfara	185.1	216.1	251.9	469.2

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Note: Sales for 2018-2019 are forecasts and sales for 2020-2025 projections

Norway

Market - 3D Printing Materials

Market Sales by Country

US Dollars	Market Sales	Pct. of Global		
Year	(USD 000s)	Market	Year-to-Year Change	
2017	4,883.6	0.48%		
2018	6,081.8	0.50%	2017-2018	24.5%
2019	6,585.8	0.45%	2018-2019	8.3%
2020	7,296.7	0.46%	2019-2020	10.8%
2021	9,116.4	0.46%	2020-2021	24.9%
2022	11,110.7	0.46%	2021-2022	21.9%
2023	13,527.4	0.45%	2022-2023	21.8%
2028	34,611.2	0.41%	CAGR 2023-2028	31.2%

Krones	Market Sales		
Year	(Krones 000s)	Year-to-Year Change	
2017	41,688.9		
2018	51,917.3	2017-2018	24.5%
2019	56,219.1	2018-2019	8.3%
2020	62,288.2	2019-2020	10.8%
2021	77,822.3	2020-2021	24.9%
2022	94,846.2	2021-2022	21.9%
2023	115,475.8	2022-2023	21.8%
2028	295,457.5	CAGR 2023-2028	155.9%

In 2022, sales for this service in Norway is forecast to be \$11.1 million dollars.

Sales are forecast to change by 21.8 percent in the next year (2022 to 2023). In 2022, sales will be 94.8 million Krones and will change by 21.9 percent in the next year (2022 to 2023).

In 2028, sales for this service in Norway is forecast to be \$34.6 million dollars.

The compound annual growth rate is projected to change by 31.2 percent from 2023 to 2028. In 2028, sales will be 94.8 million Krones and will change by 21.9 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Norway

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Akershus	1,068.4	1,309.5	1,603.4	4,218.8
Aust-Agder	201.1	244.7	297.5	754.7
Buskerud	483.7	589.4	717.4	1,832.7
Finnmark (Finnmárku)	128.4	155.3	187.7	461.9
Hedmark	335.4	406.1	491.3	1,216.6
Hordaland	900.0	1,097.3	1,336.6	3,426.0
Møre og Romsdal	454.1	551.0	667.9	1,671.1
Nordland	412.3	498.5	602.0	1,479.7
Oppland	323.8	391.9	473.8	1,170.8
Oslo	1,167.0	1,430.1	1,750.6	4,601.4
Østfold	507.1	617.7	751.7	1,917.7
Rogaland	828.6	1,014.0	1,239.6	3,236.4
Sogn og Fjordane	187.6	226.9	274.3	676.3
Telemark	296.3	358.9	434.3	1,077.1
Troms (Romsa)	284.1	344.9	418.2	1,048.9
Trøndelag	784.3	954.7	1,160.8	2,950.1
Vest-Agder	322.5	393.4	479.4	1,231.5
Vestfold	431.9	526.4	640.9	1,639.4

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Pakistan

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	3,444.5	0.34%		
2018	4,004.4	0.33%	2017-2018	16.3%
2019	4,192.0	0.29%	2018-2019	4.7%
2020	4,541.5	0.29%	2019-2020	8.3%
2021	5,511.4	0.28%	2020-2021	21.4%
2022	6,524.5	0.27%	2021-2022	18.4%
2023	7,715.9	0.26%	2022-2023	18.3%
2028	17,069.8	0.20%	CAGR 2023-2028	24.2%

<u>Rupees</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Rupees 000s)</u>	<u>Year-to-Year Change</u>	
2017	481,088.1		
2018	559,286.1	2017-2018	16.3%
2019	585,498.3	2018-2019	4.7%
2020	634,308.7	2019-2020	8.3%
2021	769,779.1	2020-2021	21.4%
2022	911,274.7	2021-2022	18.4%
2023	1,077,675.4	2022-2023	18.3%
2028	2,384,123.5	CAGR 2023-2028	121.2%

In 2022, sales for this service in Pakistan is forecast to be \$6.5 million dollars. Sales are forecast to change by 18.3 percent in the next year (2022 to 2023). In 2022, sales will be 911.3 million Rupees and will change by 18.4 percent in the next year (2022 to 2023).

In 2028, sales for this service in Pakistan is forecast to be \$17.1 million dollars. The compound annual growth rate is projected to change by 24.2 percent from 2023 to 2028. In 2028, sales will be 911.3 million Rupees and will change by 18.4 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Pakistan

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Balochistān	338.5	403.9	481.5	1,108.4
Tribal Areas	119.0	139.7	163.7	346.2
Islāmābād	55.5	67.2	81.2	200.3
Khyber Pakhtūnkhwā	803.9	954.0	1,131.0	2,532.9
Punjāb	2,910.7	3,438.6	4,058.0	8,882.7
Sindh	1,283.9	1,521.2	1,800.5	3,999.3

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Philippines

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	4,190.9	0.41%		
2018	4,986.3	0.41%	2017-2018	19.0%
2019	6,415.4	0.44%	2018-2019	28.7%
2020	7,079.7	0.45%	2019-2020	10.4%
2021	9,263.3	0.47%	2020-2021	30.8%
2022	11,823.2	0.49%	2021-2022	27.6%
2023	15,075.1	0.50%	2022-2023	27.5%
2028	48,587.7	0.58%	CAGR 2023-2028	44.5%

<u>Pesos</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Pesos 000s)</u>	<u>Year-to-Year Change</u>	
2017	218,761.8		
2018	260,279.2	2017-2018	19.0%
2019	334,877.2	2018-2019	28.7%
2020	369,557.3	2019-2020	10.4%
2021	483,540.0	2020-2021	30.8%
2022	617,164.2	2021-2022	27.6%
2023	786,909.0	2022-2023	27.5%
2028	2,536,244.0	CAGR 2023-2028	222.3%

In 2022, sales for this service in Philippines is forecast to be \$11.8 million dollars. Sales are forecast to change by 27.5 percent in the next year (2022 to 2023). In 2022, sales will be 617.2 million Pesos and will change by 27.6 percent in the next year (2022 to 2023).

In 2028, sales for this service in Philippines is forecast to be \$48.6 million dollars. The compound annual growth rate is projected to change by 44.5 percent from 2023 to 2028. In 2028, sales will be 617.2 million Pesos and will change by 27.6 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Philippines

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Luzon	5,317.3	6,795.6	8,676.0	28,144.5
Mindanao	2,217.3	2,831.3	3,611.6	11,665.2
Visayas	1,728.8	2,196.3	2,787.5	8,778.0

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Poland

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	6,419.0	0.63%		
2018	7,972.2	0.65%	2017-2018	24.2%
2019	9,596.1	0.66%	2018-2019	20.4%
2020	10,074.2	0.64%	2019-2020	5.0%
2021	12,571.0	0.64%	2020-2021	24.8%
2022	15,413.4	0.64%	2021-2022	22.6%
2023	18,867.8	0.63%	2022-2023	22.4%
2028	52,410.3	0.63%	CAGR 2023-2028	35.6%

<u>Zlotys</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Zlotys 000s)</u>	<u>Year-to-Year Change</u>	
2017	24,012.8		
2018	29,822.9	2017-2018	24.2%
2019	35,897.8	2018-2019	20.4%
2020	37,686.4	2019-2020	5.0%
2021	47,026.6	2020-2021	24.8%
2022	57,659.7	2021-2022	22.6%
2023	70,582.0	2022-2023	22.4%
2028	196,060.4	CAGR 2023-2028	177.8%

In 2022, sales for this service in Poland is forecast to be \$15.4 million dollars. Sales are forecast to change by 22.4 percent in the next year (2022 to 2023). In 2022, sales will be 57.7 million Zlotys and will change by 22.6 percent in the next year (2022 to 2023).

