

# Changing Climate Change

Global Climate Tax Concept

## Executive Summary

Saving The Economy while Disrupting Climate Change

1	<u>THE CLIMATE TAX STATEMENT:</u> .....	4
2	<u>SUMMARY</u> .....	5
3	<u>A GLOBAL CLIMATE TAX: THE SCHEME</u> .....	6
4	<u>WHY IT WORKS</u> .....	7
5	<u>ZERO GHG EMISSIONS BY 2031-2035</u> .....	8
6	<u>THE GLOBAL CLIMATE TAX: ECONOMIC STIMULUS</u> .....	10
7	<u>BARRIERS TO IMPLEMENTATION</u> .....	12
8	<u>CONCLUSIONS</u> .....	13

Tax all GHGs

```
graph TD; A[Tax all GHGs] --> B[Re-distribute: Cash-back]; A --> C[Re-invest: Renewable infra]; B --> D[Economic stimulus]; C --> E[GHG emissions eliminated]; C --> D;
```

Re-distribute:  
Cash-back

Re-invest:  
Renewable infra

Economic  
stimulus

GHG emissions  
eliminated

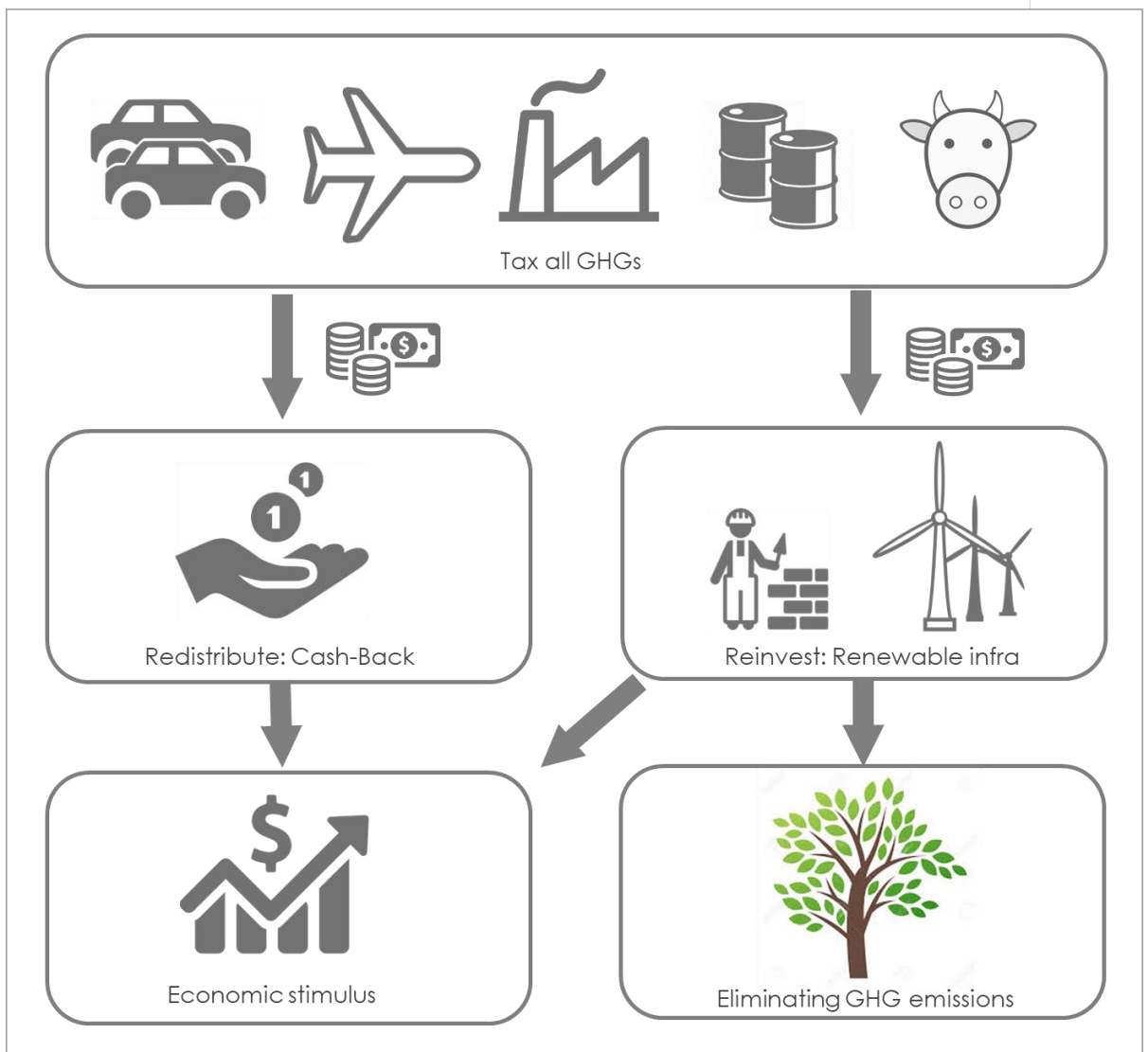
# 1 The climate tax statement:

1. All GHG gases & substances are taxed
2. The tax is levied EVERYWHERE, globally, at the same rate per ton of CO<sub>2</sub> equivalent
3. The tax is gradually introduced – modest initially– to allow the economy to adjust. The tax starts at U\$ 50/tCO<sub>2</sub>e in Year 1 (2020), increasing to a minimum of U\$ 500/tCO<sub>2</sub>e in 2030 (Year 10) and U\$ 1000/tCO<sub>2</sub>e by 2035 (Year 15)
4. The tax is levied & redistributed at country level, at the point of emissions (point of sale to the end-consumer, similar to VAT)
5. ALL tax revenues are redistributed, completely fiscal neutral
  - a. 50% cash-back, re-distributed regressively (low income brackets receive higher cash-back) to balance the temporarily increasing energy bill
  - b. 40% for building renewable energy infrastructure (excluding nuclear, bio-fuels and carbon capture technologies)
  - c. 10% for R&D and mitigation
6. Agriculture contributes 15-25% of global GHG emissions. Meat and dairy products therefore need to be taxed according to their associated CO<sub>2</sub>e emissions
7. Countries that do not participate in a global climate tax scheme are taxed a flat import tariff of at least 30% on all imports. These tariffs will be redistributed to the population as cash-back

## 2 Summary

The implementation of a global climate tax has the following outcomes:

- Depending on the climate tax per tCO<sub>2</sub>e and the rapidness of increasing the initial tax level, the World could produce sufficient renewable energy to cover all energy requirements by 2031-2035. However, due to technical constraints (lack of commercial electric airliners) and agricultural requirements, GHG emissions are expected to continue into the 2040's, albeit at a low level of appr. 3-7% compared to today.
- The global energy bill will be 30-50% lower after the transition (2-4% of global GNI, equivalent to U\$ 1.5 trillion, available for other purposes)
- During the transition, global energy costs will rise to between 10-20% of global GNI (depending on rapidness of increasing the tax). However, since 100% of tax revenues are directly reimbursed as cash-back or re-invested into the economy, the economy is expected to gain monument.



