

The Tech for Global Good

Save the Species Design Challenge



ORANGUTANS



**The Tech
for Global Good**

Introduction

The Tech for Global Good

The Tech for Global Good is an initiative that will create the next generation of innovators ready to tackle the toughest challenges facing our planet.

Smart Parks

Smart Parks combines conservation with innovation and technology to protect some of the world's most threatened animal populations.

Wild Me

Wild Me uses machine learning and artificial intelligence to track animal populations in the fight against species extinction.

Innovation Design Process



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Design Challenge Scenario

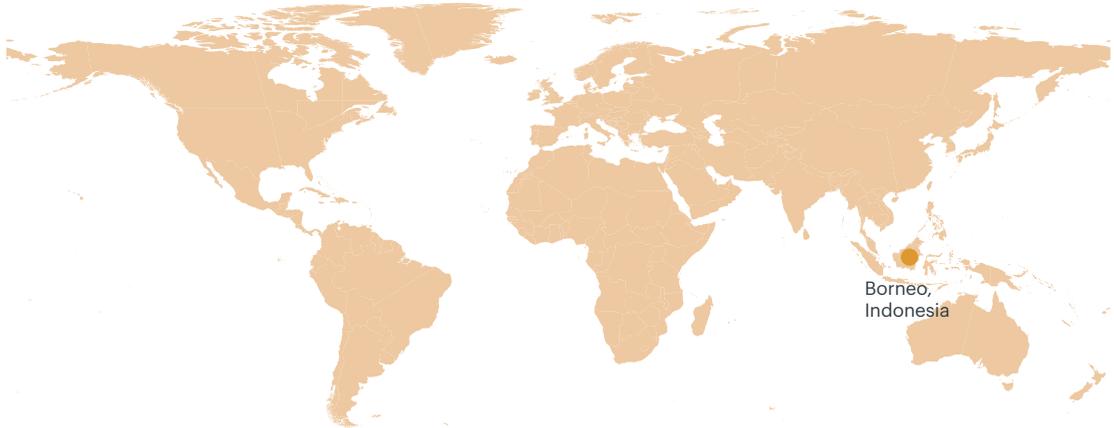
You and your team run an animal conservation foundation that develops innovative technology and policy plans to help save endangered and threatened animals. Four communities around the world have reached out to you for help. Your team will use your skills as communicators, researchers, collaborators and creative problem-solvers to assist one of these communities in developing plans to help create more sustainable environments for animals and humans.

-  **1. Research the problem:**
 - Understand the design challenge.
 - Read the background material.
-  **2. Brainstorm:**
 - Write each idea (in text, an image, or both) a sticky note and put it on the board.
 - Be creative! Think of as many wild ideas as possible.
 - Develop questions and search out answers.
-  **3. Create a solution:**
 - Each member shares their sticky notes and posts them on the board.
 - Pick someone to group similar ideas.
 - Label the categories.
 - Work together to add more ideas.
 - Each team member ranks their favorite ideas (1-5).
 - As a team, choose a solution to focus on.
-  **4. Refine your solution:**
 - Get feedback from peers on your solution.
 - Edit your solution and improve how it addresses the problems your team is focusing on.
-  **5. Design a project and presentation:**
 - Get feedback on your solution from others.
 - Please show:
 - The specific problem your team is going to address.
 - Your team's solution for this problem.
 - A story of how someone is impacted by your work.

Designing a Solution for Orangutans in Sebangau National Park on Borneo, Indonesia

Problem

You and your team run an animal conservation foundation. Community members who work with orangutans have asked your team to develop plans for helping to conserve this animal population.



Share with your team a couple things you already know about orangutans (*or-rang-a-tang*)

The Indonesian Ministry of Forestry wants to become a model for ecological sustainability and animal conservation. They have asked you to join their team in making the next advancement in protecting orangutans (*or-ang-a-tangs*) in Sebangau (*See-ban-gow*) National Park. Sebangau National Park is a 568,700 hectare (or about 2,200 square mile) forest established in 2004 after over 85% of the forest had been destroyed from legal and illegal logging. The logging has greatly reduced the habitat for the orangutans in this park and illegal logging continues to threaten territory for this critically endangered animal.

On the following pages, you will receive more information about the challenges of protecting orangutans around the globe. Think about these different issues to help inspire your solution. It is fine to design solutions that require collaboration with other organizations and governments, or that create new technologies or innovate with existing ones.

What will you do to create a change in Borneo that will ripple out into the world?

Background Information

Rainforests cover about six percent of the Earth and house half of its animal and plant species. These rainforests act as lungs for the planet, taking in carbon dioxide and releasing oxygen. Over time the rainforests have begun to shrink as humans cut down the trees to make products, expand cities, and grow crops on the land.

