

The role of hydrogen in Swedish industrial policy

Nordisk Energiforskning, Dansk Energi, DI Energi
København 2019-09-19

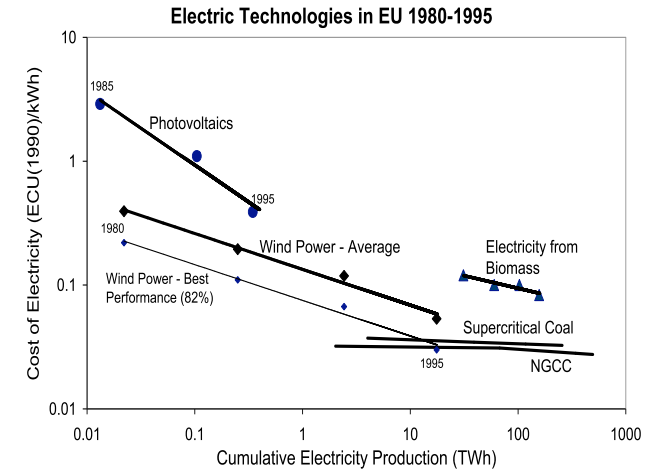
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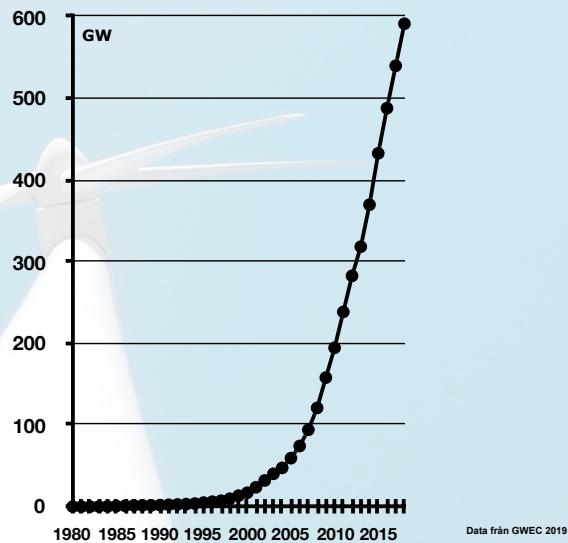
Industrial learning by experience



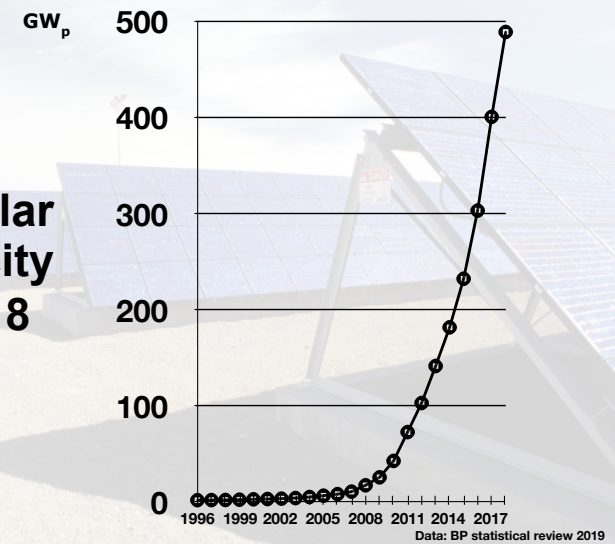
Prof. Clas-Otto Wene,
Chalmers Univ. of Technology,
2000



Global Wind power-capacity 1980-2018



Global solar PV Capacity 1996-2018



New low for wind energy costs: Morocco tender averages \$US30/MWh 14

By Giles Parkinson on 17 January 2016

The north African country of Morocco has achieved a new low for wind energy costs, securing average bids of just \$US30/MWh from its tender for 850MW tender of large-scale wind energy projects, with the lowest at around \$US25/MWh.