The economics of climate change is simple: tax the cost & redistribute

### 3 A Global Climate Tax: The Scheme

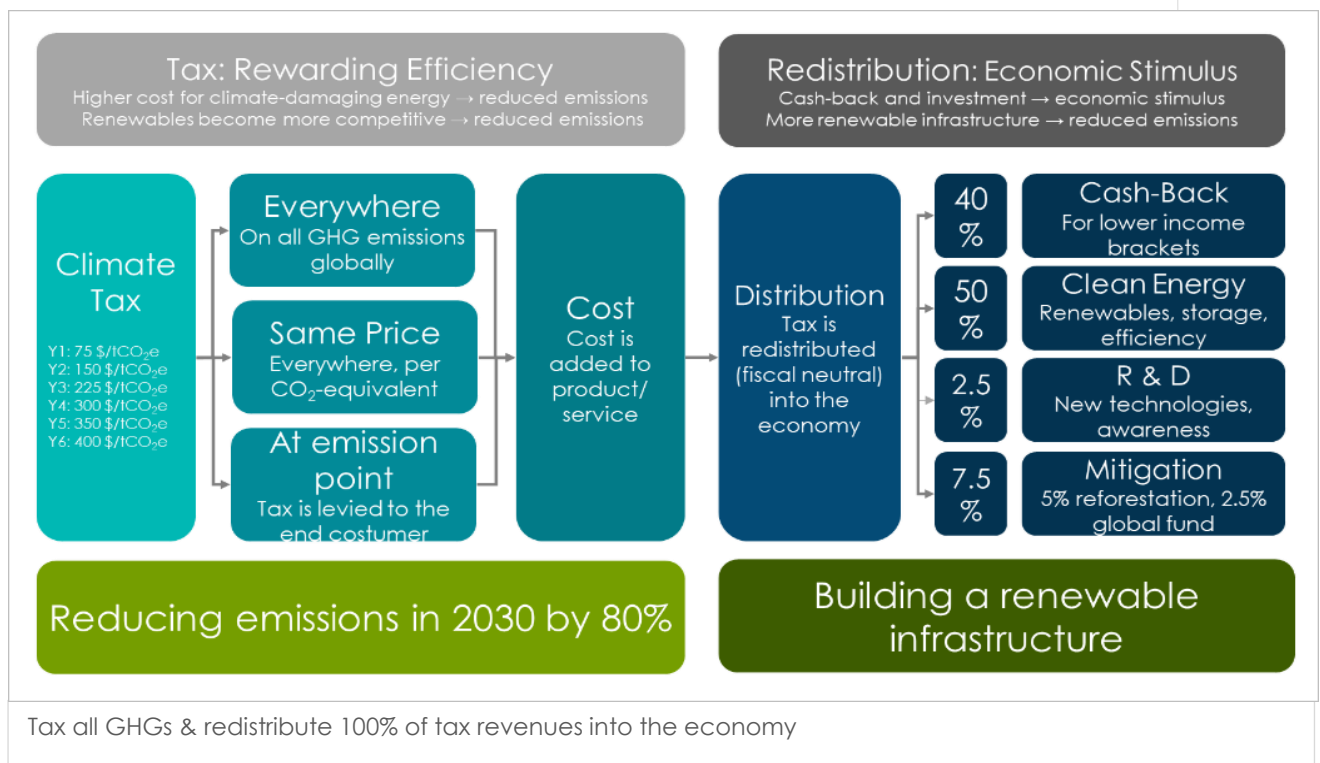
SolAbility has been commissioned to evaluate feasible ways to actually achieve results in combating climate change – including weighting the impacts of potential schemes on economic development, political feasibility, and of course emission reductions.

Several approaches have already been implemented and tried: cap & trade systems, CDMs local/national trading/taxing systems, certain subsidies and tax breaks, agreeing on emission reduction targets internationally, ..., - *but none of them have made a significant difference.*

This evaluation finds that the simplest and economically most feasible way to achieve meaningful reductions in a meaningfully short period of time is **taxing emissions – but globally.** At the point of emissions. And then **re-inject the tax revenues in the economy** – through cash-back for the below-average income segments of the population, and investment in clean energy infrastructure, storage, and efficiency.

**The concept of the global carbon tax is based on two simple principles:**

1. Taxing GHG emissions, everywhere, equally.
2. Re-injecting all tax revenues in the economy (no additional government spending), at the national level (the climate tax has to be fiscal neutral)



And 3), impose a flat import tariff on all goods from countries that do not participate in the global climate tax, e.g. 30%

**Taxing GHG emissions** means higher cost. It also means rewarding higher efficiency. Higher cost of fossil energy will lead to

- Higher efficiency: meaningful emissions taxes kicks off an innovation drive in the economy for more efficiency and new technologies, reducing energy and material consumption
- Higher investment in viable and clean alternative technologies, thus further driving down price of renewable energy through economics of scale and increasing the renewable share in the global energy mix
- Reduced emissions

**Re-injecting the climate tax revenues in the economy** through cash-back and investments will lead to

- Rapid further expansion of installed renewable energy generation capacity and associated technology (e.g. storage)
- Driving down cost of clean energy technology
- The cash-back element increases consumer spending, thus serving as an economic stimulus

