

Chapter 2

Which Is Most Sustainable? Using Everyday Objects to Examine Trade-Offs Among the “Three Pillars” of Sustainability

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Introduction

In everyday conversation, the term “sustainability” is used so frequently and in so many different contexts that, for some, it has lost precise meaning (Freyfogle 2006; Farley and Smith 2014). For others, the term signifies “environmental sustainability” and efforts to reduce the impact of human activities on the nonhuman world (see Caradonna 2014 for a useful discussion of the differences between sustainability and environmentalism). Though common, this view differs substantially from the word’s meaning when it first gained prominence in the 1980s, as world leaders tried to find a workable balance between concerns about environmental degradation and the ability of people to meet their material needs (WCED 1987). Because of its conceptual fuzziness, everyone should carefully think about what they mean when they say something is “sustainable.” In an introductory sustainability studies class, students should become familiar with the assertion that sustainability must incorporate the “three pillars” of social, economic, and environmental well-being. It is also important for them to understand the limitations of this conceptualization, particularly the challenges in reconciling tensions among the “three pillars” (Gibson 2006; Kuhlman and Farrington 2010; Morrison-Saunders and Pope 2013; also see Chaps. 23 and 24 in this volume).

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The primary goal of the learning activity described below is for students to gain a basic understanding of sustainability that includes social, economic, and environmental aspects. The secondary goal is for them to see the difficulty of operationalizing this concept, especially when weighing potential trade-offs among these three pillars. To achieve these goals, students rank common household objects by what they perceive to be the most to the least sustainable and discuss their assumptions behind these rankings. Because the activity requires no student preparation, it works well at the beginning of a course or sustainability lesson. The activity's small-group discussions also help students talk to each other, thus building a sense of collaboration and community. Although this activity has elements of an informal life cycle assessment and could introduce a formal life cycle analysis project, its main purpose is simply to introduce students to the concept and challenges of sustainability.

Learning Outcomes

After completing this activity, students should be able to:

- Explain the “three-pillar” concept of sustainability.
- Question their previous assumptions about the meaning of sustainability.
- Articulate their own analysis of why an object is or is not sustainable.
- Describe the difficulty of weighing potential trade-offs among social, environmental, and economic aspects of an object's sustainability.

Course Context

- Originally designed as a lab activity for an introductory engineering and general education course and has been used in political science courses with 10–30 students
- 40 min (or longer with extended analyses and discussion) in one class meeting
- Requires no student preparation or background knowledge
- Adaptable to courses of any size

Instructor Preparation and Materials

To implement this activity, the instructor should be prepared, in the context of example objects and in a short summary lecture, to (A) explain the “three-pillar” conception of sustainability and (B) discuss the challenge of trade-offs when conflicts or tensions arise among the three pillars (e.g., the benefits of affordable

necessities for low-income people may result in negative environmental consequences). Brief descriptions and illustrations of the “three-pillar” concept can be found on the US EPA website ([u.d.](#)) and in the introductory chapter of Caradonna (2014). Relevant perspectives are also provided by AtKisson (2013). See Kuhlman and Farrington (2010) for a useful critique of the “three-pillar” conception. Discussions of the challenges of trade-offs among the three pillars in the context of sustainable development can be found in Lele (1991) and Boström (2012)).

In the classroom, a writing surface such as a chalk or dry-erase board is needed to record student groups’ sustainability rankings of the objects and the reasons for those rankings. Before class, the instructor should gather six to eight household objects that are likely to elicit a wide variety of initial, perhaps obvious and conflicting environmental, social, and/or economic associations. For example, a cell phone may be seen as not environmentally sustainable because of the materials used to manufacture it and the growing problem of electronic waste. However, cell phones can be very valuable for improving banking and health care in developing countries, therefore contributing significantly to social and economic sustainability. Other objects and potential questions and trade-offs for each are suggested in Electronic Supplementary Material (ESM) A. Obtaining detailed information for each item is not necessary to successfully complete this activity. However, instructors who want to know as much as possible about their chosen objects can find information on many common household products from the Worldwatch Institute (2004), [www.goodguide.com](#), and [www.madehow.com](#). For more detailed assessments of a smaller number of objects, see Pearce (2009) and Leonard (2011).

