AESG

Zero Waste Goals and TRUE Challenges

Executive Summary

This white paper addresses the persistent global challenges of waste management, focusing on the shift towards Zero Waste practices, Circular Economy, and the adoption of TRUE (Total Resource Use and Efficiency) certification in the United Arab Emirates (UAE) and globally. This document underscores the urgency of a global transition by emphasising environmental impact, resource conservation, and waste crisis. As nations urbanise and economies grow, waste generation is projected to rise significantly, requiring a strategic approach to mitigate environmental degradation.

The objective of this paper is to explore Municipality Solid Waste (MSW), highlighting global contributions and statistics, while analysing the UAE's commitments, efforts, and challenges in waste management.

While achieving absolute zero waste is a considerable challenge, successes have been demonstrated globally. In the UAE, a historic moment took place at COP28, where local authorities committed to decarbonise waste management and establish a circular economy platform, further solidifying the UAE’s commitment to sustainability.

Furthermore, TRUE certification emerges as a guideline for corporations globally and in the UAE, by providing a framework for measuring, improving, and certifying waste management performance.

This paper recognises the adoption of the Zero Waste practices across various sectors in the UAE, emphasising its role in aligning with international sustainability standards and demonstrating transparency and accountability to stakeholders.

The conclusion of this paper synthesises key findings, focusing on the importance of policy support, data collection and reporting, education, financial incentives, and innovative approaches to overcoming challenges in the pursuit of Zero Waste Goals and TRUE in the UAE. The commitment of local authorities and corporate efforts underscore the collective responsibility to transition towards a circular economy and embraces the Zero Waste principles.

Keywords: Zero Waste; Waste Management; TRUE Certification; Sustainability; Circular Economy

1 Introduction

1.1 Scope and Objectives

The aim of this paper is to address the challenges and solutions of MSW, focusing particularly on the adoption of Zero Waste practices in the UAE and worldwide. This paper analyses key waste management statistics globally but with a specific focus on the UAE. The objectives are (1) to highlight the urgency of a global transition towards sustainable waste management practices due to environmental impact, (2) to analyse the UAE's commitment, efforts and challenges in a rapidly developing urban environment with responsible waste management practices, (3) to highlight the significance of TRUE certification as a guideline for measuring waste management challenges in the UAE, and (4) to recommend solutions to overcome the identified challenges, including policy support, data collection and reporting transparency.

1.2 Waste Management challenges globally and specifically in the UAE

The global conversation surrounding waste management has undergone a transformative shift, with a call for the adoption of Zero Waste practices being discussed at governmental levels. Championed by various authoritative bodies such as the United Nations Environment Programmeme (UNEP)[1], the World Bank Group (WBG)[2], and the Ellen MacArthur Foundation (EMF)[3], Zero Waste has emerged as a critical initiative in mitigating environmental degradation, conserving resources, and changing the alarming increase of waste worldwide.

As stated in the World Bank report 'What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050':

> *"By 2050, the world is expected to generate 3.40 billion tonnes of waste annually, increasing drastically from today's 2.01 billion tonnes"* (Kaza et al., 2018).

In this section we will explore the global waste dynamics, emphasising regional contributions and key statistics that support the challenges and opportunities in contemporary waste management. From high-income countries with disproportionate waste generation to the distinct patterns in specific regions. Statista[4] provides valuable insights on the total municipal waste generated and the waste generated per capita. This information and data should inform strategic initiatives to be taken for a more sustainable and responsible approach to waste management on a global scale.

1. *The global authority for the environment with programmes focusing on climate, nature, pollution, sustainable development and more.*
2. *With 189 member countries, the World Bank Group is a unique global partnership fighting poverty worldwide through sustainable solutions.*
3. *A UK registered charity which promotes the circular economy.*
4. *The Statistics Portal for Market Data.*

Largest Waste Producers Worldwide

There are two main ways to look at waste production: total amount and per capita. Each analysis reveals different aspects of the issue.

