Muinín Catalyst STEAM Education for Sustainable Development and Futures Literacy

SDG2 The Future Of Food

Programme Phase 2: Exploration and Experimentation

Micro-Module 4: Feeding the World Sustainably and Responsibly in the 21st Century

Subject Areas: Art and Design, Agricultural Science, CPSE, Home Economics, SPHE

An Roinn Oideachais
Department of Education

SFI Discover
Science Foundation Ireland

SDG2 Feeding the World Sustainably and Responsibly in the 21st Century

Micro-Module 4: Feeding the World Sustainably and Responsibly in the 21st Century

Exploration and Experimentation

Subjects: Art and Design, Agricultural Science, CPSE, Home Economics, SPHE

Micro-module Summary: Feeding the World Sustainably and Responsibly in the 21st Century

The last century has seen the emergence of a global society dominated in many ways by multinational corporations and supply chains (or value chains) that stretch from one side of the planet to the next. Services and products produced by companies and industry delivered on scale across the globe have enabled billions of people to move beyond poverty, to feed their families, and gain access to affordable and nutritious food every day. Incredible progress has been achieved for humanity in this era, but a huge price has been paid by mother nature, the animal kingdom, workers, and farming communities all over our planet.

Over these 7 lessons, learners will learn about the value chains behind the everyday goods and foods we consume, gain deep understanding of the link between agriculture and food production, business, human development, and climate change. Students will apply learnings from the lessons through group projects and presentations to address people and planet related challenges existing in real and broken food value chains today.

In this module, the learners will:

- Learn about human progress, population growth and agriculture through the ages
- Understand how our global food systems work
- Learn about the externalities and costs of producing and consuming food
- Learn about value chains, shareholders, profits and stakeholders
- Gain an understanding into the journey of the products in our cupboards

Materials

- Lesson plans
- Worksheets

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Feeding the World Sustainably and Responsibly in the 21st Century

Lesson 1: 2000 Years of Human Agriculture, Population and Progress
Through this lesson we'll learn about the growth in global populations through the ages exploring how population rates have rocketed up in the past century, understanding how and why population is expected to plateau at 10-11 billion by the end of 2100, and explore the links between population growth, agriculture, and food.

Resources: Worksheet: Population Curve Exercise, Worksheet: Nitrogen as Fertiliser, Worksheet: World of Data Links and Questions

Lesson 2: The Food We Eat: Where Does Our Food Come From?
In this lesson, we'll dive into our cupboards, larders, shopping trolleys and bellies to learn what we eat and why, where we buy these foods, where and how they're made, and where they come from.

Resources: Worksheet:The Top Foods We Eat, Worksheet:The Food Pyramid, Worksheet:Breakfast

Lesson 3: Food, Agriculture and Climate Change
In this lesson, we'll learn about the connection between industrial agriculture, our global food systems and climate change. Learners will explore our food systems to understand the various and complex ways in which agriculture impacts the natural world, including through land and water use and the production of greenhouse gases from farming. In this lesson we'll attempt to explore whether a more sustainable and climate friendly way is possible and see if our food systems can be reinvented!

Resources: The Four Impacts of Agriculture Worksheet, Top Foods and their Environmental Impact Worksheet

Lesson 4: From Farm to Fork: The Steps of Food Value Change
Each day our plates are filled with foods that come to us from farmers and producers from every country and continent in the world. The supply chains and value chains behind our food stretch across the globe. In this lesson Learners explore the paths our food travels, learn more about farming, harvesting, production, packaging, and the transport of our food and try to understand the true cost of our food.

Resources: Worksheet: Value Chain Definitions, Worksheet: Bananas and the Steps of a Value Chain, Worksheet: Value Chains in the Media

Lesson 5: Case Studies - Coffee, Tea and Cocoa
Coffee, Tea, and Chocolate (Cocoa) are some of the world's most popular drinks and treats. These are massive global industries worth billions, yet our current model of business sees little of the

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income or profits make their way back to the workers and farmers who put in the hard work to bring these goods to us. In this lesson Learners will look at business as usual in the tea, coffee and cocoa industries and question whether things can be better.

Resources: Worksheet: Ethical Trade Definitions, Worksheet: FairChain and Moyee Coffee, Worksheet: Tony Chocolonely's Chocolate, Worksheet: FrankAboutTea

Lesson 6: Supermarkets, Farmers and our Broken Value Chains
Today we buy most of our food from a handful of supermarkets. These multinational companies are tremendously successful and profitable at delivering all kinds of food to us when and where we want it. They dominate the planet's food supply systems. In this lesson we'll try to understand why the global food system is so broken that farmers can starve and struggle while supermarkets profit and explore whether a better way is possible for the future.

Resources: Worksheet: The Power of Supermarkets, Worksheet; Living Income for Farmers, Worksheet: How to Solve Farmer Poverty?

Lesson 7: Value Chain Exercise
In this lesson, we'll take a deep dive into the value chains behind some of the everyday foods we all enjoy and plot the journey through the value chains these foods make, identifying the human and environmental problems that exist within these food systems, and attempting to discover what innovations and solutions can help change the systems behind our foods to do right by customers, farmers, workers, company owners, and our planet.

Resources: Worksheet: Value Chain Six Stages, People and Planet

Module development and expertise: Killian Stokes, Moyee Coffee Co-Founder and Proudly Made in Africa CEO

Using the Resources:

If you wish to use these resources, we can offer an induction and online support throughout the module to help you plan integration into your projects and timetable. To register for this option, please contact us e:hello@futurefocus21c.com

For more information on the resources please visit www.muinincatalyst.com

Setting up an online learning environment for the lessons on this module:
Our lessons integrate the use of virtual learning environments. To ensure seamless use of our

lessons, a module should be set up on your school's virtual learning environment such as Teams, Google Classroom, etc. Learners are encouraged to upload documents to share with their peers.

You can also use Google Sites or Microsoft Sway to encourage learners to present their work over the year - this can easily be set up to reflect the aims of TY and provide a showcase for their work as well as assessment tool.

Setting up a Canva Education account.

If your virtual learning environment does not support document sharing, we recommend OneDrive or Google Drive. As our lessons integrate design, our lessons also refer to Canva. Educators and schools are able to open a free Canva for Education account by registering. Canva for Education provides primary and secondary school teachers and students with premium features and templates. You can then also set up lessons and invite your learners to the class.

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Micro-Module 4: Feeding the World Sustainably and Responsibly

Experimentation and Exploration

Lesson 1: 2000 Years of Human Agriculture, Population and Progress

Subjects: Agricultural Science, CPSE, Geography, Home Economics, SPHE

Lesson Title and Summary: 2000 Years of Human Agriculture, Population and Progress

Through this lesson, we'll learn about the growth in global populations through the ages exploring how population rates have rocketed up in the past century. Understanding how and why population is expected to plateau at 10-11 billion by the end of 2100 and explore the links between population growth, agriculture, and food.

Vocabulary: Agriculture, Population Growth, Nitrogen, Ammonia, Fertiliser, Yield

In this lesson, the learner will:

- Learn about global population growth, agriculture, food, and progress
- Identify information (e.g. statistics) related to population, food production
- Apply learning on how to conduct online research and collate findings
- Understand and accurately use online resources
- Engage in speaking and communication activities applying critical thinking, discussion strategies, and presentation skills

Materials

- Worksheet 1: Population Curve Exercise
- Worksheet 2: Nitrogen as a Fertiliser
- Worksheet 3: Analysis of Growth Crop Pens and
- paper
- Online resources (computer / iPhone; website links)
- Blackboard / Whiteboard and chalk / white board markers

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Lesson 1: 2000 Years of Human Agriculture, Population and Progress

ACTIVITY INSTRUCTIONS

Activity 1: Class Poll (15 minutes)

1. Write the words Human Population and three numbers showing different possibilities for global population including the current figure 8.1 billion.
2. Ask the class to vote on the three numbers indicating which number they think is the correct global population.
3. Reveal that 8.1 billion is the correct figure and discuss.
4. Divide learners into groups of 2.
5. Give learners Worksheet 1: Population Curve Exercise and ask learners to plot population growth over time using the internet for research, if need be. Discuss as a class.

Activity 2: (15 minutes)

1. Staying in groups of 2, give learners Worksheet 2: Nitrogen.
2. Play the video The chemical reaction that feeds the world - Daniel D. Dulek (5:18min) from 0:00min - 1:58min and have learners complete the first part of the Nitrogen worksheet.
3. Discuss their answers as a group.
4. Play the video from 4:05 – 4:55 mins and have learners complete the second part of the Nitrogen worksheet.
5. Discuss their answers as a group.
6. Discuss as a class.

Activity 3: Analysis of Growth of Crop Yields (20 mins)

1. Staying in groups of 2, give learners Worksheet 3: Analysis of Growth of Crop Yields and ask them to work through the interactive maps and charts (see links below) on the two linked pages and answer the questions in the worksheet.
   a. https://ourworldindata.org/fertilizers
   b. https://ourworldindata.org/crop-yields

REFLECTIVE EXERCISE: 3-2-1 (10 mins)

- Three things they feel they have learnt from the tasks.
- Two things they found most interesting and would like to explore more.
- One – their opinion they have about the tasks.

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Lesson 1: 2000 Years of Human Agriculture, Population and Progress

EXTENSION / REDUCTION ACTIVITIES:

Reduction: For a shorter lesson, run Activity 3 as a flipped classroom and have the learners discuss their summary findings in the next lesson.

Extension: For a longer lesson, watch the video in the media box and extend activity 1 by encouraging students to visit the population matters website and compare their chart with the population explorer tool at: https://explore.populationmatters.org/

MEDIA BOX: (materials, online video links, extra resources, case studies etc)

Websites:

- https://ourworldindata.org/fertilizers
- https://ourworldindata.org/crop-yields
- https://ourworldindata.org/yields-habitat-loss

Video:

TED-Ed: The chemical reaction that feeds the world [5:19min]: https://www.youtube.com/watch?v=o1_D4FscMnU