## 4 Why it works

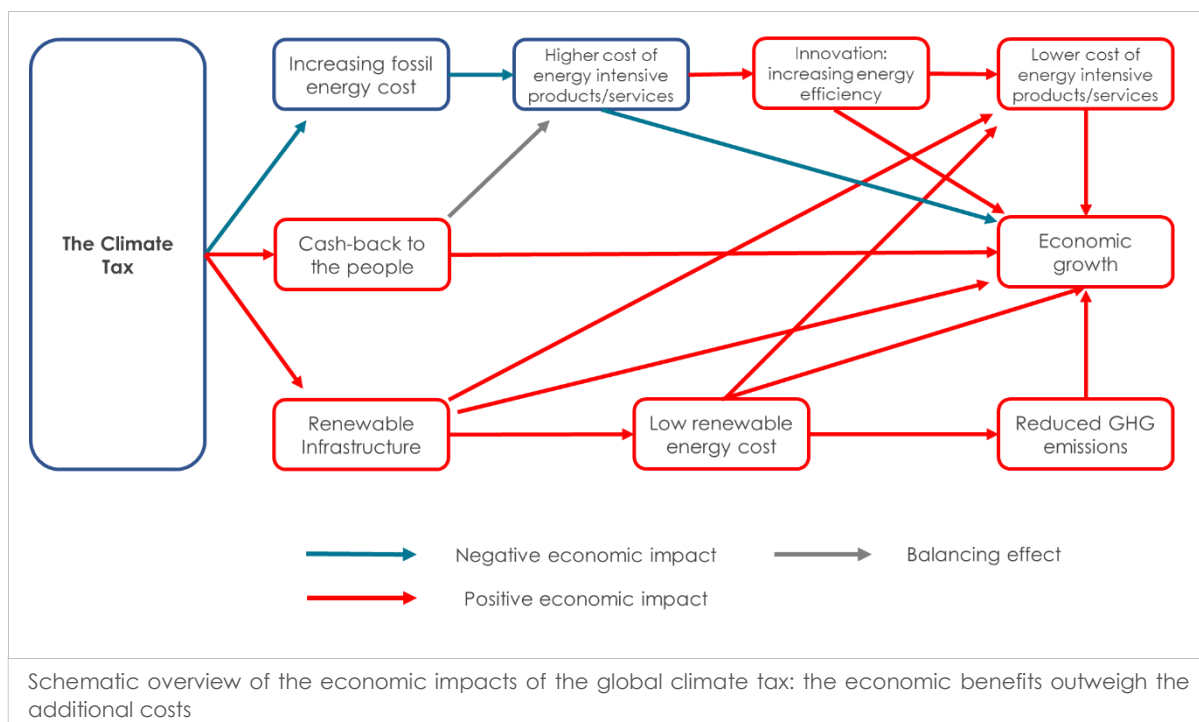
The economics of climate change is simple: attaching a price to carbon dioxide. Another established wisdom is that it is better to build the new before scrapping the old.

Here is why the global climate tax works:

- GHG tax increases cost of fossil energy. The cost pressure is an incentive to become more efficient (innovation drive), as well as looking for alternatives
- Fossil energy and energy intensive products/services will become more expensive – incentive to save energy
- Regressive cash-back will increase purchase power of low-income brackets, maintain the purchase power of the middle class, and not affect the high-income brackets. More cash in the hands of the lower-income brackets equals higher spending, equals growth for local businesses
- Electricity generated from wind and the sun is cheaper than fossil generated electricity already now. The investment in renewable energy infrastructure is further lowering cost of clean energy: the energy of choice will be renewable
- The investments in the renewable energy infrastructure will create more jobs than will be lost in the fossil industry

A group of leading economists – including 25 Nobel laureates and 4 former fed heads – are urging the USA to introduce a domestic carbon tax. Unfortunately, they have been largely ignored by decision and law makers.

The global climate tax goes a step further – by lifting the tax to the global level. Application of the same tax, globally, excludes potential economic disadvantages for businesses operating in countries that do vs. competitors operating in countries that do not have such taxes.



## 5 Zero GHG Emissions by 2031-2035

For the purpose of this report, 4 different scenarios of implementing a global climate tax have been analysed: “Soft”, “Medium”, “Hard”, and “Emergency”. They differ from modest and “soft” introduction and increase of the tax (U\$ per ton of CO<sub>2</sub> equivalent), to a drastic and step introduction (“emergency”) of a global tax on GHG emissions.

Scenario		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Soft	U\$/ton CO <sub>2</sub> e	50	75	100	125	150	183	225	250	300	350	400
Medium		50	100	150	200	250	300	350	400	450	500	550
Hard		75	150	225	300	375	450	525	600	675	750	800
Emergency		100	200	300	400	500	600	700	800	900	1000	1100

Key assumptions made for all 4 scenarios:

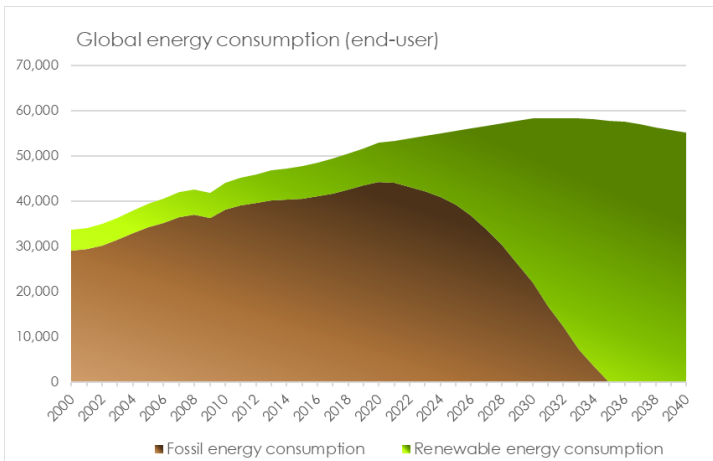
- Population, GNI, and global end-user energy consumption are increasing at the average growth rate of the past 10 years
- Price of crude oil (and natural gas & coal) will grow with inflation from current levels, but start slightly falling after 2025 due to sinking demand
- Cost projections of renewable electricity are based on historic trends and forecasts by international energy agencies (IEA, IRENA), conservatively projected into the future
- Each new renewable generated end-user energy unit will replace a fossil end-user energy unit. Initially mainly gasoline will be replaced (electric cars), later also coal-, oil- and finally gas-power power plants. This leads to a theoretical zero-fossil usage in 2031-2035. In reality, some fossil energy consumption is likely to continue into the 2040s for special uses



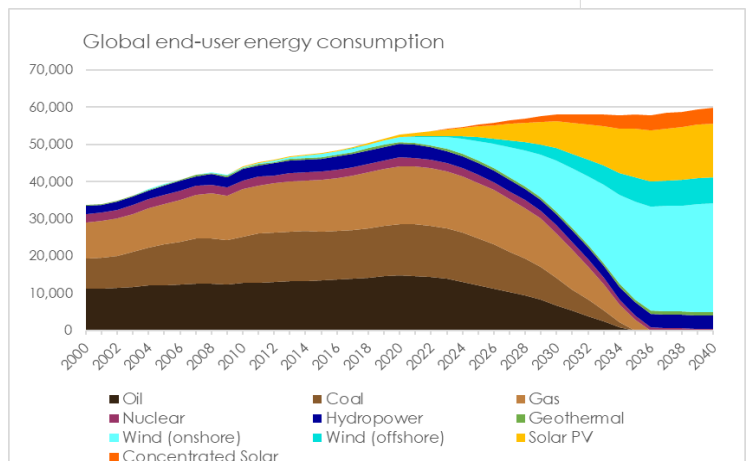
- The operating life of nuclear power plants nearing decommissioning in the 2020s will be extended until sufficient renewable capacity is available. Nuclear plants currently under construction are included in the calculations, but no further plants are built thereafter
- Until batteries capable of temporarily storing sufficient renewable electricity will be available, existing fossil generation capacity will be used and/or retrofitted to provide electricity from gas generated by surplus renewable electricity (power to gas to power) when the wind does not blow/the sun does not shine

**Energy-related GHG emissions reduction**

In theory, fossil energy usage could be replaced completely by renewable energy by 2031 (emergency scenario) to 2035 (soft scenario). This is under the assumption that each new additional renewable energy unit replaces a fossil unit. However, for some uses, fossil energy carriers will be used for somewhat longer.

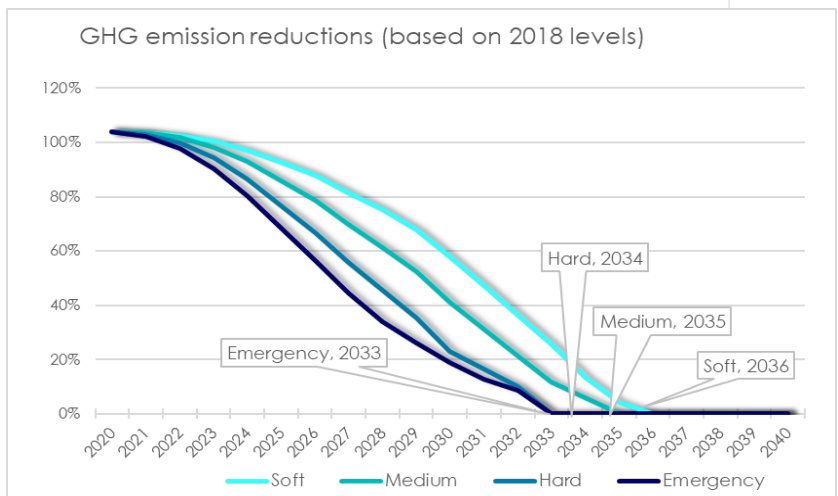


Fossil vs. renewable energy usage (soft scenario): fossil energy consumption could be replaced completely by 2035



Global energy mix (soft scenario): wind & solar energy to cover most energy demand

