

Promising industries; moving towards tomorrow's innovative world

Market Report Summary

Commissioned by [ZharBiz Holdings Inc.](#)

September 2020



Outlook

The world has never been more involved into finding ways of dealing with pressing global issues such as global warming, inequality among people and an ever-increasing global population. The scientific world has made it clear that technology is the key to a sustainable and brighter future.

Technological advancements in the past 30 years have made it possible, among many other opportunities, to harness new sources of energy & made knowledge accessible for people around the world.

This summary market report aims to introduce the reader to three key industries that will definitely shape the future of the world. It offers powerful insights, tackles challenges and speaks about opportunities for tomorrow's innovative world.

**“The best way to predict
the future is to invent it.”
- Alan Kay**



Education

Acquiring the necessary knowledge to change the world

We start our journey with the engine that constantly pushes the human race forward: **education**.

For the past decade and especially since the COVID-19 pandemic, e-learning has been taking over the entire educational system. The rise of online learning has been possible due to the increase in demand for non-physical labor & the Internet penetration around the world.

However, the e-learning system is facing increasing challenges. Let's take a look at the main factors that make the current state of e-learning:

- Chronic lack of support from platforms.
- Non-existent social interaction during learning.
- Unclear instructions in assignments.
- Focus on content rather than learning experience.

Education

The opportunity
behind e-learning

What is needed for a truly effective &
sustainable e-learning model?

The secret lies with elevating the **learning experience**, **motivation** and **outcomes** of the learning act.

How can we achieve that?

- By incorporating modern technology such as artificial intelligence.
- Gathering predictive insights in the scope of personalizing education.
- Creating a learning environment that promotes social learning and collaboration.

**\$200 billion
market size in 2019**

The e-learning market is anticipated to grow at over 8% CAGR between 2020 and 2026.



Education

Example of an innovative e-learning platform

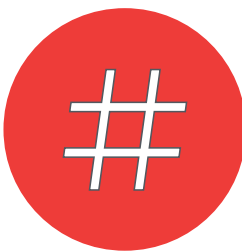
Claned is a complete solution to further elevate the learning experience, motivation, and outcomes by combining academically validated learning theories with artificial intelligence.

Located in Helsinki Finland, they are a multiple award-winning e-learning platform with an innovative & out of the box approach to the learning experience.

Secret recipe for success:



Continuous Development



Social Learning Capabilities



AI Powered Learning

Global organizations using Claned:



Urban Air Mobility

A revolutionizing concept that will change transportation for ever

It might sound like science fiction but the days where we will commute to work in a flying vehicle are not far away.

The concept of UAM (Urban Air Mobility) is relatively new. Morgan Stanley sees it as disruptive industry that will revolutionize transportation.

First steps

First AAV (autonomous aerial vehicle) was launched at CES in Las Vegas, back in 2016. The vehicle is called Model 184 and is manufactured by a Chinese-based company. The initial model was capable of carrying one passenger for a 20-minute autonomous flight.

UAM is a safe and efficient air traffic operations in a metropolitan area for manned aircraft and unmanned aircraft systems

NASA, 2018



Urban Air Mobility

What does it solve?

Urban population is crippled by **traffic congestion**, **car accidents** (in some countries) and huge amounts of **air pollution**. All three effects take a toll on the quality of life and the economy in general.

\$305 billion, economic losses caused by traffic congestion in the US, 2017

The US Environmental Protection Agency estimated that each car passenger in the US emits an average of 4.7 metric tons of CO₂ each year; that is a huge amount.

Another grueling statistic is around car accidents. According to the WHO, around 1,250,000 people are killed in car accidents each year, with China and India leading the way.

That means **3,400 deaths / day**.



Urban Air Mobility

The opportunity

The opportunity lies with being among the first adopters of this ground breaking technology.

Solving urban traffic congestion, air pollution and car accident fatalities would contribute immensely to a sustainable & brighter future for people living in cities. But that's not all; UAM can be used for other specific activities, greatly improving operational efficiency

Let's take a look at how UAM can change people's lives. The most interesting use cases we identified are:

Tourism and recreation; UAM can provide aerial tourism services at designated locations including scenic spots, amusement parks, tourist attractions, etc. A ride on a UAM vehicle will help tourists explore new areas that were previously difficult or impossible to reach.