In 2028, sales for this service in Poland is forecast to be \$52.4 million dollars. The compound annual growth rate is projected to change by 35.6 percent from 2023 to 2028. In 2028, sales will be 57.7 million Zlotys and will change by 22.6 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Poland

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Dolnośląskie [Lower Silesia]	949.4	1,163.7	1,424.0	3,949.6
Kujawsko-Pomorskie	683.0	837.5	1,025.3	2,849.2
Łódzkie [Łódź]	811.3	992.5	1,212.2	3,329.1
Lubelskie [Lublin]	698.1	854.8	1,044.8	2,881.7
Lubuskie [Lubusz]	333.3	408.7	500.4	1,390.8
Małopolskie [Lesser Poland]	1,106.6	1,358.8	1,665.8	4,660.6
Mazowieckie [Mazovia]	1,753.4	2,153.2	2,639.9	7,389.7
Opolskie [Opole]	323.6	395.5	482.7	1,320.2
Podkarpackie [Subcarpathia]	696.5	854.4	1,046.3	2,911.8
Podlaskie [Podlachia]	388.3	475.6	581.6	1,607.9
Pomorskie [Pomerania]	758.8	932.5	1,143.9	3,212.5
Śląskie [Silesia]	1,487.9	1,821.0	2,224.9	6,123.0
Świętokrzyskie [Holy Cross]	409.9	501.8	613.3	1,689.8
Warmińsko-Mazurskie	471.2	577.8	707.3	1,965.3
Wielkopolskie [Greater Poland]	1,139.7	1,399.2	1,715.0	4,794.3
West Pomerania	559.8	686.5	840.3	2,334.7

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Puerto Rico

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	1,121.4	0.11%		
2018	1,217.9	0.10%	2017-2018	8.6%
2019	1,415.2	0.10%	2018-2019	16.2%
2020	2,023.4	0.13%	2019-2020	43.0%
2021	2,411.9	0.12%	2020-2021	19.2%
2022	2,804.4	0.12%	2021-2022	16.3%
2023	3,257.5	0.11%	2022-2023	16.2%
2028	6,588.3	0.08%	CAGR 2023-2028	20.4%

<u>Dollars</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Dollars 000s)</u>	<u>Year-to-Year Change</u>	
2017	1,121.4		
2018	1,217.9	2017-2018	8.6%
2019	1,415.2	2018-2019	16.2%
2020	2,023.4	2019-2020	43.0%
2021	2,411.9	2020-2021	19.2%
2022	2,804.4	2021-2022	16.3%
2023	3,257.5	2022-2023	16.2%
2028	6,588.3	CAGR 2023-2028	102.2%

In 2022, sales for this service in Puerto Rico is forecast to be \$2.8 million dollars.

Sales are forecast to change by 16.2 percent in the next year (2022 to 2023). In 2022, sales will be 2.8 million Dollars and will change by 16.3 percent in the next year (2022 to 2023).

In 2028, sales for this service in Puerto Rico is forecast to be \$6.6 million dollars.

The compound annual growth rate is projected to change by 20.4 percent from 2023 to 2028. In 2028, sales will be 2.8 million Dollars and will change by 16.3 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Puerto Rico

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Culebra	1.3	1.5	1.8	3.7
Puerto Rico	2,404.4	2,795.7	3,247.4	6,567.4
Vieques	6.2	7.2	8.4	17.2

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Romania

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	2,468.9	0.24%		
2018	3,230.2	0.27%	2017-2018	30.8%
2019	4,124.9	0.28%	2018-2019	27.7%
2020	4,944.5	0.31%	2019-2020	19.9%
2021	6,845.3	0.35%	2020-2021	38.4%
2022	9,244.3	0.38%	2021-2022	35.0%
2023	12,471.4	0.42%	2022-2023	34.9%
2028	53,303.4	0.64%	CAGR 2023-2028	65.5%

<u>New Leus</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(New Leus 000s)</u>	<u>Year-to-Year Change</u>	
2017	10,073.0		
2018	13,179.2	2017-2018	30.8%
2019	16,829.3	2018-2019	27.7%
2020	20,173.6	2019-2020	19.9%
2021	27,928.6	2020-2021	38.4%
2022	37,716.6	2021-2022	35.0%
2023	50,882.9	2022-2023	34.9%
2028	217,476.6	CAGR 2023-2028	327.4%

In 2022, sales for this service in Romania is forecast to be \$9.2 million dollars.

Sales are forecast to change by 34.9 percent in the next year (2022 to 2023). In 2022, sales will be 37.7 million New Leus and will change by 35 percent in the next year (2022 to 2023).

In 2028, sales for this service in Romania is forecast to be \$53.3 million dollars.

The compound annual growth rate is projected to change by 65.5 percent from 2023 to 2028. In 2028, sales will be 37.7 million New Leus and will change by 35 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Romania

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Alba	113.9	153.3	206.1	865.5
Arad	146.7	198.1	267.2	1,140.5
Argeş	206.9	279.4	376.9	1,609.9
Bacău	206.0	277.3	372.9	1,566.6
Bihor	197.4	266.8	360.4	1,547.6
Botoşani	137.2	185.0	249.3	1,058.3
Braşov	189.4	255.7	344.8	1,469.8
Bucureşti [Bucharest]	642.0	868.2	1,172.9	5,044.1
Buzău	148.8	200.4	269.8	1,139.5
Cluj	245.8	333.3	451.4	1,968.1
Constanţa	237.0	320.6	433.3	1,867.8
Dâmboviţa	176.1	238.0	321.5	1,381.3
Dolj	221.6	298.8	402.3	1,703.3
Galaţi	178.3	239.8	322.4	1,352.2
Gorj	112.8	151.9	204.3	858.5
Hunedoara	133.8	179.3	240.0	986.5
Iaşi	277.5	376.3	509.9	2,225.3
Ilfov	167.6	232.3	321.6	1,562.4
Maramureş	162.4	219.2	295.7	1,262.3
Mureş	188.9	255.3	344.8	1,479.7
Neamţ	155.7	209.3	281.0	1,171.6
Olt	141.2	189.8	254.9	1,064.4
Prahova	255.2	344.2	463.6	1,966.0
Sălaj	74.6	100.4	135.0	568.6
Satu Mare	116.2	156.7	211.2	897.0
Sibiu	138.2	186.8	252.2	1,081.6
Suceava	219.9	297.2	401.4	1,723.5
Teleorman	119.4	160.1	214.3	881.3
Timiş	246.0	334.3	453.6	1,996.2
Tulcea	68.9	92.4	123.8	510.6
Vâlcea	123.6	166.5	224.0	943.8
Vaslui	133.2	179.5	241.6	1,019.6
Vrancea	114.3	154.1	207.4	876.4

Note: Sales for 2020-2021 are forecasts and sales †

Note: Sales for 2018-2019 are forecasts and sales for 2020-2025 projections

Russia

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	19,094.8	1.87%		
2018	22,803.0	1.87%	2017-2018	19.4%
2019	25,477.1	1.75%	2018-2019	11.7%
2020	27,362.0	1.74%	2019-2020	7.4%
2021	33,669.4	1.71%	2020-2021	23.1%
2022	40,709.1	1.68%	2021-2022	20.9%
2023	49,140.7	1.65%	2022-2023	20.7%
2028	127,285.1	1.52%	CAGR 2023-2028	31.8%

<u>Rubles</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Rubles 000s)</u>	<u>Year-to-Year Change</u>	
2017	1,279,323.0		
2018	1,527,771.4	2017-2018	19.4%
2019	1,706,931.5	2018-2019	11.7%
2020	1,833,218.2	2019-2020	7.4%
2021	2,255,802.0	2020-2021	23.1%
2022	2,727,456.5	2021-2022	20.9%
2023	3,292,361.5	2022-2023	20.7%
2028	8,527,929.9	CAGR 2023-2028	159.0%

In 2022, sales for this service in Russia is forecast to be \$40.7 million dollars.