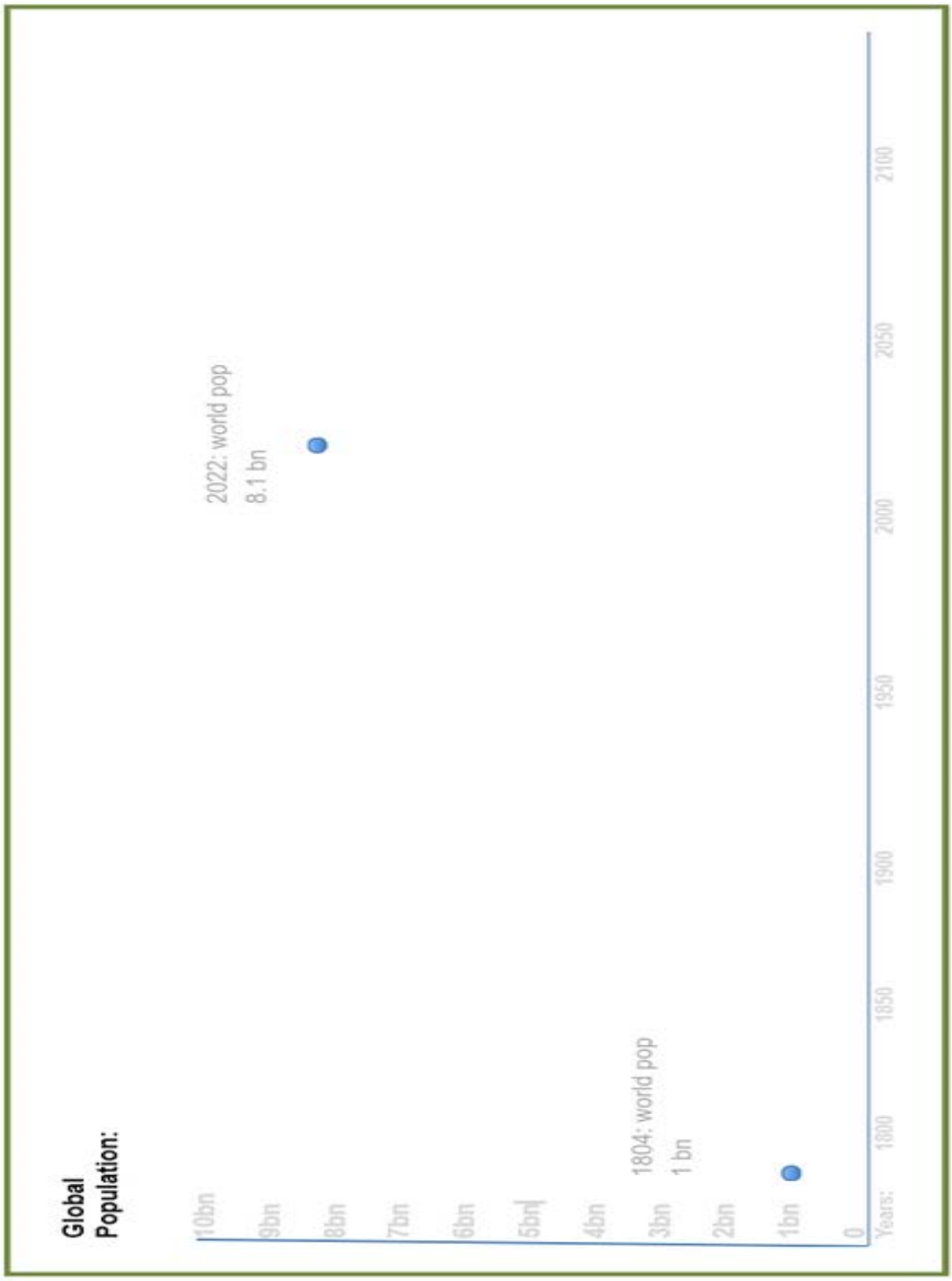
LOCAL TRIP / EXPERTISE / ADDITIONAL WORK AND ASSESSMENTS

Visit a local supermarket or specialty food store and identify 3 foods in the aisles that are made with corn, 3 that are made with wheat, 3 that are made with rice, and 3 that are made with cereals.

Record the details of the various products including price, weight and country of origin.

MM4: L1 WS POPULATION CURVE EXERCISE

Working in pairs, and using the internet to search if required, plot out the timeline for when global population reached 2, 3, 4, 5, 6 and 7 billion and when it is expected to reach 9 and 10 billion.



MM4: L1 WS NITROGEN AS A FERTILIZER

Part 1

The Haber Process is (circle one):

a. Turning air into fertiliser
b. Turning water into fertiliser
c. Turning fertiliser into air
d. Turning water into air

True or False: A nitrogen gas molecule plus three hydrogen gas molecules gets you two ammonia gas molecules t_____ / f____

Without the faber process how many people could farmers feed? _____

Where do plants normally get their nitrogen? _____

What percentage of the air is nitrogen? _____

In what year did Fritz Harber make his discovery?

_____

Part 2

How much ammonia is produced in the world each year? _____

How many elephants would it take to match the weight of that ammonia _____

What % of the ammonia produced is used for fertiliser in agriculture _____

What percentage of fertiliser is not absorbed by these plants _____

Where does this nitrogen go and what does it lead to?

_____

_____

MM4: L1 WS ANALYSIS OF GROWTH OF CROP

Working in pairs, visit the two world of data websites, explore the data and answer the questions below:

First Website: https://ourworldindata.org/fertilizers

Question 1: Looking at fertilizer use and using the map view, try to capture the names of the countries that have applied less than 12.5 kg of nitrogen fertiliser per hectare:

_____

_____

_____

Question 2: What do you notice about these countries?

_____

_____

_____

Second Website: https://ourworldindata.org/crop-yields

Question 3: Looking at four key crops: corn (maize), rice, cereal & wheat, what are the two smallest yield segments per hectare per crop?

Wheat: _____ & _____
Corn (Maize): _____ & _____
Rice: _____ & _____
Cereal: _____ & _____

Question 4: Name 5 countries from these two lowest performing segments for each of the four crops:

_____

_____

_____

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Micro-Module 4: Feeding the World Sustainably and Responsibly

Experimentation and Exploration

Lesson 2: The Food We Eat: Where Does Our Food Come From?

Subjects: Agricultural Science, CPSE, Geography, Home Economics, SPHE

Lesson Title and Summary: The Food We Eat: Where Does Our Food Come From?

In this lesson, we'll dive into our cupboards, larders, shopping trolleys and bellies to learn what we eat and why, where we buy these foods, where and how they're made and where they come from. Learners will learn about the main foods we all eat and the distances travelled by many to reach our plates.

Vocabulary: Food Miles, Food Pyramid, Calculate, Food Choices

In this lesson, the learner will:

- Identify information and vocabulary related to food
- Explore the concept of food miles and food choices
- Apply learning on how to conduct online research
- Consolidate and articulate research findings
- Engage in pair and group work

Materials

- Worksheet 1: The Top Foods We Eat
- Worksheet 2: Food Pyramid
- Worksheet 3: Breakfast
- Teacher's Notes
- Pens and paper
- Online resources (computer / iPhone; website links)
- Whiteboard
- Whiteboard markers

MM4: Feeding the World Sustainably and Responsibly
L2: The Food We Eat: Where Does Our Food Come From?

ACTIVITY INSTRUCTIONS

Activity 1: The Top Foods We Eat (10 mins)

1. Divide the class up into small groups of 2-5 students.
2. Encourage teams to allocate one writer and multiple internet researchers.
3. Distribute Worksheet 1: The Top Foods We Eat, facedown to teams. Turning over the sheets give the teams 5 minutes on a stopwatch to complete the task.

Activity 2: Food Pyramid (10mins)

1. Divide learners into groups of 2.
2. Draw a pyramid on the board and distribute the worksheet: Food Pyramid
3. Ask the groups to fill in the blank pyramid with the six food groups.
4. Discuss as a class and fill in the pyramid on the board.
5. Ask learners to come up with 3-5 food items which fall into each of the six food groups.
6. Have groups share with the class.

Activity 3: Deconstruct Breakfast (30mins)

1. Using the groups from activity 2, have learners brainstorm a list of food and drink that you would find in a typical Irish breakfast using the worksheet: My Breakfast Part 1. Have learners use the blank pyramid to sort the food and drink items into the appropriate food group.

NB: If you have a diverse group of learners, assign each group a nationality (this could be done randomly through drawing nationalities out of a hat), so that they are brainstorming a typical breakfast for the nationality (e.g. Polish, Irish, Ukrainian, Lithuanian, Nigerian, etc.).

Have groups complete part 2 and 3 of the worksheet as if they were buying their food items in the home country of that nationality. This is a good chance for learners to learn about other cultures' typical foods.

2. Share as a class.
3. Have learners answer the questions on the worksheet: My Breakfast Part 2.
4. Discuss as a class.
5. Have learners answer the questions on the worksheet: My Breakfast Part 3.
6. Discuss as a class.

REFLECTIVE EXERCISE: 3-2-1 (10 mins)

- Three things they feel they have learnt from the tasks.
- Two things they found most interesting and would like to explore more.
- One – their opinion they have about the tasks.

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L2: The Food We Eat: Where Does Our Food Come From?

EXTENSION / REDUCTION ACTIVITIES:

Reduction: For a shorter lesson, skip activity 1 and only do activities 2 and 3.

Extension: For a longer lesson, after activity 3, assign each group a category: the most food miles, the least food miles. Half of the groups should be assigned the most food miles, and half of the groups should be assigned the least food miles. Ask learners to create a breakfast menu in their groups for their assigned category (e.g. design a breakfast menu which uses the least amount of food miles OR design a breakfast menu which uses the most amount of food miles). If time allows, have learners draw and present their menus to the class.

Option B: Have groups pick one photo from Peter Menzel's gallery (https://www.menzelphoto.com/portfolio/G0000s3jj73.5TSs) of food around the world and calculate the food miles of the food they see the in the photo using the worksheet: My Breakfast.

MEDIA BOX: (materials, online video links, extra resources, case studies etc)

Food Miles: www.foodmiles.com

Distances From: https://www.distancesfrom.com/

What the world eats: https://www.nationalgeographic.com/what-the-world-eats/

25 Most produced foods: https://beef2live.com/story-top-25-produced-foods-world-124-107239

Biggest producing countries of key foods: https://ourworldindata.org/grapher/maize-production?tab=map

Peter Menzel: Hungry Planet & What I Eat Galleries
https://www.menzelphoto.com/portfolio/G0000s3jj73.5TSs

LOCAL TRIP / EXPERTISE / ADDITIONAL WORK AND ASSESSMENTS

- Visit a local farmers market and have learners find 5 food items. They should record what that item is, the origin of the item (where did it come from?), the price, the food miles, and how popular the item is.
- Visit a local supermarket and have learners find 5 of their favourite food items. They should record the brand name, the country of origin, the price, the food miles, and how popular the item is (learners may have to ask a manager or store personnel for this information). Compare this with their findings at the local farmers market.

MM4: L2 WS THE TOP FOODS WE EAT

75% of our calories come from just 12 crops and 5 animals.
Can you name them?

You have five minutes to fill in the blanks.

