

Fossil carbon emissions: a refundable excise duty on its *extraction* rather than on its *emissions*.

A pragmatic and concrete “plan B” to save the *Paris Agreement* in front of the accelerating climate disruptions¹

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“A new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it.”

Max Planck

At the time of the CoP 24 and despite the diplomatic optimism regarding the outcome of CoP 21 to 23, it is important to recognize that the conference may equally be considered as a settling for compromises to fully grapple with the issues at hand. Indeed, such is the case with the climate change compromises currently in place, their façade of efficacy notwithstanding.

Closing the 14-17 Gt emissions gap between current levels of ambition and those that will enable the goals of the Paris Agreement to be achieved before 2020 requires an inclusive, ‘all hands-on-deck’ approach. There is also a crucial need for governments to work in partnership with other financial actors, development banks as well as private finance institutions to mobilize finance at the scale required to transition to a low-carbon, climate resilient global economy. A crucial outcome of the Marrakech climate conference in this context was to move forward on writing the rule book, or operational manual, of the Paris Agreement which calls for a significant boost of transparency of action, including for measuring and accounting emissions reductions, the provision of climate finance, and technology development and transfer⁴.

They continue however to confront the challenge of implementing a reliable system for evaluating, overseeing, and taxing emissions of CO₂ and other greenhouse gases

¹ A short presentation of this proposal is available on line In English :

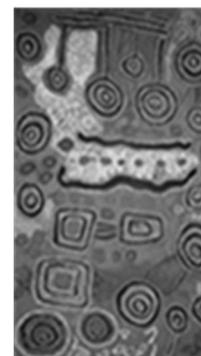
<https://www.euractiv.com/section/climate-environment/opinion/mondaycop21-goals-an-alternative-path-to-success/> ; More detailed in French on: <http://www.up-magazine.info/index.php/planete/climat/7127-le-plan-b-pour-sauver-l-accord-de-paris-sur-le-climat>

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⁴ <http://newsroom.unfccc.int/unfccc-newsroom/nations-take-forward-global-climate-action-at-2016-un-climate-conference/>

Illustration: Pukara. Aboriginal artwork by Iyawiki Wikilyiri of the Tjungu Palya Center for Art. Work exhibited at the Aboriginal Signature Gallery, Brussels. Dimensions of the original work: 200x120 cm.



(GHGs). The discourse surrounding these issues clearly reveals a disconcerting lack of appreciation for their gravity: we seem to be debating treatments for hypertension when, in reality, our patient is on the verge of a heart attack.

Of course, the Marrakech Action Proclamation⁵ was published and a club of subnational governments, the Under2 Coalition⁶, have committed to reduce their emissions by at least 80 percent by 2050, announced their membership has grown to 165 and the Climate Vulnerable Forum⁷, a group of more than 40 vulnerable nations, released a declaration that strengthens the call to limit global temperature rise to as close to 1.5 °C as possible.

Nevertheless, despite the multiplicity of initiatives³ COP 24 still run a high risk of failure in its operational application and it will be not so much the fault of a crippling and pervasive dearth of enthusiasm as it is the fault of the current system for calculating and taxing emissions, which at present only underscores our disagreements. Mr. Mezouar, President of the COP 22 said himself that it will be necessary not only to respect the commitment of \$100 billion dollars from now until 2020 but that faced with the magnitude of what is required for dealing with the impacts of climate change, turning billions into trillions is indispensable ! And this was before the US presidency election and the fact that climate was so low in the debate at the French one, not to mention the priority that will given on the Brexit issues or the pressure on oil prices with the aim to make the shale gas uncompetitive and maybe lead to a new subprime crisis...

Therefore, is it not critical that we pause to reevaluate our current strategies and recognize that the moment has come for a true paradigm shift regarding an effective strategy to manage the climate challenge?

1. Context

1.1 Two decades of stymied negotiations.

One of the critical issues facing the Conferences of the Parties (COP) at the United Nations Framework Convention on Climate Change involved the many and disparate methods for controlling greenhouse gas emissions: how can we embrace and – most importantly – promote compliance with these various strategies? Our concern is only with emissions sources that the scientific community has deemed responsible for current (and future) global warming.⁸ Should average global temperatures rise by more than 2°C, we know that the risk of consequences will no longer be gradual and subtle, but devastating and abrupt, similar to the aftermath of an avalanche or earthquake. Such cataclysmic events could swiftly shatter the planet's overall climate balance.

