

Red Hydrocarbon



This presentation is TOO long so I'm going to go FAST>>>>>>>>

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Can we really rely on LUCK or do we need a REAL solution to the problem of anthropogenic CO₂ >> >> climate change?

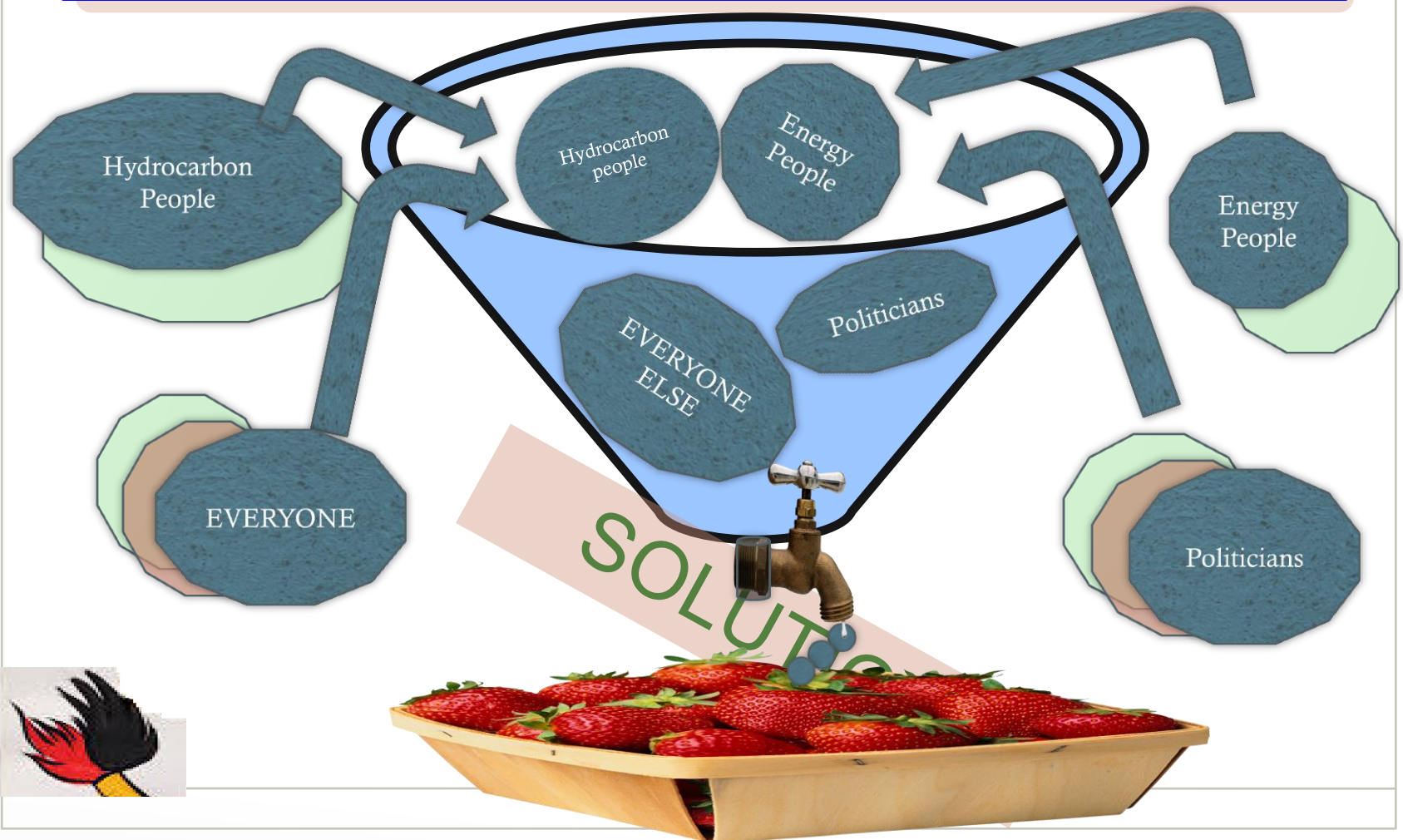
**Red Hydrocarbon's aim is to pursue a practical solution --
--HOW?.**



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Red Hydrocarbon's approach.



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Red Hydrocarbon is a new and we hope it is a ***practical*** way to combat climate change.

Existing approaches are;

- logically flawed,
- uneconomic,
- too slow – and

In 20 years – They just haven't delivered!

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WHY Red Hydrocarbon?

- *All* solutions to Climate Change are very expensive.
Whether achieved by: PV arrays*, wind generation, Nuclear, Geothermal, CCS or any other means
- Tax payers (and politicians) have showed that they will not pay
- Investment must come from conventional sources.
- So, each individual *project* must generate a proper return.

So each individual project must be:
INVESTABLE

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What about the alternatives?

