The Future of Coal, the Paris Agreement & Conflict Resolution: *Google Search Results as an Aid to Resolve the Controversy*

Dr Ted Christie, 22 November 2019

Disclosure Statement

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Commencing from 2013, **a series of articles has been posted by the author on the future of coal under the UN climate change treaties.**

TAGS: *Paris Agreement; COP25; coal; future; risk; best available science; sustainable development; equity; scientific round-table; positions; interests*

> *"The future of coal remains an urgent question. Global trends mask different regional stories – while climate and air quality policies, the emergence of shale gas and the collapsing cost of renewables have all added to coal's decline among many member states of the OECD and in China, rising demand in parts of Asia have largely offset these falls…"*
>
> Siân Bradley (2018)

A Google search of the tags – 'future of coal' –
produced over 200,000,000 results.
The web link results[1]
extracted from the primary pages of the Google search engine,
provide a framework to manage and resolve
the information conflict over the future of coal.

The divergent viewpoints found in the Google search persist to polarise the scientific community and public opinion.

From a conflict resolution perspective,
the controversy over the future of coal from the Google search
can be reduced to two alternative positions: -

1. *Priority given to phase out of coal mining and coal-based energy, immediately. This includes emission reduction technologies, such as CCS, which do not exist on a meaningful scale at this stage; reliance on them distracts from reducing emissions now;* ***OR***

2. *The alternative viewpoint is to recognize that a window of opportunity now exists in which to shape the future of coal - but the momentum for demand and support for clean coal technologies needs to grow quickly.*

A problem-solving pathway is required to resolve the information conflict over the future of coal: One that focusses on the "***interests***" (i.e. the "***needs***" and "***concerns***" that must be satisfied) – rather than the "***positions***" held.

But the pathway must resonate with the legal obligations imposed by the Paris Agreement to meet its long-temperature goals: *To limit global warming by 2100 to 1.5^{o}C – 2^{o}C above pre-industrial levels.*

The Paris Agreement and Emission Reductions

At the date of this post, 187 Parties (*of the* 197 *Parties* to the *UNFCCC*) have ratified the Paris Agreement. Ratification signifies that the Parties are to be legally bound by the terms of the Agreement.

Terms to implement the Paris Agreement include an obligation for the Parties to reduce GHG emissions "in accordance with the ***best available science"***, "on the basis of ***equity"*** and "in the context of ***sustainable development*** and efforts to eradicate poverty": **(Article 4)**.

These three terms in the Paris Agreement should be seen as relevant considerations – essentially cornerstones – for decision-making over the future of coal.

(a) Best Available Science

Best available science (or some variant of it such as *"best available scientific knowledge"*) is a term commonly used by politicians and Government agencies when environmental management and protection is in issue. However, it is rarely, if ever defined. In this regard, the UNFCCC and the Paris Agreement are but one example.

However, for the *"best available science*" to be objective for decision-making over for the future of coal, it must acknowledge whether all potential sources of an ***information (or data) conflict*** are not in issue.

The source of scientific data conflicts arise from
a lack of information (i.e. incomplete or unavailable),
misinformation, scientific uncertainty,
different interpretations of the same information or
different opinions as to what information is relevant and reliable.

(b) *Sustainable Development*

Overall, the viewpoints from the Google search reflect the future of coal from the four objectives of sustainable development. But individual viewpoints generally considered only one - sometimes two – of the objectives: -

- ***"ecological"*** *e.g. emission reduction targets of national action plans;*
- ***"economic"*** *e.g. cost competitiveness of mitigation measures;*
- ***"social"*** *e.g. protecting the most vulnerable and alleviating poverty; &*
- "***cultural***" *e.g. affordable and secure energy for developing countries.*

In this regard, the Google search is not a surprising outcome.

Transitioning to a low carbon economy
and ultimately, to a decarbonisation of the global economy,
is a classic sustainable development problem to resolve
The dominant guiding principle for achieving sustainable development
requires the multiple and competing objectives
- ecological, economic, social and cultural -
to be assessed and balanced equitably.

