

Climate Policy in a Diversified, Heterogenous World

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Introduction

Game-theoretical studies of international environmental agreements (IEAs) have shown that these agreements fail to be entirely effective because they consist of free-riding and a failure to comply by the participating members. As more members join the IEA, the agreement becomes progressively ineffective because the incentive to free-ride increases; in an agreement as such, a vast majority of the uncommitted members will become dependent on those who *are* committed by riding off their success and ability to reduce emissions of greenhouse gases (GHGs). Additionally, members face an unwillingness to commit to a carbon tax system or a cap-and-trade system, both of which are known for their ability to reduce emissions of GHGs. In order for there to be compliance in the IEA and for it to ultimately be effective, there need to be fewer member countries. Globally, better policies must also be adopted to deter the effects of climate change.

Game Theory – The Prisoners' Dilemma

		Country A	
		Reduce Emissions	Don't Reduce Emissions
Country B	Reduce Emissions	Both countries cooperate to reduce emissions, helping the fight against climate change	Country A free rides on Country B's reduction of emissions
	Don't Reduce Emissions	Country B free rides on Country A's reduction of emissions	No reduction in emissions of greenhouse gases

Suppose there are two countries, Country A and Country B, who are forming a climate agreement. They can choose to reduce their emissions of GHGs and thus cooperate, or do the opposite. While cooperating results in the best outcome for the world, Countries A and B will see that their dominant strategy is if they free-ride instead, causing the agreement to fail or become ineffective.

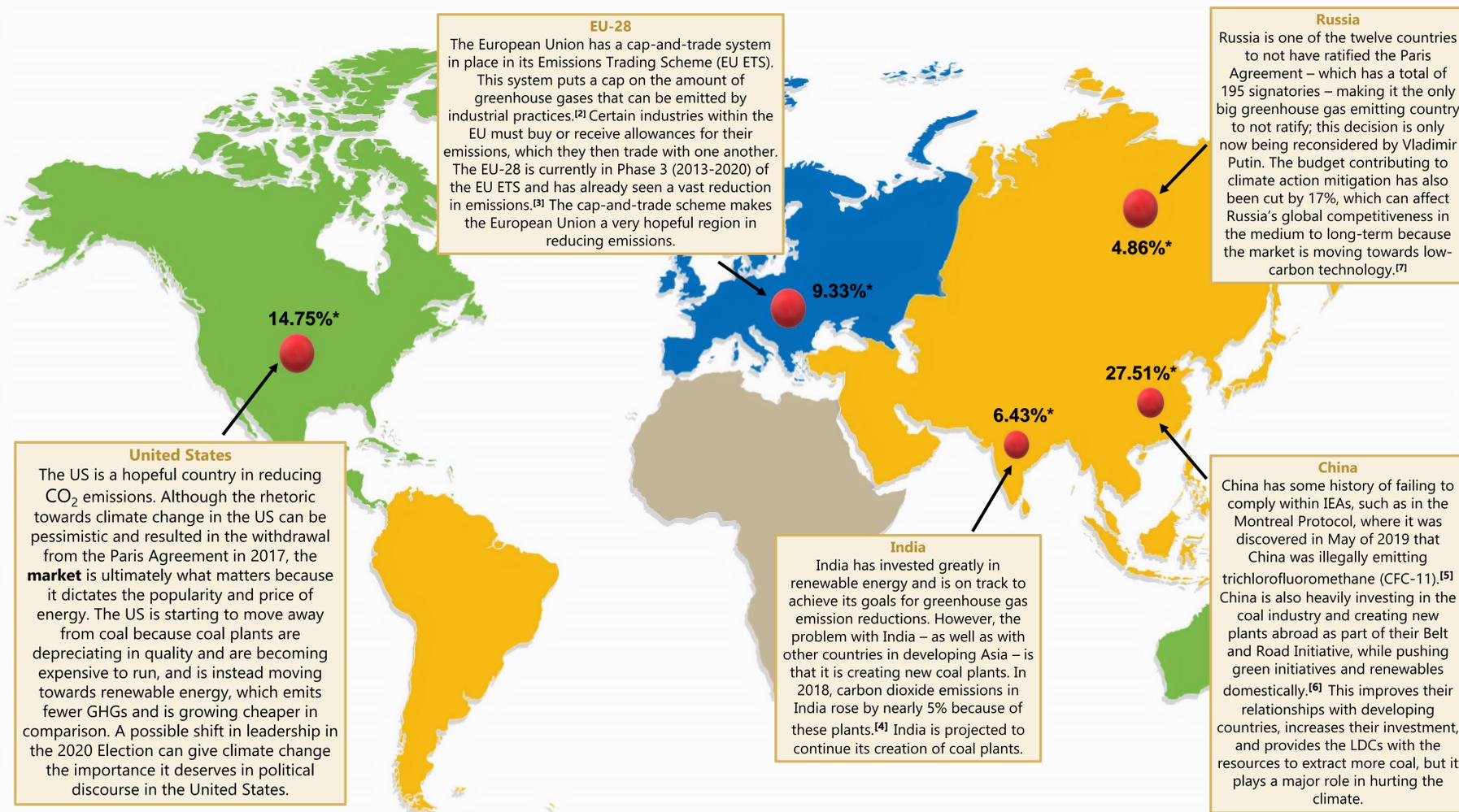
Our Study – The Need for a C-5

Our Goal: Propose an international climate agreement that signatory countries can adhere to without free-riding. An agreement will be more effective if fewer countries are involved. The more signatories there are, the less the tendency to comply will be because punishment or accountability mechanisms will not be as strong.

Our Proposal: Create a C-5, consisting of the United States, Russia, EU-28, India, and China, which are the five regions with the highest emissions of GHGs in the world.

If we can have these five countries join forces in a climate agreement, then emissions can be significantly reduced.

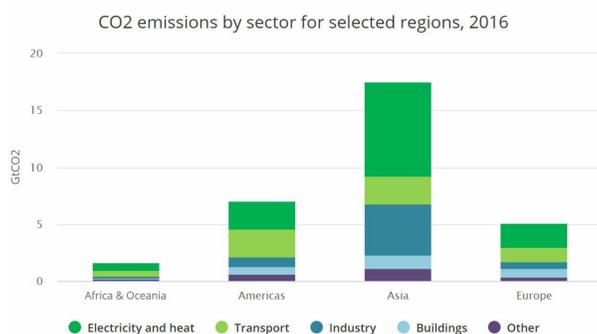
The C-5 – China, United States, EU-28, Russia, and India: Will they Comply?



* Percentage of global total emissions in 2017

What About the Rest of the World?

Emissions from all parts of the world are important, but over 60% of the world's emissions come from our five countries/regions.



Involving only five countries is beneficial towards the problem of free-riding and it accounts for the most CO₂ emissions, which come from sectors that are all centered in our five chosen countries/regions.^[1]

Conclusions and Policy Suggestions

While a C-5 will ideally solve the free-riding problem, it will be difficult to have it come to life because of the hurdles that exist in each country/region. However:

- Having five countries as opposed to over fifty or one hundred, per say, can greatly reduce the chance of free-riding.
- The direction of the market will dictate the use of certain types of energy, i.e. coal.
- The idea of a C-5 will lead to useful and necessary discussion, if nothing else.
- In order to effectively fight climate change, countries should aim to adopt a carbon tax or a cap-and-trade system.

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