

Sustainability

Throw Away Culture



Introduction

This is a sustainability lesson. The video links for this lesson are on the website. They will help you navigate through the lesson.

Save the Turtles

Sk Sk Sk

You have probably heard students at your school say “Save the Turtles!” This would also be followed by some sort of “No straws” commentary from a girl drinking from a metal straw.



Let's look at some
data...

Read the next seven slides and complete the boom quiz at the end by clicking on the link and answering the questions to the best of your ability.

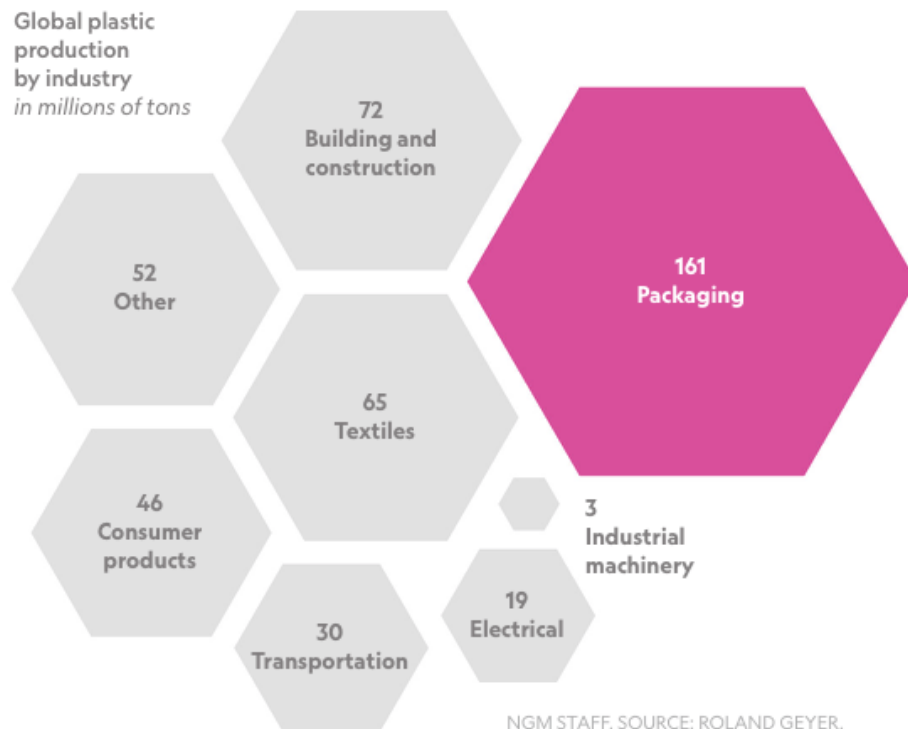
Some 18 billion pounds of plastic waste flows into the oceans every year from coastal regions.



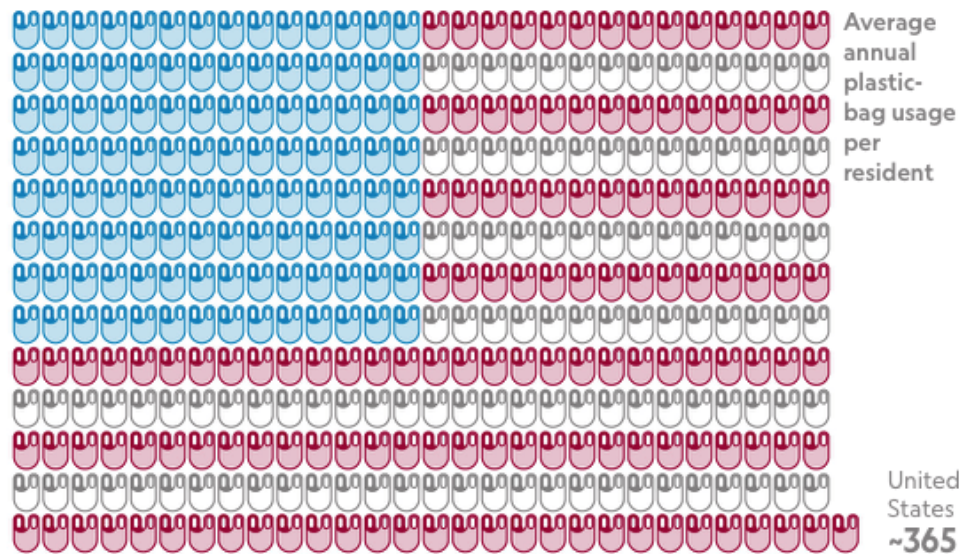
That's the equivalent of
**five grocery bags of plastic trash
sitting on every foot of coastline**
around the world.

