

# Commodity prices: Recent developments

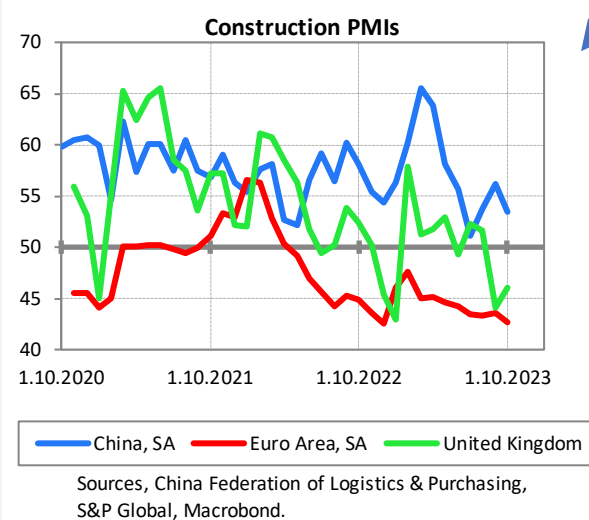
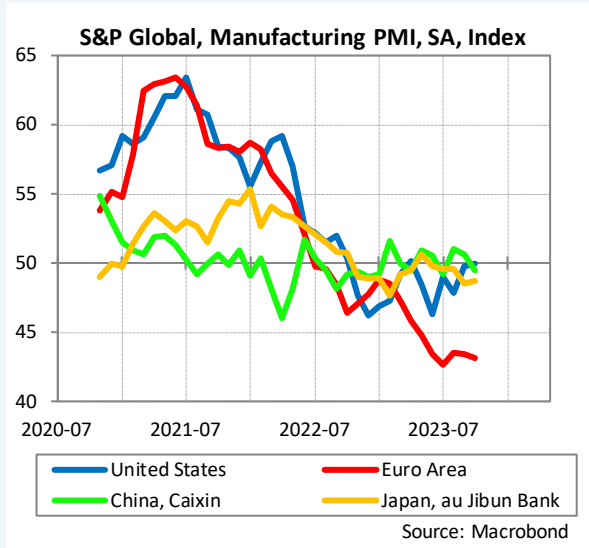
Ville Kaitila

ETLA Economic Research  
(Finland)

AIECE 23.11.2023  
Brussels

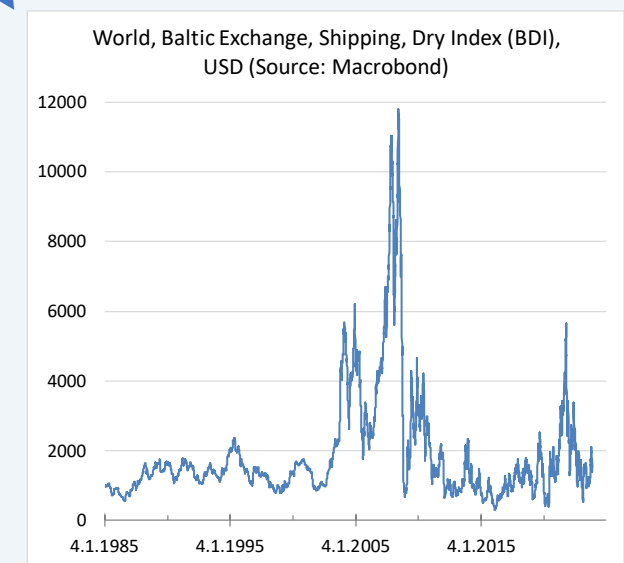
A decorative pattern at the bottom of the slide consisting of a series of vertical bars of varying heights and shades of blue, resembling a stylized bar chart.

# General



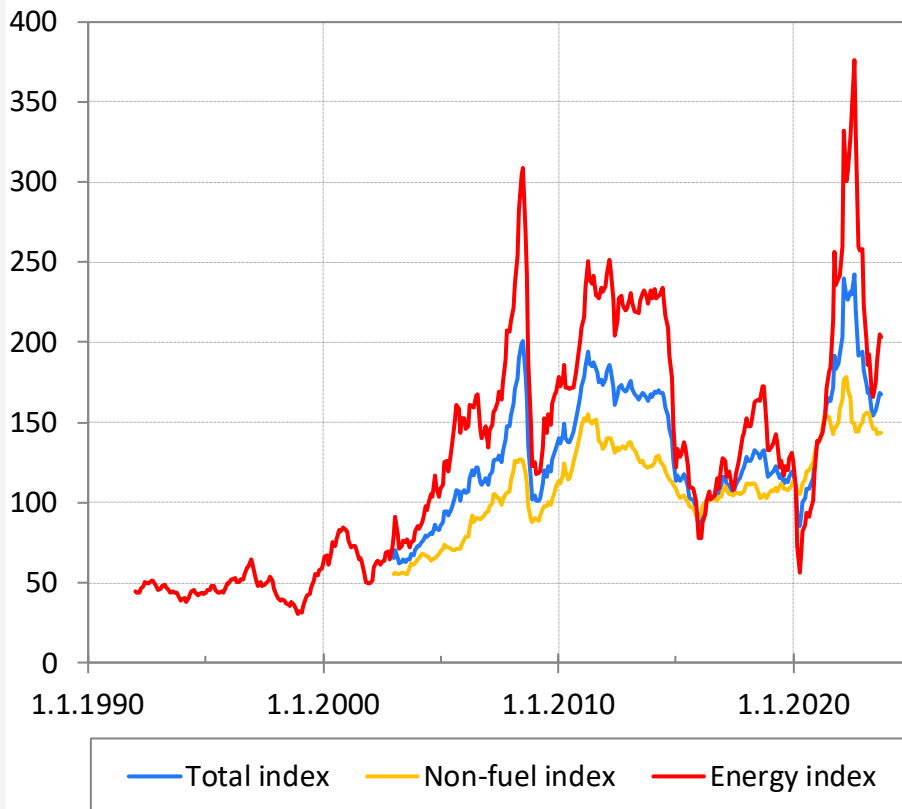
- I will discuss recent developments in metals and minerals, energy, and agricultural commodities.
- Prices have normalised after recent shocks (pandemic, Russia's invasion of Ukraine), albeit often at a higher level than pre-2020.
- Supply chain pressures have eased
- Manufacturing not growing
- Higher interest rates and China's real estate crisis have depressed construction and investment and thereby demand for metals.
- OPEC+ production cuts have affected crude oil prices, though only temporarily, ...
- ... but global crude production is set to increase this year.
- El Niño has usually raised food prices.

Global GDP growth (average 1975-2022 3.0%)			
Source	Published	2023	2024
IMF	Oct	3.0	2.9
OECD	Sep	3.0	2.7

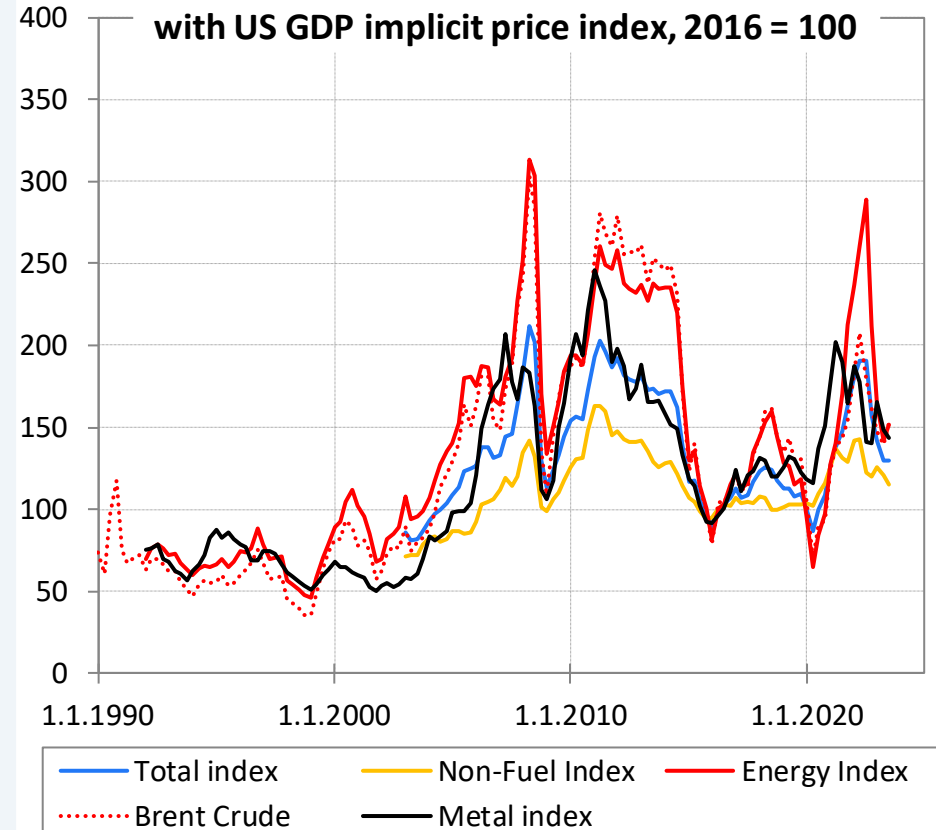


# Nominal (monthly) and real (quarterly) raw material prices, USD

Raw materials (IMF, USD), 2016 = 100



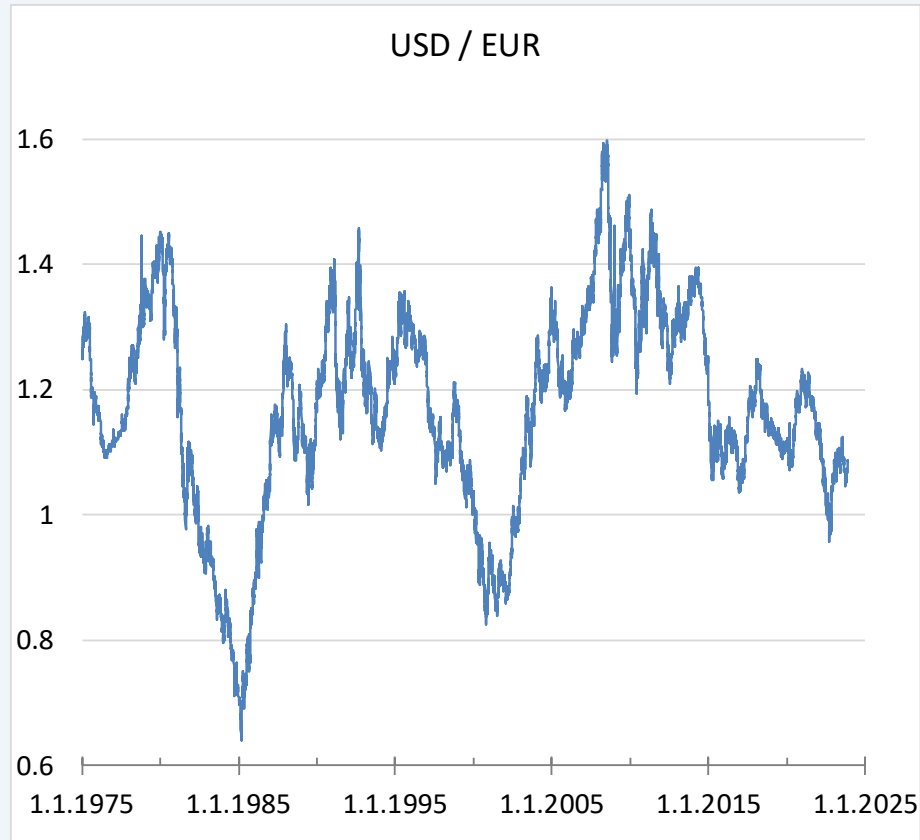
World market prices of raw materials deflated with US GDP implicit price index, 2016 = 100



- Nominal energy commodity prices are below their three recent peaks. Non-fuel prices remain relatively high, e.g. food.
- In real terms the prices are more moderate.