** The € costs of PV arrays, may be falling but, a simple calculation shows that the land utilization for PV to replace just the current electricity generation in UK would demand 13% of the area currently occupied by ALL of the countries' motorways.*

** Land based wind generation requires even more land area and is more expensive overall*

** Off-shore based wind generation requires the same footprint albeit in the sea but is much more expensive again*

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The size of the task:

** The **world's** current power sector alone (emitting c.17% of CO₂ emissions) comprises c. 10,000 major power plants.*

** To modify or replace these @ €1 - 4bn each = c.€20tn
This does not address projected growth.*

**Nor does it address the 83% non electric energy demand.*

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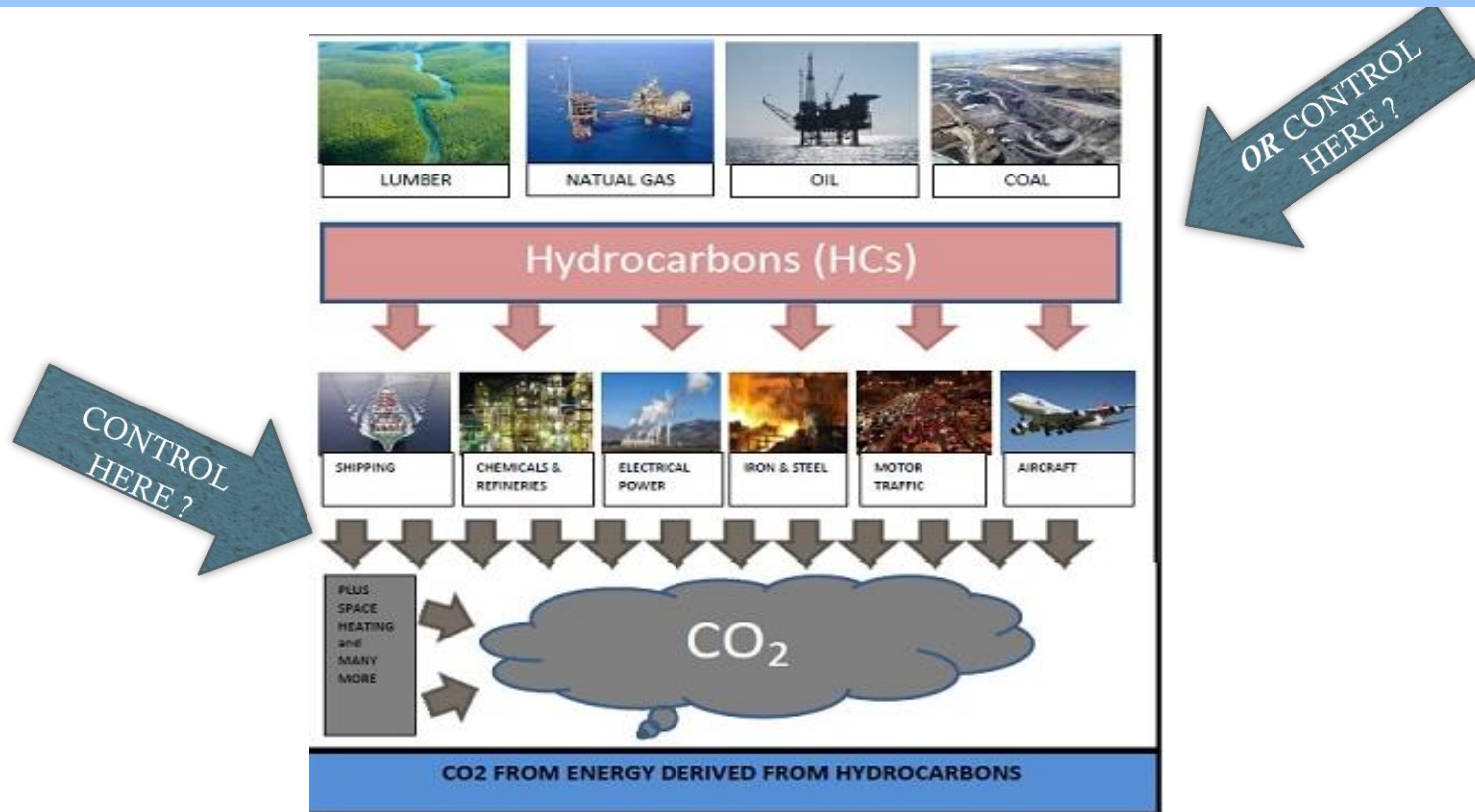
WHY Red Hydrocarbon?

- The complexity of trying over 20 years, to identify, measure and directly manage CO₂ emissions worldwide has so far defeated us.
- *We need to pull a different and more controllable lever.*

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CO₂ sources – control options?



