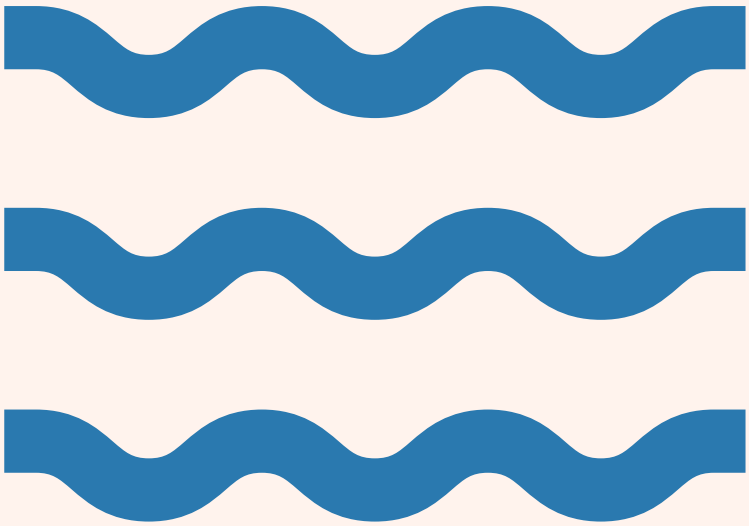
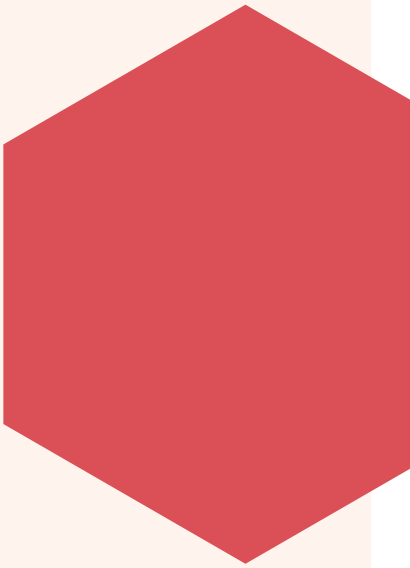
REDRESS

SUSTAINABLE DEVELOPMENT GOALS

Get Redressed Lesson Plan:

# Fashion and The Environment





redress.com.hk/getredressedmonth

@GetRedressed

RedressAsia

## Introduction

Redress is a Hong Kong based environmental charity with a mission to prevent and transform textile waste in the fashion industry.

The fashion industry is one of the most polluting industries in the world, affecting everything from our land and water to the air that we breathe. Fashion is responsible for around 10% of the world's greenhouse gases, more than the shipping and aviation industries combined, and growing the cotton required to make just one pair of men's jeans and one men's T-Shirt uses around 10,000L - 20,000L of water - more than you would drink in over 10 years. It is also a growing problem for our landfills, with around 370 tonnes of textiles being dumped in Hong Kong's landfills every day. Yet did you know that 95% of textiles that are thrown away every year could be re-used, recycled or repaired?

Given these critical environmental issues, Redress has developed this Get Redressed Lesson Plan in order to introduce students to the issue of textile waste, encourage them to reflect on their own fashion consumption, clothing use and disposal habits, and provide them with the knowledge and tools to take direct and positive action. Armed with this knowledge, students will have the power to change their behaviour as consumers, minimising carbon emissions, water use and waste in the long-term. The Get Redressed Lesson Plan will also support schools and teachers to align with the UN Sustainable Development Goals, in particular Goal 12, Responsible Production and Consumption, which has been identified as a priority for Hong Kong.

Founded in 2007, Redress has a successful track record of working directly with a wide range of key stakeholders, including government and industry bodies, designers and consumers, to tackle the problem of textile waste in order to ultimately reduce fashion's carbon, water and chemical footprints. Over the last 12 years we have successfully developed and implemented a huge number of public and industry related educational programmes including workshops, exhibitions, screenings and talks at various schools, corporates and events across Hong Kong.

## Learning Outcome

- Build awareness about the environmental impacts of the fashion industry.
- Recognise the important role you play as a consumer of fashion.
- Understand the value of clothing and the global resources required to create garments.
- Consider the effects of over-consumption.
- Understand and implement easy changes to make a positive impact within fashion.

## How To Use This Pack

This is a two part lesson, (each part lasts approximately 30 minutes), which can also be taught as one 60 minute lesson or across an extended period of time. We advise you to run the lesson alongside our Get Redressed PowerPoint - feeling free to add or remove slides as needed.

The Get Redressed Lesson Plan also includes a homework activity that can be set in advance of the lesson, in between parts one and two, or after both parts of the lesson have been delivered.

We have also included extra resources and suggestions on how you can further develop some of the themes and issues raised in other areas of the curriculum.

## Subject Links

**Mathematics:** Calculating and surveying quantities of clothes.

**Geography:** Understand the production processes behind our clothes, the locations where they are made and the impact the fashion industry has on the surrounding environment and communities.

**English:** Analysis of wardrobe survey, class discussion and debate points.

**Science:** Understanding the raw materials used in our clothes.

**Sustainable Development Goals (SDGs): Goal 12 - Sustainable Consumption & Production**
"Sustainable consumption and production is about promoting resource and energy efficiency, sustainable infrastructure, and providing access to basic services, green and decent jobs and a better quality of life for all. Its implementation helps to achieve overall development plans, reduce future economic, environmental and social costs, strengthen economic competitiveness and reduce poverty." [1]

**Global Citizenship Education (GCED): Sustainable Development**
"How we share and use the earth's resources affects the health of the planet and of everyone with whom we share it – now and in the future. There are many different interpretations of sustainable development, but at its heart lies a recognition that our relationship with the earth needs to acknowledge the limits of finite resources and the human rights of all." [2]

**Circular Economy:**
Thinking about how we could change our systems to design out waste and pollution, keep products and materials in use, and regenerate natural systems.