Sources: IMF, BEA, Macrobond.

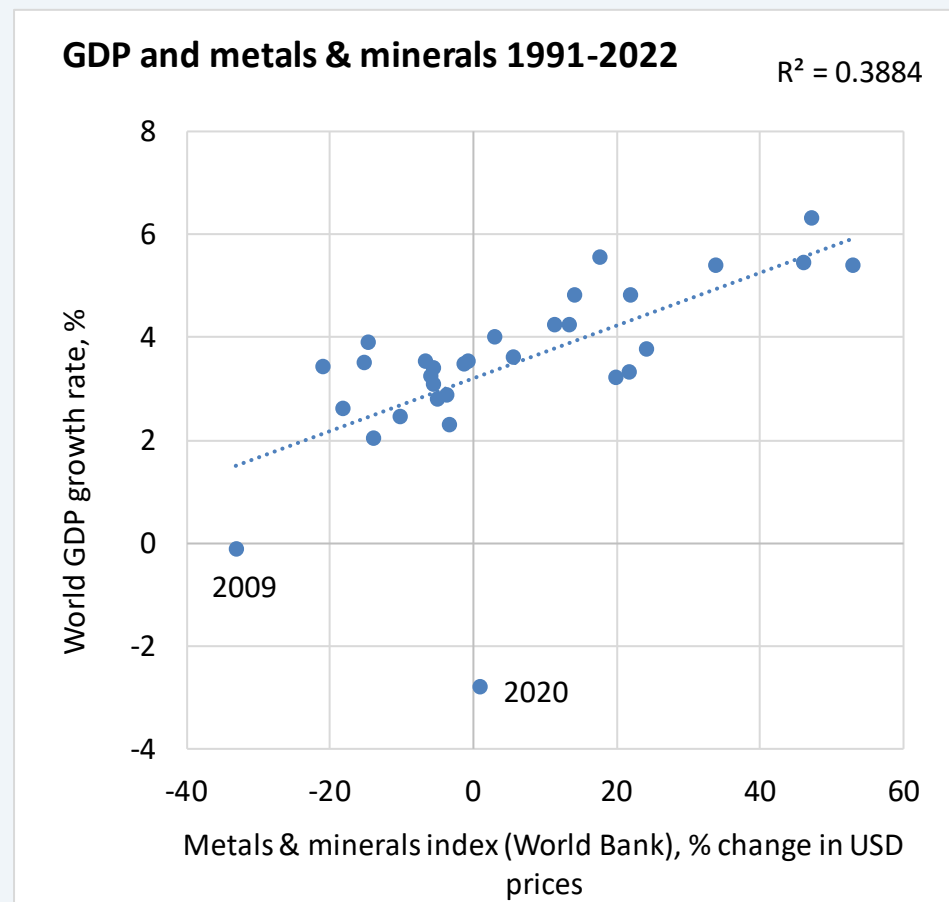
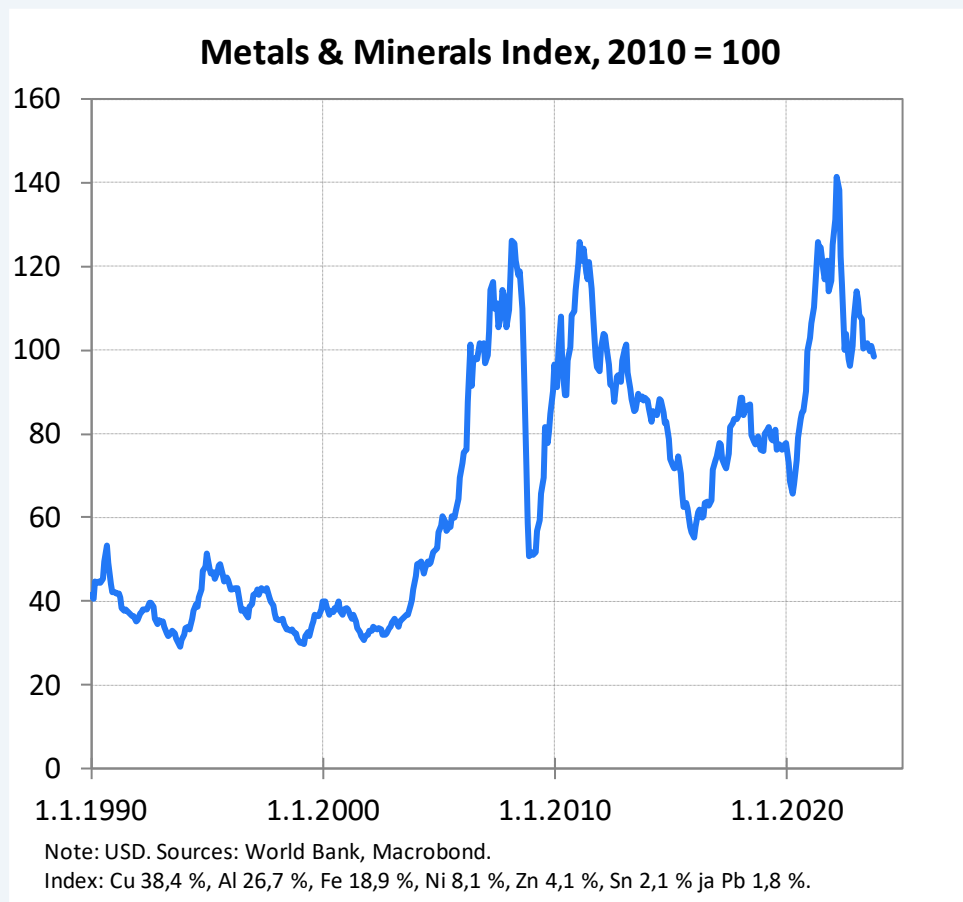
# USD / EUR in the long and the short term



- The euro has appreciated slightly against the dollar.
- Average after 1.1.2000 is 1.19.

# Metals & minerals

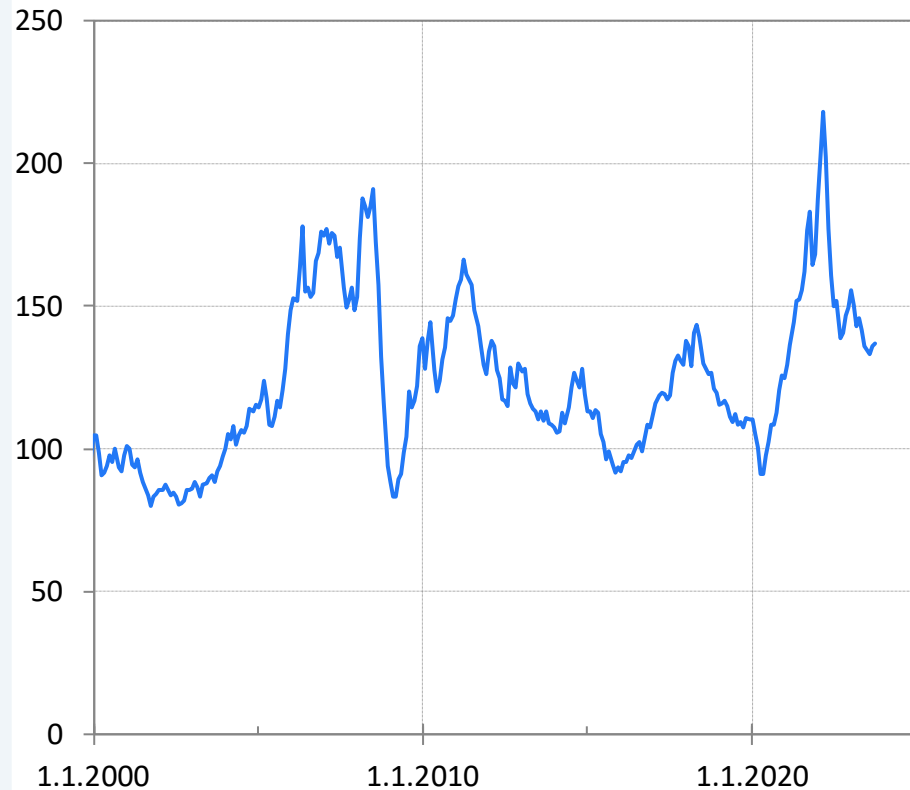
# Metal prices will recover with the global economy



- World GDP growth explains metals & minerals (nominal) development (w/o 2020  $R^2$  is 0.66).
- China accounts for ~half of the demand for base metals, and 60% of all metal demand.
- In many metals (Cu, Ni, Zn, Al) ample supply and weaker demand have depressed prices this year.

