From energy to material security – a world challenged by supply and demand imbalances

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The world is not facing one, but multiple crises
Which are related to or worsening other global challenges

- Food insecurity
- Deforestation
- Inflation
- Bio-diversity loss
- Unhealthy oceans
- Conflicts
- Extremes weather
- Climate change
- Energy insecurity
- Pollution
- Health issues
- Migration
- Rich-poor gap
- Gender inequality
- Access to raw materials
- Energy insecurity
The world constantly tries to cure symptoms – not root causes

Making things worse

**What People See**

- High prices for energy and electricity

**Proposed cure**

- Demand reduction
- Price cabs
- Revenue curbing of inframarginal generators
- Windfall profit taxation in the fossil fuel sector

**Example:**

- Current (global) energy and (European) electricity crises

**What People See Don’t See**

- High demand amidst COVID-19 recovery
- Insufficient supply – amplified through Russian invasion into Ukraine

**Ideal cure**

- Protect vulnerable consumer groups with target measures
- Boost (renewable) supply
- Reduce demand
EU’s discussion on potential market intervention at a glance

Measures come with significant design challenges

**ACER’s assessment of possible market interventions** (the further a measure is depicted to the right, the higher the risk of market distortions) and related design challenges (not exhaustive)

<table>
<thead>
<tr>
<th>Targeted support of vulnerable consumer groups</th>
<th>Windfall profit taxation</th>
<th>Support for gas power plants</th>
<th>Price caps &amp; revenue curbing</th>
<th>Technology-specific measures</th>
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<td>• Direct transfers to specific consumer groups, support for energy efficiency improvements &amp; self-production doesn’t distort the electricity market</td>
<td>• How to ensure compliance with constitutional and state aid laws?</td>
<td>• Iberian example: can reduce electricity prices but can drive up gas consumption (how to ensure demand reduction?)</td>
<td>• Price caps: how to avoid trade flow shifts (between markets &amp; market segments)?</td>
<td>• How to avoid severe market distortions (between countries, markets &amp; technologies)?</td>
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<td></td>
<td>• How to avoid tax burden to impact end-consumer prices?</td>
<td>• How to avoid tax evasion?</td>
<td>• Revenue curbing: how to target realized revenues only? How to deal with bilateral agreements?</td>
<td>• How to ensure healthy investment climate?</td>
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**Source:** ACER, Final Assessment of the EU Wholesale Electricity Market Design, 04/2022
How to avoid short-term market interventions hampering the energy transition

Restoring a healthy supply and demand balance will be key

Reduce demand for energy and electricity as bringing immediate relief to all consumers

Protect vulnerable consumers through targeted support measures – if partially financed through revenue curbing on inframarginal generators:
- Introduce a time-limited single EU-wide technology-neutral revenue cap across all electricity market segments
- Exempt generators on fixed-price contracts below the revenue cap
- Apply the cap on realized revenues only

Accelerate the build-out of renewables and grids – each additional (renewable) kWh decreases electricity prices

Increase power system flexibility on demand and supply side

Open a stakeholder-encompassing discussion on how to future-proof energy and electricity market designs – hasty short-term patches do more harm than good

Restore supply and demand balance while protecting vulnerable consumer groups
Next supply-demand-imbalance on the horizon: energy transition materials

Time to start thinking ahead

Increase of demand for energy transition materials
(in thousand tonnes (kt), IEA’s sustainable development scenario; excludes structural materials such as concrete, steel or aluminum)

- Inverted relations: clean energy technologies (e.g. renewables, electric vehicles, batteries) are much less carbon-intensive but far more material intensive than fossil fuels
- Though there is no shortage in resources worldwide as per the IEA, “Today’s supply and investment plans for many critical minerals fall well short of what is needed to support an accelerated deployment of solar panels, wind turbines and electric vehicles.”
- Long-term visibility, robust investment signals and global collaboration are key to ensure future mineral security – as illustrated by the current energy and electricity crisis

Source: IEA, The Role of Critical Minerals in Clean Energy Transitions, 03/2022

Classification: Public
Thank you for your attention
Marginal cost based pricing explained

As wind and solar PV have low to no marginal costs, they reduce power prices

Merit order effect: The higher the share of wind and solar in the power mix … the lower the power prices

Source: Adapted from Agora Energiewende 2012; note: illustration valid for liberalized power markets (not for markets with regulated power prices or market segments with pay-as-bid pricing)