

Contours of an Emerging Global Future Woven by Technological Leaps

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The Global Connectivity Revolution

Skeletal System

Transportation

Highways, railways, bridges, tunnels, airports, seaports

Vascular System

Energy

Oil & gas pipelines and refineries, electricity grids and power plants

Nervous System

Communication

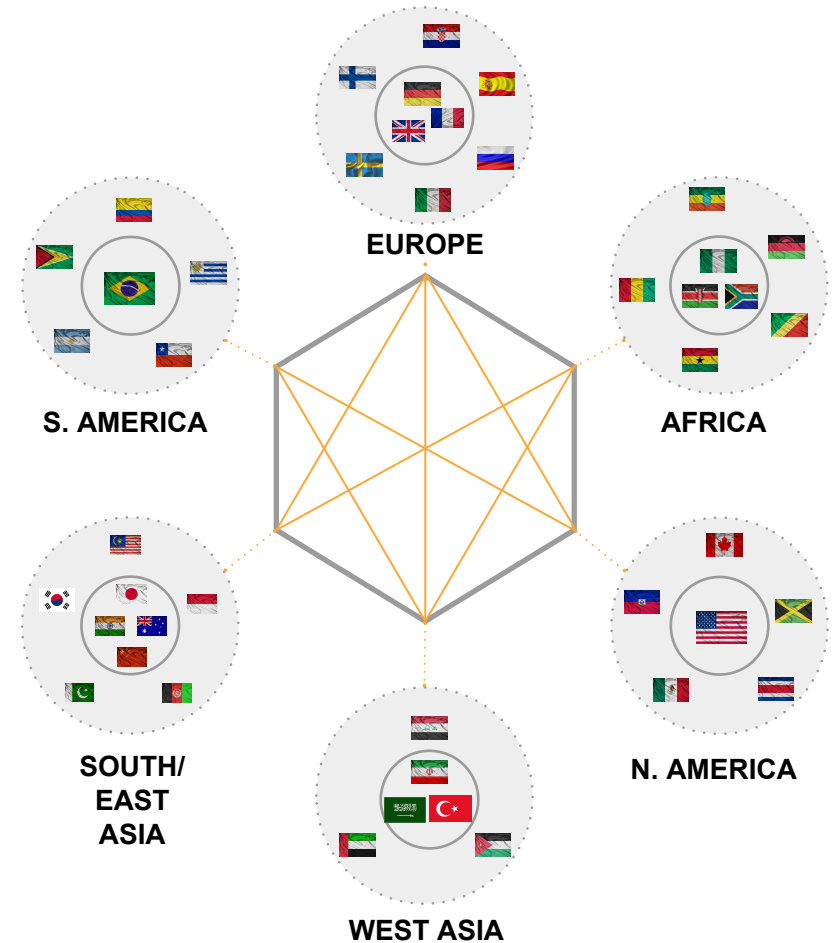
Internet cables, satellites, data centers



