

A network diagram with black nodes and blue lines connecting them, set against a light blue background with a dark blue vertical bar on the right side.

2024

ENERGY & RENEWABLES

SAMPLE REPORT

Get an in-depth look at the energy industry's transition to renewable energy, focusing on wind and solar energy growth, energy storage systems, and electric vehicle charging.

JABIL

MADE POSSIBLE.
MADE BETTER.

Table of Contents

1. Overview	4
2. Introduction	5
3. Market Overview	7
3.1 Global Energy Demand & Renewable Energy Expansion	7
3.2 The Renewables Market in Asia-Pacific.....	7
3.3 The Renewables Market in EMEA.....	8
3.3.1 Outlook for 2024.....	9
3.4 The Renewables Market in the Americas	9
3.5 Market Growth Enablers	10
3.5.1 Government Initiatives.....	10
3.5.2 Environmental Concerns.....	10
3.5.3 Energy Security	11
3.5.4 Corporate Sustainability Goals.....	11
3.6 Market Inhibitors.....	11
3.6.1 Transmission and Distribution Challenges	11
3.6.2 High Upfront Costs.....	12
3.6.3 Intermittency and Grid Integration	12
3.6.4 Materials and Supply Chain Constraints	12
3.6.5 Workforce Development.....	12
3.7 Use Case Analysis.....	13
3.7.1 Use Cases: Solar Energy	13
3.7.2 Use Cases: Wind Energy	13
3.7.3 Use Cases: Energy Storage System Installment.....	14
4. Supply Chain.....	15
4.1 Critical Stages.....	15
4.2 Spotlight on Lithium-Ion Batteries.....	15
4.3 Challenges and Opportunities	16
4.4 OEMs' Carbon Footprint Reduction due to Localization.....	16
4.5 The Road Ahead.....	17
4.6 Impact of AI on Supply Chain	17
4.7 The "China+1" Strategy for Global Supply Chains	17
4.8 Geopolitical Tensions and Supply Chain Realignment.....	18

4.9	Legal & Regulatory Landscape	18
4.9.1	Importance of Understanding Legal & Regulatory Landscape	18
4.9.2	Role of Government Policies.....	19
4.9.3	Asia: Regulatory Impacts and Outlook.....	19
4.9.4	EMEA: Regulatory Impacts and Outlook	20
4.9.5	The Americas: Regulatory Impacts and Outlook	20
5.	Technology Evolution	22
5.1	Advancements in Battery Technology	22
5.1.1	Lithium-Ion Dominance and Chemistry Innovations.....	22
5.1.2	Alternate Battery Solutions.....	23
5.2	Alternative Battery Solutions.....	23
5.3	Technological Advancements in Wind Turbines	23
5.4	Digitalization and Value Chain Evolution.....	23
5.5	Direct Current (DC) Fast Charging.....	24
5.5.1	Benefits of DC Fast Charging	24
5.5.2	DC Fast Charging: Challenges.....	24
5.5.3	DC Fast Charging: Market Trends	24
5.5.4	Market Prospects for DC Fast Charging: A Deep Dive Across the World.....	25
5.6	Advanced Energy Storage Systems (ESS):.....	25
5.6.1	Competitive Landscape for Energy Storage Systems.....	25
5.6.2	Electric Vehicles (EVs) and Charging Infrastructure	25
5.7	Technological Innovations in the Solar Industry.....	26
5.7.1	Space-based Solar Power Technology Concept.....	26
6.	Jabil Insights	27
6.1	Navigating the Evolving Regulatory Landscape	27
6.2	Optimizing Products for a Long Lifecycle	27
6.3	Sustainability: A Growing Imperative:.....	27
6.4	Innovation and Collaboration for a Sustainable Future:	28
7.	Recommendations.....	29
7.1	Focus on Core Infrastructure and Innovation	29
7.2	Sustainable Practices and Long-Term Strategies.....	29
7.3	Collaboration and Policy Advocacy.....	29
7.4	Jabil Spend Data.....	30

1. Overview

The Energy and Renewables Market update analyzes the industry's sustainable transition, delving into the growth of wind and solar energy, the development of energy storage systems, and the proliferation of electric vehicle charging.