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CO₂ sources – control options?

- All anthropogenic CO₂ arises from burning *HC*.
- So we should be looking to *HC* for our solution

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The *Red Hydrocarbon* solution

Red Hydrocarbon is based on the creation of a *dual market scheme* for hydrocarbons and the continuing use of *all* of the world's current energy resources, whilst:

- Not tapping the public purse.
- Not raising new taxes
- Not requiring public subsidies
- Providing very large, commercially sound and profitable new investment opportunities.

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CRITICAL AIMS of RED HYDROCARBON

1. Reduce world CO₂ emissions to *zero / tolerable*
2. Within an *acceptable time* frame
3. On a practical, *long term & sustainable* basis
4. Relying on *commercially available capital* investment
5. In a *market driven* system, independent of the public purse
6. *Absent* – competitive/discriminatory, taxes and public subsidies
7. Delivering *energy prices that people can accept*

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TWO UNDERLYING PRINCIPLES

1. A *Dual Market Scheme* for all hydrocarbons (*HC*) where:

Each *HC* markets characterised by the *END-USE* of its *HC*.

1 - *Black HC* :where its end use gives rise to CO₂ emissions

and

2 - *Red HC* :where its end use is carbon free
(“C_{free}”)



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TWO PRINCIPLES UNDERLIE Red Hydrocarbon

2. *Black HC* is gradually capped

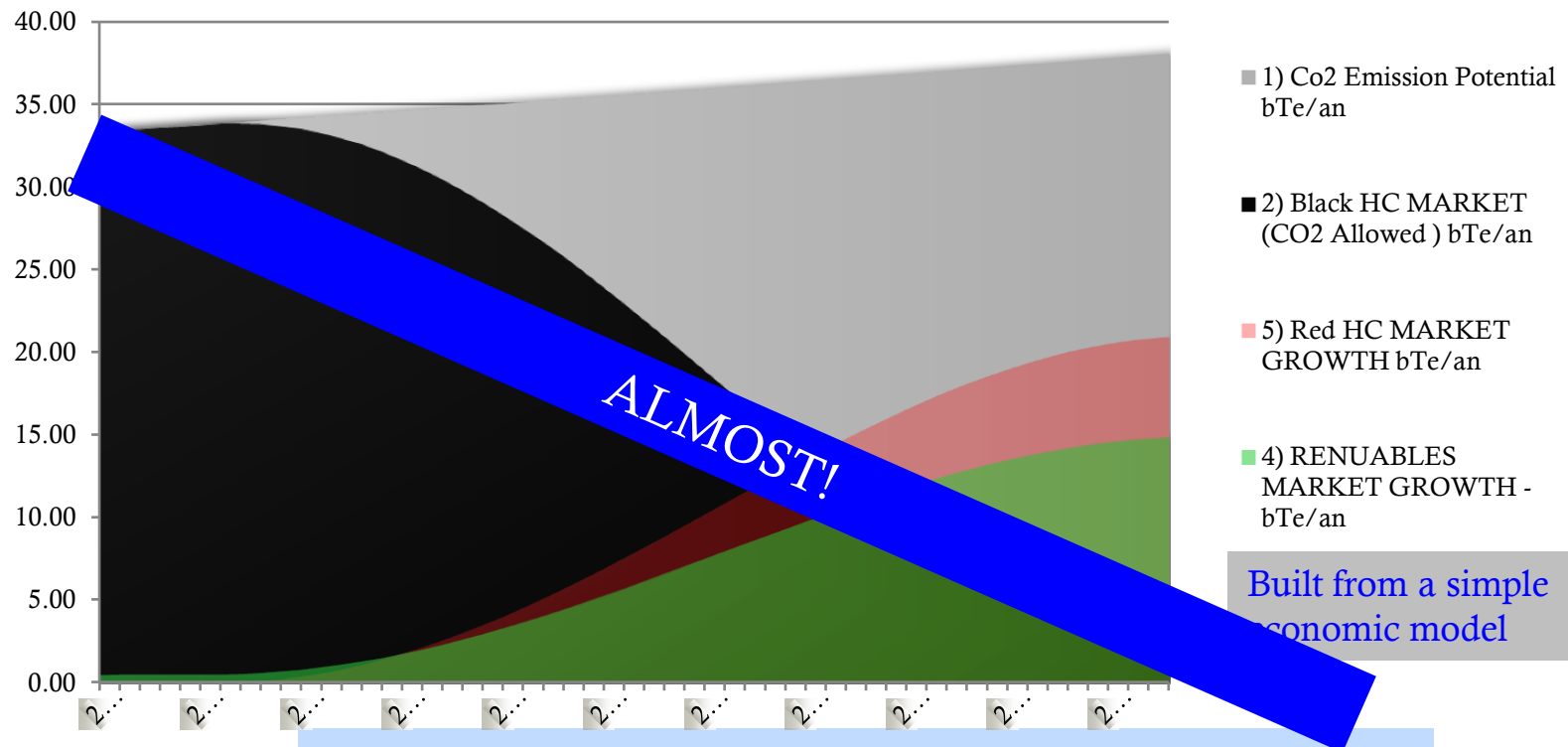
This is done progressively over (c. 50 – 100 years) voluntarily or by edict, to *exactly* mirror the *tolerable carbon trajectory* (TCT) envisaged by the IPCC.