## Resources Included



[1] https://www.un.org/sustainabledevelopment/sustainable-consumption-production/

[2] OXFAM Global_Citizenship_guide_for_Teachers P.7 https://www.oxfam.org.uk/education/resources/global-citizenship-in-the-classroom-a-guide-for-teachers

# Lesson Plan: The Polluting Effects of Clothes and Possible Solutions

You can use this Get Redressed PowerPoint presentation to deliver this lesson. The notes below are linked to the slides should you wish to use them. Sources for all the statistics mentioned below can be found in the Get Redressed Fact Sheet at the end of this document.

*You may have already introduced the SDGs to your class. Goal 12 (Responsible Consumption & Production) is about ensuring sustainable consumption and production patterns in order to prevent over-extraction of resources and protect the environment from degradation. It directly relates to some of the issues this lesson will cover in relation to the wider fashion industry. Whenever you see an SDG link, you can bring some of these concepts into the lesson.*

## Introduction to the Lesson

**Slide 1**

Clothes are a really big part of our everyday lives. Even if you aren't interested in fashion or shopping, you are part of the fashion industry because you wear clothes every day and will buy and wear a large number of clothes throughout your lifetime.

Have you ever thought about how many clothes are made every year for the world's population? *Encourage the class to guess how many clothes are made every year.*

## Global Clothing Consumption

**Slide 2**

The number of clothes produced every year is more than 100 billion garments. That is a lot of clothes! There are only around 7.7 billion people in the world, so that's more than 12 new items per person in the world each and every single year! And this number is set to double by 2030.

## Lesson Part One: The Polluting Effects of Clothes

**Slide 3**

Do you know where your clothes come from?

Your clothes are made and handled by many different people from all over the world, including farmers, fashion designers, factory workers, truck drivers/pilots, warehouse workers and retail assistants. The fashion industry employs around 60 million people world wide.

You may also be surprised to learn that the production of your clothes doesn't just happen within one place or in one country. Your T-Shirt might be designed in England, the cotton grown to make your T-Shirt could come from America and then the T-Shirt might be stitched together in India before it makes its way to Hong Kong for you to purchase.

In the production process, all of these colourful clothes actually create a lot of pollution and waste. In fact, fashion is one of the most polluting industries in the world, affecting everything from our land and water to the air that we breathe.

Why is it so polluting?

***Further Resources***

- Where do our clothes come from?
- BBC Magazine: The path of a suit

## Land:

**Slide 4**

Many garments, like jeans, are made from cotton, wool and viscose, which use a large amount of land and trees. To make one pair of jeans uses 10m2 of land just to grow the cotton. The production process of wool also requires a large amount of land for the sheep to graze, and viscose (although a man-made material) includes fibres that are made from trees which need land to grow. We actually log over 120 million trees a year to make our clothing. Could the land we use to produce our clothes be better used for growing food to feed the increasing population or trees to capture CO2?

## Carbon and Greenhouse Gases:

**Slide 5**

When we produce and transport clothing, damaging greenhouse gases are emitted into the atmosphere. These gases (such as carbon dioxide and methane) trap energy from the sun and cause the earth to warm up, which is why they are known as greenhouse gases. The temperature of the planet needs the perfect balance and warming up even by just 2 degrees or more will have serious consequences such as melting polar ice caps, rising sea levels and extreme weather conditions.

Fashion is responsible for around 10% of the world's greenhouse gases, more than the shipping and aviation industries combined, in part due to its long supply chains and energy-intensive production.

## Chemicals:

**Slide 6**

Pesticides are used in the farming of cotton to make sure that insects don't eat the crops. It can take up to 3kg of chemicals to produce 1kg of cotton. When cotton is harvested it is off-white in colour, and in order to make colourful garments it has to be dyed which uses a variety of chemicals. All these chemicals and pesticides can be quite harmful and toxic to both humans and the environment. Numerous other chemicals are also used to process and finish our clothes, including water repellent coatings and anti-wrinkle treatments. The fashion industry consumes around 25% of all chemicals produced globally.

## Water:

**Slide 7**

Fashion is the second biggest polluter of clean water around the world after agriculture. Unregulated textile factories often dump dirty and polluted water from dyeing and washing fabrics back into local streams and water sources. This leaves local communities without safe water to drink and bathe in. Producing our clothes also consumes a lot of water, from the water needed to grow cotton to the production process of dyeing, washing and finishing fabrics. For example, producing just one pair of jeans uses 2,9121 litres of water. That's approximately the same amount of water you drink over 2 years.

## Plastics:

**Slide 8**

Plastics are found all the way through the clothing production chain. Polyester, a man-made fibre, is the most widely used fibre in our clothes. What you may not know is that polyester is also a type of plastic. This can be a very durable fabric when not made cheaply - meaning it has the potential to last a long time. However it also takes its toll on the environment in two ways. Firstly, if polyester clothes are sent to landfill they take over 200 years to decompose - it's almost the same as trashing single use plastic, like water bottles. Secondly, when we wash polyester clothing the fabric sheds micro-plastics into our waterways, which are too small to see but are highly damaging to marine life.

During the production process, clothes are often wrapped in plastic bags and plastic wrap to protect them while they are being transported between factories and to the shops where you buy them. We are also often given plastic bags when we buy clothes in shops.

