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Tragedy of the commons examples

Port Meadow in OxfordThe tragedy of the commons is a situation where there is overconsumption of a particular product/service because rational individual decisions lead to an outcome that is damaging to the overall social welfare.The tragedy of the commons theory assumes that when making decisions, people take the course of action that maximises their own utility. However, if many people seek to do this, the net effect may be to deplete a resource making everyone worse off in the long run.The tragedy of the commons was first mentioned by the Victorian economist William Forster Lloyd, in 1833. He used a hypothetical area of common grazing land, in which villagers all took their cows to this common grazing land, but this led to overgrazing and a loss of the resource. In theory, individuals could limit their use so that they don't deplete the common resource. However, there is a free-rider problem. Where people rely on others to cut back their production. If everyone free-rides and maximises their use, then we get a situation of over-consumption.Over-fishing and Tragedy of the CommonsIndividual fisherman have an incentive to catch as many fish as possible. However, if many fishermen have this same motive, then it can lead to fish stocks being depleted as fish are caught at a faster rate than they are replenished.Unchecked, this can lead to a collapse in fish stocks due to over-fishing.If one individual fisherman holds back on his catch to try and preserve overall fish stocks, it may prove futile because many other fishermen continue to catch as much as possible. The net result is that fisherman don't have any incentive to hold back, so they might as well try and catch as much as possible.Voluntary agreements to avoid the tragedy of the commonsElinor Claire "Lin" Ostrom an American economist investigated local communities who did work together to successfully manage common resources. She used the term 'common pool resource management' to describe how local individuals could come together to make informal arrangements to manage and use the pool of resources. Her examples of local initiatives led to the use of the term (sometimes known as Ostrom's Law) "resource arrangement that works in practice can work in theory."However, this co-operation is more difficult for an international resource like fishing in the north sea. In this case, the multi-national level fishing makes it more difficult to reach an agreement.Example of Tragedy of the CommonsFor example, we may have a plot of land which could tolerate 20 animals grazing per year. This level is sustainable from year to year.However, if the land is open, there may be 40 villagers each bringing their own cow to graze the land. This leads the village green to be overgrazed meaning the village lose this common land.If there was regulation or a common agreement to limit grazing to 20 cows, then the net welfare would be much greater for the village as it would last from year to year.Policies to Overcome Tragedy of the CommonsVoluntary agreements along the lines of Elinor Ostrom, with informal arrangements and local monitoring. Strong sense of civic responsibility can make these arrangements more successful.Government regulation. Government regulation can limit fish catches or size of fishnets to allow young fish to escape.Clearly defined property rights. If common land is given over to private ownership, the private owner has a stronger incentive to manage the resource for optimum outcome. However, the problem of property rights is that it can lead to equity issues (private owners gain monopoly power over tenants). Also if owner pursues short-run profit maximisation he may make the same mistakes.Fishing Policy. The EU has a fishing policy to try and regulate fish stocks in heavily fished areas. However, it is often controversial because agreeing and implementing quotas can be a source of friction.For example, in fishing, the international community may set a specific fishing quota, which is split up amongst different fishing industries. If these quotas are kept, then fishing stocks should be preserved.Economic policies to save the rainforestRelatedFree Rider Problem - a situation where people have an incentive to benefit from the efforts of other people.Public goods - A good where there is non-rivalry and non-excludability. Not a good where there is a tragedy of the commons, will not be a public good because it has the function of rivalry.Photo: Tejvan The phrase tragedy of the commons, first described by biologist Garrett Hardin in 1968, describes how shared environmental resources are overused and eventually depleted. He compared shared resources to a common grazing pasture; in this scenario, everyone with rights to the pasture grazes as many animals as possible, acting in self-interest for the greatest short-term personal gain. Eventually, they use up all the grass in the pasture; the shared resource is depleted and no longer useful. Here are ten examples of the tragedy of the commons.Grand Banks fisheries The Grand Banks are fishing grounds off the coast of Newfoundland. For centuries, explorers and fishermen described this region as home to an endless supply of cod fish. In the 1960s and 1970s, advances in fishing technology allowed huge catches of cod. Following a few dramatically large seasons, the fish populations dropped, forcing Canadian fishermen to sail farther to maintain large catch sizes each season. By the 1990s, cod populations were so low that the Grand Banks fishing industry collapsed. It was too late for regulation and management, the cod stocks had been irreparably damaged. Since then, the cod populations have remained low, and some scientists doubt the Grand Banks ecosystem will ever recover. Bluefin Tuna Currently the