⁵ http://unfccc.int/files/meetings/marrakech_nov_2016/application/pdf/marrakech_action_proclamation.pdf

⁶ <https://www.theclimategroup.org/project/under2-coalition>

⁷ <http://www.thecvf.org/>

⁸ For *GreenFacts* short animated teaching videos that explain key factors affecting climate, see <https://www.youtube.com/watch?v=f3a90Ct6d-U>.

We now confront a critical challenge: while the fossil fuel industry continues to receive enormous subsidies totaling billions of dollars, particularly in developing countries⁹, how to define, implement, and ensure broad adoption of a reliable system for evaluating, overseeing, reducing and taxing GHG emissions necessary to ensure the energy transitions ?

Whatever was their immediate outcomes and official endorsement by many countries, in the median and long term the CoP conferences do run a high risk of failure. Among the potential causes of such a defeat is the lack of real political will on the part of some stakeholders (states, industrial/economic sectors, etc.). For instance, taxes are levied on GHG emissions themselves, despite the fact that such emissions are difficult to measure and monitor. These taxes are inconsistently enforced, which only compounds the current system's dearth of incentives to promote compliance.

1.2. Limitations in the strategies currently under consideration.

The current strategies for reducing carbon emissions face three major limitations.

The first major limitation involves “externalities.” This term refers to the social and environmental (particularly in relation to climate change) impacts of fossil fuels and other GHGs or activities involving them¹⁰. Since final sales prices do not typically reflect the significant downstream costs stemming from these externalities, the fuels are perpetually sold at a absolute global loss. This cycle is unacceptable and even clashes with the values of a liberal economy. It is important to recognize, too, that these losses are absorbed by the environment of course, but also by states, not by businesses; in order to cope, states must take on additional debt or raise taxes/increase their citizens' social security contributions. As might be expected, the public bitterly resents such efforts to raise revenues. Yet when efforts are made under the current system to roll the cost of externalities (especially climate externalities) into product prices, the results are problematic: such products are invariably too expensive to be competitive and thus fail to find purchasers outside a few “niche” markets.

The second major limitation lies in the difficulty of determining the value or the cost of “emissions permits.” Without first knowing this cost, it is impossible to fix a price for these permits on the carbon market. Two major systems of emissions quotas and/or carbon taxes have been delineated. These systems should, in theory, make it possible to integrate and monitor the vast array of small, disparate emissions sources. In addition, they should create incentives to promote a transition toward products or activities with a reduced (or wholly eliminated) climate impact. Thus, as originally

⁹ Estimates of the global subsidies granted to fossil fuels and nuclear energy range from 550 to 5600 billion USD per annum; estimates differ based on the definitions adopted and methods of calculation employed. See http://www.ren21.net/wp-content/uploads/2015/07/REN12-GSR2015_Onlinebook_low1.pdf.

¹⁰ A prime example of the cost of these externalities: in France, the external cost of removing excess nitrogen (derived from fertilizer use) from water can reach 100000 €/ton, even as the sales price of the fertilizer fluctuates between 500 € and 1000 €/ton. This vast difference is due to the fact that the plants only remove 50% of the fertilizer

envisioned, the emissions quotas program ought to resemble a young family seeking to rent an apartment or a house before having the resources to purchase it.

These systems ought to draw a distinction – at least a temporary one – between the price of the carbon emitted by existing facilities (via the notorious “licenses to pollute”) and the price of the carbon associated with new ventures/start-ups investments and products/facilities generating lower levels of emissions.¹¹ Unfortunately, the various efforts to implement such a system for regulating carbon emissions, particularly in Europe, have proven to have serious limitations. Carbon emissions quotas are set in a relatively arbitrary manner and cannot readily be scaled up to a global level or applied to a wide range of activities (e.g., heating buildings). These limitations are especially pronounced in times of economic crisis. Emilie Alberola, director of the Carbon and Energy Market research unit at CDC Climate, has stressed that due to these weaknesses in the quota system, economic agents lack incentives to make the long-term investments (30 to 50 years) necessary for reduction of CO₂ and other GHG emissions. As a result, true “decarbonization” of the world’s energy will likely be stalled for decades to come.

