

Overview of Activities

1. Introduction
2. Products, Services and Supply Chain
3. Analysis of Current Situation
4. Analysis of User Needs and Preferences and Willingness to Pay
5. HWTS Design
6. Supply Chain Challenges
7. Review

Learning Outcomes

At the end of this session, the participants will be able to:

1. Explain the concept of HWTS products, services, and supply chains
2. Explain why HWTS selection within a multibarrier approach needs to be appropriate for the context.
3. Describe the components of an HWTS products and services supply chain
4. Outline ways to strengthen and overcome challenges for a supply chain

Materials and Preparation

- Participant workbook (1 per participant)
- PowerPoint: Products and Services (optional)
- Flip chart paper and markers
- Dot stickers
- Prepare: Cut out pictures of materials used in HWTS
- Prepare: Cut out pictures of HWTS products and services
- Prepare: Flip charts for dot voting activity
- Handouts: Snowball Activity – 1 per participant
- Handout: Supply Chain Challenges – 1 per Panau group
- Handout: HWTS Technologies – 1 per Panau group

Recommended Reading

- Technical Brief: Selecting Household Water Treatment and Safe Storage (HWTS) Options
- Technical Brief: The Multi-Barrier Approach to Safe Drinking Water
- HWTS Case Studies



Introduction

1. Explain that we will do an activity to generate and share ideas about the products and services required in an HTWS program. Point out the images showing materials that are part of an HTWS program at the front of the room. **(PPT Slide 3)**
2. Ask each person to pick an item or material that is part of an HWTS product and instruct them to write it at the top of their handout for the Snowball Activity (for example, plastic bucket, membrane filter, concrete, sand, plastic tubing, or ceramic pot).
3. Instruct participants to crumple up their papers and throw them randomly across the room. Then, ask everyone to find a “snowball” and open it up. **(PPT Slide 4)**
4. Ask each person to write in box 1, the raw materials used to make the item written on their new piece of paper. Explain that raw material is the basic material from which a product is made. For example, cement is made from limestone and clay.

Trainer Tip: If participants are struggling to come up with the raw material, ask: “what materials would be needed to make the item on your paper?”

5. Invite the group to again crumple their papers and toss their snowballs across the room by saying “Crumple and throw!”
6. Once everyone has selected a new snowball, ask them to write down, in box 2, where the item on the paper is manufactured (for example, an overseas factory in China).

Trainer Tip: to clarify you may choose to ask: “where was the item made before it arrived in the shop?”

7. Invite the group to again crumple their papers and toss their snowballs across the room by saying “Crumple and throw!” When they have new snowballs, ask them to write down, in box 3, who sells the item listed, and who distributes the item (for example a wholesaler in the capital sells and promotes the item, and the item is distributed by trucks run by a delivery company).
8. Invite the group to again crumple their papers and toss their snowballs across the room by saying “Crumple and throw!” Ask them to pick up another new snowball and write, in box 4, all the service providers and stakeholders involved in the process (for example, delivery company, wholesaler, factory owner in China, boat operator, manufacturer, or salesperson).
9. Ask: “What do you think was the purpose of this activity?”
10. Explain that HWTS products consist of numerous raw materials that are extracted, converted into other products through manufacturing and distributed and sold by many different stakeholders, such as quarry workers, factory workers, truck drivers, shop owners, and sales agents.
11. Present the learning outcomes or an overview of the lesson. **(PPT Slide 5)**