Largest Waste Producers of Municipal Solid Waste (MSW)[5] , by Total Amount Worldwide

The below chart informed by Statista represents that:

> *"The United States and China are the largest producers of municipal waste in the world, generating over 200 million metric tonnes, as of the latest data available. In contrast, municipal waste generation in the UK stood at around 31 million tonnes in 2020"*
> (Alves, 2023).

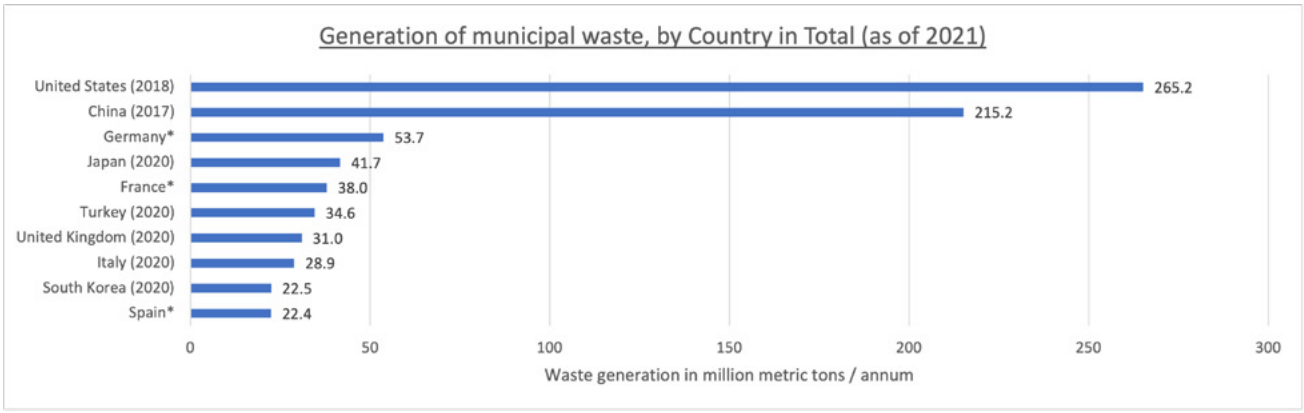

Figure 1: Statista, Generation of MSW worldwide as of 2021, by select country.

5. *The composition of municipal solid waste varies greatly from municipality to municipality, and it changes significantly with time. Most definitions of municipal solid waste do not include industrial wastes, agricultural wastes, medical waste, radioactive waste or sewage sludge.*

Largest Waste Producers of MSW per Capita Worldwide

The below chart informed by Statista represents that:

> *"In 2021, per capita municipal waste generation in Norway was estimated at nearly 800 kilograms. This made the Nordic country one of the largest per capita municipal waste producers worldwide. Most recently in 2018, municipal waste generation in the United States averaged 811.5 kilograms per capita"* (Alves, 2023).

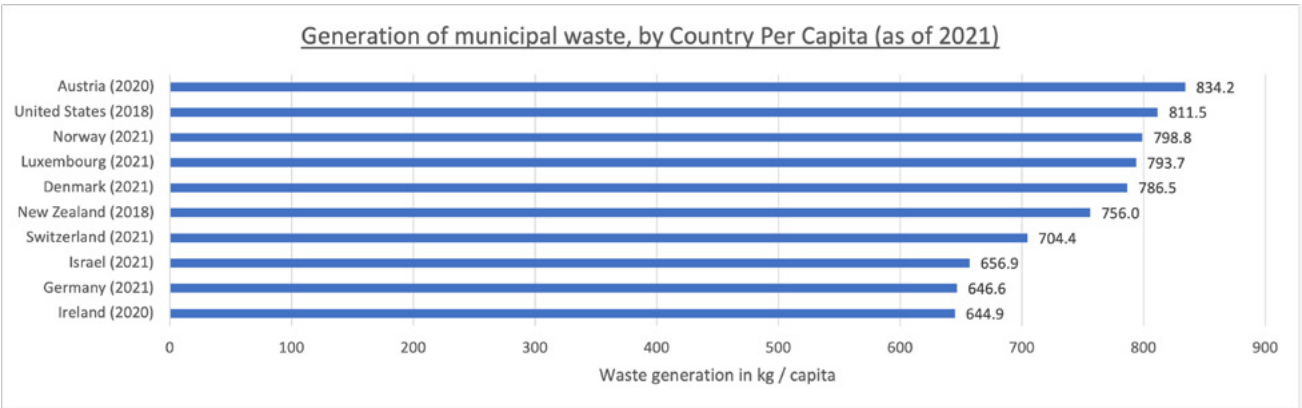

Figure 2: Statista, Per capita generation of municipal waste worldwide as of 2021, by select country.