Sales are forecast to change by 20.7 percent in the next year (2022 to 2023). In 2022, sales will be 2727.5 million Rubles and will change by 20.9 percent in the next year (2022 to 2023).

In 2028, sales for this service in Russia is forecast to be \$127.3 million dollars.

The compound annual growth rate is projected to change by 31.8 percent from 2023 to 2028. In 2028, sales will be 2727.5 million Rubles and will change by 20.9 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Russia

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Central Russia	8,934.2	10,802.2	13,039.5	33,767.3
Dal'nevostočnyj Federal'nyj	1,433.6	1,724.4	2,070.7	5,224.6
[Southern Russia	3,335.1	4,040.5	4,887.1	12,783.1
Volga	6,922.6	8,352.5	10,061.2	25,782.8
Northern Caucasus	2,477.7	3,028.6	3,695.8	10,106.2
Northwestern Russia	3,111.6	3,750.6	4,513.4	11,508.9
Siberia	4,511.1	5,445.4	6,562.4	16,854.9
Ural'skij Federal'nyj Okrug [Ural]	2,943.5	3,565.0	4,310.6	11,257.4

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Saudi Arabia

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	7,779.7	0.76%		
2018	10,274.8	0.84%	2017-2018	32.1%
2019	11,190.4	0.77%	2018-2019	8.9%
2020	14,724.5	0.94%	2019-2020	31.6%
2021	20,494.1	1.04%	2020-2021	39.2%
2022	27,825.2	1.15%	2021-2022	35.8%
2023	37,739.9	1.26%	2022-2023	35.6%
2028	165,677.6	1.98%	CAGR 2023-2028	67.8%

<u>Rials</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Rials 000s)</u>	<u>Year-to-Year Change</u>	
2017	29,173.8		
2018	38,530.6	2017-2018	32.1%
2019	41,964.1	2018-2019	8.9%
2020	55,216.8	2019-2020	31.6%
2021	76,853.1	2020-2021	39.2%
2022	104,344.3	2021-2022	35.8%
2023	141,524.6	2022-2023	35.6%
2028	621,291.1	CAGR 2023-2028	339.0%

In 2022, sales for this service in Saudi Arabia is forecast to be \$27.8 million dollars. Sales are forecast to change by 35.6 percent in the next year (2022 to 2023). In 2022, sales will be 104.3 million Rials and will change by 35.8 percent in the next year (2022 to 2023).

In 2028, sales for this service in Saudi Arabia is forecast to be \$165.7 million dollars. The compound annual growth rate is projected to change by 67.8 percent from 2023 to 2028. In 2028, sales will be 104.3 million Rials and will change by 35.8 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Saudi Arabia

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Al-Bāḥah	286.7	384.8	515.9	2,135.9
Northern Frontier	230.4	310.8	418.8	1,780.1
Al-Jawf (incl. Al-Qurayyāt)	331.0	449.7	610.2	2,685.2
Medina	1,353.9	1,839.3	2,496.1	10,988.4
Al-Qaṣīm [Al-Qaseem]	915.5	1,242.9	1,685.8	7,399.6
Ar-Riyāḍ [Riyadh]	5,271.1	7,187.0	9,789.2	43,883.8
Eastern Region	3,078.1	4,177.9	5,664.8	24,824.6
'Asīr [Aseer]	1,387.7	1,873.5	2,526.7	10,781.0
Ḥā'il	436.0	589.1	795.1	3,405.2
Jīzān	1,022.4	1,386.1	1,877.3	8,179.8
Mecca	5,198.6	7,049.4	9,549.2	41,649.7
Najrān	384.1	522.3	709.4	3,135.7
Tabūk [Tabouk]	598.5	812.4	1,101.5	4,828.6

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Singapore

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	5,182.5	0.51%		
2018	6,306.3	0.52%	2017-2018	21.7%
2019	7,402.6	0.51%	2018-2019	17.4%
2020	8,260.5	0.53%	2019-2020	11.6%
2021	10,605.5	0.54%	2020-2021	28.4%
2022	13,282.2	0.55%	2021-2022	25.2%
2023	16,617.6	0.56%	2022-2023	25.1%
2028	48,718.7	0.58%	CAGR 2023-2028	38.6%

<u>Dollars</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Dollars 000s)</u>	<u>Year-to-Year Change</u>	
2017	7,013.6		
2018	8,534.4	2017-2018	21.7%
2019	10,018.0	2018-2019	17.4%
2020	11,179.1	2019-2020	11.6%
2021	14,352.6	2020-2021	28.4%
2022	17,975.1	2021-2022	25.2%
2023	22,488.8	2022-2023	25.1%
2028	65,931.8	CAGR 2023-2028	193.2%

In 2022, sales for this service in Singapore is forecast to be \$13.3 million dollars.

Sales are forecast to change by 25.1 percent in the next year (2022 to 2023). In 2022, sales will be 18 million Dollars and will change by 25.2 percent in the next year (2022 to 2023).

In 2028, sales for this service in Singapore is forecast to be \$48.7 million dollars.

The compound annual growth rate is projected to change by 38.6 percent from 2023 to 2028. In 2028, sales will be 18 million Dollars and will change by 25.2 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Singapore

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Central Region	1,639.5	2,010.7	2,462.8	6,463.8
East Region	1,220.2	1,497.6	1,835.7	4,836.2
North-East Region	1,666.6	2,093.1	2,625.3	7,759.2
North Region	1,025.1	1,278.7	1,592.9	4,549.9
West Region	1,670.6	2,068.5	2,558.0	7,042.6
Non-Resident Population	3,383.6	4,333.6	5,542.9	18,066.9

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

South Africa

Market - 3D Printing Materials

Market Sales by Country

US Dollars	Market Sales	Pct. of Global		
Year	(USD 000s)	Market	Year-to-Year Change	
2017	4,651.2	0.45%		
2018	5,421.0	0.45%	2017-2018	16.6%
2019	6,017.7	0.41%	2018-2019	11.0%
2020	6,498.3	0.41%	2019-2020	8.0%
2021	8,005.8	0.41%	2020-2021	23.2%
2022	9,621.2	0.40%	2021-2022	20.2%
2023	11,550.7	0.39%	2022-2023	20.1%
2028	27,552.2	0.33%	CAGR 2023-2028	27.7%

Rands	Market Sales		
Year	(Rands 000s)	Year-to-Year Change	
2017	64,012.8		
2018	74,607.4	2017-2018	16.6%
2019	82,820.8	2018-2019	11.0%
2020	89,434.2	2019-2020	8.0%
2021	110,182.0	2020-2021	23.2%
2022	132,414.3	2021-2022	20.2%
2023	158,969.9	2022-2023	20.1%
2028	379,194.9	CAGR 2023-2028	138.5%

In 2022, sales for this service in South Africa is forecast to be \$9.6 million dollars.

Sales are forecast to change by 20.1 percent in the next year (2022 to 2023). In 2022, sales will be 132.4 million Rands and will change by 20.2 percent in the next year (2022 to 2023).

In 2028, sales for this service in South Africa is forecast to be \$27.6 million dollars.

