

# **Climate Change and Energy Transition**

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## Natural Resources PC

### An international consulting company specialized in

- Energy: emphasis on sustainability, renewables, GHG emissions, shale oil/gas
- Mines & metallurgy: industrial minerals, rare earths, gold & nickel
- Energy production at site: PV, wind, biomass
- Green funding
- Infrastructure

### Methodology

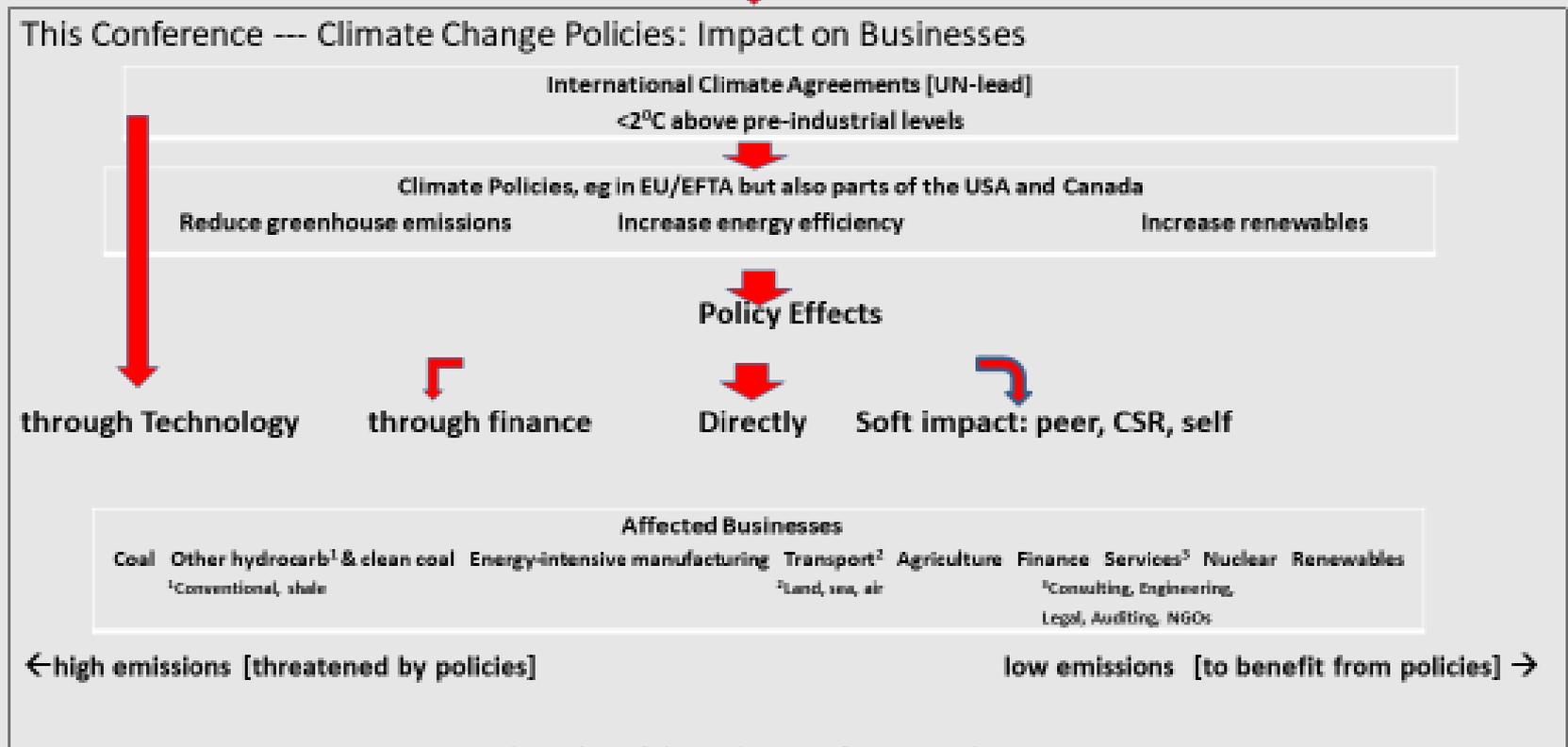
- Stanford Systems
- In-house consulting
- Studies: bespoke, ready and networks
- Newsletters
- Working via affiliations and networks
- Conferences