The IPCC required carbon trajectory is therefore always achieved.

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THE OUTCOME



In simple terms - That's it!

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THE RED HYDROCARBON - MECHANISM

The basic mechanism is straightforward:

- The two HC markets work independently of each other as separate free markets – supply vs. demand.
- They interact commercially with each other through their downstream markets; energy market, the steel market, the fertilizer market.....etc.

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THE OUTCOME

- ✓ CO2 emissions reduced to a *planned and predictable decline trajectory*.
- ✓ The *traded volume* of *Black HC* trends down but its scarcity drives *market* price up.
- ✓ The *traded volume* of *Red HC* trends up as market demand increases.
- ✓ All *HC produced* is available to serve both *Black* and *Red* market demand.
- ✓ The total volume of *HC* produced/traded depends on this *overall demand*
- ✓ *Black & Red HC energy*, compete ensuring price comparability.
- ✓ *Red HC* market price will always therefore be lower than for *Black HC*
- ✓ Subsidies and special tax regimes no longer apply to either the *HC* or *energy* markets.
- ✓ The markets alone rule the prices for *Black & Red HC* and for *energy*
- ✓ Governments are not involved in pricing *HC* or *energy*.
- ✓ All types of **Cfree energy** (including **Red HC**) compete with one another.
- ✓ So, all types of **Cfree energy** (including **Red HC energy**) become **investible**.
- ✓ Commercial/ private investment alone support **investment** without state aid.
- ✓ *HC* industries become important investors in *Red HC energy* (R&D, design and build).
- ✓ *HC* industry, its economic value/expertise – preserved for climate change campaign.

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THE RED HYDROCARBON - MECHANISM

Whilst the basic mechanism is straightforward, there are more aspects to *Red Hydrocarbon* which explain some critical issues and add further flexibility and utility.

Red Hydrocarbon is set out in more detail in a foundation paper available at: www.redhydrocarbon.com

Red Hydrocarbon – **More Detailed aspects**



Preventing climate change is going to be a very large endeavour - - - (c.€50tn)¹ .

It must be *accomplished* in a relatively short time (50 - 100 yrs.).

¹. It is possibly **the largest and most concentrated non-military enterprise that the world has ever faced**. The power sector alone (generating just c.17% of CO₂ emissions) comprises c. 10,00 major power plants. To modify or replace @ 1 -\$4bn each will cost c.€20tn. This does not even address growth in energy demand nor the the other 83%, currently non electric energy emissions.

But, as the *price of energy* affects all of us, it will be *quickly absorbed* within the world economy in exactly the same way that the oil shocks of the '70s were absorbed.

Red Hydrocarbon – More Detailed aspects



Any real solution to climate change has to be conventionally ***INVESTABLE***:

- It cannot rely on long-term subsidies
- It cannot rely on discretionary taxation
- It cannot rely on impositions at the whim of governments.

So, the costs of de-carbonization **MUST** be included in the *price of energy*.

Red Hydrocarbon – **More Detailed aspects**



IN A NUT-SHELL:

The world needs long-term *investors* in Cfree energy.

With a new and better shape to the HC market, there can be one investor waiting in the wings

The *HC* industry.

Red Hydrocarbon – **More Detailed aspects**



*HCs are the **most concentrated** conventional store of **easily harvested inexpensive** energy.*

*“Free Burn” HC and release of CO₂ has become **unacceptable**.*

*To eliminate this **requires massive worldwide investment** in energy supply alternatives to Free burn HC.*

*The HC industries **need markets** for their product to survive and prosper*

*The HC industries have **very large resources**:*

- capital resources,
- corporate expertise,
- human resources,
- intellectual property
- but... declining opportunities for investment

Careless destruction of the HC industries and their economic and technical resources would probably result in a world calamite