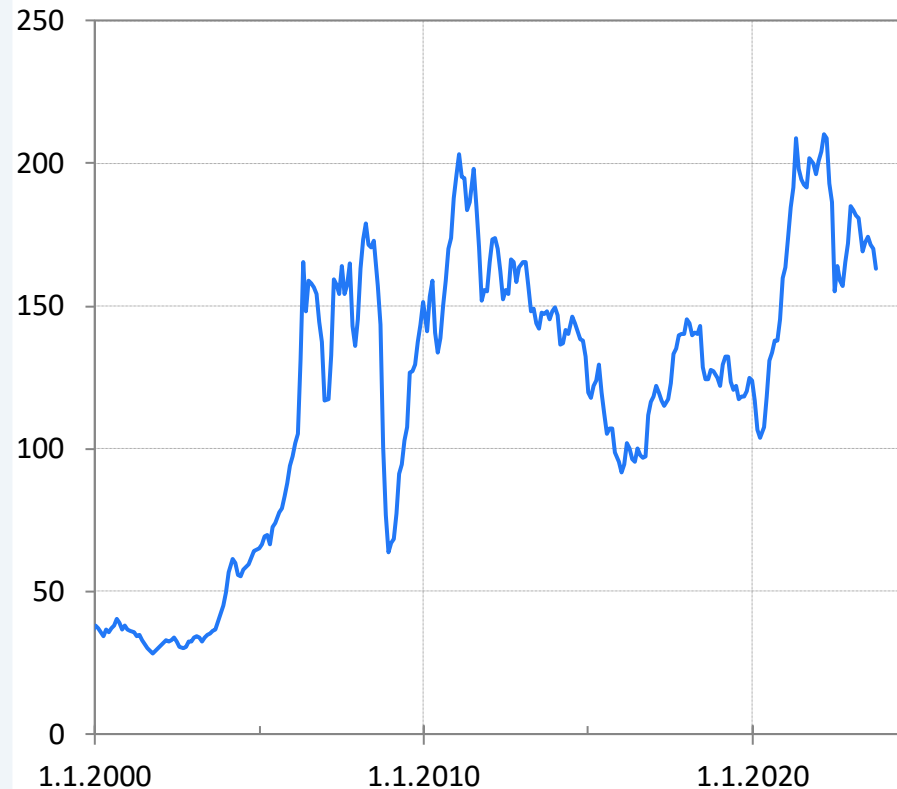
# Aluminium and copper

Aluminium (USD), 2016 = 100



- From bauxite ore: Australia (28%), China (22%), Guinea (22%)
- Smelter production: China (58%), India, Russia, Canada, UAE.
- Energy intensive to produce
- Users: China (57%)
- Used in transportation equipment, construction, packaging, electrical transmission lines, machinery, and consumer goods.

Copper (USD), 2016 = 100



- Mined: Chile (24%), D.R. of Congo, Peru, China, USA.
- Refined: China (42%), Chile, D.R. of Congo, Japan, USA
- Users: China (57%)
- Used in construction, power grids, heavy engineering, transportation equipment, and home appliances.

- Increase in aluminium supply in China with lower energy costs. Increase in capacity in Indonesia.
- Increasing copper mining in Chile, Congo, Indonesia, Peru, Russia, and Uzbekistan.
- Many metals benefit from green transition: aluminium, copper, nickel, lithium, tin.

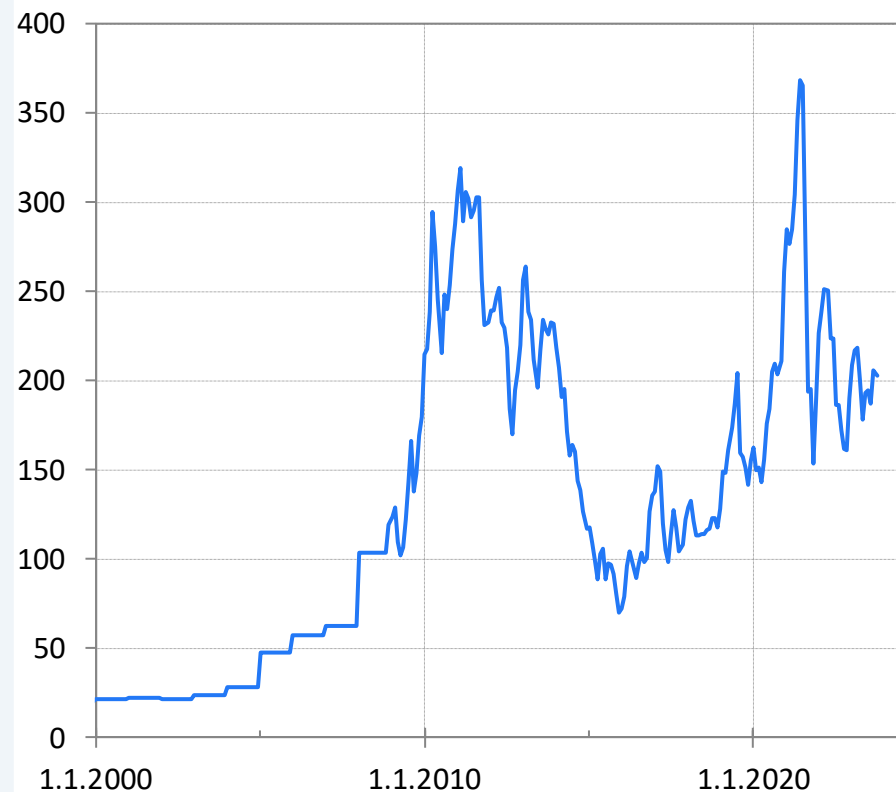
# Nickel and iron ore

Nickel (USD), 2016 = 100



- Mined: Indonesia (48%), Philippines, Russia, New Caledonia
- Users: China (60%)
- Used in stainless steel (68%), superalloys & non-ferrous alloys (aerospace industry, wind turbines), rechargeable batteries.

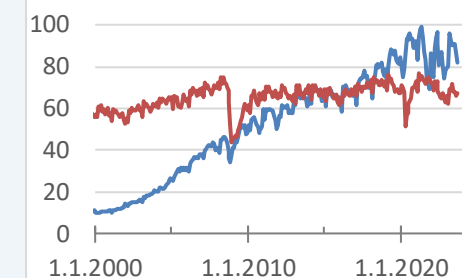
Iron ore (USD), 2016 = 100



- Iron ore mined: Australia (34%), Brazil, China, India.
- Pig iron (crude iron) production: China (64%), Japan.
- Steel production: China (52%), India, Japan, USA.
- Users: China (52%)
- Used in housing, transportation, industrial, automobile, infrastructure and utilities.

- Nickel: Slowing battery demand in China in Q3 and rapid supply growth (Indonesia).
- Steel: Pick-up in production in China.

Crude steel production, mill. t.



— China — Rest of the world

Sources: World Steel Association, Macrobond.



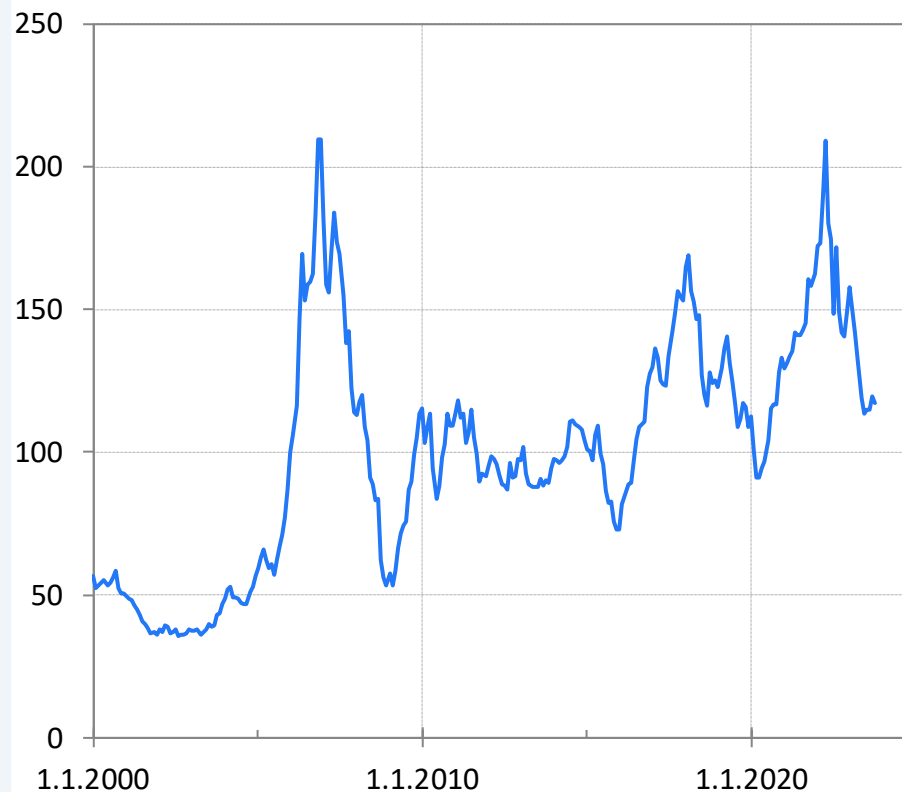
# Tin and zinc

Tin (USD), 2016 = 100



- Mined: China (31%), Indonesia (24%), Burma, Peru, Bolivia.
- Users: China (47%)
- Used as a protective coating or an alloy with other metals; semiconductors, electronics, e.g., electric vehicles, solar panels, batteries

Zinc (USD), 2016 = 100

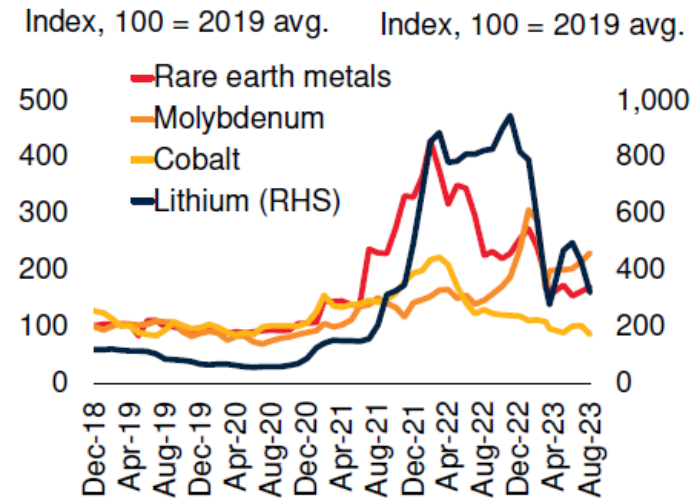


- Mined: China (32%), Peru, Australia, India, Mexico.
- Energy intensive to produce
- Used for galvanizing iron and steel (60%), die-casting alloys (15%), brass and casting (14%)

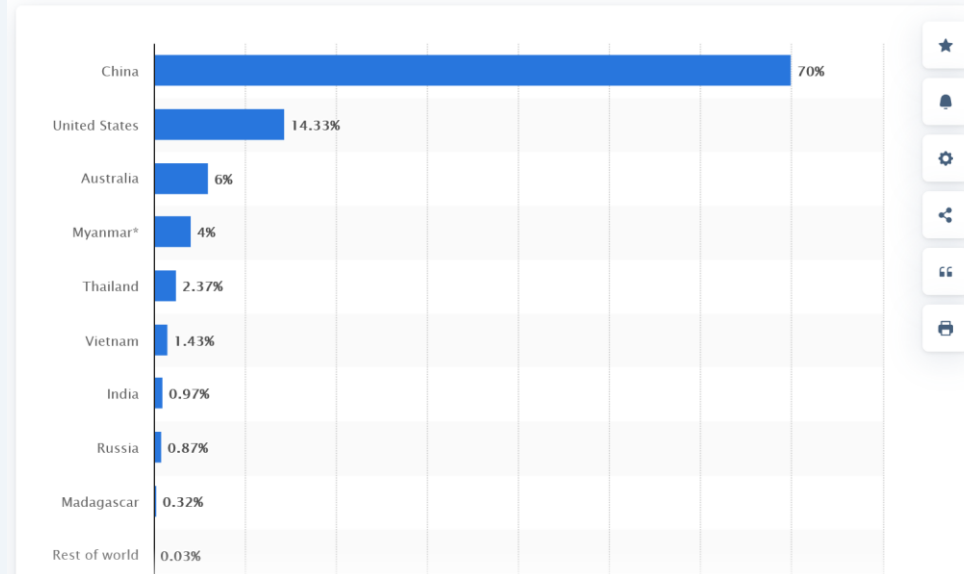
- Zinc in Q3: weak demand and rising inventories.

