The energy transition and the European utility sector

Mark C. Lewis
Head of Research, Carbon Tracker Initiative

Preventable Surprises' Frankfurt Workshop, 18 June, 2018

mlewis@carbontracker.org

Who are we?

Identity

Carbon Tracker is an independent non profit financial think tank funded by EU and US foundations interested in climate.

Vision

To enable a climate secure global energy market by aligning the capital markets with climate reality.

Mission

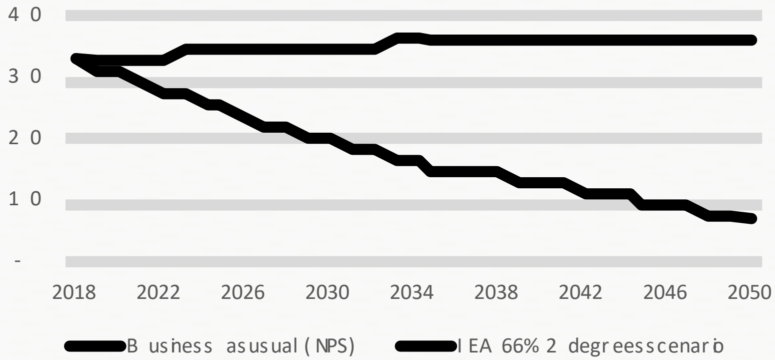
Mapping the transition for the fossil fuel industry to stay within a two degree budget.

Strategy

- Empower **investors** to identify and switch off capital to the highest cost, highest carbon projects.
- Engage with **companies** to re-assess both the viability of such projects and of their business model.
- Educate mainstream **financial markets** and **policy-makers** over the risk of a disorderly transition.
- Work with **financial regulators** to bring transparency on carbon and stranded asset risk and the fossil fuel risk premium.

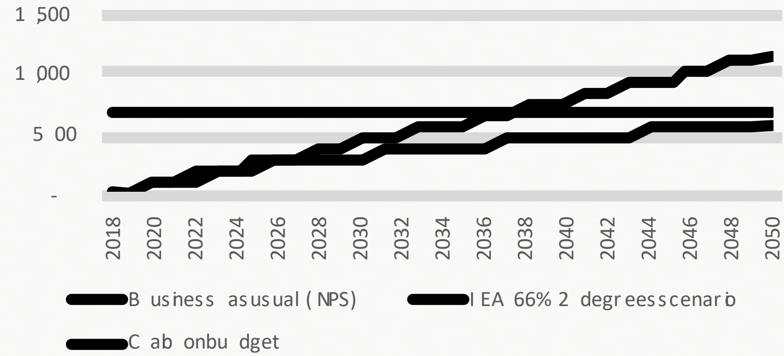
There is a carbon budget for a 2°C world

Annual CO2 emissions of the energy sector Gt



Source: IEA, IRENA

Cumulative CO2 energy sector emissions Gt

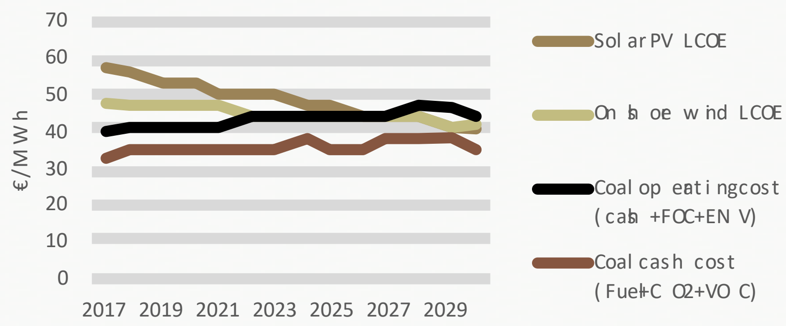


Source: IEA, IRENA

- Based on IPCC data, the energy sector can release 700 Gt of CO2 from 2018 to give the world a 66% chance to avoid global warming of over 2 degrees.
- Meanwhile, the energy sector released 32 Gt of Co2 in 2016, and this has been rising.
- So, if nothing changes, we will use up the budget within 20 years.
- To have a chance of hitting the budget, we need to start to reduce CO2 emissions immediately, and get them to a quarter of current levels by 2050.