Products, Services and supply chain



1. Put up two pieces of flip chart paper. On one write the heading “Products” and on the other “Services”.
2. Hand out some pictures of HWTS products and services to participants around the room (see sample pictures at end of lesson plan, please add more). Ask those with a picture to come up one at a time and decide if the picture should be placed under the heading products or services.
3. Ask: “What do you think is the difference between HWTS products and HWTS services?” Present the definitions of **products** and **services**. (PPT Slide 6)
 - a. **Products:** items a household would need to purchase to have, use, and maintain an HWTS product (for example, a ceramic pot filter, brush, chlorine, safe storage container, etc.). (PPT Slide 7)
 - b. **Services:** tasks to help a household purchase, install, use, maintain and repair HWTS products. Often required before, during, and after purchase or installation (for example, sales agents, financial support, education on use and maintenance, customer support, repairs, etc.). (PPT Slide 8)
4. Ask: “Can anyone tell me what a supply chain is?” Present the definition of a **supply chain**.
 - a. Supply Chain: A system of stakeholders and activities that lead to the supply of HWTS products and services to a household. (PPT Slide 9)
5. Create a basic supply chain diagram on a piece of flip chart paper with input from the participants by starting with an item used to make an HWTS technology, such as a ceramic candle filter. Ask: “What is this made of, who makes this item, who sells this item, how does it get delivered to the household and who installs it?”
6. As participants answer the questions, add onto your supply chain diagram until you have identified the raw materials and all stakeholders related to the manufacturing, distribution, and sale of that item. (See 2.3 Supply Chain in Latrine Program Design Products and Services technical brief).
7. Point out that in the simple supply chain example, raw materials, manufacturing, and distribution are all represented.
8. Explain that raw materials involve stakeholders that are concerned with how materials are extracted and reach manufacturers. Manufacturing stakeholders are concerned with how materials are converted into finished products. Distribution stakeholders are concerned with how products and services reach households.

Key Points

- Services to a household before, during, and after the purchase of an HWTS product are necessary for the sustainability of an HWTS program.
- Supply chains are complex, they have many parts that are interdependent on others.



Analysis of Current Situation

1. Briefly review with participants the PESTLE Analysis done as the introduction to Panau. Ask: “What are some of the issues that were introduced during the PESTLE Analysis that would help prepare you to design a products and services plan?” (see the list of possible answers below).
2. Ask: “What other factors or information should be considered to help you conduct an analysis of the situation at this time?” (**PPT Slide 10**)

Possible answers:

- Drinking Water Quality Testing Results
 - The current demand for HWTS products
 - What HWTS options are available in the country or region
 - What local HWTS solutions are already being used
 - Gender, age, or disability issues
 - The existing products, services, and supply chains that are available
 - Relevant government policy around HWTS
 - Environmental factors (such as seasonal changes to water sources) (**PPT Slide 11**)
3. Have participants return to their Panau groups and hand out a copy of the “User Needs and Preferences” and the “Ministry of Health – National Vision 2030” handouts to each group.
 4. Using information provided and all the information they have gathered for Panau over the course of this workshop, give participants 10 minutes to complete the first 6 rows of the table in question 1 of their workbooks.

Trainer Tip: Direct participants to the questions in the far left column of the table to spur their thinking.

5. Ask: “What are some of the methods you will use to collect this information?”

Possible answers:

- Consult lists of water treatment products approved by the national bureau of standards, or equivalent agency.
- Ask national WASH sector groups about products they recommend, especially if there is a HWTS working group.
- Visit CAWST’s HWTS Knowledge Base, available at: <https://www.hwts.info/>.
- Visit local markets.
- Ask individuals and households about the methods they use or have seen.
- Ask other WASH businesses and NGOs in your region about their HWTS initiatives.

6. Ask: “What are your experiences with collecting or using this type of information?” (PPT Slide 12)

40 minutes

Analysis of User Needs and Preferences and Willingness to Pay



1. Explain that the last two parts of completing an analysis are determining user needs and preferences, and analyzing affordability and willingness to pay.
2. Draw the participants’ attention to the flip chart papers posted around the room that present them with questions to vote on such as:
 - Chlorinated water – dislike the taste or do not mind the taste?
 - Which one would you prefer - Biosand Filter or Ceramic Pot Filter?
 - Which do you think is easier to do – SODIS or boiling?
 - What is more important to you – flow rate or ease of maintenance?
 - How much water do you need to filter each day for the size of your family?
 - How much would you pay for a safe storage container?
 - How much would you pay for an HWTS technology?
3. Provide each participant with dot stickers and ask the group to circulate around the room. Explain that they should place a dot on the option they would choose or write an answer to a question. Give the group 5-6 minutes to complete the activity

Trainer Tip: For the flip charts on willingness to pay, you will need to know the local price for HWTS products. Add prices that are lower and higher than the average price of an HWTS product. Participants should place a sticker on the price they would be willing to pay.