# Lithium, cobalt, molybdenum

## A. Price indexes for selected minerals



## Distribution of rare earths production worldwide as of 2022,



- Minerals used in, among other things, electric vehicles and battery production.
- Long-term structural demand growth.
- Efforts to find technologies to decrease or end the use of expensive strategic minerals in car batteries etc.

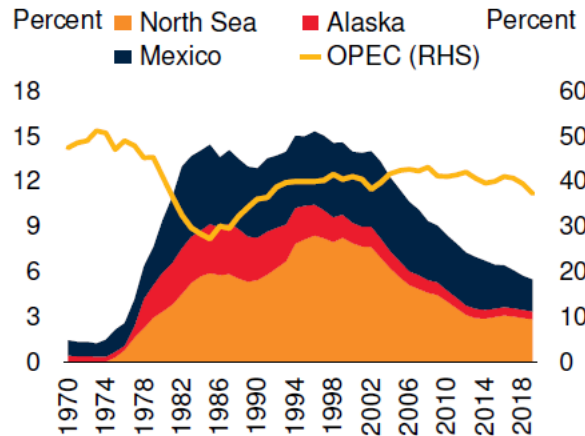
Source: World Bank.

# Energy

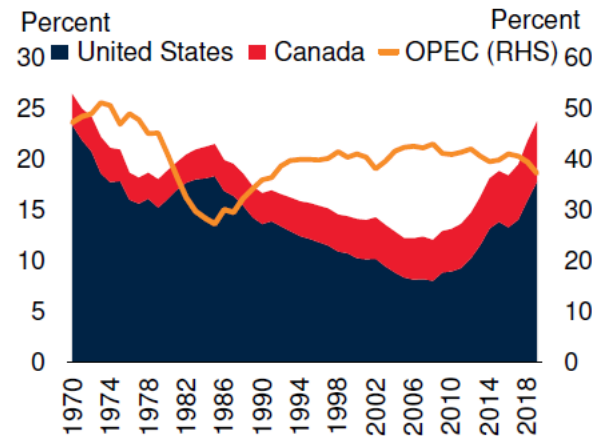


# The USA is again a big player in oil

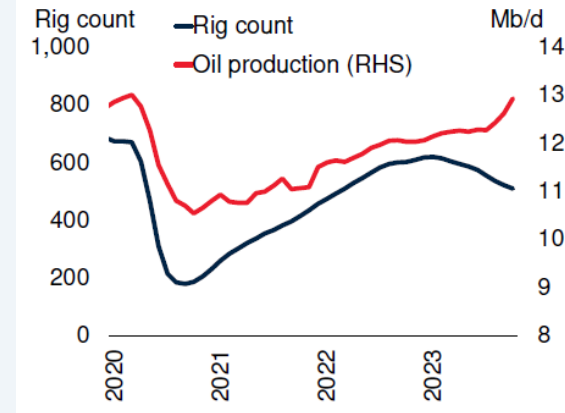
**C. Oil production by Alaska, Mexico, North Sea, and OPEC**



**D. Oil production by Canada, OPEC, and the United States**



**D. U.S. rig count and oil production**



Source: World Bank.

Sources: BP Statistical Review; Energy Institute; International Energy Agency; World Bank.

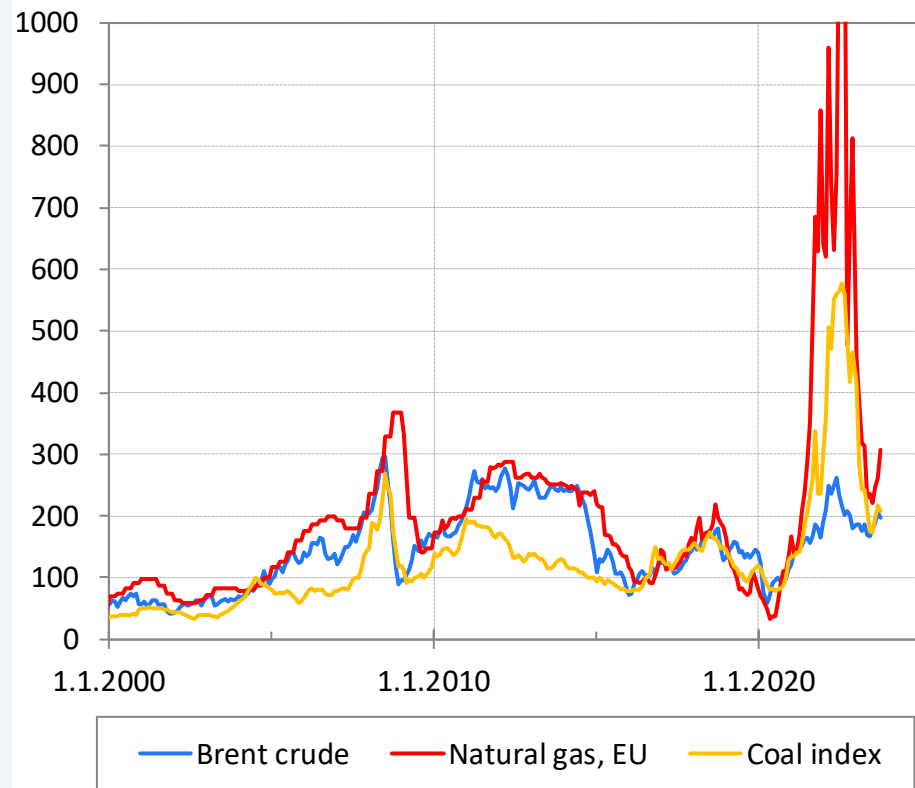
C.D. Crude oil production as a share of global crude oil production. North Sea includes Norway and the United Kingdom.

- As a net exporter the US has less interests in the Middle East. For example, ExxonMobil has just sold its stake in West Qurna 1 oilfield in Iraq; PetroChina takes its place. Also Lukoil is active in Iraq.
- This has geopolitical implications for Europe.

