Ian Parry: We need to cut back on carbon emissions through conserving on energy through shifting towards zero carbon fuels and carbon taxation is the most effective way to nudge people in households towards cleaner fuels and to encourage them to adopt more efficient appliances or lower emission vehicles.

Bruce Edwards: Convincing people to buy electric cars and more efficient appliances is one thing, but to make a real dent in greenhouse gas emissions, the major emitting countries need to get together and work out a plan. Our guest today, economist Ian Perry says that's proving to be difficult.

Ian Parry: We're only talking about a handful of countries here. China, United States, India, Japan at the European union. If these countries could get together and agree to impose a minimum carbon price that could reinforce the Paris Agreement. It's striking how effective that could be in terms of scaling up global mitigation.

Bruce Edwards: Welcome to this podcast produced by the International Monetary Fund. I'm Bruce Edwards.

Ian Parry: I'm Ian Parry, I work in the fiscal affairs department at the International Monetary Fund. My focus is on climate change and environmental issues, particularly with a view to how fiscal policies can be used to address climate change and environmental problems.

Bruce Edwards: Ian Parry has authored numerous research papers, blogs, and articles about carbon pricing. His latest Putting a Price on Pollution is published in the December 2019 edition of Finance and Development Magazine.

Bruce Edwards: What is the difference between carbon taxes and emissions trading systems?

Ian Parry: Carbon taxes are charges on the carbon content of fossil fuels. They can be implemented through integrating charges into existing fuel taxes or into an existing royalty regimes for extractive industries. In contrast, under emissions trading systems, firms are required to hold allowances to cover their emissions. The government sets a cap on the total amount of allowances and then trading amongst firms establishes an emissions price or price on allowances. The more emissions they produce, the more allowances they have to acquire, and that's costly for them. Either system because it imposes a charge on emissions, it encourages firms and households to reduce energy use and switch towards cleaner energy sources.

Bruce Edwards: How reasonably available and affordable are alternative energy sources for these countries that use fossil fuels the most?

Ian Parry: Well, the costs of renewables and solar and wind have been declining quite rapidly actually in recent years. There are prospects for that to continue. There are limits on the availability of sites that are suitable for solar and wind. In addition, these intermittent power sources. To provide a base load power countries still typically need to rely on other sources like natural gas, coal, hydro. We need to keep progressing on technologies who need to develop batteries that will help store some of the the intermittent power from renewables and facilitate greater use of these fuels in the power grid. We also need to develop technologies for capturing the carbon emissions from fossil fuels.

Bruce Edwards: A country like South Africa for example, wanted to move away from coal for their power generation, could they feasibly do that?

Ian Parry: Up to a point. In fact, South Africa is moving ahead with a carbon tax, so that'll provide incentives for power generators to look for alternative energy sources, whether it's solar, wind, perhaps natural gas as a breaching fuel.

Bruce Edwards: How many countries have actually implemented either a carbon tax or carbon trading system and what is the market price for carbon these days?

Ian Parry: The 57 examples of carbon taxes or trading systems at the regional level, like the EU, the national level and the sub national level. Prices in these systems vary from anything below $5 per ton of emissions to a 25 euros per ton in Europe to $125 per ton in Sweden. Even when the trading system in China is introduced, these systems will only be covering about a fifth of global emissions. The average price on global emissions is only about $2 per ton at the moment. Whereas we really need measures that are equivalent to a global carbon price of $75 per ton to be consistent with the containing warming to two degrees Celsius, which is the upper bound target at the Paris Agreement.

Bruce Edwards: How confident are you that we could get to that level?

Ian Parry: Well, that would be extremely challenging. We really need a much more aggressive action in the major emitters. The EU is announced a very ambitious program to cut back their emissions and achieve net zero emissions by the mid century. We need to scale up action and other large emitters like China, India, the United States and Japan.

Bruce Edwards: For those countries that have actually already moved away from coal, for the most part, is a carbon tax still beneficial to these countries?

Ian Parry: Well, it may not be the best instrument. Carbon taxation isn't for everyone, for example, a particular country. It may just be politically very difficult or maybe their energy prices are already on the high side relative to those in a neighboring countries or maybe most of their emissions are coming from the transportation sector and it's very difficult to achieve deep emissions reductions from the transportation sector through raising fuel taxes.

Ian Parry: These countries may be interested in other approaches which aren't as effective as carbon taxes but avoid a big increase in energy prices and here we'd recommend countries think about fee-based schemes. These are more flexible and cost effective than regulations fee bates provide a sliding scale of fees for products or activities with above average emission rates and a sliding scale of rebates for products and activities with below average emission rates. For example, under a fee bates scheme, power generators would pay a charge in proportion to the difference between their emission rate per kilowatt-hour and the industry wide average emission rate per kilowatt hour multiplied by their output.

