



**L Deterrence through
Transformation**

ISA Security Summit 2026

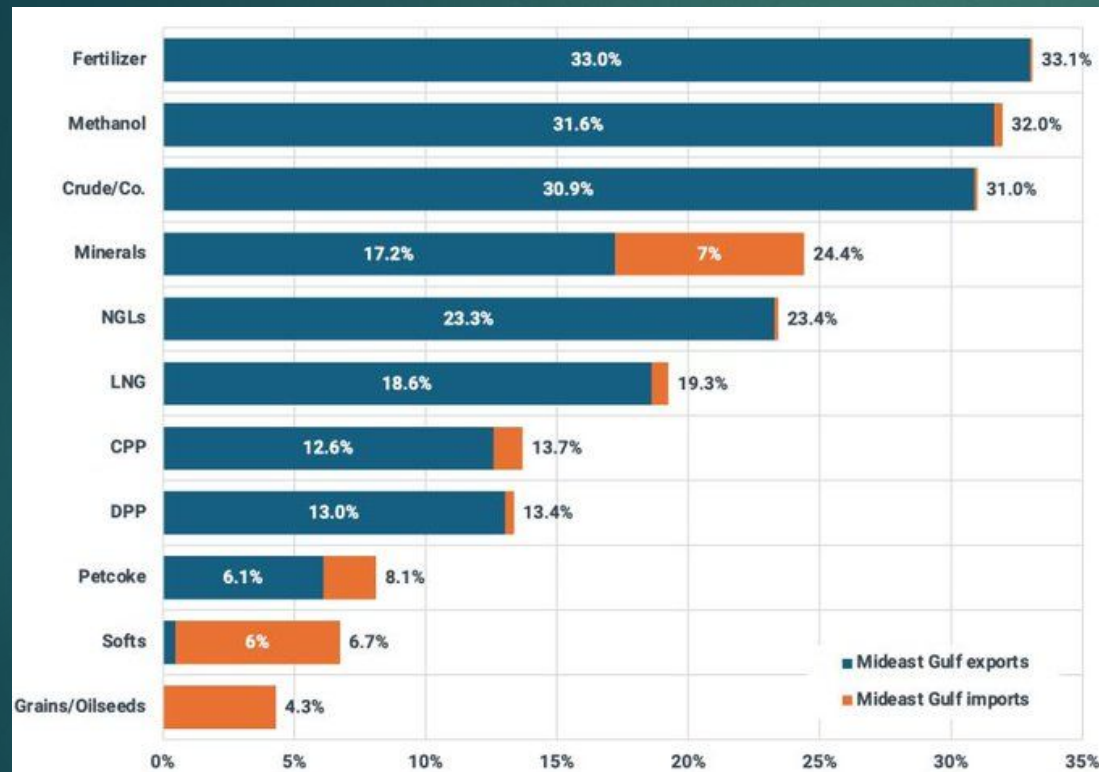
Water, food security and national security

DR RICHARD BYRNE – HARPER ADAMS UNIVERSITY, UK

Food security challenges

- ▶ Climate change – water, production, logistics
- ▶ Water – exclusive capture – private and state – soil salinisation, crops....
- ▶ Supply chains – fertiliser, seed - geopolitics, conflict
- ▶ Low prices – farmer behaviour – export potential
- ▶ Increased global dependency on trade for food security – leverage
- ▶ Trade disruption - threat to international order

Conflict - Straits of Hormuz



- ▶ ~33% of the world's fertilizer shipments.
- ▶ Monthly shipments from the Persian Gulf region range from 3 to 3.9 MMT, including
 - ▶ 1.5-1.8 MMT of sulphur,
 - ▶ 1.2-1.5 MMT of urea
 - ▶ 400-500 KMT each of ammonia and phosphates.
- ▶ Complete closure of the strait could reduce global sulphur supplies by 44% and urea by 30% annually
- ▶ Plus Trump – Sulphur directorate

Conflict and disinformation

Ukraine – have we learnt lessons?

- ▶ Key supplier of grains and oilseeds
- ▶ WFP
- ▶ Russia grain diplomacy
- ▶ Statistics – global pricing/availability



Promoting Food Security Resilience

- ▶ Data!
- ▶ Seed technology
- ▶ Micro irrigation
- ▶ Water storage – ground water governance
- ▶ Soil management
- ▶ Understanding supply chains – inputs
- ▶ Food and agricultural systems – National Defence
- ▶ National security priority – UK WW2
- ▶ Scenarios
- ▶ Wargaming
- ▶ What if- think the unthinkable
- ▶ Food system securitisation
- ▶ State and private sector

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- An aerial photograph of Harper Adams University. The main building is a large, multi-story red brick structure with a complex roofline featuring several gables and dormers. It has numerous windows with white frames. The building is surrounded by green lawns and trees. In the background, there are more campus buildings and a landscape of fields and distant hills under a clear sky. A solid red vertical bar is located in the top right corner of the image.
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