The Infrastructural Matrix: Exoskeleton on the Planetary Body

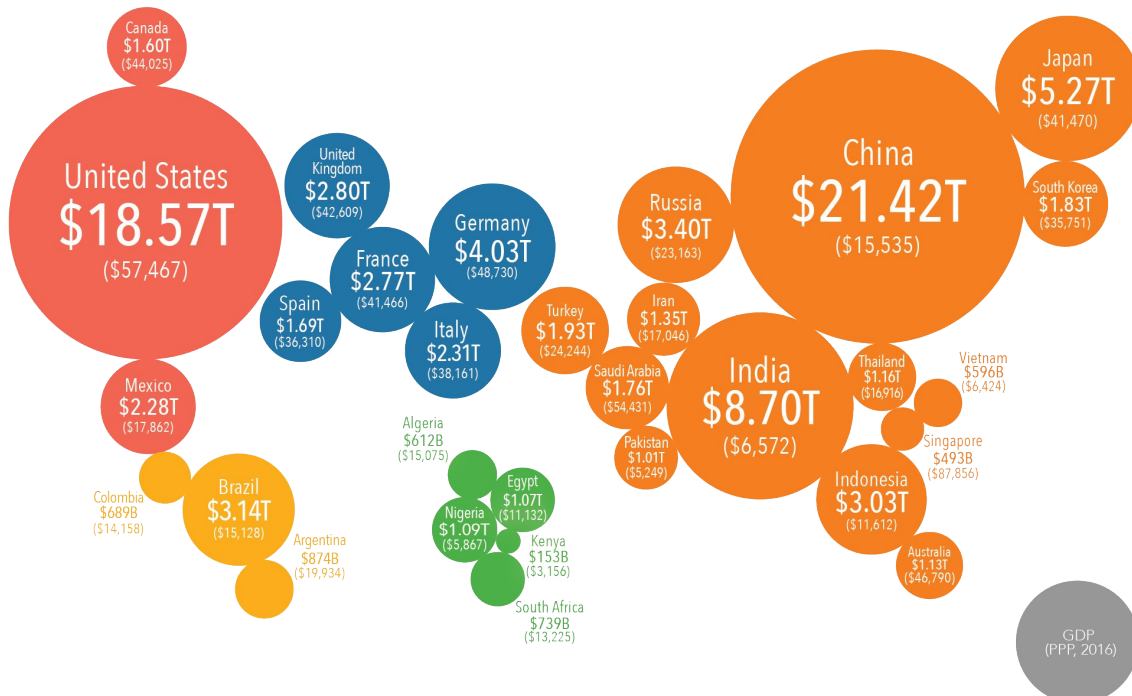
The Geopolitical Marketplace: Networks Across Hierarchies

- A New World Order: Permanent multi-regional, multi-civilizational structure
- From Hierarchy to Symmetry: Regionalism and reciprocity
- Complementary Global Goods: American security and Chinese infrastructure
- Competitive Utilities: Security, energy, finance, technology



Rise of the Asian Economic System

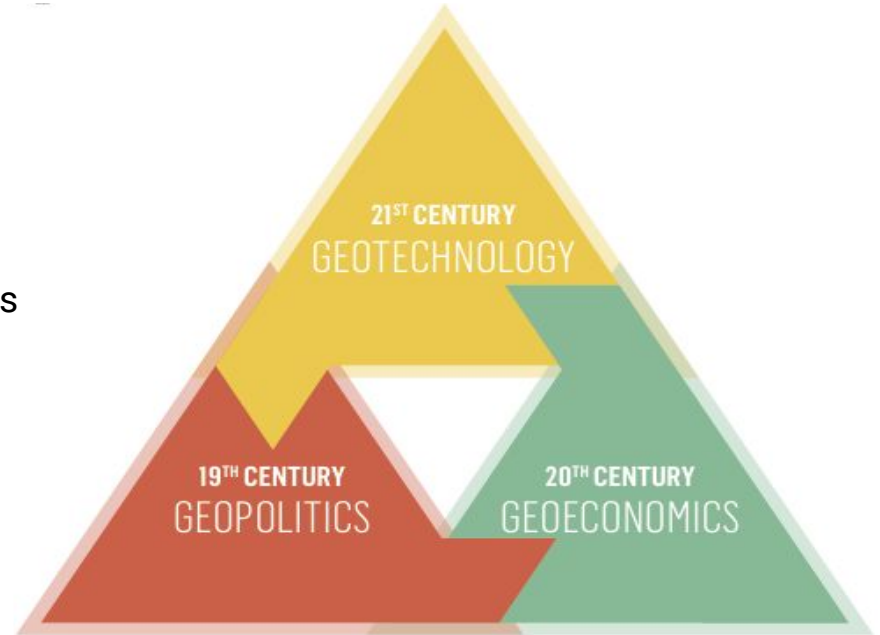
- Economic multipolarity: Asia's geo-economic regional expanse versus North America and Europe
- Increasingly integrated sub-regional systems: West Asia, South Asia, Central Asia, Southeast Asia, Northeast Asia, Oceania
- Swing states: Asianization of Russia, Turkey, GCC via trade/investment reorientation
- Regional liquidity: SWFs, capital markets, currency agreements, FDI