The core observation from 2018 to present is that high-income countries generate more waste on both, a total amount produced and on a per capita basis. By the numbers, high-income countries generate approximately 34% of global MSW but only represent approximately 16% of the global population (Kaza et al., 2018).

It is worth mentioning that high-income countries, like some of those in the graphs above, have well established waste management facilities and strategies. Although this subject is not covered in this paper, it leaves room for further necessary research.

Middle East Region

The region produces approximately 150 million tonnes of municipal solid waste (MSW) annually, with Saudi Arabia and the UAE being the largest contributors. Individuals in the Middle East generate more waste than the global average (Maheshwari, 2022).

Focus on the United Arab Emirates (UAE)

The UAE exceeds 21 million tonnes of MSW annually. The Ministry of Climate Change and Environment (MOCCAE) in the UAE states that per capita municipal solid waste generation reached about 2.1 kg/day before falling to around 1.8 kg/day, as a result of the enormous efforts made by the relevant authorities in the UAE. Converting this to kilograms per year (assuming 365 days), gives us a range of 657 – 667 kg/year as a result this would position the UAE in the list of the highest MSW producers per capita globally.

While not explicitly listed in the above graphs, the UAE's per capita waste generation is undoubtedly significant and comparable to some of the worst offender countries measured. Depending on the specific study, methodology, year, and or report used to compile the top list, the data for the UAE might not have been readily available or included in the analyses at that time. In addition, some reports might target a specific regional focus or choose countries with well-established and consistent data records and exclude rapidly developing economies.

Overall, the UAE's waste generation per capita is comparable to other high-income countries and requires attention and urgent action for sustainable waste management practices.

1.3. Initiatives on Waste Management and key stakeholders in the waste management industry in the UAE

Governmental Initiatives

Among this important global movement, the UAE has eagerly embraced sustainable initiatives, seeking to align the country's trajectory and execution with global sustainability best practices.

Local authorities in the UAE, such as the Dubai Municipality and Tadweer[6], have taken proactive measures to promote sustainable practices as a testament to the UAE's commitment to a more sustainable future.

In 2019, Abu Dhabi Waste Management Centre, Tadweer, signed a Memorandum of Understanding with the Green Business Certification Inc. (GBCI)[7], to collaborate in the field of zero waste management. This Memorandum will support Tadweer's efforts to minimise the waste production of the UAE by pursuing zero waste goals as a strategy for full diversion of waste from non-recovery solutions, while creating a responsible and sustainable society that adopts and implements zero waste lifestyle choices.

In 2021, the UAE took significant steps towards adopting a circular economy model, recognising its potential for economic growth, environmental sustainability, and resource security. The **'UAE Circular Economy Policy'**[8] outlines a strategic framework to implement the circular economy across various sectors. It prioritises infrastructure, sustainable manufacturing, sustainable transportation, sustainable food production and consumption, and promotes innovation and collaboration.

6. Abu Dhabi Waste Management Centre.

7. An American organisation that provides third-party credentialing and verification for several rating systems relating to the built environment.

8. The policy is a framework for identifying the priorities in terms of circular economy. Priorities include infrastructure, sustainable transportation, sustainable manufacturing, sustainable food production and consumption.

The chart below illustrates the primary sectors where circular economy principles are implemented, delineating the four priority sectors, and identifying eight overarching priorities.

Figure 3: Source – UAE Circular Economy Policy

> *"The UAE government is committed to achieving more Sustainable Consumption and Production (SCP) and meeting SDG 12 by moving away from a degenerative linear (take, make, use, dispose) economy"* (Government of Dubai, 2021).