In sum, the carbon emissions market options fail to create a coherent, effective, and reliable system for controlling emissions. Above all, these do not offer incentives powerful enough to trigger a dramatic reduction in the scale of emissions, nor do they supply the financial means for a genuine energy transition.

The third major limitation lies in the financial burden that the energy transition places on states. Many developing countries lack the necessary resources for such a transition, others are (deeply) mired in debt, and still others remain extremely hesitant to fund such complex endeavors. While many countries have promised financial support, only a few have followed up on their pledges: as the saying goes, *a promise only binds believers*. Consequently, contributions have fallen far short of expectations and there remains a pressing need for funds.

2. An alternative, incentive-based proposal for controlling GHG emissions.

A system based on emission control is therefore intrinsically difficult to set up and monitor: the sources of carbon emissions are innumerable in the true sense of the term, and therefore impossible to account for and manage. The establishment of a hypothetical "carbon market" remains unpredictable, and the proposed changes, such as the carbon tax, unfortunately result in more of the plaster on the leg than a global and operational strategy at the height of the stakes and their urgency¹².

¹¹ A similar strategy was successfully employed in the 1980s, during a campaign to reduce emissions responsible for acid rain. In the EU, targets for reducing these emissions were reached five years ahead of schedule.

¹² See for example in April 2017 a new scientific assessment of climate change in the Arctic, by the Arctic Council’s Arctic Monitoring and Assessment Programme (AMAP) which concludes that the Arctic is shifting—rapidly and in unexpected ways—into a new state.

In light of these issues, it is therefore right – indeed, urgent – that we recognize that the moment has come for a true paradigm shift, a shift toward a more global and integrative (holistic) approach to find truly operational solutions to the stakes. We envision a dynamic system wherein the longstanding coercive measures meant to promote compliance are paired with equally powerful inherent incentives. Only through such an approach would it be possible to negotiate and generate a dynamic action plan intrinsically more incentive than coercive to reach the ambitious although unavoidable goals for reducing GHG emissions.

We thus face a unique challenge: how to internalize these collective expenses, particularly those costs incurred in the effort to control GHG emissions? As a corollary, we must also ask: how do we incorporate externalities, including their associated costs and the collective constraints they impose, into the options available to, and the decisions made by, economic agents?

2.1. The two components of the excise duty/refund strategy.

Instead of negotiating a distribution of effort through emission reduction targets, some economists, such as Weitzmann (2015) argued that it would be easier and more efficient to agree on a universal carbon tax. While the large disparity in emissions (from less than 1 ton to several tens of tons per capita) is often cited as an obstacle to such an approach, it would appear that a levy proportional to the consumption of carbon would favor by essence the least carbon-consuming countries.

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Toward this end, we propose replacing taxes on emissions of carbon and other GHGs with a new system consisting of two interlocking components:

- a) The first component consists of an Excise Duty on Extraction of Fossil Fuels and Primary Production of Greenhouse Gases (GHGs). The duty would apply particularly to carbon derived from fossil fuels but also to GHGs derived from other sources, both synthetic and non-synthetic, including timber, fluorocarbons, methane, and incinerated waste;
- b) The second component involves a scalable refund that would make it possible to reclaim (via COCs) the excise duty levied upstream, in whole or in part. Refunds would be granted in exchange for a reduction in, or complete elimination of the emissions linked to the use of substances with a global-warming potential. Examples of activities eligible for refunds include: cogeneration of energy, including cogeneration involving renewable energy sources; production of polymers and other long-lasting and/or non-emissive products; and demonstrated development of more energy-efficient processes or installations (agriculture, housing transport) , as well as recycling, fixation, or long-term storage of GHGs.

At the global level, the excise duty would be intrinsic and therefore more readily implemented: there are, after all, innumerable immediate sources of GHG emissions,

versus relatively few sources of *extraction/production* of GHG-emitting materials. And to those who consider that oil producer countries would never accept this principle, just let's answer that the EU, for example does not ask to China if they agree that a tax (VAT) is applied on their products. The great advantage of this combination – i.e., excise duties coupled with refunds – is that it avoids requiring states, already heavily indebted for the most part, to make financial commitments that will sometimes remain very uncertain and provides inherent incentives to promote compliance to the commitments of the *Paris Agreement* : could there be a more effective strategy?