Crop 1: _____

Crop 2: _____

Crop 3: _____

Crop 4: _____

Crop 5: _____

Crop 6: _____

Crop 7: _____

Crop 8: _____

Crop 9: _____

Crop 10: _____

Crop 11: _____

Crop 12: _____

Animal 1: _____

Animal 2: _____

Animal 3: _____

Animal 4: _____

Animal 5: _____

MM4: L2 WS THE TOP FOODS WE EAT

THE TOP FOODS WE EAT

Answers:

Crops:

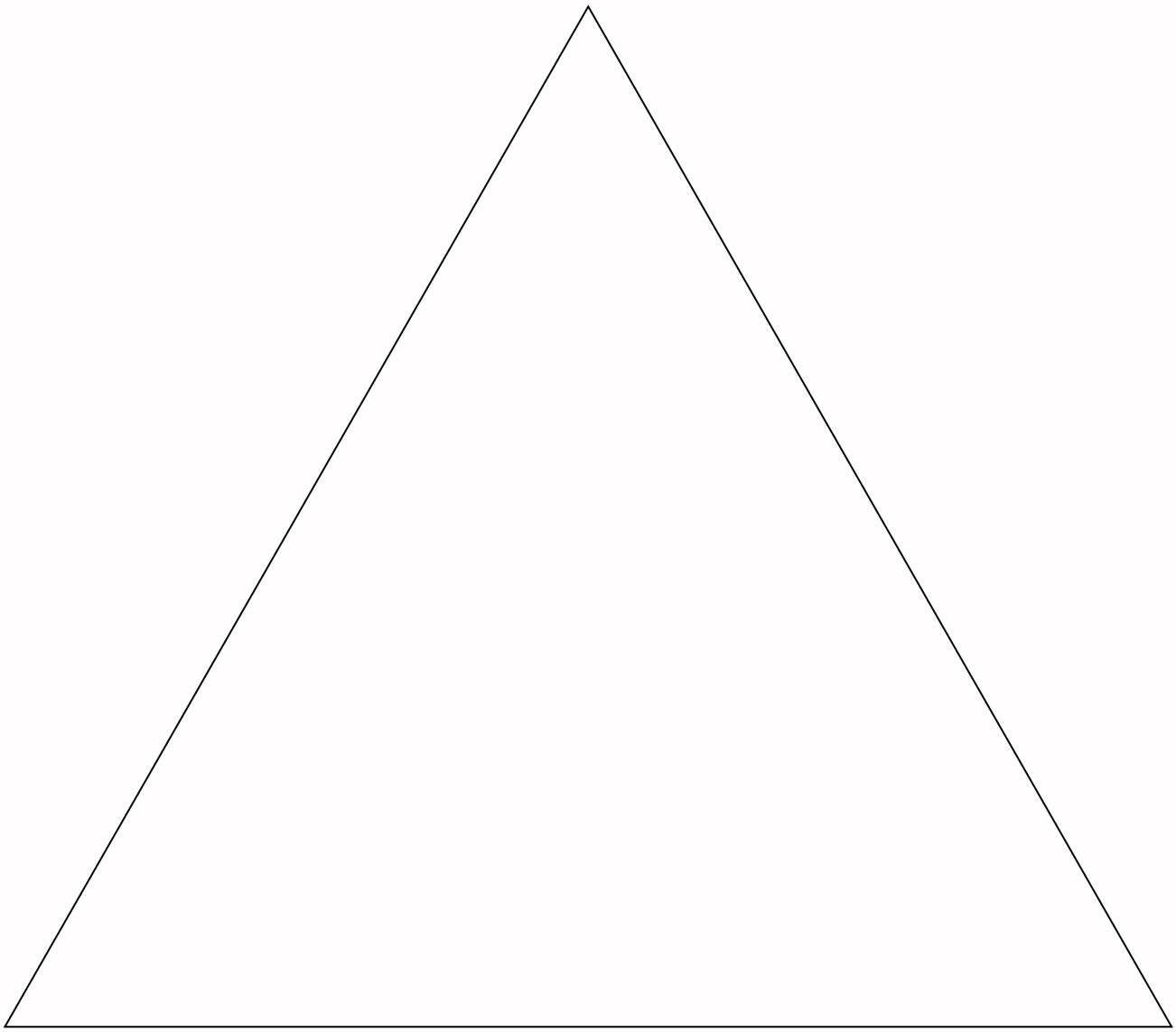
Wheat, Sugar, Rice, Corn/Maize, Soy, Potatoes, Palm Oil, Cassava, Sorghum, Millet, Groundnut, Sweet Potatoe

Animals:

Cows, Buffalo, Chickens, Pigs, Goats

MM4: L2 WS Food Pyramid

Nutritionists typically say there are six different food groups.
Can you name each food group and place them in the food pyramid below?



As a group, can you think of five different food items for each food group?

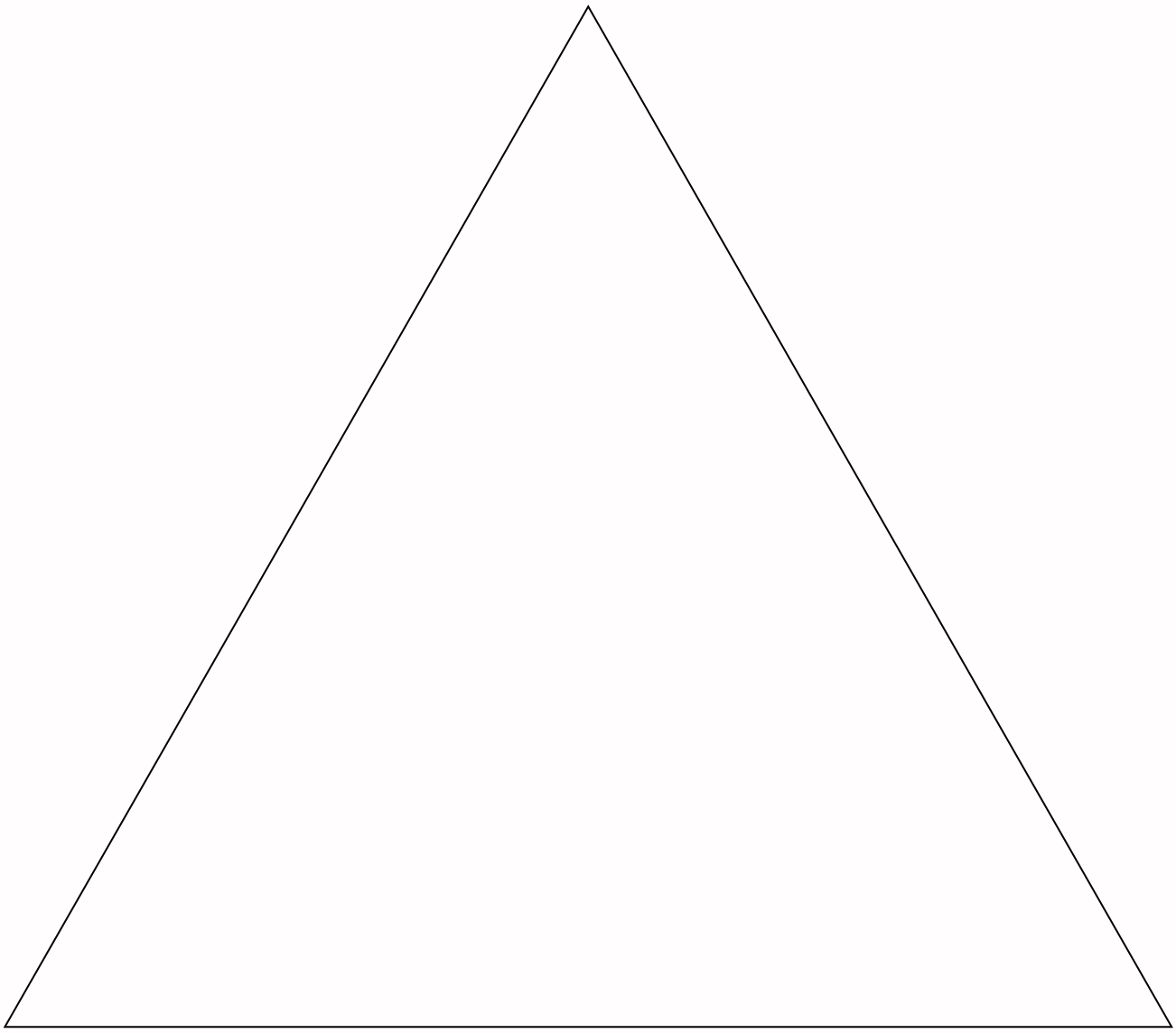
Draw or write them in the food pyramid above.

MM4: L2 WS FOOD PYRAMID BREAKFAST

BREAKFAST

Part 1

Using the food pyramid below, brainstorm a typical breakfast in your assigned country and sort each item into an appropriate food group.



MM4: L2 WS FOOD PYRAMID BREAKFAST

BREAKFAST

Part 2

Why do you think the breakfast foods in part 1 are so popular in your assigned country?

Where do you think the breakfast foods in part 1 are made / produced?

How do you think these foods are made / produced?

Do you think we could grow or produce the breakfast foods in part 1 at your home in your assigned country?

MM4: L2 WS FOOD PYRAMID BREAKFAST

BREAKFAST

What is food-miles? Write a definition with your group.

What do you think the relationship between food miles and our carbon footprint is?

What stages of travel and transportation do you think food goes through to reach Ireland?

Do you think your breakfast in part 1 has to travel far to reach your plate? If so, how far?

Where would you buy the breakfast foods in part 1? Are there any alternative places where you could buy these foods?

MM4: L2 WS FOOD PYRAMID BREAKFAST

BREAKFAST

How sustainable do you think your breakfast in part 1 is?

_____

_____

_____

Part 3

We are going to calculate the food miles of our breakfasts from part 1!

First, identify the country of origin of each breakfast food item from part 1:

Now, use www.foodmiles.com & https://www.distancesfrom.com/ to look up the food miles of each item.

_____

_____

_____

Then, add all of the food miles together.

_____

Does your breakfast have a high amount of food miles or a low amount of food miles?

_____

_____

_____

MM4: L2 WS FOOD PYRAMID BREAKFAST

BREAKFAST

Which of the food items had the highest and lowest food miles? Why do you think this is the case?

Did any of the food items' food miles surprise you? If so, which ones and why?

How could we make our breakfast from part 1 more sustainable? Is there any item that has a high amount of food miles we can do without or replace? If so, what and what could we replace it with?

SDG2 Future of Food

MM4: Feeding the World Sustainably and Responsibly

Micro-Module 4: Feeding the World Sustainably and Responsibly

Experimentation and Exploration

Lesson 3: Food, Agriculture and Climate Change

Subjects: Agricultural Science, CPSE, Geography, Home Economics, SPHE

Lesson Title and Summary: Food, Agriculture and Climate Change

In this lesson, we'll learn about the connection between industrial agriculture, our global food systems and climate change. Over half of land on our planet is devoted to raising livestock, crops, and food. This is responsible for quarter of all man made greenhouse gas emissions. We will explore our food systems to understand the various and complex ways in which agriculture impacts the natural world, including through land and water use and the production of greenhouse gases from farming. In this lesson, we'll attempt to explore whether a more sustainable and climate friendly way is possible and see if our food systems can be reinvented!

Vocabulary: Land Use, Water Use, Eutrophication, Greenhouse Gas Emissions, Crops, Livestock

In this lesson, the learner will:

- Identify information and vocabulary related to food, agriculture & climate change
- Explore the link between agriculture and climate change
- Examine how food systems and farming can become more sustainable
- Carry out online research
- Engage in pair and group work

Materials

- Worksheet 1: The Four Impacts of Agriculture
- Worksheet 2: Top Foods and their Environmental Impact
- Pens, paper and blue tack
- Online resources (computer / iPhone; website links)
- Blackboard/Whiteboard and chalk/white board markers

MM4: Feeding the World Sustainably and Responsibly
L3: Food, Agriculture and Climate Change

ACTIVITY INSTRUCTIONS

Activity 1: The Negative Impact of Nitrogen Fertiliser (15 mins)

1. Divide the class up into small groups of 2-5 students
2. Encourage teams to find 3 photos online showing the negative impacts of the use of nitrogen fertiliser / nitrogen runoff in agriculture. (Note: useful search terms include nitrogen runoff, nitrogen and algae bloom, nitrogen pollution).
3. Briefly discuss as a class what teams are finding.