Activities

To begin, the instructor shows the objects to the students. Without any other prompting or discussion, the instructor asks them to individually rank the objects from the most to the least sustainable and write down their rankings. (This takes about 5 min.) Starting the activity without opening remarks is effective because an important aspect of the exercise is for students to realize that others may have very different ideas as to what objects are more or less sustainable. However, a brief introduction can be added based on the instructor’s preference and course context. As they are determining their rankings, students can be invited to come up to examine the objects more closely. After everyone completes their ranking, the instructor places the students into groups of three or four and instructs them to share their rankings and discuss the reasons for their choices. Each group should then use a process of debate and discussion to create one collective ranking of the objects. (This should take about 10 min.)

Next, the instructor asks a group to volunteer their ranked list of objects, writes this on the board, and then asks the group to explain the rationale for their decisions. These reasons should be recorded on a different section of the board. Depending on

how long the instructor wishes to spend on the activity, the group can explain the rank of each object or just those ranked most and least sustainable. Additional groups should be invited to explain their rankings and rationales, in turn, while the instructor records them on the board. This can be done for all groups or for as many as time permits or are needed to provide sufficient information for the subsequent discussion. As more rankings and rationales are recorded, students will probably find that other groups had very different rankings from their own, accompanied by compelling reasons for them. This is likely to cause group explanations and class discussion to shift toward more nuanced analyses about what makes something sustainable. As potential debates emerge, the instructor can allow the discussion to proceed organically (allowing students to respond to points made by those in other groups) or guide it by pointing out notable talking points, as when one object is ranked as highly sustainable by one group and low by another. The instructor may also encourage groups to elaborate on their explanations by asking the class if anyone agrees or disagrees with a particular criterion offered by a group. After the first few groups have listed their sustainability rankings, the important element of the activity is not the rankings but the discussion of the criteria. If new criteria for sustainability emerge from the discussion, the instructor should add these to the board.

In the author's experience, the most common initial criterion students use to rank objects is their (presumed) environmental sustainability. They usually focus on whether the object is recyclable or reusable; some students will raise questions about the environmental impact of the production process. Even with this narrow view of sustainability, the divergent rankings quickly lead students to see that there are different ways of thinking about whether or not something is environmentally sustainable (e.g., is the spray bottle sustainable because it is reusable and mostly recyclable or is it not sustainable because it is made from plastic?). Depending on the class and students' knowledge, some groups might raise points that address economic and social sustainability. If these aspects do not emerge from the discussion, the instructor should ask questions to raise these issues (see ESM-A for examples). Either way, varied aspects of social and economic sustainability (and environmental as needed) should be emphasized to help challenge and deepen students' initial views. After discussing several examples of how the three aspects of sustainability (or lack thereof) and possible trade-offs among them can be seen in the objects, the instructor should present a short lecture on the "three-pillar" conception of sustainability and its importance, providing summary points and referencing the example objects and notes on the board as appropriate (see the references cited above for additional content and perspectives).

To conclude, the instructor can encourage students to offer additional examples of ways in which the objects may meet one or two of the pillars of sustainability but not another (e.g., natural play dough from the local, small business may be environmentally and economically sustainable, but it is also very expensive. Who can afford this play dough? Does its expense make it less socially sustainable?). There is no need to come to definitive answers about these potential trade-offs. The goal is simply to help students recognize that, as important as the "three-pillar" understanding

of sustainability is, it can be hard in practice to balance and find synthesis among the economic, social, and environmental aspects of sustainability.