The report covers the existing landscape and challenges, rapidly evolving market dynamics, supply chain, competitive landscape, technology evolution, and the global legislative and regulatory ecosystem.

The report is a strategic tool that offers insights and recommendations for stakeholders operating in the energy and renewables sector. It highlights the opportunities and risks associated with the global energy transformation, providing insights and analysis to support informed decision-making.

The smart home market in North America is characterized by its maturity, focusing on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. This advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

Europe's smart home market thrives on a solid commitment to sustainability and energy efficiency. Governmental incentives and a collective drive towards sustainable living practices significantly influence the region's focus. Smart meters and energy management systems are particularly popular, catering to the demand for devices that reduce energy consumption. Additionally, there's a growing trend towards enhanced home security systems. This increase is partly driven by regional conflicts and geopolitical tensions, which, along with shifting migration patterns, have led to a rise in domestic crime rates. Consequently, there's a heightened demand for advanced security products, including surveillance cameras and motion sensors, to ensure household safety. Moreover, the aging population in Europe represents another critical segment, with smart home solutions focusing on safety and accessibility to cater to their needs.

2. Introduction

The energy sector is undergoing a rapid transformation driven by environmental concerns, policy changes, and economic factors. This transition propels a surge in renewable energy, with solar and wind leading the way. The International Energy Agency (IEA) reports a staggering 507 gigawatts (GW) of additional renewable electricity capacity added in 2023 alone.

Despite progress, significant hurdles remain. Limited investment in developing economies hinders the widespread adoption of clean energy solutions. Additionally, integrating variable renewable sources like solar and wind necessitates robust Energy Storage Systems (ESS) to ensure grid stability.

Key Sectors Driving the Change:

The smart home market in North America is characterized by its maturity, focusing on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. This advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

Europe's smart home market thrives on a solid commitment to sustainability and energy efficiency. Governmental incentives and a collective drive towards sustainable living practices significantly influence the region's focus. Smart meters and energy management systems are particularly popular, catering to the demand for devices that reduce energy consumption. Additionally, there's a growing trend towards enhanced home security systems. This increase is partly driven by regional conflicts and geopolitical tensions, which, along with shifting migration patterns, have led to a rise in domestic crime rates. Consequently, there's a heightened demand for advanced security products, including surveillance cameras and motion sensors, to ensure household safety. Moreover, the aging population in Europe represents another critical segment, with smart home solutions focusing on safety and accessibility to cater to their needs.



3. Market Overview

The energy sector is undergoing a significant transformation driven by increasing demand, renewable energy expansion, and the adoption of electric vehicles (EVs). This market overview breaks down the key factors influencing the growth of renewable infrastructure, energy storage systems (ESS), EV charging infrastructure, and the markets for lithium-ion batteries, renewable energy, solar, and wind industries.

3.1 Global Energy Demand & Renewable Energy Expansion

The smart home market in North America is characterized by its rapidly growing and evolving ecosystem, energy efficiency, and security. The region leads significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. This advancement is propelled by consumers prioritizing compatibility between different devices and systems, striving for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

Europe's smart home market thrives on a solid commitment to sustainability and energy efficiency. Environmental initiatives and a collective drive towards sustainable living practices significantly influence the region's focus. Smart meters and energy management systems are particularly popular, catering to the demand for devices that reduce energy consumption. Additionally, there's a growing trend towards enhanced home security systems. This increase is partly driven by regional conflicts and geopolitical tensions, which, along with shifting migration patterns, have led to a rise in domestic crime rates. Consequently, there's a heightened demand for advanced security products, including surveillance cameras and motion sensors, to ensure household safety. Moreover, the aging population in Europe represents another critical segment, with smart home solutions focusing on safety and accessibility to cater to their needs.

3.2 The Renewables Market in Asia-Pacific

The Asia-Pacific region has firmly established itself as a global solar power market powerhouse. According to analysts, in 2023, it accounted for over 65% of the world's solar PV installed capacity.

