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## Why the Recent Proposals to Solve the Climate Crisis Fall Short

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On June 30, 2020 the U.S. House of Representatives Select Committee on the Climate Crisis presented its report (the House Plan).<sup>[i]</sup> The House Plan sets the “ambitious” target of net-zero CO<sub>2</sub> emissions by 2050 or sooner and net-negative emissions thereafter. The Plan also calls for adoption of a “carbon pricing” mechanism to provide incentives to advance these goals. This was supplemented on August 25 with a report from Senate Democrats making the economic case for spending \$400 billion a year on reducing greenhouse gas emissions.<sup>[ii]</sup>

Meanwhile, on July 14, 2020 presidential candidate and former Vice-President Joe Biden released his own climate plan (the Biden Plan),<sup>[iii]</sup> which also targets net-zero emissions by 2050 or sooner. The Biden Plan addresses the pricing issue through removal of current tax subsidies.

One asks whether the two plans have taken the right approach. As ambitious as they claim to be, they fall short of actually solving the problem.

## The Problem Definition Implies the Solution (And Vice-Versa)

**The climate crisis is a legacy problem.** Because defining a problem determines the class of instruments to use in its solution, the place to start is to consider how the two plans have diagnosed the problem. Both the House Plan and the Biden Plan address the climate crisis through emission control, implying that they have defined the crisis as an emission problem.

**It is no longer an emission problem.** In fact, the accumulation of greenhouse gases (GHGs) has now made emission control obsolete as the framing idea for a climate change remedy, as the climate crisis is no longer primarily an emission problem — it is now a concentration problem. The behavior of the atmosphere is determined principally by its chemical composition, and because the bulk of the GHGs are long-lived in the atmosphere they accumulate, changing the composition. While GHG emissions are a major contributor to the accumulation, the atmosphere doesn't care when, how, or by whom they were emitted; it cares only about the concentration. Moreover, since the concentration consists entirely of GHGs previously emitted, the concentration at any given moment represents the accumulated historical emissions up to that moment. Because its behavior at any moment is determined by the GHGs already there, *the climate crisis is not just a concentration problem, it is a legacy problem.*<sup>[iv]</sup> Thus, defining the climate crisis as an emission problem is a misdiagnosis.

**Thus, the solution cannot be emission control alone.** To address the climate crisis as a legacy problem the remedy must include controls to reduce the existing concentration. While current and future (i.e., new) emissions must also be controlled, a remedy that focuses only on new emissions is fatally incomplete. And yet, the two plans propose no definite, systematic mechanism to reduce the existing concentration. Absent a mechanism for carbon removal, the existing concentration remains in place and is allowed to grow. Thus, even if the plans were carried out to perfection, what we would have by 2050 would be ... a climate crisis – indeed, a worse one.<sup>[v]</sup>

**Defining the problem determines the instruments, thus, who pays.** Traditionally, instruments used for environmental protection have been judged by their efficiency, but political economy requires one to ask how those instruments allocate the cost.

Following from the problem definition, both plans employ the instruments of emission control – direct regulation, regulation with trading, and intervention in market pricing. It is in the distinct combinations of these instruments that the plans differ.

**Regulatory instruments.** Consider first the two regulatory instruments, direct regulation and regulation with trading.<sup>[vi]</sup> Both plans set out policy objectives, including regulatory standards and mandates with possible trading options, but the House Plan is much more detailed.

Cost allocation under regulation is relatively straightforward: the regulated industry initially bears the cost of its own compliance. However, that cost is subsidized through the tax system to the extent the law allows, and the remaining cost is ultimately “passed through” to the consumer in higher retail prices to the extent market factors allow. The addition of trading to regulation lowers the cost, creating a savings that can be spent on compliance cost savings and/or additional emission reductions, but it does not change the cost allocation.

Though further study could show more precisely how cost allocation will play out, the bulk of the cost of regulations proposed by the two plans is likely to be passed through and ultimately paid by the taxpayer or consumer.

**Pricing instruments.** For the pricing instruments, the cost allocations in the two plans are very different. The Biden Plan focuses on removing existing tax subsidies – such as the recently enacted tax cuts and the subsidies for fossil fuels – and uses the savings toward a planned \$2 trillion in federal

spending. The House Plan also proposes to eliminate tax breaks but in addition calls for a new pricing mechanism. Though it doesn't prescribe the specific mechanism,[vii] the instrument that has momentum in the policy community, especially among economists who consider it the most efficient approach, is the carbon tax.[viii]

The cost allocation implications of a carbon tax are not as straightforward as those of the two regulatory instruments. Theory prescribes that to disincentivize certain purchases an emission tax should be paid by the consumer. Recent discussions have debated the "point of regulation" (i.e., whether upstream at the producer level or downstream at the point of retail sale). But, according to the prevailing view, even if the tax is assessed upstream it will ultimately be passed through and paid by the consumer. [ix] The industries, by contrast, will have to respond only to the shift in market demand, and their legal responsibility will be only to collect the tax on behalf of the government and pay whatever portion, if any, they cannot pass through.