The pricing – revealed by its energy ministry at a ministerial round table at the International Renewable Energy Summit in Abu Dhabi on Saturday – sets a new low for wind energy pricing in the world, and is boosted by the remarkable wind energy resource sourced from Atlantic trade winds, and some concessional finance.

Abderrahim El Hafdi, vice minister of energy and environment, described the result as “extraordinary” and “amazing” and said it pointed to a “real revolution” in the means of producing energy. Some bids in the US have been in and around \$US25/MWh, although these have been boosted by a 30 per cent production tax credit.



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Enel sets a new world wind record in Mexico, below \$18/MWh

November 29, 2017 Paul Dvorak - 0 Comments

This Flash Note from Iktate Consulting examines the results of Mexico's third long-term power auction held in November 2017. The note evaluates the event and its bidding within the context of previous auction rounds in Mexico as well as within the Latin American region. It analyzes the dynamics that contributed to Enel's record low bidding and goes into dynamics that favor low bidding in the Mexican market.

Key points:

- Mexico hosted a long-term power auction in November 2017 which awarded off-take agreements to wind power and PV projects totaling 3.5 TWh of annual production
- Enel submitted four successful bids for wind power sites with the lowest reaching \$17.7¢/kWh
- In total, the auction awarded PPAs to 2 GW of new project sites, including 680 MW of new wind power sites which are due online in 2020




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First Subsidy-Free Offshore Wind Deal In German Offshore Wind Auction, DONG Energy & EnBW Win Big

April 14th, 2017 by [Joshua S Hill](#)

Germany's first competitive auction for offshore wind projects has not only delivered an average bid price that was “far below expectations” according to the Bundesnetzagentur, but also included what is likely one of the world's first subsidy-free offshore wind projects.



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NETHERLANDS

Vattenfall awarded Dutch zero-subsidy site

19 March 2018 by David Weston, [Be the first to comment](#)

NETHERLANDS: Developer Vattenfall has been granted the licence to build the 700MW Hollandse Kust Zuid offshore wind project in the latest Dutch offshore tender round, without subsidy.

The site, located 22.2km off the Dutch coast, will require €1.5 billion in investment from Vattenfall, the developer said. It comprises two 350MW projects and due online in 2022.



Clean Technica

Tremendously Low 4.8¢/kWh Solar Price In Peru, Unsubsidized

February 25th, 2016 by [Guest Contributor](#)

Peru recently awarded 185 megawatts (MW) of new solar photovoltaic (PV) contracts in a renewable energy solicitation, at record low prices for a nation not offering any tax breaks for such development.

Of the 185 MW of new project capacity, 144 MW relates to a bid from **Enef Green Power** at \$47.96/MWh (megawatt-hour), and 41 MW relates to a bid from **Enersur** at \$48.50/MWh.

Notably, the projects aren't expected to be built until 2017 — when solar PV prices are expected to be notably lower, hence the lower bids and contracts.

According to the press release from Peru's Supervisory Agency for Energy and Mines (OSINERGMIN), the Enef Green Power contract is for the provision of 415 GWh of electricity a year from the company's planned Rubi solar PV project at the aforementioned price of \$47.96/MWh. The Enersur contract is for the provision of 108 GWh of electricity a year from the planned Intimpa solar PV project at \$48.50/MWh.

Delivery of electricity from the projects is currently set to begin by the end of 2018 — if the terms of the contracts are to be met.

Along with the above-mentioned solar energy projects, 3 wind energy projects were awarded contracts following the recent solicitation. Contract prices for these projects ranges from \$36.84-37.83/MWh. In addition, a number of hydroelectric and biomass projects were awarded contracts as well.

Clean Technica

About Electric Car Reviews Exclusives **Power** Tri

Dubai Gets Record-Low Bid Of 2.99¢/kWh For 800 MW Solar PV Project

May 2nd, 2016 by [Saurabh Mahapatra](#)

Dubai Electricity and Water Authority has received yet another record-breaking bid for expansion of the iconic Mohammed bin Rashid Al Maktoum Solar Park, the lowest solar price bid in history, for an 800 MW solar PV project that expands on 213 MW.