The smart home market in North America is characterized by its maturity, focusing on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, striving for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

Europe's smart home market thrives on a solid commitment to sustainability and energy efficiency. Governmental incentives and a collective drive towards sustainable living practices significantly influence the region's focus. Smart meters and energy management systems are particularly popular, catering to the demand for devices that reduce energy consumption. Additionally, there's a growing trend towards enhanced home security systems. This increase is partly driven by regional conflicts and geopolitical tensions, which, along with shifting migration patterns, have led to a rise in domestic crime rates. Consequently, there's a heightened demand for advanced security products, including surveillance cameras and motion sensors, to ensure household safety. Moreover, the aging population in Europe represents another critical segment, with smart home solutions focusing on safety and accessibility to cater to their needs.

3.3 The Renewables Market in EMEA

Renewable Energy Market Surge in the EMEA (Europe, Middle East, and Africa) region stands at the forefront of the renewable energy revolution. With solar PV leading the charge and wind returning, the path to a sustainable, cleaner energy future is well-lit. Policymakers, investors, and innovators are collaborating to ensure that the sun and wind power our tomorrows.

The smart home market in North America is characterized by its maturity, focusing on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, striving for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

3.3.1 Outlook for 2024

The smart home market in North America is characterized by its maturity, focusing on enhancing convenience, energy efficiency, and security. The region leads significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

Europe's smart home market thrives on a solid commitment to sustainability and energy efficiency. Governmental incentives and a collective drive towards sustainable living practices significantly influence the region's focus. Smart meters and energy management systems are particularly popular, catering to the demand for devices that reduce energy consumption. Additionally, there's a growing trend towards enhanced home security systems. The market is partly driven by regional conflicts and geopolitical tensions, which, along with shifting regulatory policies, has led to a rise in demand for smart locks. Consequently, there's a heightened demand for advanced security products, including surveillance cameras and motion sensors, to ensure household safety. Moreover, the aging population in Europe represents another critical segment, with smart home solutions focusing on safety and accessibility to cater to their needs.

3.4 The Renewables Market in the Americas

The smart home market in North America is characterized by its maturity, focusing on enhancing convenience, energy efficiency, and security. The region leads significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

Europe's smart home market thrives on a solid commitment to sustainability and energy efficiency. Governmental incentives and a collective drive towards sustainable living practices significantly influence the region's focus. Smart meters and energy management systems are particularly popular, catering to the demand for devices that reduce energy consumption. Additionally, there's a growing trend towards enhanced home security systems. The market is partly driven by regional conflicts and geopolitical tensions, which, along with shifting regulatory policies, has led to a rise in demand for smart locks. Consequently, there's a heightened demand for advanced security products, including surveillance cameras and motion sensors, to ensure household safety. Moreover, the aging population in Europe represents another critical segment, with smart home solutions focusing on safety and accessibility to cater to their needs.

3.5 Market Growth Enablers

3.5.1 Government Initiatives

Government policies and incentives play a pivotal role in accelerating the adoption of renewable energy by creating a favorable market environment and reducing financial barriers. These measures aim to stimulate investment, innovation, and deployment of renewable energy technologies.

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, striving for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

3.5.2 Environmental Concerns

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, striving for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

Europe's smart home market thrives on a solid commitment to sustainability and energy efficiency. Governmental incentives and a collective drive towards sustainable living practices significantly influence the region's focus. Smart meters and energy management systems are particularly popular, catering to the demand for devices that reduce energy consumption. Additionally, there's a growing trend towards enhanced home security systems. This increase is partly driven by regional conflicts and geopolitical tensions, which, along with shifting migration patterns, have led to a rise in domestic crime rates. Consequently, there's a heightened demand for advanced security products, including surveillance cameras and motion sensors, to ensure household safety. Moreover, the aging population in Europe represents another critical segment, with smart home solutions focusing on safety and accessibility to cater to their needs.

3.5.3 Energy Security

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. This advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

3.5.4 Corporate Sustainability Goals

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. This advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

3.6 Market Inhibitors

3.6.1 Transmission and Distribution Challenges

Renewable energy sources are often located in remote areas with abundant sunlight or wind, far from population centers with high electricity demand. This necessitates the construction of extensive transmission lines to transport the generated power, which can be expensive and encounter regulatory hurdles. For instance, offshore wind farms require undersea cables to connect to the mainland grid, adding complexity and cost to the project.