4. Once voting is complete, invite the group to take a minute to walk around the room and look at all the responses to the questions and then sit down.
5. Ask participants, “What surprised you about the results?”
6. Explain that there is no perfect way to select or create suitable HWTS products and services. However, certain practices—such as engaging your users in the selection and creation process—will increase your likelihood of selecting appropriate solutions that will be used **correctly, consistently, and continually**.
7. Share the brief example of Ecofiltro who produce a clay and colloidal silver water filtration unit. They had spent years trying to make it affordable for rural communities by keeping it simple, a 20-liter paint bucket with a filter that was not very attractive. Recently, they noted that in the same rural communities where they were trying to sell affordable filters, people had flat panel TVs, cell phones, and cable services. Ecofiltro supposed that since people wanted “sleek devices in their homes” they might also want the same from their water filters. In response to this observation Ecofiltro launched their “color” product line and the demand as per their CEO Philip Wilson, “is much greater.”
(<https://pocoapoco.co/blog/five-takeaways-ecofiltro-ceo-philip-wilson>)
8. Ask participants, “What is the value of doing research on user needs and preferences, affordability, and willingness to pay?”

Possible answers:

- Helps program designers identify current behaviours and cultural practices
 - Identify behavioural factors that influence user needs and preferences and willingness to pay
 - Identify barriers and challenges
 - Recognize potential solutions within the programs' own community
9. Ask the large group to brainstorm some general user needs and preferences (this is not Panau focused, just generalized). (For example, flow rate, capacity, ease of use, weight, lifespan, resulting water's smell or taste or colour)
 10. Have participants stand up and pair up with someone they haven't worked with previously. Ask the pairs to take 2 minutes and discuss the following question: "Does the HWTS sector do a good job of considering and meeting users needs and preferences?" "Why or why not?"
 11. Have pairs join another pair to make a group of 4 and give them another 2 minutes to discuss their responses to the above question, but now ask them to "consider women, elderly, children, and physically or intellectually disabled persons. Does the HWTS sector with its products and services consider and meet the needs and preferences of these users?"
 12. Invite groups to sit back down and briefly share some of their thoughts, concerns, or experiences with these questions. Keep the conversation to 8 minutes.
 13. Explain that affordability is often described as the cost of something relative to the persons ability to pay. There is a part of affordability that is measurable based on what people earn and their cost of living. The other part is perception and related to what they feel they can pay or in other words their "willingness to pay". Similar to the Ecofiltro story shared earlier.
 14. Explain that researchers try to measure willingness to pay by asking community members what they would hypothetically pay for something. The difficulty is that often answers are quite different than what they would actually be willing to pay when the time comes. Sometimes this information is misleading with respect to the cost feasibility of a project.
 15. Explain that willingness to pay studies are often time consuming and require training, skills and expertise to carry out reliably.
 16. Ask: "What are alternatives to doing a willingness to pay study?"

Possible answers:

 - Providing options to customers such as products at different price points and seeing which ones people will buy.
 - Encourage men and women to participate in these discussions because they are each likely to make decisions about different financial aspects of the households finances.

Trainer Tip: If no one addresses involving women suggest that option. For more information see 3.1.4 in the Latrine Program Design Products and Services Technical Brief.
 17. Ask: "What are some activities you have seen for engaging women in HWTS programs?"
 18. Ask: "How could we get women involved in affordability and willingness to pay discussions?"

19. In their Panau groups, direct participants back to their workbooks to complete the last two rows of the table in question 1 on Affordability/Willingness to Pay and User Needs/Preferences. Give groups 10 minutes to complete.

Trainer Tip: Provide support by answering questions as needed and checking in on progress

