



Environmental Econ: Crash Course Economics #22

Crash Course: Economics

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Adriene: Welcome to Crash Course Economics. I'm Adriene Hill Jacob: And I'm Jacob Clifford. Economics is about choices, and how we use our scarce resources. It's not just about producing and consuming, it can also be about conserving. Adriene: Maybe counter-intuitively, economics has a lot to add to discussions of how we can balance our desire for prosperity and growth, with the need to protect our natural resources. Today we're going to look at environmental economics and think about how economics can help us keep our planet livable. [Theme Music] Pollution is going to happen, it's a by-product of human existence and there is no way that we can get rid of it all. In fact, one of the ways we know about earliest societies is by looking at their trash heap, something archaeologists call middens, because it sounds better than "dumps." But the fact that humans produce all kinds of waste doesn't mean that we have to embrace islands of trash floating in the oceans, a layer of smog over industrial cities, and toxic chemicals in our rivers. For sake of simplicity though, we're going to focus on one type of pollution: carbon dioxide emissions. They're one of the primary greenhouse gases. These greenhouse gases basically blanket the earth and are causing climate change. CO2 levels are the highest they've been for millions years which is why environmentalists consider it a "planetary emergency." There is a lot of effort going into how to remove greenhouse gases from the atmosphere, how to make cities more resilient to climate change, but in the interest of time we're going to focus on efforts to reduce the amount of new pollutants getting spewed into our atmosphere. Jacob: The economic solution is pretty simple. Step one, identify the sources of the most air pollution. Done. We know exactly what it is. It's factories that burn fossil fuels for energy, industries that use oil and coal to produce things, and vehicles with internal combustion engines. Step two, decrease the supply of these technologies and products or decrease the demand for them. That's it, it's simple. But, the implementation of these policies gets complicated. Let's look at decreasing supply. As we mentioned in the last video, one of the biggest problems with having countries independently enforce environmental regulations is the Tragedy of the Commons. No one owns the atmosphere, so there is very little incentive for countries to keep it clean and switch to expensive green technologies if no one else is going to. It's not like there is some global environmental police punishing countries for polluting. While a country like Trinidad and Tobago has a huge carbon output per capita, its small population means it's only producing a small fraction of global CO2. The other option is to decrease the demand for fossil fuels, possibly by finding alternate green energy sources. But we're already very reliant on fossil fuels, and markets have made the production of those fuels very cheap. So, any new type of energy will have a hard time beating the established system. So we can either wait patiently for new technologies to develop and get cheaper, or we can speed up the process by manipulating markets with government subsidies, taxes, and regulations. Adriene: In the case of pollution, there are long-term side effects, like climate change, that consumers often don't take into account when they buy products. Remember negative externalities? When the full cost of a product doesn't line up with the costs that manufacturers or consumers pay? Pollution represents a market failure- a situation where markets fail to produce the amount that society wants. To address this, some economists argue that government intervention is not only justified, but essential. There are all kinds of different ways intervention can happen — all of them meant to encourage producers and consumers to choose to pollute less. One solution is for the government to come out and set very specific rules about how much specific industries can pollute. Forget markets. You're gonna follow our pollution rules. Another way governments encourage people to pollute less is by providing price incentives. Those incentives can encourage individuals to make choices that are better for the environment. The government could add taxes to gasoline purchases, or, on the other hand, provide subsidies for people who drive electric cars. Governments can also create permit markets —

basically setting a limit on how much firms can pollute, and allowing those firms to buy and sell pollution permits. You've probably heard these called "cap and trade". Proponents of cap and trade argue that it can successfully limit emissions, without creating hard and fast rules that might hinder economic growth. And, governments can subsidize the development of a specific technology or industry—in an effort to make that technology more competitive with the alternatives. A country might help support the development of solar or wind energy. As of 2014, around 10% of the energy consumed in the United States came from renewable sources, which is pretty much in line with the global average. Current predictions are that by 2040 15% of the world energy consumption will come from renewable sources. But, alternative energy sources, for the most part, just aren't cheap enough yet, so the majority of our energy is likely to continue to come from non-renewable sources, at least for now. Jacob: We don't have the time to sit back and wait for new technologies to get cheaper, and there's no guarantee that the technologies that the government picks will be cost effective. Perhaps the solution is not to get rid of fossil fuels, but instead be more efficient with those fuels. But That has drawbacks, too. Some energy economists argue that the expected gains from energy saving technologies, are offset by something called the rebound effect. Let's go to the Thought Bubble. Adriene: Let's say Hank uses a gallon of gas to drive to work everyday. Then, partially to help the planet but mostly to help his wallet, he buys a new fuel efficient car that only takes half a gallon of gas for the same commute. He saves money and there's less pollution. It is a win-win. But the rebound effect says that the benefits of energy efficiency might be reduced as people change their behavior. With the money he saves, Hank might start driving more than he normally would or he might go on a vacation in Hawaii. That leads to more consumption and possibly even more emissions. Also, if greater fuel-efficiency makes driving less expensive it might encourage more people to buy cars and increase the overall use of gasoline. And even if people didn't increase their driving, the new fuel efficiency could decrease the demand for gas, making fossil fuels cheaper and more readily available for other uses. The possibility of the rebound effect doesn't mean we shouldn't invest in energy saving technologies. It just means that we have to keep in mind how consumers will behave. It's also the reason why it's important to have economists involved in the discussion about environmental policy. The tools of economics can help analyze the incentives and figure out what might work best. Thanks Thought Bubble. Okay, so we've identified another problem. But before you get so angry that you kick over a barrel of oil and light it on fire, keep in mind that there is hope. Most countries are actively trying to address the problem of greenhouse gases. The international community has been trying for decades to work together to protect the environment with varying success. There are international treaties that commit countries to reducing greenhouse gas emissions. UN negotiations are underway to create a new climate change agreement — that could be adopted in December 2015. Both private companies and governments are also funding research into green technology. In the U.S. the American Recovery and Reinvestment Act of 2009 allocated billions to fund renewable energy. China is also vowing to clean things up, and, in fact, leads the world in renewable energy investment. So, now that most countries recognize there is a problem, the hope is that they'll figure out a way, or more likely a lot of ways, to start addressing it. Environmental economists say that is not just governments and producers that need to change, it's also consumers. Conserving and consuming more thoughtfully likely need to be a part of our daily lives if we want to protect the environment. But just bringing our reusable grocery bags to the store isn't going to save the planet, even if it says it on the bag. Bigger and more costly interventions like improving insulation and changing thermostats might have more impact, but we need to recognize individual action alone isn't going to be enough. Industries, governments, and individuals; we're in this together.



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