Source: World Bank
Casey Kalman

The Triangle of 21st Century Power

- Three reinforcing dimensions of power
- Balance of innovation drives balance of power
- Strategic industrial policy to capture value chains



National success requires a new curriculum bridging all three approaches

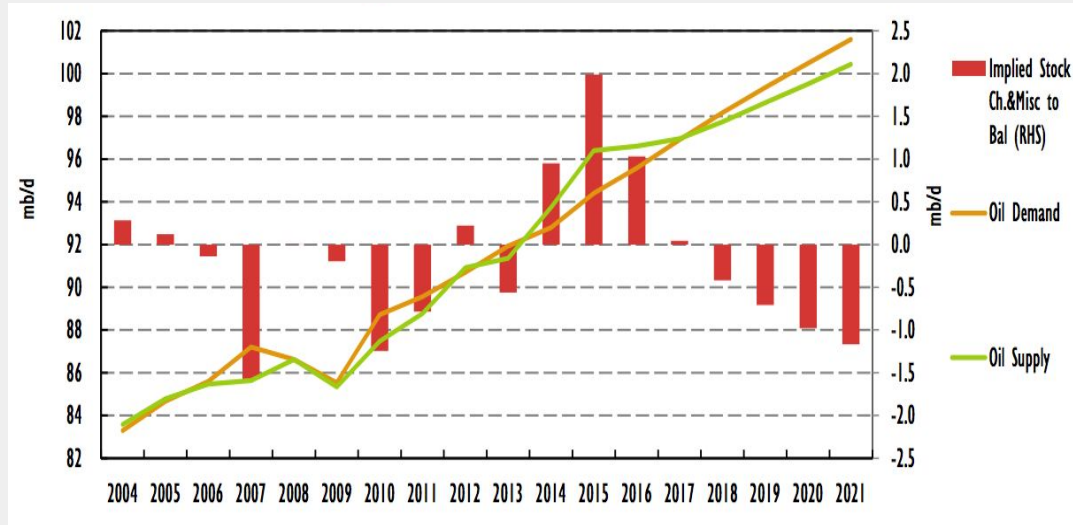
Do Energy Markets Even Care about Geopolitics Anymore?

Triumph of supply and demand

- From “peak oil” to peak oil demand
- Global LNG and Asian gas hubs
- NA shale revolution: US exports to China

Isolated instability

- From supercycle to austerity crisis: Russia, Iran, Iraq, Nigeria, Angola, Brazil, Venezuela... even GCC
- Ringfencing volatility: Ukraine, Libya, Iraq, Iran
- Distributed hydrocarbon abundance = less probability of supply side shock