Nothing is simple of course and for countries - extractors or users - who would refuse to join the system, a carbon border adjustment system should be considered, although such mechanisms, as Nordhaus¹³ analyses, which are complicated to conceive, have limited coverage, and have little impact on broadening participation in a global agreement. Another problem would be to assess the carbon content of the products, but these data would still be more readily identifiable than quantifying most diffuse carbon emissions.

Nevertheless, Jean Tirole, Nobel laureate in Economics, has urged that a carbon tax be levied in conjunction with a system of “green funds.” These would in turn be linked to a trading market wherein a multilateral governing organization would assign or auction off redeemable permits to participating countries. States choosing not to participate would be penalized by excise duties imposed at the borders by the WTO, the ECB, or an institution specifically created to fill this role. The system would establish an adjustable “corridor” for the price of carbon. However, country participation would be purely voluntary in the interest of ensuring adequate follow-through.

It is interesting to see that the proposal is supported in France by Christian de Perthuis^{14,15} and, somehow Barak Obama also took over this idea¹⁶ although probably a little bit late in his second term.

2.2. Effective implementation of the excise duty/refund strategy.

2.2.1 Levying the excise duty.

Some 30 giga barrels of oil are extracted each year. Let us now suppose that the excise duty per barrel is fixed at 10 USD/barrel (25 USD/ton) – not an insurmountable financial barrier for immediate users and consumers – and that the price of the barrel ranges

¹³ Nordhaus W. (2015), "Climate Clubs: Overcoming Free-Riding in International Climate Policy", *American Economic Review*,

¹⁴ <http://www.chaireeconomieduclimat.org/en/publications-en/information-debates/id-44-the-paris-climate-agreement-let-the-negotiations-begin/>

¹⁵ <http://www.lesechos.fr/idees-debats/editos-analyses/021783145783-cop21-transformer-les-bonnes-intentions-en-actions-1208739.php?7i5K04eGkSalojKC.99>

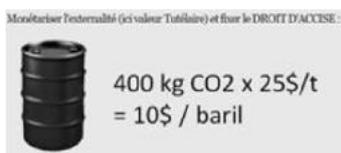
¹⁶ **The Environmental Merits of Obama's Oil Tax** <http://www.rff.org/blog/2016/environmental-merits-obama-s-oil-tax-proposal>

Taxing Oil: Good Climate Policy? <http://www.rff.org/blog/2016/taxing-oil-good-climate-policy> **Why so many economists back Obama's idea of a tax on oil** https://www.washingtonpost.com/news/energy-environment/wp/2016/02/08/why-many-economists-support-obamas-idea-of-a-tax-on-oil/?postshare=701454953809765&tid=ss_tw

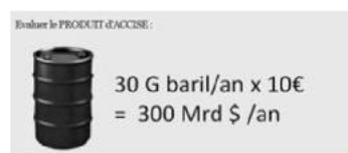
from \$40 to \$110. As such, the excise duty on petroleum alone would generate at least 300 billion USD.



Determine a reference value



Monetize the externality
(reference value used here)
and set the excise duty rate.



Calculate total revenues associated
with the excise duty.

These revenues would then be used to distribute refunds as determined at the Copenhagen Summit. Refunds would be granted in exchange for a reduction in, or complete elimination of, the emissions linked to the use of or extraction/production of substances with a global-warming potential.

Further, part of these revenues could contribute to support countries who already suffer from the consequences of major climate events, such as the recent hurricanes, dryness, or fires, and unable to support the costs of reconstruction and adaptation.