Red Hydrocarbon – More Detailed aspects



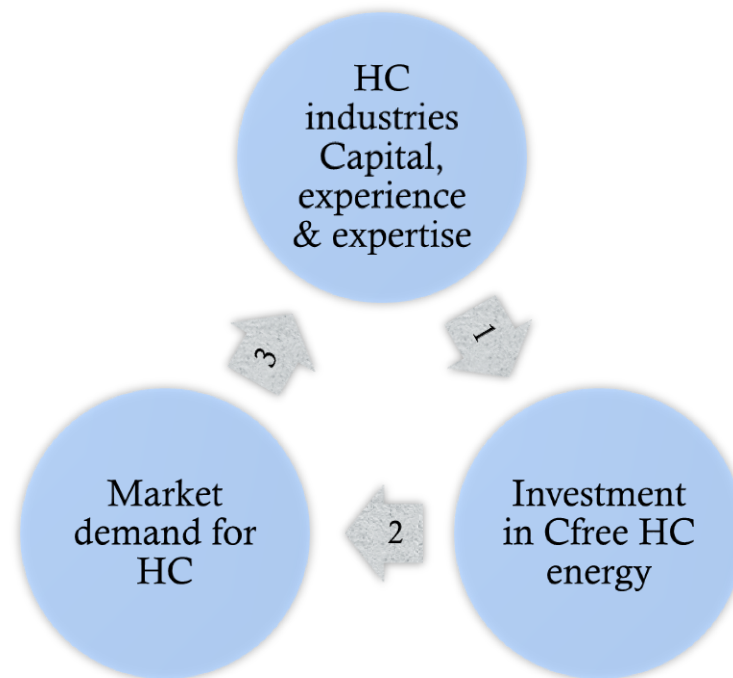
- The stability of the world economy depends on the continuing industrial health of its major industries.
- None is larger nor more important than the *HC* industry. So, the health of the world economy currently, depends upon a thriving *HC* industry.
- *HC* industry can only survive through a continuing market for *HC*.

So, it is in the long-term interests of the *HC industry* and in the long-term interests of the *world* for the *HC* industries to be amongst the principal investors in economically viable *Cfree HC energy*.

Red Hydrocarbon – **More Detailed aspects**



From this premise, a symbiotic cycle emerges as the world approaches the Post Carbon Age:

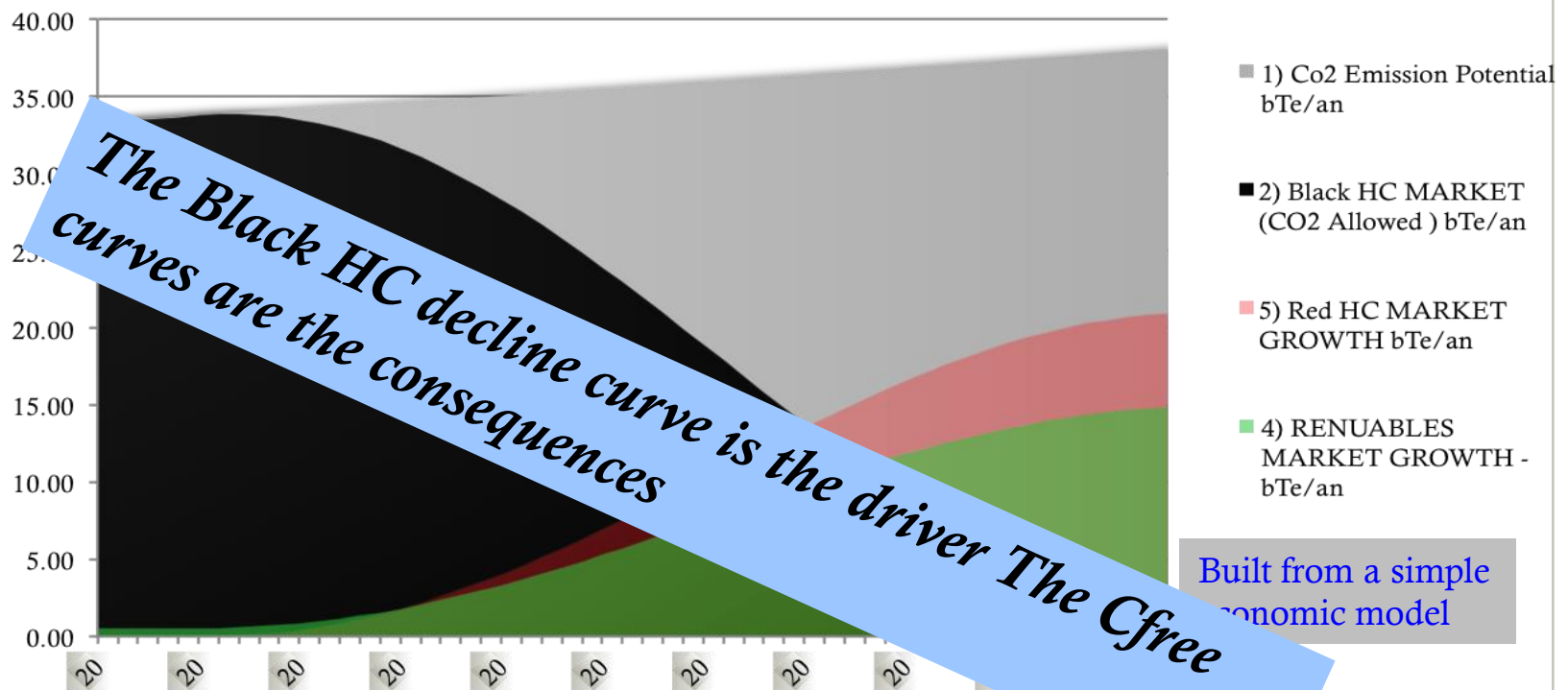


Much more detail and interactive opportunity is available at: www.redhydrocarbon.com