Moreover, the existing grid infrastructure, primarily designed for centralized fossil fuel power plants, may not be equipped to handle the variable nature of renewable energy generation. This can lead to grid congestion and instability, necessitating upgrades and investments in smart grid technologies to optimize power flow and maintain grid reliability.

3.6.2 High Upfront Costs

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, setting for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

3.6.3 Intermittency and Grid Integration

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, setting for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

3.6.4 Materials and Supply Chain Constraints

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, setting for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

3.6.5 Workforce Development

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, setting for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

3.7 Use Case Analysis

3.7.1 Use Cases: Solar Energy

Owner	Country / Location	Status	Key Features
Adani Green Energy	India (Rajasthan)	Fully Operational	World's largest solar-wind hybrid power plant (2.24 GW)
ACWA Power	UAE (Dubai)	Fully Operational	World's largest single-site solar park (3 GW)
Qatar Hydropower Development	China (Ginghai Province)	Fully Operational	World's largest solar power plant by area (24 million solar panels)
Sun Cable	Australia (Northern Territory)	Under Development	Planned to be world's largest solar farm and battery storage facility (3.6 GW)
SolarReserve	Australia (South Australia)	Under Development	Planned to be world's largest solar thermal power plant with molten salt storage (3.6 GW)

Note: Reference links for each development are listed in Appendix Section

3.7.2 Use Cases: Wind Energy

Owner	Country / Location	Status	Key Features
Adani Green Energy	India (Rajasthan)	Fully Operational	World's largest solar-wind hybrid power plant (2.24 GW)
ACWA Power	UAE (Dubai)	Fully Operational	World's largest single-site solar park (3 GW)
Qatar Hydropower Development	China (Ginghai Province)	Fully Operational	World's largest solar power plant by area (24 million solar panels)
Sun Cable	Australia (Northern Territory)	Under Development	Planned to be world's largest solar farm and battery storage facility (3.6 GW)
SolarReserve	Australia (South Australia)	Under Development	Planned to be world's largest solar thermal power plant with molten salt storage (3.6 GW)

Note: Reference links for each development are listed in Appendix Section

3.7.3 Use Cases: Energy Storage System Installment

Name	Country / Location	Status	Key Features
Adani Green Energy	India (Rajasthan)	Fully Operational	World's largest solar-wind hybrid power plant (2.24 GW)
ACWA Power	UAE (Dubai)	Fully Operational	World's largest single-site solar park (3 GW)
Suzlon Hydropower Development	China (Sichuan Province)	Fully Operational	World's largest solar power plant by area (26 million solar panels)
Sun Cable	Australia (Northern Territory)	Under Development	Planned to be world's largest solar farm and battery storage facility (2.6 GW)
SolarReserve	Australia (South Australia)	Under Development	Planned to be world's largest solar thermal power plant with molten salt storage (2.5 GW)

Note: Reference links for each development are listed in Appendix Section

4. Supply Chain

The supply chain is the backbone of the renewable energy sector, enabling the development, production, and deployment of clean energy solutions. However, this complex system faces challenges that must be addressed to ensure a sustainable and resilient future.

4.1 Critical Stages

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region leads significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region leads significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

4.2 Spotlight on Lithium-Ion Batteries

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region leads significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

4.3 Challenges and Opportunities

The smart home market in North America is characterized by its maturity, focusing on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. This advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

4.4 OEMs' Carbon Footprint Reduction due to Localization

Cutting down on the distance between supplier and manufacturer also cuts down on greenhouse gas emissions



The smart home market in North America is characterized by its maturity, focusing on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. This advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

4.5 The Road Ahead

The global home market in North America is characterized by its maturity, focusing on enhancing convenience, energy efficiency, and security. The region leads significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing convenience, seamless integration between different devices and systems, and a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

4.6 Impact of AI on Supply Chain

The global home market in North America is characterized by its maturity, focusing on enhancing convenience, energy efficiency, and security. The region leads significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing convenience, seamless integration between different devices and systems, and a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