This commitment to SCP and the Circular Economy plays an important role in the UAE's Vision and the UAE's Green Agenda 2030.

COP28

In addition to that, a historic moment took place on the 6th of December 2023 in Dubai at COP28 where the MOCCAE and Tadweer officially launched the 'Waste to Zero'[10] initiative. This global endeavour, unveiled during COP28[9], aims to champion efforts in decarbonising Waste Management and establishing a circular economy platform, further solidifying the UAE's commitment to sustainability. The UAE government has also launched several initiatives supporting zero waste goals, including the Waste to Wealth Strategy[11]. These initiatives create a supportive environment for companies pursuing zero waste ambitions.

9. The 2023 United Nations Climate Change Conference or Conference of the Parties of the UNFCCC, more commonly known as COP28.

10. The 'Waste to Zero' initiative will host a series of discussions, workshops, and awareness programmes worldwide, focusing on sustainable resource management, circular economy objectives, and innovative waste management and carbon emission reduction technologies.

11. An ambitious national programme aiming to divert 75% of waste from landfills by 2025 through advanced recycling, composting, and waste-to-energy projects.

Key Stakeholders

The ambitious pursuit of Zero Waste in this rapidly growing region comes with its own unique set of challenges, particularly in supporting population growth while adapting and improving environmentally responsible waste management practices. The encountered challenges vary from infrastructure limitations to cultural shifts in consumer behaviour to regulatory frameworks that demand innovative solutions and collaborative actions.

Recognising the need for a structured approach and a circular economy, many corporations in the UAE are committing to implementing Zero Waste practices or turning to third-party certifications like TRUE. This certification, administered by the GBCI, provides a comprehensive framework for businesses to measure, improve, and certify their waste management performance. Corporates view TRUE certification as a strategic tool not only to align with international sustainability standards but also to demonstrate transparency and accountability to their stakeholders.

Zero Waste practices have been adopted across various sectors including but not limited to hospitality, manufacturing, commercial offices, retail centres and data centres in the UAE. Therefore, TRUE certification is seen as a tangible demonstration of their dedication to sustainable practices.

1.4. What is Zero Waste?

The definition of zero waste according to the Zero Waste International Alliance (ZWIA)[12] states:

> *"Zero Waste: The conservation of all resources by means of responsible production, consumption, reuse, and recovery of products, packaging, and materials without burning and with no discharges to land, water, or air that threaten the environment or human health"*
> (ZIWA, 2018).

The Zero Waste concept entails a holistic approach, emphasising multiple behavioural changes for the end user that encompass stages such as repair, redesign, rethink, refuse, repurpose, re-gift, resiliency, responsibility, relationship, and the well-known RRR principles of reduce, reuse, and recycle.

Why do we need Zero Waste? The urgency of embracing Zero Waste comes from the escalating environmental crises, including climate change, pollution, and resource depletion. These are all discussed and highlighted by international authorities, such as the United Nations (UN), the World Health Organisation (WHO), and environmental agencies.

12. An alliance working towards a world without waste through public education and practical application of Zero Waste.

2. Corporates' approach towards Zero Waste

Not long ago, the majority of people paid little attention to waste; it was often overlooked and was rather automatically referred to as an "out of sight, out of mind" paradigm. As long as trash bins were emptied, people did not care to question or think about where the waste ended up. However, this mindset has changed. There is now a global awareness that the handling of waste is crucial, and corporates are becoming more mindful of their waste generated and its final destination.

Over the past decade, numerous prominent corporations and brands have significantly advanced their sustainability efforts by aligning with the zero-waste movement. These strides involve eliminating manufacturing waste sent to landfills, with more than 90% diverted from both landfills and incinerators. This success is most notable among companies responsible for the manufacturing of well-known household items.

More recently, enterprises leading the Zero Waste movement are ranging from small businesses to large corporations and are actively engaged in efforts such as diverting manufacturing waste from landfills and empowering consumers with tools to reduce household waste. A few examples of the enterprises advocating zero waste are: Unilever, Procter & Gamble, Google, Subaru, Mars, etc. Together, these economic titans are leading the way towards achieving a zero-waste future.