Sebangau National Park was formed in 2004 to protect the peat swamp forest. From 1980 to 1995, multiple logging companies greatly reduced the size and health of the rainforest by cutting down trees, draining swamps, and burning peat. Then in 1996, part of the swamp was drained to try to create rice fields. This plan did not work but the forest was reduced further. In 2004, 85% of the park had been deforested, and only one percent has been reforested over the last 14 years.

Over the past decade illegal burning to clear land and dry vegetation during Borneo's dry seasons has resulted in massive forest fires. In addition to threatening natural habitat and impacting the health of humans and animals in the region, the forest fires also affect global air quality. In 2019 the CO₂ released from the fires was more than the annual output of Australia.

Palm oil production has become a very profitable business in Kalimantan. The trees, that take about four years, to produce fruit and last about 30 years boost the economy. Now that the land and trees of Sebangau National Park are officially protected, farmers and plantations have set up along the border. This means that humans and rainforest animals live very closely together.





- Orangutans are slow to reproduce. An adult female orangutan usually has one baby at a time and reproduces once every two to three years.
- Interactions with humans. As orangutans lose territory they have less food to eat and sometimes take produce from farms on the edge of the forest. Villagers will sometimes kill orangutans to protect their crops.

Indonesia is working on finding a balance between the businesses of logging, mining, and farming, along with protecting the forests by limiting these businesses and creating national parks. In 2009, Indonesia created the Timber Legality Assurance System to increase legal logging. However, enforcement and punishment for breaking the logging laws are inconsistent. It is illegal to take, kill, or sell orangutans but not many people have been prosecuted in Indonesia for doing these things. Policies exist to protect the forests and wildlife, but there isn't much being done to enforce them.

Protecting Orangutans

A key component in maintaining the health of Sebangau National Park is protecting the orangutans. They play the role of “gardeners” by dispersing seeds that help the forest grow and thrive. Currently, it is believed that 6,000 orangutans live in the Sebangau National Park. Worldwide, it was estimated in 2016 that there are 100,000 orangutans in the wild, down from 280,000 in the 1970s. As the numbers continue to decrease, several threats to the health of wild orangutans have been identified:

- Deforestation of the rainforests for farmland, timber, and palm oil plantations.
- Illegal wildlife trade. Some estimate that a baby orangutan can be sold illegally for up to \$45,000.



Perspectives on the Issue



Farmer

I live on the edge of a palm oil plantation and I have a little land to grow food for my family.

Sometimes orangutans come out of the forest and steal my family's food. The orangutans are pests that steal food and make it hard to get lumber in the forest. We've heard people far away care about these thieves, but what do they think about us trying to take care of our families? The palm oil trees I plant can last up to 30 years producing a product used in food and goods all over the world. My work helps the world.

Technology

- Mapping technology can identify the location of small farms and non-governmental organizations, like **INOBU**, can work with farmers to develop sustainable farming practices.
- Sensors can be used in the soil to collect data like pH and moisture.

Organizations

- **The Borneo Project** connects international interests with community-led solutions to protect forests, livelihoods, and human rights.
- **Susila Dharma Organization** helps teach and support farming techniques that do not require cutting and burning down sections of the rainforest.

Opinions

- Some farmers see the possibility to work with palm oil corporations as an opportunity to take care of their families.

Twitter: **#BoycottPalmOil**

International Approaches

- **World Wildlife Fund:** Helps orangutans by working with governments, institutions, and communities to conserve forests, change logging methods, and reduce human-orangutan conflicts.
- **World Resources Institute:** Carries out research that supports independent farmers systematically in maintaining sustainable farming practices and protecting the forests.



Grocery Store Owner

I've heard about the impact of non-sustainable palm oil and the continued

deforestation in Southeast Asia. I know that forests are important for our planet so I'm considering a shift in purchasing for the store. However, it seems like it is hard to figure out if palm oil is in a product and how it is sourced. Is this amount of work really necessary and will it make a difference to my customers?

Technology

- Apps with scanners tell users if palm oil used in the product is sustainably sourced.
- Online research of organizations that might want to help:
 - **Palm Smart** grades products by their palm oil sourcing.

Organizations

- **World Wildlife Fund** warns consumers if they are purchasing palm oil products by sharing ingredient names and educating on food labels.
- **Iceland Foods** a supermarket in the United Kingdom has stopped carrying products that have palm oil.
- **Kroger Grocery** puts out a yearly sustainability report.

Opinions

- **Say No to Palm Oil** educates the public about the environmental and social impacts of unsustainable palm oil production.
- According to an article in the **Smithsonian Museum Magazine**, giving up palm oil is a bad idea because it produces more oil per acre than other sources.

Twitter: **#BoycottPalmOil**

International Approaches

- **Center for Climate Risk and Opportunity Management** at Bogor International University looked at the government's need to provide land to palm oil companies and how to protect the forests from deforestation.
- **Roundtable on Sustainable Palm Oil** certifies sustainable palm oil farming practices. It works with larger plantations that have questionable track records in respecting small farmers and indigenous peoples' rights. The program is criticized for being too expensive, and therefore excluding small farmers.