The compound annual growth rate is projected to change by 27.7 percent from 2023 to 2028. In 2028, sales will be 132.4 million Rands and will change by 20.2 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

South Africa

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Eastern Cape	886.1	1,050.2	1,243.4	2,763.2
Free State (Oranje Free State)	392.2	465.6	552.2	1,237.6
Gauteng	2,099.9	2,552.7	3,099.8	7,817.7
KwaZulu-Natal	1,551.1	1,854.9	2,215.7	5,147.3
Limpopo (Northern Transvaal)	793.1	946.8	1,129.2	2,602.0
Mpumalanga (Eastern Transvaal)	626.4	753.0	904.3	2,156.8
Northern Cape	166.2	198.3	236.4	543.7
North West	548.8	659.7	792.1	1,888.7
Western Cape	942.0	1,139.8	1,377.7	3,395.1

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Spain

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	19,004.0	1.86%		
2018	22,920.6	1.88%	2017-2018	20.6%
2019	26,480.5	1.82%	2018-2019	15.5%
2020	27,417.6	1.75%	2019-2020	3.5%
2021	33,397.1	1.70%	2020-2021	21.8%
2022	39,972.1	1.65%	2021-2022	19.7%
2023	47,763.8	1.60%	2022-2023	19.5%
2028	117,596.7	1.40%	CAGR 2023-2028	29.2%

<u>Euros</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Euros 000s)</u>	<u>Year-to-Year Change</u>	
2017	16,567.2		
2018	19,981.6	2017-2018	20.6%
2019	23,084.9	2018-2019	15.5%
2020	23,901.9	2019-2020	3.5%
2021	29,114.6	2020-2021	21.8%
2022	34,846.6	2021-2022	19.7%
2023	41,639.2	2022-2023	19.5%
2028	102,517.5	CAGR 2023-2028	146.2%

In 2022, sales for this service in Spain is forecast to be \$40.0 million dollars.

Sales are forecast to change by 19.5 percent in the next year (2022 to 2023). In 2022, sales will be 34.8 million Euros and will change by 19.7 percent in the next year (2022 to 2023).

In 2028, sales for this service in Spain is forecast to be \$117.6 million dollars.

The compound annual growth rate is projected to change by 29.2 percent from 2023 to 2028. In 2028, sales will be 34.8 million Euros and will change by 19.7 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Spain

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Andalucía [Andalusia]	5,983.5	7,159.4	8,552.4	21,017.3
Aragón	928.4	1,107.2	1,318.4	3,187.4
Asturias	714.6	846.8	1,001.9	2,346.6
Canarias [Canary Islands]	1,554.1	1,871.4	2,249.7	5,707.0
Cantabria	410.5	489.6	582.8	1,408.3
Castilla-La Mancha	1,475.8	1,767.7	2,113.8	5,222.1
Castilla y León	1,681.1	1,993.3	2,359.4	5,539.6
Cataluña [Catalonia]	5,426.2	6,503.4	7,781.8	19,283.9
Ceuta	60.6	72.7	87.0	215.5
Comunitat Valenciana	3,601.2	4,320.9	5,175.9	12,897.2
Extremadura	750.6	891.9	1,058.1	2,512.4
Galicia	1,879.4	2,231.4	2,644.9	6,252.1
Illes Balears [Balearic Islands]	841.1	1,017.3	1,228.4	3,185.8
La Rioja	226.7	271.3	324.1	796.3
Madrid	4,732.0	5,682.4	6,812.5	17,046.1
Melilla	62.9	75.9	91.4	234.4
Murcia	1,084.8	1,305.9	1,569.5	3,975.8
Navarra [Navarre]	462.7	554.3	663.0	1,638.9
País Vasco [Basque Country]	1,520.9	1,809.3	2,148.8	5,130.0

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Sweden

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	7,705.0	0.75%		
2018	8,784.6	0.72%	2017-2018	14.0%
2019	9,785.7	0.67%	2018-2019	11.4%
2020	10,482.1	0.67%	2019-2020	7.1%
2021	12,831.8	0.65%	2020-2021	22.4%
2022	15,323.0	0.63%	2021-2022	19.4%
2023	18,279.1	0.61%	2022-2023	19.3%
2028	42,234.0	0.50%	CAGR 2023-2028	26.2%

<u>Kronas</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Kronas 000s)</u>	<u>Year-to-Year Change</u>	
2017	68,954.8		
2018	78,617.3	2017-2018	14.0%
2019	87,576.1	2018-2019	11.4%
2020	93,808.7	2019-2020	7.1%
2021	114,836.9	2020-2021	22.4%
2022	137,131.7	2021-2022	19.4%
2023	163,587.3	2022-2023	19.3%
2028	377,968.7	CAGR 2023-2028	131.1%

In 2022, sales for this service in Sweden is forecast to be \$15.3 million dollars.

Sales are forecast to change by 19.3 percent in the next year (2022 to 2023). In 2022, sales will be 137.1 million Kronas and will change by 19.4 percent in the next year (2022 to 2023).

In 2028, sales for this service in Sweden is forecast to be \$42.2 million dollars.

The compound annual growth rate is projected to change by 26.2 percent from 2023 to 2028. In 2028, sales will be 137.1 million Kronas and will change by 19.4 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Sweden

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Blekinge län	199.9	237.7	282.3	638.0
Dalarnas län	354.1	420.0	497.6	1,110.8
Gävleborgs län	353.4	419.0	496.4	1,107.3
Gotlands län	73.6	87.4	103.7	233.1
Hallands län	417.5	499.8	597.8	1,398.6
Jämtlands län	160.0	189.5	224.3	497.3
Jönköpings län	454.6	542.2	646.0	1,483.1
Kalmar län	301.6	358.0	424.4	950.2
Kronobergs län	246.3	293.3	349.0	795.8
Norrbottnens län	312.0	369.5	437.1	968.5
Örebro län	373.3	444.4	528.4	1,201.5
Östergötlands län	576.6	687.3	818.5	1,873.8
Skåne län	1,722.7	2,061.8	2,465.1	5,757.7
Södermanlands län	365.0	435.3	518.4	1,188.2
Stockholms län	2,982.8	3,583.9	4,301.6	10,244.7
Uppsala län	474.1	568.0	679.9	1,597.1
Värmlands län	348.4	413.2	489.6	1,092.9
Västerbottens län	338.3	402.4	478.0	1,081.5
Västernorrlands län	303.5	359.4	425.0	940.4
Västmanlands län	338.0	402.5	478.9	1,091.2
Västra Götalands län	2,136.0	2,548.3	3,037.1	6,982.3

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Switzerland

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	10,478.1	1.02%		
2018	12,128.2	1.00%	2017-2018	15.7%
2019	14,676.2	1.01%	2018-2019	21.0%
2020	15,058.5	0.96%	2019-2020	2.6%
2021	18,449.0	0.94%	2020-2021	22.5%
2022	22,048.5	0.91%	2021-2022	19.5%
2023	26,323.5	0.88%	2022-2023	19.4%
2028	61,067.3	0.73%	CAGR 2023-2028	26.4%

<u>Swiss Francs</u>	<u>Market Sales</u>		
<u>Year</u>	<u>Swiss Francs 000s)</u>	<u>Year-to-Year Change</u>	
2017	10,283.3		
2018	11,902.6	2017-2018	15.7%
2019	14,403.3	2018-2019	21.0%
2020	14,778.5	2019-2020	2.6%
2021	18,105.9	2020-2021	22.5%
2022	21,638.5	2021-2022	19.5%
2023	25,834.0	2022-2023	19.4%
2028	59,931.8	CAGR 2023-2028	132.0%

In 2022, sales for this service in Switzerland is forecast to be \$22.0 million dollars. Sales are forecast to change by 19.4 percent in the next year (2022 to 2023). In 2022, sales will be 21.6 million Swiss Francs and will change by 19.5 percent in the next year (2022 to 2023).