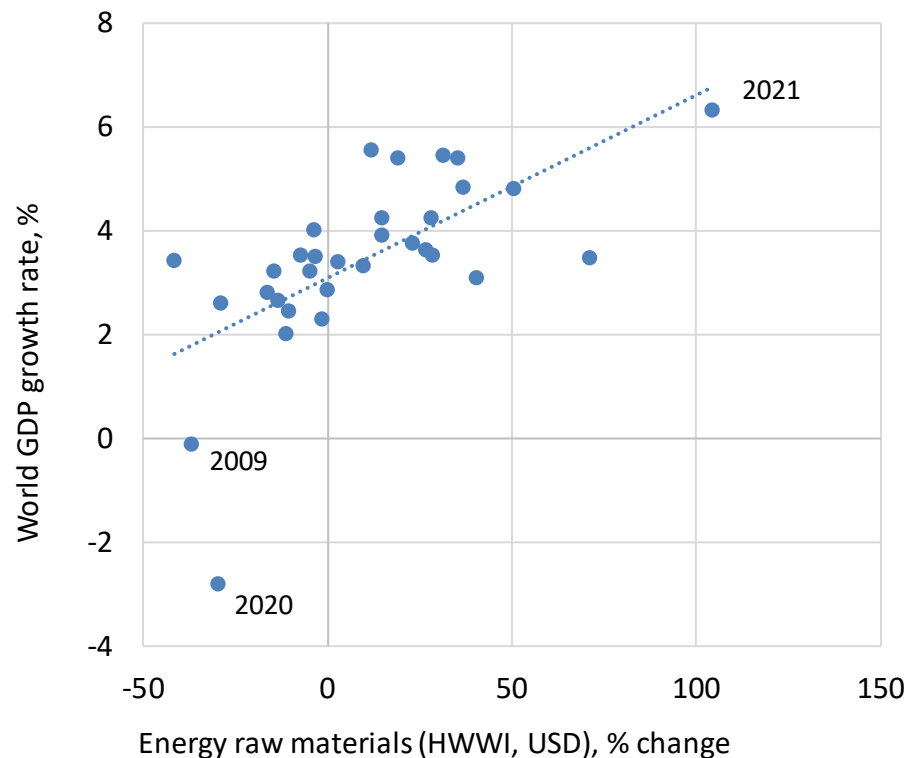
# Energy raw materials

Energy commodities (IMF, USD), 2016 = 100

Natural gas max  
1,607 in Aug '22

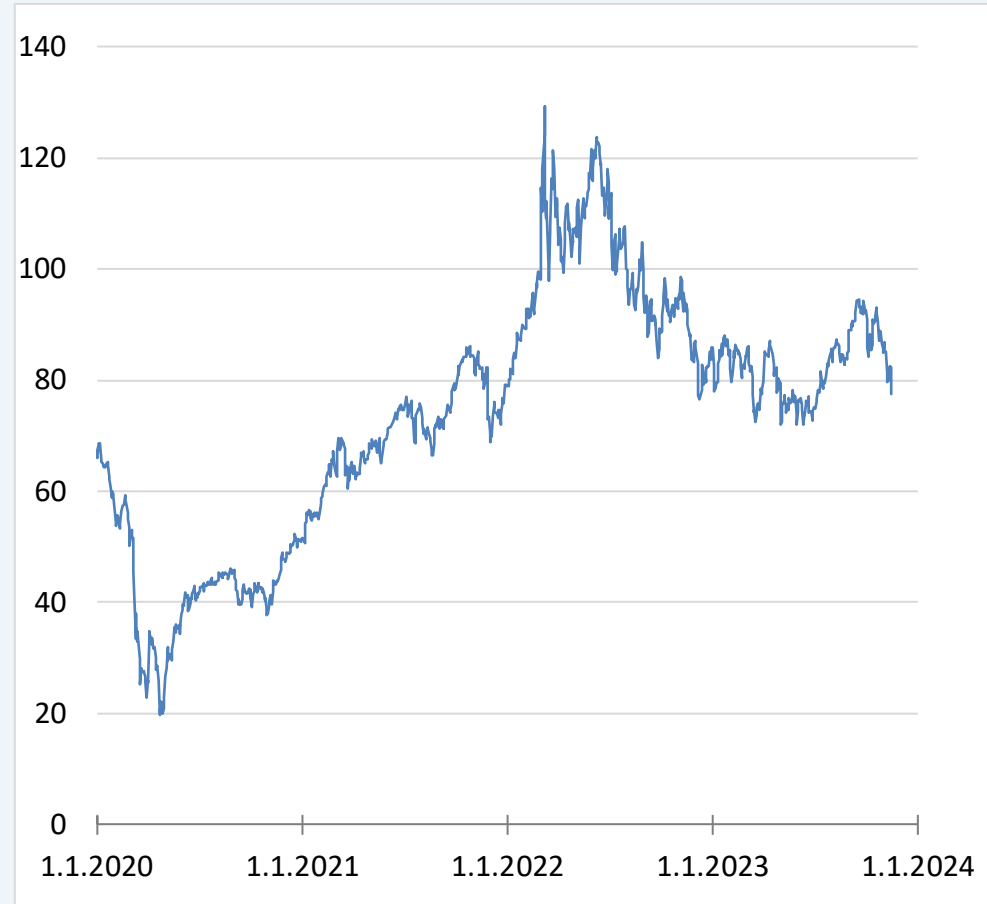
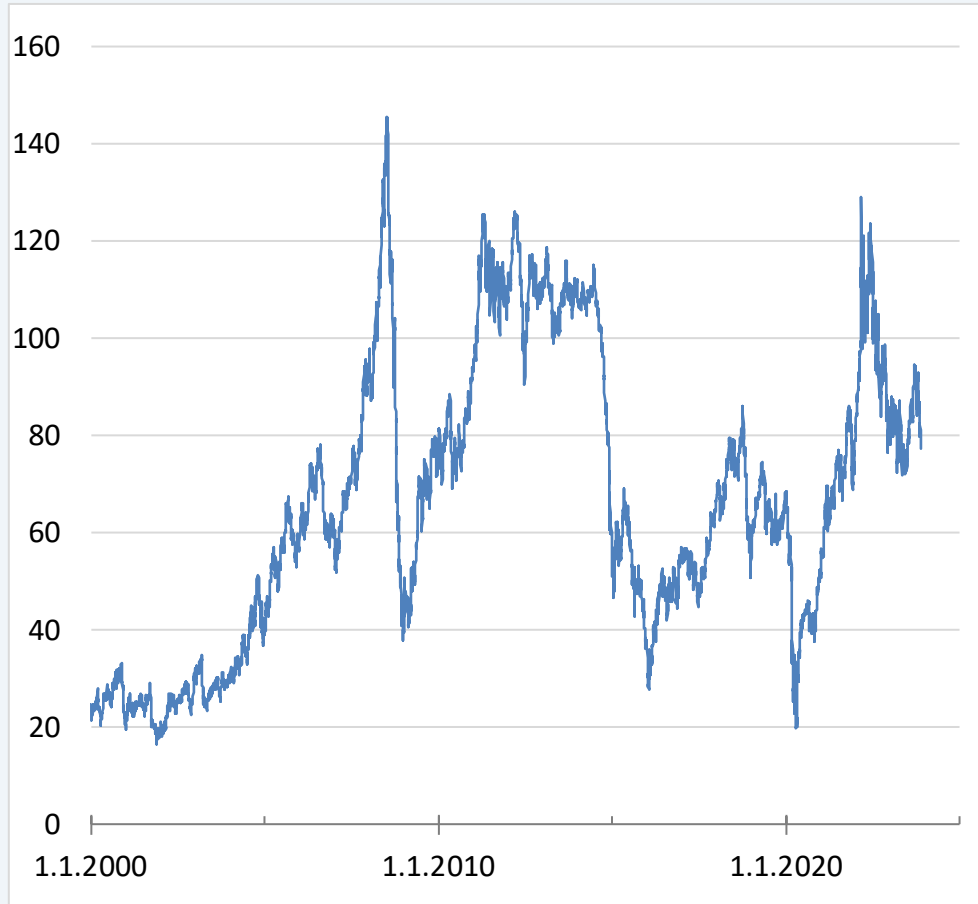


GDP and energy raw materials 1990-2022  $R^2 = 0.4162$



- World GDP growth explains energy raw materials price development (w/o 2020  $R^2$  is 0.46).
- Crude oil has approximately the same  $R^2$ s as all energy.
- Currently, high inventories and increasing LNG import capacity, but this winter may be colder than last. Gas demand is trending down.

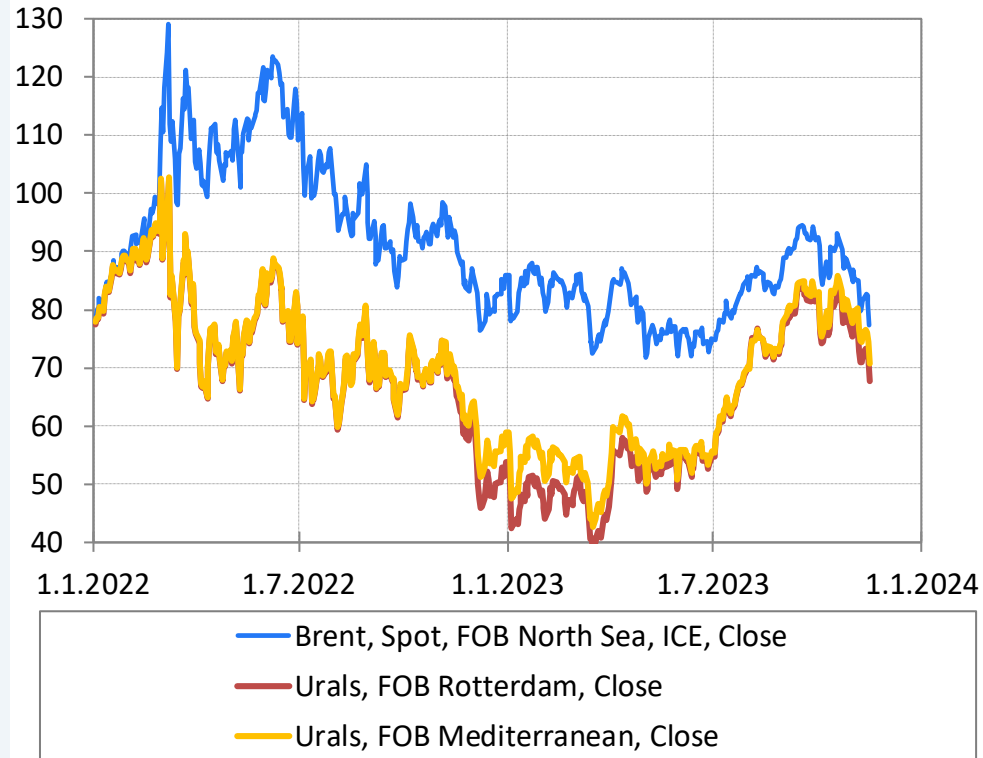
# Brent, USD/barrel, in the long and the short term



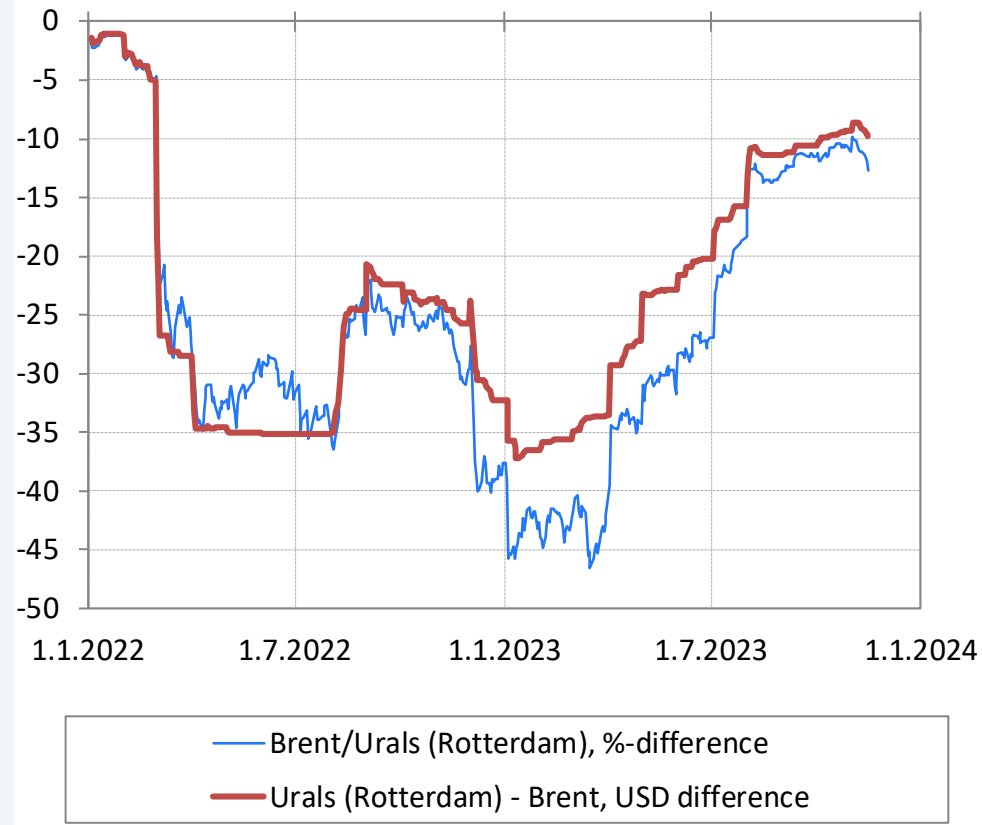
- OPEC+ cuts ...
- ... but supply growth elsewhere, notably the US.
- Weaker global economic growth.
- Oil markets have (at times) worried about the Israel-Hamas conflict.
- For now, the conflict is limited to a very small area and the market reaction is very muted.