40 percent of plastic produced is packaging,
used just once and then discarded.

Global plastic
production
by industry
in millions of tons



NGM STAFF. SOURCE: ROLAND GEYER,
UNIVERSITY OF CALIFORNIA, SANTA BARBARA



Shoppers in the United States use

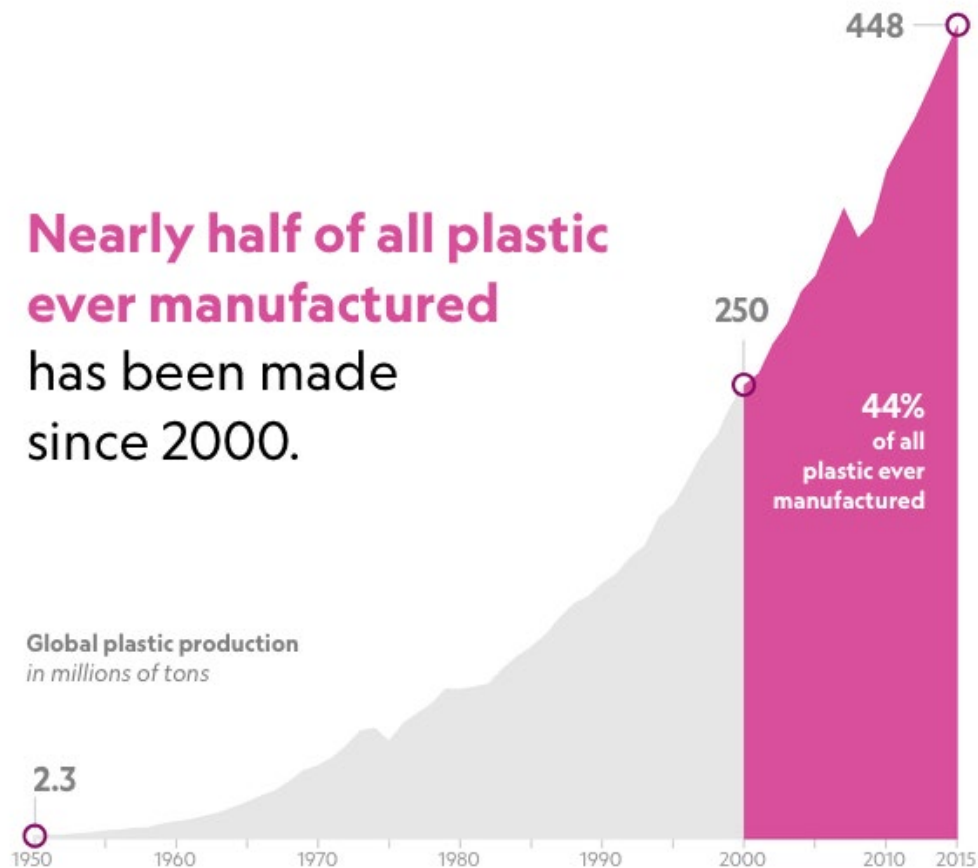
almost one per resident per day.

Shoppers in Denmark use an average
of four plastic bags a year.