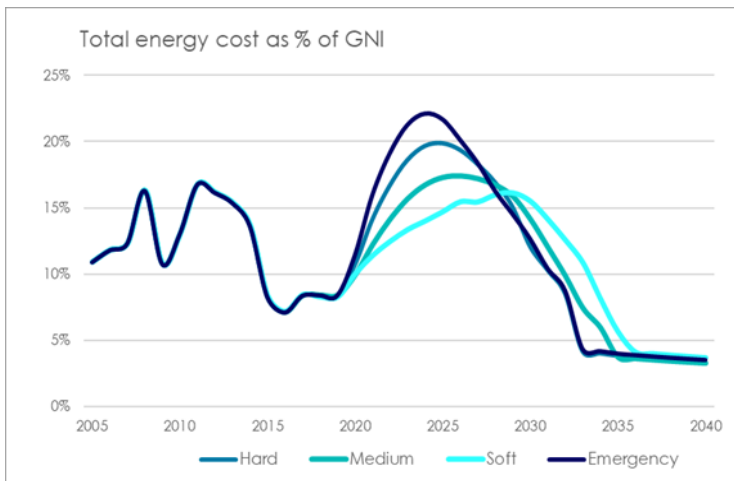
This means that energy-related GHG emissions could be completely eliminated by 2031-2035 (depending on size of global climate tax). However, considering technical constraints to replace liquid fuels for special applications, it is probable that some energy-related GHG emissions will continue into the 2040s, albeit at a very low level. In addition, certain agricultural emissions seem impossible to eliminate, in particular emissions from rice paddies. Taken together, these emissions are expected to represent approximately 5% of 2018 global emissions.



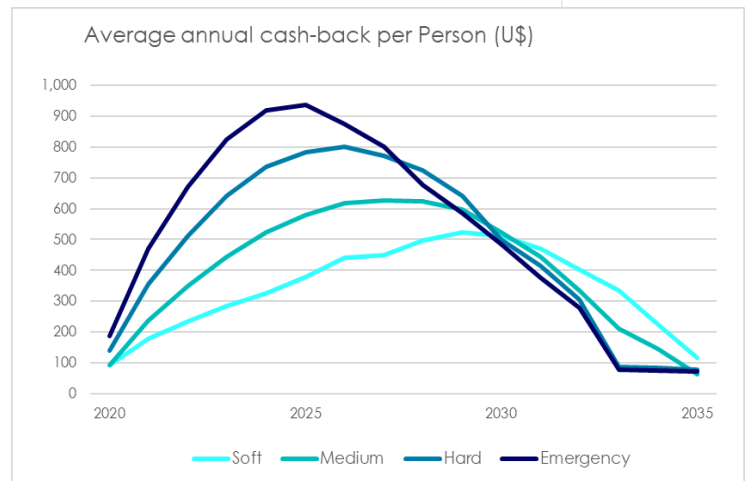
Potential energy emission reduction based on availability of renewable energy: depending on the scenario between 2031-35

## 6 The global climate tax: economic stimulus

Tackling climate change is not expensive, on the contrary: it is a huge development and business opportunity – probably the biggest business opportunity since WW2. Jobs lost in the fossil energy industry will be more than compensated in new industries (the renewable energy industry), higher purchase power and the investments facilitate innovation & growth, and the total global energy bill will be lower after the transition period of 5-10 years by 1-2% of global GNI (or GDP) – that U\$ 900 billion plus available for other purposes, every year.

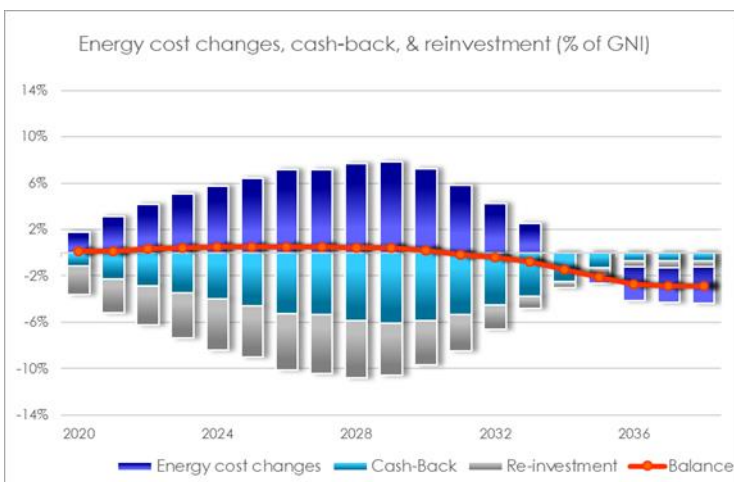


Global energy cost as % of before, during and after the global climate tax for the different scenarios