As per USGBC[13], organisations committed to closing the loop on waste through zero waste ambitions, are moving beyond single facilities and committing to zero waste targets across their portfolios of assets by using TRUE certification to advance their net zero goals.

> *"Leading the charge are companies like Colgate-Palmolive and Mastercard. To meet their goals, these household names have turned to a new programme by TRUE, the comprehensive zero waste certification programme led by GBCI" (Plockova, 2023).*

Trends are changing, and waste isn't welcome anymore. Companies from many industries are diving headfirst into TRUE certification, proving or at least making strong efforts to demonstrate that Net Zero Waste might soon be the new way of doing business.

13. *Is a nonprofit organisation that supports the development of prosperous, healthy and resilient communities through the transformation of the built environment.*

2.1. Who is pursuing Zero Waste practices in the UAE?

Several companies are actively pursuing Zero Waste practices and implementing strategies associated with the TRUE certification criteria. Some examples include Unilever (MENA) which implements eco-design principles, reduces packaging waste, and participates in recycling programmes to minimise their environmental footprint; Majid Al Futtaim which launched a comprehensive sustainability strategy focused on reducing waste across their diverse businesses, including shopping malls, cinemas, and entertainment centres; Emirates Airlines which is working to reduce inflight waste through sustainable packaging, food waste reduction programmes, and exploring biofuel alternatives; DP World (Jebel Ali Port) which is investing in sustainable technologies and infrastructure to minimise waste generation and pollution within their ports and logistics operations.

Several waste management companies like Tadweer (Abu Dhabi), Bee'ah (Sharjah), and Dulsco (Dubai) are leading the charge by showcasing significant efforts in waste reduction, recycling, and resource recovery, putting them on a potential path towards Zero Waste practices which are derived from the TRUE standard.

While several companies are actively pursuing waste reduction and resource recovery which are aligned with Zero Waste principles, achieving and maintaining this demanding TRUE certification presents several challenges, which we explore in the next section of this paper, followed by potential solutions.

It is important to note that as TRUE certification is still relatively new and evolving, there isn't a publicly available or a comprehensive list of companies in the UAE pursuing this certification (yet).

Similarly, no information is currently available on companies in the UAE that have obtained the TRUE certification. Achieving TRUE certification can take time, often requiring a phased approach with initial pre-certification followed by full certification.

3. Zero Waste best practices

Zero waste best practices encompass the principles of reduce, reuse, recycle, recovery, and disposal, aiming to minimise waste generation and environmental impact. By prioritising waste prevention, material reuse, efficient recycling processes, resource recovery, and responsible disposal methods, zero waste initiatives strive to create a sustainable and circular economy.

Figure 4: Responsible Waste Management Hierarchy by SG

In addition to the core principles of zero waste (reduce, reuse, recycle, recovery, and disposal), TRUE certification incorporates additional practices to further promote sustainability and waste reduction. These practices include:

1. **Source Separation:** Implementing effective systems to separate different types of waste at the source, facilitating easier recycling and diversion from landfills.
2. **Composting:** Encouraging the composting of organic waste materials to divert them from landfills and create valuable soil amendments.
3. **Material Reclamation:** Prioritising the reclamation and reuse of materials from discarded items, promoting a circular economy, and reducing the need for raw resources.
4. **Sustainable Purchasing:** Adopting procurement practices that prioritise environmentally friendly and reusable products, reducing waste generation from the outset.
5. **Education and Training:** Providing education and training programmes to employees and stakeholders to raise awareness about waste reduction strategies and promote participation in waste management initiatives.

By incorporating these additional best practices, TRUE certification goes beyond zero waste principles to promote comprehensive resource efficiency and environmental stewardship within organisations and communities.