## Landfill:
**Slide 9**

Clothes are being used and disposed of faster than ever before. The average consumer now buys 60% more clothing items a year, and keeps them for about half as long, as they did about 15 years ago. Globally one full garbage truck of textiles is burned or sent to landfill every second, and in Hong Kong we throw away 370 tonnes of textiles every day (note the word 'textiles' is not unique to clothing and includes towels, curtains, bedding etc.). It's hard to imagine but that's a mountain of clothing weighing around the same as 1.5 x Hong Kong's Big Buddha being dumped into Hong Kong's landfills every day, 365 days a year.

Clothing can take a very long time to decompose in landfills (for example, a pair of nylon tights takes 30-40 years to decompose), and during the decomposing process they release greenhouse gases and other harmful pollutants into the air.

## Wasted Resources
**Slide 10**

These mountains of clothes that are piling up in the landfill don't just represent wasted clothes; they represent all the resources including land, water and energy that went into producing them. All of those precious resources are wasted when we throw our clothing in the bin.

### *Further Resources*
- Clothing decomposition times
- Decomposition times comparison to other items

## The Making of a T-Shirt
**Slide 11**

Now let's see how this all comes together in practice by watching a video about how just one T-shirt is made and finding out about the resources, energy and people that are involved in producing our clothes.

## Sustainable Development Goal Links
**Slide 12**

**SDG 12.2:** By 2030, achieve the sustainable management and efficient use of natural resources.

*Many natural resources are used to produce our clothes. You can discuss how the industry could be regulated to be more sustainable. How can we reduce waste and consume within our means?*

**SDG 12.4:** By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimise their adverse impacts on human health and the environment.

*The fashion industry consumes 25% of all chemicals produced globally. You can discuss how we can use those chemicals more safely (e.g. in the farming and dyeing process) for both workers, the environment and waterways they go on to pollute. Or is there another solution?*

### *Further Resources*
- UN SDG 12 - Why it matters
- UN SDG 12 - Poster
- UN SDG Resources for Students
- UN SDG 12 - Further Information & Resources

# Lesson Part Two: Possible Solutions

## Discuss: What Solutions Can You Think Of?

**Slide 13**

Just like with any environmental issue - such as plastic - there's lots of things that we can do to make a difference.

Questions to the class:

- What do you think are the main reasons why people throw clothes away?
- What do you do with your clothes when you don't want them anymore?
- Do we have to waste all of these precious resources?
- What else could we do with clothes when we don't want them instead of sending them to the landfill?

## About Redress / The Get Redressed Clothing Drive

**Slide 14**

Redress is a Hong Kong based environmental charity that is working to prevent textile waste and to find new solutions for unwanted clothing, in order to stop them from ending up in landfills.

Did you know that 95% of textiles that are thrown away every year could be re-used, recycled or repaired? And that by keeping clothing in use for just an extra 9 months, we could reduce the carbon, waste and water footprints by up to 20-30% each?

In October Redress collects unwanted clothes from schools, companies and clubs across Hong Kong as part of their Get Redressed Month Clothing Drive. Get Redressed Month is an educational campaign that aims to raise awareness of the environmental impact of the fashion industry, drive more sustainable consumption and disposal habits, and promote the benefits of re-using and recycling clothing, whilst directly supporting people in need in our community. After they receive donated clothes, Redress sorts through them, inspecting every item to decide how best to extend its life and minimise its environmental impact by re-using, repurposing/up-cycling, recycling and down-cycling.

Outside of Get Redressed Month Redress have permanent take back boxes in all Zara stores in Macau and HK, PizzaExpress in Sai Ying Pun, and Jeeves drycleaners in Central and Aberdeen, where you can donate your unwanted clothes

***Further Resources***

- Donating Clothes to Redress
- Get Redressed Month 2019
- Total clothes collected and distributed by Redress in Get Redressed Month 2018

## Refuse and Reduce

**Slide 15**

Something you can do from today is to refuse to buy things you don't need and reduce the amount of new clothing you buy. Choose to use your clothes for as long as possible: if we doubled the amount of time we kept our clothes for, greenhouse gas emissions would be 44% lower.

Think about your shopping habits – do you really need it? Could you use what you already have? Can you restyle the item to make it more desirable or fit better? How many times will you actually wear it before you no longer want it? 5 times? 30 times? The most sustainable item in your wardrobe is one that you already own!

## Alternatives to Buying New

**Slide 16**

If you do need something, instead of buying new, think about other ways you can find clothes that have less impact on the environment. Wearing used clothes is one of the best ways you can keep the environmental footprint of your wardrobe in check. You could: borrow from a friend or family member, swap something that you no longer want with something your friend has and doesn't want, buy secondhand, or even make it yourself.

If everyone bought one used item instead of new this year, we would save:

- 5.7 lbs of CO2 emissions (equivalent to half a million cars taken off the road for a year)
- 11B kWh of energy (equivalent to light up the Eiffel Tower for 141 years)
- 25B gallons of water (equivalent to fill up 1,140 Bellagio fountains)
- 449M lbs of waste (equivalent to the weight of 1M polar bears)

## Sustainable Development Goal Links

**Slide 17**

**SDG 12.5:** By 2030, substantially reduce waste generation through prevention, reduction, recycling and re-use. Understand and encourage better disposal of clothing outside of landfill.

**SDG 12.8:** By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.

*Tell your friends and family what you have learnt and put it into practice.*

### *Further Resources*

- Buyerarchy of needs image
- Sustainable Consumption and Production
- SDG 12 More information
- SDG 12 Infographic explainer

## Re-using and Re-selling Clothes

**Slide 18**

When you don't want your clothes any more, try to find a way to re-use them. Re-using means to take an item exactly as it is and wear it again, with no extra steps needed. A lot of clothes that we don't want any more are in perfect condition. You might have grown out of them, but they are still perfectly good for someone else to wear. The simplest way to minimise the environmental impact of clothes you no longer want is to give or sell them to a new owner - always remembering to wash them first! Re-using clothes both delays disposal and means the person receiving them doesn't have to buy new, which avoids using new materials and new resources to make new clothes.

