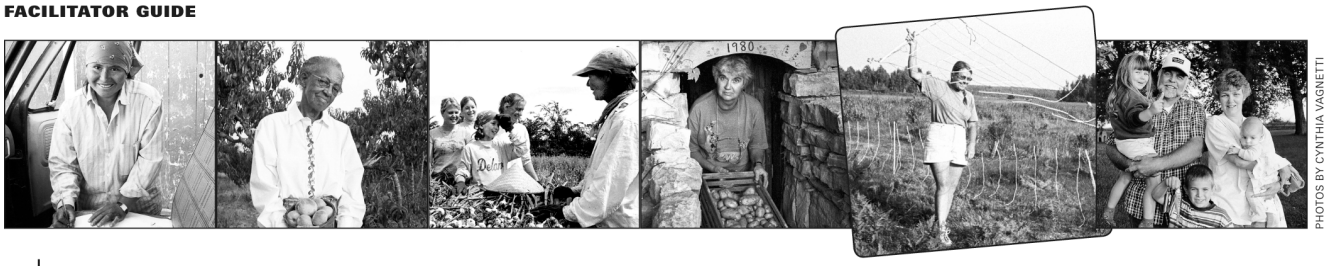
FACILITATOR GUIDE



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# 3 | THE FOOD FOOTPRINT

## Summary

Where does our food come from, and why does this matter? This session examines materials and energy used in food production as well as the wastes produced. As learners explore the environmental impacts of these processes, they will gain an understanding of the food "footprint." Hands-on activities and multiple diagrams will help clarify the science behind the concepts.

## Guiding Questions

- What steps do foods take from farm to table?
- What is a food "footprint"?
- What are the environmental impacts of growing, producing, transporting, processing and disposing of food? Are these impacts positive or negative?
- What are ways to reduce our personal food footprint?

## Big Ideas: As a result of this session, learners will understand that:

- All the elements of a food system—from production to disposal--requires natural materials, energy, and labor. These materials are called "inputs".
- Food production activities also produce **wastes**, such as carbon emissions and fertilizer run-off. All of these wastes are called **outputs**.
- Inputs and outputs have environmental impacts. Some impacts are positive and nourishing, such as food scraps that become compost, adding nutrients to the soil. But many impacts are negative, such as the carbon emissions created when fuels are used to fly in produce from other continents.
- Together, the negative environmental impacts are called a "footprint." The greater a food's negative environmental impact, the bigger its "footprint." Foods that require a lot of fossil fuels and produce polluting waste (rather than nourishing outputs) have a bigger footprint. The environment serves as the source of all inputs and materials, and the "sink" into which all wastes (outputs) go.
- Actions associated with harvesting inputs and disposing of outputs have environmental impacts, some positive, some negative. Examples:
    - Clearing land for food production can mean deforestation.
    - Actions associated with removing some inputs from the environment (such as drilling for oil or harvesting trees) have negative environment consequences.

- Burning fossil fuels creates outputs (emissions) that are accumulating in the atmosphere faster than can be absorbed by natural carbon sequestration systems. This creates negative environmental impacts.
- Some outputs (such food scraps) can be nourishing if they are re-used in ways that benefit the environment (i.e., if food scraps become compost).
- Foods that are highly processed, or that are grown and shipped from far away, tend to have larger footprints than unprocessed, locally produced foods.

## Sequence and timing

| Activity | Overview | Minutes |
|---|---|---|
| 1) Feeding yourself for a year | Learners design and map a farm that can support their family's food needs for a year. The task involves estimating the types and quantities of foods consumed, and the types (pasture, forest, etc.) of land and other materials needed to produce them. | 30 |
| 2) Inputs and Outputs: An introduction to the "food footprint" | A brief reading (and accompanying presentation in Powerpoint) introduces learners to the concepts of inputs and outputs. To connect the concept to previous learning, learners share and diagram some of the inputs and outputs of a food eaten at a recent meal. (This task was assigned at the end of Session 2, and is revisited here.) | 15 |
| 3) Do our choices matter? Comparing the footprints of three potatoes | Working in groups of three, learners read about one of three potatoes (local organic, French Fry, and one grown with traditional Peruvian methods), and diagram the inputs and outputs of each. Discussion focuses on comparing the different methods and the environmental impacts of each. To reinforce the concepts, a one-page reading with graphics defines and summarizes the key components of a food footprint. | 30 |
| 4) Lowering your food footprint | Learners examine fossil fuels used in food production and generate ways to lower their food footprint. | 20 |
| 5) Before the next session | Learners consider the difference between the most expensive and the memorable meals they have ever had. | 5 |

## Materials

- Learner booklet for Session 3
- Flipchart paper, markers, tape, and a wall to post maps from Activity 1
- Accompanying Slides for Session 3

## Preparation

This session explores the environmental impacts of food production using the concept of the food "footprint." The "footprint" concept is derived from a scientific measurement tool called the "Ecological Footprint" (EF). The EF estimates "the amount of land and ocean required to sustain your consumption patterns and absorb your wastes on an annual basis" (Redefining Progress, 2008). In other words, it measures the amount of land, trees, ocean, etc. required to produce all your materials (inputs) and absorb your wastes (outputs) for not only food habits, but overall lifestyle including the your housing, transportation, and consumption of goods. An on-line

quiz (http:/www.myfootprint.org) enables you to find out what your footprint is, and how to reduce it. Facilitators should take the quiz and review the site before teaching this session. The footprint quiz is presented by Redefining Progress (http://www.rprogress.org).

