

COP21 Implementation: Strategies or “Muddling Through”

Research Article

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Abstract

The COP21 Agreement among the governments of the world obliges them to initiate the process of halting or reducing the emission of greenhouse gases, especially CO₂s by 2018-2020. In the social sciences, the commitment calls for decentralised policy-making by the states or nations. The technical term is policy implementation. But the lessons from the policy sciences is that implementation, viz successful implementation is hard to come by. Avoiding lengthy and transaction costly discussions about economic policy measures, the article suggests a simple administrative solution: Dismantle coal fired power stations as much as possible; put strong filters on the remaining ones until they can be abandoned; compensate the biggest emitters of CO₂ from the new super fund. Awaiting the massive transfer from fossil fuels to renewables will be too slow process for stemming climate change, however desirable this is.

Keywords: GHG emissions; CO₂ emissions; Policy implementation; Coal energy; Reducing CO₂s

Introduction

It may be correct to hail the COP21 approach to the climate change problematic a turnaround for mankind, establishing with unanimity of governments of the states of the world that total CO₂ emissions are going to be halted in growth, reduced considerably and finally completely abolished, even if it would take the entire century! This is all ambitions, promises, talk – i.e. *intentions ex ante*. An entirely different matter is the set of *outcomes ex post* – in reality the important aspect of the COP21 approach.

The COP21 Agreement is meant to guide the UN and 195 governments/states for almost the entire century. Yet, it is somewhat opaque or ambiguous:

- Is it a treaty or just a promise, i.e. how is it binding?
- Can its implementation be evaluated in a neutral and objective fashion?
- Can the overall objective be broken down into measurable

middle range targets?

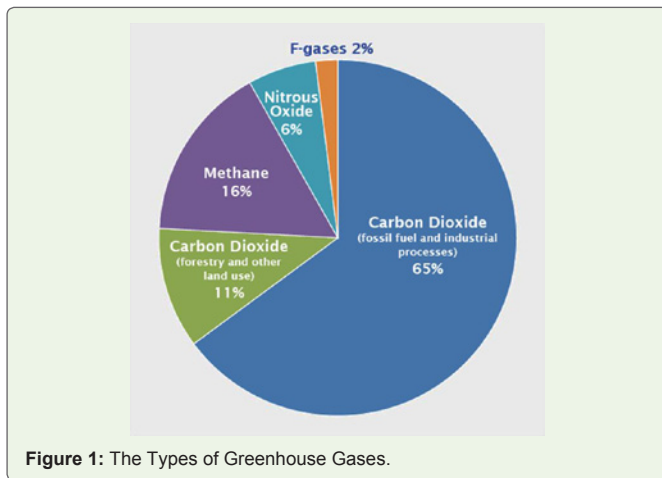
- Is there some continuously operating overview mechanism?
- Are there so-called implementation fixers?
- How is the super fund to be operated and by whom?

Given that the global ambition is to show policy results already around 2020, much attention must be devoted now to implementation issues. Thus, one wants to halt the progression of CO₂ emissions as early as possible and rescue what is left of the rainforests. How to implement such objectives on a global scale?

The signatories of the COP21 Agreement would benefit from taking stock of the huge debate about rational policy-making in the social sciences. Is there a rational strategy for decarbonisation in the nations of the world? If so, will it be implemented?

Implementation Theory

The distinction between intention and outcomes became the



The Chief Target: CO2 Emissions

Figure 1 presents a nice overview of the greenhouse gases and the problematic targets of halting CO2 and stop deforestation. Since CO2 emissions from fossil fuels and deforestation make up such a large part of the greenhouse gases, they appear promising for policy-making. Reducing deforestation would be doubling significant, as trees and vegetation absorb CO2.

Now, how is the objective to decrease CO2 emissions to be achieved? The main responsibility would fall upon the states, with various levels of governments involved. So the question of implementation becomes: Do the implementers know what to and are they will to do it?