You can re-use your unwanted clothes by:

- Donating them to charities to help people who need them
- Giving them to a friend or family member
- Selling them at a secondhand store
- Donating them to Redress

Most of the clothes that Redress collects are donated to local charities where they are given to those in need. Redress works with more than 23 charities in Hong Kong who tell them exactly what kinds of clothes they need - for example clothes for children, pregnant mums, or homeless people and even towels and bedding for animals in need. Redress sells some of the clothing at a pop-up charity shop which raises money for Redress and shows people that you can buy really cool clothes secondhand. Redress also partners with other organisations that sell secondhand clothes like Green Ladies and Retykle.

*Further Resources*

- The Get Redressed Pop-up Shop
- Green Ladies
- Retykle

## Repairing and Up-cycling Clothes

**Slide 19**

You can keep your clothes in use for longer by repairing or up-cycling your clothes. Up-cycling means taking something that you are about to throw away and turning it into something useful and of equal or higher value. When you up-cycle a garment you essentially redesign it. Examples include cutting your old jeans into shorts, turning old T-Shirts into tote bags or using the material to make something completely different - like a furoshiki wrap, beeswax food wraps or decorations like bunting! You can even cut up old T-Shirts to make T-shirt yarn, which can then be knitted into new clothes or art like macrame.

Learning sewing basics, like how to sew a button on or hide a stain with a cool patch, are easy steps to start with that help extend the life of your clothes. There are lots of videos on YouTube where you can teach yourself all sorts of new skills that will help you keep and wear your favourite clothes for longer. Some brands, like Patagonia and North Face, even offer easy repair services for the clothes you buy from them.

*Further Resources*

- What is up-cycling?
- Atmosphere art project made with secondhand clothes sourced by Redress
- Down-cycling and up-cycling explained
- How to make bunting out of old T-Shirts
- Furoshiki Wraps: How to make and use
- An easy guide to making beeswax wraps
- Turn a T-Shirt into a tote bag with no sewing
- How to make T-Shirt yarn
- 10 T-Shirt Yarn Projects
- Kids Clothing Tips & Hacks

## Recycling and Down-cycling Clothes

**Slide 20**

If clothes are not in good enough condition to be re-used, for example because they are ripped, stained, broken or badly worn, we can sometimes recycle or down-cycle them, which means turning them into rags, insulation, re-usable energy, or even new clothes.

At the moment there is a state of the art recycling facility being developed in Tai Po by HKRITA and local HK manufacturer Novetex. Together they have been working to develop a facility that can process mixed fibres, sort them into colours, sterilise them and turn them into new cones of yarns which can be spun into new clothing.

*Further Resources*

- Up-cycling, down-cycling and recycling explained
- What is down-cycling - a packaging crash course
- Garment to Garment Shop at The Mills
- A place where you can turn your old clothes into something new in HK
- How clothes are being recycled in HK
- Beautiful by Holly McNish

## Ask Questions

**Slide 21**

One other thing you can do is start asking questions about what your clothes are made of and where they come from. Take the time to write a letter to a brand telling them why environmental sustainability is important to you and asking them what they are doing to improve their business to help the planet. Choose to support brands that are truly committed to reducing the impact they have on the environment, and are responsive to your concerns.

# Further Activities and Lesson Development

## Circular Economy:

If we want to be more sustainable in the long term, we need to think about how we can change our systems from a linear model (take, make, dispose) to a circular model (use, re-use and recycle resources to feed them back into the system). Visit the Ellen MacArthur Foundation for further learning resources.

## Geography:

Survey where the children's clothes are made and find out more about the production process. Discuss the impact the fashion industry has on workers and the environment around them. What physical changes has this had on our planet?

## Technology:

Look at how clothing is made, what designs can you come up with to make clothing more sustainable? How can you up-cycle old clothes into something new? You could also conduct an easy up-cycling project.

## Art:

Design a poster informing other students about what they can do to reduce textile waste, promoting Get Redressed Day and/or a school clothing drive.

## English:

Write a poem related to what you have learnt inspired by the poet Hollie McNish.

## Global Citizenship Education:

Draw an issue tree to explore the issue of fast fashion. What solutions can you come up with to help alleviate the impact on the environment? Further discussion points - What does sustainability mean to you as an individual? What changes can we make in our daily lives or at school to be more sustainable?

## SDG 12: Class Discussion

Why is it important to look at the way we make and distribute consumer goods?

***Further Resources***

- Get Redressed LEARN MORE Page
- For further learnings on circular economy please visit the Ellen MacArthur Website
- For an in-depth look at the social costs of the fashion industry visit Fashion Revolution
- For more detail about sustainability within fashion design visit the Redress Design Award LEARN Platform and Fashion for Good
- For more information about teaching SDG 12 visit the World's Largest Lesson
- For more information about SDG 12 and the textile industry visit Textiles for SDGs
- For more information about GCED visit Oxfam and Unesco

# Homework Activity

## The Wardrobe Survey

A home-based research project to be set by the teacher in advance of or after delivery of the lesson plan provided (as teacher sees fit).

Students to collect data about their clothes at home. During the lesson, students will use the data they collected to calculate approximately how many resources went into making their clothes (water, land and carbon).

This exercise will help give students a greater understanding of how many clothes they own, what percentage of their clothes they actually wear, and the resources that went into making them, directly enabling the students to critically reflect on their consumption habits.

Before setting the homework task, it might be fun to get the students to guess how many clothes they think they have in their wardrobe and/or list some of the countries where they think their clothes were made.