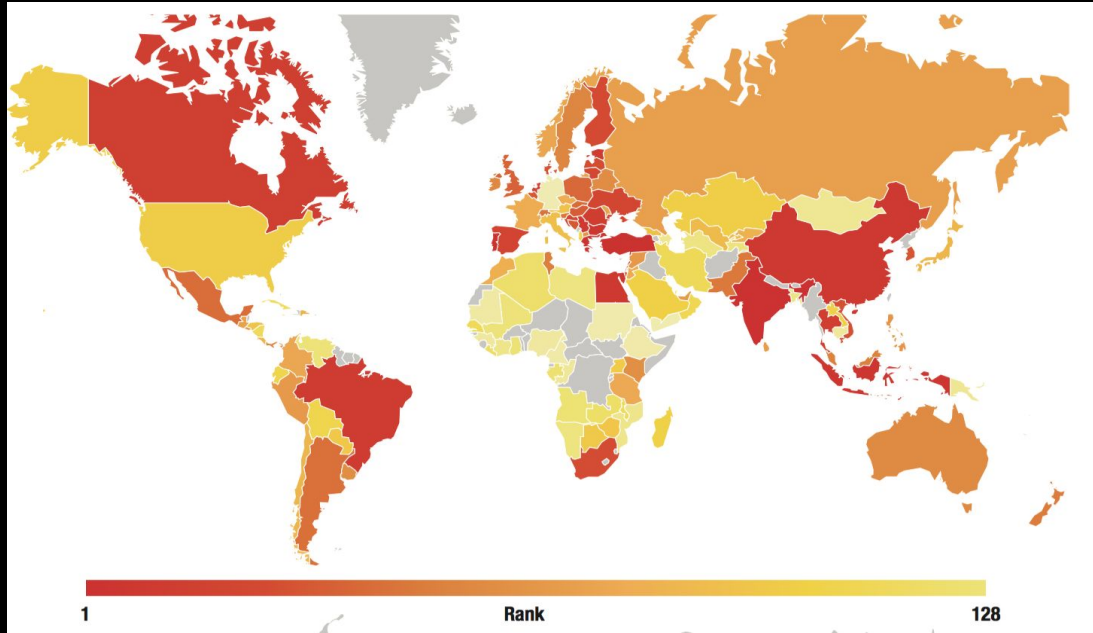


From “Resource Wars” to “Tug-of-War”

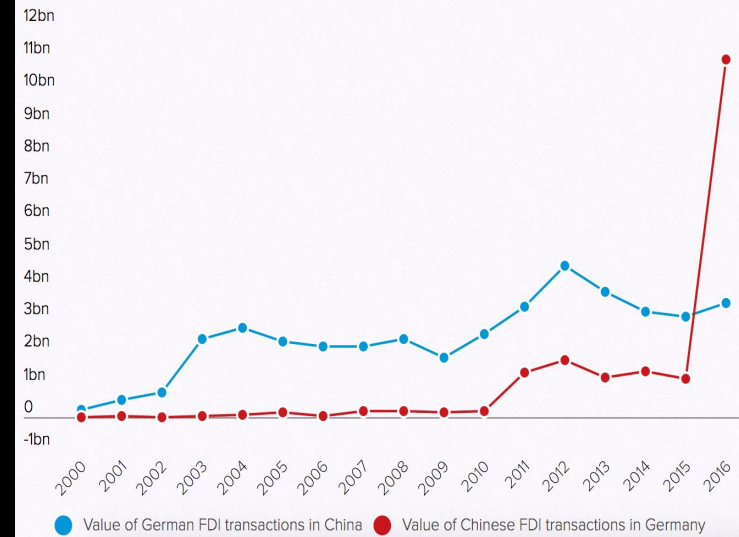
- New coalitions: OPEC fraying but Saudi/Russia partnership vs US to raise/lower oil price
- Eventual sanctions lift will further ease prices
- There will be production, but where?

The Great Supply Chain Tug-of-War

The Complexity Outlook Index ranks countries according to their potential to improve productive capabilities, especially by gaining know-how from large or proximate trade partners to raise the complexity of their own goods.



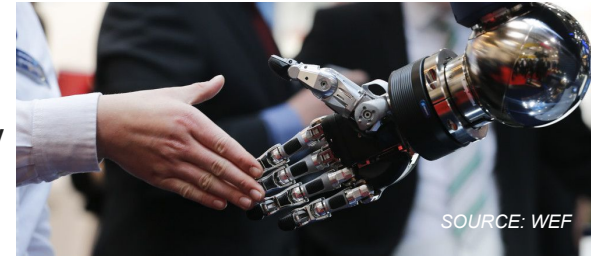
The Race to Complexity: Horizontal + Vertical = Diagonal



- Arab economies lack complexity
- “Ch-ermanny”: Acquire tech through investment and JVs and reverse engineer
- Go Asian: AI and solar (Japan), mobile finance eco-systems (China)

Fourth Industrial Revolution

- 1st IR (1760s-1900): Steam powered mechanical production
- 2nd IR (1900-1970s): Electric power driven mass production
- 3rd IR (1970s-2010s): Communications and computing enhance productivity
- 4th IR (2010s -): Cyber-physical networked connectivity within “global brain”



➤ What is the 4th Industrial Revolution?