The outcomes of the implementation process depend upon three abstract things:

- Information: technology, innovative skills, organisational leadership,
- Motivation: belief in the objectives, willingness to contribute, endurance,
- Resistance: conflicts, delays, misunderstandings, goal displacement

In an implementation process that takes several years, these three elements are bound to change or be transformed. This explains why a policy ex ante may be very different in outcomes ex post, as well as why Wildavsky underlined learning and evolution. The COP21 Agreement is bound to meet resistance, open or tacit, because there are economic costs involved in implementing it. Now, what are the means available to the urgent implementation of this objective: decarbonisation?

Decarbonisation

CO2 emissions come from almost every sector in the economy, according to Figure 1: energy production, transport, industry, agriculture, forests and biomass, housing, as well as water and waste. Countries will have to start looking at their specific situation in order to devise a set of decarbonisation policy measures:

central point in the social theory of *implementation*, created by late American Aaron Wildavsky (1973, 1984) [1,2]. The gulf between the enactment of policy *ex ante* and its implementation *ex post* is beset by paradoxes and ambiguity, the more so the loner the time spa between ex ante and ex post. He studied the following difficulties:

- Un-intended and un-recognizes outcomes
- Flaws in the policy theory about ends and means
- Resistance to change among locals
- Incoherent outcomes necessitating new policies
- Misunderstanding between central policy-makers and local implementers about objectives and restraints.

Wildavsky rejected the idea of complete implementation or fully successful implementation from a static point of view, as he observed goal conflicts, different recommendation of means and various interpretations of the outcomes, from positive to negative. Instead, implementation of policy decisions at the centre by local implementers had to be conceived as an evolutionary process where learning and change played a major role – a dynamic conception.

In an important paper, Paul Sabatier (1988, 1989) argued that successful implementation putting the goals into real life outcomes requires not so much formal organisation and hierarchy of command [3,4]. The so-called “*fixers*” are the key players in the stage ex post the enactment of policy decisions, and they can come from various organisations creating a powerful informal group to handle implementation.

Finding the “implementation fixers” to manage CO2 emissions and forest protection will prove tricky, as players at various levels – international, national, regional and local – have to cooperate, including the civil society organisations.

Implementation, or the carrying through of policy, is fraught with strategic behaviour, including opportunism with guile. How this is to be controlled in the COP21 approach is going to be a major headache. And the process of implementation will be long.

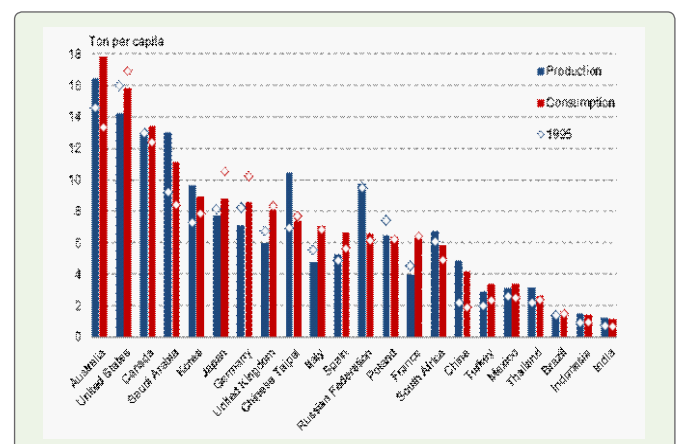
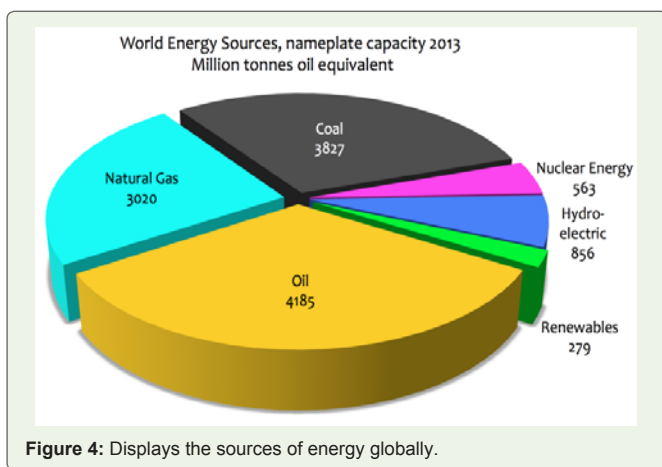
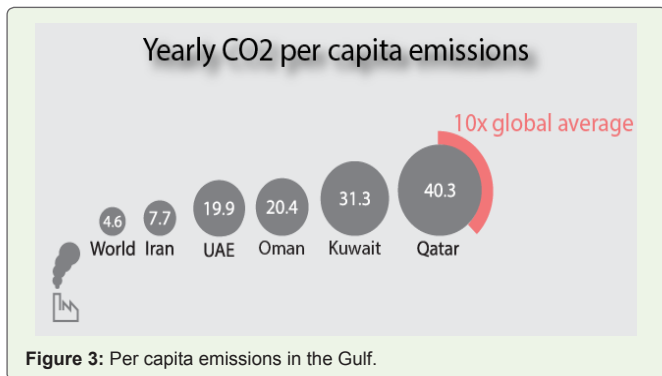


