



PROJECT 2 : Creation of Public Campaign on Environmental Impacts of Smartphones

Student Planning Sheet: Lesson 2

Design a Future Without Pollution or Waste

Name: _____

Date: _____

Directions: Alone or with a group, complete this worksheet using information found in Grand Challenge 3. Keep in mind that in nature, waste is a resource and reducing waste due to life-cycle design rather than a linear model, when developing your public campaign on environmental impacts of Smartphones.

OVERVIEW

What would the future look like if all waste was repurposed? How could this be accomplished? How does the increase of the earth’s population impact pollution and waste? In the Environmental Engineering for the 21st Century study, Grand Challenge 3 explores ways to “Design a Future Without Pollution or Waste”.

- 1. In nature, waste is a resource. A pond or lake ecosystem is an example of this. Research how a pond ecosystem works (or go back a few years – you most likely learned about this before) and identify the interactions of organisms with each other and with the system. How is waste a resource in this ecosystem?

- 2. Based on your research, how does the photo below [Box 3-2] differ from a natural system?



Box 3-2



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3. Examine the 'Take-Make-Dispose' model in pages 45-47 (be sure to read Box 3-1 and Box 3-2). Consider the following statement and create a list of issues concerning consumption and waste.

An analysis of five high-income countries found that $\frac{1}{2}$ to $\frac{3}{4}$ of annual resource inputs are returned to the environment as waste within a year.

Why is this happening and what are some consequences? Are specific groups affected by this model?

4. The U.S. recycles or composts 35% of municipal waste and less than 10% of plastics. Why are the percentages of recycling are low? What are the challenges? Make a list of challenges to recycling and categorize them below:

Challenge	Type of Challenge (Identify as social, economic, technical, policy, other)



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5. Reducing waste and pollution requires new approaches to design based on life-cycle thinking. This diagram represents the prevention of pollution and waste through improved design.

Read pages 48 – 52 to learn more about the life-cycle approach.

List some examples of how environmental impacts could be prevented by different approaches in each of the elements in the diagram Figure 3-3 on p. 49.

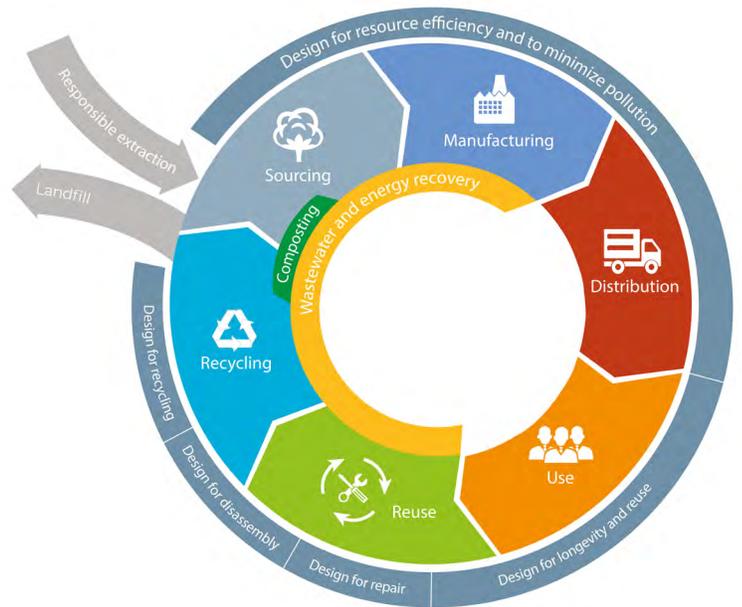


Figure 3-3 on p. 49. Sharply reducing waste and pollution requires new approaches to design based on life-cycle thinking.

Examples	Element