

E-PARCC

COLLABORATIVE GOVERNANCE INITIATIVE

Syracuse University

Maxwell School of Citizenship and Public Affairs

Program for the Advancement of Research on Conflict and Collaboration

The Great Pacific Garbage Patch SIMULATION



The Great Pacific Garbage is a collection of debris and trash, mostly plastic, found in the north central Pacific Ocean between the Hawaiian Islands and California, approximately 1,000 miles from either location. Although the location of the patch moves and varies based on ocean currents, it generally lies in the middle of the North Pacific Subtropical Gyre, located about 30 to 40 degrees north latitude and 135 to 145 west longitude.¹ A gyre is a circular current caused by wind patterns and the rotation of the earth. The North Pacific Subtropical Gyre is “made up of four large, clockwise-rotating currents - North Pacific, California, North Equatorial, and Kuroshio.”² Because of this gyre, the Garbage Patch is also known as the Great Pacific Plastic Vortex, since it slowly circulates a clockwise direction.

This simulation was written by Khaldoun AbouAssi, American University and Tina Nabatchi, Maxwell School of Citizenship and Public Affairs, Syracuse University. It was one of the winners in E-PARCC's 2016-2017 Competition for Collaborative Public Management, Governance, and Problem-Solving Teaching Materials. The simulation is intended for classroom discussion and not to suggest either effective or ineffective responses to the situation depicted. It may be copied as many times as needed, provided that the authors and E-PARCC are given full credit. E-PARCC is a project of the Collaborative Governance Initiative, Program for the Advancement of Research on Conflict and Collaboration- a research, teaching and practice center within Syracuse University's Maxwell School of Citizenship and Public Affairs.

https://www.maxwell.syr.edu/parcc_eparcc.aspx

¹ Berton, Justin. 30 October 2007. Feds want to survey, possibly clean up vast garbage pit in Pacific SFGate Accessed: <http://www.sfgate.com/news/article/Feds-want-to-survey-possibly-clean-up-vast-3301752.php#photo-2449091>

² <http://marinedebris.noaa.gov/info/patch.html>

The Garbage Patch was discovered in 1997 by Charles Moore, who was taking a short cut home from Hawaii to Los Angeles. Instead of steering his ship around the Pacific Ocean gyre, he headed directly through it. Moore explained that every day he traveled through the gyre he encountered more and more trash. While the size of the patch is contested (with estimates of it being twice the size of the state of Texas), research suggests that the amount of trash in the patch has increased 100 times in the past 40 years.³ Moreover, much of the waste will not “breakdown in the lifetime of the grandchildren of the people who threw [it] away.”⁴

The United Nations reports that in every square kilometer of sea you can find over 13,000 pieces of plastic. “Plastic only became widespread in the late ‘40s and early ‘50s, but now everyone uses it and over a 40-year range

we’ve seen a dramatic increase in ocean plastic. Historically we have not been very good at stopping plastic from getting into the ocean so hopefully in the future we can do better.”⁵

It is estimated that we use about 10 million tons of plastic each year, and that about 10% of the plastic finds its way into the ocean. Of this, about 20% of the plastic comes from ships and other sea vessels, while 80% comes directly from land. “When

a plastic cup gets blown off the beach in, say, San Francisco, it gets caught in the California Current, which makes its way down the coast toward Central America. Somewhere off the coast of Mexico it most likely meets the North Equatorial Current, which flows toward Asia. Off the coast of Japan, the Kuroshio Current might swoop it up and yank it eastward again, until the North Pacific Current takes over and carries it past Hawaii to the garbage patch.”⁶ Trash from the coast of the United States, among other countries, travels through the ocean currents reaching the garbage patch 1 to 6 years later.

Of the trash that finds its way into the oceans, nearly 70% sinks to the bottom; the remaining 30% floats near the surface.⁷ The majority of this trash stays in the ocean and forms garbage patches throughout the

The annual production of plastic resin in the United States has roughly doubled in the past 20 years, from nearly 60 billion pounds in 1987 to an estimated 120 billion pounds in 2007, according to a study by the American Chemistry Council, which represents the nation's largest plastic and chemical manufacturers.

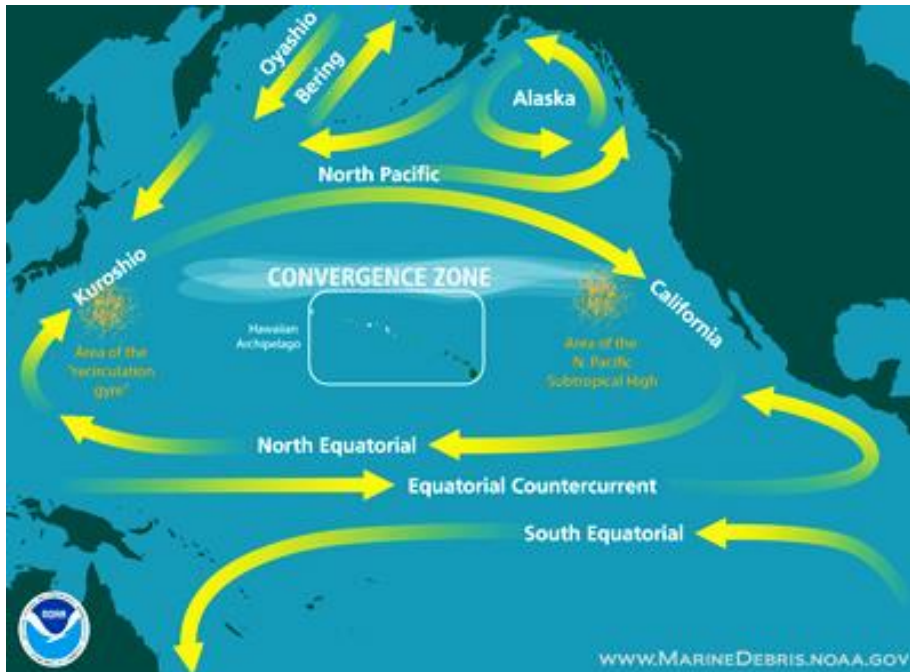
³Johnston, Ian. 9 May 2012. “Study: Plastic in 'Great Pacific Garbage Patch' increases 100-fold.” MSNBC.com Accessed: <http://worldnews.nbcnews.com/news/2012/05/09/11612593-study-plastic-in-great-pacific-garbage-patch-increases-100-fold?lite>

⁴Greenpeace. 2013. The Trash Vortex. Greenpeace International. Accessed: <http://www.greenpeace.org/international/en/campaigns/oceans/pollution/trash-vortex/>

⁵Ibid.

⁶Kostigen, Thomas M. 2008. “The World's Largest Dump: The Great Pacific Garbage Patch.” *Discover Magazine*.