**KS1 (age 4-8 years):**
Ask students to count:

- How many items of clothing do you have in your wardrobe in total? Remember to count socks (as a pair!), swimwear and underwear.

**KS2 (age 8-11 years) & KS3 (age 11-14 years):**
Ask students to count:

- How many items of clothing do they have in their wardrobe in total? Remember to count socks (as a pair!), swimwear and underwear.
- How many pairs of jeans do they own?
- How many items in their wardrobe do they never or rarely wear? Give examples of why they don't wear them e.g. too small, don't like, too warm for Hong Kong etc.
- How many items in their wardrobe were not bought new? (For example, hand-me-downs from their siblings, or items purchased from a secondhand shop.)

We have provided a worksheet for students to fill in - but please feel free to adapt the questions or create your own project worksheet as further outlined below.

**Development of exercise for further learning:**
Students can also create their own project e.g. drawing/taking photos of their wardrobe and transitioning the data they have into bar/pie charts. You can also ask students to identify where their clothes were made, or what they were made from. You could add this to the worksheet e.g. "List all of the countries where your clothes were made; List the types of fibres that your clothes are made from". Students could chart the countries where their clothes are made on a map. This information should be found on the care label or via the brand's website.

# My Get Redressed Wardrobe Survey

Name: _____
Class: _____
Date: _____

How many clothes do you have in your wardrobe in total? Remember to count socks (as a pair!), swimwear and underwear. Make a tally below:

How many pairs of jeans do you own? ☐

Do you own any items that you wear every week? Give examples of what they are:

_____

_____

_____

_____

Do you own any items that you rarely or never wear? Give examples of why you don't wear them e.g. too small, don't like, too warm for Hong Kong etc:

_____

_____

_____

_____

Do you own any items that were not bought new? (For example, hand-me-downs from your siblings, or items purchased from a secondhand shop.) How many? Where are they from?

_____

_____

_____

_____

# Review Of Homework - Suggested Class Activities

## 1. Introduction and Class Discussion Points

**KS1 (age 4-8 years), KS2 (age 8-11 years), KS3 (age 11-14 years)**
Introduction/Student Questions/Activities for Debate:

- How did you all get on with your homework?
- What did you find in your wardrobes?
- Were you surprised by any items you found?
- Which items of clothing do you wear the most and why?
- Which items do you rarely or never wear and why?
- Why do you think so many clothes are produced?

Compare your results (in full or one particular item e.g. jeans) with the person next to you.

## 2. Calculating the Environmental Cost of Your Wardrobe

Share the calculation card (Page 13) with your students showing the resources needed to create one pair of jeans.

**KS1 (age 4-8 years)**
Teacher instructions:

- Tally up the total number of clothes owned by the students in the classroom on the board.

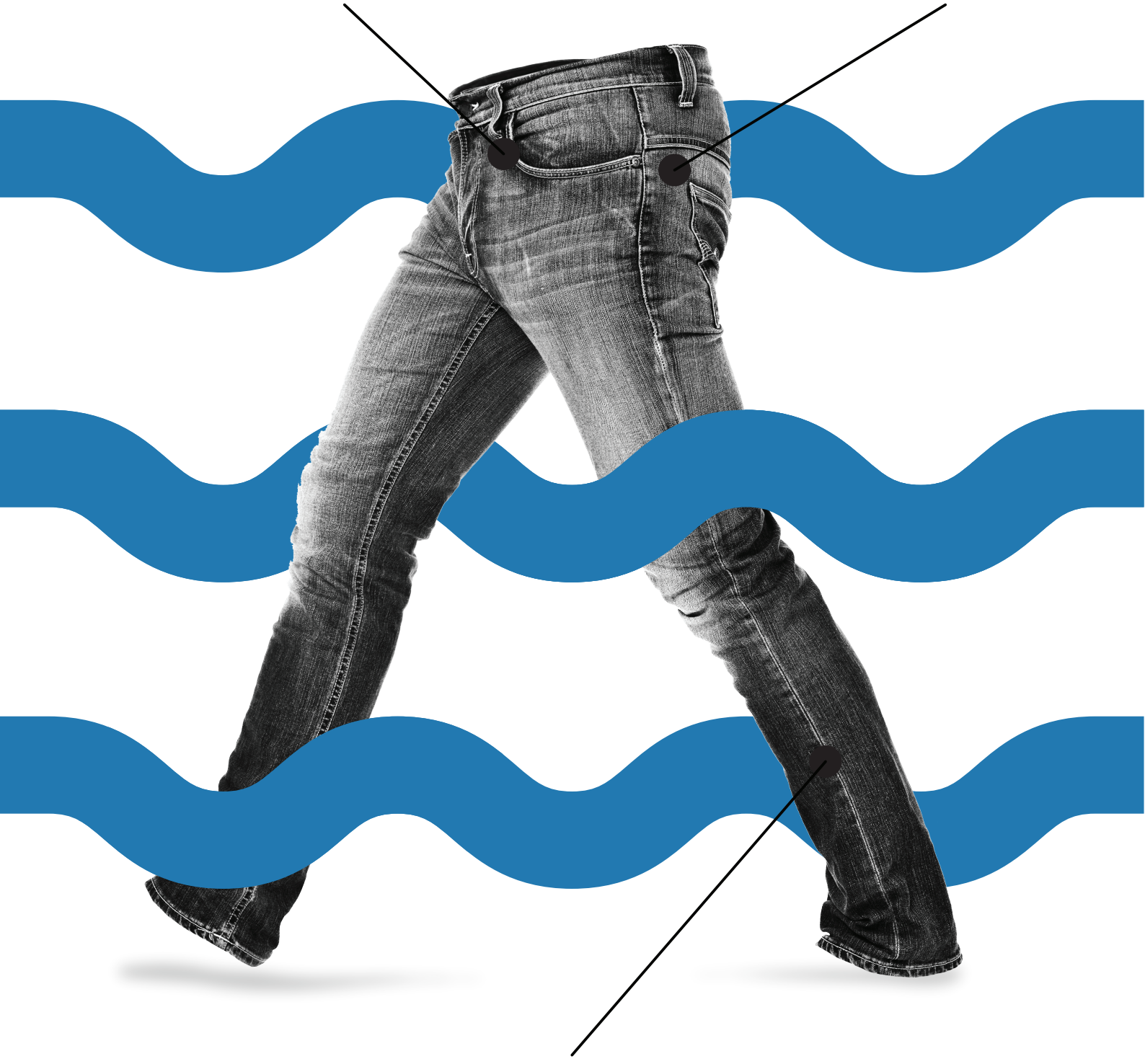
**KS2 (age 8-11 years) & KS3 (age 11-14 years)**
Teacher instructions:

- Ask students to take out their homework sheets and refer to the number of pairs of jeans that they own.
- Referring back to their homework, ask students to calculate the quantity of resources that went into making those pairs of jeans (e.g. one pair of jeans requires 2,912L of water so if the student owns two pairs 2,912 + 2,912 = 5,824).
- You can use this website to calculate equivalents for the number of litres of water and squared metres of land that were used to produce the students' clothing (for example, 2,912L of water to create one pair of jeans = 18 bathtubs of water).
- Extra learning activities: Get students to think about the clothes that they don't wear. How much of the world's resources have gone into creating those clothes? What could they do with those clothes to keep them in use and minimise the environmental impact?

Following these calculations, you will be able to reiterate the vast quantities of natural resources needed to create the clothes we wear and the impact that has on our planet.

Produces **16.2kg**
**of carbon dioxide**

**10m²**
**of land**



**2,9121 Liters**
**of water**

# Get Redressed Fact Sheet

## Clothing Use & Consumption

The number of garments produced annually has doubled since 2000 and exceeded 100 billion for the first time in 2014: nearly 14 items of clothing for every person on earth. [1]

The average consumer now buys 60% more clothing items a year and keeps them for about half as long as they did about 15 years ago. [2]

Worldwide clothing utilisation – the average number of times a garment is worn before it ceases to be used – has decreased by 36% compared to 15 years ago. [3]

Every second, the equivalent of one garbage truck of textiles is landfilled or burned. (Based on an average density of 150kg/$m^3$ for a bale of textiles and a volume of 17.5$m^3$ of a garbage truck). [4]

Extending the active life of 50% of UK clothing by 9 months would decrease the UK's carbon footprint by 8%, water footprint by 10% and waste footprint by 4%, per tonne of clothing. [5]

Buying one used item reduces its carbon footprint by 82%. [6]

If everyone bought one used item instead of new this year, we would save:
- 5.7 lbs of CO2 emissions (equivalent to half a million cars taken off the road for a year)
- 11B kWh of energy (equivalent to light up the Eiffel Tower for 141 years)
- 25B gallons of water (equivalent to fill up 1,140 Bellagio fountains)
- 449M lbs of waste (equivalent to the weight of 1M polar bears). [7]

Beyond production, washing clothing using washing machines is estimated to require an additional 20 billion cubic metres of water per year globally. [8]

On average, 370 tonnes of textiles were discarded every day into Hong Kong Landfills in 2017, which is up nearly 8% from 2016, is up 37% from 2013, and is up a whopping 71% from 2011. [9]

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[1] McKinsey & Company, 2016. Style that's sustainable: A new fast-fashion formula.
Available from: <http://www.mckinsey.com/business-functions/sustainabilty-and-resource-productivity/our-insights/style-thats-sustainable-a-new-fast-fashion-formula?cid=sustainability-eml-alt-mip-mck-oth-1610> [14 November 2016]

[2] McKinsey & Company (2016), Style that's sustainable: A new fast-fashion formula. Available: https://www.mckinsey.com/business-functions/sustainability-and-resource-productivity/our-insights/style-thats-sustainable-a-new-fast-fashion-formula

[3] Ellen Macarthur Foundation (2017), A New Textiles Economy: Redesigning Fashion's Future. Available at:https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy_Full-Report_Updated_1-12-17.pdf

[4] Ellen Macarthur Foundation (2017), A New Textiles Economy: Redesigning Fashion's Future. Available at: https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy_Full-Report_Updated_1-12-17.pdf

[5] WRAP (2017), Valuing Our Clothes: the cost of UK fashion.
Available: http://www.wrap.org.uk/sites/files/wrap/valuing-our-clothes-the-cost-of-uk-fashion_WRAP.pdf

[6] thredUP. (2019). 2019 Fashion Resale Market and Trend Report | thredUP. [online]
Available at: https://www.thredup.com/resale [Accessed 3 May 2019].