bluefin tuna populations in the Atlantic Ocean and Mediterranean face a similar fate as that of the Grand Banks cod. In the 1960s, fishermen realized the tuna populations were in danger, and an International Convention for the Conservation of Atlantic Tuna (ICCAT) formed in an effort to manage fish harvesting more sustainably. Unfortunately, not every nation is a member of the ICCAT or follows the convention's guidelines. Instead, many nations continue to seek profit from large bluefin tuna catches every year without regard for conservation. Bluefin tuna have already been fished to extinction in the Black Sea and Caspian Sea, and perhaps the Atlantic bluefin tuna will follow. Passenger pigeons When Europeans arrived in North America, passenger pigeons migrated across the sky in huge numbers. As settlers spread farther into the continent, they began to clear the forests that passenger pigeons inhabited (destroying the birds' habitat) and eventually began to hunt the pigeons for food. In the mid-1800s, they caught massive numbers of pigeons in nets and sold the birds in cities as a food resource. By 1870, nearly all the passenger pigeons had been killed; hunting limits were enacted in the 1890s, but by that time, the passenger pigeon population couldn't recover. The last known passenger pigeon (held in captivity at a zoo) died in 1914, completing the extinction of a species because of unsustainable hunting practices. Ocean garbage gyres The ocean is an excellent example of a shared resource that can easily be abused and degraded because it's shared by many different nations. No single authority has the power to pass laws that protect the entire ocean. Instead, each nation manages and protects the ocean resources along its coastlines, leaving the shared common space beyond any particular jurisdiction vulnerable to pollution. Throughout the world's oceans, garbage has begun to accumulate in the center of circular currents, or gyres. These giant patches of ocean garbage occur because many different countries allow solid waste to enter the oceans from land or ships. Destruction of ocean ecosystems because of garbage, especially plastic pollutants, is likely to affect every person on the planet as these pollutants cycle through the food chain. Earth's atmosphere Earth's atmosphere is another resource that everyone on the planet uses and abuses. Air pollution and greenhouse gases from various industries and transportation increasingly damage this valuable, shared resource. As an example of a tragedy of the commons, the atmosphere offers some hope for a solution: More than once, international agreements have recognized the importance of taking care of the atmosphere. One example is the Kyoto Protocol, which attempted to bring nations together in reducing greenhouse gas emissions and slowing global climate warming. Multiple nations recognized that everyone had an interest in preserving this common resource for the future and agreed to look beyond short-term gain and immediate self-interest to a sustainable future. Gulf of Mexico dead zone Thousands of farms are located along the Mississippi River and its tributaries through the central U.S. As water washes into the river after a heavy rain, it brings with it nutrients from fertilizers added to farmland. These materials flow downriver and eventually enter the Gulf of Mexico, where they create conditions for a dead zone — a region of the ecosystem that can't support any living creatures. The Gulf of Mexico has a dead zone because everyone along the Mississippi River shares the waterway without considering how each small contribution of nutrient and chemical pollution adds up to have dramatic results. Traffic congestion Public roads are an excellent example of common property shared by many people. Each of these people has his or her own interest in mind — typically, how to get to work as quickly and easily as possible. But when everyone decides that public roads are the best way to meet traveling needs, the roads jam up and slow down overall traffic movement, filling the air with pollutants from idling cars. Turning public roads into private roads or toll roads creates a different scenario. With a toll to pay (especially if the toll is higher during peak-use hours such as rush hour), drivers may consider a less-direct route or choose to drive to work at a different time. Groundwater in Los Angeles Landowners around Los Angeles each have rights to use the water pumped up from wells on their land. This water is part of a regional groundwater aquifer, so each landowner is ultimately pulling water from the same pool. As the city grew in the 1930s and 1940s, the amount of water drawn from the underground aquifer increased each year to meet the needs of the growing population. Eventually, residents drew so much water from the aquifer that the supply reached levels that left the aquifer vulnerable to saltwater intrusion from the nearby Pacific Ocean. Facing potential water shortages and possible destruction of the renewable water resource they depended on, the water users created a voluntary organization to discuss how to manage and conserve the groundwater for the future. Unregulated logging The tropical rainforests are a common resource that everyone in the world benefits from. In some parts of the world, vast expanses of dense rainforests aren't governed or owned in a way that allows effective management for resource extraction. Timber producers are driven to remove as much timber as possible as cheaply as possible. The result is that logging irreparably damages acres of rainforest each year. Although some laws protect these forests from destructive logging practices, illegal logging continues — particularly along boundaries between countries, where the laws may be different on each side of the border. Population growth Some