⁷Greenpeace. 2013. The Trash Vortex. Greenpeace International. Accessed: <http://www.greenpeace.org/international/en/campaigns/oceans/pollution/trash-vortex>



oceans of the world, with the Great Pacific Garbage Patch being the most notorious. Better described as plastic soup, the Great Pacific Garbage Patch is mostly comprised of micro-plastics.⁸ The patch is not visible from satellite photos; it is almost 80% plastic, translucent, and found between the depths of one inch to 300 feet.⁹ Regardless, the Garbage Patch is a critical problem for ocean habitats and for people.

Most of the plastic in the ocean is broken down by a process called photodegradation, during which sunlight and UV rays degrade the plastic into tiny pieces of debris that outnumber plankton 6 to 1.¹⁰ This debris, called nurdles, is hydrophobic and absorbs harmful chemicals such as PCBs and DDT.¹¹ Marine animals and birds believe the trash to be food. The United Nations



Environment Program estimates that plastic debris in the ocean has caused over a million deaths in seabirds and over one hundred thousand deaths in marine mammals. Consumption of the nurdles not

⁸ National Geographic. 2013. "Great Pacific Garbage Patch." National Geographic Accessed:

http://education.nationalgeographic.com/education/encyclopedia/great-pacific-garbage-patch/?ar_a=1

⁹ Berton, Justin. 30 October 2007. Feds want to survey, possibly clean up vast garbage pit in Pacific SFGate Accessed:

<http://www.sfgate.com/news/article/Feds-want-to-survey-possibly-clean-up-vast-3301752.php#photo-2449091>

¹⁰ <http://curiosity.discovery.com/question/prevents-cleanup-great-pacific-garbage>

¹¹ Kostigen, Thomas M. 2008. "The World's Largest Dump: The Great Pacific Garbage Patch." Discover Magazine.

only leads to the death of animals, but also poses threats to humans. Fish that eat the plastic waste become part of the food chain - they are eaten by other marine animals and sometimes end up on the dinner tables of humans.¹²

Recent studies also report a threatening rise in the number of jellyfish in the oceans, due to several reasons, including trash.¹³ This has negative socio-economic impacts on tourism (due to hazardous swimming environments) and fisheries (jellyfish eat small fish and fish eggs).¹⁴ More important is the devastating impact on marine life. “The jellyfish, a predatory plankton, feeds on things like plankton, crustaceans, small fish and fish eggs, it depletes the food resources of larger mammals like whales.”¹⁵

No institution currently exists to monitor the oceans, especially the high seas, a term referring to the approximate 64% of oceans that lie outside the control of any one specific country. Although there are rules in place to protect the ocean, there is no governing body to enforce these rules. As a result, the Great Pacific Garbage Patch—and others like it—will continue to grow. Because everyone uses the ocean, but no one has legal ownership of it, the Garbage Patch has been called a “tragedy of the commons.” In short, *despite the problems with and dangers of the Garbage Patch, no nation will take responsibility because it is located in international waters beyond any national claims and will be extremely costly to clean up.*

Moving Forward

Although no one is in charge, there are several isolated efforts and proposed solutions to rectify the problem. These efforts and solutions generally fall into four categories: (1) Prevention, (2) Manufacturing, (3) Clean-Up, and (4) Regulation.

Prevention

The essence of the prevention argument is that (a) we lack concrete information about the size, shape, and impacts of the Garbage Patch, and (b) clean-up is cost-prohibitive. Until a comprehensive study is completed, efforts should focus on prevention.

Charles Moore, the oceanographer who discovered the Great Pacific Garbage Patch, is a pioneer on this front. After sailing through the patch, he reportedly went home and immediately sold his entire inheritance to start a foundation. Moore explains that any attempt to clean up this garbage patch would bankrupt any nation. Thus, he offers one simple solution: “stop putting trash into the ocean.”¹⁶ Others rally behind this call, asserting that clean-up is not cost effective.

¹² Marks, Kathy. 2008. “The world’s rubbish dump: a garbage tip that stretches from Hawaii to Japan” *The Independent*.

¹³ <http://www.isciencetimes.com/articles/5368/20130610/jellyfish-blooms-rising-population-sign-oceans-trouble.htm>

¹⁴ <http://qz.com/194036/climate-change-will-mean-way-less-sushi-and-way-more-jellyfish/>

¹⁵ <http://www.isciencetimes.com/articles/5368/20130610/jellyfish-blooms-rising-population-sign-oceans-trouble.htm>

¹⁶ DeFranza, David. “Isn't it Time to Clean Up the Great Pacific Garbage Patch?” TLC Accessed: <http://tlc.howstuffworks.com/home/clean-up-great-pacific-garbage-patch.htm>

Suppose we were to attempt to clean up less than 1% of the North Pacific Ocean (a 3-degree swath between 30° and 35°N and 150° to 180°W), which would be approximately 1,000,000 km.² Assume we hired a boat with an 18 ft. (5.5 m) beam and surveyed the area within 100 m off of each side of the ship. If the ship traveled at 11 knots (20 km/hour), and surveyed during daylight hours (approximately 10 hours a day), it would take 67 ships one year to cover that area!

At a cost of \$5,000-20,000 per day, it would cost between \$122 million and \$489 million for the year. That's a lot of money—and that's only for boat time. It doesn't include equipment or labor costs. Also, keep in mind that not all debris items can be scooped up with a net.¹⁷

Several options to improve and increase prevention efforts have been proposed. For example, some have asserted that we need to extend and enlarge recycling programs, particularly on California beaches. Others argue that to stop trash from entering the ocean, we need to raise awareness through programs such as reverse distribution.^{18,19} Still others argue that we need to support government initiatives to study the problem. In general, proponents of the prevention approach strongly and stridently reject any initiatives aimed at stopping or slowing the production of plastics.

In sum, proponents of this approach assert that prevention is the key factor in stopping the plastics from finding their way into ocean waters. This is not a laissez faire attitude; it is a practical one. The best way to stop the garbage patch from growing is to stop the trash from getting to the ocean.

Manufacturing

A second option involves both prevention and addressing manufacturing issues, including slowing down the production of plastics and changing the types of plastics that are produced. The essence of this argument is that prevention is necessary, but insufficient. No matter how hard we work, plastics will find their way into the oceans - from beaches, barges, cruise liners, and ships and other sea vessels.

