

## **WASTE TO X CAMPUSES: REIMAGINING THE VALUE OF WASTE**

By Heath Jones, Managing Director, Hitachi Zosen Inova USA

A significant aspect of making the circular economy a reality is reimagining waste as an integral component in sustainable energy generation, achieving decarbonization and continual resource recovery and utilization. This requires a shift in thinking away from purely looking at waste as something that needs to be “managed”, and viewing it as a valuable continuous resource. Waste collection and landfilling does not harness the full potential of waste as a valuable resource, because it is focused on maximizing short-term industry profits, while minimizing potential long-term environmental issues that may only be understood by future generations. If we continue to turn a blind eye and allow short-term profits to overtake a long-term strategic approach to waste, then we are undervaluing the impact of waste, and our ability to effect positive change.

### **The economic benefits of resource recovery from waste**

While there is a lot of focus on the environmental benefits of reducing emissions from landfill and separating waste, a business case also needs to be made for evolving waste management practices, if the sector is to progress from a decades-old approach, to one that is harnessing the ultimate value of waste.

There are many examples in the United States of operators being paid millions of dollars to transport waste hundreds of miles away from one community to another, impacting environmental health and infrastructure of communities along the way, and at the final destination putting profits ahead of maximizing the community value of waste.

However, with the innovative solutions that are being developed and implemented for integrated waste management globally, this doesn't have to be the scenario of the future; there are profitable alternatives to landfills that contribute to the economy, and decarbonization and environmental sustainability. Switching to these alternatives requires reimagining the world as one where waste is viewed as a valuable resource, and shifting to a “Waste to X” mindset. This shift also requires communities and legislators to challenge the status quo of traditional waste companies, and demand a genuine effort in making real advancements on utilizing waste as a resource.

Establishing an integrated network of Waste to X assets is essential to maximizing the value of waste in communities for recovering energy and natural resources, and upcycling previously landfilled waste. This transition will require individuals, communities, and lawmakers to make a bold move away from burying waste as the ultimate solution. There is an initial investment required in Waste to X infrastructure to maximize the value of waste; however, the overall cost of such upcycling infrastructure can be at, or below, the cost of landfilling, while still returning short and long-term profits to shareholders.

Implementing a comprehensive Waste to X strategy can finally bring community and government aspirations, initiatives, and laws to a sustainable reality, by reducing greenhouse gas emissions, including the reduction of methane and CO<sub>2</sub> emissions, while extending the lifespan of landfills for the fractional residual materials that are unable to be recovered and upcycled. To reduce the short-term infrastructure investment required, Hitachi Zosen Inova (HZI) is leveraging local, state, and federal grants and incentives, as well as establishing private-public partnerships, easing the capital investment required to maximize the value of waste in communities.

### **A new business model: integrated waste management**

HZI is deploying innovative Waste to X technologies that can be integrated globally, and that fit together in a synchronized way to enhance and maximize the waste value chain. These technologies and “campuses” can be scaled and tailored to treat a specific waste profile of a community (whether it be municipal waste, solid waste, commercial waste, or biomass and organic waste), and maximize it to generate electricity and other renewable energy, district heating, industrial products (such as material for road construction), compressed or liquefied industrial gasses (i.e., hydrogen, CO<sub>2</sub>, etc.) and biomethane (CH<sub>4</sub>), recover ferrous and non-ferrous metals, and even recover industrial salts that would otherwise have been buried in a landfill, reducing its lifespan.

In the US, we are seeing next-gen integrated waste management facilities emerging in forward-looking communities that are focused on long-term sustainability, and efficient and effective treatment of waste. This demand for renewable energy and products is growing in major cities from Miami to Minneapolis, to smaller sustainability-focused communities such as San Luis Obispo, California. HZI is having conversations about these solutions across the landscape of communities – community leaders, regional

economic development leaders, global and local businesses, higher education, and industry working groups.

What all of these initiatives have in common is that they are focused on elevating waste management to maximize long-term economic and social growth, while minimizing waste impact on the communities – seeing waste as a resource. We believe this is just the start of advancing waste away from a “waste disposal” approach to a “waste resource” mindset.

We owe it to our communities and children to evolve waste management practices beyond feel-good enhancements of a decades-old “waste disposal” approach, to enhancing the value of waste and improving its utilization.

### **Waste to X Campus: integrated waste management infrastructure**

This diagram paints a vision of an integrated waste management network in a circular economy and how it is enmeshed into, rather than removed from, the community.

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#### **About Hitachi Zosen Inova North America**

With offices in Knoxville, Norcross, San Luis Obispo, and Montreal, Hitachi Zosen Inova North America (HZI NAM) is part of the Swiss-Japanese Hitachi Zosen Inova Group. HZI NAM is one of North America’s leading suppliers of biogas processing plants and Waste to Energy technologies.

Headquartered in Zurich, the green-tech group Hitachi Zosen Inova (HZI) is a global leader in solutions for energy transition and circular economy, including Waste to Energy (WtE) and Renewable Gas (RG).

HZI acts as a project developer, technology supplier, and engineering, procurement, and construction (EPC) contractor delivering complete turnkey plants and system solutions for thermal and biological waste recovery.

Its solutions are based on efficient and environmentally sound technologies, are thoroughly tested, and can be flexibly adapted to customer requirements. HZI’s Service Solutions Group combines its own research and development with comprehensive manufacturing and erection capabilities to provide support throughout a plant’s entire plant cycle. Its innovative and reliable solutions have been part of more than 1,600 reference projects worldwide.

To find out more about HZI, please visit [www.hz-inova.com](http://www.hz-inova.com).

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