REMEDIATION PROCESS IN LANDFILL IN ARCTIC REGION - A CASE OF CIRCULAR ECONOMY

Sadhan Kumar Ghosh[1,*], Tatiana S. Smirnova[2,3], Vladimir A. Maryev[4], Dineshkumar M[5]

[1]Sustainable Department & Circular Economy Research Centre, ISWMAW, Kolkata,
[2]Federal State Autonomous Body Research Institute "Environmental Industrial Policy Centre", Moscow region, Russian Federation
[3]Gubkin Russian State University of Oil and Gas (National Research University), Moscow region, Russian Federation
[4]Mendeleev University of Chemical Technology of Russia, Moscow region, Russian Federation
[5]Department of Mechanical Engineering, Jadavpur University, India

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ABSTRACT

The Arctic region is a vast and inhospitable environment that presents significant challenges for waste management. Spanning 27 million Sq.km and shared by eight nations, the region has limited infrastructure and only 11% of waste has been treated properly. The high cost of waste removal in the Arctic, due to logistical and technological constraints, makes the challenge of safe waste management even greater insisting on the need for elaborate research in extracting such resources. Concerning those, this study was conducted to fill this gap by investigating the feasibility of extracting secondary resources from two specific sites: an MSW landfill in Dudinka, Russia and an industrial waste deposition site located in the permafrost zone in the Krasnoyarsk region. The research will evaluate the environmental and ecosystem impacts of these landfills and examine various technical and economic approaches for reclaiming resources from them. The findings of this study will provide valuable insights into the viability of extracting secondary resources from waste in the Arctic and inform future waste management strategies in the region. By applying the principles of the circular economy, that identifies that the best approach for addressing the waste management problem in Dudinka is the creation of an eco-industrial park for deep processing and manufacturing of products from secondary resources reducing the environmental impact of waste disposal and promote sustainable resource utilization in the permafrost regions.

Keywords: Arctic waste management, circular economy, resource recovery, landfill remediation, logistics, environmental impact.

* *Corresponding author: Sadhan Kumar Ghosh, email: sadhankghosh9@gmail.com, ISWMAW, Kolkata, India*