Figure 2: Per capita CO2 emissions, production and consumption, 2005-09.



- 1) Massive use of solar power;
- 2) Increase water power;
- 3) Closing down of coal power plants;
- 4) Put coal filter on every coal plant;
- 5) CCS: trapping and separating the CO2 from other gases, transporting this captured CO2 to a storage location, and storing that CO2 far from the atmosphere ;
- 6) CDR: Sucking CO2 from the atmosphere;
- 7) Employing much more of natural gas;
- 8) Expand wind energy;
- 9) Built more nuclear power stations; use thermal and wave power; better mileage on cars and trucks; natural gas on buses; no subsidies to diesel.

Decarbonisation also involves forestry and agriculture: Eliminate or reduce forest fires; Agriculture: change production methods and food habits to reduce massive emissions of CO2 and also methane.

The policy mix chosen for decarbonisation will depend upon the country situation with regard to both emissions and energy sources. Nations that use lots of coal must reduce this dependency quickly. Solar and wind power must be resorted to on a much grander scale. Compare little Denmark that has 40 per cent coming from wind

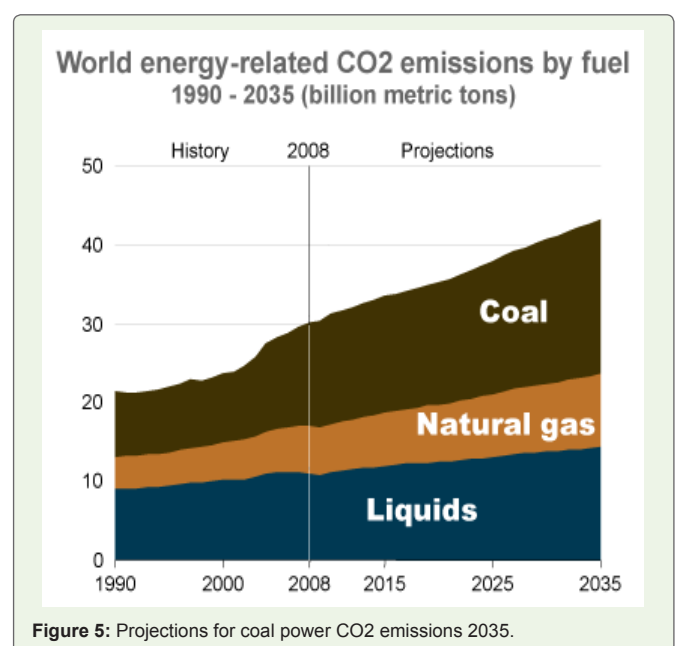
power sources. Can this be imitated in other bigger countries where it is windy or sunny?