### Business brokerage

- Liaising sources of capital with owners of projects or companies

# The Context

Mainstream Climate Science: 'Climate change is happening and is partly due to human activity'  
 ie burning fossil fuels, cutting down rainforests, farming livestock  
 GHG causing man-made global warming, %: carbon dioxide 64, methane 17, nitrous oxide 6, fluorinated gases



## Recent Facts...

- Europe: 4/19 at 27 € / mt CO<sub>2</sub>, ~ 11 years high and > 5X corresponding prices of 2017
- EU Council of Ministers 4 '19 approved free allocation of emission allowances under more stringent conditions by 2030 for sectors such as mining – EP and EC have adopted for the first time GHG emission regulations from car / truck transport
- 30 Central Banks, US exception: call for more Green Funding & better risk assessment of climate change
- IMO : Implementation of GHG emission reduction strategy, list of measures by 2023

## ...Recent Facts

- China & the EU have confirmed their commitment to tackle climate change & promote clean energy 4/19
- Norway, a major oil / gas producer and Sovereign wealth fund owner, sets the foundation for a 'low oil'
- But: public reaction to fuel taxes, eg France: just such taxes trigger a rebellion of 'yellow vests'
- Technological developments: a new 100% electric 'super-car' with an acceleration > of one F-16, transports are already powered by 7.6% from RES. High demand for batteries for vehicles, buildings, and hybrid RES systems [1st Battery Cell Consortium France / Germany 4/19] > Battery demand > increased interest in many minerals / metals, especially Li & Co, but also Ni and Cu.

# Therefore...

- Greece: To achieve the national targets for energy formation [late 18] committed to 4% less emissions from 2005, 18% gross final energy consumption from RES, energy efficiency 24.7 Mtoe RES.
- PPC is trying to sell units against, among other things, the high CO<sub>2</sub> prices, and to develop RES.
- Ministerial decision provides auctions for  $\Sigma = 1000$  new MW from wind and PV in 2019 and another 600 new MW in 2020.
- The Energy Exchange is set up, where real-time electricity and gas prices will be traded between producers, suppliers and consumers

### .... Therefore...

- Processing, much of the energy production, transport including marine, and agriculture, are targeted for significant greenhouse gas emissions.
- It may be possible to extend the objections already presented in Germany and so forth for an imminent extension of green tax to today's non-regulated sectors such as transport, building heating, agriculture
- In particular, energy-intensive activities such as steel, metallurgy, cement, glass, limekilns, refineries, transport (land, air and sea), agriculture, (fertilizers) and livestock farming will be affected
- Businesses may leave the EU, while those that are purely local will suffer great cost increases [carbon leakage].

# .... Therefore...

- In contrast,
- other sectors will have investment opportunities: electricity from RES [and from nuclear to countries that allow it] RES-related construction companies, waste management companies, energy efficiency, for example in buildings, storage of electricity but also CO<sub>2</sub>, electric cars, green finance
- and other services for climate change policies.

## ...Therefore

- Climate change will affect regulations and public perceptions of everything from mining industries to future food production standards.
- Businesses seek to become entities ready or at least capable of operating in the low GHG emissions economy
- The concept of circular economy meets the ambition for sustainable development in the context of increasing pressure from production & consumption of resources
- These policies also have a clear link with all companies and organizations that are concerned with corporate social responsibility, especially those that regard climate change as an important part of their branding and communication - in the modern sense of the impact on society rather than simply on the image of the business

# The way forward: Energy transition ...

- The conceptual framework has been laid above
- It is been specialized in documents such as:

‘Task Force on Climate-related Financial Disclosures’

Euromines on Decarbonisation: ‘Providing Metals and Minerals for Carbon Neutrality’

and others

# ...The way forward: Energy transition...

## For companies

**Extreme example: remote mining companies**

## For regions

**Extreme example: islands**

Same actions:

- Switch to lower-carbon fuels
- Electrification
- Renewable +/- hybrid energy sources
- Energy efficiency
- Electric vehicles
- Prosumer model
- Combination with water treatment & waste treatment
- Carbon capture, storage and utilisation
- Green finance
- *Culture*

## ...The way forward: Energy transition

The Natural Resources PC

### **‘ETP’: Energy Transformation Program**

- In view of the international phenomena described above, we have developed:
- A comprehensive yet practical toolkit to be used by companies and regions alike...
- ...to transit to a lower GHG footprint

Thank you

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