[7] thredUP. (2019). 2019 Fashion Resale Market and Trend Report | thredUP. [online]
Available at: https://www.thredup.com/resale

[8] Ellen Macarthur Foundation (2017), A New Textiles Economy: Redesigning Fashion's Future.
Available at:https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy_Full-Report_Updated_1-12-17.pdf

[9] Hong Kong SAR, Hong Kong Environmental Protection Department (2019) Monitoring of Solid Waste in Hong Kong - Waste Statistics for 2017, Hong Kong: Hong Kong Environmental Protection Department. Available at: https://www.wastereduction.gov.hk/sites/default/files/msw2017.pdf (Accessed 18 March 2019)

In China the average number of wears has descended from over 200 wears to just 62, now lower than in Europe (i.e. clothing utilisation has decreased by 70% over the last 15 years). [10]

16% of all the clothes owned by Hong Kong residents or around HK$3.9 billion worth of purchased clothes have never or seldom been worn with the assumption of each item of clothing worth HK$100. [11]

Four in ten Hong Kong residents (39%) have thrown away an item of clothing after wearing it just once and, in the past year alone, a fifth of all respondents (20%) have thrown away at least three items that they've only worn once. [12]

## Environmental Impact

In Hong Kong, 15% of our ecological footprint at the individual, family and company level is from clothing. [13]

The production of 1 kilogram of cotton garments uses up to 3 kilograms of chemicals. [14]

25% of all chemicals manufactured globally are used in the textile industry.[15]

If the number of times a garment is worn were doubled on average, greenhouse gas emissions would be 44% lower.[16]

The fashion industry, including the production of all clothes which people wear, contributes to around 10% of global greenhouse gas emissions due to its long supply chains and energy intensive production. [17]

Greenhouse gas emissions from textiles production total 1.2 billion tonnes of CO2 equivalent, more than those of all international flights and maritime shipping combined.[18]

The production of 1 tonne of textiles generates 17 tonnes of CO2 equivalent (compared to 3.5 tonnes for plastic and less than 1 tonne for paper). [19]

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[10] Ellen Macarthur Foundation (2017), A New Textiles Economy: Redesigning Fashion's Future. Available at: https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy_Full-Report_Updated_1-12-17.pdf

[11] Greenpeace (2016), Press Release - Greenpeace Releases Hong Kong and Taiwan Consumer Report; Billions of Dollars of Clothing Hangs Unworn in Wardrobes [docx]

[12] Yougov (2017). Fast fashion: 39% of Hong Kongers have thrown away clothing after wearing it just once. [online] YouGov: What the world thinks. Available at: https://hk.yougov.com/en-hk/news/2017/12/06/fast-fashion/ [Accessed 15 Apr. 2019].

[13] WWF (2019). Earth Hour 2019. [online] Available at: https://earthhour.wwf.org.hk/en/home/ [Accessed 15 Apr. 2019].

[14] KEMI,(2014). Chemicals in textiles: Risks to human health and the environment (p.33) [online] Available at: https://www.kemi.se/-files/8040fb7a4f2547b7bad522c399c0b649/report6-14-chemicals-in-textiles.pdf

[15] 1) Bluesign Technologies, AFIRM RSL Seminar presentation, September 27, 2007. Reprinted in BSR, "Water Management in China's Apparel and Textile Factories," 2008 http://www.bsr.org/reports/ChinaWater_IssueBrief_042908.pdf Cited by China Water Risk http://chinawaterrisk.org/resources/analysis-reviews/the-environmental-cost-of-clothes/)
2) Asano, T. and Visvanathan, C. 2001. Industries and water recycling and re-use. Business and Industry – A Driving or Braking Force on the Road towards Water Security. Founders Seminar, organized by Stockholm International Water Institute, Stockholm, Sweden, pp. 13–24. Cited by GLASA Award - http://glasaaward.org/award-2015/

[16] Ellen Macarthur Foundation (2017), A New Textiles Economy: Redesigning Fashion's Future. Available at:https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy_Full-Report_Updated_1-12-17.pdf

[17] UNFCCC (2019), UN Helps Fashion Industry Shift to Low Carbon, Available at: https://unfccc.int/news/un-helps-fashion-industry-shift-to-low-carbon

[18] Ellen Macarthur Foundation (2017), A New Textiles Economy: Redesigning Fashion's Future. Available at: https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy_Full-Report_Updated_1-12-17.pdf

[19] Eunomia, (2015). The potential contribution of waste management to a low carbon economy. [24 January 2018] as cited in Ellen Macarthur Foundation (2017), A New Textiles Economy: Redesigning Fashion's Future. Available at: https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy_Full-Report_Updated_1-12-17.pdf

The fashion industry's CO2 emissions are projected to increase by more than 60% to nearly 2.8 billion tonnes per year by 2030 - equivalent to nearly 230 million passenger vehicles driven for a year, assuming average driving patterns. [20]

The Rainforest Action Network estimates that 120 million trees are logged every year to make clothing, an area expected to increase since the production of dissolving pulp – the base material for viscose and similar fibres – could double by 2050. [21]

The Aral Sea, formerly one of the four largest lakes in the world, has almost entirely dried up, in a large part due to intensive industrial cotton farming in Central Asia. [22]

Extending the life of clothing by an extra nine months of active use would reduce carbon, waste and water footprints by around 20-30% each and cut resource costs by 20% (£5 billion). [23]

17-20% of industrial water pollution comes from textile dyeing and treatment, indeed 72 toxic chemicals in China's water originate solely from textile dyeing. [24]

The volume of freshwater consumed by the fashion industry is nearly 79 billion cubic meters, enough to fill nearly 32 million Olympic-size swimming pools. This figure is predicted to increase by 50% by 2030, which is critical, because some of the main cotton-producing countries (China, India) are located in areas that are already suffering from high or medium to high levels of water stress. Top 3 areas of water use in fashion industry: production of raw materials e.g. cotton-growing (most significant), textile processing and consumers washing of clothes. [25]

The World Bank estimates that 20% of industrial wastewater pollution worldwide originates from the textiles industry. [26]

The entire lifecycle of one pair of Levi's® 501® jeans equates to: 3,781 liters of water, 12 $m^2$ land, 33.4 kg of $CO_2$-e. If we exclude the transportation and consumer use sta ge, the production of one pair of jeans uses 2912 liters of water, 10$m^2$ land and produces 16.2kg of carbon dioxide. [27]