Clean Technica

New Low Solar Price Record Set In Chile — 2.91¢ Per kWh!

August 18th, 2016 by [Saurabh Mahapatra](#)

Originally published on sister site [Cleantechnics](#).

A couple of companies managed to secure a huge share in the latest electricity auction held in Chile, and auction where a new record-low solar bid was set (globally) and wind projects took 40% of the auctioned power contracts.

According to [media reports](#), Mainstream Renewable Power Ltd. and Empresa Nacional de Electricidad/Chile SA won more than two-thirds of the electricity supply auction in Chile.

Meanwhile, [SunEdison](#) set a new record-low solar bid at **2.91¢/kWh** (\$29.1/MWh). That beats the **2.99¢/kWh** bid at [Mandar Consortium](#) provided for an 800 MW solar power project in Dubai earlier this year.

Clean Technica

Cheapest Solar on Record Offered as Abu Dhabi Expands Renewables

Anthony Dipanda @A_Dipanda

September 16, 2016 - 6:53 PM CEST
(Updated on September 20, 2016 - 8:14 AM CEST)

Utility Adwea gets power offer at 2.42 cents a kilowatt-hour
JinkoSolar makes lowest bid with offers still being evaluated

Two companies offered to build the cheapest solar power plant on record in Abu Dhabi, reflecting declining costs for photovoltaic cells and cheaper financing for clean-energy projects.

Government-owned Abu Dhabi Water & Electricity Authority received a record-low bid of 2.42 cents a kilowatt-hour for power from a planned facility in the Persian Gulf sheikhdom, state-run Emirates News Agency said. The utility on Monday opened six bids to build a solar plant capable of generating at least 350 megawatts, the agency said. JinkoSolar Holding Co. of China and Japan's Marubeni Corp. made the lowest joint offer, according to an official from the Middle East Solar Energy Industry Association, who asked not to be identified citing policy.



SUN&V
The Platform for Renewable Energy Intelligence

Renewables Now

Avg solar bid at EUR 43.3/MWh in German solar tender

February 20 (Renewables Now) - The 200-MW German solar tender launched in December has been won by 24 projects, offering to sell their power at an average price of EUR 0.0433 (USD 0.054) per kWh, the Federal Network Agency said Tuesday.

The average rate in the solar tender completed in October 2017 was EUR 0.0491/kWh.

Large solar park. Source: IBC Solar. License: All Rights Reserved.

German PV €4.91c/kWh

30.11.2018

In the first cross-border tender PV plants in Germany and Denmark were awarded contracts for a volume of 50 MW. The auction price was 4.91 cts/kWh.

The German Federal Network Agency announced an auction price for PV projects that is almost 20% lower than the last national tender in Germany. Denmark used to be used for PV projects, and installations that the auction planning. Agricultural installations to develop than convert Renewable Energies Agency developers in Germany to.

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Renewables Now

Gebotstermin 1. Juni 2018

- Öffentliche Bekanntgabe der Zuschläge
- Bekanntmachung der Ausschreibung

Öffentliche Bekanntgabe der Zuschläge

Der niedrigste Gebotswert eines Angebotes, das einen Zuschlag erhielt, betrug 3,89 cts/kWh.

Das Gebot mit dem höchsten Zuschlagswert lag bei 4,96 cts/kWh.

Der durchschnittliche, mengengewichtete Zuschlagswert beträgt 4,59 cts/kWh.

Die Bundesnetzagentur gibt die Ergebnisse des Verfahrens nach § 35 Abs. 1 für den Gebotstermin 1. Juni 2018 bekannt:

The auction was completed in June 2018. The average rate in the solar tender completed in October 2017 was EUR 0.0491/kWh.