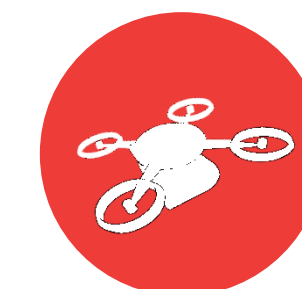
Emergency medical services; The fast-moving nature of emergency medical services makes UAM an ideal solution that provides "air ambulances", "especially when ground traffic jeopardizes the emergency missions of normal ambulances.

Other interesting applications include industrial use & aerial fire extinguishing services.



The commercial Urban Air Vehicle market size will surpass \$104B by 2023

Frost & Sullivan, 2019





Urban Air Mobility

Example of pioneering in the UAM industry

EHang (NASDAQ: EH) is a world leading autonomous aerial vehicle (“AAV”) technology platform company. Their mission is to make safe, autonomous and eco-friendly air mobility accessible to everyone. EHang provides customers in various industries with AAV products and commercial solutions: air mobility (including passenger transportation and logistics), smart city management and aerial media solutions.

As the forerunner of cutting-edge AAV technologies and commercial solutions in the global Urban Air Mobility industry, EHang continues to explore the boundaries of the sky to make flying technologies benefit our life in smart cities.

EHang’s model 216 costs around \$300,000, which is not far from a modern luxury sedan/limousine.



EHANG 216
~\$500,000



2020 Mercedes S-Class 650
Full Option, ~\$275,000

**Austrian technology,
Chinese manufacturing**

Waste-to-Energy

Working towards a cleaner environment

For thousands of years, humans have dealt with waste by either burying in landfills or burning in pits and incinerators. We now understand the dangers of these choices and **the waste industry spends tens of billions of dollars per year on technology** that ensures these antiquated methods do not release toxins into surrounding communities.

Regardless of their advertised “cleanliness”, the stigma of landfills and incinerators makes it nearly impossible to permit in new locations. Today, cleaner alternatives exist but they are they economical or efficient?

Old vs. new technologies

Turning waste into energy is usually done by gasification; a rather old technology used in the clean coal industry. Usually, gasification alone is considered ineffective from a cost perspective.

Recently, new technologies like integration of energy generation with emission cleansing while employing a repeatable modular design have allowed the waste-to-energy industry to produce small sized, low-cost waste elimination systems with a large variety of applications.





Waste to Energy

Current market is riddled with opportunities

Today, it is possible to reuse 90% of the metals contained in the bottom ash. And the remaining clinker can be reused as road material.

Waste to energy is one of the most robust and effective alternative energy options to reduce CO2 emissions and replace fossil fuels.

Worldwide, **about 130 million tons of municipal solid waste (MSW) are combusted annually in over 600 waste-to-energy (WTE) facilities** that produce electricity and steam for district heating and recovered metals for recycling.

Today, there are WTE facilities in 35 nations, including large countries such as China.

The global waste to energy market size was valued at USD 31.0 billion in 2019 and is projected to register a compound annual growth rate (CAGR) of 7.4% from 2020 to 2027.

Favorable regulatory policies encouraging proper waste disposal combined with energy production along with growing energy demands from the end-use sector are projected to play a vital role in the market growth over the forecast period.

Waste to Energy

Case studies:

- The Asia Pacific region
- Average output for a \$50 million plant

Some of the newest waste to energy power plants are located in Asia.

The Asia-Pacific WTE market is projected to grow at an annual rate of over 15% and reach a value of US\$13.66 billion by 2023.

Tapping into this market is a variety of commercial banks, multilateral development banks, financial sponsors, and private equity firms.



A typical waste to energy power plant - \$50 million total investment

Transforms a wide array of feedstocks into energy at a rate of 0.5 - 2.2 MWh per metric ton processed energy output options including electricity, liquid fuels and specialized chemicals.

The plant generates 6MW/h of power. Approximately 0.7 to 1.0 MW/h of electricity generated is used to power the plant and to ensure the facility is self-sustaining without the need for external sources of energy.

Consequently 5 MW/h can be exported to the grid. That rounds up to an estimated 43,800 MW/year. That is enough energy to power for a year, on a global average, 12,500 households

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