Oceanographer Curtis Ebbesmeyer is a strong advocate of this approach. Ebbesmeyer points to several studies conducted over the past 10 years. During one expedition to the Garbage Patch, researchers

¹⁷ U.S. Department of Commerce | National Oceanic and Atmospheric Administration. 19 July 2012. "How Much Would it Cost to Clean up the Pacific Garbage Patches?" Accessed: <http://response.restoration.noaa.gov/about/media/how-much-would-it-cost-clean-pacific-garbage-patches.html>

¹⁸ Berton, Justin. 30 October 2007. Feds want to survey, possibly clean up vast garbage pit in Pacific SFGate Accessed: <http://www.sfgate.com/news/article/Feds-want-to-survey-possibly-clean-up-vast-3301752.php#page-2>

¹⁹ A reverse channel is when wastes, packages, and defective/obsolete products are "climbing back" the supply chain. In some cases (such as a defective product), distributors will take back the merchandises, but in many others, a specialized segment of the distribution industry aims at collecting and then recycling goods and parts. Thus, reverse logistics (or reverse distribution) is concerned about the movements of previously shipped goods from customers back to manufacturers or distribution centers due to repairs, recycling or returns (<http://people.hofstra.edu/geotrans/eng/ch5en/conc5en/forwardreversedistribution.html>)

collected 100 different samples, and found a “shocking” amount of plastic and debris. The research team concluded that “trash vortex” is somewhat of a misnomer, and “plastic confetti” was a more appropriate term.²⁰ Another study found that this plastic confetti (along with other plastics) was harming sea life; 9% of fish from the Garbage Patch area have some form of plastic in their stomachs. That said, the effects of plastics on marine life have yet to be studied extensively. Ebbesmeyer asserts, “the only solution [is] to switch to using biodegradable plastic and let the plastic gradually disperse, we can’t clean it up. It’s just too big. You’d have to have the entire U.S. Navy out there, round the clock, continuously towing little nets. And it’s produced so fast, they wouldn’t be able to keep up.”²¹

In sum, proponents of this approach believe that prevention is important, but that we must also address manufacturing. They argue that since we can only stop some, but not all, plastics from getting into the oceans, we must find ways to change the manufacturing and production of plastics. Manufacturing less plastic and ensuring that plastics are biodegradable is the best long-term solution for addressing the Garbage Patch.

Clean-Up

A third approach explicitly rejects the argument that clean-up is cost prohibitive, and instead asserts that we need to collect and recycle the trash - and particularly the plastics - in the ocean.

Mary Crowley, a former sea captain, is an advocate of this approach. Specifically, she and a team of researchers have proposed sending two large boats to the Garbage Patch to collect debris with nets and/or floating receptacles that capture big pieces of trash.²² Once the trash is collected, plastics would be recycled or reused, rather than put into a landfill. One option for this is pyrolysis, a process that takes plastic waste, heats it (to over 550° F) until it breaks down, and converts it into synthetic oil.²³ Proponents argue that pyrolysis could take place on floating rigs in the ocean, and could potentially break down over 85% of plastics. Although each floating rig is estimated to cost around seven million dollars, these costs could be recovered through the sale of the oil.²⁴

In sum, proponents of this approach assert that we have a moral and ethical responsibility to clean-up the mess that we have made of the ocean. They believe that clean-up is not only cost-effective, but that it

²⁰ National Geographic. 4 September 2009. “PHOTOS: Giant Ocean-Trash Vortex Documented--A First.” National Geographic *Photograph* courtesy Scripps Institution of Oceanography Accessed:

<http://news.nationalgeographic.com/news/2009/09/photogalleries/pacific-garbage-patch-pictures/index.html>

²¹ Johnston, Ian. 9 May 2012. “Study: Plastic in 'Great Pacific Garbage Patch' increases 100-fold.” MSNBC.com Accessed: <http://worldnews.nbcnews.com/news/2012/05/09/11612593-study-plastic-in-great-pacific-garbage-patch-increases-100-fold?lite>

²² Stone, Daniel. 9 December 2009. “Can the Pacific Garbage Patch Be Cleaned Up?” Newsweek Accessed: <http://www.thedailybeast.com/newsweek/2009/12/09/the-great-pacific-cleanup.html>

²³ Ibid.

²⁴ Ibid.

could, over time, generate important revenues that could be used for the further protection of our oceans.

Regulation

The final approach involves regulation. The essence of this approach is to compel nations to better protect ocean environments through soft-law. Advocates of this approach are pushing for the creation of a High Seas Biodiversity Agreement to regulate the oceans.

According to the United Nations Environment Program (UNEP) “deficiencies in the implementation and enforcement of existing international, regional, national regulations and standards that could improve the [marine litter] situation, combined with a lack of awareness among main stakeholders and the general public, are other major reasons why the marine litter problem not only remains, but continues to increase worldwide.”²⁵ Proponents of regulation suggest that a High Seas Biodiversity Agreement would help ameliorate the challenges of implementation and enforcement. Specifically, they assert that such an agreement is urgently needed to ensure healthy and productive marine ecosystems across the world’s oceans. They believe only a global agreement can provide a coherent and integrated approach in all areas beyond national jurisdictions.

Several international regulations already exist. For example, the constitution for the oceans, the UN Convention on the Law of the Sea (UNCLOS), sets out the rights and obligations that countries have when operating in the high seas, including the responsibility to protect ocean life from harm. In 1974, the UN started the Regional Seas Program (RSP) to link countries sharing a common body of water through an environmental management agreement designed to protect their shared marine surroundings. Such agreements have been enacted by 143 countries and involve 13 different regional sea programs. Similarly, the 1995 Global Program of Action for the Protection of the Marine Environment from Land-based Activities (GPA) enables nations to target major threats and work collaboratively to help maintain the “health, productivity and biodiversity of the marine and coastal environment.”²⁶ Although the GPA evaluates threats to the marine environment and provides guidance and implementation tools to help alleviate problems, implementation must be done by nations in conjunction with neighboring countries and regional actors. However, neither the GPA nor the RSP have strong monitoring and enforcement protocols.²⁷

Accordingly, advocates of regulation assert a High Seas Biodiversity Agreement would help with the needed monitoring and enforcement functions. These proponents assert that the management of the

²⁵ United Nations Environment Program. “Regional Seas Program.” United Nations Environment Program. Accessed: <http://www.unep.org/regionalseas/about/default.asp>

²⁶ United Nations Environment Program. Global Program of Action for the Protection of the Marine Environment from Land-based Activities (GPA) United Nations Environment Program Accessed: <http://www.gpa.unep.org/>

²⁷ United Nations Environment Program About the GPA. United Nations Environment Program Accessed: <http://www.gpa.unep.org/index.php/about-gpa>; United Nations Environment Program. “Regional Seas Program.” United Nations Environment Program. Accessed: <http://www.unep.org/regionalseas/about/default.asp>

high seas is undertaken by many different organizations serving a vast array of interests (some want to drill for oil; some want to preserve a specific group of fish or coral; some want to regulating fishing of specific species). These groups rarely work together and are not monitored; thus, it is difficult to determine whether their environmental impact reports are complete and correct. “A high seas biodiversity agreement would make clear the obligation of countries to protect ocean life that is found both in high seas waters and the seabed in areas that are beyond the jurisdiction of any one country.” Specifically, this new agreement would: (1) ensure that all marine reserves are properly identified and protected; (2) monitor environmental impact assessments, particularly by corporations; and (3) coordinate all organizations regulate the oceans, including protection agencies.