The price impact of the carbon tax on the consumer is in keeping with theory, but it produces a reaction that theory didn't consider – that placing the cost burden principally on one set of parties would trigger a sense of inequity. Recognizing the political resistance, carbon tax proposals are often designed to rebate the proceeds (or most of them) back to the consumer to make the tax "revenue-neutral." This, however, leaves the government without revenue to cover essential climate obligations, which will likely be in the two-digit trillions.[x] Having levied one carbon tax, the government can't then go back and ask for a second round, so the burden shifts from the consumer to the taxpayer. But since the taxpayer and the consumer are essentially the same person, the rebate doesn't change the outcome – what the individual doesn't pay as a consumer s/he will have to pay as a taxpayer or add to the deficit. Thus, ultimately, the rebate is illusory – the cost of climate change remains the burden of the individual, i.e., "the taxpayer/consumer." The rebate idea fails to appreciate that *since the problem is not cost-neutral, the solution cannot be revenue-neutral*. In reality, a carbon tax paired with a rebate is just a dog chasing its tail.

**Design is destiny.** In sum, misdiagnosis of the climate crisis as an emission problem gives the plans several shortcomings. These result not from outside factors – they originate in the definition of the problem.

*The plans fail to solve the problem.* As noted, defining the problem as an emission problem and targeting only new emissions for control leaves the legacy emissions in place so that the climate crisis will not be solved.

*The misdiagnosis generates a mispricing.* Defining the crisis as an emission problem divides emissions into new emissions that will be addressed and historical emissions that will not. This means that emissions having equal climate impacts are priced differently: new emissions are burdened with the entire cost, while historical emissions are assigned zero cost. Since the atmosphere does not care when a molecule of CO<sub>2</sub> was emitted, these valuations are entirely artificial.

It is easy to see why the excluded historical emissions are priced artificially low: though they are the emissions that now constitute the problem, they are assigned no price at all. Economics explains why the new emissions are priced artificially high: if only new emissions are controlled it is essential to get as much CO<sub>2</sub> reduction as possible from them, so the plans will have to control the last, most expensive emissions. That would not be necessary if a mechanism were available to reduce the existing concentration, which might be cheaper, but no such mechanism has been proposed.

Given these considerations, any program that excludes historical emissions essentially introduces a mispricing. *Many have called for a pricing mechanism, but what is being proposed is a mispricing mechanism.*

*The plans raise equity concerns.* Principles of equity would require that *all who share in the benefits of transactions should share in responsibility for the resulting damage.*

Under the two plans, however, not all parties would share responsibility. Excluding the historical emissions because of the focus on emission control excuses any party from responsibility for costs associated with those emissions, leaving only controls on new emissions as the remedies. But as established above, the instruments to control new emissions allocate the bulk of the cost to the consumer.

The result is that while transactions in GHG-producing products involve both a producer and a consumer, the instruments proposed by the two plans place the cost largely on the consumer, even though the producer benefited from the transactions just as the consumer did. Only in the elimination of tax subsidies would the industries be asked to make a direct contribution, but that is a strategy that has not been accomplished previously.

Thus, the cost allocation of the two plans violates the equity principle. This has not been missed by the consumer, who senses that s/he alone is singled out to shoulder the burden. It suggests that cost allocation is a factor in the failure of climate remedies to gain political traction. Because no plan has been offered that does not single out the consumer, no remedy has been able to gain sufficient public support to overcome resistance.

The shortcomings of the two plans originate in the definition of the problem. To overcome them one must wipe the slate clean and go back to first principles.

## There Has to Be Another Way

**Where do we find a model that has the required elements?** A true remedy must address legacy emissions as well as new emissions, share the burden equitably between industry and the taxpayer/consumer, and generate sufficient resources to cover the burden.

*Identifying a model – but not in the Clean Air Act.* The starting point is to analyze U.S. environmental law to discover if there is an existing remedy that meets these criteria. There is, but it is not found in the seemingly logical starting point, the Clean Air Act, which is almost entirely dedicated to emission control. It is found instead in the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), which is specifically addressed to legacy problems. Specifically, the Superfund in CERCLA provided for retroactive liability of industries associated with the damage to pay into a trust fund that would provide resources for rapid cleanup.