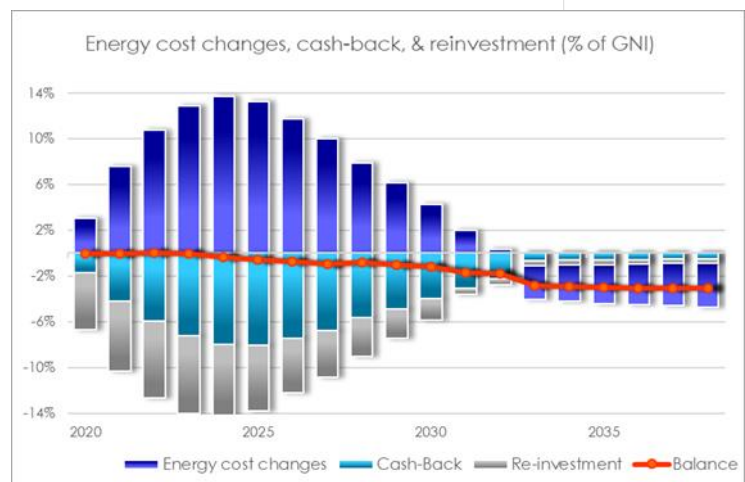


Cash-back per person and year – for each global citizen, in U\$ per person

In the short term, and during a transition period of 5-10 years, the prices of energy intensive goods and services will increase. In parallel, the global cost for energy demand is rising as a result of the tax. However, in the soft scenario, the cost does hardly rise above fluctuations seen in recent years due to changes in crude oil spot prices, i.e. the global economy should not be affected increased energy cost.



Soft scenario: energy cost changes are modest and do not surpass investments and cash-back generated



Emergency scenario: while energy cost changes are somewhat significant, purchase power is not affected

In addition, redistributing the tax revenues will ensure the level of purchase power of citizens remains equal, and for lower income brackets increase purchasing power.

Investing 40% of the tax revenues leads higher availability and falling cost of alternatives (renewable electricity, lowering the total energy cost).

The re-imbursement to the lower incomes brackets leads to higher consumer spending, while the technology/infrastructure investments will more than replace the fossil industry, both in terms of jobs and growth. The overall impact of the global climate tax is expected to be **positive after a maximum of two years, and from there on, very positive.**

A global carbon tax essentially makes money go around faster. It frees capital for combating climate change through rapid dissemination of renewable energy and intelligent efficiency technologies while simultaneously phasing out climate-damaging energy forms. The cash-back in the hands of the below-average income segments will put the additional money back into the macro-economy. The implications of the global climate tax on the global economy is positive.

**Why renewables will soon be significantly cheaper than fossil energy - anyway**

	Fossil	Cost	Renewable
<b>Capital cost</b> (One-off: building the infrastructure)			
<b>Management &amp; maintenance cost</b> (recurring: personnel, spare parts)			
<b>Operational cost</b> (recurring: materials, fuel)			<b>No cost</b>

Generating electricity has three major cost parts: building the infrastructure (power plant, turbines, ...), maintenance (employees to run & maintain the infrastructure), and operational cost (fuel). **With renewable energy, there is no fuel cost.** Wind is – measured by Levied cost of electricity – already now the cheapest electricity source. This cost reality is already reflected in investments in electricity generation infrastructure with more than half of global electricity investments allocated to renewable projects. While cost of renewable energy will further fall with the investments generated through the climate tax, fossil generated electricity becomes more expensive and therefor unattractive for owners and investors.

## 7 Barriers to implementation

There are technical barriers, to achieving a fossil-free world, and there are human barriers to implement a global climate tax. The main technical barrier currently is the still low capacity of batteries to temporarily store electricity, and the lack of batteries able to power commercial airplanes. Until batteries are in place, there are alternatives such as power to gas (e.g. surplus renewable electricity is used to produce natural gas, which powers gas power plants in times of need), albeit with a lower efficiency grade. The cost pressure will accelerate the development of high-capacity batteries and electric air-transport. The technology to produce renewable electricity is already in place, at costs that are more than competitive with fossil energy generation: the technical barriers are not really barriers.