In sum, advocates of this approach assert that regulation is needed to get all nations to uphold their obligations to keep the oceans clean and safe. Specifically, they would like to see the creation of a new international agreement that would create the monitoring and enforcement mechanisms needed to protect the oceans.

Next Steps

This brief overview only scratches the surface of the Garbage Patch problem and its potential solutions. Representatives of several institutions and organizations are voluntarily coming together for the first time to discuss the Garbage Patch. The expectation is that the groups will start to shape a collaborative governance regime that will work to address the problems of the Garbage Patch. As one of the representatives, your bosses expect you to stand for your organization and its positions and interests during the deliberations (although as a citizen you might have a different view). The deliberations will focus on the following questions:

1. Is this a problem that your organization should be involved in solving?
2. If so, is creating a collaborative governance regime the best approach?
3. What is the best solution to addressing the Garbage Patch? (There is no need to go into specific scientific details at this point.)
4. What should be the process for solving the problem?
5. Who should assume the responsibility for the solution and for ensuring the process takes place?

In short, you are to determine **whether** and **how** to proceed. Beyond addressing these questions, there are no set expectations for the results of your deliberation.

Great Pacific Garbage Patch

Public Information on Actors Involved



National Oceanic and Atmospheric Administration (NOAA)

NOAA's Mission: *Science, Service, and Stewardship; To understand and predict changes in climate, weather, oceans, and coasts; To share that knowledge and information with others; and, To conserve and manage coastal and marine ecosystems and resources*

NOAA's Vision of the Future: *Resilient Ecosystems, Communities, and Economies; and Healthy ecosystems, communities, and economies that are resilient in the face of change*

The National Oceanic and Atmospheric Administration (NOAA) is a government agency responsible for conducting scientific research, sharing knowledge, and organizing conservation efforts through collaboration. NOAA has long standing relationships with the scientific community and regional governing bodies. Citizens trust its research and value its recommendations. When interacting with the international community, NOAA provides all relevant policy and decision recommendations to public officials. Since 2006, NOAA was authorized through the U.S. Congress to “identify, determine sources of, assess, prevent, reduce, and remove marine debris and address the adverse impacts of marine debris on the economy of the United States, marine environment, and navigation safety” through the Marine Debris Program. This program has specific jurisdiction over researching and determining action in regard to the Great Pacific Garbage Patch.



American Chemistry Council (ACC)

ACC's Mission: *To deliver business value through exceptional advocacy using best-in-class member performance, political engagement, communications and scientific research. We are committed to sustainable development by fostering progress in our economy, environment, and society. The business of chemistry:*

- *Drives innovations that enable a more sustainable future.*
- *Creates nearly 800,000 manufacturing and high-tech jobs—plus more than six million related jobs—that support families and communities.*
- *Enhances safety through the products of chemistry and investment in research*

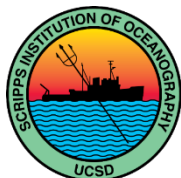
The American Chemistry Council (ACC) is a trade association that represents U.S. plastic producing firms. ACC is very influential among private actors and can aid in setting industry standards. ACC seeks to create a sustainable market with profits for industry, job growth, and maintenance of consumer health and safety, including environmental effects.

Great Pacific Garbage Patch

Public Information on Actors Involved

Plastic materials are found in everyday life in both highly developed and developing countries. Products include packaging, electronics, household décor, sporting wear, cooking utensils, and more. It would be hard to imagine life without plastic in this day and age. That being said, plastic manufacturing is around to stay.

Research Institutes



Scripps Institution of Oceanography Mission: *to seek, teach, and communicate scientific understanding of the oceans, atmosphere, Earth, and other planets for the benefit of society and the environment.*



Algalita Marine Research Foundation Mission: *to work on the protection and improvement of the marine environment and its watersheds through education and research on the impact of plastic pollution.*



Ocean Voyages Institute Mission: *to teach maritime arts and sciences and preserving the world's oceans.*

As a group of international sailors, educators, and conservationists, the above research organizations seek to eliminate future plastic waste as the costs of clean-up are too high and efforts unmanageable. These groups also share a common interest in conducting and distributing research that informs decision and policy making. Their goals are to delve into cutting edge research and provide the best information in order to preserve the Earth's environment.

A common theme among all three organizations is the commitment to education. This includes education among academic institutions, everyday consumers, private firms, and governments. They know without the right knowledge, decision making influence diminishes. A potential downside to the information each research organization maintains is the variance in reports. This has been one of the greatest problems with the garbage patch as reports vary in its actual size and breadth of environmental impact.

Great Pacific Garbage Patch

Public Information on Actors Involved



Greenpeace

Greenpeace's Mission: *to use non-violent, creative confrontation to expose global environmental problems, and to force the solutions which are essential to a green and peaceful future. Greenpeace's goal is to ensure the ability of the earth to nurture life in all its diversity, through the protection of biodiversity in all its forms, prevention of pollution and abuse of the earth's ocean, land, air and fresh water, ending all nuclear threats, and promoting peace, global*

disarmament and non-violence

Greenpeace is an independent activist, campaigning international nongovernmental organization (NGO) seeking to promote environmentally safe activities through advocacy and the promotion of meaningful solutions. Headquartered in Amsterdam, Holland, the organization has a mixed reputation in the United States and abroad. Its main criticism is that it sometimes performs too radical of advocacy means while others highly acclaim its efforts.



United Nations Environment Program (UNEP)

UNEP's Mission: *To provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without*

compromising that of future generations.

UNEP's Mandate: *To be the leading global environmental authority that sets the global environmental agenda, that promotes the coherent implementation of the environmental dimensions of sustainable development within the United Nations system and that serves as an authoritative advocate for the global environment.*

As an intergovernmental organization, the United Nations (UN) as a whole seeks to improve standards of living across all nations. One such means is through environmental stewardship. In 1972, the UN created the UN Environment Program to be the environmental body responsible for conducting research for informed decision making in every nation regardless of economic status. Today, the UNEP seeks to be the leading authority on global environmental matters, although still unable to become a regulatory body. Its main power occurs through recommendations it may put forth to nations around the world.

Great Pacific Garbage Patch

Public Information on Actors Involved



Japan (Ministry of the Environment)

Ministry of the Environment Mission: *Aiming to create a sustainable society, works to make a country which enables simple and high-quality living environment. The ministry will then transmit this idea to the world.*

It is commonly known that a large portion of Japan's food supply comes from regional marine environments. The government has vested interest in the fishery industry; the country is ranked among the top five in the world in the tonnage of fish caught (15% of the global catch). In 2010, the country's total fisheries production was around 5million fish. Coastal fishing by small boats and nets accounts for about one third of the industry's total production and offshore fishing by medium-size boats accounts for more than a half.

The Great Pacific Garbage Patch

Student Instruction Sheet

The Great Pacific Garbage Patch is a collection of debris and trash, mostly plastic, found in the north central Pacific Ocean between the Hawaiian Islands and California, approximately 1,000 miles from either location. Although its size is contested, one estimate is that it is twice the size of the state of Texas. The Garbage Patch is a critical problem for ocean habitats and for people.