90 minutes

Design and Develop

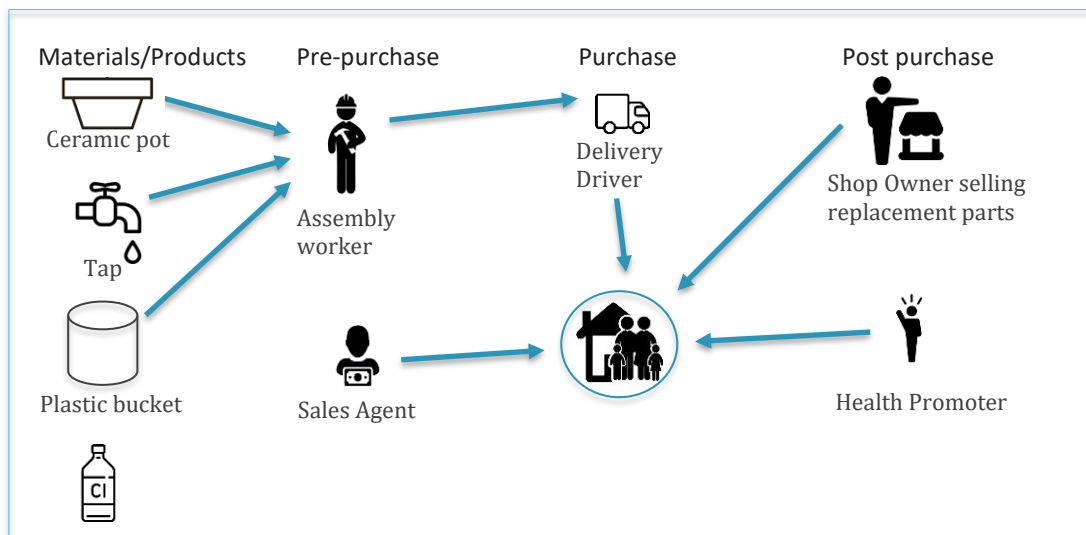


1. Explain that it is important to understand the goals of the program you are working within, and the goals of the community you are serving. These broader goals will influence the criteria you use to assess available HWTS options within the program's context. Recognizing that not all HWTS options are feasible or acceptable for every context.
2. Given the information you have learned about your users and their context, you can now work with them to decide which criteria are most important. In their Panau groups, employ the '**User Needs and Preferences Handout**' to create a list of criteria for HWTS that matter most to your potential users.

Possible Answers:

- Type of product (filters were preferred to other methods).
 - Effectiveness of the product at removing pathogens.
 - Retail outlet (department store and weekly markets were preferred).
 - Time required to treat 10 litres of water
 - Temperature of water coming out of the filter
 - Taste of the water
 - Affordability
3. Explain that once they understand which technologies are available and have a list of criteria that are most important for the users. The next step is to assess the available options against the criteria. The goal being to identify two or three HWTS systems (a shortlist of options) that meet most of the selected criteria and are most likely to meet the users' needs and context.
 4. In their Panau groups, they will review the handout: **HWTS Options** and pick one or more of the HWTS technologies based on the multibarrier approach for Panau, taking into consideration their analysis to create two or three HWTS system options. **(PPT Slide 13)**
Trainer Tip: If your group is struggling to understand this activity or you feel another activity might be more effective see the 'Selecting HWTS Options' Technical Brief for activity instructions called "Ranking Lines" or "Matrix Scoring".
 5. Ask: "Will you provide different models for households to choose from? Why might this be important? What are the challenges of giving households options?"
 6. Explain that offering more than one option, especially if you have distinct groups of target users helps meet needs and create demand.

7. Explain that typically program designers would work with users to create a shortlist with several of the most promising HWTS options and then they would have households test the products in order to provide feedback. They would:
 - Identify 8–15 households willing to test one of your shortlisted HWTS systems. It is ideal to have around three to five households testing each system.
 - Train household members to use and maintain their HWTS systems.
 - Give users several weeks to get to know their HWTS systems and practice using them on a daily basis.
 - After 2–4 weeks, gather feedback from the users in focus group discussions or individual questionnaires. Visit households to observe how they used the filters, how well they are performing, and how well they fit with users’ home layouts and lifestyles.
8. Once the best HWTS option was selected then the program would begin planning and implementing their initiative. But not before considering the supply chain. As described earlier having a system of stakeholders and activities that lead to the supply of HWTS products and services to the household safeguards demand, use and reduced cost to the program and end-user.
9. Instruct each group to complete all three parts of question 2 in their workbooks by identifying the products and materials needed for their HWTS products and identifying who will be involved in their supply chain. They will also need to identify the various services that will be involved to support a household before, during, and after the purchase of their product(s) and who will provide them.
10. Explain that each group will put their design into a simple supply chain map to show how things are connected all the way to the household. Demonstrate how the groups can set up their maps by modelling the creation of a supply chain map at the front of the room. **(PPT Slide 14)**



Trainer Tip: Follow these instructions to guide you in demonstrating the supply chain map.

- a. Place the following labels at the top of the paper: Materials, Pre-purchase, Purchase, Post Purchase.