4.7 The “China+1” Strategy for Global Supply Chains

The global home market in North America is characterized by its maturity, focusing on enhancing convenience, energy efficiency, and security. The region leads significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing convenience, seamless integration between different devices and systems, and a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

4.8 Geopolitical Tensions and Supply Chain Realignment

The smart home market in North America is characterized by its maturity, focusing on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

Europe's smart home market thrives on a solid commitment to sustainability and energy efficiency. Governmental incentives and a collective drive towards sustainable living practices significantly influence the region's focus. Smart meters and energy management systems are particularly popular, catering to the demand for devices that reduce energy consumption. Additionally, there's a growing trend towards enhanced home security systems. This increase is partly driven by regional conflicts and geopolitical tensions, which, along with shifting migration patterns, have led to a rise in domestic crime rates. Consequently, there's a heightened demand for advanced security products, including surveillance cameras and motion sensors, to ensure household safety. Moreover, the tight cooperation in Europe represents another critical segment, with smart home solutions focusing on safety and accessibility to cater to their needs.

4.9 Legal & Regulatory Landscape

The global energy and storage market is undergoing a significant transformation driven by climate change concerns, energy security considerations, and technological advancements.

Governments worldwide are heavily influencing the energy and renewables market by implementing laws and regulations to promote clean energy adoption, efficiency improvements, and the development of energy storage solutions.

4.9.1 Importance of Understanding Legal & Regulatory Landscape

By understanding the regulatory landscape in different regions, companies can identify emerging markets for renewable energy technologies and energy storage solutions.

Companies can gain a competitive edge in the energy and storage market by using the legal and regulatory information around strategic sourcing, supply chain resilience, and cost optimization.

The smart home market in North America is characterized by its maturity, focusing on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

4.9.2 Role of Government Policies

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

4.9.3 Asia: Regulatory Impacts and Outlook

The regulations impacting the sector across Asia, EMEA, and the Americas include:

4.9.3.1 China

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

4.9.3.2 India

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

4.9.3.3 Japan

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

4.9.4 EMEA: Regulatory Impacts and Outlook

4.9.4.1 European Union (EU)

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region faces significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

4.9.4.2 Middle East

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region faces significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

4.9.4.3 Africa

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region faces significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

4.9.5 The Americas: Regulatory Impacts and Outlook

4.9.5.1 United States

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region faces significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

4.9.5.2 Canada

The smart home market in North America is characterized by its industry focusing on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, striving for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

4.9.5.3 Latin America

The smart home market in North America is characterized by its industry focusing on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, striving for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

5. Technology Evolution

The energy industry faces a technological hurdle as it integrates more renewables into the grid. Solar and wind, while plentiful, are variable resources with fluctuating output. To bridge this gap, robust energy storage solutions are crucial. Batteries have emerged as a key technology, with large-scale systems capable of storing excess renewable energy and releasing it when demand is high. Battery technology continues to evolve, offering a wider range of capacities suitable for various applications. Residential systems typically have a capacity of around 5-10 kW, while utility-scale deployments can reach hundreds of megawatts. However, maximizing renewable integration requires advancements beyond just storage capacity. Research into different battery chemistries and energy storage technologies like flow batteries and compressed air energy storage (CAES) also hold promise for a more versatile renewable energy future.

5.1 Advancements in Battery Technology

Batteries, with a power range from 10 kW to 150 MW or more and discharge capabilities spanning minutes to hours, are pivotal to tackling both issues effectively. However, overcoming the technological challenges discussed above is essential for ensuring their long-term viability and widespread adoption. Continued research, development, and innovation in battery technology are key to a clean and sustainable energy future.