Despite the problems with and dangers of the Garbage Patch, no nation will take responsibility for it because it is located in international waters beyond any coastal region claims, and will be extremely costly to clean up.

The Simulation

This role play simulation requires you to assume the role of a representative of one the following actors:

- National Oceanic and Atmospheric Association (NOAA)
- American Chemistry Council (ACC)
- Research Institutes
- Greenpeace
- United Nations Environment Program (UNEP)
- Japanese Ministry of Environment

The representatives of these organizations are coming together for the first time to discuss Great Pacific Garbage Patch. You will work on this role-play in a large group where each organization is represented by *at least* one student.

You will be assigned to one of the above roles and to a team. You are expected to assume your assigned role based on the confidential information sheets that will be provided to you.

Expectations

The group's deliberations will focus on the following questions:

1. Is this a problem that your organization should be involved in solving?
2. If so, what is the best solution? (There is no need to go into specific scientific details at this point.)
3. What should be the process for solving the problem?
4. Who should assume the responsibility for the solution and for ensuring the process takes place?

In short, the group is to determine whether and how to proceed. Beyond that, there **are no set expectations for the results of the deliberation or for how the group carries out its work.**

Your Role

As one of the representatives of a specific actor, your bosses expect you to stand for your organization and its positions and interests. However, as a citizen you might have a different view. In either case, you are to act responsibly and assume your role professionally.

Logistics

- Once you get your background information, you will have the chance to coordinate with the other representative(s) of your organization/role on your objectives, approach, and strategy, before the whole group comes together to discuss the Great Pacific Garbage Patch. You can use the four questions above as a guide
- The group should decide on how to organize itself and conduct its meetings (meet as a whole, form committees, hold side meetings, etc.) within the timeframe allocated to the role play.
- The group should keep track of its meetings (date, location, attendees, duration, etc.) and submit a brief record at the end.
- In the past, group meetings ranged between 2.5 hours to 4.5 hours, excluding preparation time. This means that it is important for your group to set the ground rules and expectations before your first negotiation meeting.

Rules & Regulations

- All students are required to participate in the role-play. It is the student's individual responsibility to actively participate in the group discussion. This participation will impact the group performance.
- General information on the six actors is provided to all participants.
- The information sheet on each actor is confidential. Do NOT share the sheet.
- You can strategically disclose some or all of the information as quickly or as slowly as you want once the negotiations begin.
- You should NOT conduct extra research at this stage, including investigations of the organizations involved.
- The group(s) has to present the *results of its deliberation* in a brief report.
- Students can utilize different channels/tools of communications (e.g., video/voice conferencing, Skype, etc.), but should be aware of the challenges associated with each tool.

Preparing for the Group Meeting

- All participants should read the Great Pacific Garbage Patch background information and public information on all of the actors.
- Representatives of each organization can strategize prior to the meeting and decide on their approach.
- Before or at the start of the meeting, the group should decide on how to manage the meeting/discussion. The group should be given the opportunity to break out and leave the meeting room.
- The group needs to present a summary of its meetings either in a report or a presentation that is submitted to the instructor. The summary could include a proposal on how to address the issue or a memo on the results of the deliberation.
- Each student will write a reflective piece on the role play. It's a good idea to review that assignment before the group meets.

Great Pacific Garbage Patch - Actor Information

CONFIDENTIAL - DO NOT SHARE!

National Oceanic and Atmospheric Administration (NOAA)



NOAA's Mission:

- Science, Service, and Stewardship.
- To understand and predict changes in climate, weather, oceans, and coasts,
- To share that knowledge and information with others, and
- To conserve and manage coastal and marine ecosystems and resources.

NOAA's Vision of the Future:

- Resilient Ecosystems, Communities, and Economies.
- Healthy ecosystems, communities, and economies that are resilient in the face of change²⁸

Background

The National Oceanic and Atmospheric Administration (NOAA) is a government agency responsible for conducting scientific research, sharing knowledge, and organizing conservation efforts through collaboration. NOAA has long-standing relationships with the scientific community and regional governing bodies. Citizens trust its research and value its recommendations. When interacting with the international community, NOAA provides all relevant policy and decision recommendations to public officials.

Since 2006, NOAA was authorized through the U.S. Congress to “identify, determine sources of, assess, prevent, reduce, and remove marine debris and address the adverse impacts of marine debris on the economy of the United States, marine environment, and navigation safety²⁹” through the Marine

Debris Program. This program has specific jurisdiction over researching and determining action in regard to the Great Pacific Garbage Patch.

²⁸ National Oceanic and Atmospheric Administration | United States Department of Commerce. “About NOAA.” 2014. National Oceanic and Atmospheric Administration | United States Department of Commerce. Accessed: <http://www.noaa.gov/about-noaa.html>

²⁹ U.S. Department of Congress | National Oceanic and Atmospheric Administration | National Ocean Service. “Marine Debris.” 2014. U.S. Department of Congress | National Oceanic and Atmospheric Administration | National Ocean Service. Accessed: <http://marinedebris.noaa.gov/>

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As Director of the NOAA Marine Debris Program, you are under increasing pressure regarding research and a policy recommendation for the Great Pacific Garbage Patch, but must maintain positive relations with all relevant stakeholders. Stakeholders include citizens, NGOs, private industry, international bodies, and other research groups. You also need to recognize that as a federal agency, your discretion is limited in some fields and you require the authorization from Washington DC (the congress or other federal agencies).

The Great Pacific Garbage Patch poses substantial negative effects to the environment, including marine and human wellness. The decomposition of the plastics remain in marine life and the hazardous materials are passed on to consumers. After a cost-benefit analysis, NOAA has found the Great Pacific Garbage Patch too extensive and costly for clean-up and removal. If policy makers chose to only clean-up 1% of the patch it would take 67 ships one year to remove debris from just this small area, or up to \$489 million per year³⁰. In addition, there is a lack of concrete information on exactly how large the patch is and the extent of its environmental impact. NOAA, nor other actors, is willing and able to take on these substantial costs. NOAA instead argues for prevention of future plastics and garbage released into our oceans. This includes means such as enhanced recycling programs, a reduction in plastic manufacturing, a reduction in plastic usage, greater environmentally friendly means of production, or alternative means you as Director may envision and facilitate. This can only be achieved through collaboration with the public, private, and nonprofit sectors in both domestic and international capacities.

Position on Collaboration

Collaboration is crucial to NOAA's success in prevention. In your position as Director, you must decide which actors in regard to this problem provide the best and complimentary resources in order to promote prevention. When thinking through your decision, keep in mind each actor's interests, values, and position in managing the Great Pacific Garbage Patch.