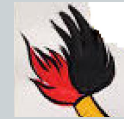
Red Hydrocarbon – More Detailed aspects



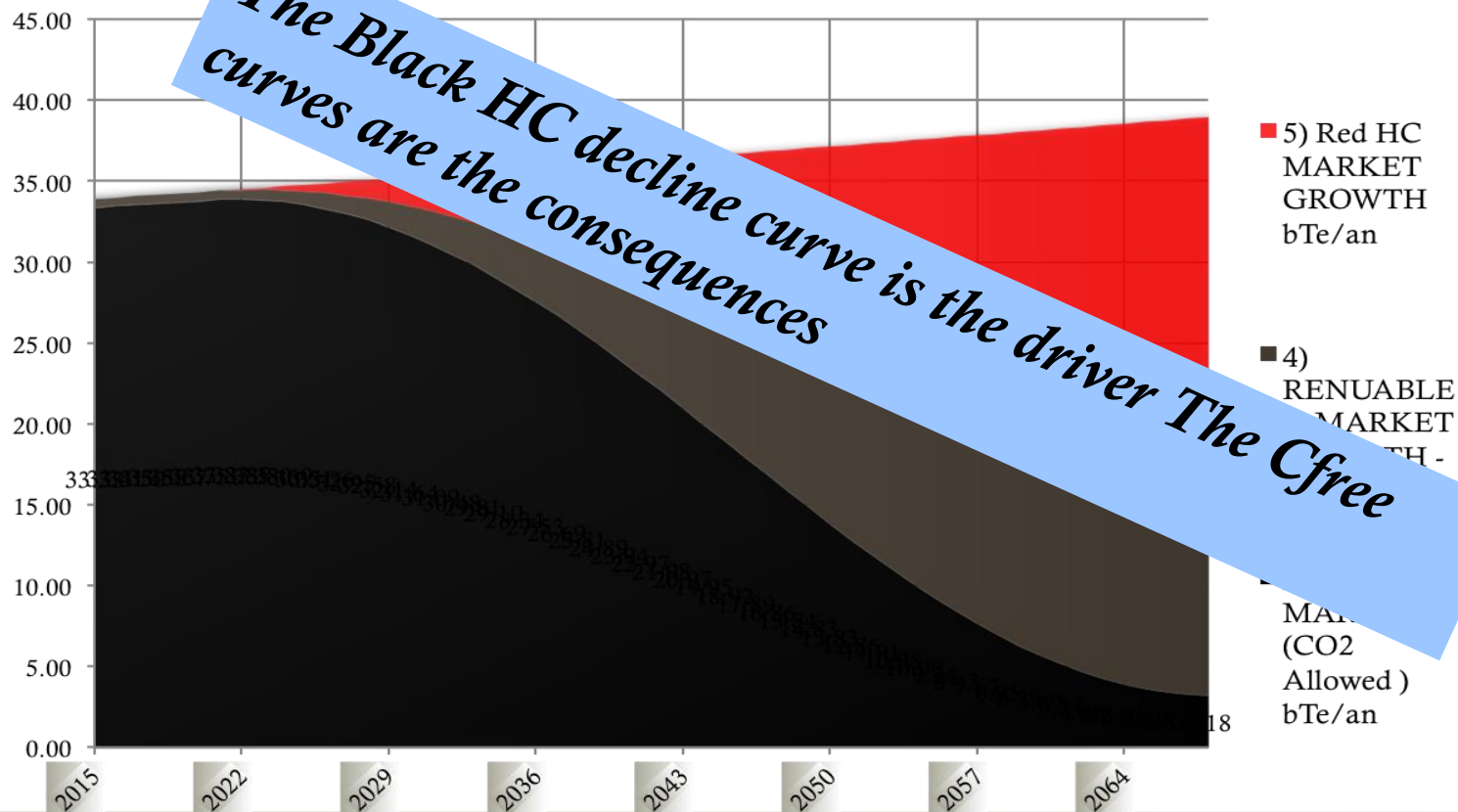
.....and this cycle drives the outcome:



Red Hydrocarbon – More Detailed aspects



.... changing players and market growth:



Red Hydrocarbon – **More Detailed aspects**



KEY FEATURES:



The two most important features controlling the Red Hydrocarbon process are:

- **1. RIGHTS TO PURCHASE and**
- **2. CERTIFICATES OF END USE & ACCREDITATION**

Red Hydrocarbon – **More Detailed aspects**



1. RIGHTS to PRODUCE/IMPORT Black HC

- These *annual rights/quotas* hold the *key* to the whole *Red Hydrocarbon* approach.