Addressing the various challenges of Zero Waste and meeting TRUE certification in the UAE requires a combination of innovative approaches and viable solutions. Some of these solutions are listed below:

- **Policy Support:** Align local regulations and policies with Zero Waste and TRUE principles, to create an environment for mass adoption. This includes incorporating TRUE principles into various policies, for example sustainability policies guiding everything from procurement practices to building designs. Even Human Resource (HR) policies should play a role, incentivizing employee engagement in waste reduction initiatives. By aligning regulations and policies with TRUE standards, we create an environment where sustainability isn't just an option, but the default setting.
- **Data Collection and Reporting:** Capturing and analysing accurate data about waste management is crucial for shaping policies and planning at local levels. By understanding the quantity and types of waste generated, authorities can choose appropriate management strategies and prepare for future needs. Transparent reporting enhances accountability and provides stakeholders with valuable insights into the efficiency of waste management measures.
- **Education and Awareness Campaigns:** Extensive awareness efforts are vital for promoting the adoption of Zero Waste and TRUE practices. Engaging videos and interactive workshops can illustrate the benefits of recycling and composting to diverse audiences. Empowering stakeholders with knowledge and opportunities for input fosters support for TRUE initiatives.
- **Financial Support and Incentives:** It could prove beneficial in the effort to promote TRUE standards by providing financial incentives and or support mechanisms to encourage businesses to invest in TRUE principles. For example, governments and organisations can offer financial assistance in the form of grants to businesses to encourage making the transition to TRUE practices. By offering this solution, we can encourage businesses to see TRUE not as a cost, but as an investment in a sustainable future. It's a win-win for the environment, the economy, and ultimately, all of us.
- **Design apps for waste reduction:** Develop engaging mobile apps and or reward systems that incentivize individuals, companies, and communities to participate in waste reduction and recycling initiatives.

4. Identifying Challenges and Solutions of Zero Waste

4.1. Assessment Methodology

The methodology used in this white paper involves a combination of qualitative and quantitative methods. Some of the challenges associated with achieving Zero Waste and TRUE certification in the UAE have been meticulously examined and assessed through (1) in-person assessments of the projects' sites. This qualitative method involves visiting the project site to observe and evaluate various aspects such as operations and environmental conditions. This method allows us to gather firsthand information, and impressions that may not be captured through other data collection methods. (2) The quantitative method was applied during waste auditing. This quantitative method provides measurable data on the types and amounts of waste generated, which is essential for assessing current waste management practices and identifying areas for improvement. (3) A Gap Analysis was carried out which involved comparing current waste management practices at the project site against TRUE rating systems and Zero Waste best practices. The gap analysis helps identify discrepancies between current practices and desired goals, which informs the development of strategies and recommendations for improvement. (4) A review of existing policies was undertaken.

This method involves reviewing and analysing existing policies, regulations and standards related to waste management at the project site. This methodology has been carried out for two commercial organisations in Dubai and Abu Dhabi (they have requested to remain confidential). Overall, the combination of in-person assessments, waste audits, gap analysis, and policy reviews allow us (AESG) as researchers and consultants to gather comprehensive data from multiple sources and perspectives. This mixed-method approach enables a thorough analysis of waste management practices, challenges, and opportunities, as well as the formulation of evidence-based recommendations for improvement.

4.2. Zero Waste and TRUE – Challenges & Recommendations

TECHNICAL

- **Limited Infrastructure:** While there is rapidly developing waste management infrastructure in the UAE, there still lacks sufficient facilities for various advanced recovery and processing technologies required for Zero Waste and TRUE certification. A few examples of infrastructure investments that are still necessary to be introduced to this market include large-scale organic waste composting facilities and specialised plastic recycling plants.
- **Technology Adoption:** Implementing innovative waste management technologies (e.g., anaerobic digestion, AI-powered sorting systems, etc.) requires significant capital investment, overcoming initial difficulties in operational integration and expertise.
- **Data Collection and Monitoring:** Accurately measuring and monitoring waste streams throughout the entire lifecycle, from generation to disposal, requiring robust data management systems and skilled personnel for implementation.