Activity 2: Environmental Impacts of Agriculture (15 mins)

1. Keep the class in the small groups of 2-5 students
2. Distribute Worksheet: The Four Impacts of Agriculture. Ask the class to split the topics amongst themselves and research what each topic means and write up a quick definition for each in their own words.

Activity 3: Food and its Impact on the Environment (20 mins)

1. Keep the class divided up into the same small groups of 2-5 students.
2. Assign each group with a food from the Worksheet: Top Foods and their Environmental Impact and ask them to complete the worksheets using the world in data environmental impacts page (https://ourworldindata.org/environmental-impacts-of-food). Ensure their allocated food is showing and that they know how to toggle through carbon footprint, water use, and land use. Encourage the learners to fill in the diagrams and hang them on the wall.
3. Once all teams are done, direct the learners to sequence the diagrams according to carbon footprint and, if time is permitting, to re-sequence them according to land use, and finally water use.
4. Discuss as a class what foods we should eat more or less of? Direct the class to divide the foods on the wall into these two groups.

REFLECTIVE EXERCISE: 3-2-1 (10 mins)

- Three things they feel they have learnt from the tasks.
- Two things they found most interesting and would like to explore more.
- One – their opinion they have about the tasks.

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L3: Food, Agriculture and Climate Change

EXTENSION / REDUCTION ACTIVITIES:

Reduction: For a shorter lesson, remove Activity 1

Extension: For a longer lesson, as a class watch the UN EP video Why Do We Need To Change Our Food Systems. While watching the video ask the learners to take notes about what they are hearing and seeing. Here are some prompts to guide them:

a) Take note of how many people on the planet suffer from malnutrition?
b) How does the lack of diversity of food and the quality of food impact our health and the planet?
c) in what different ways are our natural resources under pressure?
d) How is food waste connected to climate change?
e) What are the 4 key stages of the food system?
f) What are the two main goals we need to achieve?
g) Who are the different stakeholders in our food systems?

MEDIA BOX: (materials, online video links, extra resources, case studies etc)

- The 12 crops and 5 animals that feed us https://np.thepondfoundation.org/the-12-crops-and-5-animals-that-feed-us/
- What the world eats: https://www.nationalgeographic.com/what-the-world-eats/
- 25 Most produced foods: https://beef2live.com/story-top-25-produced-foods-world-124-107239
- Biggest producing countries of key foods: https://ourworldindata.org/grapher/maize-production?tab=map
- Food Spending Around the World: https://www.vox.com/2014/7/6/5874499/map-heres-how-much-every-country-spends-on-food
- Photos of plates of food based on income & poverty levels: https://www.gapminder.org/dollar-street?topic=plates-of-food&media=all
- Yields and Habitat Loss https://ourworldindata.org/yields-habitat-loss

- UN EP Video (3:46mins): https://www.youtube.com/watch?v=VcL3BQeteCc
- “Why beef is the worst food for the climate” (4:37mins) https://www.youtube.com/watch?v=3lrJYTsKdUM&t=114s

LOCAL TRIP / EXPERTISE / ADDITIONAL WORK AND ASSESSMENTS

Media Communications 2: Research Poster Working in pairs, learners are each given one country and asked to prepare a poster on how food and agriculture has affected the environment, wild habitats, water systems and biodiversity of that country over time.

MM4: L3 WS THE 4 IMPACTS OF AGRICULTURE

As a group, write your own definition for each of the following words:

Land Use:

Water Use:

Carbon Footprint:

Eutrophication:

MM4: L3 WS TOP FOODS ENVIRONMENTAL IMPACT

You will be assigned 1-2 foods from the list below, and a worksheet for each food.

Visit the website:https://ourworldindata.org/environmental-impacts-of-food

and interact with the data explorer diagram ensuring your allocated food is showing.

Foods:

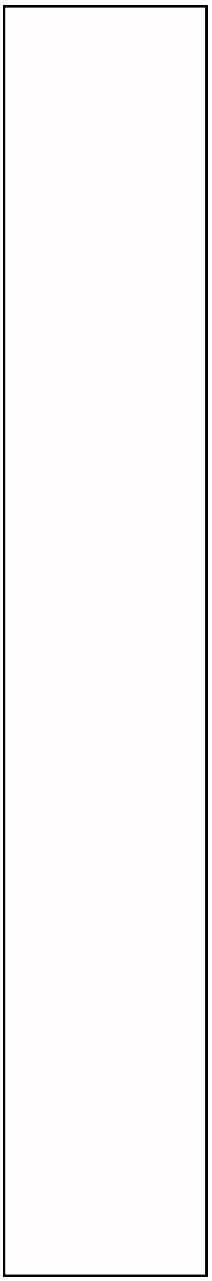
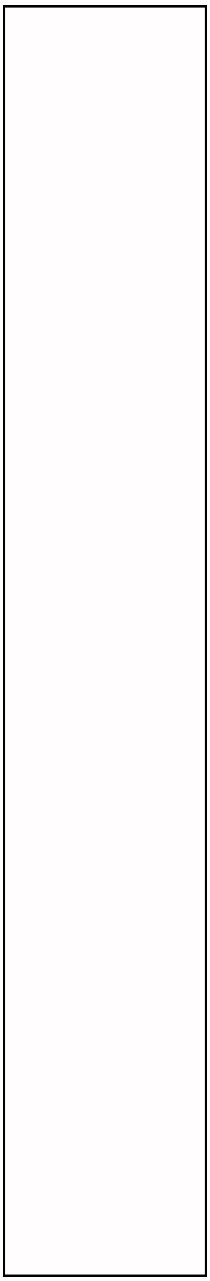
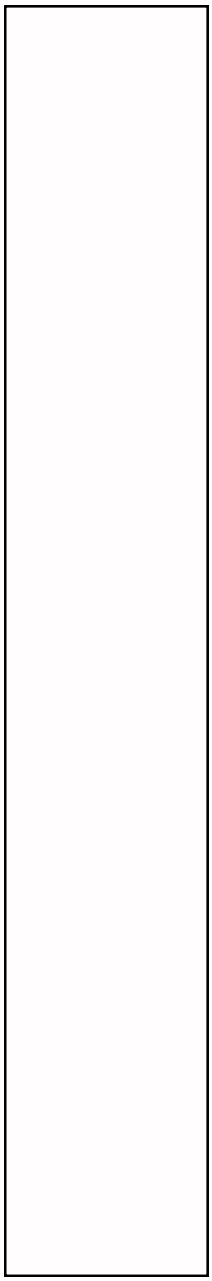
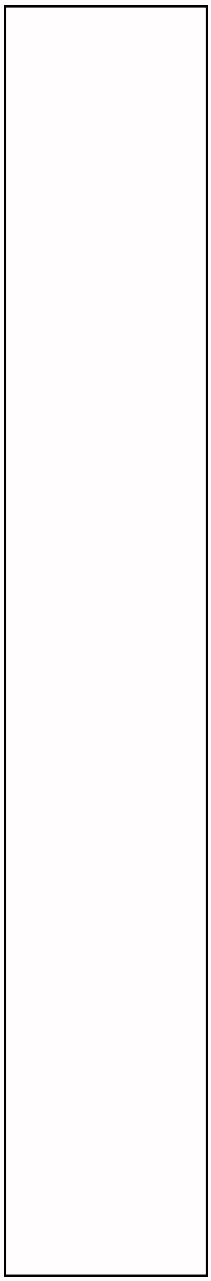
1. Beef (Herd)
2. Lamb
3. Pigs
4. Chickens & Poultry
5. Eggs
6. Rice
7. Wheat
8. Sugar Cane
9. Potatoes
10. Maize / Corn
11. Cassava
12. Soy / Soy Milk
13. Bananas
14. Coffee
15. Tomatoes
16. Prawns
17. Nuts
18. Groundnuts
19. Milk
20. Dark Chocolate

MM4: L3 WS TOP FOODS ENVIRONMENTAL IMPACT

Food (write in the name of the food you are researching):

_____

Color in the columns below to the right level of each impact for your food.

Carbon Footprint p/kg:	Water Use p/kg:	Land Use p/kg:	Eutrophy p/kg:
100 Kgs CO2	6,000 Litres	400 sq metres	400 grams
			
0 Kgs CO2	0 Litres	0 Sq Metres	0 Grams

MM4: L3 WS TOP FOODS ENVIRONMENTAL IMPACT

Food (write in the name of the food you are researching):

_____

Color in the columns below to the right level of each impact for your food.

Carbon Footprint p/kg:	Water Use p/kg:	Land Use p/kg:	Eutrophy p/kg:
100 Kgs CO2	6,000 Litres	400 sq metres	400 grams
0 Kgs CO2	0 Litres	0 Sq Metres	0 Grams

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MM4:Feeding the World Sustainably and Responsibly

Micro-Module 4: Feeding the World Sustainably and Responsibly

Experimentation and Exploration

Lesson 4: From Farm to Fork: The Steps of Food Value Chains

Subjects: Art and Design, Agricultural Science, CPSE, Home Economics, SPHE

Lesson Title and Summary: From Farm to Fork: The Steps of Food Value Chains

Each day our plates are filled with foods that come to us from farmers and producers from every country and continent in the world. The supply chains and value chains behind our food stretch across the globe. In this lesson we'll explore the paths our food travels, learn more about farming, harvesting, production, packaging, and the transport of our food and try to understand the true cost of our food. On top of what we pay at the till, is there a further cost that mother nature or the planet's farmers and workers have to bear on our behalf?

Vocabulary: Value Chains, Farming, Harvesting, Food Production, Packaging, External Costs of Production

In this lesson, the learner will:

- Identify and describe the various stages of a value chain
- Appreciate the role various stakeholders play within a value chain
- Exercise critical thinking & decision making
- Evaluate the environmental, social and economic impacts in value chains
- Engage in pair and group work

Materials

- Worksheet 1: Value Chain Definitions
- Worksheet 2: Bananas and the Steps of a Value Chain
- Worksheet 3: Value Chains in the Media
- Pens, paper and blue tack
- Internet access
- Blackboard/Whiteboard and chalk/white board markers

MM4: Feeding the World Sustainably and Responsibly
L4: From Farm to Fork: The Steps of Food Value Chains

ACTIVITY INSTRUCTIONS

Activity 1: Value Chain Definitions (15 mins)

1. Divide the class up into small groups/teams of 4-5 learners
2. Distribute Worksheet 1: Value Chain Definitions
3. Ask the groups to research and define each of the three concepts.
4. Discuss the definitions and attempt to explain the difference between an external cost and a hidden cost.

Activity 2: Bananas and the Steps of the Value Chain Defined (15 mins)

1. Distribute Worksheet 2: Bananas and the Steps of a Value Chain
2. As a class, watch the video “How Do Bananas Grow and End Up in the Store?” [3:08 mins]
3. While watching the video, ask the learners to make notes using the worksheet about what they are hearing and seeing and the possible stages of the value chain.
4. Discuss as a class what possible steps might exist for other foods, for example - grapes, apples, milk, a hamburger?

Activity 3: Value Chains in the Media (20 mins)

1. Continue working in groups and distribute Worksheet 3: Value Chains in the Media to the class
2. Allocate each team with a different newspaper article to review.
3. Assist the learners to work through the questions and requirements of the worksheet.
4. Class discussion on their findings

REFLECTIVE EXERCISE: 3-2-1 (10 mins)

- Three things they feel they have learnt from the tasks.
- Two things they found most interesting and would like to explore more.
- One – their opinion they have about the tasks.