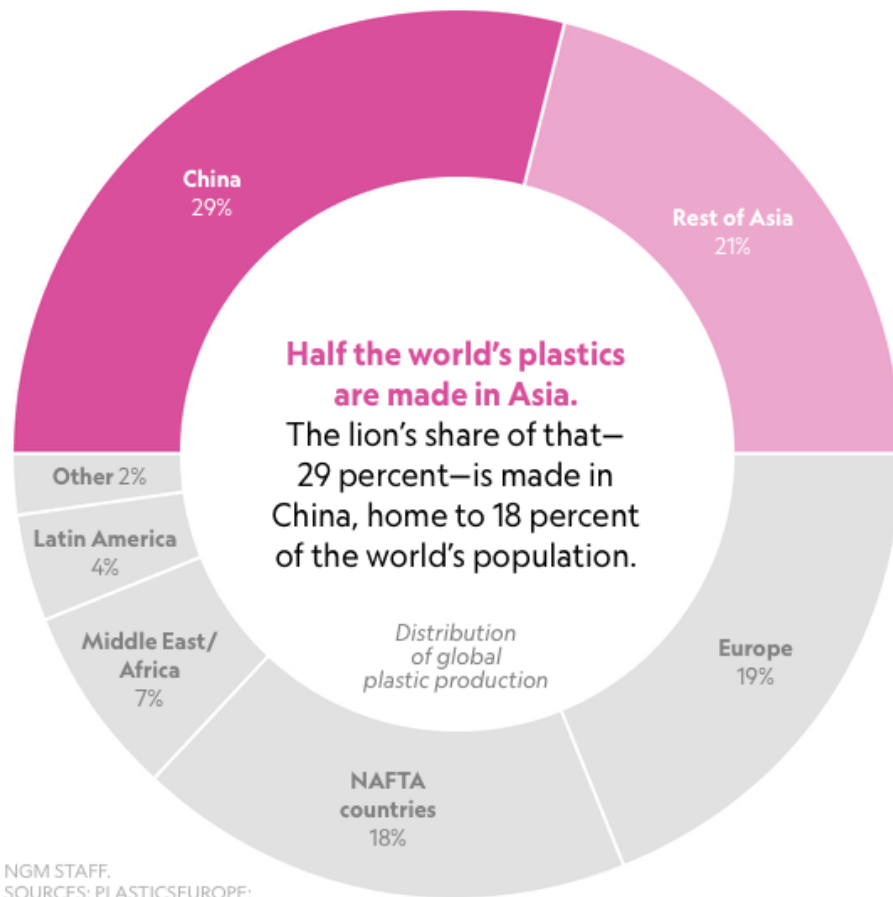


**Nearly half of all plastic
ever manufactured
has been made
since 2000.**

Global plastic production
in millions of tons



NGM STAFF. SOURCE: ROLAND GEYER,
UNIVERSITY OF CALIFORNIA, SANTA BARBARA



NGM STAFF.
SOURCES: PLASTICSEUROPE;
POPULATION REFERENCE BUREAU



Plastic recycling rates are highest in Europe at 30 percent.

China's rate is 25 percent.

The United States recycles just 9 percent of its plastic trash.



What did you
learn?

Go to:

[Boom Cards Quiz](#)



The Great Pacific Garbage Patch

Watch this
video from
the link and
go to the
next slide.



What's Next?

If you want to try this at home, please feel free. If I were doing it as an actual “scientific” inquiry I would collect one week’s worth of plastic for the entire family.

If I asked you to figure out the amount of plastic your family uses per person per year, could you explain how you would do that scientifically and mathematically?



Ask What is the problem

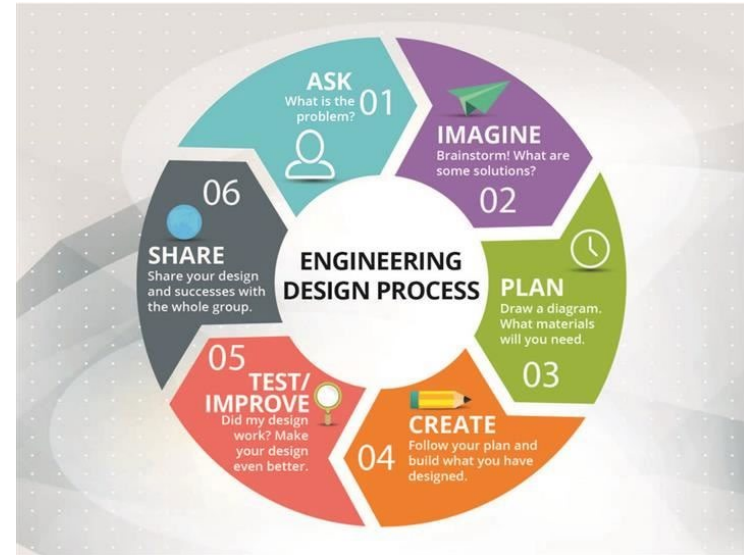
Imagine Brainstorm: What are some solutions?

Plan Draw a diagram. What materials will you need

Create Follow your plan. Build what you have designed.

Test/Improve Did my design work? Make your design even better.

Present Share your design and successes with the whole group.



Engineer Design Process

Further Exploration

Your job as an environmental engineer, is to create a contraption, concept, idea, machine that would help clean up the Great Pacific Garbage Patch.

You will need to think through the first three steps of the engineering design process.

- **Ask:** Can you come up with a potential solution to remove the plastic pollution in the Great Pacific Garbage Patch
- **Imagine:** Brainstorm on a piece of paper all kinds of ideas, words, sketches that might answer the question.
- **Plan:** Create a plan to represent your solution. The plan that you need to turn in is included as a link. Your job as an environmental engineer, is to create a contraption, concept, idea, machine that would help clean up the Great Pacific Garbage Patch. You can type it out and then print it and draw your diagram. I am including an exemplar.
- I also included the article, Forbes Ocean Clean Up Project. This article might help you with your brainstorming. You can skim through it or do your own research if you need some ideas