Energy at the End of the World
ECC – September 8, 2022
State of the War & Ukrainian Exports
## Russian, Belarusian and Ukrainian Major Exports

<table>
<thead>
<tr>
<th>First in Global Ranking</th>
<th>Second</th>
<th>Third</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural gas</td>
<td>Crude oil</td>
<td>Coal</td>
</tr>
<tr>
<td>Uranium (fuel)</td>
<td>Refined oil products</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Neon</td>
<td>Platinum group metals</td>
<td>Gas turbines</td>
</tr>
<tr>
<td>Processed nickel</td>
<td>Refined copper</td>
<td>Titanium</td>
</tr>
<tr>
<td>Semi-finished iron</td>
<td>Steel</td>
<td></td>
</tr>
<tr>
<td>Wheat</td>
<td>Seed oils</td>
<td></td>
</tr>
<tr>
<td>Fertilizer</td>
<td>Ammonia</td>
<td></td>
</tr>
<tr>
<td>Potash</td>
<td>Sawn wood</td>
<td></td>
</tr>
</tbody>
</table>
The Redirection Question
The Depression Question
The Populist Question
The German Question
The Mismatch

Risk to Important Crude Flows

[Diagram showing a scatter plot with various crude oil types and their API gravity and sulfur content.]

Production (thousand barrels per day):
- 100
- 2,000
- 4,000
- 6,000
- >8,500

All global crude grades with a gross production in excess of 100,000 barrels per day. Sources: Energy Intelligence, Baker Institute, EIA, Argus Media, and Tableau. © 2020 Zelhan on Geopolitics.
The Steel Question

Iron Ore  Blast Furnace  Pig Iron  Hot-Rolled  Cold-Rolled
Minerals Used in Green Technologies

Transport (kg/vehicle)
- Electric Car
- Conventional Car

Power generation (kg/MW)
- Offshore wind
- Onshore wind
- Solar PV
- Nuclear
- Coal
- Natural gas

Source: IEA
Approaching the Chinese Collapse
Transport: Global Patrol
Transport: Trade and War
Energy: Investment

USD Billions

- 2010
- 2011
- 2012
- 2013
- 2014
- 2015
- 2016
- 2017
- 2018
- 2019
- 2020
- 2021

2010: 800 USD Billions
2011: 900 USD Billions
2012: 1000 USD Billions
2013: 1100 USD Billions
2014: 1200 USD Billions
2015: 900 USD Billions
2016: 800 USD Billions
2017: 700 USD Billions
2018: 700 USD Billions
2019: 700 USD Billions
2020: 500 USD Billions
2021: 600 USD Billions
Energy: Waste Economics

Petroleum Inputs into Common Goods

NEW

OLD

Energy: Waste Economics

Petroleum Inputs into Common Goods

NEW

OLD
Natural gas, LNG Benchmarks - Monthly Averages
1990-2022, $/mmBTU

HH
TTF
ASIALNG
Finance: The Cliff Approaches

This is the average net worth for all Americans.
Finance: The Old Normal

Nigeria 2025

Birth year of youngest members of 5-year cohorts.

Source: UNPD
United States Demography 2025

Female

<table>
<thead>
<tr>
<th>Year</th>
<th>Population in Thousands</th>
</tr>
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<td>1925</td>
<td>14000</td>
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<tr>
<td>1935</td>
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Birth year of youngest members of 5-year cohorts.
Mexico 2025

Birth year of youngest members of 5-year cohorts.

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Source: UNPD
War and post-war industrialization

Peak Boomer consumption

Globalization’s heyday

CPI: US and Canada
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www.Zeihan.com/newsletter