MM4: Feeding the World Sustainably and Responsibly
L4: From Farm to Fork: The Steps of Food Value Chains

EXTENSION / REDUCTION ACTIVITIES:

Reduction: For a shorter lesson, run Activity 1 as a flipped classroom and have the learners briefly discuss their definitions at the beginning of the lesson.

Extension: For a longer lesson, extend Activity 2 by extending the discussion in step 5 by defining more value chains for other everyday foods learners have eaten in the past week. Have learners choose two articles to read in Activity 3.

MEDIA BOX: (materials, online video links, extra resources, case studies etc)

- How do Bananas Grow and End Up in the Store? (3:08mins) https://www.youtube.com/watch?v=SgFKfVfghpg
- Supermarkets wasting 200,000 tonnes of food that could go to needy, says charities: https://www.theguardian.com/business/2022/feb/22/supermarkets-wasting-200000-tonnes-of-food-that-could-go-to-needy-say-charities
- Warning that coffee could disappear from shelves by 2050 due to climate change: https://www.irishexaminer.com/news/arid-41081876.html
- Sustainability of global coffee production 'at risk' - report: https://www.rte.ie/news/2019/0117/1023727-coffee_at_risk/
- Container ship begins exit from Suez Canal 106 days after getting stuck: https://www.rte.ie/news/world/2021/0707/1233615-suez-canal/
- In the year to end child labour, COVID wreaks havoc: The pandemic has fuelled trafficking of children to work in mines and cocoa plantations: https://www.irishtimes.com/news/world/in-the-year-to-end-child-labour-covid-wreaks-havoc-1.4762320
- Mars, Nestle, and Hershey to face child slavery lawsuit in US: https://www.theguardian.com/global-development/2021/feb/12/mars-nestle-and-hershey-to-face-landmark-child-slavery-lawsuit-in-us

LOCAL TRIP / EXPERTISE / ADDITIONAL WORK AND ASSESSMENTS

Visit two shops in your area - one supermarket and one small local food shop (butcher, bakery, specialty food store/ fruit shop).

Find out how many deliveries a week the store receives and from how many different suppliers. How many products does each delivery company provide to the store or shop. Find out where these trucks come from and attempt to calculate their Irish transport miles per week for each store.

MM4:L4 WS VALUE CHAIN DEFINITIONS

As a group, write your own definition or description for each of the terms:

What is a Value Chain?

What is an External Cost?

What is a Hidden Cost?

What is the difference between an external cost and a hidden cost?

MM4: L4 WS BANANAS & VALUE CHAINS STAGES

Take notes during the video and attempt to identify the activities for each of the following stages of the value chain. Identify who carries out this work and where this activity takes place.

Stage 1: Farming: What is involved? Who does it?

Stage 2: Harvesting: What is involved? Who does it?

Stage 3: Shipping: What is involved? Who does it?

Stage 4: Production: What is involved? Who does it?

MM4: L4 WS BANANAS & VALUE CHAINS STAGES

Take notes during the video and attempt to identify the activities for each of the following stages of the value chain. Identify who carries out this work and where this activity takes place.

Stage 5: Packaging: What is involved? Who does it?

Stage 6: Selling & Consuming (and waste disposal):

MM4: L4 WS VALUE CHAINS IN THE MEDIA

You will be allocated a media article. Read the article and answer the following questions:

Which stage of the food value chain does the article relate to?

What impact is this issue having?

Is there an impact for the consumer? for farmers? for workers? for the food company/brand?

Who is paying the cost or price of this problem?

Who, if anyone, is solving the issue?

MM4: L4 WS VALUE CHAINS IN THE MEDIA

Article 1:

Supermarkets wasting 200,000 tonnes of food that could go to needy, says charities: https://www.theguardian.com/business/2022/feb/22/supermarkets-wasting-200000-tonnes-of-food-that-could-go-to-needy-say-charities

Article 2:

Warning that coffee could disappear from shelves by 2050 due to climate change: https://www.irishexaminer.com/news/arid-41081876.html

or

Sustainability of global coffee production ‘at risk’ - report: https://www.rte.ie/news/2019/0117/1023727-coffee_at_risk/

Article 3:

Container ship begins exit from Suez Canal 106 days after getting stuck: https://www.rte.ie/news/world/2021/0707/1233615-suez-canal/

Article 4:

In the year to end child labour, COVID wreaks havoc: The pandemic has fuelled trafficking of children to work in mines and cocoa plantations: https://www.irishtimes.com/news/world/in-the-year-to-end-child-labour-covid-wreaks-havoc-1.4762320

or

Mars, Nestle, and Hershey to face child slavery lawsuit in US: https://www.theguardian.com/global-development/2021/feb/12/mars-nestle-and-hershey-to-face-landmark-child-slavery-lawsuit-in-us

SDG2 Future of Food

MM4: Feeding the World Sustainably and Responsibly

Micro-Module 4: Feeding the World Sustainably and Responsibly

Experimentation and Exploration

Lesson 5: Cases Studies - Coffee, Tea and Cocoa

Subjects: Art and Design, Agricultural Science, CPSE, Home Economics, SPHE

Lesson Title and Summary: Cases Studies - Coffee, Tea and Cocoa

Coffee, Tea and Chocolate (Cocoa) are some of the world's most popular drinks and treats. These are massive global industries worth billions, yet our current model of business sees little of the income or profits make their way back to the workers and farmers who put in the hard work to bring these goods to us. In this lesson we'll look at business as usual in the tea, coffee and cocoa industries and question whether things can be better. In this lesson we'll meet some impact driven companies working to end poverty, child labour and exploitation in the tea, coffee and cocoa sectors and learn about the challenges these companies face to ensure business is a force for good and try to see if their radical approach can become the new norm.

Vocabulary: Value Chains, Coffee, Cocoa, Tea, Business Model, Profit, Impact Driven, B Corp Movement, Fair Trade, FairChain, Rainforest Alliance

In this lesson, the learner will:

- Be introduced to a number of ethical trade initiatives
- Explore case studies from the value chains for Coffee, Tea and Chocolate
- Learn to gather and analyse information from a case study
- Apply learnings and conduct supportive online research
- Consolidate and articulate research findings
- Engage in pair and group work

Materials

- Worksheet 1: Ethical Trade Definitions
- Case Study 1: FairChain & Moyee Coffee
- Case Study 2: Tony Chocolonely's Chocolate
- Case Study 3: FrankAboutTea
- Pens, paper
- Internet access

MM4: Feeding the World Sustainably and Responsibly
L5: Cases Studies - Coffee, Tea and Cocoa

ACTIVITY INSTRUCTIONS

Activity 1: Ethical Trade Definitions (20 mins)

1. Divide the class up into small groups of 2-5 students
2. Distribute Worksheet 1: Ethical Trade Definitions
3. Encourage teams to research the four topics in the worksheet and to write a definition for each in their own words.
4. Share as a class.

Activity 2: Case Studies (30 mins)

1. Continuing to work in small groups of 2-5 students
2. Distribute the 3 case studies amongst the students and encourage them to research their allocated companies and answer the accompanying questions.
3. Encourage teams to research the four topics in the worksheet and to write a definition for each in their own words.
4. Assist the learners where possible with their research and help them to write, edit, and refine their answers to the questions.
5. If time allows, have learners share their case studies with the class.

REFLECTIVE EXERCISE: 3-2-1 (10 mins)

- Three things they feel they have learnt from the tasks.
- Two things they found most interesting and would like to explore more.
- One – their opinion they have about the tasks.

MM4: Feeding the World Sustainably and Responsibly
L5: Cases Studies - Coffee, Tea and Cocoa

EXTENSION / REDUCTION ACTIVITIES:

Reduction: For a shorter lesson, have learners complete activity 1 at home and briefly discuss in class.

Extension: For a longer lesson, allow more time for the case studies, getting each group to present to the class. Learners could also take on more than one case study.

MEDIA BOX: (materials, online video links, extra resources, case studies etc)

FrankAboutTea: https://frankabouttea.com/en

Tony's Chocolonely: https://tonyschocolonely.com/uk/en

Tony's Chocolonely annual fair report 2021-2022: https://tonyschocolonely.com/us/en/annual-fair-reports/annual-fair-report-2021-2022

Moyee Coffee: https://moyeecoffee.ie/ and https://www.moyeecoffee.com/

Moyee Coffee impact report: https://www.moyeecoffee.com/wp-content/uploads/2023/01/Moyee-Coffee-Impact-Report.pdf

LOCAL TRIP / EXPERTISE / ADDITIONAL WORK AND ASSESSMENTS

Visit your local supermarket, Convenience store (cornerhop, Spar, 7-11), speciality food store and health food store.

Excluding tea, coffee and cocoa, try to find 3 fair trade products and 3 B corp products. Can you identify why these products are B Corp or FairTrade? Find three similar products that are not ethical. Can you describe the difference between the two products.

MM4: L5 WS ETHICAL TRADE DEFINITIONS

As a group, write your own definition or description for each terms below

What is Fairtrade?

What is Rainforest Alliance?

What is the B Corp Movement?

What is FairChain?

MM4: L5 WS CASE STUDY MOYEE COFFEE

CASE STUDY 1: MOYEE COFFEE

Visit the moyeecoffee.ie and moyeecoffee.com websites to learn about the radical approach of this impact driven “fairchain” coffee company. Refer to their impact report: https://www.moyeecoffee.com/wp-content/uploads/2023/01/Moyee-Coffee-Impact-Report.pdf
Answer the following questions:

When was the company founded?_____

Where is the company based?_____

What is the mission or purpose of the company?

_____

_____

How big is the company?_____

Describe how the company operates through out the six stages of the value chain?

_____

_____

_____

_____

What is the main impact focus of the company?

_____

_____

_____

_____

MM4: L5 WS CASE STUDY MOYEE COFFEE

CASE STUDY 1: MOYEE COFFEE

How does the company differ from other coffee companies?

In your view can the company's approach be mainstreamed and adopted as the global norm in the coffee industry?

What challenges might be faced by the global coffee industry to adopt Moyee's approach?

MM4: L5 WS CASE STUDY TONY'S CHOCOLONELY

CASE STUDY 2: TONY'S CHOCOLONELY

Visit the tonyschocolonely.com/uk/en/ website to learn more about this company's efforts to create the world's first slave free bar of chocolate. Refer to their impact report: https://tonyschocolonely.com/us/en/annual-fair-reports/annual-fair-report-2021-2022 Answer the following questions:

When was the company founded?_____

Where is the company based?_____

What is the mission or purpose of the company?

_____

_____

How big is the company?_____

Describe how the company operates through out the six stages of the value chain?

_____

_____

_____

_____

What is the main impact focus of the company?

_____

_____

_____

_____

MM4: L5 WS CASE STUDY TONY'S CHOCOLONELY

CASE STUDY 2: TONY'S CHOCOLONELY

How does the company differ from other chocolate companies?

In your view can the company's approach be mainstreamed and adopted as the global norm in the chocolate industry?

What challenges might be faced by the global chocolate industry to adopt Tony's Chocolonely's approach?

