DIPLOMA THESIS

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MUNICIPAL SOLID WASTE INCINERATION AS A SUSTAINABLE WAY OF ENGERGY PRODUCTION

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SUMMARY

This thesis investigated municipal solid waste (MSW) incineration within the context of sustainable energy production, focusing on the EU's waste management practices and drawing comparisons with China's approach. The research revealed critical insights into waste classification systems, technological innovations in waste incineration, and public attitudes towards waste-to-energy facilities.

A literature review provided the foundation for understanding the EU's and China's waste treatment infrastructures and policies, highlighting the advancements in sustainable MSW treatment technologies and the role of incineration in the circular economy. This thesis shows the potential of municipal solid waste (MSW) incineration as a sustainable energy source, with a focus on Austria's practices and its role in addressing the current European energy crisis. The study investigates the technological innovations in MSW incineration processes and explores the success of Vienna's circular economy through its waste management systems, particularly the renowned Spittelau incinerator. The research identifies the factors impacting public perception and acceptance of waste-to-energy (WtE) facilities within the European Union.

A comprehensive literature review provides the backbone for this thesis, examining EU waste classification, treatment technologies, and the integration of solid waste recovery into the circular economy.

Key findings include a recognition of the EU's stringent waste management practices and its focus on circular economy principles, as well as the challenges faced under the current energy crisis.

The thesis utilized a comprehensive quantitative and qualitative methodology, resulting in a robust analysis of the data. Correlations between public perception and the adoption of MSW incineration for energy recovery were explored, with results emphasizing the importance of enhancing public understanding and trust in sustainable waste management. An extensive questionnaire survey gauges European attitudes towards MSW incineration and circular economy concepts, contributing to the analysis of current challenges and potential solutions for optimizing energy supply amidst stringent environmental policies. The findings suggest that Austria's proactive stance on environmental policy and its innovative waste management techniques play a

critical role in its energy landscape. This study contributes to the broader discourse on sustainable urban construction, energy crisis response, and the pivotal role of MSW incineration in future energy strategies.

The research contributes to the body of knowledge on waste-to-energy processes and offers practical recommendations for policymakers and stakeholders to foster sustainable urban construction and waste management practices.