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Renewables Now

Germany's Biggest Solar Park Will Be Built Without Subsidies

By Brian Parkin
6 februari 2019 14:41 CET

- EnBW to build 175MW solar park on 405 acres near Berlin
- Park will join EnBW's zero-subsidy offshore wind assets

EnBW AG said it plans to build Germany's biggest solar park without subsidies, underscoring how falling costs are fueling green power investments in Europe's largest economy.

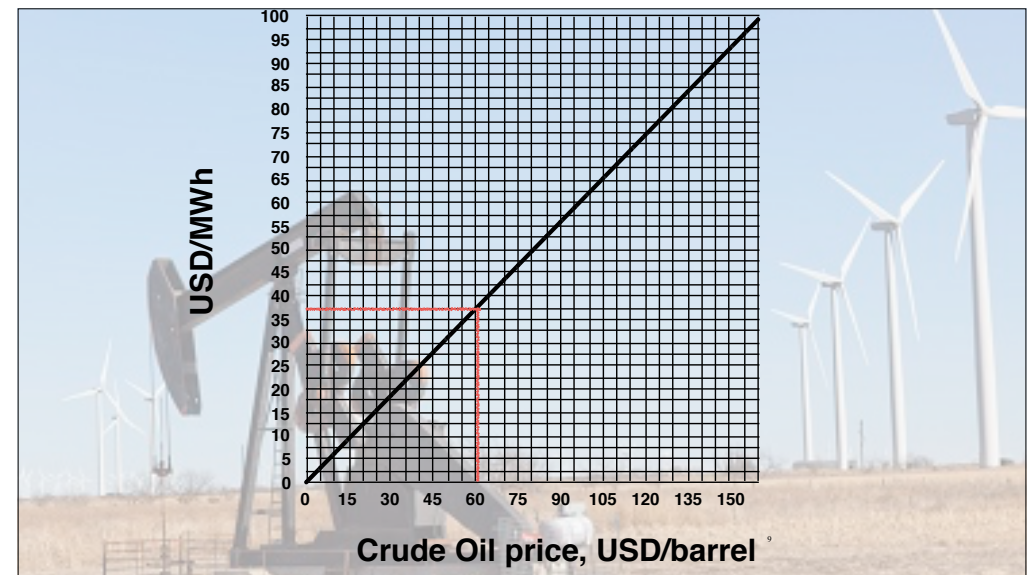
Germany's fourth biggest utility will build the 175-megawatt Weesow-Willmersdorf plant over 164 hectares (405 acres) in Brandenburg outside of Berlin, EnBW said on Wednesday. Its power will feed wholesale markets with enough electricity for about 50,000 homes.