Technological innovations are going to be of utmost importance, like the storing of electricity from solar power, the massive use of LNG, improved mileage of cars and electricity power cars, new filters on fossil fuels burning stations to capture CO2, etc. This is the great challenge for engineers and natural scientists in this century.

However, the best solutions do not come about automatically, which the social scientists would remind about. There are so-called “veto-players” in the implementation of the CO21 Agreement:

- Vested industry interests coal, car, agriculture, etc.;
- Quick profits in energy and agriculture;
- State sovereignty concerns;
- A narrow and myopic view on economic development/growth;
- The shipping industries and air transportation industries polluting a lot with little demand for decrease.

The feasibility of policy implementation has been discussed back and forth in political science, public administration and economics. The pessimism of Wildavsky is shared by those who reject the possibility of rational decision-making. Instead, they favour the Herbert Simon model of “bounded rationality”, which implies that somehow and at some point in time some policies but not all meet with a few favourable outcomes – government is muddling through (Charles Lindblom). Rational policy-making was rejected as unfeasible by major scholars theorizing policy-making, stating that rational plans about ends and means were merely precepts (D. Waldo), or wishful thinking blending politics and administration, values and science (P. Appleby). Perhaps global policy-making in relation climate change is



a “garbage can”, meaning that solutions chase an unknown problem in total confusion, successful implementation is just luck and when new people take over they come up with other policy identification (J. March and J.P. Olsen).

Yet, global warming cannot wait for the resolution of the feasibility of rational policy-making, as things press more and more. Thus, the total size of CO2 in the atmosphere keeps going up, despite a small reduction in CO2 emissions 2015: December 6 - 12, 2015: 401.31 ppm; December 6 - 12, 2014: 398.93 ppm; December 6 - 12, 2005: 379.67 ppm. One may tentatively identify a few reasonable precepts for a global emission reducing policy.

Implementation Strategies: A few rational precepts

Each nation has to develop its own strategy in order to comply with the COP21 Agreement. The choice of policy measures for implementation of the goal of halting and reducing greenhouse gases (GHG) or CO2 will take the basic parameters of the country situation in terms of energy consumption into account. One may identify certain aspects of the entire implementation project that somehow enters how the COP21 framework will fare.

- 1) When targeting CO2 emissions in policies, it is always the real outcomes that matter, namely: i) size of total emissions

of CO2, ii) total amount of CO2 in the air. Even if the first no longer increase, the second may still augment.

- 2) The global warming problematic is not symmetrical among nations, as a few countries are responsible for much of the emissions of GHG:s or CO2:s.

It is the total size of the GDP that makes a country a major emitter. The fact of the matter is that there is a small set of huge polluters of GHG:s or CO2:s. If they start decreasing, it would mean a lot. Most other countries are too small to play a big role in the global warming game.

Table1 lists the 2014 annual CO2 emissions estimates (in thousands of CO2 tonnes) along with a list of emissions per capita (in tonnes of CO2 per year) from same source. The data only considers carbon dioxide emissions from the burning of fossil fuels and cement manufacture, but not emissions from land use, land-use change, and forestry. Emissions from international shipping or bunker fuels are also not included in national figures, which can make a huge difference for small countries with important ports. The top 10 largest emitter countries account for some 65 per cent of the world total.

During 2015, Indonesia has moved up sharply on the list due to

Table 1: Largest emitter 2014 (Wikipedia).