- Velocity: Acceleration of technological progress and expansion of reach at declining cost
- Scope: Beyond digital revolution into economy, society and personal life with global systemic impact
- *Hybrid Reality*: Fusion of technologies and blurring of lines across the material, biological and digital spheres

➤ Breakthrough technologies

- IoT, artificial intelligence, robotics, 3DP, materials science/nanotechnology, synthetic biology, energy storage, quantum computing

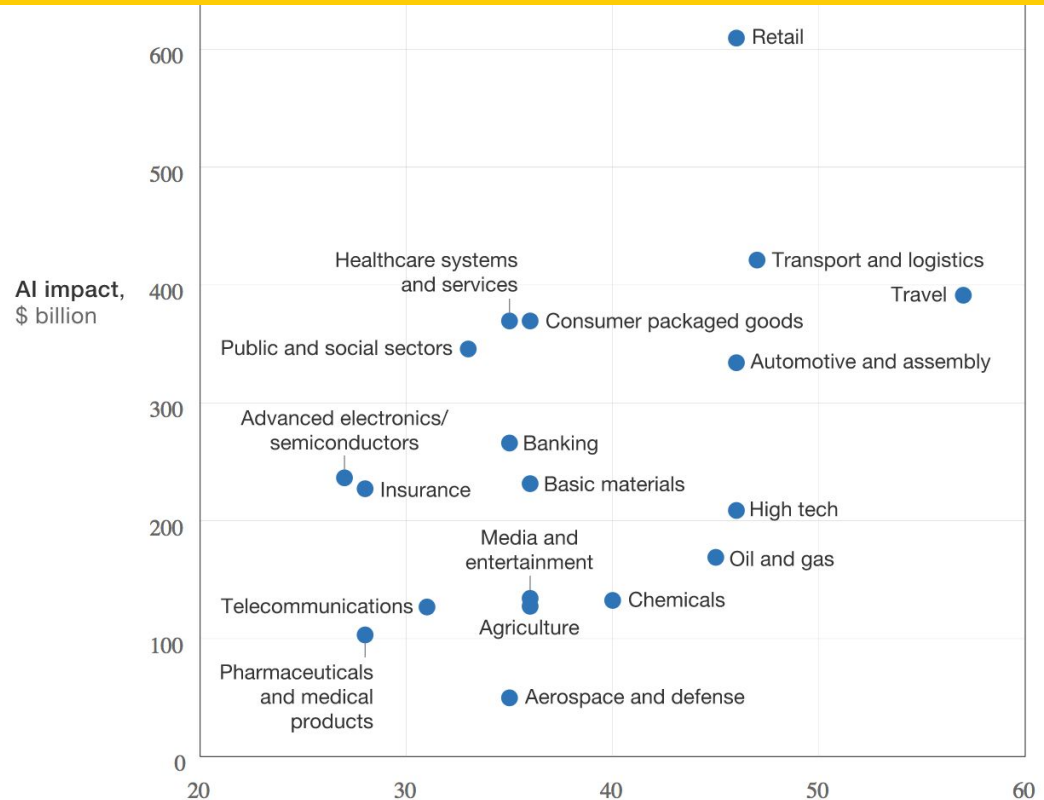


Industrial Revolutions

- Worldwide 4G/5G: Ubiquitous high-speed Internet (Wi-Fi/Li-Fi, satellites/blimps, Aquila/drones, mesh networks/hotspots)
- Mass customization: At-home 3DP micro-manufacturing
- Gene editing: CRISPR assisted low-cost genome decoding and clinical trials (Editas Medicine)
- Efficient energy: Cloud platform allow utilities to analyze data from millions of smart meters (Enero)