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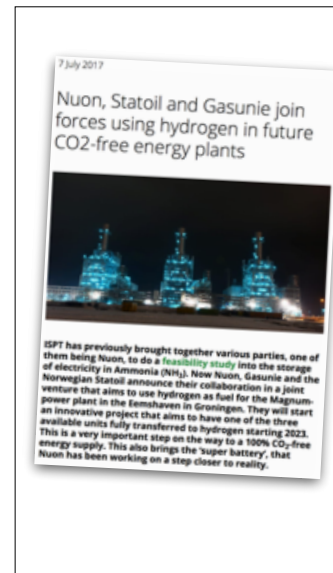
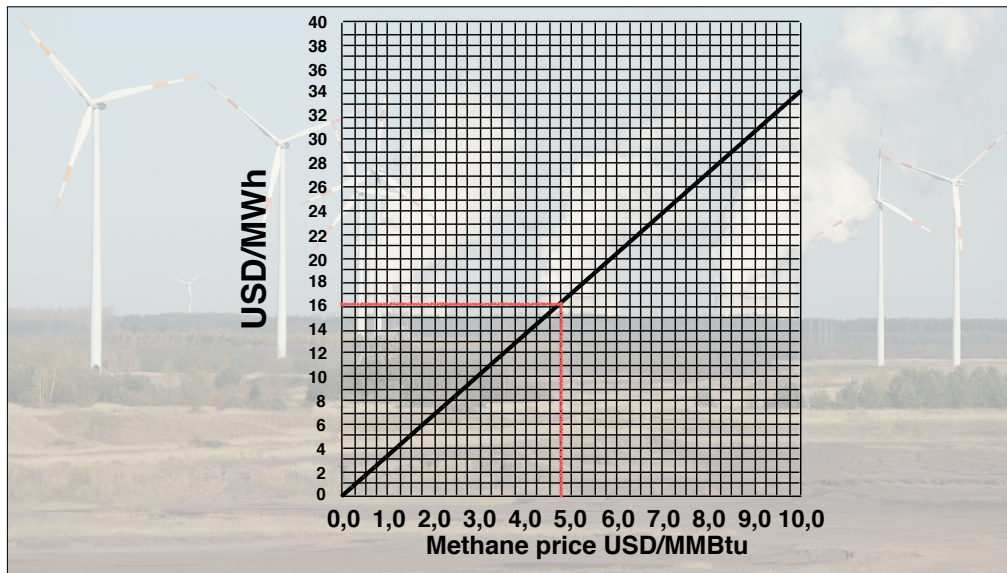
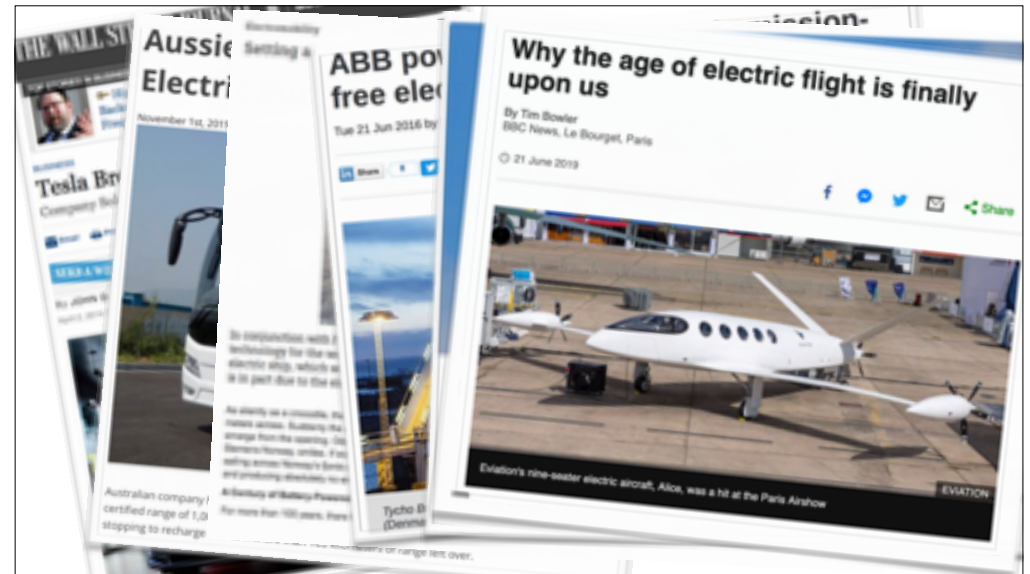


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Abu Dhabi, United Arab Emirates - February 5, 2019

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The production of hydrogen using renewable forms of energy such as solar and wind, and its subsequent use in various sectors, will put the UAE on the global map, experts said at the ground breaking ceremony of the region's first solar-powered green hydrogen project.

Solar-powered hydrogen plant breaks ground
The solar-driven hydrogen electrolysis facility will be located at the Mohammed bin Rashid Al Maktoum Solar Park in the first of its kind in the Middle East and North Africa (MENA) region. Sheikh Ahmed bin Saeed Al Maktoum, Chairman of the Dubai Supreme Council of Energy and chairman of the UAE 2020 Dubai Higher Committee, is the project's sponsor.

The project will be implemented in collaboration with the Dubai Electricity and Water Authority (DEWA), E.ON Energy Research Center and Siemens.