scientists consider the exponential growth of the human population to be an example of a tragedy of the commons. In this case, the common resource is the planet Earth and all its shared resources. The world's population has reached a whopping 7 billion individuals. Examining population growth as a tragedy of the commons illustrates that the depletion of common resources isn't always the result of greed. Just by existing, each person uses water, air, land, and food resources; splitting those resources among 7 billion people (and counting) tends to stretch them pretty thin. Written by: Steve VorsterReviewed by: Jenna QuinnUpdated on 14 October 2024Common pool (access) resources are natural resources over which no private ownership has been established. They are non-excludable but rivalrous in consumption Examples of common pool resources includeOceans (especially international waters)Natural forests and rainforestsCommunal grazing landWater sources such as riversThe tragedy of the commons (as explained by Garrett Hardin in 1968) occurs when common pool resources are used in production in an unsustainable wayLeft to the free market, there is no private ownership over these resources, as it is costly and inefficient to find ways to exclude other producers This creates negative externalities of production and consumption There is no incentive for firms to reduce production levels as they seek to maximise profits. If an individual producer cut back production, other firms may then enter the market, causing them to lose out. Each private producer has the self-interest to keep exploiting resourcesThere is also no incentive for consumers to reduce consumption levels. If an individual consumer cuts back on consumption, other consumers will use the resource. E.g Excessive consumption of fish from a lake will deplete fish stock, exploiting resourceThe external costs of production and consumption often include pollution, environmental damage and resource depletion, which prevents future generations from benefitting in the same way. This results in partial market failureThe tragedy of the commons can be applied to the grazing of cattle on public lands. What is the nature of this market failure?Overgrazing results in degradation of grazing landsThe establishment of grazing permits by government authoritiesThe positive externalities associated with cattle farmingThe third-party effects on wildlife due to cattle ranchingAnswerA. Overgrazing results in degradation of grazing landsThe tragedy of the commons refers to a situation where a commonly owned resource (public grazing lands), is overexploited due to individuals' self-interest. Overgrazing can occur when there are no restrictions or regulations on the number of cattle allowed to graze. This can lead to the degradation of grazing lands or soil erosionThe Darién Gap is in Panama and is located on the border with ColumbiaThis area is one of the most impenetrable rainforests on the planet and is inhabited by indigenous tribes, drug traffickers, and para-military organisationsThe Darién Gap is a common pool resourceBackgroundThe Darién Gap is the only area where the 19,000km Pan American highway from Ushuaia (Argentina) to Prudhoe Bay (Alaska) is interrupted: a 62-mile gapIllegal logging has been steadily increasingThe most valuable resource in the forest is the Rosewood Cocololo tree which sells in Panama for \$4,000 per m3 but in China for \$12,000 per m3: this scarce resource is rapidly being depletedLoggers use the river system to penetrate deep into the forestOnce the forest canopy is thinner, they bring in bulldozers and create illegal roads to speed up the extractionWhen they have left, palm oil entrepreneurs move in and plant palm oil treesDespite laws in place to protect the forest, there is no enforcement and corruption is commonHundreds of tons are shipped each year to ChinaThe indigenous tribes are waging war with the illegal loggers and there are frequently violent clashes and deathsSolutionsSeveral solutions have already been attempted by the indigenous community, includingCollective self-governance of the areaForest mapping using dronesUsing drones to gather video footage of the identity of the illegal loggersAppeal to the government by the three indigenous tribes for legal ownership rights to the landAppealing for the creation and enforcement of international agreements on the sale of illegal timber An Evaluation of the Solutions used to Address the Tragedy of the Commons in the Darién GapAdvantagesDisadvantagesCollective self-governanceThe tribes can come together and attempt to govern the land which they consider to be their homeland. They can work together to stop illegal activityWorking together can provide a common purpose and build a communityThe tribes understand the land best and know how and where to best restrict the activities of the illegal loggersThis activity can provide employment within the tribesThe resources can be protected and used in a sustainable wayThe illegal loggers are violent and armed with automatic weapons so violence is almost a certaintyThe tribes have fewer resources (weapons, machinery, and money) than the illegal loggers, so struggle to limit their activityAttempts to slow down extraction may actually increase the pace of extraction as the illegal loggers are feeling more pressure to get the job doneAppeal to the government for legal ownership rights of tribal landSo far, about 40% of the land has been granted to the tribesThe owners are legally entitled to defend their landLegal rights of property ownership can be enforced by lawIllegal logging is now theft and the tribes have hired lawyers to prosecute individuals and firms involvedSome illegal loggers have been imprisonedCorruption remains high. The profits from illegal logging are so high that firms and individuals involved easily