Applying AI to Boost Productivity

- Applied analytics: From ML to NN, AI alters industrial landscapes
- Greatest impact based on size of sector x AI role: Retail, transport/logistics, travel, automotive, healthcare systems, assembly
- Services: At great risk of automation, but opportunity to boost efficiency and enhance labor productivity



Source: McKinsey

Share of AI impact in total impact derived from analytics, %

UAE as an Innovation Hub - and Driver of Arab Leapfrogging

Strengths

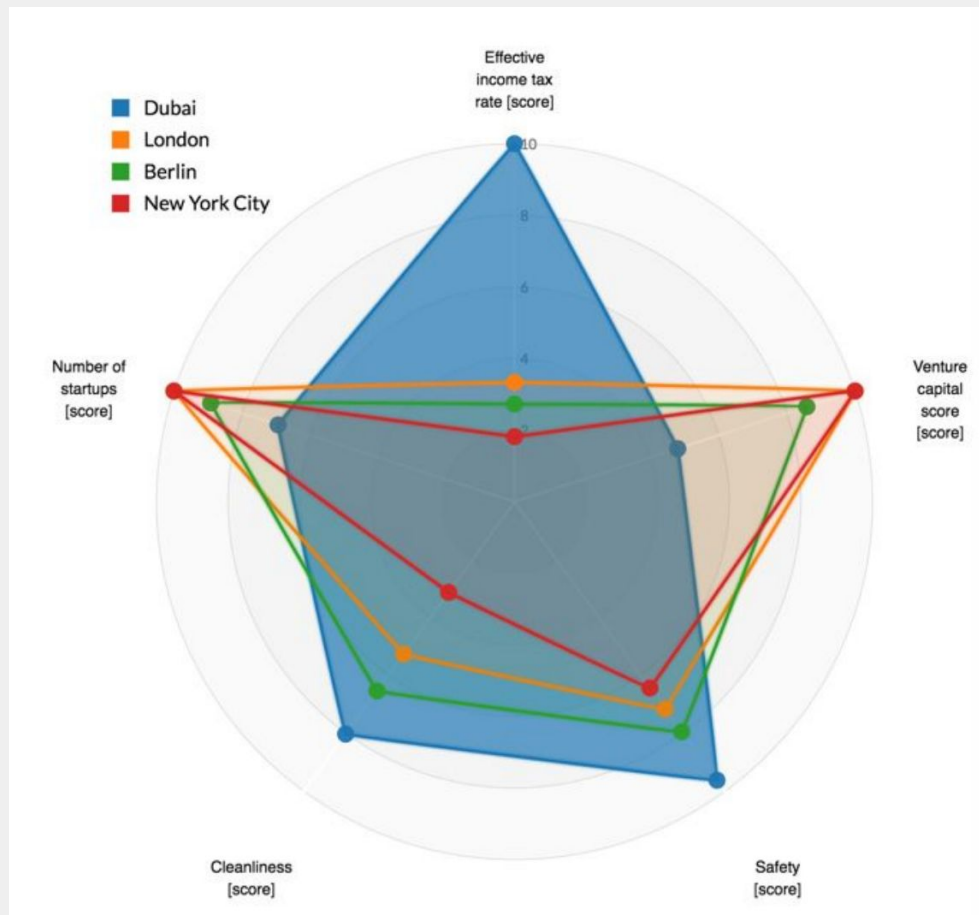
- Tax rate
- Safety / cleanliness
- High-demand regional market
- Investments in tech integration