Follow-Up Engagement

- These questions can be used to further examine the concept of sustainability:
 - What does it mean for something to be “sustainable?”
 - What information about an object would you need to be more confident in your assessment of its sustainability? Do you think that information would be hard to get? Why or why not?
 - What are the relationships among environmental, social, and economic sustainability? How do these objects show potential tensions among these three pillars? What should be done if the three pillars of sustainability are in conflict with each other? How can they be balanced? What should be prioritized and why? (Also see Chaps. 23 and 24.)
- Ask students to think of a brand-name food, personal care, or household item. Using the criteria and concepts that emerged from the activity, have them spend 10 min writing about the sustainability of that item. Their analysis should include what they already know about the item (e.g., it is certified organic) and what they do not know (e.g., the working conditions in the manufacturing plant). Then, ask students to look up the item at www.goodguide.com and write a two-page reflection on the provided information. The reflection can discuss whether their guesses about the item in their initial writing match the information from the website, the ways that the item is or is not sustainable, any trade-offs among the three pillars they see in the item, and how these trade-offs could be balanced to make the item more sustainable. (See Chap. 22, this volume, for a related activity.)
- The issues and questions raised in this activity can be revisited throughout a course. Asking students to reflect on the exercise is particularly useful when other examples of trade-offs between the pillars emerge from course material or when students revert to using the concept of sustainability to mean environmentalism. This exercise can also be revisited at the end of a course to encourage students to think about how their understanding of sustainability has changed.

Connections

- This activity provides concrete illustrations that can be referred to when discussing many environmental and sustainability topics, including economic growth and development, environmental policy, energy use, human health, consumerism

and advertising, and corporate social responsibility. To this end, instructors may want to keep a permanent record of the board notes so they can be revisited later.

- For courses that include a more in-depth and extended life cycle analysis or sustainability assessment, this activity establishes a useful foundation. For example, it can be used as a starting point for individual and group research projects in which students find data and reports pertaining to sustainability assessments of the objects used in this exercise (see the *International Journal of Lifecycle Assessment*, Klöpffer 2003, and Chaps. 3, 22, and 23 of this volume).
- This exercise can be referred to when systems thinking is discussed in a course in that it requires an examination of multiple multifaceted processes and the complexity of their interactions.

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References

- AtKisson A (2013) Sustainability is for everyone. ISIS Academy Publishing, Oxford
- Boström B (2012) A missing pillar? Challenges in theorizing and practicing social sustainability: introduction to the special issue. *Sustain Sci Pract Pol* 8:3–14
- Caradonna JL (2014) Sustainability: a history. Oxford University Press, Oxford
- Farley HM, Smith ZA (2014) Sustainability: if it's everything, is it nothing? Routledge, New York
- Freyfogle ET (2006) The sustainability sham. *Orion* 25:11
- Gibson RB (2006) Beyond the pillars: sustainability assessment as a framework for effective integration of social, economic and ecological considerations in significant decision-making. *J Environ Assess Pol Manag* 8:259–280
- Klöpffer W (2003) Life-cycle based methods for sustainable product development. *Int J Life Cycle Assess* 8:157–159
- Kuhlman T, Farrington J (2010) What is sustainability? *Sustainability* 2:3436–3448
- Lele SM (1991) Sustainable development: a critical review. *World Dev* 19:607–621
- Leonard A (2011) The story of stuff: the impact of overconsumption on the planet, our communities, and our health – and how we can make it better. Free Press, New York
- Morrison-Saunders A, Pope J (2013) Conceptualizing and managing trade-offs in sustainability assessment. *Environ Impact Assess Rev* 38:54–63
- Pearce F (2009) Confessions of an eco-sinner: tracking down the sources of my stuff. Beacon, Boston
- U.S. EPA. (u.d.) Sustainability primer. http://www.epa.gov/ncer/rfa/forms/sustainability_primer_v7.pdf. Accessed 12 Mar 2015
- WCED (1987) Our common future. Oxford University Press, Oxford
- Worldwatch Institute (2004) Good stuff? http://www.worldwatch.org/system/files/GoodStuff_Guide_0.pdf. Accessed 31 Mar 2015

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