Director of Pingtung Rescue Center in Taiwan

I run a rescue center for

smuggled pets that can no longer be cared for. We are starting to operate it as a zoo with a limited number of guests to show the public the cost of exotic pet smuggling. Currently, the zoo houses 850 animals of 106 species and is visited by 9,000 visitors annually. The number is low to keep the animals calm. We are doing our best to care for all of these animals and to show people that the dangers of the illegal animal trade, but how much of a difference can our one rescue center make?

Technology

- Sensors and drones to protect the perimeter of forests to aid game wardens in protecting endangered animals.
- **Apps for Apes**, developed by the Smithsonian’s National Zoo, provides enrichment to orangutans to keep them active and engaged.
- Milwaukee County Zoo is working to make iPads more orangutan-safe, so they can use them to chat with other orangutans around the world.

Organizations

- **TRAFFIC - Wildlife Trade Monitoring Network** focuses on illegal animal trafficking.
- **Sumatran Orangutan Conservation Program** rescues, quarantines, and reintroduces orangutans that have been pets.
- **Orangutan Appeal UK** provides orangutan rescue, care, and rehabilitation services.
- **Orangutan Foundation International** cares for and rehabilitates orangutans, and works on forest conservation.

Opinions

- When Debate.org asked if people should be allowed to keep exotic animals, the respondents were divided 50/50. People for it think there are humane ways to care for exotic animals. Those against were concerned with safety for humans and animals.
- **Breakfast with Orangutans** is a zoo experience has lots of positive online reviews for interacting with orangutans.

Twitter: @redapes @OrangutanTOP

International Approaches

- **Convention on International Trade in Endangered Species (CITES)** is an agreement between international governments about stopping trade in endangered species to protect the survival of plants and animals. This organization began in 1973 and currently lists protections for 35,000 species.
- Movies like “Finding Nemo,” “Free Willy” and “Rio” that were intended to show the problems with the illegal pet trade seemed instead to increase interest in owning macaws and clown fish or attending large aquatic parks.



Climatologist

I study the role of peat swamp rainforests in global ecology. The peat clearly helps capture

carbon, which is necessary to clean our atmosphere. We have conducted a number of research projects that clearly demonstrate the need for these forests, but people don’t seem to understand. What can I do as a scientist to inspire governments and people to make different choices?

Technology

- **Rainforest Connection** uses recycled cell phones as acoustic monitors to check for illegal logging.

Organizations

- **Climate Adaptation Knowledge Exchange (CAKE)** provides climate adaptation case studies and resources.
- **American Meteorological Society** provides data on weather, water, and climate.

Opinions

- According to an article in the **Public Library of Science**, 65% of villagers in Borneo are against large scale deforestation.
- Climatologists believe protecting the rainforests in all areas, including Borneo, is essential to reducing the wide-scale effects of climate change.
- Farmers and plantation owners who want to create more fields quickly and cheaply want to cut or burn the forests.
- People who want or need inexpensive products that use palm oil or wood may support deforestation or may be unaware of how price relates to deforestation.

Twitter: #deforestation #climatechange

International Approaches

- **United Nations/Climate Change** helps governments coordinate protection and climate efforts.

Twitter: @UNFCCC.



From Your Reading

Below are some questions to help you process what you read

- What are some problems that affect orangutan populations?

- What questions do you have based on your reading?



Brainstorm Notes

Problem

- Why is this a problem?
- What other problems does it remind you of?
- Often larger problems need to be broken down into smaller pieces. What part(s) of this problem does your team want to address?



Solution

- How could you combine these ideas to create a new solution?
- What ideas do you have that are nothing like what you have researched? (Wild ideas are welcome!)
- Who will help your team solve this problem? Which organizations, governments, etc.?
- How do these ideas help solve the problem?
- What is needed to implement or enforce your solution?

Impact

Pick one of the following identities:

- Rainforest tour guide
- Snack food manufacturer
- High school student

Based on one of the above identities, think about how they will be impacted by your team's solution to this problem.

- How will this person's life change because of your solution?
- What would they think or say about your solution?
- How will this change impact someone with a similar identity that lives 2,000 miles away?



Listen and Help

	Team Presenting	Audience
3 min	Present their design solution.	Silently listen. Take notes.
3 min	Respond to clarifying questions.	Ask clarifying questions.
2 min	Silently listen. Take notes.	Provide feedback.

Listen and Help Notes

Feedback <i>from</i> the other team	Notes <i>for</i> the other team

Design a Project and Presentation!

Your conservation team will need to create a presentation to share your plan with the community, including:

- The problem your team has identified and addressed.
- Your team's solution for this problem.
- A story of how your solution will impact one person in the community (for example, a rainforest tour guide, snack food manufacturer, or high school student.)

Remember your project can include any tools that are useful. Like a ...



Business plan



Advertising campaign



Demo of potential device



Slideshow



Infographic

Notes



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