In 2028, sales for this service in Switzerland is forecast to be \$61.1 million dollars. The compound annual growth rate is projected to change by 26.4 percent from 2023 to 2028. In 2028, sales will be 21.6 million Swiss Francs and will change by 19.5 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Switzerland

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Aargau [Argovia]	1,467.8	1,758.4	2,104.5	4,940.6
Appenzell Outer Rhodes	117.8	139.9	165.9	373.0
Appenzell Inner Rhodes	35.3	42.1	50.2	115.2
Basel-Landschaft	623.2	742.9	884.6	2,025.6
Basel-Stadt [Basel-City]	402.7	476.9	564.1	1,249.5
Bern	2,202.6	2,619.7	3,112.6	7,047.7
Fribourg	697.4	838.9	1,007.9	2,413.5
Genève [Geneva]	1,089.0	1,304.0	1,559.9	3,653.6
Glarus	85.6	101.6	120.5	270.8
Graubünden [Grisons]	433.2	516.0	614.0	1,400.9
Jura	157.6	187.5	222.9	506.0
Luzern	886.4	1,059.4	1,264.9	2,935.3
Neuchâtel	383.0	455.5	541.1	1,224.0
Nidwalden [Nidwald]	96.1	115.1	137.7	322.3
Obwalden [Obwald]	83.6	100.1	119.7	279.9
Schaffhausen	173.9	207.0	246.3	560.9
Schwyz	354.1	425.2	510.1	1,211.9
Solothurn	587.0	699.9	833.7	1,911.8
St. Gallen	1,098.2	1,310.0	1,561.1	3,587.4
Thurgau [Thurgovia]	597.2	714.9	855.0	2,000.5
Ticino	778.7	931.0	1,112.1	2,585.2
Uri	78.1	92.7	110.1	248.1
Valais	754.3	905.0	1,084.7	2,564.8
Vaud	1,721.1	2,061.6	2,466.8	5,785.8
Zug	280.7	337.5	405.4	969.2
Zürich [Zurich]	3,264.4	3,905.5	4,667.6	10,883.6

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Thailand

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	5,420.2	0.53%		
2018	6,807.5	0.56%	2017-2018	25.6%
2019	8,871.5	0.61%	2018-2019	30.3%
2020	9,792.5	0.62%	2019-2020	10.4%
2021	12,901.1	0.66%	2020-2021	31.7%
2022	16,700.6	0.69%	2021-2022	29.5%
2023	21,583.8	0.72%	2022-2023	29.2%
2028	78,650.6	0.94%	CAGR 2023-2028	52.9%

<u>Bahts</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Bahts 000s)</u>	<u>Year-to-Year Change</u>	
2017	173,094.9		
2018	217,397.1	2017-2018	25.6%
2019	283,310.2	2018-2019	30.3%
2020	312,721.6	2019-2020	10.4%
2021	411,995.2	2020-2021	31.7%
2022	533,330.6	2021-2022	29.5%
2023	689,276.8	2022-2023	29.2%
2028	2,511,697.1	CAGR 2023-2028	264.4%

In 2022, sales for this service in Thailand is forecast to be \$16.7 million dollars.

Sales are forecast to change by 29.2 percent in the next year (2022 to 2023). In 2022, sales will be 533.3 million Bahts and will change by 29.5 percent in the next year (2022 to 2023).

In 2028, sales for this service in Thailand is forecast to be \$78.7 million dollars.

The compound annual growth rate is projected to change by 52.9 percent from 2023 to 2028. In 2028, sales will be 533.3 million Bahts and will change by 29.5 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Thailand

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Bangkok Metropolitan	3,194.1	4,196.3	5,503.4	21,544.0
Central	585.0	753.6	969.1	3,438.1
Eastern	1,114.1	1,456.7	1,901.4	7,267.9
Northeastern (Isan)	3,425.7	4,384.3	5,601.4	19,237.4
Northern	2,139.6	2,750.5	3,529.8	12,396.3
Southern	1,769.4	2,292.3	2,964.5	10,819.9
Western	673.2	866.9	1,114.4	3,947.0

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Turkey

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	9,855.5	0.96%		
2018	10,003.4	0.82%	2017-2018	1.5%
2019	12,030.1	0.83%	2018-2019	20.3%
2020	12,117.3	0.77%	2019-2020	0.7%
2021	14,133.3	0.72%	2020-2021	16.6%
2022	16,200.2	0.67%	2021-2022	14.6%
2023	18,542.8	0.62%	2022-2023	14.5%
2028	31,579.3	0.38%	CAGR 2023-2028	14.1%

<u>Liras</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Liras 000s)</u>	<u>Year-to-Year Change</u>	
2017	53,614.0		
2018	54,418.4	2017-2018	1.5%
2019	65,443.8	2018-2019	20.3%
2020	65,918.4	2019-2020	0.7%
2021	76,885.4	2020-2021	16.6%
2022	88,129.1	2021-2022	14.6%
2023	100,873.0	2022-2023	14.5%
2028	171,791.6	CAGR 2023-2028	70.3%

In 2022, sales for this service in Turkey is forecast to be \$16.2 million dollars.

Sales are forecast to change by 14.5 percent in the next year (2022 to 2023). In 2022, sales will be 88.1 million Liras and will change by 14.6 percent in the next year (2022 to 2023).

In 2028, sales for this service in Turkey is forecast to be \$31.6 million dollars.

The compound annual growth rate is projected to change by 14.1 percent from 2023 to 2028. In 2028, sales will be 88.1 million Liras and will change by 14.6 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Turkey

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Adana	388.5	444.5	507.7	854.8
Ankara	958.9	1,103.6	1,268.2	2,199.0
Antalya	433.3	502.1	581.0	1,042.5
Aydın	183.5	209.1	237.9	392.8
Balıkesir	205.2	233.5	265.3	434.5
Bursa	530.6	612.7	706.4	1,245.2
Denizli	173.7	198.3	226.0	376.3
Diyarbakır	298.8	342.7	392.6	669.7
Erzurum	126.2	141.7	158.8	243.6
Eskişehir	144.6	165.0	188.0	312.3
Gaziantep	359.8	416.8	482.1	863.9
Hatay	272.4	311.7	356.0	599.4
İstanbul	2,796.8	3,246.3	3,762.3	6,806.7
İzmir	758.0	870.5	998.2	1,712.1
Kahramanmaraş	190.5	216.8	246.4	404.2
Kayseri	236.0	270.2	309.0	522.4
Kocaeli	336.8	390.4	452.0	812.7
Konya	370.7	421.2	477.9	777.1
Malatya	132.1	149.5	168.9	269.0
Manisa	238.5	271.2	308.0	503.1
Mardin	142.1	162.5	185.6	312.3
Mersin (İçel)	312.5	356.9	407.0	679.2
Muğla	165.3	190.1	218.3	377.2
Sakarya	168.0	192.3	219.8	371.0
Samsun	218.1	247.3	280.0	450.8
Şanlıurfa	357.9	414.0	478.1	850.2
Tekirdağ	178.7	207.5	240.5	435.6
Trabzon	129.9	146.2	164.3	254.8
Van	204.6	235.8	271.3	473.5

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Note: Sales for 2018-2019 are forecasts and sales for 2020-2025 projections

United Arab Emirates

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	3,887.8	0.38%		
2018	4,969.2	0.41%	2017-2018	27.8%
2019	6,257.5	0.43%	2018-2019	25.9%
2020	7,224.8	0.46%	2019-2020	15.5%
2021	9,492.8	0.48%	2020-2021	31.4%
2022	12,129.4	0.50%	2021-2022	27.8%
2023	15,429.0	0.52%	2022-2023	27.2%
2028	62,384.9	0.74%	CAGR 2023-2028	60.9%

<u>Dirhams</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Dirhams 000s)</u>	<u>Year-to-Year Change</u>	
2017	14,278.1		
2018	18,249.2	2017-2018	27.8%
2019	22,980.7	2018-2019	25.9%
2020	26,533.0	2019-2020	15.5%
2021	34,862.3	2020-2021	31.4%
2022	44,545.3	2021-2022	27.8%
2023	56,662.8	2022-2023	27.2%
2028	229,108.7	CAGR 2023-2028	304.3%

In 2022, sales for this service in United Arab Emirates is forecast to be \$12.1 million dollars. Sales are forecast to change by 27.2 percent in the next year (2022 to 2023). In 2022, sales will be 44.5 million Dirhams and will change by 27.8 percent in the next year (2022 to 2023).