- b. Draw a household in the middle of the page.
- c. Next, identify the products and materials needed for your supply chain (ceramic pot, tap, bucket, chlorine)
- d. Draw each item under the materials/products heading.
- e. Draw and label the various stakeholders/service providers under the heading that applies to them. For example, a shop owner selling replacement parts would be listed under post purchase.
- f. Draw arrows to identify how things are connected. For example, the ceramic pot, tap and bucket might be assembled by a worker. The ceramic pot filter is then delivered to the household by a delivery driver.

11. Invite Panau groups to take a piece of flip chart paper and using the information they have documented in their workbooks have them draw a supply chain for their chosen HWTS technologies.

Trainer Tip: Use the instructions above to help guide groups as needed.

12. Ask the groups to display their maps on the wall once finished and encourage them to circulate, view, and compare with those of other groups. Groups can ask each other questions and add things they may have missed to their own maps.
13. Ask each group to complete questions 3 and 4 in their workbooks.
14. Ask participants if they have any questions about selecting HWTS products and services.

15 minutes

Supply Chain Challenges

1. Explain that all programs experience challenges, such as delays in receiving shipments, weather, or personal issues. Explain that we are going to do an activity to help us begin thinking critically about challenges and how we might deal with them.
2. Present each Panau group with the handout **Supply Chain Challenges**.
3. Ask participants to return to their workbooks and answer question 5 and brainstorm how they will overcome two of the presented challenges to their supply chain. Give groups 10 minutes.

Trainer Tip: Participants can use the 3.2.2 Design and Develop Products and Services Plan from the Lartin Program Design Products and Services technical brief. examples from the HWTS case studies to identify solutions. Allow 10 minutes.

Trainer Tip: Select the challenges that might be most relevant to your participants' context. Create new challenges if needed.

4. Ask each group to share one of their challenges and the solutions they identified. Share other solutions that you are familiar with. Allow other participants to share other solutions.

5 minutes

Review

1. Add products and services activities to workflow table on wall. (PPT Slide 15)

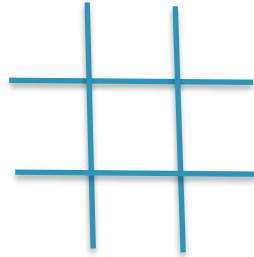


15 minutes

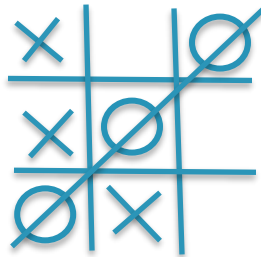
Review



1. Divide participants into two groups and assign them as either X or O.
2. Draw a tic-tac-toe board on flip chart paper (see below). Each group can place an X or O on the game board if they answer a review question correctly. The object of the game is to get three X's or O's in a row to win. **(PPT Slide 16)**



Example: O's Win!



Sample questions:

- What is the difference between products and services?
- Name one supply chain challenge.
- What is the difference between willingness to pay and ability to pay?
- Name one way to strengthen a supply chain.
- What are two things you need to need to know about your context before making a products and services plan.
- Under which stage of the ADDIM process would we put products and services analysis?
- Where would we put choosing our HWTS technologies in our ADDIM table?
- Where would we put creating a products and services plan in our ADDIM table?
- Where would we put strengthening our supply chain in our ADDIM table?

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Images to display at the start of the lesson:







Products







Services

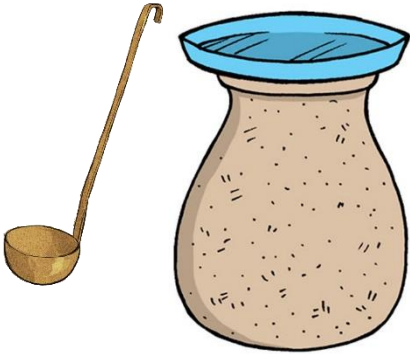








HWTS Options



Handout

Sedimentation Is the water turbid?	Filtration Are there any priority contaminants in your region? Any chlorine residual?	Disinfection
Chemical coagulants	Cloth	Chlorine
Natural coagulants	Ceramic Candle filter	Solar Disinfection (SODIS)
Settling	Membrane filter	Boiling
	Biosand filter	Purification tablets
	Ceramic Pot filter	