MM4: L5 WS CASE STUDY FRANKBOUTTEA

CASE STUDY 3: FRANKBOUTTEA

Visit the frankabouttea.com website to learn more about this company's efforts to redesign the value chain for tea. Answer the following questions:

When was the company founded?_____

Where is the company based?_____

What is the mission or purpose of the company?

_____

_____

How big is the company?_____

Describe how the company operates through out the six stages of the value chain?

_____

_____

_____

_____

What is the main impact focus of the company?

_____

_____

_____

_____

MM4: L5 WS CASE STUDY FRANKBOUTTEA

CASE STUDY 3: FRANKABOUTTEA

How does the company differ from other tea companies?

In your view can the company's approach be mainstreamed and adopted as the global norm in the tea industry?

What challenges might be faced by the global tea industry to adopt FrankAboutTea's approach?

SDG2 Future of Food

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Micro-Module 4: Feeding the World Sustainably and Responsibly

Experimentation and Exploration

Lesson 6: Supermarkets, Farmers and our Broken Value Chains

Subjects: Art and Design, Agricultural Science, CPSE, Home Economics, SPHE

Lesson Title and Summary: Supermarkets, Farmers and our Broken Value Chains

Today we buy most of our food from a handful of supermarkets. These multinational companies are tremendously successful and profitable at delivering all kinds of food to us, when and where we want it. They dominate the planet's food supply systems. But behind these supermarkets, there is a global army of smallholder farmers, literally million of farmers and their families, in every corner of the globe. They work so hard often while facing the impacts of climate change head on, to put food and on our tables. Yet, many farmers earn so little that they cannot afford to feed their own families. In this lesson we'll try to understand why the global food system is so broken that farmers can starve and struggle while supermarkets profit and explore whether a better way is possible for the future.

Vocabulary: Value Chains, Farming, Production, Transport, Social Cost, Ecological Cost

In this lesson, the learner will:

- Understand how powerful and important supermarkets are in the food sector
- Explore concept of living income for food workers and farmers
- Apply learning on how to conduct online research
- Consolidate and articulate research findings
- Engage in pair and group work

Materials

- Worksheet 1: The Power of Supermarkets
- Worksheet 2: Living Income for Farmers
- Worksheet 3: How to Solve Farmer Poverty?
- Pens, paper
- Internet access

MM4: Feeding the World Sustainably and Responsibly
L6: Supermarkets, Farmers and our Broken Value Chains

ACTIVITY INSTRUCTIONS

Activity 1: The Power of Supermarkets (20 minutes)

1. Write the question " What did you eat in the last week?". Ask the class to name foods they ate in the last week that you cannot buy in a supermarket. (note: to prompt the discussion, if need be highlight (i) speciality food stores (ii) ethnic stores, (iii) butchers, (iv) bakers and (v) fishmongers. If take-away foods are mentioned, ask if these ingredients are available in supermarkets).
2. Divide the class into groups of 4-5 learners.
3. Distribute the Worksheet 1: The Power of Supermarkets. Have the groups carry out research on supermarkets in Ireland and Europe and completing pie charts as instructed.
4. As a class, discuss the pros and cons of supermarkets having so much power in where we get our food.

Activity 2: Farmer Pay & A Living Income (15 minutes)

1. Staying in the same groups.
2. Distribute the Worksheet 2: A Living Income for Farmers. Have the teams use the internet to answer the questions.
3. As a class, discuss the group's findings.
4. Start a class discussion with a few probing questions:

    a. Were you surprised how much farmers get paid from the supermarket price?
    b. Were you able to find information online showing how much farmers earn for other products?
    c. Do you think there is enough information and consumer awareness on how much farmers earn?

Activity 3: Solutions (15 minutes)

1. Distribute Worksheet 3: "How to Solve Farmer Poverty?" to the teams. Ask the learners, as groups, to research and identify 3 actions each of the four groups can take to improve life for farmers.
2. Discuss as a class.

REFLECTIVE EXERCISE: 3-2-1 (10 mins)

- Three things they feel they have learnt from the tasks.
- Two things they found most interesting and would like to explore more.
- One – their opinion they have about the tasks.

MM4: Feeding the World Sustainably and Responsibly
L6: Supermarkets, Farmers and our Broken Value Chains

EXTENSION / REDUCTION ACTIVITIES:

Reduction: For a shorter lesson, carry out Activity 1 just for Ireland.

Extension: For a longer lesson, extend Activity 1 by preparing pie charts of supermarkets for ALL countries in the EU.

Option B: Extend Activity 2 by instructing the teams to visit dollar street website and find pictures of small holder farmers and learning about the the items they possess that might constitute a living income (look at the food, education materials, basic household materials, shelter, bedding, sanitation facilities, etc. at their disposal). As a class, discuss the difference in what these families have and what people in Ireland might have.

MEDIA BOX: (materials, online video links, extra resources, case studies etc)

- Ripe for Change Oxfam Report: https://policy-practice.oxfam.org/resources/ripe-for-change-ending-human-suffering-in-supermarket-supply-chains-620418/
- Supermarkets in Ireland: https://www.checkout.ie/tag/kantar
- Supermarkets in Ireland: https://www.theconsumergoodsforum.com/wp-content/uploads/2022/07/Global-Summit-2022_Irish-Retail-Scene.pdf
- Smallholder Farmers: https://www.fao.org/news/story/en/item/1395127/icode/#:~:text=The%20updated%20estimates%20are%20that,world's%20food%20in%20value%20terms.
- World Living in Poverty: https://ourworldindata.org/grapher/world-population-in-extreme-poverty-absolute
- Our World in Data: Poverty: https://ourworldindata.org/poverty
- Dollar Street Gapminder: https://www.gapminder.org/dollar-street

LOCAL TRIP / EXPERTISE / ADDITIONAL WORK AND ASSESSMENTS

Try to identify five foods in your home that are not available at your main supermarket.

Visit a butcher, bread shop, ethnic food store, or health food store in your area and identify 3-5 items per shop that might not be available in a regular supermarket.

Interview a farmer and ask them about the prices they receive from supermarkets and how they think farmer income can be improved on our planet.

MM4: L6 WS THE POWER OF SUPERMARKETS

Supermarkets in Ireland:

https://www.checkout.ie/tag/kantar https://www.theconsumergoodsforum.com/wp-content/uploads/2022/07/Global-Summit-2022_Irish-Retail-Scene.pdf

Try to name the top five supermarkets in Ireland?

1. _____
2. _____
3. _____
4. _____
5. _____

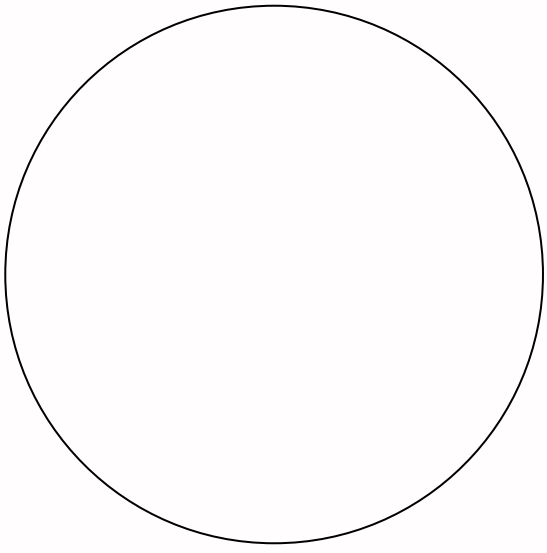
How many stores does each supermarket have across the country?

1. _____
2. _____
3. _____
4. _____
5. _____

What share of the grocery market does each supermarket possess?

1. _____
2. _____
3. _____
4. _____
5. _____

Using the circle below create a pie chart of the Irish retail food market:



MM4: L6 WS THE POWER OF SUPERMARKETS

THE POWER OF SUPERMARKETS

Repeat the exercise for two other EU countries of your choice.

Country name:_____

Try to name the top five supermarkets in this country?

1._____
2._____
3._____
4._____
5._____

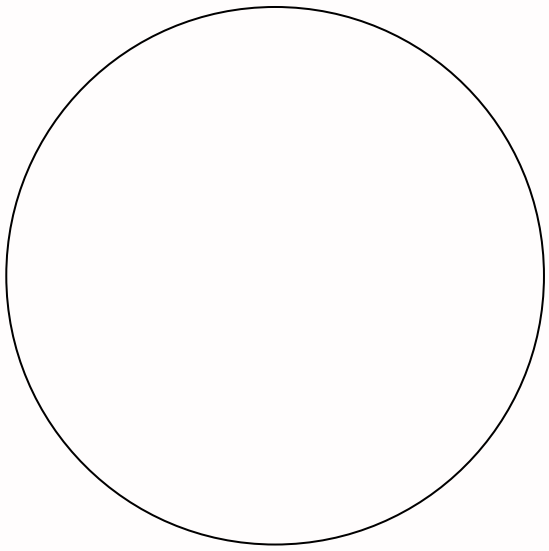
How many stores does each supermarket have across the country?

1._____
2._____
3._____
4._____
5._____

What share of the grocery market does each supermarket possess?

1._____
2._____
3._____
4._____
5._____

Using the circle below create a pie chart of the country's retail food market:



MM4: L6 WS THE POWER OF SUPERMARKETS

THE POWER OF SUPERMARKETS

Repeat the exercise for two other EU countries of your choice.

Country name:_____

Try to name the top five supermarkets in this country?

1. _____
2. _____
3. _____
4. _____
5. _____

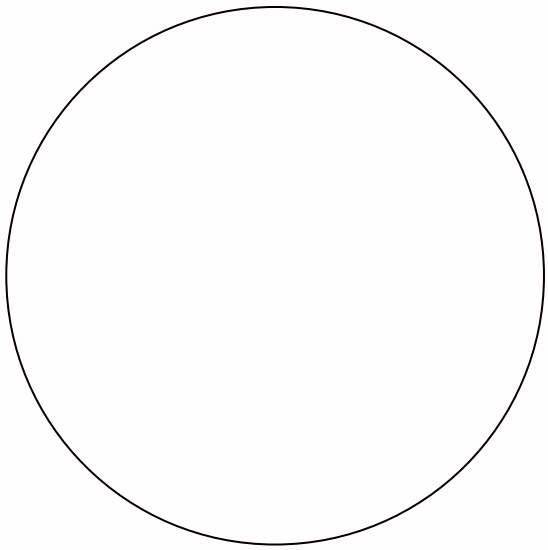
How many stores does each supermarket have across the country?

1. _____
2. _____
3. _____
4. _____
5. _____

What share of the grocery market does each supermarket possess?

