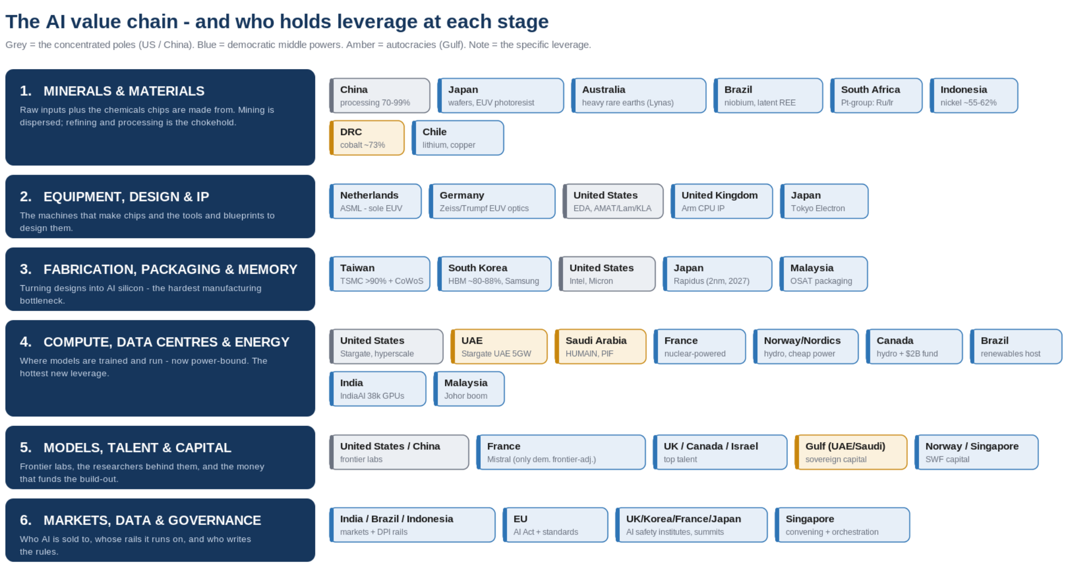
THE MAP OF LEVERAGE

The global AI value chain, and which countries could anchor an extended middle-powers coalition

with an assessment of each country's AI-governance ecosystem



AI value-chain leverage assessment

Prepared for Ettore Arpini · June 2026

Data vintage 2024–2026 · every figure carries a source; refresh fast-moving numbers before external use

EXECUTIVE SUMMARY

The AI frontier is a duopoly: a handful of firms in the United States and China train the most capable models. But the value chain that produces and runs AI is spread across dozens of countries, and several of them hold genuine chokepoints. That spread is the opening a coalition can use.

Leverage comes in two kinds. **Hard chokepoints** are narrow but close to irreplaceable: the Netherlands (ASML's EUV monopoly), Taiwan (TSMC's leading-edge fabrication plus CoWoS packaging), South Korea (HBM memory), and Japan (wafers and EUV photoresist). **Broad and emerging leverage** is spread more widely — capital, energy and data centres, talent, large markets, and governance weight — and it is where most middle powers actually sit.

The decisive shift of 2024–2026 is that leverage is moving downstream, to compute, energy and data centres. Much of that new capacity is being built in **Gulf autocracies** (the UAE's 5GW Stargate UAE, Saudi Arabia's HUMAIN), bound to US chips and operators — leverage that doubles as dependency. The democratic counterweight is the clean-energy hosts: France (nuclear), the Nordics and Canada (hydro), and Brazil (renewables).

The ten countries with the most leverage outside the US–China poles: **Taiwan, the Netherlands, South Korea, Japan, the UAE, India, Germany, France, Saudi Arabia, and the United Kingdom**. Two of those ten are autocracies whose weight sits in capital and compute — a finding in itself: a large share of the newest leverage is accruing to states a democratic coalition would counterbalance, not recruit.

Governance maturity follows a different map. It clusters in South Korea, Japan, the EU core (Netherlands, Germany, France), Canada, Singapore and the UK — binding law or framework, a networked AI safety institute, and real convening power. The **global-south democracies with real leverage — India, Brazil, Indonesia, South Africa — have thinner governance ecosystems**. That gap is precisely where a coalition-building effort adds the most value.