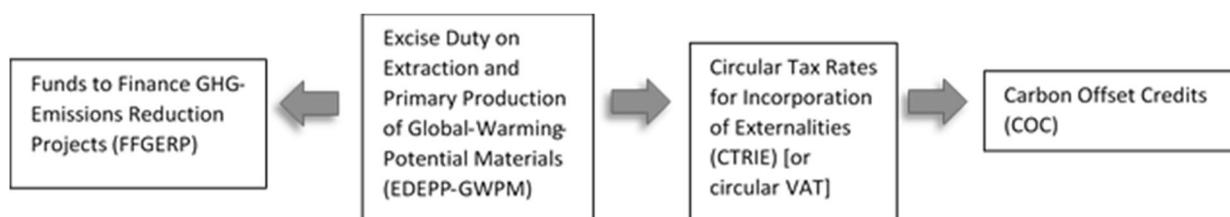
These calculations do not take into account potential revenues from excise duties on coal, traditional natural gas sources or shale gas or industrial biomass (wood and pellet form). The excise duty would be levied on the basis of the quantity of material extracted, and thus would be impervious to the fluctuations of markets that are, after all, inherently speculative (consider the case of trading markets for CO₂ emissions permits). In addition, after signing a treaty pledging its participation, each country would be obliged to levy the duty regardless of whether the GHGs (or other products associated with climate externalities) were extracted within the country or were imported from elsewhere. The process would resemble the system proposed by Jean Tirole, though in this case, the duty would be levied not on GHG emissions, but on extraction of GHG-producing materials.

2.2.2. Reclaiming the excise duty in whole or in part: the refund component.

In order to provide full or partial refunds of the excise duty levied upstream, we propose the implementation of a tax recovery rate scheme. Certificates would be issued indicating monetized “climate externalities” associated with a good, service, or activity. This system would make it possible to identify products or processes that reduce their energy consumption (agriculture, housing and transport in particular), generate lower GHG levels or avoid generation of GHGs altogether. Like the European VAT, this *Circular Tax Rate for the Incorporation of Externalities* (CTRIE) could be incorporated into traditional tax schemes. Such taxes would thus not rise for those producers or consumers who adopt strategies to selectively reduce their own climate externalities. This plan is closely linked to the *Carbon Added Tax* (CAT) proposed by Laurent and

Cacheux.¹⁷ However, while the CAT would seek to control emissions linked to the process of GHG importation, it would not address the significant issue of the cost of climate externalities associated with the use of imported goods.¹⁸ The CTRIE would take such considerations into account.

If deemed appropriate, the CTRIE could incorporate additional externalities, direct and indirect – including effects upon the environment, public health, and society at large. Examples include the issues discussed in the UN’s list of Millennium Development Goals.¹⁹ The tax would be calculated using methods (e.g., Life Cycle Analysis [LCA]) already in place for monetizing these externalities. Other tools for monetization of various externalities, both positive and negative, are also available or are in development. The *Fondation 2019*²⁰ in France is particularly active in this field.



In order to implement *the Excise Duty on Extraction and Primary Production of GHGs*, strategies should be developed to make the duty broadly applicable and to monitor its collection. To ensure compliance, a source-tracing system (similar to those adopted in some food industry sectors) must be instituted. This is particularly true in the case of imports. And it is well known from many experiences in a variety of sectors that the control of the funds and budget allocations remains a priority challenge ²¹...

3. As a tentative conclusion...

Ultimately, this alternative proposal would resolve three of the major difficulties that policymakers have encountered in the current paradigm:

- 1- Emissions are so numerous and so varied that it has become nearly impossible to comprehensively measure and control them at the worldwide level. The current paradigm ignores the carbon footprint linked to indirect, extraterritorial emissions (those linked to imports/exports of finished products).

¹⁷ See <http://www.ofce.sciences-po.fr/pdf/revue/5-122.pdf>.

¹⁸ In France, for instance, the carbon footprint has increased by 15% since 1990, even as direct emissions declined by 7%!

¹⁹ See <http://www.un.org/fr/millenniumgoals/>.

²⁰ For more information about the *Fondation 2019*'s endeavors, see <content/uploads/2013/03/MISSION-TVA-CIRCULAIRE-V20110216.pdf>.

²¹ To help developing countries in their efforts to build institutional and technical capacity for enhanced transparency, Parties requested the GEF at COP 21 to support the establishment and operation of a Capacity-building Initiative for Transparency (CBIT). <http://www.thegef.org/topics/capacity-building-initiative-transparency-cbi>
http://unfccc.int/files/meetings/marrakech_nov_2016/application/pdf/gef_newfund_release_en.pdf