## Procedure

## Activity 1) Feeding yourself for a year

Overview: Learners will design and map a farm that can support their family's food needs for a year. The task involves estimating the types and quantities of foods consumed, and the types (pasture, forest, etc.) of land and other materials needed to produce them.

It's likely that learners will not know how to generate accurate measurements and will thus struggle with the activity. Note that *learners are not expected to know or generate "correct" answers*. Rather, the activity is designed to engage learners in a *process* of generating estimates about how to measure food consumption and related land use. Through the process, learners raise some of the core questions measured by the Ecological Footprint; as noted, the EF is a tool that measures the impacts of consumption habits in acres of land. These concepts are addressed as part of the activity's debriefing.

**Directions:**

- Have someone read the introduction, which explains the premise for the activity. (Participants are to design a farm that could support their family for a year, estimating the different types of land needed.)
- Review the directions and guidelines for the map provided in the learner's guide. Emphasize that all maps should include a scale and a key to indicate different types of land used.
- As described under Point 4 in the learner packet, emphasize that groups also need to write down how they developed their map and the calculations for different types of land used.
- Pass out markers and paper, and allow groups 15 minutes to work on their maps and complete the questions.
- When groups are done, post all maps on the wall and have people review them in a "gallery walk." Have a representative from each group talk about the highlights of their farm and key ideas on how they developed it.
- Finish by leading a full-group discussion using the reflection questions, provided here. Sample responses are in brackets.
    - Which tasks or calculations were easiest? Why? [Typical response: Figuring out what to eat; identifying map 'essentials' such as pastureland, trees, and a water source of water.]
    - What aspects of the activity were more difficult? Why? [Typical response: Calculating amounts of food and land was difficult.] Ask participants to share some of the methods they used to estimate amounts. [Typical response: "For fruit, our team figured on two pieces each day, then tried to guess how many trees that would take."] It's likely that participants struggled with their calculations. Reassure participants that they weren't expected to correctly figure exact amounts; rather, the goal was to consider how such amounts could be calculated at all. Explain that the following activities will further address this challenge.
    - What does this activity tell us about the relationship between food systems and the environment? [Typical response: Food systems and the environment are

related/interdependent.] Explain that the following activities will examine the nature of this relationship and some of the science behind it.

## Activity 2) Inputs and outputs: An introduction to the food footprint

Overview: A brief reading (and accompanying presentation in Powerpoint) introduces learners to the concepts of inputs and outputs. To connect the concept to previous learning, learners share and diagram some of the inputs and outputs of a food eaten at a recent meal. This task was assigned at the end of Session 2, and is revisited here.

- Give participants 3-5 minutes to review the reading, or have people take turns reading it out loud.
- Reinforce key points by using the accompanying slides for Activity 2, which summarize key ideas about inputs and outputs.
- Continue to the "What about your last meal?" task. Here, participants will generate some inputs and outputs of a food eaten at their last meal, and enter them in the diagram on the following page. (Note: Learners were asked to generate some of this as "homework" at the end of Lesson 2. At this point, learners revisit their responses and enter them into the diagram. If participants did not do the "homework," they can complete the activity now using the directions provided in the learner's guide.)

## Activity 3) Do our choices matter? Comparing the footprint of three potatoes

Overview: Working in groups of three, learners read about one of three potatoes (local organic, french fry, and one grown with traditional Peruvian methods), and diagram the inputs and outputs of each. Discussion focuses on comparing the different methods and the environmental impacts of each. To reinforce the concepts, a one-page reading with graphics defines and summarizes the key components of a food footprint.

- Review the introduction. As noted, learners will examine and compare the inputs and outputs involved in producing three types of potatoes: a French fry, a potato grown using traditional Peruvian methods, or a potato grown locally. (For the purposes of the activity, assume potatoes can grow in your climate).
- Have participants get into groups of three, doubling up as needed. Assign each person one of the potatoes so that all selections are represented in one group. Review the directions, emphasizing that each person will read one of the selections and be responsible for recording the inputs and outputs in either the input-output diagram, OR the table. (Both are provided after the local potato reading.)
- As described under point 4 of the directions, learners are to compare their work with their group mates when they are done, using the questions provided as prompts.
- Have each group share key insights from their discussion. Connect the responses to previous learning about the relationship between food systems and the environment.
- End by reviewing and reinforcing key ideas and diagrams provided in text; these are also provided in the slides for Activity 3.

## Activity 4) Reducing our food footprint

Overview: Learners examine fossil fuels used in food production and generate ways to lower their food footprint

- Have someone read the introduction, connecting the information on fossil fuels to the concepts of inputs, outputs and environmental impacts already covered.
- Review the directions. As noted, learners will review fossil fuels used at each stage of the food system and brainstorm food choices and actions that can reduce their food footprint. Have people work in pairs or groups for 5 minutes, then take responses orally.
- Direct learners to the following page, which presents a more detailed list of ways to reduce the food footprint. Summarize and present these ideas using the Powerpoint slides if desired.
- Have learners review the list and select and share one or two they can commit to or try in the next week.
- End with the "Learn More" text at the bottom; this explains that the food footprint concept is based on a larger "Ecological Footprint" concept that measures the environmental impact of overall lifestyle (food, housing, transportation, goods consumption, etc.) Encourage people to take the footprint quiz on their own.

## 5) Before the next session

- Review the activity as presented in the learners' guide. As noted, learners will consider the difference between the most memorable and the most expensive meals they have ever had. This will set the stage for differentiating between price and value in the following session.