But what is surprising was the failure of the viewpoints obtained from the Google search to consider emission reductions and the future of coal within the framework of sustainable development.

(c) *Equity*

The term "equity" is not defined in the Paris Agreement. *The **plain** and **legal** meanings of **'equity'** are similar: **"fairness", "justice".***

Decision-making on emission reductions and the future of coal to implement the Paris Agreement on the basis of equity, requires an outcome founded on fairness, justice and integrity of the decision-making process.

The Future of Coal: *Conflict Assessment and Common Ground*

Finding solutions for environmental conflicts - such as the future of coal – should be based on a long-accepted principle of conflict resolution: The need to focus on "***interests***" (i.e. the "***needs***" and "***concerns***" that must be satisfied) – rather than the "***position***" held.

Finding ***common ground*** on *future of coal "interests"* is part of the process of *conflict assessment*. It facilitates joint problem-solving enabling Parties to move forward to the *conflict management and resolution* stages.

In this regard, the following facts arising from the Google search should not be in dispute and could be regarded as "*common ground*": -

- ☑ *Coal is the single largest source of global temperature increase. T*he ***International Energy Agency (March 2019)*** *"found that CO_2 emitted from coal combustion was responsible for over 0.3°C of the 1°C increase in global average annual surface temperatures above pre-industrial levels".*
- ☑ *Global concerns about air pollution and CO_2 emissions and the international trade in coal are well-founded. Available clean coal technologies currently in use to reduce coal-plant emissions remain problematic for coal posing an unacceptable risk to secure the future by effectively addressing the Paris long-term temperature goals.*
- ☑ *For coal to have a future, greater efforts are needed by government and industry to implement less polluting, more efficient advanced clean coal technologies - not simply to become a much cleaner source of energy - but, more critically, emission reductions that meet the Paris Agreement's long-temperature goals and timelines.*

Any consideration of the future of coal should counterbalance the common ground against the following ***interests*** – rather than the ***position*** - on coal's future:

- The following projections by the International Energy Agency are relevant for evaluating the **need** for coal in the future. Coal currently supplies around ***38% of total global electricity***. In 2040, it will still be the largest single source of ***electricity generation at 26%*****.**

- Assuming these projections are not in dispute, would adherence to the position that prioritizes the immediate phasing out of coal mining and coal-based energy be consistent with the **need** to adhere to the *Paris Agreement's equity obligation – fairness and justice*?
- At this stage, there is **concern** that the *best available science* from clean coal technology R&D, is at best "*incomplete*" or "*unavailable*".
- This being the case, **concern** whether objective decision-making could now be made for the future of coal.
- Given the IEA finding that coal will remain the largest single source of electricity generation in 2040, is there a **need** under the Paris Agreement's *equity* obligation to promote accelerated R&D into clean coal technology to determine its contribution for meeting the Paris Agreement's long-temperature goals; and within the Paris timelines?
- Could adherence to a position that prioritizes the immediate phasing out of coal mining and coal-based energy also lead to **concern** for compliance with the Paris obligation for *sustainable development*?
- Should COP25 consider the **need** for a window of opportunity to promote an accelerated, ambitious global R&D program into clean coal technologies, given the contradictory opinions on the future of coal?