ECONOMIC AND BUSINESS

- **Costs and Investments:** Comprehensive recycling and composting often have higher upfront costs compared to traditional landfill and incineration methods. Finding revenue streams and cost-recovery mechanisms to make these practices economically viable can be challenging and require cost-efficient solutions. Government subsidies could be a potential example to make these upfront sustainable investments more attractive and less expensive.
- **Market Demand:** Creating a robust market for recycled materials and compost is crucial for the success of Zero Waste, Circular Economy, and TRUE certification. Limited demand in specific sectors can discourage investment and slow down waste diversion efforts.
- **Consumer Behaviour:** Shifting consumer behaviour towards responsible waste disposal and resource conservation requires extensive awareness campaigns and educational programmes to overcome ingrained habits, current cultural norms, and the status quo.

POLICY AND REGULATORY

- **Lack of Standardisation:** Clear and consistent regulations and standards for waste management practices, labelling for recycled materials and product end-of-life responsibility are a few examples of crucial guidelines to help enable a seamless transition towards Zero Waste, TRUE and Circular Economy. Gaps in these areas can ultimately delay the progress. Ensuring that governmental regulations support, facilitate and progress the principles of Zero Waste and resource efficiency is crucial for success.

- **Enforcement and Transparency:** Implementing and enforcing stricter regulations on waste disposal, promoting, and maintaining transparency in waste management systems are essential to hold all stakeholders accountable and discourage practices that contradict and or prevent progress of the Zero Waste goals.

SOCIAL AND CULTURAL

- **Changing Mindsets:** Overcoming traditional perceptions of waste as disposal and fostering a "resource recovery" mindset amongst all governments, companies and individuals requires cultural shifts and promotion of the value of resource efficiency and circularity.
- **Workforce Availability:** Implementing and maintaining advanced waste management systems requires skilled personnel in various areas, potentially demanding upskilling or attracting specialised talent, which can be challenging in rapidly evolving and complex markets.
- **Awareness and Education:** Generating awareness and fostering behavioural changes among residents, businesses, industries, and governments is pivotal. Without a widespread understanding of the importance of waste reduction and recycling, achieving compliance with Zero Waste, TRUE standards and Circular Economy most likely will remain challenging.

In addition to the above categories, specifically the IT industry faces additional challenges when it comes to Zero Waste and TRUE practices in the UAE. For example:

- **Specialised Waste Streams:** Data centres produce unique waste, including electronic waste (e-waste) and specialised equipment (that is near impossible to recycle). Managing these streams effectively to meet TRUE Waste standards might require specialised recycling facilities and disposal methods; details such as this still need to be finalized, communicated effectively and then implemented.
- **Technological Obsolescence:** Rapid technological advancements often lead to frequent upgrades and replacements of ‘out of date’ equipment in data centres and technology companies. Disposing of outdated technology hardware and infrastructure while adhering to Zero Waste and TRUE principles poses significant challenges in ensuring responsible disposal and recycling.
- **Data Security Concerns:** The destruction and or recycling of data storage devices carries inherent security risks. Balancing data security requirements with responsible disposal or repurposing of devices remains a challenge.
- **Lack of Local Recycling Infrastructure:** Specialised recycling facilities for electronic components are limited in the UAE. Dependence on external recycling facilities and or shipping waste abroad, outside of the UAE, for processing would negatively affect the attempted achievement of TRUE goals.
- **Regulatory Compliance:** Ensuring that local regulations align with TRUE Waste standards for electronic waste disposal and recycling might require amendments or specific exemptions to accommodate the unique nature of data centre waste.

It should be highlighted that:

> *"While plastic waste has garnered huge attention in recent years due to its impacts on marine life, electronic waste (E-waste) is the fastest growing waste stream worldwide. Global E-waste generation stood at around 50 million metric tonnes in 2019 and was forecast to grow by around 40 percent in just one decade, to reach some 75 million tonnes by 2030. Much like other waste forms, e-waste generation per capita is higher in wealthier nations, with countries like Norway, the UK, and Switzerland generating more than 20 kilograms per person per year. While E-waste is a fast-growing stream, food is still the most common form of waste, accounting for almost 50 percent of global MSW generation"* (Alves, 2023).