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[20] Global Fashion Agenda and The Boston Consulting Group, Inc. (2017), Pulse of the Fashion Industry, Available: http://globalfashionagenda.com/wp-content/uploads/2017/05/Pulse-of-the-Fashion-Industry_2017.pdf

[21] Changing Markets Foundation (2017). Dirty fashion: How pollution in the textiles supply chain is making viscose toxic [online]. Available at: http://changingmarkets.org/wp-content/uploads/2017/06/CHANGING_MARKETS_DIRTY_FASHION_REPORT_SPREAD_WEB.pdf; http://www.canopystyle.org/forests [24 January 2018] as cited in Ellen Macarthur Foundation (2017), A New Textiles Economy: Redesigning Fashion's Future. Available at: https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy_Full-Report_Updated_1-12-17.pdf

[22] Fashion Revolution (2017), SFI0056, as cited in House of Commons: Environmental Audit Committee (2019), Fixing Fashion: Clothing Consumption and Sustainability

[23] WRAP (2012), Valuing our clothes, Available at : http://www.wrap.org.uk/sites/files/wrap/VoC%20FINAL%20online%202012%2007%2011.pdf

[24] The Environmental Cost of Clothes (China Water Risk), Available at: http://chinawaterrisk.org/resources/analysis-reviews/the-environmental-cost-of-clothes/

[25] Global Fashion Agenda & The Boston Consulting Group (2017) The Pulse of the Fashion Industry Available at: http://globalfashionagenda.com/wp-content/uploads/2017/05/Pulse-of-the-Fashion-Industry_2017.pdf

[26] Kant, R., (2012). Textile dyeing industry: An environmental hazard, p.23 [online] Available at: https://file.scirp.org/pdf/NS20120100003_72866800.pdf [24 January 2018] as cited in Ellen Macarthur Foundation (2017), A New Textiles Economy: Redesigning Fashion's Future. Available at: https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy_Full-Report_Updated_1-12-17.pdf

[27] Levi Strauss & Co. 2015, THE LIFE CYCLE Understanding the environmental impact of a pair of Levi's ® 501 ® jeans. Available from: http://levistrauss.com/wp-content/uploads/2015/03/Full-LCA-Results-Deck-FINAL.pdf (Accessed 31 December 2015)

When will your clothes decompose?

- Cotton 1-5 months
- Polyester 200+ years
- Nylon 30-40 years
- Leather 30-40 years
- Wool 1-5 years. [28,29,30]

The global average water footprint for 1 kilogram of cotton - equivalent to the weight of one man's shirt and a pair of jeans is 10,000 - 20,000L, depending on where it is grown.[31]

## Recycling

After use, less than 1% of the material used to produce clothing is recycled into new clothing. This take-make-dispose model not only leads to an economic value loss of over $500 billion per year, but also has numerous negative environmental and societal impacts. [32]

The fashion industry's waste will increase by about 60% between 2015 and 2030, with an additional new 57 million tons of waste generated annually. [33]

The vast majority of clothing waste ends up in landfills or is incinerated. Globally, only 20% of clothing is collected for re-use or recycling, lower than the recycling rates of other materials like plastic. [34]

Where recycled input is used to make clothing, this is often down-cycled from other industries. Around 2% of input for clothing production comes from recycled materials, mostly polyester from recycled PET bottles. [35]

Recycling saves 75% of the energy needed and 40% of the CO2 compared to using virgin polyester. [36]

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[28] Pennsylvania Department of Transportation (2005), The Life Span of Commonly Discarded Litter, Available at: http://www.dot.state.pa.us/Internet/pdKids.nsf/StartlingStatistics?OpenForm (Accessed 15 July 2015)

[29] Science Learning Hub The University of Waikato (2008), Available at: http://sciencelearn.org.nz/Contexts/Enviro-imprints/Looking-Closer/Measuring-biodegradability (Accessed: 15 July 2015)

[30] NH Department of Environmental Services (N.D.), Time it takes for garbage to decompose in the environment, Available at: http://des.nh.gov/organization/divisions/water/wmb/coastal/trash/documents/marine_debris.pdf (Accessed 15 April 2016)

[31] THE STATE OF THE APPAREL SECTOR 2015 SPECIAL REPORT WATERGLASA. Available from http://glasaaward.org/wp-content/uploads/2015/05/GLASA_2015_StateofApparelSector_SpecialReport_Water_150624.pdf Extracted quote from WRAP (2017), Valuing Our Clothes: The Cost of UK Fashion, Available: http://www.wrap.org.uk/sites/files/wrap/valuing-our-clothes-the-cost-of-uk-fashion_WRAP.pdf

[32] Business of Fashion (2017), The State of Fashion 2018 Available at: https://cdn.businessoffashion.com/reports/The_State_of_Fashion_2018_v2.pdf

[33] Global Fashion Agenda and The Boston Consulting Group, Inc. (2017), Pulse of the Fashion Industry. Available: http://globalfashionagenda.com/wp-content/uploads/2017/05/Pulse-of-the-Fashion-Industry_2017.pdf

[34] Global Fashion Agenda and The Boston Consulting Group, Inc. (2017), Pulse of the Fashion Industry. Available: http://globalfashionagenda.com/wp-content/uploads/2017/05/Pulse-of-the-Fashion-Industry_2017.pdf

[35] Ellen Macarthur Foundation (2017), A New Textiles Economy: Redesigning Fashion's Future. Available at:https://www.ellenmacarthurfoundation.org/assets/downloads/publications/A-New-Textiles-Economy_Full-Report_Updated_1-12-17.pdf

[36] Global Fashion Agenda & The Boston Consulting Group (2017), Pulse of The Fashion Industry. Available at: http://globalfashionagenda.com/wp-content/uploads/2017/05/Pulse-of-the-Fashion-Industry_2017.pdf