The smart home market in North America is characterized by its rapidly growing and evolving consumer energy efficiency and security. The region leads significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. This advancement is propelled by consumers prioritizing compatibility between different devices and systems, setting for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

5.1.1 Lithium-Ion Dominance and Chemistry Innovations

The smart home market in North America is characterized by its rapidly growing and evolving consumer energy efficiency and security. The region leads significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. This advancement is propelled by consumers prioritizing compatibility between different devices and systems, setting for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

5.1.2 Alternate Battery Solutions

The global battery market in North America is characterized by its industry focus on enhancing performance, energy efficiency, and security. The region leads significant strides in integrating AI and data control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

5.2 Alternative Battery Solutions

The global battery market in North America is characterized by its industry focus on enhancing performance, energy efficiency, and security. The region leads significant strides in integrating AI and data control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

5.3 Technological Advancements in Wind Turbines

The global battery market in North America is characterized by its industry focus on enhancing performance, energy efficiency, and security. The region leads significant strides in integrating AI and data control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

5.4 Digitalization and Value Chain Evolution

The global battery market in North America is characterized by its industry focus on enhancing performance, energy efficiency, and security. The region leads significant strides in integrating AI and data control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

5.5 Direct Current (DC) Fast Charging

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

5.5.1 Benefits of DC Fast Charging

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

5.5.2 DC Fast Charging: Challenges

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

5.5.3 DC Fast Charging: Market Trends

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

5.5.4 Market Prospects for DC Fast Charging: A Deep Dive Across the World

The global market for DC fast charging is characterized by its rapidly growing demand for efficiency, convenience, energy efficiency, and security. The region leads significant strides in integrating AI and data control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

5.6 Advanced Energy Storage Systems (ESS):

The global market for DC fast charging is characterized by its rapidly growing demand for efficiency, convenience, energy efficiency, and security. The region leads significant strides in integrating AI and data control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

5.6.1 Competitive Landscape for Energy Storage Systems

The global market for DC fast charging is characterized by its rapidly growing demand for efficiency, convenience, energy efficiency, and security. The region leads significant strides in integrating AI and data control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

5.6.2 Electric Vehicles (EVs) and Charging Infrastructure

The global market for DC fast charging is characterized by its rapidly growing demand for efficiency, convenience, energy efficiency, and security. The region leads significant strides in integrating AI and data control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

5.7 Technological Innovations in the Solar Industry

The global solar market in North America is characterized by its industry's focus on enhancing performance, energy efficiency, and security. The region boasts significant strides in integrating AI and data control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers' growing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

5.7.1 Space-based Solar Power Technology Concept

The global solar market in North America is characterized by its industry's focus on enhancing performance, energy efficiency, and security. The region boasts significant strides in integrating AI and data control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers' growing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

6. Jabil Insights

6.1 Navigating the Evolving Regulatory Landscape

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

6.2 Optimizing Products for a Long Lifecycle

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

6.3 Sustainability: A Growing Imperative:

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

6.4 Innovation and Collaboration for a Sustainable Future:

The smart home market in North America is characterized by its maturity, focusing on enhancing convenience, energy efficiency, and security. The region leads significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

7. Recommendations

7.1 Focus on Core Infrastructure and Innovation

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

7.2 Sustainable Practices and Long-Term Strategies

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

7.3 Collaboration and Policy Advocacy

The smart home market in North America is characterized by its industry focus on enhancing convenience, energy efficiency, and security. The region boasts significant strides in integrating AI and voice control, primarily through devices like Amazon's Echo and Google Home, which have become household staples. The advancement is propelled by consumers prioritizing compatibility between different devices and systems, aiming for a seamless smart home experience. Despite its advances, the market continues to face increased challenges related to privacy concerns and the complexity of device setup, which requires a certain level of IT expertise.

7.4 Jabil Spend Data

Jabil Spend on the Renewable Energy Sector by Category (2020 vs. 2023)



Data based on Jabil's historical spending data for the Energy Segment

Jabil Spend on Categories YoY (%)



Data based on Jabil's historical spending data for the Energy Customer Segment

This document is provided for informational purposes only. It is not intended to be used or construed as investment advice. The information contained in this document is not an offer to buy or sell any securities or other financial instruments. Any investment decisions made based on the information contained in this document are made at the sole discretion of the reader. The author(s) of this document are not investment advisors and are not registered with any regulatory authority. The author(s) of this document disclaim any liability for any direct or consequential loss arising from any use of this document or its contents. The company instances or examples provided in the report are for reference purpose only.

JABIL and the JABIL logo are the property of Jabil Inc. Other marks used herein are used for identification purposes only and are the property of their respective owners.