Bruce Edwards: You just mentioned the political challenges there and there are obviously some pretty significant political challenges in implementing carbon taxes. Evident in the failure of the international community to agree on the carbon markets. If there are so many benefits to implementing a carbon taxes and or emissions trading systems, why is it so difficult to convince policy makers to move on this?

Ian Parry: Yeah, I mean there are several major obstacles which need to be addressed in a comprehensive package of measures. The appropriate package will obviously vary with national circumstances. Higher energy prices are going to impose burdens on households, but they also raise significant amounts of revenue and when that revenues put back into the economy that provides an offsetting benefit for households. For many advanced countries, they could introduce carbon taxation as a tax shift so people would pay more for polluting fuels, but they would be paying less, for example, in taxes on their labor income. Perhaps for developing countries where the pressing need is for more investment in health education infrastructure, which benefits households in low income households. Perhaps that would be the most productive use of carbon pricing revenues. In addition, countries will need to think about workers that might be displaced for managing intensive industries.

Ian Parry: They'll need an upfront package of assistance to help temporary financial assistance and relocation retraining programs for workers. Maybe some communities will be adversely affected. They might need some transitory support from the national government. There were firms that are going to be vulnerable, firms might be producing aluminum, cement, steel and so on that that energy intensive and they're competing in global markets. Maybe some transitory assistance for these firms will be needed as well.

Bruce Edwards: In reading through your article in Finance and Development, once convinced that of the benefits of doing these things, why aren't governments taking advantage and moving on this?

Ian Parry: Well a lot of governments are taking small steps but I think they are reluctant to go faster until other countries as a whole are moving faster. I think there's a lot of path dependency. If action in one major emitter could catalyze action in other major emitters. I think a big problem with the approach under the UN framework convention on climate change is that we don't have the major emitters getting together. We recommend that the major emitters, and we're only talking about a handful of countries here, China, United States, India, Japan, the European union. If these countries could get together and agree to impose a minimum carbon price that could reinforce the Paris Agreement. It's striking how effective that could be in terms of scaling up global mitigation. If we could get China and India to impose measures that equivalent to only $25 per ton an advanced countries to impose measures that are equivalent to $50 per ton, that would double emissions reductions over and above reductions that countries have pledged.

Ian Parry: I think we need to get these countries together and have a dialogue and say to China and India, what would it take to get you on board to signing up to this agreement where you agree to implement a $25 per ton carbon price or equivalent measures? What financial assistance or technical assistance would it take to get you on board? Or what would you expect advanced countries to do? Presumably impose higher prices and then take it from there. Then scale up the carbon pricing.

Bruce Edwards: They would also benefit, at least China and India would also benefit from cleaner air coming out of these taxation schemes.

Ian Parry: That's exactly right. Over a million people are dying prematurely in China from exposure to local air pollution. It's in their own interests to scale back the use of fossil fuels, particularly coal.

Bruce Edwards: Now with the U S having confirmed that they are in fact withdrawing from the Paris Agreement in 2020. With coal, the use of coal entrenched still in the most populated countries on the planet, how optimistic are you that a carbon tax can actually reduce emissions to the extent that we need to?

Ian Parry: Well, the good, the good news is that 190 parties have submitted mitigation commitments, mitigation pledges. Most countries are taking this seriously. That's a step in the right direction. The United States withdrawing from the Paris Agreement obviously makes it more difficult for other countries to progress with a aggressive carbon pricing because they're more concerned about the loss of a competitiveness. It's true that coal is very entrenched, for example in India. India already has a modest tax on coal, so it's feasible that they could gradually ramp that tax up. If a concern is that the authorities don't want to increase electricity prices too much for households, the revenue from the coal tax could be used to subsidize electricity to contain the increase in electricity price. A progressively increase in the coal tax would cause a shift towards a cleaner energy sources and it would help India address the problem of local air pollution, which is increasingly severe and an increase a major cause for concern.

Bruce Edwards: You're hopeful that even without the United States that this can move forward?

Ian Parry: To some extent, but it does make it more difficult without the United States playing its part too. I think the United States having a carbon tax that rises over time would really catalyze action in other countries.

Bruce Edwards: Thanks so much.

Ian Parry: Okay, thank you.

Bruce Edwards: Ian Parry is principal environmental fiscal policy expert at the IMF. His latest article, Putting a Price on Pollution is published in the December 2019 edition of Finance and Development Magazine. You can read the article online at imf.org/fnd or download the Finance and Development app to read it on your mobile device. Look for other IMF podcasts, wherever you get your podcasts. Subscribe if you like what you're hearing and follow us on Twitter @IMF\_podcast. Thanks for listening.