Storage Container	Aspects
	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Non fragile material <input checked="" type="checkbox"/> Easy to see dirt <input checked="" type="checkbox"/> Has Stand (off ground) <input checked="" type="checkbox"/> Has Spout or small neck for pouring <input checked="" type="checkbox"/> Has Tap <input checked="" type="checkbox"/> Has Lid <input checked="" type="checkbox"/> Opaque <input checked="" type="checkbox"/> Easy to clean <input checked="" type="checkbox"/> Stable/sturdy

	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Good size for HWTS <input checked="" type="checkbox"/> No openings for dirt and insects to enter <input checked="" type="checkbox"/> Food safe or new material
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Handout

Panau User Needs and Preferences Handout

Table 1: Which attributes are most important to you in your water treatment technology?

Ranking scale: 1 = most important, 5 = least important	Females	Males
Taste	1	3
Flow rate	3	4
Ease of use	2	5
Cost	4	1
Lifespan	5	2

Table 2: Which HWTS characteristics do you prefer?

HWTS Characteristics	Males (198)	Females (214)
Type of product		
1. Durable	63%	51%
2. Consumable	35%	35%
3. Combination of the two	2%	14%
Acceptable amount of maintenance		
1. Daily	16%	17%
2. Weekly	24%	41%
3. Bi-weekly	60%	42%
Taste of water treated with chlorine		
1. Dislike	62%	88%
2. Like	38%	12%
Taste of boiled water		
1. Dislike	50%	60%
2. Like	50%	40%
Built-in storage container		
1. Yes	79%	53%
2. No	21%	47%

HWTS Characteristics	Males (198)	Females (214)
Capacity of container		
1. 8 Litres	33%	12%
2. 12 Litres	36%	57%
3. 18 Litres	31%	31%
Preferred appearance		
1. Stainless steel	78%	65%
2. Clear plastic	20%	30%
3. Opaque plastic	2%	5%

Taste preferences	Males (198)	Females (214)
Taste of water treated with chlorine		
1. Dislike	62%	88%
2. Like	38%	12%
Taste of boiled water		
1. Dislike	58%	60%
2. Like	42%	40%

Additional questions	Males (198)	Females (214)
Water source for drinking water		
1. Stream	22%	20%
2. Hand-dug well	75%	78%
3. Bore hole	3%	2%
Preferred HWTS purchase location		
1. Local community shop	54%	14%
2. Mobile sales person	41%	63%
3. Health clinic	5%	23%

Handout

Ministry of Health – National Vision for 2030

This document outlines the country's overall development goals, including a development objective to provide safe drinking water to the country's population. By 2030, every household should have efficiently treated water supplied by either the government or individually along with safe storage.

HWTS in informal settlements:

The target is to rehabilitate or upgrade water treatment facilities in all major towns and cities and ensure that 60% of unplanned settlements have access to piped water by 2030.

The mechanism for reaching vulnerable populations:

Funds have been allocated to a grant program. The aim is to incentivize service providers to extend services to low-income areas. This grant program will be performance-based and funds will be given to service providers after pre-identified outputs have been delivered and verified independently. Please contact your local ministry office to apply.

Supply Chain Challenges

Handout

Challenge 1 :

You rely on chlorine for disinfection as part of the multi-barrier approach to your HWTS program. However, shop owners are only stocking chlorine during the rainy season when people are more likely to buy.

Challenge 2:

The government recently increased tariffs in a trade war with China. All membrane filters, plastic piping, and plastic buckets will be affected and increase in cost by 50%.

Challenge 3:

The rainy season arrives and washes out large sections of the main road leading into Panau. The road will need to be rebuilt and it will take two months before a truck can deliver more supplies to you or your service providers.

Challenge 4:

Households are simply not making their payments on time to your sales agents. They have become frustrated and threatened to quit as they are not making enough money in their work.

Challenge 5:

Your project is only funded for 3 years after which time you will no longer work in Panau. How will you ensure that your target audience has sustained access to a supply chain long after you are gone for:

- a) Consumable products such as chlorine, which they will regularly need to purchase?
- b) Durable products such as filters which will last a long time but will still need to be replaced or have parts replaced when they break or wear out?

Snowball Activity

Handout

Name of item / material:	
1. Raw materials used to make the item:	2. Where is it manufactured?
3. Who sells the item and who distributes the item?	4. Who are all the stakeholders and service providers involved?