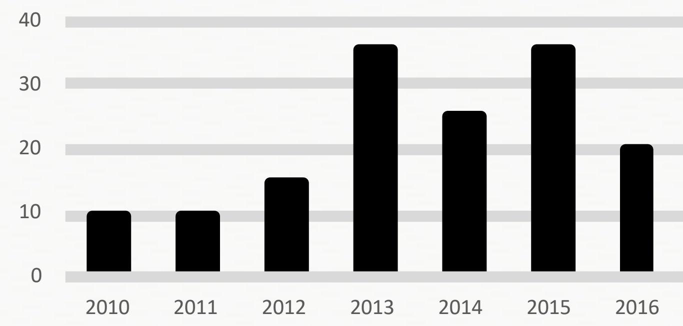
Power generation in Europe: A Warning (1)

Electricity generation costs €/ MWh



Source: Carbon Tracker

Electricity sector write-downs in Europe $bn

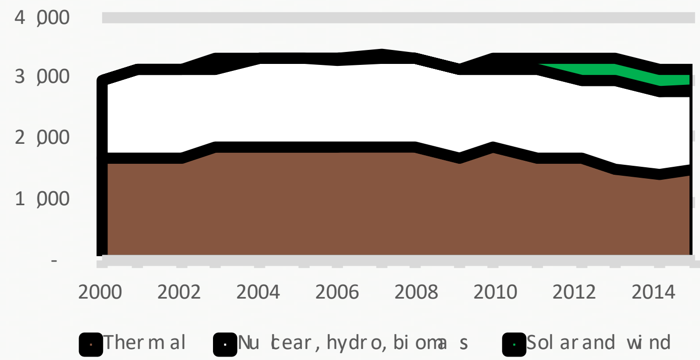


Source: IEA

- Since 2010, European utilities have written down $150bn of assets, mostly in fossil fuel generation. The drivers were a combination of regulation, renewables subsidy, excess capacity, and the falling costs of alternatives.
- Renewables costs in Europe are about to break through the operating cost of existing plants. This is likely to lead to a new round of asset write owns.

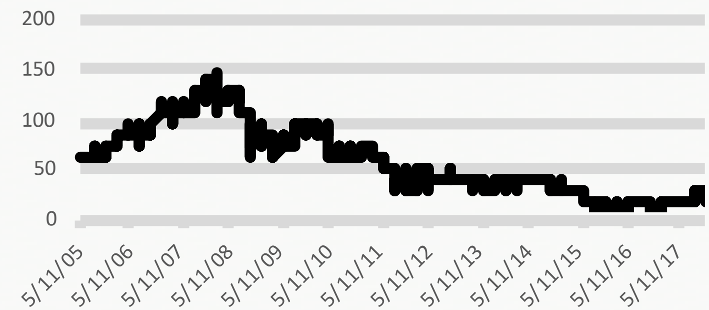
Power generation in Europe: A Warning (2)

European electricity supply TWh



Source: BP

RWE share price $



Source: Bloomberg

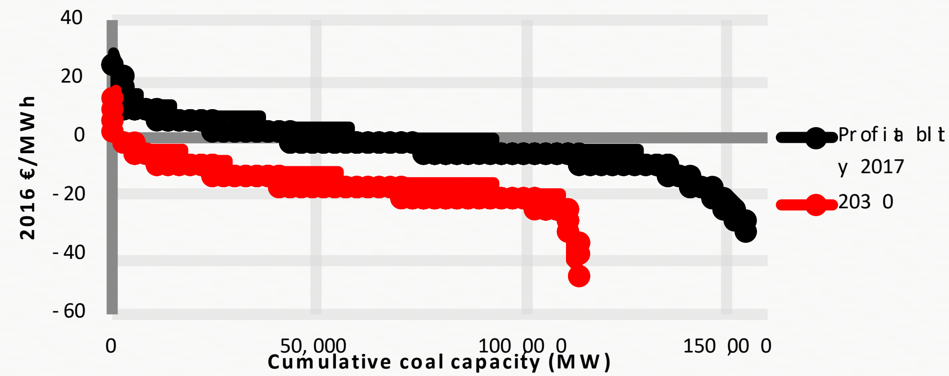
- After decades of uninterrupted growth, the European utility sector was looking forward to more of the same in 2007.
- What they got was stagnant demand and stranded assets as the renewables sector pushed out fossil fuel generation.
- Wholesale electricity prices fell as a result of the overcapacity.
- Since 2010, the European electricity sector has written down $150bn of assets.
- Sector capitalisation has fallen by over half.