1. _____
2. _____
3. _____
4. _____
5. _____

Using the circle below create a pie chart of the country's retail food market:

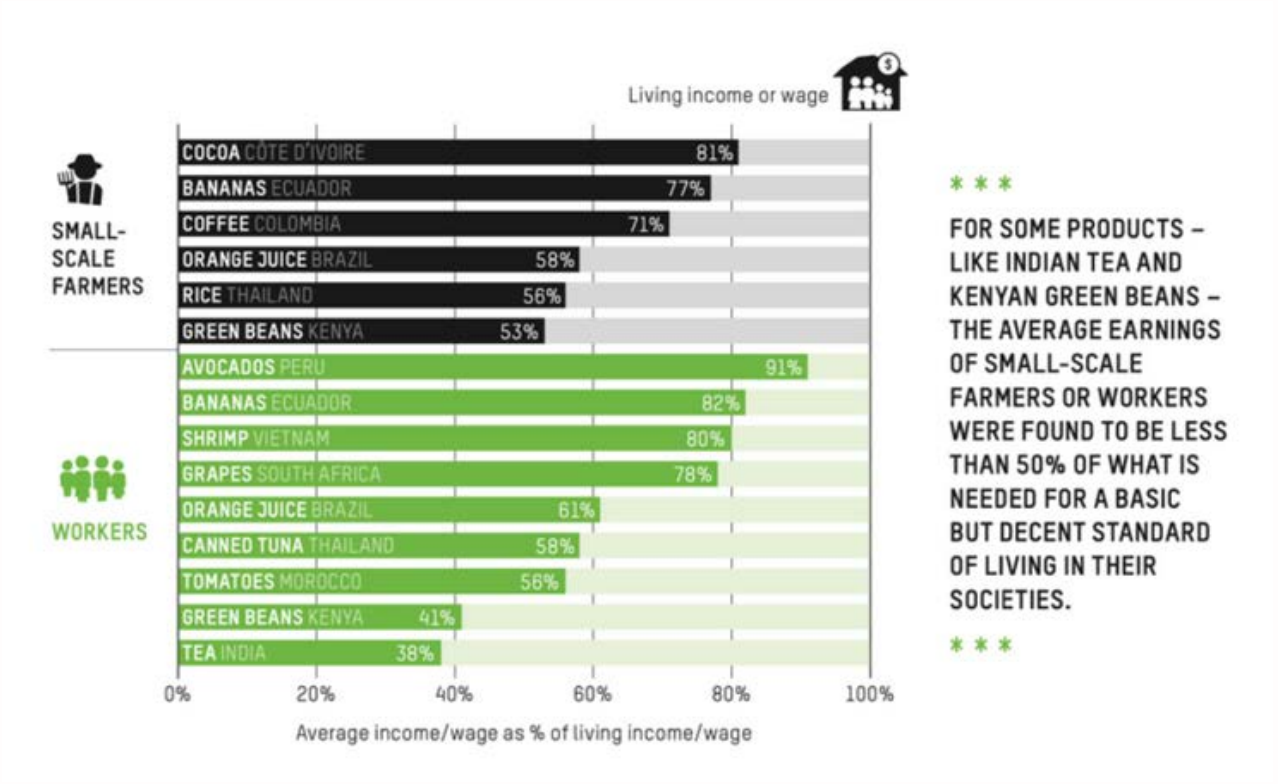


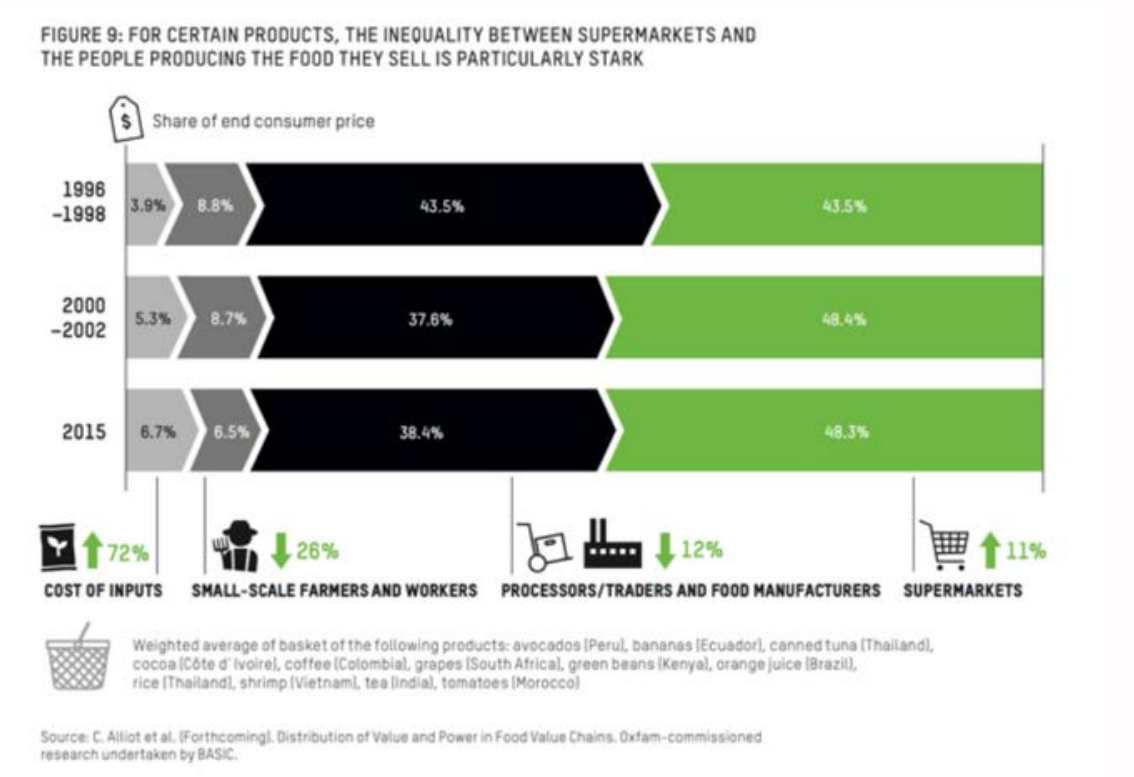
MM4: L6 WS LIVING INCOME FOR FARMERS

2 ZERO HUNGER

As a group, take five minutes to explore the following four diagrams:

Charts taken from the Oxfam report Ripe for Change: https://policy-practice.oxfam.org/resources/ripe-for-change-ending-human-suffering-in-supermarket-supply-chains-620418/





MM4: L6 WS LIVING INCOME FOR FARMERS

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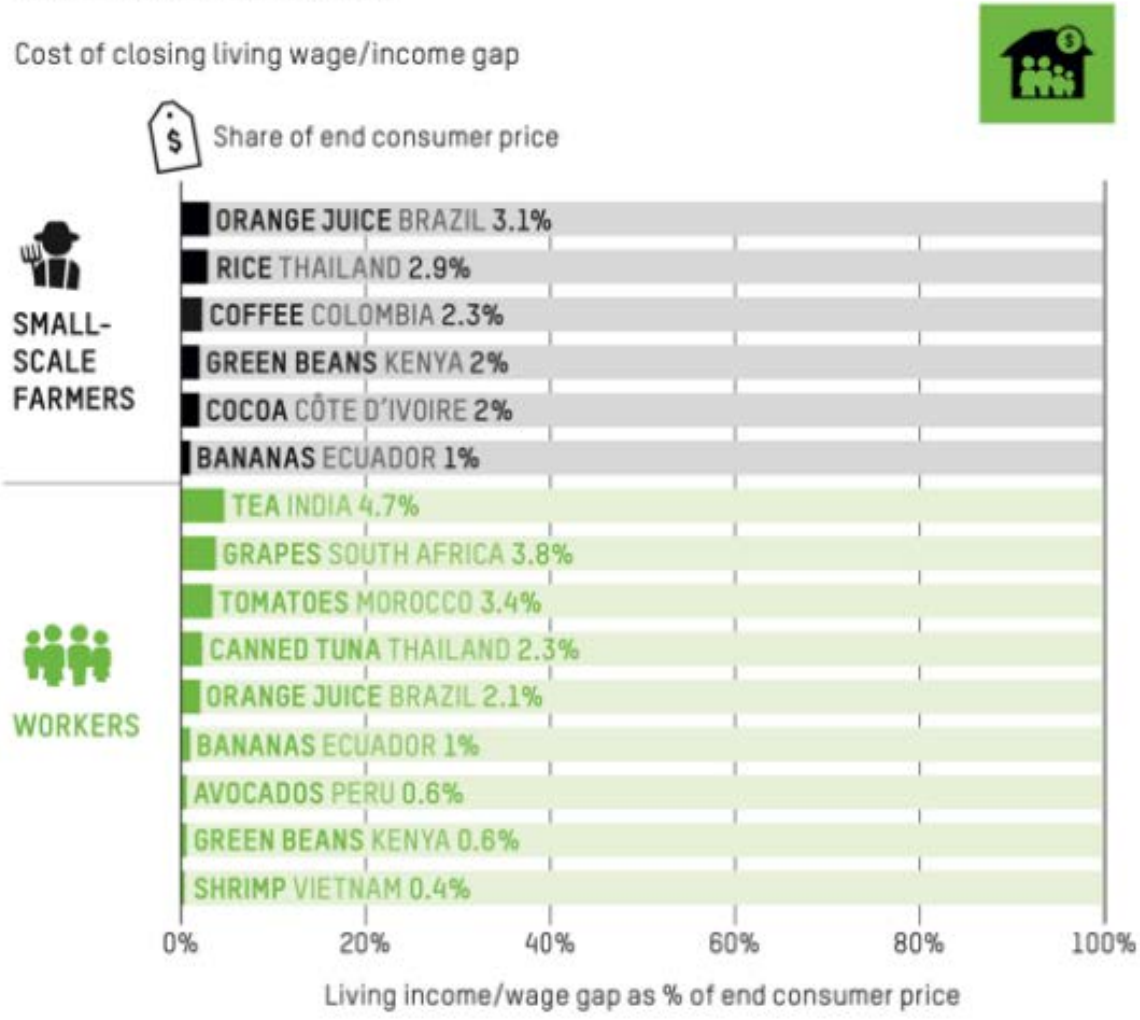
FIGURE 10: FOR MANY PRODUCTS, THE INVESTMENT NEEDED TO CLOSE THE GAP BETWEEN PREVAILING AND LIVING INCOMES OR WAGES IS MARGINAL COMPARED TO THE END CONSUMER PRICE



Note: Data as of 2015. Some commodities appear twice, as they are both produced by small-scale farmers and by waged workers on large-scale plantations, in processing facilities or on fishing vessels.