In 2028, sales for this service in United Arab Emirates is forecast to be \$62.4 million dollars. The compound annual growth rate is projected to change by 60.9 percent from 2023 to 2028. In 2028, sales will be 44.5 million Dirhams and will change by 27.8 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

United Arab Emirates

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Abū Ḥaby [Abu Dhabi]	2,945.0	3,728.6	4,699.3	18,128.4
'Ajmān	499.4	641.4	820.0	3,397.5
Al-Fujayrah [Fujairah]	267.0	339.5	429.7	1,694.2
Ash-Shāriqah [Sharjah]	1,900.1	2,439.6	3,118.1	12,901.6
Dubayy [Dubai]	3,328.5	4,281.7	5,482.8	22,900.3
Rā's al-Khaymah	453.0	572.5	720.3	2,754.8
Umm al-Qaywayn	99.8	126.1	158.7	608.0

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

United Kingdom

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	40,910.7	4.00%		
2018	48,720.0	4.00%	2017-2018	19.1%
2019	56,153.0	3.86%	2018-2019	15.3%
2020	59,888.5	3.81%	2019-2020	6.7%
2021	72,458.1	3.68%	2020-2021	21.0%
2022	86,152.6	3.55%	2021-2022	18.9%
2023	102,289.2	3.42%	2022-2023	18.7%
2028	209,212.1	2.50%	CAGR 2023-2028	20.9%

<u>Pounds</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Pounds 000s)</u>	<u>Year-to-Year Change</u>	
2017	31,738.0		
2018	37,796.3	2017-2018	19.1%
2019	43,562.7	2018-2019	15.3%
2020	46,460.7	2019-2020	6.7%
2021	56,212.1	2020-2021	21.0%
2022	66,836.1	2021-2022	18.9%
2023	79,354.7	2022-2023	18.7%
2028	162,304.0	CAGR 2023-2028	104.5%

In 2022, sales for this service in United Kingdom is forecast to be \$86.2 million dollars. Sales are forecast to change by 18.7 percent in the next year (2022 to 2023). In 2022, sales will be 66.8 million Pounds and will change by 18.9 percent in the next year (2022 to 2023).

In 2028, sales for this service in United Kingdom is forecast to be \$209.2 million dollars. The compound annual growth rate is projected to change by 20.9 percent from 2023 to 2028. In 2028, sales will be 66.8 million Pounds and will change by 18.9 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

United Kingdom

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
England	61,048.1	72,613.6	86,247.0	176,732.0
Northern Ireland	2,078.0	2,472.2	2,937.1	6,025.4
Scotland	5,906.8	7,003.0	8,290.8	16,714.7
Wales (Cymru)	3,425.3	4,063.8	4,814.4	9,739.9

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

United States

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	322,522.4	31.50%		
2018	381,409.4	31.33%	2017-2018	18.3%
2019	463,614.9	31.86%	2018-2019	21.6%
2020	499,312.4	31.79%	2019-2020	7.7%
2021	632,162.8	32.11%	2020-2021	26.6%
2022	780,734.2	32.19%	2021-2022	23.5%
2023	963,236.6	32.25%	2022-2023	23.4%
2028	2,633,474.5	31.41%	CAGR 2023-2028	34.7%

<u>Dollars</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Dollars 000s)</u>	<u>Year-to-Year Change</u>	
2017	322,522.4		
2018	381,409.4	2017-2018	18.3%
2019	463,614.9	2018-2019	21.6%
2020	499,312.4	2019-2020	7.7%
2021	632,162.8	2020-2021	26.6%
2022	780,734.2	2021-2022	23.5%
2023	963,236.6	2022-2023	23.4%
2028	2,633,474.5	CAGR 2023-2028	173.4%

In 2022, sales for this service in United States is forecast to be \$780.7 million dollars. Sales are forecast to change by 23.4 percent in the next year (2022 to 2023). In 2022, sales will be 780.7 million Dollars and will change by 23.5 percent in the next year (2022 to 2023).

In 2028, sales for this service in United States is forecast to be \$2,633.5 million dollars. The compound annual growth rate is projected to change by 34.7 percent from 2023 to 2028. In 2028, sales will be 780.7 million Dollars and will change by 23.5 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

United States

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Alabama	9,396.1	11,562.3	14,212.6	38,123.7
Arizona	14,637.0	18,320.7	22,907.0	66,905.6
Arkansas	5,846.9	7,209.9	8,881.1	24,072.0
California	76,482.0	94,433.5	116,474.1	317,764.3
Colorado	11,273.3	14,044.0	17,477.1	49,855.1
Connecticut	6,793.1	8,329.0	10,201.4	26,875.0
Florida	41,559.5	51,691.6	64,225.3	181,758.2
Georgia	21,018.1	26,140.6	32,476.8	91,880.3
Illinois	24,535.1	30,105.0	36,899.9	97,570.5
Indiana	12,789.1	15,733.9	19,336.3	51,809.7
Iowa	5,930.2	7,278.9	8,924.9	23,640.1
Kentucky	8,560.1	10,533.8	12,948.8	34,738.4
Louisiana	8,796.1	10,786.3	13,212.7	34,829.3
Maryland	11,634.2	14,340.5	17,657.5	47,765.1
Massachusetts	12,862.7	15,789.3	19,361.1	51,301.6
Michigan	18,809.5	23,035.1	28,179.8	73,797.4
Minnesota	10,734.2	13,232.7	16,295.4	44,105.9
Mississippi	5,746.6	7,060.0	8,664.5	23,055.4
Missouri	11,749.1	14,452.3	17,758.4	47,544.5
Nevada	6,659.9	8,418.4	10,630.0	32,613.6
New Jersey	17,186.1	21,116.5	25,918.0	69,002.8
New York	37,366.5	45,816.1	56,116.4	147,845.5
North Carolina	20,467.2	25,422.6	31,544.0	88,666.7
Ohio	21,956.1	26,896.8	32,914.2	86,328.5
Oklahoma	7,531.9	9,279.7	11,420.8	30,822.6
Oregon	8,132.7	10,074.6	12,466.9	34,575.4
Pennsylvania	24,129.7	29,567.9	36,193.1	95,062.9
South Carolina	9,780.7	12,114.8	14,989.9	41,550.1
Tennessee	13,131.0	16,235.4	20,052.4	55,085.7
Texas	56,104.5	69,862.5	86,901.6	247,344.6
Utah	6,283.1	7,846.7	9,789.1	28,272.4
Virginia	16,509.9	20,411.8	25,208.9	69,227.5
Washington	14,546.9	18,049.2	22,370.8	62,540.4
Wisconsin	11,130.8	13,686.6	16,811.2	44,923.6

Note: Sales for 2020-2021 are forecasts and sales †

Note: Sales for 2018-2019 are forecasts and sales for 2020-2025 projections

Venezuela

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	4,419.3	0.43%		
2018	4,670.8	0.38%	2017-2018	5.7%
2019	5,146.5	0.35%	2018-2019	10.2%
2020	4,880.7	0.31%	2019-2020	-5.2%
2021	4,956.2	0.25%	2020-2021	1.5%
2022	5,161.9	0.21%	2021-2022	4.2%
2023	5,348.8	0.18%	2022-2023	3.6%
2028	8,197.8	0.10%	CAGR 2023-2028	10.7%

<u>Bolivars</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Bolivars 000s)</u>	<u>Year-to-Year Change</u>	
2017	44,137.9		
2018	46,649.5	2017-2018	5.7%
2019	51,400.5	2018-2019	10.2%
2020	48,746.1	2019-2020	-5.2%
2021	49,499.6	2020-2021	1.5%
2022	51,554.0	2021-2022	4.2%
2023	53,420.8	2022-2023	3.6%
2028	81,875.4	CAGR 2023-2028	53.3%

In 2022, sales for this service in Venezuela is forecast to be \$5.2 million dollars.