Power generation in Europe: A Warning (3)

High cost coal assets in Europe €/ MWh

Source: Carbon Tracker

Operating profit €/MWh

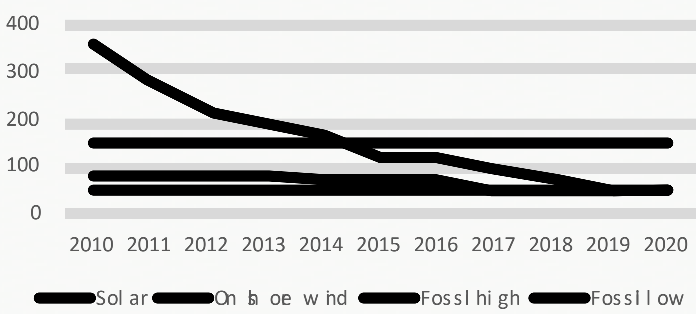


Source: Carbon Tracker

- Europe still has 447 GW of fossil fuel generation capacity which is under threat from the transition.
- We calculate that half the coal plants in Europe are loss-making at an operating level today. And they will almost all be loss-making by 2030.
- We can identify the highest cost coal assets in Europe as well as companies with the largest amount of coal assets.

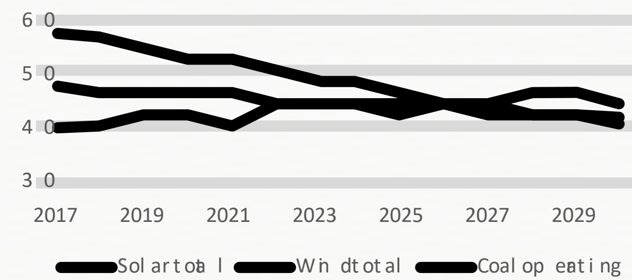
When do solar and wind beat fossils?