Is Zero Waste Failing?

It's not entirely accurate to say that Zero Waste is failing altogether. While achieving Zero Waste on a large scale remains a significant challenge, it's still a necessary and viable goal and numerous successes have been achieved. To date, many companies, cities, countries, and regions have achieved impressive waste diversion rates through investments in infrastructure, awareness campaigns, and policy changes. Technological advancements, innovation in recycling, composting, and waste-to-energy technologies offer promising solutions for the future. Numerous communities and organisations have achieved near-zero waste goals, demonstrating the potential for wider adoption and implementation.

Therefore, while achieving absolute zero waste on a global scale is still a considerable challenge, it's not a failed nor failing movement. By acknowledging the obstacles, learning from existing successes, and continuously innovating, we can steadily move towards a more sustainable future with minimised waste generation and maximised resource recovery.

Conclusion

In conclusion, this paper emphasises the importance of addressing waste generation, environmental degradation, and resource conservation. The statistics presented underscore the magnitude of the issue, with different regions facing different levels of waste generation, posing a significant threat to the environment. The United Arab Emirates has emerged as an active participant and thought leader in the global movement towards sustainable waste management. Local authorities and initiatives, such as Tadweer, the 'Waste to Zero' initiative, and the UAE government's strategic policy 'UAE Circular Economy Policy', showcase the nation's commitment to align with international sustainability best-in-class practices.

The unique challenges faced by the UAE in pursuing Zero Waste Goals have been highlighted: from infrastructure limitations to cultural shifts and regulatory frameworks. It identifies the TRUE certification as a valuable tool for corporations in the UAE, and the challenges associated with the Zero Waste and TRUE certification. The examination of these challenges has been carried out through site visits, waste audits, and gap analyses which provide a comprehensive understanding of the obstacles faced by organisations striving for TRUE certification.

Lastly, this paper proposes solutions tailored to address the challenges specific to the UAE. These include policy support, data collection and reporting transparency, education and awareness campaigns, financial support, and incentives. Innovative approaches such as gamification for waste reduction and financial incentives are suggested to actively engage individuals and corporations.

Furthermore, this white paper provides a comprehensive overview of the waste management landscape, articulates the challenges faced in pursuing Zero Waste Goals in the UAE, and offers strategic solutions to accelerate progress towards a more sustainable and responsible waste management future.

Zero Waste is more of a guiding principle and an ambitious goal rather than a single solution. The journey towards Zero waste and a Circular Economy is crucial, even if complete elimination of waste remains unlikely.

The intention of this paper is to investigate and analyse the waste challenges when implementing Zero Waste practices and TRUE certification. A further study should examine the data of waste production, segregation, and disposal by industry, in both the UAE and globally.

How AESG can help

AESG is an international consultancy, engineering and advisory firm with regional headquarters in London, Dubai, Riyadh, Singapore and South Africa. We are actively engaged in projects spanning across Europe, Asia, and the Middle East. We have one of the largest dedicated teams with decades of cumulative experience in sustainable design, sustainable engineering, fire and life safety, façade engineering, commissioning, digital delivery, waste management, environmental consultancy, strategy and advisory, acoustics, cost management and carbon management.

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Elena is a Sustainability Consultant at AESG. With nine years of professional experience in the UAE, Elena has established herself as an experienced Sustainability Consultant specialising in the built environment. Her extensive portfolio includes successful project deliveries from design stages through construction across the GCC region.

Her skillset and experience dwell in Sustainability Consultancy, Project Management, Sustainable Architecture, Green Building Standards: LEED, MOSTADAM, WELL, ESTIDAMA, TRUE, Al Safat, Sustainable Policy, Workplace Strategy, Business Development, and cultivating strategic partnerships.

Leveraging her comprehensive understanding of the construction industry and the built environment, Elena adeptly bridges the gap between design and sustainability requirements. Her expertise enables clients to achieve their objectives efficiently and cost-effectively.

For further information relating to specialist consultancy engineering services, feel free to contact us directly via info@aesg.com

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