pay bribes to officials who are meant to represent the legal processThe illegal loggers ignore the land owners and violent clashes continue to occurInternational AgreementsA global solution, enforceable by law helps to reduce illegal behaviourGlobal agreements to protect indigenous flora and fauna existIn 2018, Interpol seized 200 m3 of wood headed for Hong Kong, which were violating these agreementsLoggers up their game and avoid detectionNot all countries follow the law and in this case, China actively ignore it so as to get their hands on this resourceIt is only really effective when all countries sign up for it and when the law enforcement agencies in each country are active and free from corruptionThis is a contextualised example of the tragedy of the commons and is a useful way to prepare for the exam. The ability to apply this example and solutions effectively is a skill required when explaining and evaluating exam responsesFor evaluation responses, you should be able to include well-focused analysis of policy responses to tragedy of commons with clear, logical reasoning and supported evaluation throughout the response Property rights of common access resources are issued to define the ownership of a resource and set out how they can be usedIf common land is given over to private ownership, the private owner has a strong incentive to manage the resource and take care of it for future useExample of Property Rights to Resolve Tragedy of the CommonsCommon access resourceProperty rights issuedInternalise the externalityReduce market failureProducer uses trees in a forest to supply timberForest is at risk of over exploitationFirm issued property rights by the governmentFirm now owns part of a forestNegative externalities are internalised. The producer will be directly impacted and will pay for the over-exploitation of resourcesProducer has incentive not to over-exploit the trees or deplete resource and manages resource for continued future useQuantity produced should be reduced to a socially optimum levelAllocative efficiency in the marketAllocating property rights to manage common resources poses challenges of equity, divisibility and enforcementProblems with Allocating Property RightsProblemExplanationEquityDeciding who receives the property rights is difficult, as it quantifies one group significant power to make decisions about use of resourceE.g If a local community is allocated property rights over a forest/lake, they hold all decision-making power. A producer may have to compensate the other for access to the common resourceIt might be preferable to assign property rights to local agencies or governments to ensure fairnessCost of enforcementEnforcing and regulating the use of property rights of common access resources tends to be expensive to monitorE.g Enforcing property rights over fishing grounds in large oceans / lakes poses challenges. It may be easy for fishing vessels to avoid the regulationsDivisibilitySome common access resources pose challenges due to their indivisibility, as they are not easily divided among users E.g Air is intangible, which complicates the assignment and monitoring of property rightsDid this page help you? Have you ever considered the environmental impact of the everyday items you use? While some products might seem harmless, their production and consumption can often threaten ecosystems and deplete natural resources. This phenomenon is known as the tragedy of the commons, and understanding it is crucial if you want to make sustainable choices in your personal and professional practices. Free E-Book: How to Be a Purpose-Driven, Global Business Professional Access your free e-book today. DOWNLOAD NOW What Is the Tragedy of the Commons? The tragedy of the commons refers to a situation in which individuals with access to a public resource—also called a common—act in their own interest and, in doing so, ultimately deplete the resource. This economic theory was conceptualized in 1833 by British writer William Forster Lloyd. In 1968, the term “tragedy of the commons” was used for the first time by Garret Hardin in Science Magazine. This theory explains individuals’ tendency to make decisions based on their personal needs, regardless of the negative impact it may have on others. In some cases, an individual’s belief that others won’t act in the best interest of the group can lead them to justify selfish behavior. Potential overuse of a common-pool resource—a hybrid between a public and private good—can also influence individuals to act with their short-term interest in mind, resulting in the use of an unsustainable product and disregard of the harm it could cause to the environment or the general public. It’s helpful for firms and individuals to understand the tragedy of the commons so they can make more sustainable and environmentally friendly choices. Here are five real-world examples of the tragedy of the commons and an exploration of the solution to this problem. Check out our video on the tragedy of the commons below, and subscribe to our YouTube channel for more explainer content! View Video 5 Tragedy of the Commons Examples 1. Coffee Consumption While a simple cup of coffee might seem harmless, coffee consumption is a prime example of the tragedy of the commons. According to Statista, about 73 percent of consumers report drinking coffee daily, and four percent have coffee once a week. This overconsumption has led to significant environmental impacts. Coffee plants are a naturally occurring shared resource, but overconsumption has led to habitat loss, endangering 60 percent of the plants’ species—including the most commonly brewed Arabica coffee. Sustainable business practices in agriculture are essential to effectively mitigating negative environmental impacts. 