Opportunities

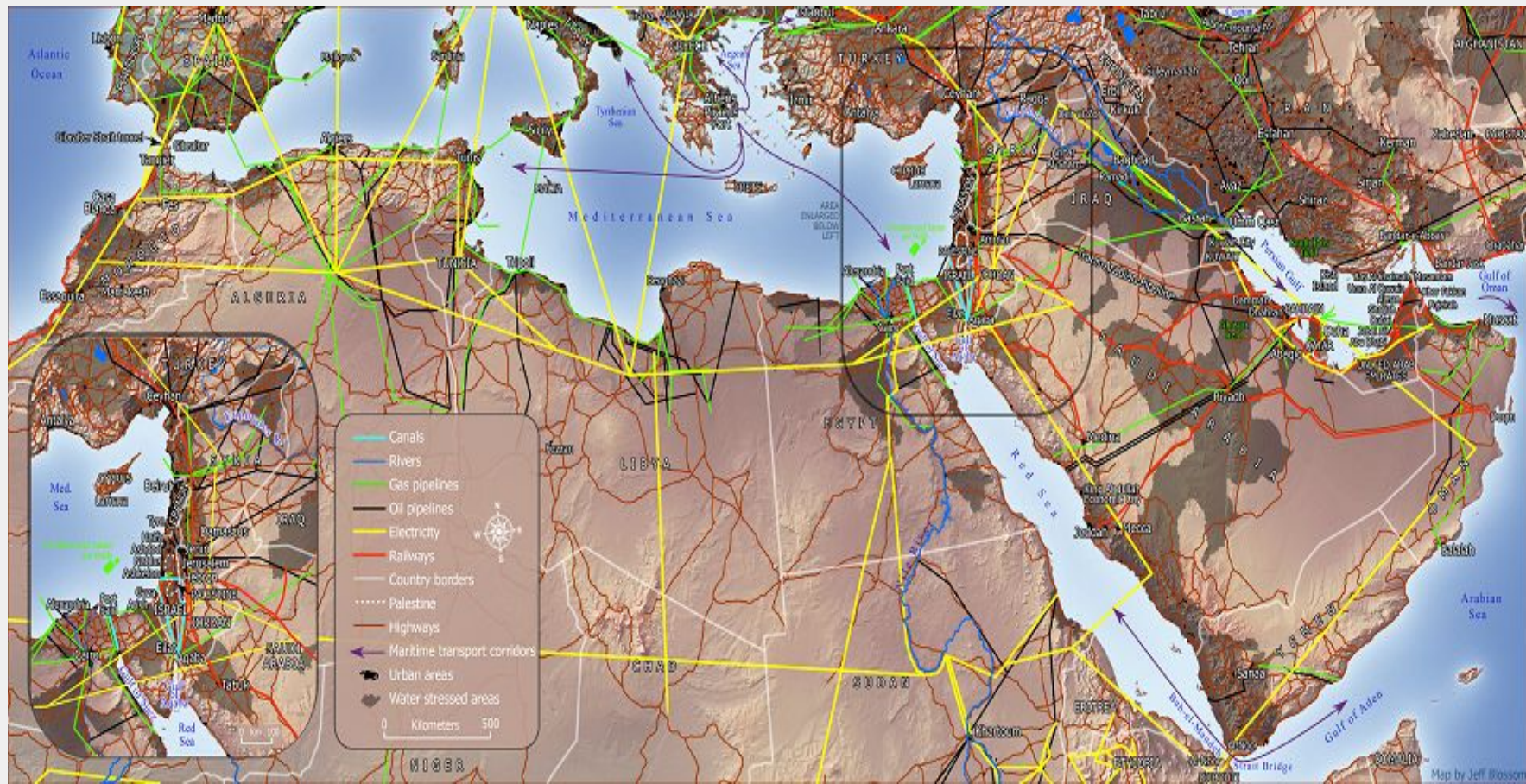
- Strengthen start-up ecosystem
- Boost VC funding networks
- Prioritize global capital market integration

An Arab Tech Agenda

- MaaS, drone logistics, Hejaz Hyperloop
- Blockchain property rights and personal finance: secure mobile services
- 3DP infrastructure and light manufacturing
- Genetic-based personalized/preventative medicine
- Nuclear/solar energy for desalination and hydroponic agriculture
- E-learning and vocational skills training



From Sykes-Picot to *Pax Arabia*



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