Each group of actors will want to vie for the proposal with highest return. Research groups will be looking to provide their own research insights into the issue along with NGO and citizen groups. Private firms will want to incur minimum to no costs in efforts as well as the American Chemistry Council who supports the industry's interests. Private firms and the ACC are adamantly opposed to a reduction or elimination in plastic manufacturing and usage. Private firms may be more willing to participate in recycling efforts as it also increases public perception of social corporate responsibility. As an influential member to the United Nations, you must also be careful not to involve the United States beyond desired

³⁰ U.S. Department of Commerce | National Oceanic and Atmospheric Administration. 19 July 2012. "How Much Would it Cost to Clean up the Pacific Garbage Patches?" Accessed: <http://response.restoration.noaa.gov/about/media/how-much-would-it-cost-clean-pacific-garbage-patches.html>

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means of public officials. When convening at such meetings, you as Director must also make sure the best information is available to U.S. representatives both financially and scientifically. Lastly, Japan will serve as a close ally to prevention, but it must also look after the interests of its own private industry which faces different regulatory processes than those of the United States.

To reiterate, when considering collaborative means, NOAA is tasked to encourage clean-up partnerships, but is not to subject the United States as the sole responsible nation, as the garbage patch is an accumulation from many nations and their respective private firms and consumers.

Resources

As Director of the NOAA Marine Debris Program, you have access to the 2014 \$5.4 billion NOAA budget along with expansive human capital connections. These connections include experts both outside and within your organization and in international and domestic capacities. You also have the support of the U.S. Congress who renewed the program again in 2012 through an amendment to the Marine Debris Act. Financial resources are highly regarded by the U.S. public and must be kept in high regard throughout decision making processes. Timelines of any coordinated efforts must also be kept in mind, as clean-up efforts or prevention means are known to take several years' time. However, it is important to consider that any major policy change or additional financial burden requires the approval of Washington DC.

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American Chemistry Council (ACC)



ACC's Mission:

To deliver business value through exceptional advocacy using best-in-class member performance, political engagement, communications and scientific research. We are committed to sustainable development by fostering progress in our economy, environment, and society. The business of chemistry:

- Drives innovations that enable a more sustainable future.
- Creates nearly 800,000 manufacturing and high-tech jobs—plus more than six million related jobs—that support families and communities.
- Enhances safety through the products of chemistry and investment in research³¹.

Background

The American Chemistry Council (ACC) is a trade association that represents U.S. plastic producing firms. ACC is very influential among private actors and can aid in setting industry standards. ACC seeks to create a sustainable market with profits for industry, job growth, and maintenance of consumer health and safety, including environmental effects.

Plastic materials are found in everyday life in both highly developed and developing countries. Products include packaging, electronics, household décor, sporting wear, cooking utensils, and more. It would be hard to imagine life without plastic in this day and age. That being said, plastic manufacturing is around to stay.

The organization currently supports a recycling stance to issues involving plastic debris, such as the Great Pacific Garbage Patch. ACC knows that a decrease or elimination of plastic production would have drastic financial effects on domestic producers. Recycling programs both within the industry and in domestic households is one of the best means to prevention and one in which costs are shared between consumers and producers. With hopes to do more in the future, ACC currently supports the following industry recycling programs:

³¹ American Chemistry Council. "About ACC." 2014. American Chemistry Council. Accessed: <http://www.americanchemistry.com/About>

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- Lightweight plastic packaging allows more products to be shipped, lightening the load and producing fewer discards. After delivering the goods, many plastics can be recycled and become new packaging or long-lasting products such as plastic lumber.
 - Absorbents, catalysts and plastic fibers in air filters for automobiles, homes and commercial buildings clean the air we breathe, and “scrubbers” at industrial facilities dramatically reduce noxious emissions to the environment and acid rain.
 - Modern landfills are lined with industrial strength plastics to prevent toxic run off into sensitive waterways or drinking water sources.
 - Disaster response relies on the products of chemistry, such as absorbents, plastic booms and skimmers after oil spills, as well as purified drinking water and disinfectants to stop the spread of disease after natural disasters.
 - Chemistry produces fertilizers that nurture crops, new compounds that protect plants from proliferating pests and disease, water saving and delivery devices such as plastic sheeting and pipes—resulting in more food for more people³².

When considering the environmental effects of plastic production, private firms are inherently against any measures that would decrease or eliminate plastic production as it would have drastic financial effects on the industry. Instead, firms are willing to increase awareness of plastic waste through recycling efforts which can be accomplished through public, private, and nonprofit partnerships. Firms are only willing to do so, if participation does not mean significant decreases in profitability. Partnership allows plastic producing firms not to bear substantial costs of clean-up or preventive activities, while also encouraging a niche among consumers who encourage environmentally friendly activities, or corporate social responsibility. As a senior executive of a major plastic manufacturing firm, you are willing to seek collaborative means to a solution without accepting responsibility for the Great Pacific Garbage Patch.

Position on Collaboration

As Vice President of ACC, you should facilitate discussions between plastic producing firms and environmental groups. You fully support the use of plastic materials in industry, but also know we must have a sustainable environment. ACC supports a *Reduce, Reuse, and Recycle* motto. In this motto, reduction pertains to the amount of reliance on alternative materials that may have even greater environmental effects, such as fuel and insulation materials. Reuse pertains to reusing plastic items again,

³² American Chemistry Council. “Environment.” 2014. American Chemistry Council. Accessed: <http://www.americanchemistry.com/Innovation/Environment>

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such as refilling water bottles. Recycle pertains to the actual process of converting existing and used plastics into new items for use³³.

In addition, ACC has interests in collaborating with U.S. governmental entities, including NOAA, as they also support your approach to recycling promotion. You must be careful though as your industry firms are used to operating outside the confines of the bureaucracy in managing red tape and public opinion. The research groups will also provide scientific research and support, but competing interests must be carefully assessed. Researchers will want to maintain close supervision of performance once action is taken.

To elaborate, for the private firms that ACC represents, collaboration is accepted as long as profitability is not expensed. As a private firm, you have an interest in funding independent research groups along with forming partnerships with NOAA and the UNEP as these organizations are viewed most favorably by the public; collaborating with them would increase credibility to corporate social responsibility. Private firms also have incentive to partner with research organizations, particularly the Ocean Voyage Institute, as the organization is currently researching means of turning the plastic waste into profits. The plastic waste can be recycled into fuels which can be resold by various private firms. This requires cutting edge research and technology which private firms can support through research and design initiatives. This also increases shareholder value for private firms.

Private firms are least likely to partner with activist NGOs, such as Greenpeace, as their means to solution are too radical, often blaming the private forms for environmental problems. Brand and image is everything for corporations.

Resources

As Vice President, you have access to a \$770 billion enterprise along with substantial ties to private industry. You also have significant influence with U.S. decision makers through lobbying efforts. You may also have international resources at your discretion as many of the U.S. based firms also have operations abroad.