The goal*: To determine whether the international trade in coal poses an unacceptable risk for reaching the goal of net zero emissions by 2050*

- The **need** for funding will be crucial for any global R&D program into clean coal technologies. Funding should be based on the ***"polluter pays" principle***. The UNFCCC Parties that export coal - as well as Parties that import coal who are also the major contributors of global CO_2 emissions – should be targeted to pay the levy. ***For example: -***

  - *In 2016, the world's top five countries that imported coal - together with the top five countries that exported coal – contributed almost half of the global CO_2 emissions in 2017.*
  - *In order, the world's **top 5 countries that imported coal** (Their % of global CO_2 emissions in 2017 are shown in brackets) were: PR China (27.2%); India (6.8%); Japan (3.3%); South Korea (1.7%); Chinese Taipei (? %).*

- *In order, the world's **top 5 countries that exported coal** (Their % of global CO_2 emissions in 2017 are shown in brackets) were: Australia (1.08%); Indonesia (1.3%); Russia (4.7%); Colombia (0.2%); and South Africa (1.3%).*

Sources: *International Energy Agency (2017); World Economic Forum (2019); World Coal Association- World Coal Production (2018); Statista (2019)*

The Future of Coal: *Conflict Management ~ Scientific Round-Table*

Conflict management provides science
with the way forward to have the definitive role
to review and to evaluate R&D into clean coal technology.

The role of science is not only to ensure the best available relevant and reliable science prevails; but also, to assess the significance that the application of R&D into advanced coal technologies has in shaping our energy future under the Paris Agreement.

The conflict management process
that warrants consideration by COP25
*is the **scientific round-table**.*

Ideally, the scientific round-table should be convened by the IPCC. The representatives at the round-table would be scientific experts of the UNFCCC Parties who are the major exporters and importers of coal.

The role of the round-table would be to accelerate R&D on advanced clean coal technologies for projects reviewed and approved by the round-table; and then funded by a global ***"climate risk management levy"***.

The scientific round-table is based on a joint problem-solving approach. Its goal would be to evaluate each completed project, funded by the research levy, for its contribution to the Paris Agreement's goal of limiting global warming by 2100 to *1.5°C – 2°C* above pre-industrial levels.

The round-table outcomes then become the foundation for UNFCCC Parties to share, equally, the *best available relevant and reliable science* in the final stage – negotiations to resolve the global controversy on the future of coal.

The round-table process ensures that information/data conflicts are resolved before negotiations commence.

The round-table promotes objective decision-making as it is the catalyst for achieving meaningful involvement of UNFCCC parties as "*no cards would be held under the table"* when negotiating the future of coal at COP.

Conclusions

1.0 The Google Search results on the "future of coal" illustrate the contradictory positions held on this issue.

2.0 While an international consensus is emerging for the position of a fast and orderly phasing out of coal mining and coal-generated energy, new coal supply and demand infrastructure continues to be developed. *Clearly, there is a need to resolve, what has become a perverse question*: *The future of coal.*

3.0 The log-in-the-road for resolving this question, is whether any decision, now, would enable the Paris Agreement's obligations to be implemented "on the basis of *equity"* - as well as "in accordance with the *best available science*". Clean coal technology R&D - at this stage - does not resonate with the Paris long-term temperature goals.

4.0 For too long scientists – compared to politicians and lawyers - have had little direct control in resolving public interest environmental conflicts. A problem-solving pathway is required to that incorporates a definitive role for science to resolve the controversy over the future of coal.

5.0 The challenge for COP25 is to promote a pathway that counterbalances the ***need*** for objective decision-making with the ***concern*** over the lack of the best available science on clean coal technology.

The essential complement to this article is the author's article, posted on October 2019, that focusses on a pathway for deciding the future of coal having three cornerstones that are interdependent and mutually supporting: An International Treaty for Trade in Fossil Fuels (based on CITES), global warming R&D and equity.

