Project | Sustainability Impact Analysis for Intel

Intel Device Repurposing Sustainability Report

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Title: Optimizing Environmental and Cost Impact of Intel's

Global Device Repurposing Program

Introduction:

As global demand for electronics surges, leading technology firms face growing pressure to reduce e-waste and carbon emissions. Intel has committed to tackling this challenge by expanding its global device repurposing program, an initiative designed to extend the lifespan of laptops and desktops while lowering environmental and financial costs.

This project evaluates the effectiveness of Intel's 2024 repurposing strategy across regions and device types. Using structured SQL analysis, I identified patterns in CO_2 savings, energy efficiency, and device utilization, and translated those insights into practical, data driven recommendations.

The Goal: Help Intel optimize sustainability outcomes while ensuring cost efficiency and

long term scalability.

Note: *This dataset was created in collaboration with Intel's Sustainability Team and The Global Career Accelerator. While it reflects real-world structures and goals from Intel's sustainability initiatives, the data itself has been simulated for educational purposes.*

Project Objectives:

This analysis focuses on evaluating the environmental impact of Intel's 2024 device repurposing initiative using structured SQL queries and data driven insights. The primary objectives were to:

- Quantify the number of devices repurposed and categorize them by age, type, and region
- Measure CO_2 savings and energy reduction across device types and regions
- Identify trends in device lifecycle efficiency and sustainability trade-offs
- Recommend strategies to increase repurposing effectiveness and long-term impact

The analysis also aimed to align with Intel's broader sustainability strategy and UN Sustainable Development Goal 12 by optimizing the balance between ecological benefit and operational cost.

Data Set Description:

This analysis draws from two structured datasets simulating Intel's real-world device repurposing strategy:

- `device_data` includes metadata for each repurposed device (e.g., type, model year).
- `impact_data` contains sustainability metrics per device, such as energy savings, carbon emissions avoided, recycling rates, and geographic deployment.

The datasets were joined via a shared `device_id` to evaluate environmental performance across device types, usage purposes, and global regions.

- ***To explore the full technical breakdown, access the SQL notebook in a .PDF or .ipynb file.***

Final SQL Sustainability Report (PDF)

SQL Code & Analysis Notebook (.ipynb)

** See the full SQL breakdown and analysis linked above for technical details. For questions or collaboration, feel free to connect with me on LinkedIn.*

Linkedin Profile (https://www.linkedin.com/in/jtpriest)

Conclusion:

Maximizing Sustainability Through Targeted Repurposing

This analysis reveals the measurable environmental impact of Intel's global device repurposing initiative. Key insights include:

- Older devices yield the highest energy and CO_2 savings, making them the most impactful targets for repurposing efforts.
- Laptops consistently outperform desktops in sustainability metrics across all regions.
- Asia, with its higher carbon intensity, delivers the most substantial emissions reductions per device repurposed.

These findings suggest a clear, data-backed strategy for Intel: prioritize the repurposing of older laptops in high-emission regions to maximize ecological benefits. By aligning repurposing priorities with device age, type, and carbon context, Intel can more effectively reduce its environmental footprint while advancing its global sustainability goals.

- *Future analyses could incorporate real-time energy grids or cost savings to further optimize repurposing decisions. Stakeholder input would also refine deployment strategies.*

** This project was completed independently as part of a SQL data analysis program in collaboration with Intel.*