Scenario 1. The Journey of a Smartphone

The journey of a smartphone begins with the extraction of raw materials, including rare minerals such as lithium, cobalt, and gold, used in the device's production. Mining these materials often takes place in countries with weak environmental and human rights regulations. The extraction processes can lead to habitat destruction, pollution of water sources, and unsafe working conditions for local communities, which are part of the social challenges of the smartphone's lifecycle.

Once extracted, these materials are transported to factories for assembly. The manufacturing process is energy-intensive, requiring significant amounts of electricity, which often comes from non-renewable sources, contributing to greenhouse gas emissions. These emissions further exacerbate climate change.

Smartphones are then packaged, transported, and sold to consumers. This distribution stage adds to the carbon footprint through transportation emissions. Once the smartphones reach the hands of consumers, they begin their active usage phase, during which the environmental impact continues, primarily due to the device's energy consumption and the disposal of the phone at the end of its life.

When a smartphone reaches the end of its useful life, many are disposed of improperly, ending up in landfills or incinerated. This process releases harmful chemicals and toxins, like lead and mercury, which can contaminate soil and water, harming ecosystems and public health.

The lifecycle of a smartphone is a vivid example of the environmental costs of modern consumer products, underlining the urgency for sustainable practices in production, consumption, and disposal.

Instruction for Utilizing the Case Study:

In this case study, students will scan the provided QR code to engage in an interactive **Yes/No** quiz about the smartphone's lifecycle. They'll answer questions about its environmental and social impacts.

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Case Study 1: The Journey of a Smartphone

Quiz: The Smartphone Lifecycle

In this interactive quiz, you will answer **Yes** ✓or **No X** to a series of questions about the environmental and social impacts of the smartphone's lifecycle.

Does mining for materials like lithium and cobalt have an environmental impact?

Do smartphone factories contribute to climate change due to their energy usage?

Can recycling smartphones reduce the need for new mining and lower environmental impact?

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Information Sheet 1: The Journey of a Smartphone

This information sheet explores the environmental and social impacts at various stages of a smartphone's lifecycle, providing insights into the key issues that arise during production, usage, and disposal. After each question, you'll find feedback on the topic, helping you understand the broader implications.

Question	Feedback
Does mining for materials like lithium and cobalt have an environmental impact?	**Yes.** Mining for materials such as lithium, cobalt, and rare earth metals has significant environmental and social impacts. The extraction of these materials often leads to habitat destruction, soil erosion, and water contamination. In some cases, mining can result in severe pollution of local water sources, affecting ecosystems and nearby communities. Additionally, unethical labor practices, including child labor and poor working conditions, have been reported in mining areas. These issues emphasize the need for responsible sourcing and more sustainable mining practices.
Do smartphone factories contribute to climate change due to their energy usage?	**Yes.** Smartphone factories contribute to climate change due to the energy-intensive processes involved in manufacturing. Many factories rely on non-renewable energy sources such as coal and natural gas, which release greenhouse gases like carbon dioxide (CO2) into the atmosphere. This contributes to global warming and air pollution. Transitioning to renewable energy sources and implementing energy-efficient production methods could help reduce the carbon footprint of smartphone manufacturing.
Can recycling smartphones reduce the need for new mining and lower environmental impact?	**No.** While recycling smartphones can help recover valuable metals and reduce some e-waste, it does not fully eliminate the need for new mining. The recycling process can be inefficient, and the demand for certain rare minerals may still require mining activities. However, promoting more efficient recycling systems and reducing overall consumption can still lower the environmental impact over time.

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