# Urals discount withers away

## Urals and Brent, USD/barrel



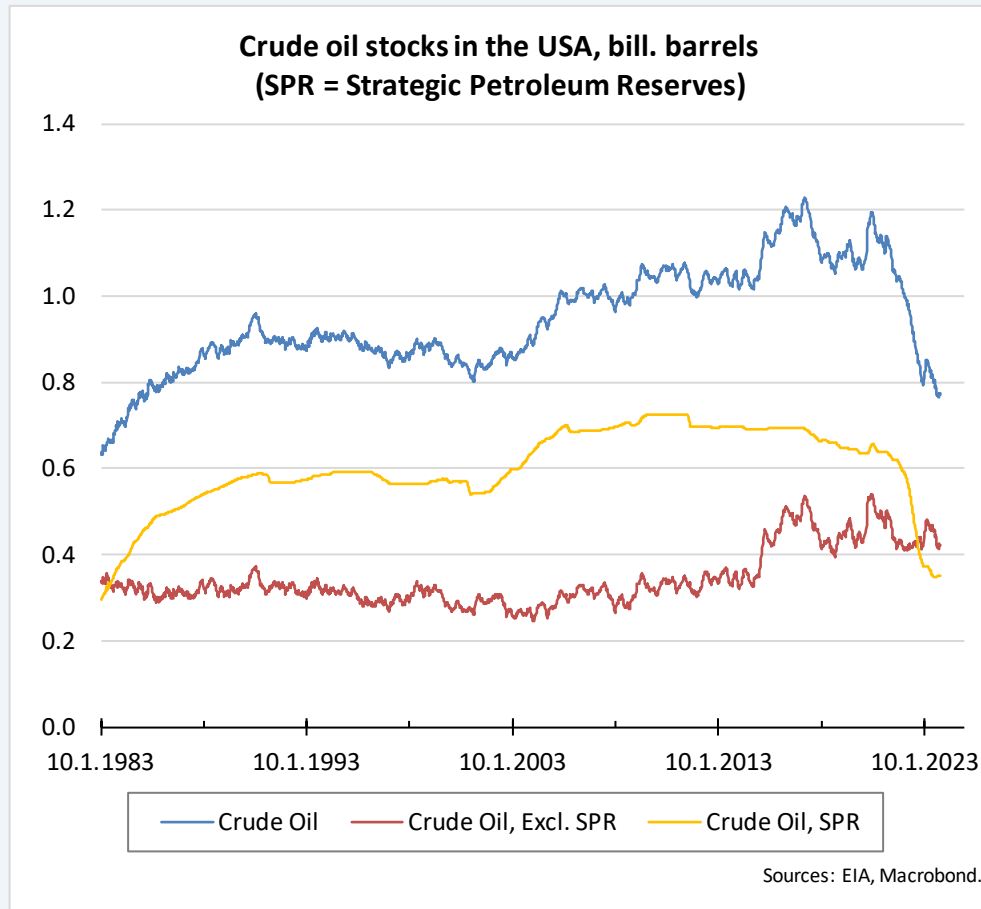
Source: Macrobond via ETLA



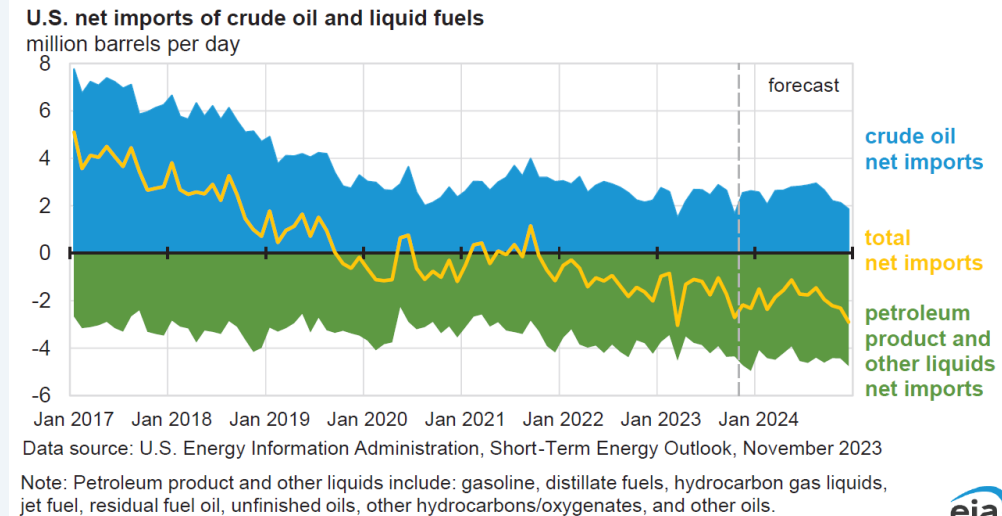
Source: Macrobond via ETLA.

- EU and G7 restrictions on exports of Russian crude and petroleum products have lowered Russia's export revenues.
- However, Russia now transports oil mainly without western insurance. Also, ESPO pipeline.
- According to the FT, 'official Russian statistics ... in October show the average price received was above \$80 a barrel.'

# US strategic petroleum reserves down (for good?)



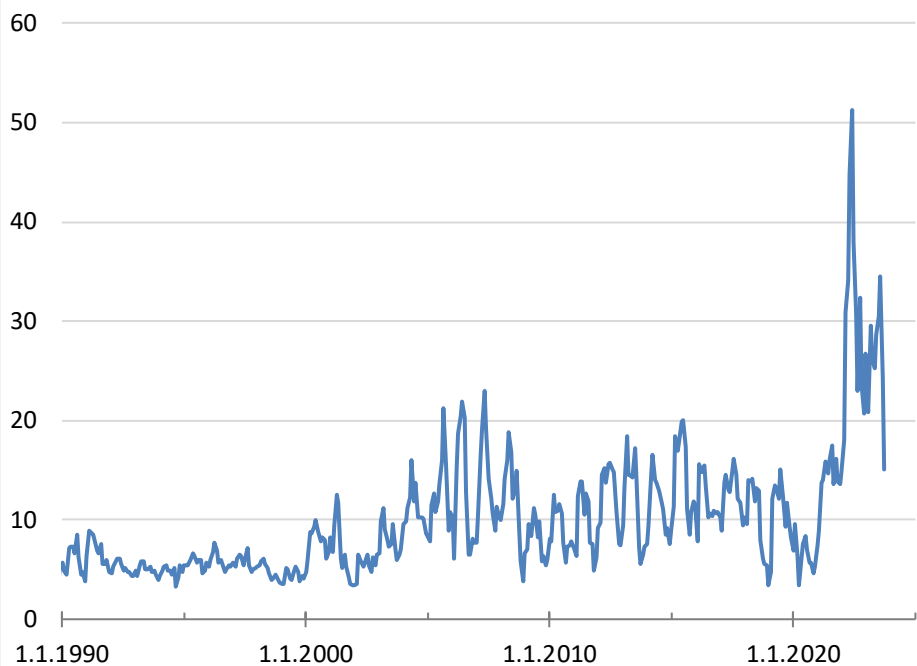
- The US is now a net exporter of oil and oil products.





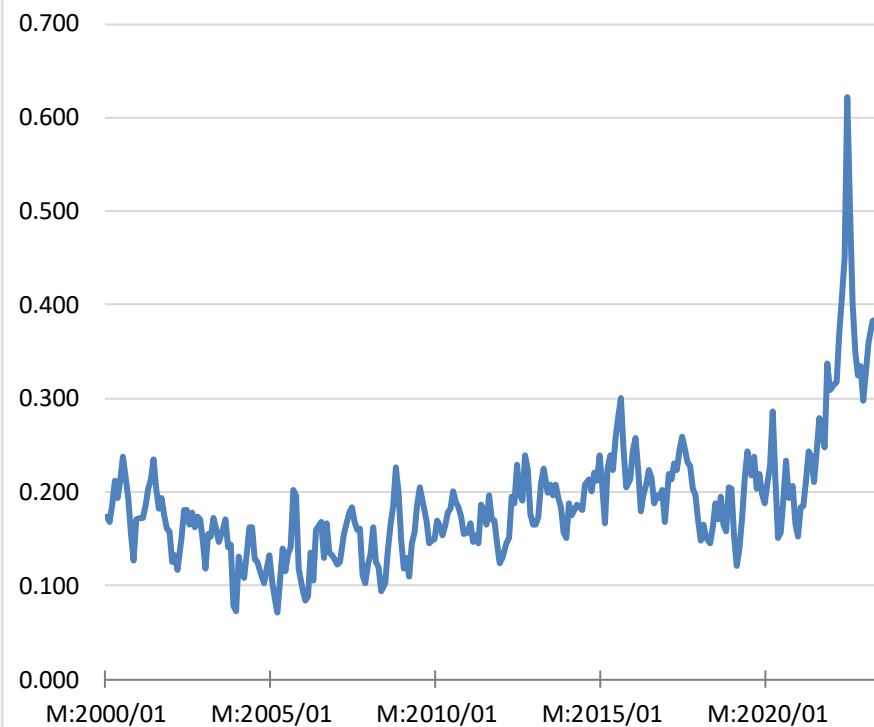
# Disruptions in the petroleum market

3:2:1 Brent Crack Spread, USD (Proxy for refining margin: difference between the purchase price of crude oil and the selling price of finished products)

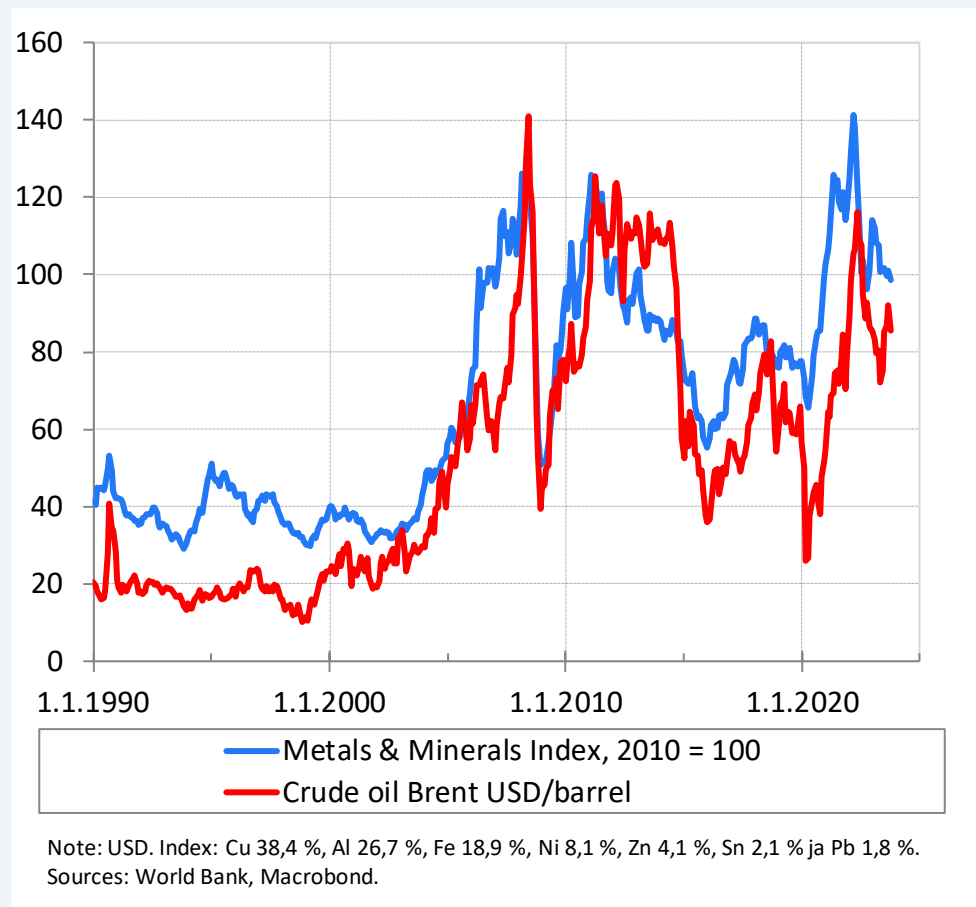


Source: Macrobond.