Sales are forecast to change by 3.6 percent in the next year (2022 to 2023). In 2022, sales will be 51.6 million Bolivars and will change by 4.2 percent in the next year (2022 to 2023).

In 2028, sales for this service in Venezuela is forecast to be \$8.2 million dollars.

The compound annual growth rate is projected to change by 10.7 percent from 2023 to 2028. In 2028, sales will be 51.6 million Bolivars and will change by 4.2 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Venezuela

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
Amazonas	31.4	33.6	35.8	62.8
Anzoátegui	277.1	289.8	301.6	471.6
Apure	91.6	95.9	99.9	157.1
Aragua	290.0	301.2	311.2	469.9
Barinas	153.7	161.4	168.5	268.7
Bolívar	279.2	291.9	303.5	473.7
Carabobo	400.6	416.8	431.5	657.9
Cojedes	59.2	61.9	64.5	101.1
Delta Amacuro	32.0	33.7	35.4	57.8
Dependencias Federales	0.4	0.4	0.4	0.7
Distrito Capital	307.8	315.6	321.9	455.6
Falcón	164.3	171.1	177.2	270.8
Guárico	140.8	146.8	152.3	235.0
Lara	317.8	330.3	341.6	518.3
Mérida	154.7	161.1	166.8	254.9
Miranda	495.1	514.9	532.8	810.6
Monagas	169.0	177.3	185.1	294.0
Nueva Esparta	95.7	100.5	105.0	168.1
Portuguesa	160.5	167.2	173.3	265.9
Sucre	159.9	165.8	170.9	255.5
Táchira	199.7	207.1	213.7	320.7
Trujillo	127.5	132.6	137.1	207.8
Vargas	57.2	59.0	60.6	88.5
Yaracuy	112.4	117.3	121.8	188.2
Zulia	678.5	708.5	736.2	1,142.8

Source: Perry/Hope Partners

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Vietnam

Market - 3D Printing Materials

Market Sales by Country

<u>US Dollars</u>	<u>Market Sales</u>	<u>Pct. of Global</u>		
<u>Year</u>	<u>(USD 000s)</u>	<u>Market</u>	<u>Year-to-Year Change</u>	
2017	1,927.9	0.19%		
2018	2,420.7	0.20%	2017-2018	25.6%
2019	3,051.2	0.21%	2018-2019	26.0%
2020	3,350.9	0.21%	2019-2020	9.8%
2021	4,359.2	0.22%	2020-2021	30.1%
2022	5,572.2	0.23%	2021-2022	27.8%
2023	7,111.1	0.24%	2022-2023	27.6%
2028	24,327.1	0.29%	CAGR 2023-2028	48.4%

<u>Dongs</u>	<u>Market Sales</u>		
<u>Year</u>	<u>(Dongs Mill.)</u>	<u>Year-to-Year Change</u>	
2017	44,713.1		
2018	56,143.8	2017-2018	25.6%
2019	70,767.5	2018-2019	26.0%
2020	77,717.5	2019-2020	9.8%
2021	101,104.0	2020-2021	30.1%
2022	129,237.5	2021-2022	27.8%
2023	164,930.5	2022-2023	27.6%
2028	564,224.8	CAGR 2023-2028	242.1%

In 2022, sales for this service in Vietnam is forecast to be \$5.6 million dollars. Sales are forecast to change by 27.6 percent in the next year (2022 to 2023). In 2022, sales will be 129.2 million Dongs and will change by 27.8 percent in the next year (2022 to 2023).

In 2028, sales for this service in Vietnam is forecast to be \$24.3 million dollars. The compound annual growth rate is projected to change by 48.4 percent from 2023 to 2028. In 2028, sales will be 129.2 million Dongs and will change by 27.8 percent from 2023 to 2028.

Source: Perry/Hope Partners

Note: Sales for 2021-2022 are forecasts and sales for 2023-2028 projections

Vietnam

Service - 3D Printing Materials

Market Sales by Regions (USD 000s)

	2021	2022	2023	2028
An Giang	100.8	128.0	162.3	536.9
Bắc Giang	76.7	97.6	123.9	413.5
Bến Tre	58.1	73.5	92.9	302.0
Bình Định	70.5	89.5	113.4	373.9
Bình Dương	102.5	135.4	178.6	718.4
Cần Thơ	58.8	74.9	95.2	319.7
Đắk Lắk	89.9	115.3	147.6	513.6
Đồng Nai	139.7	179.8	231.0	816.7
Đồng Tháp	78.9	100.3	127.3	422.9
Gia Lai	68.3	88.0	113.0	399.6
Hải Dương	82.6	105.0	133.2	442.5
Hải Phòng	92.3	117.7	149.9	506.9
Hà Nội (incl. Hà Tây) [Hanoi]	348.8	448.6	576.0	2,028.3
Hà Tĩnh	57.9	73.4	92.8	303.0
Kiên Giang	83.8	106.9	136.2	461.2
Lâm Đồng	60.9	78.0	99.7	343.2
Long An	69.9	89.1	113.3	380.6
Nam Định	84.8	107.4	135.7	441.8
Nghệ An	142.8	181.5	230.3	764.9
Phú Thọ	64.1	81.5	103.5	344.6
Quảng Nam	68.8	87.4	110.9	368.2
Quảng Ngãi	58.1	73.8	93.5	309.1
Sóc Trăng	61.8	78.7	100.0	334.9
Thái Bình	82.7	104.8	132.6	434.0
Thái Nguyên	57.3	73.1	93.1	314.5
Thanh Hóa	161.6	204.9	259.3	850.2
Ho Chi Minh City	403.5	521.8	673.5	2,437.0
Tiền Giang	80.8	102.7	130.4	433.4

Note: Sales for 2020-2021 are forecasts and sales for 2022-2027 projections

Note: Sales for 2018-2019 are forecasts and sales for 2020-2025 projections

Appendix

Market - 3D Printing Materials

Overview

PRODCOM statistics aim at providing a full picture at EU level of developments in industrial production for a given product or for an industry in a comparable manner across countries. This aim became more important together with the establishment of the single market in 1992, and with rapid changes occurring in Europe the statistical system had to adapt to these changes.

The acronym PRODCOM comes from the French “PRODUCTION COMMUNAUTAIRE” (Community Production). The PRODCOM list is updated each year by the PRODCOM Expert Group. The headings of the PRODCOM list are linked to those from the Combined Nomenclature (CN) used to compile International Trade in Goods statistics, which thus enables direct comparisons between industrial production statistics and trade statistics (see below). PRODCOM headings are coded using an eight-digit numerical code, the first six digits of which are identical to those of the Statistical Classification of Products by Activity (CPA) code. The PRODCOM list is therefore also fully consistent with the CPA, while further detailing the CPA product categories.