- Annual *rights/quotas* to produce or import Black HC , expire at year-end - “*use it or loose it*”.
- *The actual downward trajectory of Black HC will* therefore always be GUARANTEED to meet the Tollerable Carbon Trajectory (*TCT*).

Red Hydrocarbon – More Detailed aspects



1. RIGHTS to PURCHASE Black HC

Annual quotas to produce/import **Black HC** within the *tolerable carbon target* (TCT), are *auctioned*.

They apply:

- for a *specific year* (up to 20 years ahead)
- in *defined usage categories* (prioritised by absence of alternatives at future dates along the TCT.)
- and may subsequently be partitioned and sold through secondary markets to resellers or end-users.

End Users may then either extract/produce **HC** locally or they may purchase **HC** on world markets. It can then be used to fuel their business intentions.

Red Hydrocarbon – More Detailed aspects



1. RIGHTS to PRODUCE/IMPORT Black HC

This is a big ticket question.
This is where the money is.

The *annual volume* of HC to produce or import is defined as these rights.

- Why financing more Red HC Energy?
- How much money be put?



2. CERTIFICATES OF END USE & ACCREDITATION

Important questions are:

- Who can purchase *HC* on the *Red HC* market?
 - An *accredited Cfree* user (e.g. a CCS electricity plant or a paint manufacturer).
- Who cannot do so because it or its customers will burn the *HC* and emit Co₂?
 - A “*Free Burn*” electricity plant or a refinery supplying an airline.

Red Hydrocarbon – **More Detailed aspects**



2. CERTIFICATES OF END USE & ACCREDITATION

- An accredited middle man can purchase **Red HC** if he gives an *undertaking* to sell it (in smaller parcels?) exclusively to accredited **Cfree** users or other accredited middle men and so on.....
- At each transaction the purchaser provides the supplier with a *certificate of end use* showing it to be **Cfree**.
- Once purchased as **Red HC** with the cost benefits arising from the lower priced **Red HC** market, it can't be made available to a **Black HC** end user or a middleman

The last purchaser in the chain must be an accredited Cfree consumer.

Red Hydrocarbon – More Detailed aspects



CERTIFICATES OF END USE & ACCREDITATION

- This naturally gives rise to the notion of an *accredited Cfree* plant/user.
- Which begets the need for an *agency* to confer the accreditation.
- This would be a natural role for existing *certifying authorities* (Lloyds DnV, ABS...etc.)

The last purchaser in the chain must be an accredited Cfree consumer.

Red Hydrocarbon – More Detailed aspects



START-UP ZONAL SCHEMES

- A world-scale plan is unlikely to be realised immediately.
- In the short term, a large economic block could lead.
- Any economic block could be the “first mover”
- This would not disturb its *internal* cohesion (it could be an ideal policy for adoption by the EU or the US). (In which case, the importation of **HC** or of products with an **HC** “component” would be drawn into the process.)

Becoming “first mover” would encourage others to adopt **Red Hydrocarbon**



Red Hydrocarbon – **More Detailed aspects**



START-UP ZONAL SCHEMES

- Other countries/economic blocks at differing stages of development could over time confidently adopt the ***Red Hydrocarbon scheme***,
- Each on terms satisfactory to them, as they feel able to do so with rules, decline rates and other parameters suitable to their own circumstances.
- These could gradually be harmonized.

Red Hydrocarbon – More Detailed aspects

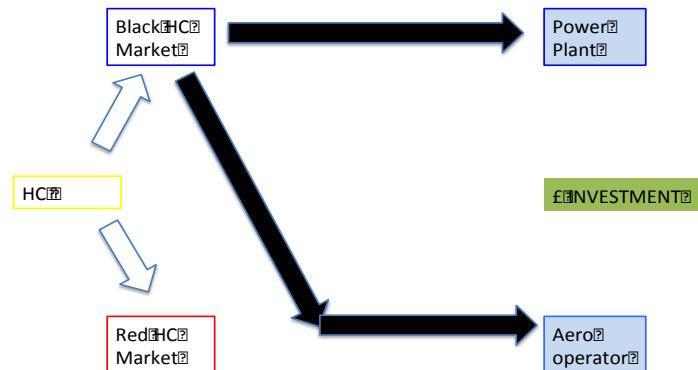


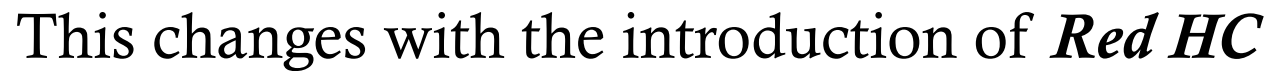
DISPLACEMENT SCHEMES

Today, there is no *Red HC*

Today, all *HC* users buy from the same market.