Total margins for petrol (E95 consumer price) in Finland, €/l (i.e. excl. crude oil, €/€, and taxes)  
(Sources: Statistics Finland and ETLA's calculations)



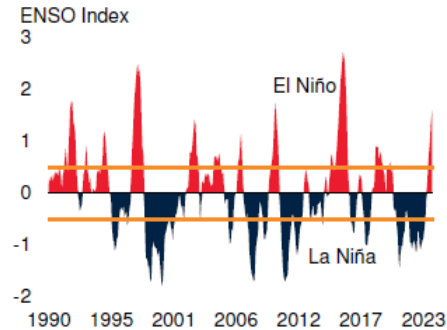
# Metals and crude move in tandem



# Food



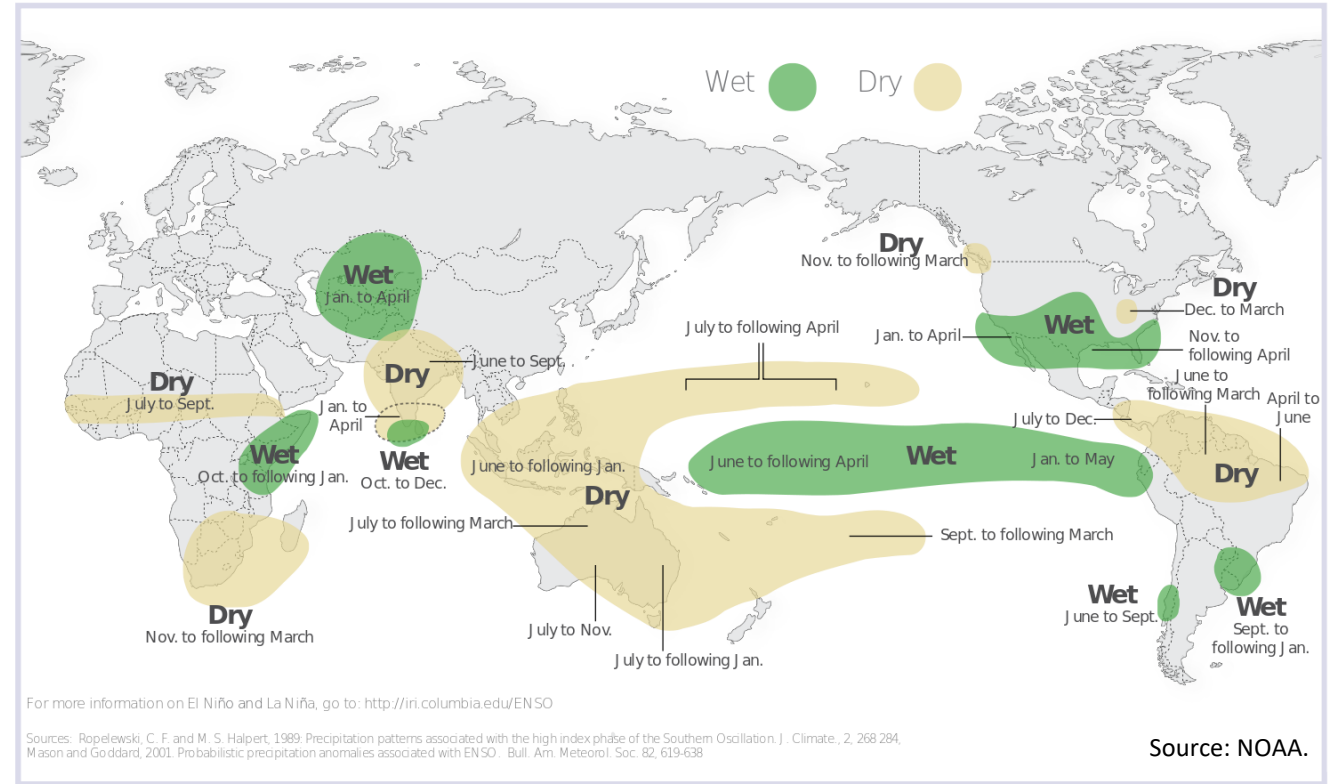
*The strength of current el Niño is moderate, with a 75 to 85 percent chance of a strong El Niño by winter in the Northern Hemisphere. El Niño is historically associated with higher prices for agricultural commodities.*



Commodity Type	El Niño Period (%)	Non El Niño Period (%)
Grains	15.5	5.5
Food	10.5	4.5
Oils and meals	10.0	7.0
Other foods	9.5	2.5
Raw materials	7.5	5.0

A. The ENSO (El Niño Southern Oscillation) Index represents a centered three-month mean SST (Sea Surface Temperature) anomaly for the Niño 3.4 region (i.e., 5°N-5°S, 120°E-170°W). According to NOAA, events are defined as five consecutive overlapping three-month periods at or above the +0.5σ anomaly for El Niño events and at or below the -0.5σ anomaly for La Niña events. The orange lines indicate the +0.5σ and -0.5σ anomaly.

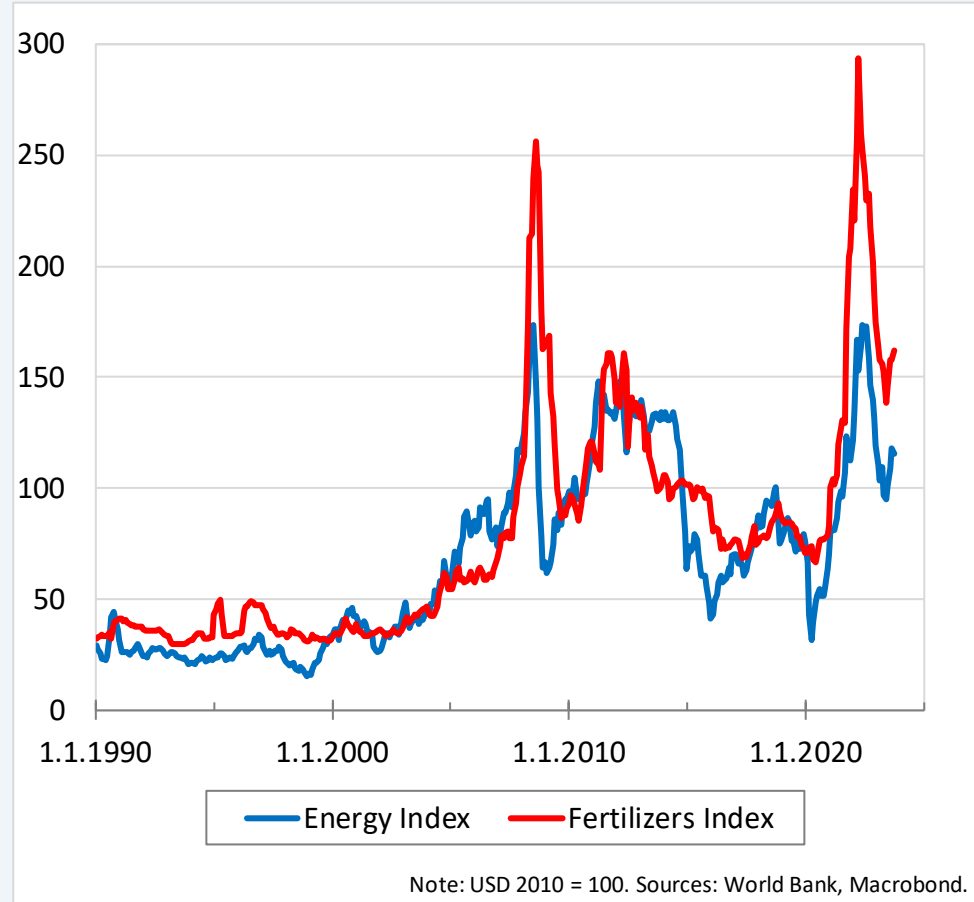
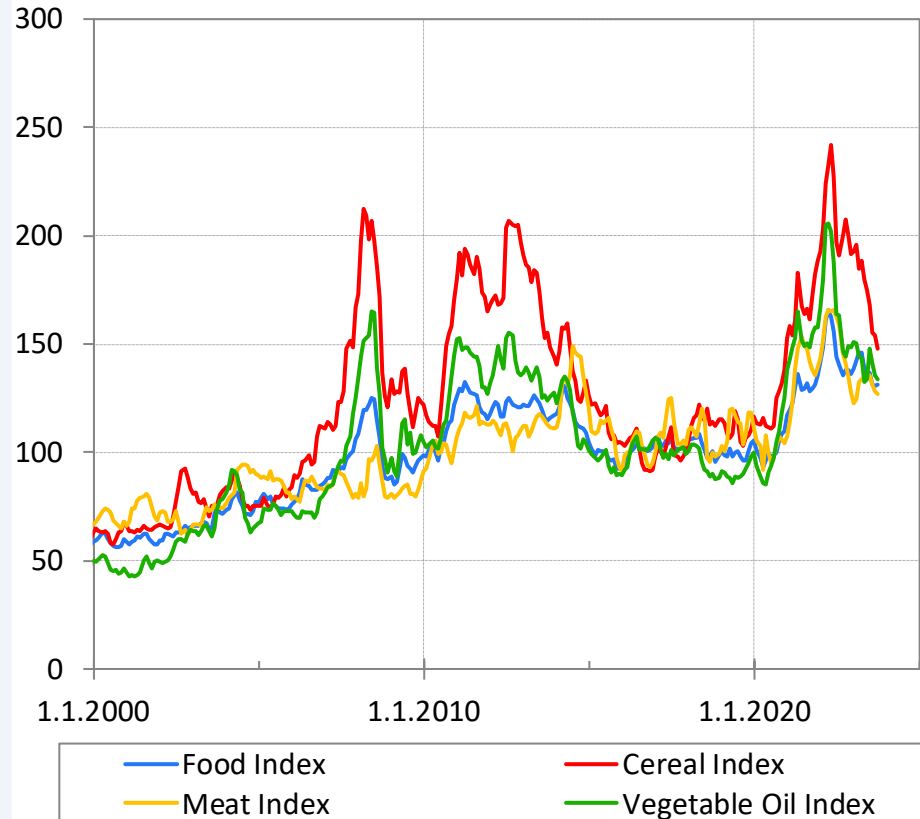
El Niño conditions in the tropical Pacific are known to shift rainfall patterns in many different parts of the world. Although they vary somewhat from one El Niño to the next, the strongest shifts remain fairly consistent in the regions and seasons shown on the map below.