[1] **End Notes:**

Key Points on the Future of Coal:
Outline of Divergent Opinions from the Google Search Results

Position: ***Immediate Phase Out of Coal Mining and Coal-Generated Energy***

i. *Coal power is dying … America's aging fleet of coal-fired power plants continues to shrink. New coal plants are not getting built …Coal just can't keep up with dirt-cheap natural gas and increasingly affordable renewables.* *(Posted September 2019)*

ii. *The clear lesson from climate science is that all coal plants should be closed as swiftly as technically achievable. The decline that has already started will have to be accelerated as governments manage the exit.* *(2016)*

iii. *A core issue is that coal is unable to compete with cheap natural gas and the rise of renewables ...* *(Posted November 2018)*

iv. *"Baseload power is not something that only coal can supply …it's not really something coal should supply, given its impact on the environment and the cost of building new power stations".* *(Posted June 2018)*

v. *A mix of different types of renewable energy sources can replace a conventional generating system and can be just as reliable in providing baseload.* *(Posted October 2019)*

vi. *Coal does not have an economic future in Australia … Renewables are stealing the march over coal in Australia, and the international outlook is for lower coal demand.* *(Posted September 2018)*

vii. *The UN Intergovernmental Committee on Climate Change has warned that limiting global warming to 1.5^{0}C by 2050 will result in a steep reduction in coal usage to supply 0-2% of electricity; renewables will need to supply 70-85%.* *(Posted October 2018)*

viii. *Coal's future in Australia is faced with uncertainty. The debate has intensified ... Mining companies must increasingly grapple with not just green protesters but anxious banks, under pressure from investors to limit financing for new, polluting projects.* *(Posted March 2019)*

ix. *"Set aside negative emission technologies – carbon capture and storage might play a role in absorbing greenhouse gases from the atmosphere in future, but they don't exist at a meaningful scale yet. Relying on them distracts resources from cutting emissions now."* *(Posted Oct. 2019)*

x. *"Increasing environmental regulations and fierce competition from renewable energies are increasingly making coal-fired power operate at a loss. According to a British think tank, coal-fired power plants are losing billions of euros every year, but energy companies say this is nonsense". EURACTIV Germany reports.* *(Posted October. 2019)*

Position: ***To Recognize a Window of Opportunity to Shape the Future of Coal***

i. ***Coal and renewables complement each other to meet India's growing demand of power in the next decade. One thing is certain. The coal industry would continue to thrive as long as it remains cost competitive.*** ***(Posted October 2018)***

ii. ***Coal fuels 'baseload' power stations, which run continuously and provide reliable continuous power. Renewables are criticised as being unsuited to provide baseload power because of their intermittency.*** ***(Posted Aug. 2011)***

iii. ***Greater efforts are needed by government and industry to embrace less polluting and more efficient technologies to ensure coal becomes a much cleaner source of energy in the decades to come.*** ***(2018)***

iv. ***The economic prospects of advanced coal technologies have never seemed so promising. Despite all of the attention given to wind and solar power, the development and deployment of advanced coal technologies may be far more important in shaping our energy future.*** ***(Posted April 2017)***

v. ***'Clean coal' plus carbon capture and storage could in theory mitigate the social and environmental costs of coal, but these technologies are not materialising at anywhere near the speed required. The momentum for demand and support for clean coal technologies needs to grow quickly.*** ***(Posted October 2018)***

vi. ***Australian coal was needed in developing countries to provide baseload power. India's per capita electricity consumption, currently one-tenth that of Australia, is expected to double by 2030 …*** ***(Posted March 2019)***

vii. ***The coal market report (2018) of the International Energy Agency predicts that global coal demand would remain stable over the next five years, as declines in Europe and North America are offset by strong growth in India and South East Asia.*** ***(2018)***

viii. ***The need for considerable dispatchable generation, critical ancillary services and grid reliability, combined with potentially higher future natural gas prices, and energy security concerns … create the opportunity for advanced coal-fired generation, for both domestic and international deployment*** ***(Posted November 2018)***

ix. ***The decline of coal in the US has had tragic consequences in certain coal communities. Working to ameliorate these impacts in affected communities is likely to be a much more effective strategy than attempting to revive the coal industry with policy…*** ***(Posted January 2019)***

x. ***The best known of several new coal technologies Increase the average efficiency rate of the U.S. coal fleet from 33 - 40%. Using these available technologies would reduce coal-plant emissions by between 14 – 21%.*** ***(Posted April 2017)***