PRODCOM statistics are broken down to a detail level of almost 3900 products available in the PRODCOM list. The main indicators of the production sold during the calendar year are collected and published both in monetary (EUR) and physical (kg, m², number of items, etc.) terms.

Eurostat releases in its database PRODCOM statistics for the EU as a whole as well as by Member State. The EU total excludes currently three EU Member States which are exempt from transmitting industrial production data given their small share in the EU total; these are Cyprus, Malta and Luxembourg.

How are PRODCOM statistics measured?

As mentioned above, PRODCOM statistics are based upon data on manufacturing of goods produced by the enterprises on the national territory. These enterprises carry out one or more activities at one or more locations and may comprise one or more legal units. When an enterprise is active in more than one economic activity, then the value added and turnover that it generates, the persons it employs, and the values of all other statistical variables will be classified under the enterprise’s principal activity. The principal activity is normally the one that generates the largest amount of value added. For PRODCOM statistics, the survey population consists of enterprises whose principal activity or one of its secondary activities was manufacturing of goods during the reference period.

PRODCOM statistics are compiled from the enterprises that cover at least 90 % of the national production per NACE class and employ at least 20 people (different thresholds may nonetheless be adopted by countries in exceptional cases). The territory covered in each country refers to the specifications of the Nomenclature of Countries and Territories for the External Trade Statistics of the Community and Statistics of Trade between Member States.

Indicator definitions for key PRODCOM statistics

PRODCOM statistics consist of the following set of indicators:

the physical volume of production sold during the survey period,
the value of production sold during the survey period,

the physical volume of actual production during the survey period, including any production which is incorporated into the manufacture of other products from the same undertaking.

The national statistical institutes transmit this set of indicators to Eurostat on an annual basis, six months after the end of the reference year. Data are available in both NACE Rev. 1.1 and NACE Rev. 2 classifications until 2008 reference year and from reference year 2009 onwards only in NACE Rev.2.

Appendix

Which parts of the economy does PRODCOM cover?

The PRODCOM statistics cover the industrial production (with the exception of military products and some energy products) carried out by enterprises classified within the Sections B to C of NACE Rev. 2, which include:

- Section B - Mining and quarrying
 - Division 07 - Mining of metal ores
 - Division 08 - Other mining and quarrying
 - Division 09 - Mining support service activities
- Section C - Manufacture
 - Division 10 - Manufacture of food products
 - Division 11 - Manufacture of beverages
 - Division 12 - Manufacture of tobacco products
 - Division 13 - Manufacture of textiles
 - Division 14 - Manufacture of wearing apparel
 - Division 15 - Manufacture of leather and related products
 - Division 16 - Manufacture of wood and of products of wood and cork, except furniture
 - Division 17 - Manufacture of paper and paper products
 - Division 18 - Printing and reproduction of recorded media
 - Division 19 - Manufacture of coke and refined petroleum products
 - Division 20 - Manufacture of chemicals and chemical products
 - Division 21 - Manufacture of basic pharmaceutical products and pharmaceutical preparations
 - Division 22 - Manufacture of rubber and plastic products
 - Division 23 - Manufacture of other non-metallic mineral products
 - Division 24 - Manufacture of basic metals
 - Division 25 - Manufacture of fabricated metal products, except machinery and equipment
 - Division 26 - Manufacture of computer, electronic and optical products
 - Division 27 - Manufacture of electrical equipment
 - Division 28 - Manufacture of machinery and equipment n.e.c.
 - Division 29 - Manufacture of motor vehicles, trailers and semi-trailers
 - Division 30 - Manufacture of other transport equipment
 - Division 31 - Manufacture of furniture
 - Division 32 - Other manufacturing
 - Division 33 - Repair and installation of machinery and equipment

Legislation

PRODCOM statistics are compiled under the legal basis provided by Council Regulation (EEC) NO 3924/1991 of 19 December 1991 and by Commission Regulation (EC) No 0912/2004 of 29 April 2004 implementing the Council Regulation (EEC) No 3924/91 on the establishment of a Community survey of industrial production. Additionally, a Commission Regulation updating the PRODCOM classification is available annually since 2003.

Methodology

A summary of the methodology applied for PRODCOM statistics accompanies the data on Eurostat's website as a European Statistics Metadata System (ESMS) metadata file (prodcom_esms). The national European Statistics Metadata System (ESMS) metadata files, employed by countries for PRODCOM statistics are available under the ESMS metadata file (prodcom_esms).

Classifications

Appendix

As mentioned above, the enterprises which are surveyed for PRODCOM statistics are classified according to their activity and assigned to a particular NACE code. The revised NACE Rev. 2 classification was adopted at the end of 2006, and is applicable to the PRODCOM Statistics since 2008 reference year. These changes in the classifications allowed a broader and more detailed collection of information to be compiled on industry, and provided the possibility to better identify new products from new areas of economic activity (such as technology-producing sectors).

Existing PRODCOM statistics presented in terms of NACE Rev. 1.1 will be maintained in the database for those users wishing to analyse historical series.

Before industrial production data collection could start, it was necessary to draw up a common list of products to be covered. Drawing up the PRODCOM list was a unique opportunity for Eurostat, the National Statistical Institutes and the European Trade Associations to work together to produce a classification that would work on the micro, national and European levels. The two main objectives of this work were to enable measuring the industrial production and to allow linking production statistics to trade statistics. As PRODCOM statistics have to be comparable with trade statistics, which are based on the CN, there had to be a close relationship between the two nomenclatures. Furthermore, the basic building blocks for PRODCOM are NACE (Rev. 2, as from 2008) and the CPA. Therefore, the PRODCOM list had to be developed in close association with these nomenclatures.

To understand how the different nomenclatures fit together, and their links to world-wide nomenclatures, it is useful to consider the diagram below which gives an overview of the revised system of integrated statistical classifications. This diagram shows the clear links between the PRODCOM list and the CN, which then links up to the HS at a world-wide level.

Diagram links: PRODCOM list, CN and HS

Policy context

Industrial production statistics collected within PRODCOM are used as one of the data sources in a number of policy areas covered mainly by the work of the Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (GROW). The European Commission's enterprise policies aim to create a favourable environment for business to thrive within the EU, creating higher productivity, economic growth, jobs and wealth. Many of the policies that have been introduced in recent years have been aimed at reducing administrative burdens, stimulating innovation, encouraging sustainable production, and ensuring the smooth functioning of the EU's internal market.

At the European Council meeting of 26 March 2010, EU leaders set out their plan for Europe 2020, a strategy to enhance the competitiveness of the EU and to create more growth and jobs. The latest revision of the integrated economic and employment guidelines (revised as part of the Europe 2020 strategy for smart, sustainable and inclusive growth) includes a guideline to improve the business and consumer environment and modernise Europe's industrial base. Additional information about the Europe 2020 strategy can be found on the Europe 2020 website.

In October 2010, the European Commission presented a Communication on "An industrial policy for the globalisation era", establishing a strategic agenda and proposing broad cross-sectoral measures, as well as tailor-made actions for specific industries, mainly targeting so-called "green innovation" performance of various sectors. Prodcum statistics represent an important data input in order to take informed political decisions in these areas.

The central principles governing the internal market for services guarantee EU enterprises the freedom to establish themselves in other Member States, and the freedom to provide services on the territory of another EU Member State other than the one in which they are established. These central principles governing the internal market were set out in the EC Treaty. The objective of the Directive 0123/2006 of 12 December 2006 is to eliminate obstacles to trade in services, thus allowing the development of cross-border operations. It is intended to improve competitiveness, not just of service enterprises but also of European industry as a whole. In December 2006, the Directive was adopted by the European Parliament and the Council with transposition by the Member States required by the end of 2009. A comprehensive and structured listing of the legislative acts in force relating to industrial policy is available on Eurlex's website.