Global average cost $ per MWh



Source: IRENA

European cost € per MWh



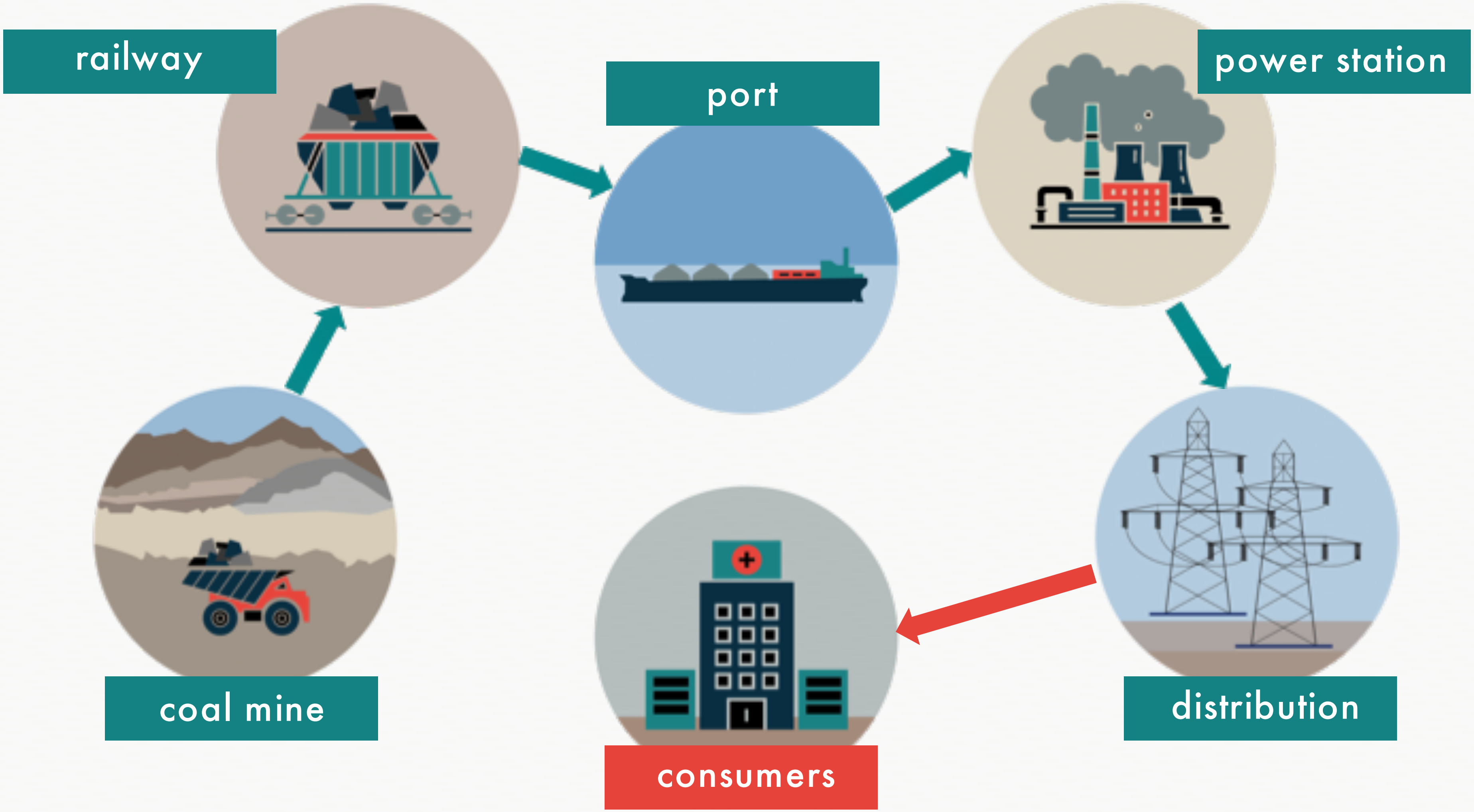
Source: Carbon Tracker estimates

- The LCOE of electricity from fossil fuels is $50–150 per MWh
- The variable cost of electricity from fossil fuels is $30-$60 per MWh
- Solar and wind have broken through the total costs of fossil fuels as a global average, and in an increasing number of specific locations. In these places it makes no economic sense to build new fossil fuel electricity generation.
- Solar and wind are starting to break through the variable cost of fossil fuels. That means it makes sense to shut down existing plants.

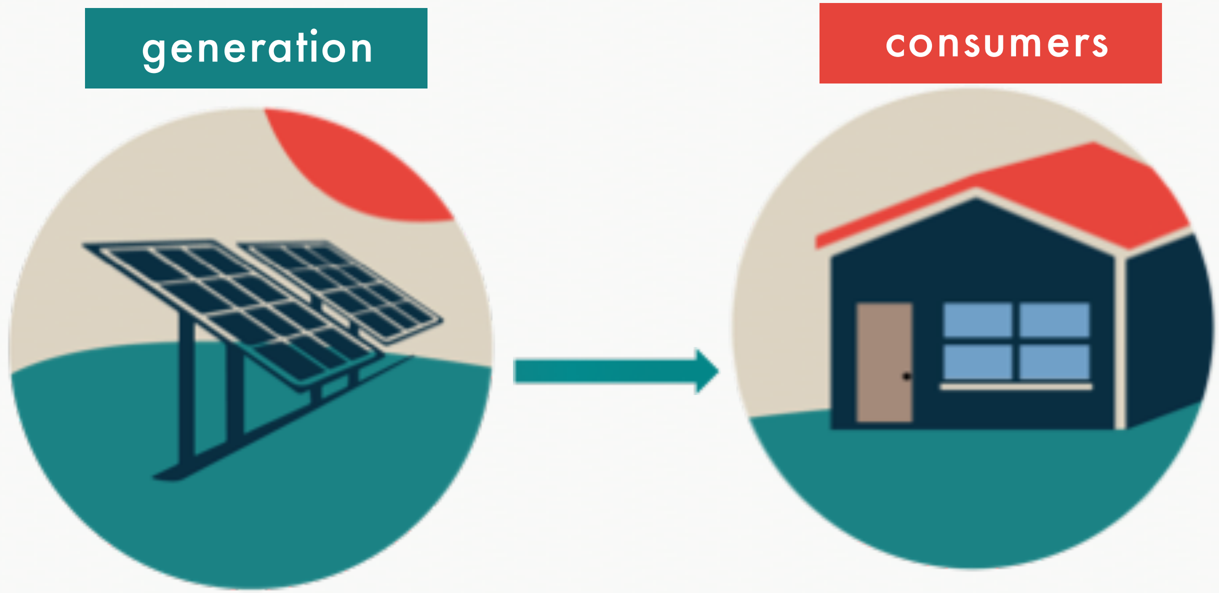
What happens when renewables are cheaper?

- Subsidies stop, and renewables costs fall even faster.
- Regulators are emboldened to make the polluters pay for their externality.
- Public support for renewables increases.
- Renewables thus enjoy the benefit of a self-reinforcing loop.
- Threatened in one area, fossils compete more with each other.
- It makes sense for fossil fuel producers to sell more today as future assets may be stranded. This causes cartels to disintegrate.
- It is no longer economical to build new fossil fuel assets.
- Existing fossil fuel assets start to be outcompeted and shut down.

The choice for emerging markets: the old



The new choice: clean energy



For more information please visit:

www.carbontracker.org
@CarbonBubble