³³ Sustainability and Recycling. 2014. American Chemistry Council. Accessed: <http://plastics.americanchemistry.com/Sustainability-Recycling>

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Research Institutes

(Each member can either identify with an individual institute or choose to represent the institutes collectively)



Scripps Institution of Oceanography Mission:

The Scripps mission is to seek, teach, and communicate scientific understanding of the oceans, atmosphere, Earth, and other planets for the benefit of society and the environment³⁴.

Algalita Marine Research Foundation Mission:

Algalita is dedicated to the protection and improvement of the marine environment and its watersheds through education and research on the impact of plastic pollution. We do this by:

- Conducting research and collaborative studies on:
 - Distribution, abundance and fate of marine plastic pollution
 - Potential harmful effects of plastics in the marine environment
 - Transference of toxicants and their impact on human health
- Providing authoritative, educational findings to students, scientists, the general public, governmental agencies, and the private sector.
- Collaborating with organizations working toward restoring the aquatic environment by reducing and ultimately eliminating plastic pollution³⁵.

Ocean Voyage Institute Mission:

Teaching maritime arts and sciences and preserving the world's oceans³⁶.

³⁴ Mission and Quick Facts. 2014. Scripps Institution of Oceanography. Accessed: <https://scripps.ucsd.edu/about/mission-and-quick-facts>

³⁵ About Us. 2014. The Algalita Marine Research Institute. Accessed: <http://algalita.org/about-us/#mission>

³⁶ About OVI. 2014. Ocean Voyages Institute. Accessed: <http://www.oceanvoyagesinstitute.org/about-ovi-2/>

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Background

As a group of international sailors, educators, and conservationists, the above research organizations seek to eliminate future plastic waste as the costs of clean-up are too high and efforts unmanageable. These groups also share a common interest in conducting and distributing research that informs decision and policy making. Their goals are to delve into cutting edge research and provide the best information in order to preserve the Earth's environment.

A common theme among all three organizations is the commitment to education. This includes education among academic institutions, everyday consumers, private firms, and governments. They know without the right knowledge, decision making influence diminishes. A potential downside to the information each research organization maintains is the variance in reports. This has been one of the greatest problems with the garbage patch as reports vary in its actual size and breadth of environmental impact.

As a lead researcher from one of the above organizations, your job is to continue building upon knowledge of the Great Pacific Garbage Patch and seek means of collaboration in future elimination and/or recycling of plastics. Your organization is a key contributor to future efforts and policy making in the United States and abroad.

Position on Collaborations

Research organizations know they cannot solely conquer environmental hazards, including the garbage patch, alone. The elimination of plastic waste will only come to fruition through collaboration across public, private, and nonprofit sectors and across domestic and international borders. Collaboration also allows researchers to become directly involved in the decision and policy making processes.

These organizations also aid in promoting innovation that may have far-reaching effects into the private sector. One such way is seen as the Ocean Voyage Institute, who potentially favors some debris removal, is paving a new cost-efficient means to prevention through supporting research and promotion of detoxification and recyclable fuel manufacturing from plastics, or pyrolysis. First, detoxification decreases the amount of hazardous material ingested by marine life with the potential of ending up on the dinner table of consumers. Second, the recycled fuel can be sold by private firms for a profit or at least a recoup from costs incurred through regulation. This innovative solution, which is advocated for by Mary Crowley, an affiliate of Ocean Voyage Institute, has been tested and the preliminary results are promising, albeit two concerns: 1) there is always the risk of air pollution during the process; and 2) the start-up cost might be high. Each floating rig is estimated to cost around seven million dollars with the possibility that these costs could be recovered through the sale of the oil.

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While you do not have the answers to these concerns, it is very important for the Institutes to promote this solution. It is paramount for the research institutes to craft a very active role for themselves in any process to address the problem.

Resources

These organizations are mostly endowed through civilians, private industry, and foundations with average yearly contributions of \$300,000-\$600,000. Researchers also have access to cutting-edge academic institutions including their resources, brand, and human capital. In addition, each organization maintains its own research vessels for conducting research in the field, or oceans. This leads to the most up-to-date information for policy and decision makers.

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Greenpeace



Greenpeace's Mission

Greenpeace is an independent campaigning organization that uses non-violent, creative confrontation to expose global environmental problems, and to force the solutions that are essential to a green and peaceful future.

Greenpeace's goal is to ensure the ability of the earth to nurture life in all its diversity.

Therefore Greenpeace seeks to:

- protect biodiversity in all its forms
- prevent pollution and abuse of the earth's ocean, land, air and fresh water
- end all nuclear threats
- promote peace, global disarmament and non-violence.³⁷

Background

Greenpeace is an activist, international nongovernmental organization (NGO) seeking to promote environmentally safe activities through campaigning, advocacy and the promotion of meaningful solutions. The organization is headquartered in Amsterdam, Holland. It has a mixed reputation in the United States and abroad. While some give it high praise, others complain that its advocacy efforts are too radical.

In terms of the Great Pacific Garbage Patch, Greenpeace is avidly fighting for both the removal of debris and further prevention. Despite high costs to removal, without the eradication of the present waste matter, the environment will continue to degrade, and consumers will face increasing health and safety

³⁷ Our Core Values. 2014. Greenpeace International. Accessed:
<http://www.greenpeace.org/international/en/about/our-core-values/>

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risks. Since 2006, Greenpeace has encouraged its members to take their own initiatives at recycling and clean-up of areas flowing into the Pacific Ocean. Greenpeace knows this is not enough; large-scale efforts are necessary. One outcome of these efforts that Greenpeace favors is a High Seas Biodiversity Agreement. As of now, no standardized regulatory body exists. Only the UN has the power to issue recommendations, and contributing countries will not accept sole responsibility. This agreement would unify environmental reports, ensure proper and unbiased reporting, and improve corporate oversight of the problem. Greenpeace is very wary about other proposed solutions that appear to solve the problem by involving private firms through investment in a treatment processes; such solutions present risk to the environment through air pollution.

Position on Collaboration

As an activist NGO, Greenpeace is capable of drawing great attention to issues. This attention is sought in hopes of increasing certain actions among state actors and to gain public support.

As the Deputy Program Director of Oceans, you must determine the best means of advocacy. Your main goal should be to arouse public support of increased recycling efforts, as you know governments currently have too much red tape and are uncooperative. Only through citizen support and pressure, policy makers would be more likely to hear your concerns. However, governments and large international bodies, such as the UN, are hesitant to collaborate with you as your organization is perceived as being too radical and not supportive of mutual interests among citizens and governance bodies. Private sector companies consider you their adversary and your track record supports their stand; however, although you are willing to listen to private companies' perspectives and might tolerate 'corporate social responsibility', the fights you have been through were mostly the responsibilities of these companies- either through their direct actions or their unwillingness to assume the responsibility and take action. There is critical distrust.

Resources

Greenpeace is financially independent from public and commercial interests. It maintains U.S. contribution funds of roughly \$12.2 million, and has over 2.8 million members worldwide. With these funds and its organizational knowledge, Greenpeace also has strong lobbying capabilities with Congress and entities around the world, particularly in Europe.