This offers a model for climate change – to enact a new statute establishing a “Climate Damage Redress Fund” (CDRF), based on the principle that *every ton of GHGs emitted — both in the past (hypothetically back to 1950) and going forward (indefinitely) – is assessed a charge.*

*Elements of a Climate Damage Redress Fund.* Specifically, the CDRF has the following elements: (1) Responsible parties are assessed a series of scheduled payments for legacy emissions over a set number of years to compensate costs that would otherwise be borne by the public, as well as assessments for new emissions going forward. (2) The assessments are civil in nature, rather than retributive, thus, like a traffic violation, the carbon industries’ knowledge or state of mind is not an element in establishing liability. (3) As a charge assessed for damage, the most economically appropriate calculation of the dollar amount per ton of GHG is the Marginal Damage Function (MDF), a term used in economics for the cost of the damage resulting from adding one ton of CO<sub>2</sub> (or CO<sub>2</sub> equivalent) to the atmospheric concentration. The MDF would cover health, ecological, and infrastructure/property damage. (4) Since every molecule of atmospheric CO<sub>2</sub> has essentially the same damage potential, the MDF applies equally to every ton covered. And because the marginal damage

increases as new molecules of CO<sub>2</sub> are added to the concentration, the MDF would be repriced periodically according to increases (or decreases) in the concentration. (5) Assessments would be charged to responsible parties (parties who emitted or caused to be emitted GHGs), but ancillary parties who facilitated such emissions may be brought in as jointly and severally liable. This, by contrast with the carbon tax, impacts parties worldwide, not just in the U.S. (6) To ensure that assessments survive bankruptcy or changes in equity structure, payments to the CDRF should be made from nonvoting preferred shares held in trust for the benefit of the CDRF. Since the producers' proceeds for historical energy transactions went into shareholders' equity, symmetry requires that the assessments for them now should be paid out of shareholders' equity. (7) Because the CDRF looks forward as well as backward, a separate carbon tax is not appropriate. What is needed is a single pricing framework that applies regardless of when a molecule was emitted. (8) Border adjustments will be required for imports and exports to avoid an unlevel playing field. Should the CDRF be adopted by other countries, it will be desirable to equalize the MDF among them and ultimately to incorporate it into international trade laws as a "Universal Climate Assessment."

*A program of offsets can create incentives to actually solve the problem.* While the CDRF is inspired by the Superfund model and relies on its legal precedent, it does not adopt the CERCLA design. Instead of engaging the federal government in directing remediation, a second major component of the CDRF is a system of independently audited offsets. This would provide for zeroing out the CDRF liability for any amount of GHGs the party removes from the atmosphere. Thus, while the CDRF would provide resources to address the consequences of climate change, the offset would directly reverse the cause of climate change itself. If the assessments are high enough, that would create an enormous incentive for responsible parties to develop carbon-negative innovations long before 2050. Essentially, *the offset is a way to get the carbon industries to pay themselves to solve the problem their products caused.*

**Political economy of the CDRF.** One will ask, how can a fund that assesses retroactive liability against major industries be enacted when a similar pricing instrument, the carbon tax, has met decades of resistance? The answer is that the carbon tax was defeated by its own design.

*The carbon tax produces incentives for delay.* The carbon tax is designed so that until the day it becomes effective the price of emitting GHGs is zero – permanently zero. This apparently has not been missed by the carbon industries, which have worked to make sure the day a carbon tax will take effect will be postponed indefinitely at no cost to themselves – ever.

*The CDRF produces incentives for response now.* With retroactive liability, by contrast, the carbon industries are already liable for their past emissions now, if at any time in the future such a provision is enacted into law. The longer they wait the greater that liability will be, not only because the number of years of emissions will increase but also because the MDF will escalate, both for past and future emissions. Thus, *for the first time, the carbon industries will have to consider that there is a price for delay.* The industries would therefore have to consider what they can do to solve the problem today, since they will no longer be able to postpone action costlessly.

## Wake Up and Smell the Carbon

Climate advocates are increasingly aware of the need to address the existing GHG concentration but remain locked into the idea of emission control, with its significant environmental, economic and equity shortcomings. Believing there isn't any other way, advocates rely on the hope that when climate conditions get worse the public will muster the political will to accept the burden upon themselves. It's a lesser-of-two-evils strategy that counts for its success on the growth of one of the evils to overtake the other.