Green hydrogen can significantly contribute to decarbonizing the transport sector.

Elektrolysteknik för minskade utsläpp
19. okt. 2019

Preem och Vattenfall intensifierar samarbetet kring en ny vätgas-anläggning med elektrolysteknik vid Preems raffinaderi i Göteborg. Genom att använda elektrolysteknik minskas anläggningens utsläpp.

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German energy grids say plan for 100MW hydrogen plant
Amprion, OGE say have completed plans for 100 MW plant in Germany. Follows hot on heels of national coal exit plan by 2038. Could start 2023 to help usher in alternative fuels.

FRANKFURT, Feb 11 (Reuters) - German power and gas companies Amprion and Open Grid Europe (OGE) said on Monday they have agreed to build the country's first large hydrogen plant that can convert natural gas into hydrogen, a fuel that is easier to store and transport.

The 100 megawatt (MW) power-to-gas (ptg) plant is expected to start operations from 2023 at Lingen in Germany's north-east, the companies said in statements presented at a Berlin news conference.

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Vattenfall-Jeppia plans CO2-free hydrogen
The energy giant is planning a hydrogen gas hub for Europe.

APRIL 4, 2019

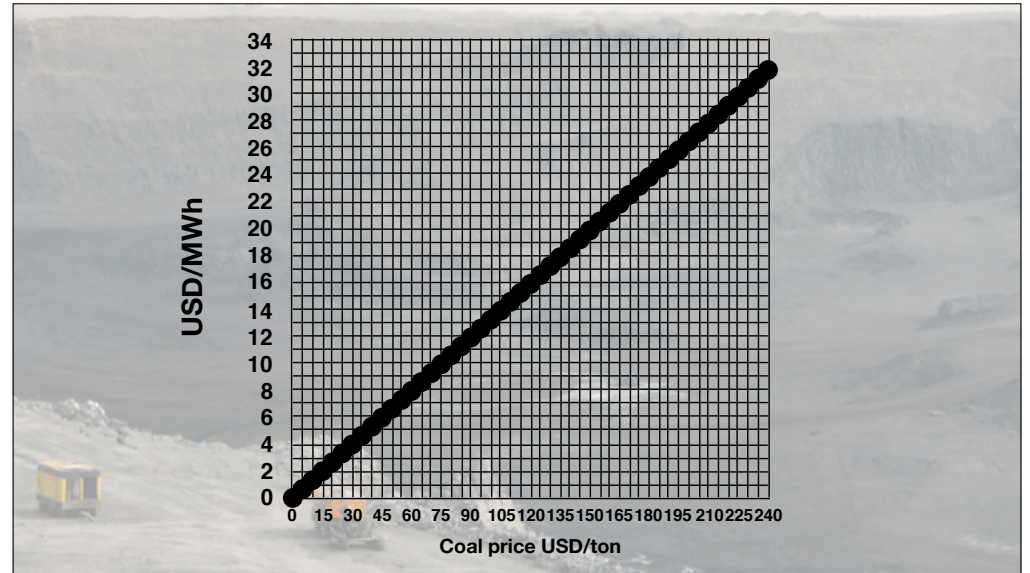
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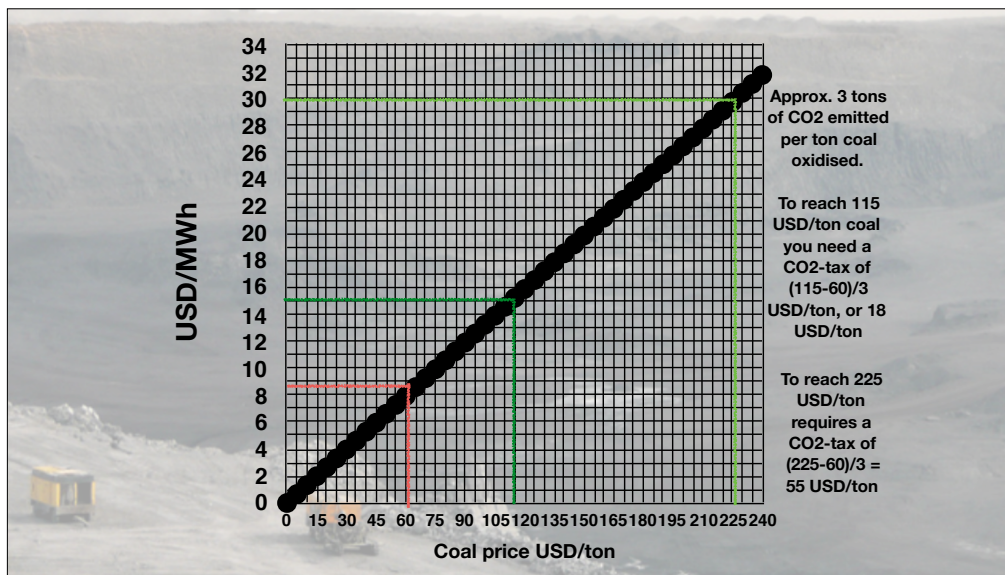
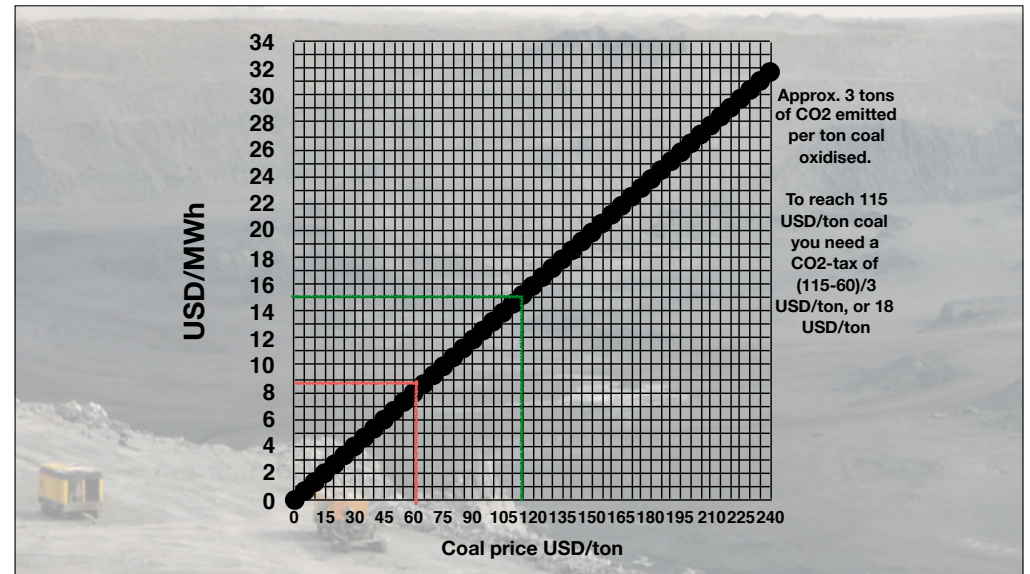
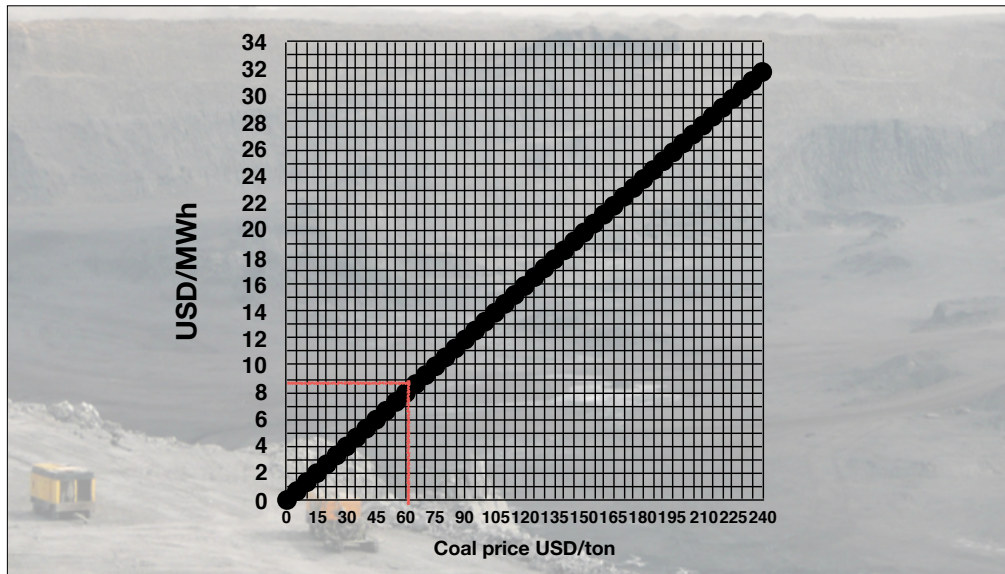
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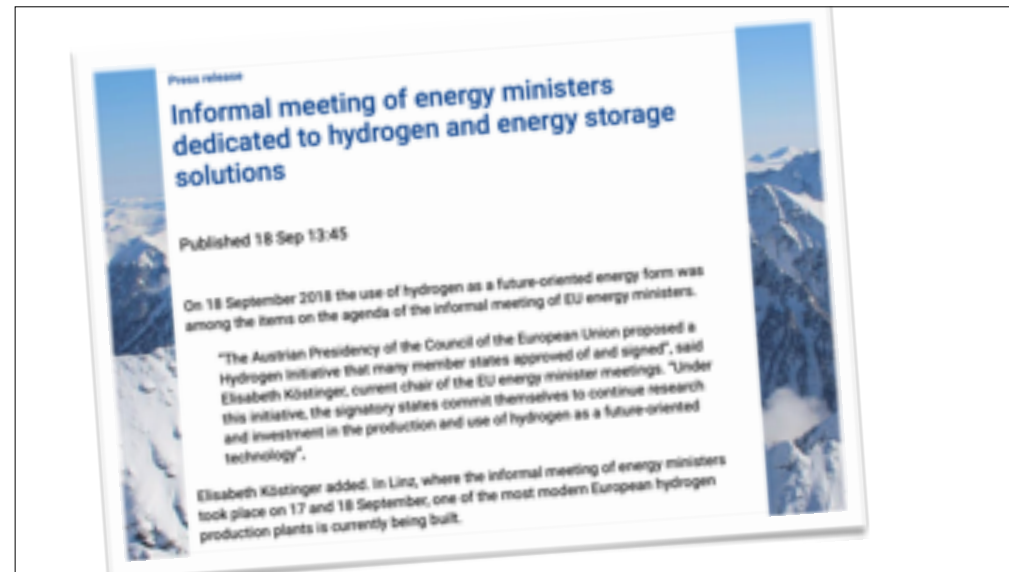


SSAB, LKAB and Vattenfall form joint venture company for fossil-free steel

SSAB, LKAB and Vattenfall announced today that they have formed a joint venture company to continue to drive the HYBRIT initiative. The three companies will each own one third of the company, which will seek to develop a steelmaking process that emits water instead of carbon dioxide.

"HYBRIT is a very important initiative for SSAB and a fossil-free Sweden by 2045. A joint venture company will enable us to work together effectively to eliminate the root cause of carbon dioxide emissions in the steel industry," said Martin Lindqvist, President and CEO of SSAB.

"Our establishment of a joint venture to develop HYBRIT indicates our conviction that it is possible to develop a fossil-free production chain all the way from the mine to the steelworks. If we're successful, this will be a technology breakthrough that can make a global contribution to significantly limiting climate change," said Jan Moström, President and CEO of LKAB.



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