- After three consecutive La Niñas, the world is now experiencing an El Niño year.
- Higher average global temperature.
- Colder winters in Northern Europe.
- Higher average global agricultural prices.

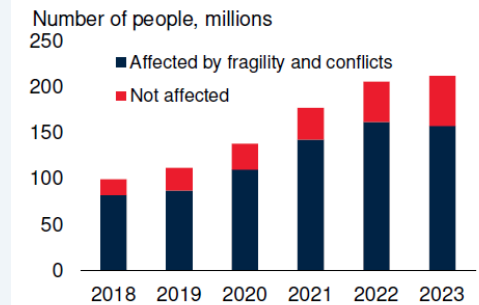
# Food prices down from peak, but remain elevated

World market prices (IMF, USD), 2016 = 100



Note: USD. Natural phosphate rock (16.9%), phosphate (21.7%), potassium (20.1%), and nitrogenous (41.3%). Sources: World Bank, Macrobond.

A. Number of people with food insecurity by fragility and conflict situations



# Some forecasts



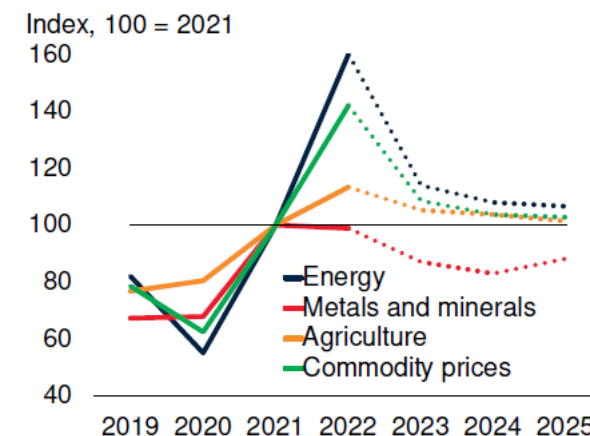


# World Bank Forecasts (October 2023)

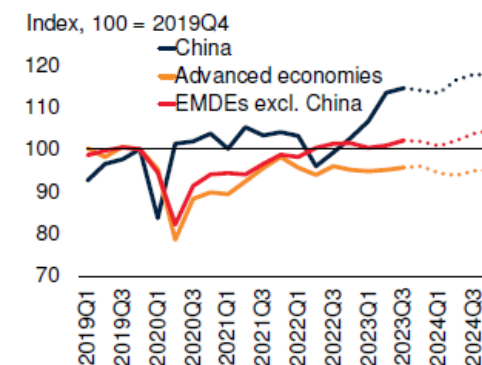
**TABLE 1** World Bank Commodity Price Forecasts

Commodity	Unit	2021	2022	2023f	2024f	2025f
<b>INDEXES (in nominal U.S. dollars, 2010 = 100)</b>						
<b>Total</b> <sup>1</sup>		101.0	143.3	109.6	105.1	104.6
<b>Energy</b> <sup>2</sup>		95.4	152.6	108.6	103.7	103.0
<b>Non-Energy</b>		112.5	124.4	111.5	108.0	107.8
<b>Agriculture</b>		108.3	122.7	113.9	112.2	109.7
<b>Beverages</b>		93.5	106.3	106.3	100.9	100.4
<b>Food</b>		121.8	143.7	131.1	129.1	124.7
Oils and Meals		127.1	145.2	120.4	117.3	114.1
Grains		123.8	150.4	133.4	129.6	122.9
Other food		113.1	135.6	142.9	144.1	140.3
<b>Raw Materials</b>		82.9	80.3	76.0	76.9	78.1
Timber		90.4	80.1	79.9	81.2	82.5
Other raw materials		74.8	80.5	71.8	72.2	73.2
<b>Fertilizers</b>		152.3	235.7	156.5	132.4	119.5
<b>Metals and Minerals</b> <sup>3</sup>		116.4	115.0	101.4	96.6	102.6
<b>Base Metals</b> <sup>4</sup>		117.7	122.4	107.8	102.3	110.5
<b>Precious Metals</b> <sup>5</sup>		140.2	136.8	138.4	145.1	131.5
<b>PRICES (in nominal U.S. dollars)</b>						
<b>Energy</b>						
Coal, Australia	\$/mt	138.1	344.9	175.0	130.0	110.0
Crude oil, Brent	\$/bbl	70.4	99.8	84.0	81.0	80.0
Natural gas, Europe	\$/mmbtu	16.1	40.3	13.0	12.5	13.0
Natural gas, U.S.	\$/mmbtu	3.9	6.4	2.7	3.3	4.0

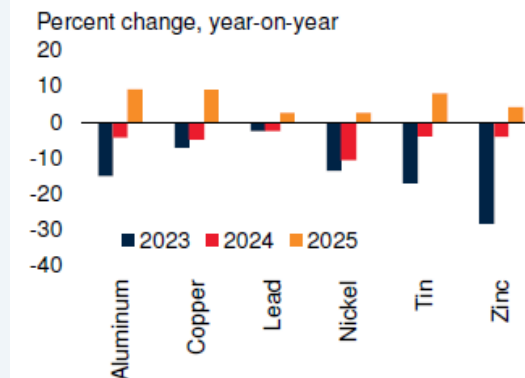
## D. Commodity price projections



## D. Oil demand



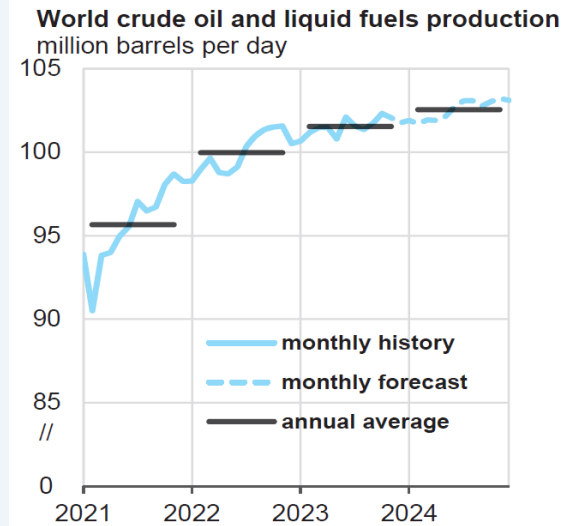
## F. Changes in base metals prices



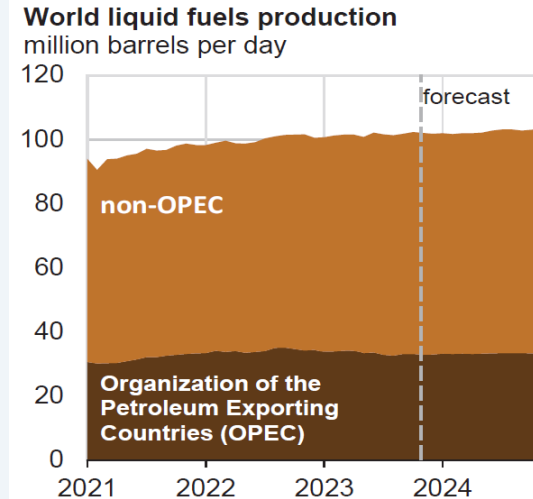
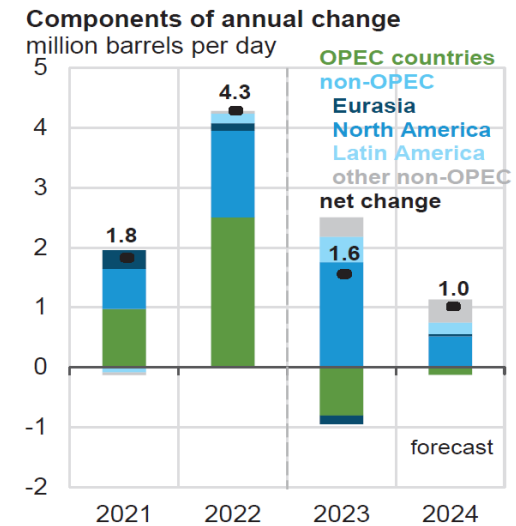
# EIA forecasts (November 2023)

Overview				
	2021	2022	2023	2024
<b>Brent crude oil</b> (dollars per barrel)	70.89	100.94	83.99	93.24
<b>Gasoline retail price</b> (dollars per gallon)	3.02	3.97	3.55	3.61
<b>U.S. crude oil production</b> (million barrels per day)	11.27	11.91	12.90	13.15
<b>Natural gas spot price</b> (dollars per million BTU)	3.91	6.42	2.67	3.25
<b>U.S. LNG exports</b> (billion cubic feet per day)	9.76	10.59	11.80	12.29

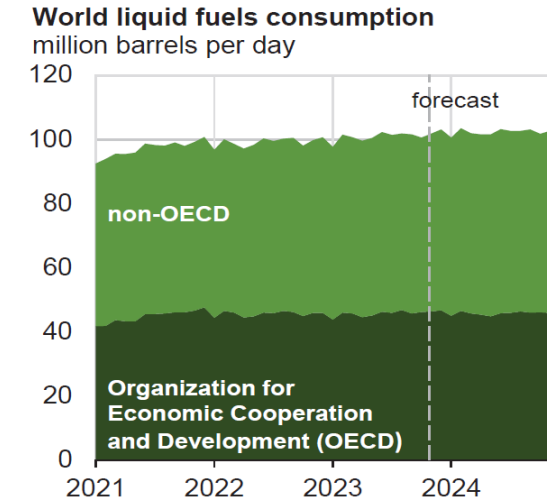
- According to the EIA
  - Crude oil prices will rise
  - Increased production outside of OPEC
  - Increased demand outside of OECD
  - Liquid fuels demand rises by about the same rate as world GDP



Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, November 2023 eia



Data source: U.S. Energy Information Administration, Short-Term Energy Outlook, November 2023 eia





Kiitos mielenkiinnostanne!

The diagram illustrates a word-for-word correspondence between the Finnish sentence "Kiitos mielenkiinnostanne!" and the English sentence "Thank you for your interest!". Brackets are placed under each word in both sentences. Arrows connect the words as follows: "Kiitos" to "Thank", "mielenkiinnosta" to "for", "nne" to "your", and "!" to "interest!".

Thank you for your interest!



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