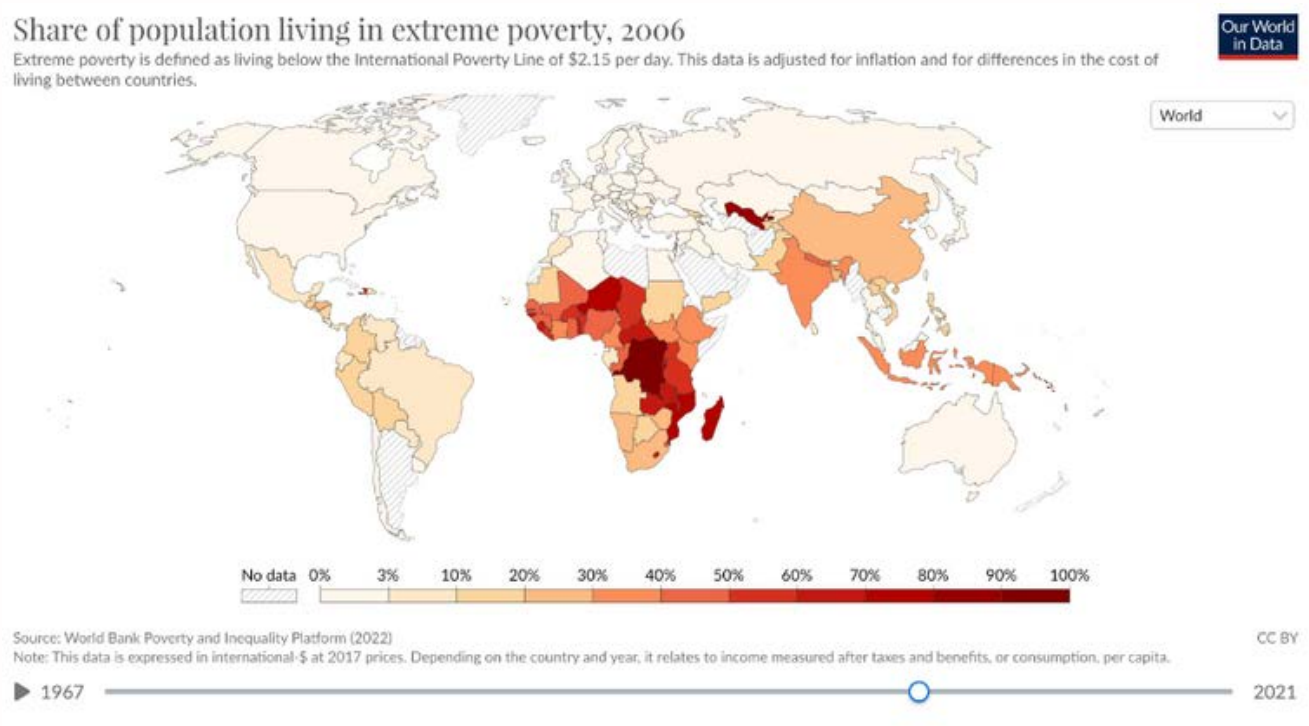
Source: C. Alliot et al. [Forthcoming]. Distribution of Value and Power in Food Value Chains. Oxfam-commissioned research undertaken by BASIC.

MM4: L6 WS LIVING INCOME FOR FARMERS

2 ZERO HUNGER

As a group, take five minutes to explore the following four diagrams:

Sourced from World in data website: https://ourworldindata.org/poverty



Discuss your thoughts and impressions on the four charts above and the information they convey. Record your comments and observations below:

Search the internet to understand what a living income for farmers means. What various components might this include? In your own words, provide a definition for a living income in the box below.

MM4: L6 WS HOW TO SOLVE FARMER POVERTY?

As a team discuss, research, and identify 3 ways these 4 different groups can help improve wages and prosperity for farmers:

Consumers

Governments

Farmers

Supermarkets, Brands and Companies

SDG2 Future of Food

MM4: Feeding the World Sustainably and Responsibly

Micro-Module 4: Feeding the World Sustainably and Responsibly

Experimentation and Exploration

Lesson 7: Value Chain Exercise

Subjects: Art and Design, Agricultural Science, CPSE, Home Economics, SPHE

Lesson Title and Summary: Value Chain Exercise

In this lesson we'll take a deep dive into the value chains behind some of the everyday foods we all enjoy. We'll plot the journey through the value chains these foods make, identifying the human and environmental problems that exist within these food systems. We'll attempt to discover what innovations and solutions can help change the systems behind our foods to do right by customers, farmers, workers, company owners and our planet.

Vocabulary: Value Chains, Farming, Harvesting, Transport, Food Production, Packaging, Consumption, Food Waste, Social Cost, Ecological Cost, True Cost

In this lesson, the learner will:

- Define and describe the concept of a value chain
- Identify and explain the various stages of a foods value chain
- Recognize the social and ecological challenges associated with each stage of the value chain
- Analyse the interconnectedness between different stages of the value chain and its impact on society and the environment
- Gain empathy for the challenges faced by farmers and producers
- Build up presentation and communication skills
- Work in groups and learn to collaborate on research and analysis

Materials

- Worksheet 1: Value Chain Six Stages, People + Planet
- Worksheet: Additional Resources
- Pens, paper
- Internet access

MM4: Feeding the World Sustainably and Responsibly
L7: Value Chain Exercise

ACTIVITY INSTRUCTIONS

Activity 1: Value Chain Exercise (50 mins)

1. Divide the class up into small groups/teams of 4-5 learners
2. Distribute Worksheet 1: Value Chain Six Stages, People + Planet and allocate each group with a different food.
3. Use the Worksheet: Additional Resources to support researching their allocate food
4. As per the worksheet, teams should be instructed to define the six stages of their food's value chain and to describe the process for each stage in the chain (actors and activities involved in the stage, inputs, outcomes)
5. Groups to be instructed to identify the social and environmental problems that are created at each stage, whether for the local or global community and whether for the local environment or global climate.
6. Groups to be instructed to identify 2 solutions that could be applied to remedy social and environmental problems at each stage.
7. Class Discussion: Teams should be asked to discuss who they think should pay for the solutions and why (the customer? farmers? corporates? government?)

REFLECTIVE EXERCISE: 3-2-1 (10 mins)

- Three things they feel they have learnt from the tasks.
- Two things they found most interesting and would like to explore more.
- One – their opinion they have about the tasks.

MM4: Feeding the World Sustainably and Responsibly
L7: Value Chain Exercise

EXTENSION / REDUCTION ACTIVITIES:

Reduction: For a shorter lesson, in activity 1, reduce the time by removing step 6 in the value chain.

Extension: For a longer lesson, extend activity 1 by expanding step 6 in the value chain and splitting it into three components – sales, consumption, and waste/afterlife. Encourage students to research the social and environmental challenges of each of these three steps and to explore solutions and workarounds.

Option B: Allow more time for research. You could also allow additional lessons for learners to develop their research into a podcast, film, Pecha Kucha presentation, or poster presentation (See Media Communications Module).

MEDIA BOX: (materials, online video links, extra resources, case studies etc)

See additional resources worksheet

LOCAL TRIP / EXPERTISE / ADDITIONAL WORK AND ASSESSMENTS

Visit your local supermarket and interview 6 supermarket customers outside the store (mix of staff and customers). Question them to see what, if any, issues they imagine may exist at each of the six stages of food value chains.

See also Media Communications 4: Creating a Podcast. Learners can use the resources to develop their interview questions and then create a short podcast on their findings either independently or as a group

MM4: L7 WS THE SIX VALUE CHAIN STAGES

VALUE CHAIN SIX STAGES, PEOPLE + PLANET

You will be assigned one of the following foods: orange juice, rice, coffee, cocoa, bananas, green beans, tea, coffee, prawns, or avocado. Use the additional resources worksheet and the internet to search the six stages of the value chain for your food. Use the questions in each stage to guide your search.

Our food is: _____

Stage 1: Farming

Description of this stage (activities, work, outputs):

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

What people are involved in this stage?
What people are impacted by this stage (local or international community, good and bad impacts)?
What materials / stuff / items are used in this stage?
What are the social impacts from this stage?
How does this work impact workers, farmers, their families, their communities?
What are the environmental outputs / impact / cost from this stage?
What impact is this stage having on water use, land use, water discharge and runoff, pollution, noise, light?
What pollution is generated by this stage in the value chain?
What solutions / innovations or different approaches can be used to fix these problems?

MM4: L7 WS THE SIX VALUE CHAIN STAGES

VALUE CHAIN SIX STAGES, PEOPLE + PLANET

Stage 2: Harvesting

Description of this stage (activities, work, outputs):

What people are involved in this stage?
Does the family get involved in harvesting?
Are there seasonal workers? How is life for them?
Are children involved working the harvest?
Is harvesting dangerous?
What people are impacted by this stage (local or international community, good and bad impacts)?
What materials / stuff / items are used in this stage?
What are the social impacts from this stage?
How does this work impact workers, farmers, their families, their communities?
What are the environmental outputs / impact / cost from this stage?
What impact is this stage having on water use, land use, water discharge and runoff, pollution, noise, light?
What pollution is generated by this stage in the value chain?
What solutions / innovations or different approaches can be used to fix these problems?

MM4: L7 WS THE SIX VALUE CHAIN STAGES

VALUE CHAIN SIX STAGES, PEOPLE + PLANET

Stage 3: Production

Description of this stage (activities, work, outputs):

What people are involved in this stage?
What people are impacted by this stage (local or international community, good and bad impacts)?
What materials / stuff / items are used in this stage?
What machinery is involved in production?
What energy source is used?
Are there chemicals or other materials added during production?
Is there pollution or run off from the production process?
What are the social impacts from this stage?
How does this work impact workers, farmers, their families, their communities?
What are the environmental outputs / impact / cost from this stage?
What impact is this stage having on water use, land use, water discharge and runoff, pollution, noise, light?
What pollution is generated by this stage in the value chain?
What solutions / innovations or different approaches can be used to fix these problems?

MM4: L7 WS THE SIX VALUE CHAIN STAGES

VALUE CHAIN SIX STAGES, PEOPLE + PLANET

Stage 4: Packaging

Description of this stage (activities, work, outputs):

What people are involved in this stage?
What people are impacted by this stage (local or international community, good and bad impacts)?
What materials / stuff / items are used in this stage?
Is the packaging paper / plastic / other materials?
Is there packaging for transport separate from consumer packaging?
Where does this packaging go after its used?
What are the social impacts from this stage?
How does this work impact workers, farmers, their families, their communities?
What are the environmental outputs / impact / cost from this stage?
What impact is this stage having on water use, land use, water discharge and runoff, pollution, noise, light?
What pollution is generated by this stage in the value chain?
What solutions / innovations or different approaches can be used to fix these problems?

MM4: L7 WS THE SIX VALUE CHAIN STAGES

VALUE CHAIN SIX STAGES, PEOPLE + PLANET

Stage 5: Transport

Description of this stage (activities, work, outputs):

What people are involved in this stage?
What people are impacted by this stage (local or international community, good and bad impacts)?
What distances are involved?
What shipping methods are involved? By sea or air, rail or truck?
What materials / stuff / items are used in this stage?
What are the social impacts from this stage?
How does this work impact workers, farmers, their families, their communities?
What are the environmental outputs / impact / cost from this stage?
What impact is this stage having on water use, land use, water discharge and runoff, pollution, noise, light?
What pollution is generated by this stage in the value chain?
What solutions / innovations or different approaches can be used to fix these problems?

MM4: L7 WS THE SIX VALUE CHAIN STAGES

VALUE CHAIN SIX STAGES, PEOPLE + PLANET

Stage 6: Sales, consumption and after life

Description of this stage (activities, work, outputs):

What happens the product once it has been eaten / consumed?
Is there packaging? Waste from the cooking / preparing stage?
Who deals with the waste and where does it go?
Where is the product sold and stored?
What people are involved in this stage?
What people are impacted by this stage (local or international community, good and bad impacts)?
What materials / stuff / items are used in this stage (buildings, shelves, electricity, storage and display boxes, refrigeration)?
What are the social impacts from this stage?
How does this work impact workers, farmers, their families, their communities?
What are the environmental outputs / impact / cost from this stage?
What impact is this stage having on water use, land use, water discharge and runoff, pollution, noise, light?
What pollution is generated by this stage in the value chain?
What solutions / innovations or different approaches can be used to fix these problems?