BASIC POSITION





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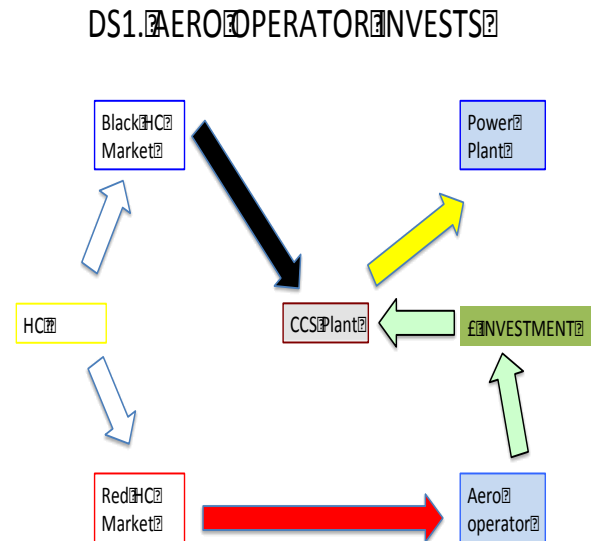


DISPLACEMENT SCHEMES

D Scheme 1.

Red HC can be supplied to a an end user who continues to emit Co₂ (“*free burn*”) such as an airline.

The “airline” invests (capex+opex) in a 3rd party facility to remove equivalent CO₂.



Red Hydrocarbon – More Detailed aspects



DISPLACEMENT SCHEMES

D Scheme 1 (cont):

The 3rd party facility physically removes or sequesters the CO₂ but can't itself purchase ***Red HC***

The airline can buy ***Red HC*** and this could be marketed as ***Red Aero*** with marketing gains and cheaper feedstock for its airline operation

Red Hydrocarbon – More Detailed aspects



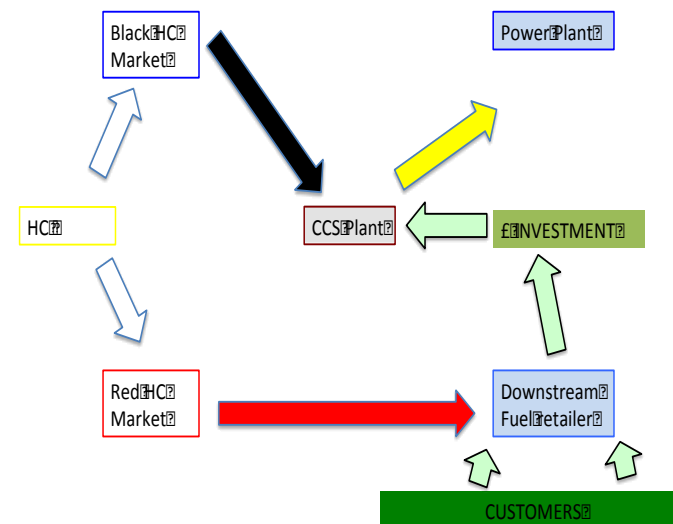
DISPLACEMENT SCHEMES

D Scheme2:

Similar to existing green energy schemes a motor fuel retailer could sell **Red petrol** or a gas supplier could sell **Red gas** at a premium price to domestic customers.

The premium could finance the **C_{free}** removal process investment at the 3rd party facility.

DS2.1 DOWNSTREAM FUEL RETAILER INVESTS



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DISPLACEMENT SCHEMES

D Scheme 2 (cont.):

The actual capture plant;

- will not be able to buy ***Red HC*** to fuel its own operation
- its own output will not be classed a ***Red HC***.
- The electricity generated will be less competitive.

The total CO₂ captured applies to only 50% of the total burned in both operations.

NOTE: It could be better, c.100% if the primary plant manufactures ***Cfree*** aero fuel (Hydrogen?!) rather than electricity so that the airline itself produces zero emissions.

Red Hydrocarbon – **More Detailed aspects**



DISPLACEMENT SCHEMES

BUT in all displacement schemes.....

.....*Red HC* purchased can only be used to fuel one of the facilities.

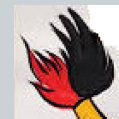
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THE OVERALL OUTCOME REMAINS THE SAME

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END



The Red Hydrocarbon story is set out in more detail in the foundation paper available at www.redhydrocarbon.com where everybody can interact with other followers of the site posting comments, suggestions and opinions.