Human barriers present a bigger challenge. International conferences on climate change have concentrated on emission reduction targets. However, how to achieve and manage emissions reductions has never been an issue. No wonder that every single country is failing to achieve even the modest reductions agreed upon under the different climate treaties. There are also local, regional and even international cap-and-trade systems, the Clean development mechanism, and local/regional tax schemes. But **none of the tried approaches has made a meaningful difference.**

In short: it's the politicians. It's "the markets". And the large corporations that are afraid of a free market without state support and subsidies. And the owners of those corporations. In short – all those who perceive to be profiting from the status quo.

The main human barriers include (but are not restricted to) -

- Lack of political will and believe
- Lack of global agreement
- The influence of large players who consider their business model threatened (the fossil industry & OPEC countries)
- The unwillingness of the financial markets to stop investing in, and seeking rent of, investment in the fossil realm
- The lack of a working approach/system to actually achieve emission reductions in practice and across all sectors, with minimal prohibitions and without negative impact on the economy

It is hard to say whether the political inactivity is due to incompetence, unwillingness, or lack of believe in common global action. Regardless of the deeper reasons for the political inactivity: **it is clear that the current political mainstream – and/or current political figures – will not provide a meaningful solution.**

**The solution therefore has to come from somewhere else.**

Luckily, we live in the 21<sup>st</sup> century. In countries that call themselves "democracies". Our leaders and politicians are elected to face up to the challenges of our time. And they are elected to serve and protect the people. So maybe, we can force their hand. **Our children on climate strike and manifestations can make themselves heard.** If it is enough of them, globally, they can force the hands of the politicians – so that on the next conference, a global climate tax is agreed and implemented immediately. **It is to be hoped that the youth movement can accumulate sufficient energy and mobilisation to force the politicians' hands.**

## 8 Conclusions

Climate change is here. Yet there seems to be no solution that politicians are able and/or willing to agree upon. A possible solution that does not negatively affect the economy while financing a clean renewable energy infrastructure is a global climate tax.

- Climate change is a global problem. Climate change can only be tackled on a global level.
- Politics is either unable or unwilling to face the challenges.
- The economics of climate change is simple: there needs to be a **cost attached to GHG emissions**.
- **A fiscal neutral global climate tax** that reimburses citizens (climate dividend) and simultaneously finances the development of a renewable energy infrastructure **could reduce emissions to nearly zero while stimulating the economy**
- A global climate tax could reduce emissions to nearly zero by 2035, while lowering the global cost for energy by 30-50% (2-4% of World GDP)
- For reasons not necessarily easy to understand, such a global agreement currently seems politically impossible.
- OPEC countries, the fossil industry, the air transport industry, and potentially animal farmers are expected to lose income and therefore exercise strong opposition
- **The global youth climate movement** has completely altered the urgency and the discussions around climate change
- Information, awareness and constant pressure from the street seems the only way to force politicians to act.

The climate youth movement is probably the most powerful agent of change.

## Scenario calculation and data sources

Key assumptions made for all scenarios:

- World population, GNI and energy usage (end-user demand) grows at the average of the last 10 years
- Each additional energy unit of renewable produced energy replaces a fossil unit
- Historical energy data is derived from IEA, IMF, and BP Energy Statistics
- The spot price for oil is assumed to grow with global inflation (before climate tax), but expected to slight fall after 2025 due to sinking demand
- Renewable cost projections are based on historical trends, projections made by IRENA, and own calculations
- Provision for the losses of the increased need for storage of renewable electricity have been included
- Not all emissions can initially be taxed, but the rate is increasing over time
- Assumptions have been verified through interviews with experts

## Data sources

- World Bank
- IMF commodity database
- IEA energy data
- BP energy statistics
- IRENA

## About this Report

"Change Climate Change" is published by Global Climate Tax Now, under the Creative Commons Share-Alike International License 4.0. Re-publication of full or partial findings of this report and available on the global climate tax website, as well as use of findings for research purposes is free & welcome. For commercial use, please [contact us](#).

The contents of this report have been researched, calculated and compiled by SolAbility. SolAbility is a Swiss-Korean competitiveness think-tank with a successful history in management consulting.

Further information: [www.solability.com](http://www.solability.com)  
[contact@solability.com](mailto:contact@solability.com)



## About Global Climate Tax

Global Climate Tax Now is a non-profit association.

We are slightly concerned about what science is telling us.

We believe that action needs to be taken.

Now.

Luckily, tackling climate change will also save our economy.

Global Climate Tax



Further information: [www.globalcarbontax.org](http://www.globalcarbontax.org)  
[contact@globalcarbontax.org](mailto:contact@globalcarbontax.org)

Change Climate Change

Global Climate Tax



[www.globalcarbontax.org](http://www.globalcarbontax.org)