T-shirt and Cotton

Consider the classic white t-shirt.
Annually, we sell and buy two billion t-shirts globally,
making it one of the most common garments in the world.
But how and where is the average t-shirt made,
and what's its environmental impact?
Clothing items can vary a lot,
but a typical t-shirt begins its life on a farm in America, China, or India
where cotton seeds are sown, irrigated and grown for the fluffy bolls they produce.
Self-driving machines carefully harvest these puffs,
an industrial cotton gin mechanically separates the fluffy bolls from the seeds,
and the cotton lint is pressed into 225-kilogram bales.
The cotton plants require a huge quantity of water and pesticides.
2,700 liters of water are needed to produce the average t-shirt,
enough to fill more than 30 bathtubs.
Meanwhile, cotton uses more insecticides and pesticides
than any other crop in the world.
These pollutants can be carcinogenic,
harm the health of field workers,
and damage surrounding ecosystems.
Some t-shirts are made of organic cotton grown without pesticides and insecticides,
but organic cotton makes up less than 1%
of the 22.7 million metric tons of cotton produced worldwide.
Once the cotton bales leave the farm,
textile mills ship them to a spinning facility,
usually in China or India,
where high-tech machines blend,
card,
comb,
pull,
stretch,
and, finally, twist the cotton into snowy ropes of yarn called slivers.
Then, yarns are sent to the mill,
where huge circular knitting machines
weave them into sheets of rough grayish fabric
treated with heat and chemicals until they turn soft and white.
Here, the fabric is dipped into commercial bleaches and azo dyes,
which make up the vivid coloring in about 70% of textiles.
Unfortunately, some of these contain cancer-causing cadmium,
lead,
chromium,
and mercury.
Other harmful compounds and chemicals can cause widespread contamination
when released as toxic waste water in rivers and oceans.
Technologies are now so advanced in some countries
that the entire process of growing and producing fabric
barely touches a human hand.
But only up until this point.
After the finished cloth travels to factories,
often in Bangladesh, China, India, or Turkey,
human labor is still required to stitch them up into t-shirts,
intricate work that machines just can't do.
This process has its own problems.
Bangladesh, for example,
which has surpassed China as the world's biggest exporter of cotton t-shirts,
employs 4.5 million people in the t-shirt industry,
but they typically face poor conditions and low wages.
After manufacture, all those t-shirts travel by ship, train, and truck
to be sold in high-income countries,

a process that gives cotton an enormous carbon footprint.
Some countries produce their own clothing domestically,
which cuts out this polluting stage,
but generally, apparel production accounts for 10% of global carbon emissions.
And it's escalating.
Cheaper garments and the public's willingness to buy
boosted global production from 1994 to 2014 by 400%
to around 80 billion garments each year.
Finally, in a consumer's home,
the t-shirt goes through one of the most resource-intensive phases of its lifetime.
In America, for instance,
the average household does nearly 400 loads of laundry per year
each using about 40 gallons of water.
Washing machines and dryers both use energy,
with dryers requiring five to six times more than washers.
This dramatic shift in clothing consumption over the last 20 years,
driven by large corporations and the trend of fast fashion
has cost the environment,
the health of farmers,
and driven questionable human labor practices.
It's also turned fashion into the second largest polluter in the world after oil.
But there are things we can do.
Consider shopping secondhand.
Try to look for textiles made from recycled or organic fabrics.
Wash clothes less and line dry to save resources.
Instead of throwing them away at the end of their life,
donate, recycle, or reuse them as cleaning rags.
And, finally, you might ask yourself,
how many t-shirts and articles of clothing will you consume over your lifetime,
and what will be their combined impact on the world?