Country	CO ₂ emissions (kt)	Emission per capita (t)
World	35,669,000	5.0
China	10,540,000	7.6
United States	5,334,000	16.5
European Union	3,415,000	6.7
India	2,341,000	1.8
Russia	1,766,000	12.4
Japan	1,278,000	10.1
Germany	767,000	9.3
International Shipping	624,000	-
Iran	618,000	7.9
South Korea	610,000	12.3
Canada	565,000	15.9
Brazil	501,000	2.5
Saudi Arabia	494,000	16.8
International Aviation	492,000	-
Mexico	456,000	3.7
Indonesia	452,000	1.8
United Kingdom	415,000	6.5
Australia	409,000	17.3
South Africa	392,000	7.4
Turkey	353,000	4.7
Italy	337,000	5.5
France	323,000	5.0
Poland	298,000	7.8

Table 2: Pounds of CO2 emitted per million British thermal units (Btu) of energy for various fuels.

Coal (anthracite)	228.6
Coal (bituminous)	205.7
Coal (lignite)	215.4
Coal (subbituminous)	214.3
Diesel fuel and oil	161.3
Gasoline	157.2
Propane	139.0
Natural gas	117.0

the deforestation of Kalimantan. By targeting the largest emitters of CO2, major reductions are feasible.

- 3) One should not target CO2 emissions per capita, because mostly small countries rank high but with small total emissions.

It is only fair that all countries contribute in a global climate change policy according to the COP21 framework. But the huge gains are not to be found in Figure 2 with emissions per person.

Although the data in Figure 3 is a little bit old, it shows that most huge emitters of CO2 totally speaking do not have the largest CO2 emissions per capita, except the US. Today the biggest emissions per capita are to found in the Gulf (Figure 2).

One should of course require that these gigantic emitters – per capita – form part of the CO2 approach, but from the point of view of a decisively large reduction of CO2:s, they matter little. The implementation of COP21 Agreement must target the emitters in Table 1.

- 4) There is no evidence for an environmental Kuznets’ curve when it comes to GHG:s or CO2:s. An EKC would imply that economic development or growth solves the global warming problem, as emissions per capita would go down with higher GDP per capita.

However, the evidence points at the opposite. The richer a country becomes, the more energy it consumes both totally and per capita. On the other hand, it holds that the emissions per GDP unit falls, but this is compensated by increases in GDP!

Thus, the problem will get worse if nothing is done with economic growth as the first priority globally.

- 5) Targeting GHG:s, one should focus on the largest component, namely CO2:s. One may also wish to seek to reduce methane emissions, but CO2 reduction would have the largest impact and probably quickest.

CO2 emissions constitute more than 75 per cent of all GHG:s with 65 per cent coming from industry, transportation and housing as well as 10 per cent from forestry and land use.

- 6) Targeting CO2 emissions, one would like to know where they come from. It is first and foremost coal that is the culprit.

Now, the emissions such as CO2 vary by various fuels of energy. Different fuels emit different amounts of carbon dioxide (CO2) in relation to the energy they produce when burned. To analyze emissions across fuels, compare the amount of CO2 emitted per unit of energy output or heat content Table 2.

The amount of CO2 produced when a fuel is burned depends upon its carbon content. Heat content, i.e. the amount of energy produced by a fuel, is a function of the carbon (C) and hydrogen (H) content of the fuel. Thus, heat is produced when C and H combine with oxygen (O) during combustion. Natural gas is primarily methane (CH4). It is important to point out that methane has higher energy content relative to other fuels. It has a relatively lower CO2-to-energy content. Water and various elements, such as sulfur and non-combustible elements in some fuels reduce their heating values and increase their CO2-to-heat contents Figure 4,5.

Besides targeting coal replacing it or employing filters to reduce CO2:s, one must look at energy efficiency globally, from one country to another.

- 7) If coal is replaced as a major energy source by natural gas or renewables, the COP21 objectives would be implemented no doubt.

Conclusion

COP21 and Coal Power

It seems reasonable to target coal first and foremost. Nations should be convinced not to construct them anymore, to close them down if old, and to put strong filters upon them if young. This policy recommendation should be followed by the largest emitter, listed above. If this policy is costly to implement, then the super fund should be employed for compensation. Removing the CO2 emissions from coal would go a long way towards saving Planet Earth and its invaluable environment for sustainable life conditions for all species, including humans.

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