2. Overfishing As the global population continues to rise, the demand for food increases. However, overhunting and overfishing threaten to push many species into extinction. For example, overfishing the Pacific bluefin tuna has reduced its population to approximately three percent of its original numbers—posing significant risks to marine ecosystems. The current state of fish stocks illustrates another risk. According to the United Nations Food and Agriculture Organization, approximately 34 percent of the world’s fish stocks are overfished, while 60 percent are fully exploited. Addressing this issue involves promoting sustainable business practices in fishing and enhancing resource management to prevent environmental degradation. Related: What Does “Sustainability” Mean in Business? 3. Fast Fashion Overproduction by fashion brands has created extreme product surplus, to the point that luxury brand Burberry burned \$37.8 million worth of its 2018 season’s leftovers to avoid offering a discount on unsold wares. Furthermore, as new trends emerge rapidly within social networks and social media, consumers are constantly purchasing new clothing items and disposing of old, out-of-trend items that end up in landfills and contribute to pollution. 4. Traffic Congestion Traffic congestion is one of the best-known modern examples of the tragedy of the commons. According to a study by the Harvard School of Public Health, air pollution from traffic congestion in urban areas contributes to more than 2,200 premature deaths annually in the United States alone. As more people decide that roads and highways are the fastest way to travel to work, more cars end up on the roads, ultimately slowing down traffic and polluting the air. 5. Groundwater Use In the United States, groundwater is the source of drinking water for about half the population, and roughly 50 billion gallons are used daily for agriculture. Because of this, the groundwater supply is decreasing faster than it can be replenished. In drought-prone areas, the risk of water shortage is high, and restrictions are often put in place to mitigate it. Yet, some individuals ignore water restrictions, and the supply becomes smaller for everyone. Related: Listen to Professor Reinhardt discuss climate change and the tragedy of the commons on The Parlor Room podcast, or watch the episode on YouTube. Ways to Prevent the Tragedy of the Commons How would you react to discovering that your consumption habits are depleting natural resources? You have two primary options: finding alternative, sustainable products and preventing overconsumption. Preventing the tragedy of the commons means making conscious choices and supporting sustainability in business. Find Alternative and Sustainable Products To drive change and avoid the tragedy of the commons, it’s important to boycott the products or brands causing the alleged harm and search for alternatives. Finding sustainable options, rather than carrying on with what Sustainable Business Strategy Professor Rebecca Henderson calls “business as usual,” directly addresses your consumption habits’ impact. Unfortunately, this response hasn’t grown in popularity since many consumers feel boycotting a product won’t have a large enough impact to make a difference. The tragedy of the commons shows us how, without some sort of regulation or public transparency of choices and actions associated with public goods, individuals have no incentive to refrain from taking too much. In fact, individuals may even have a “use it or lose it” mentality; if they’re aware of the inevitability that the good itself will be depleted, they may think, “I better get my share while I still can.” Prevent Overconsumption You’ve likely encountered examples of the tragedy of the commons in your everyday life: these hypothetical scenarios can offer insight into how to prevent the overconsumption of resources. Consider how you’d respond in the following scenarios: During a drought, your town regulates the days and times you’re allowed to water your lawn. How likely are you to disregard these parameters?If everyone in your community abides by the town’s lawn-watering regulations, you’re more likely to follow them as well. Who wants a bright green lawn while the rest of the town’s lawns are brown? Your local grocery store, which has always encouraged reusable bags, has started charging for each paper or plastic bag. How likely are you to start bringing your own bags?No one wants to pay a premium for something they’ll likely throw away or use as a trash bag. Charging for grocery bags raises the stakes because it involves the customer’s bottom line. Chances are, this change will lead you to keep reusable bags in your car, just in case you need to stop at the grocery store on the way home. These examples show how, when faced with a public good, individuals can be motivated to cooperate through monetary or moral incentives or penalties. What’s fascinating is that this also holds true on a larger scale. Remember the previous example of luxury fashion brands burning surplus clothing? Well, Burberry—having heard its customers’ reactions to the burning of inventory, regardless of how sustainably its products were disposed of—has since pledged to stop burning clothes and using real fur. Developing a Sustainable Mindset It’s easy for individuals and organizations to fall victim to the tragedy of the commons. However, it doesn’t have to be this way. By developing a more sustainable mindset, you can become better aware of the long-term impact that your short-term choices have on the environment in your personal life and at work. Are you interested in learning more? Explore our Sustainable Business Strategy course and other business in society courses to discover how you can make a difference and become a purpose-driven leader. This post was updated on May 20, 2024. It was originally published on February 6, 2019.