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United Nations Environment Program (UNEP)



UNEP's Mission

To provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations.

UNEP's Mandate

To be the leading global environmental authority that sets the global environmental agenda, that promotes the coherent implementation of the environmental dimensions of sustainable development within the United Nations system and that serves as an authoritative advocate for the global environment.³⁸

Background

The United Nations (UN) is an intergovernmental organization. As a whole, the UN seeks to improve standards of living across all nations, in part, through environmental stewardship. In 1972, the UN created the UN Environment Program (UNEP) to serve as the environmental body responsible for conducting research and informing decision making. Today, the UNEP seeks to be the leading authority on global environmental matters. However, the UNEP is not a regulatory body; it can only issue recommendations.

The Great Pacific Garbage Patch is currently in need of an immediate international response. Since no one nation or body accepts full responsibility, only a coordinated approach will lead to a cleaner Pacific Ocean. Efforts in this Garbage Patch will serve as a model for addressing other garbage patches in oceans around the world.

As Executive Director of UNEP, you should seek collaboration across all actors and push for an achievable solution to the Great Pacific Garbage Patch. Achievable is an important caveat. Most organizations agree that elimination of the current patch through removal and clean-up efforts is too

³⁸ The Voice of the Environment. 2014. United Nations Environment Program. Accessed: <http://www.unep.org/About/>

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costly even if all actors were to chip in resources. The proposal supported by most actors is the prevention of future build-up. If the amount of plastic waste released, both intentionally and unintentionally, into oceans can be reduced and then eliminated, then current plastic levels will not increase causing even greater environmental harm and adverse human effects.

Position on Collaboration

The UNEP favors only a collaborative approach to addressing the Great Pacific Garbage Patch. Public, private, and nonprofit organizations must combine knowledge and physical and financial resources to see positive returns. UNEP will act as a unifying organization providing guidance and alleviation means. Only through the efforts of national and regional coordination, NGOs, private firms, and active citizens can the garbage patch see future reduction.

Resources

The UNEP currently has no regulatory powers, but does have a great deal of ability to influence and coordinate collaboration across state, private, and NGO actors. Its primary means of influence is through recommendations and financial support from the UN. As an inherently collaborative organization, nonprofit and activist organizations already seek your advice and support. In addition, the UNEP has access to financial reserves from highly environmentally friendly bodies such as the European Union.

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Japan (Ministry of the Environment)



Ministry of the Environment Mission

Aiming to create a sustainable society, works to make a country which enables simple and high-quality living environment. The ministry will then transmit this idea to the world.³⁹

Background

The government of Japan has a vested interest in the fishery industry. The country is ranked among the top five in the world in the tonnage of fish caught (15% of the global catch). In 2010, the country's total fisheries production was around 5 million fish. Coastal fishing by small boats and nets accounts for about one third of the industry's total production, and offshore fishing by medium-size boats accounts for more than a half.

Japan is highly affected by the Great Pacific Garbage Patch, as a large portion of its food supply comes from regional marine environments. Recently, local hospitals have had increasing numbers of new human patients experience a variety of ailments. Although research is still underway, there is a high likelihood the inflow is linked to the decomposition of plastic waste found in small marine fish that wind up on the dinner table of Japanese families. Domestic industry has disputed such claims, and denies links to the hazardous plastic waste in the oceans.

However, the March 2011 tsunami proved that Japan is a major contributor to the garbage patch. Nevertheless, the country is neither willing nor able to accept full responsibility, as much of the patch existed long before and contains waste from the United States and other nations.

As the Japanese Minister of the Environment, you must consider the impacts of the garbage patch on your citizens and domestic industries. Japan currently supports a prevention based approach to the garbage patch, and asserts that responsibility for such measures falls to plastic manufacturers and firms with plastic as a by-product. Japan knows clean-up costs will be too high and efforts unmanageable.

³⁹ Policy Coordination/Evaluation and Public Relations Division under the Minister's Secretariat. 2006. Ministry of the Environment Accessed: <http://www.env.go.jp/en/aboutus/>

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Japan has expressed interest in international collaboration efforts, increased regulation, and support from regional and local governments. However, it is important to take a back seat and make sure that

United States government and industry primarily take the blame for the problem and assume the responsibility for the solution. Japan should only be involved if needed and indirectly through UNEP.

Position on Collaboration

Japan is willing to collaborate internally with its domestic industries, as well as externally with international organizations such as the United Nations agencies. The country is most likely to support efforts by UN Environment Program (UNEP). However, the general mood in the government—supported by government reports—tends to blame the United States for the problem; much of the patch existed long before and contains waste from the United States and other nations. The inclination is to displace both the blame and responsibility to the United States government and industry and only get involved if needed and indirectly through UNEP. Another problem to consider is that activist and research groups may pose problems for Japan as their requests may be beyond feasible and acceptable means.

Resources

The Japanese government is willing to financially support prevention efforts, but in an inconspicuous manner so as to not upset fishing and other marine economies. In addition to channeling support through UNEP, such efforts could include financial support of recycling programs at major Japanese private firms or through the Japanese Plastics Industry Federation and the All Japan Plastic Products Industrial Foundation. The latter two firms work with private industry in waste reduction methods.

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Writing Assignment

Now that you have completed the role play, step out of your stakeholder role and assume your position as a professional student studying collaboration and organizations.

Reflect on your experience in the role play and how those experiences connect to the big themes of collaboration and organizational management. You can do that by focusing on the *process* or on the *outcome(s)/ result(s)* of your deliberations. (Do NOT explain the roles or the positions and interests of the group. Instead, focus on issues relating to the dynamics and the challenges of coordinating across organizational boundaries.)

- The emphasis of your paper should be on how the role play shaped or influenced the way you think about and understand the theme you selected (*or the other way around*). More specifically, you should:
 - Identify the question(s) you will address in the paper and explain why the question(s) is relevant to the role play.
 - Describe the tensions/issues/controversies embedded in the question(s) and discuss how those were evident in the role play. Buttress your arguments with analysis and connections to the readings and materials provided in class.
 - Analyze the role play in terms of the selected questions and embedded tensions/controversies; discuss how your experience shaped the way you think about them.
 - Remember, we already know what your team's proposal was, so we care less about your individual or team experience. Instead, *we want to know how YOU view, understand, and approach the big question(s) we discuss in the course.*
- The paper must be no more than 1500 words, using 1-inch margins and 12-point font.
- Make sure you draw on a variety of sources (from and outside of assigned class text & readings). At least 7 sources should be used.
- A list of full references is necessary (does not count to the page limit). For in-text citations, you need only use author name; for direct quotes please provide the page number as well.
- The assignment will be graded on clarity, analytical thoughtfulness, and application of key organizational management/analysis concepts to a complex issue. You **MUST** give serious consideration to how the role play informed your understanding of one or two of the big issues/questions we discussed in this course.