

Green Technology and Sustainable Innovation

Katarina Horvat*

Department of Sustainable Technology and Innovation, University of Zagreb, Croatia,

***Corresponding author:** Katarina Horvat. Department of Sustainable Technology and Innovation, University of Zagreb, Croatia,

Email: katarina.horvat.env@greeninnovation.hr

Received: nov 04, 2025; **Accepted:** nov 18, 2025; **Published:** nov 27, 2025

Abstract

Green technology and sustainable innovation play a critical role in addressing environmental challenges while supporting economic growth. Effective waste disposal and management practices are essential for minimizing environmental impacts and promoting sustainable industrial development. This article examines the sources of industrial solid waste, associated environmental impacts, and various disposal methods used for managing industrial waste.

Keywords: Green technology, sustainable innovation, clean energy, eco-friendly solutions, low-carbon economy

Introduction

Environmental degradation and climate change have intensified the need for technological solutions that minimize environmental impacts. Green technology refers to the application of innovative technologies that reduce pollution, conserve resources, and promote environmental sustainability [1]. These technologies are essential for decoupling economic growth from environmental degradation. Green technologies span various sectors, including renewable energy, energy efficiency, waste management, and sustainable transportation [2]. These practices enhance soil health, improve water-use efficiency, and reduce vulnerability to climate extremes. By maintaining soil organic matter and reducing erosion, CSA practices contribute to long-term agricultural sustainability [3]. In addition

Citation: Katarina Horvat, Green Technology and Sustainable Innovation. Environ Sci Ind J. 21(4):294.

to adaptation benefits, climate-smart agriculture can reduce greenhouse gas emissions through improved nutrient management, reduced tillage, and efficient livestock practices [4]. Lower emissions contribute to climate change mitigation while improving farm efficiency. Adoption of CSA practices is influenced by factors such as access to knowledge, financial resources, and supportive policies. Climate-smart agriculture also offers socio-economic benefits by increasing farm incomes, enhancing food security, and strengthening rural resilience [5]. However, scaling up CSA requires capacity building, investment, and institutional support. Integrating climate-smart agriculture into national agricultural policies is essential for addressing climate risks and promoting sustainable development.

Conclusion

Green technology and sustainable innovation are key drivers of environmental sustainability and economic transformation. By promoting resource efficiency and reducing environmental impacts, green technologies support the transition to a low-carbon economy. Adopting sustainable disposal methods, promoting waste reduction, and strengthening regulatory enforcement can significantly reduce environmental impacts. Effective industrial waste management is essential for achieving sustainable development and environmental protection.

REFERENCES

1. Kaikkonen L, Parviainen T, Rahikainen M, Uusitalo L, Lehikoinen A. Bayesian networks in environmental risk assessment: A review. *Integrated environmental assessment and management*. 2020 Aug 1;17(1):62-78.
2. Scholz S, Fischer S, Gündel U, Küster E, Luckenbach T, Voelker D. The zebrafish embryo model in environmental risk assessment—applications beyond acute toxicity testing. *Environmental science and pollution research*. 2008 Jul;15(5):394-404.
3. Hommen U, Baveco JM, Galic N, van den Brink PJ. Potential application of ecological models in the European environmental risk assessment of chemicals I: Review of protection goals in EU directives and regulations. *Integrated environmental assessment and management*. 2010 Jul 1;6(3):325-37.
4. Covello VT, Merkhoher MW. *Risk assessment methods: approaches for assessing health and environmental risks*. Springer Science & Business Media; 2013 Jun 29.
5. Jones RN. An environmental risk assessment/management framework for climate change impact assessments. *Natural hazards*. 2001 Mar;23(2):197-230.