The CDRF doesn't take even the present concentration as acceptable. Its offsets feature provides a mechanism to reduce the concentration, and by pricing all emissions equally using the MDF it

sidesteps the mispricing and inequity issues. At the same time, it is compatible with some elements of the two plans. For example, the House Plan invites a pricing mechanism, and in part the CDRF is one. However, it is not the pricing mechanism the policy community is thinking of. Its adoption would require Congress to ask those who have never contemplated paying their share to contribute. That may be more than politicians are willing to take on.

And yet, it is what is called for by the circumstances. No plan that exempts legacy emissions will succeed fully, and no plan that immunizes the carbon industries can address legacy emissions. The carbon industries, having participated in the transactions that created the problem, should now share in funding the remedy.

There can be hope for the climate, but only if all the parties and all the emissions are part of the plan. It is something that so far not only has not been proposed but has not been imagined.

[i] “Solving the Climate Crisis: The Congressional Action Plan for a Clean Energy Economy and a Healthy, Resilient, and Just America” (Jun. 30, 2020), [climatecrisis.house.gov](https://climatecrisis.house.gov).

[ii] Senate Democrats’ Special Committee on the Climate Crisis, “The Case for Climate Action: Building a Clean Economy for the American People,” Aug. 25, 2020, [www.democrats.senate.gov/climate](http://www.democrats.senate.gov/climate). Because it is a complementary economic argument, it will be treated here as a supplement to the House Plan.

[iii] “The Biden Plan for a Clean Energy Revolution and Environmental Justice” (Jul. 14, 2020), [www.joebiden.com](http://www.joebiden.com).

[iv] This is even more true in our current moment. The problem is not just that the CO<sub>2</sub> concentration has reached a level that is destructive but that the level it has reached – over 400 ppm – is capable of creating feedback loops that cause the atmosphere to raise the concentration on its own, even if anthropogenic emissions cease. Will Steffen, et al., “Trajectories of the Earth System in the Anthropocene,” *Proceedings of the National Academy of Sciences*, Aug. 14, 2018. See also The Climate Reality Project, “How Feedback Loops Are Making the Climate Worse,” Jan. 7, 2020. Some examples are water vapor, diminishing albedo, spontaneous forest fires, reduction in tropical rainforest, heating of tropical soils, and permafrost thawing (sometimes referred to as the Arctic “methane bomb”) As a result, the problem now can no longer be prevented by reducing new anthropogenic contributions to the concentration.

[v] Both plans recognize that they result in a rising concentration. See, e.g., the House Plan at 19-20, citing Intergovernmental Panel on Climate Change, *Special Report on Global Warming of 1.5°C* (October 2018).

[vi] The classification used here departs from the current convention, which classifies trading and emission taxes/fees together as “pricing mechanisms.” While it is true that the trading instrument generates a market price, that price does not occur – in fact, it would be meaningless – without the regulatory program of which is a part. One thus questions the term “market-based regulation.” If one stops to think about it, the term “market-based regulation” is a highly promotional oxymoron. That is, how can it be market-based and regulation at the same time? A regulatory program can contain a market, but as shown in the successful Lead Phasedown and Acid Rain programs the market is not the basis. The term has spawned befuddlement in the policy community that can be corrected by thinking of the mechanism not as “market-based regulation” but as a “regulation-based market.” When that more-descriptive name is applied, regulation with trading falls into the category of regulation.

[vii] In designing the pricing mechanism the House Plan sets out the following objectives: that it be economy-wide, that it complement other tools, that it be coordinated with policies to protect low- and

moderate-income households, that it complement state and local programs, that it not come at the expense of other clean air standards, and that it be protected by border adjustments.

[viii] E.g., Gilbert E. Metcalf, *Paying for Pollution: Why a Carbon Tax is Good for America* (Oxford, New York, 2019), at 54, 71. On August 7, 2020, Senator Dick Durbin (D-IL) announced the introduction of *America's Clean Future Fund Act*, which would set a price on CO2 emissions. Dick Durbin, "Durbin Introduces Bill To Fund A Clean Climate Future," Press Release, Aug. 7, 2020; see Shannon Osaka, "Is the carbon tax dead? Not yet, says this senator," *Grist*, Aug. 10, 2020.

[ix] Marc Hafstead, Resources for the Future, "Options for Carbon Pricing Design," *Carbon Pricing 101*, Jun. 6, 2019, rff.org.

[x] Federal costs include climate change adaptation, rebuilding infrastructure, relocating military installations, providing damage insurance and compensation, stimulating research and innovation, and transition assistance for those affected by loss of fossil-fuel jobs. Estimates suggest the order of magnitude, e.g., Douglas Holtz-Eakin, et al., "The Green New Deal: Scope, Scale, and Implications," American Action Forum, Feb. 25, 2019.

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