Recommendation in one line: don't chase the chokepoint-holders (already central and well-resourced) or the Gulf (counterparties). Anchor on the high-leverage global-south democracies others skip — Brazil, India, Indonesia, South Africa — bridge to the democratic core (Korea, Japan, France, Canada, Netherlands, Germany), engage the UK, Singapore, Australia and Taiwan selectively, and treat the Gulf and the two poles as the power being counterbalanced.

HOW TO READ THIS REPORT

Each country is scored 0–3 on eight value-chain axes — minerals & materials, equipment/design/IP, fabrication/packaging/memory, compute/data-centres/energy, capital, models & talent, market & data (DPI), and governance & convening — for a **leverage index out of 24**. The score rewards breadth; the narrative flags where a low total still hides a near-monopoly chokepoint (the Netherlands and Taiwan are the clearest cases). **Governance maturity** is rated High / Medium / Developing / Nascent from national law, AI-safety-institute status, research base, and international participation. **Democracy** labels use the EIU 2024 classification. Figures are 2024–2026; the most fast-moving (announced data-centre capacity, fund sizes) are targets, not built capacity, and are flagged as such.

THE AI VALUE CHAIN, STAGE BY STAGE

The chain runs from the minerals and machines that make chips, through fabrication and memory, into the data centres and energy that run models, and out to the markets and rules that govern them. Leverage is unevenly distributed — and, crucially, it is mostly held by democracies plus Taiwan, with China's grip concentrated upstream (mineral processing) and the United States holding the design-and-tools lock.

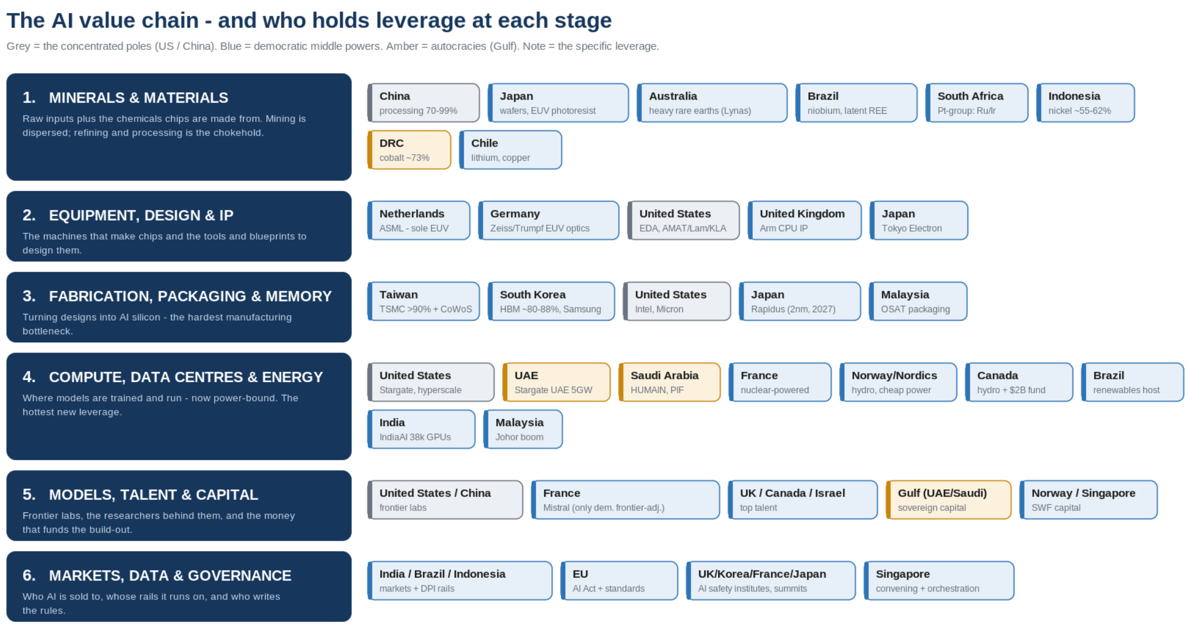


Figure 1. Who holds leverage at each stage. Grey = the concentrated poles (US/China); blue = democratic middle powers; amber = Gulf autocracies.

1 · Minerals & materials

Mining is geographically dispersed, but refining and processing is overwhelmingly Chinese — the IEA finds China is the dominant refiner for 19 of 20 strategic minerals (~70% average; rare-earth magnets ~94%, heavy rare earths and gallium ~99%), and it has used that midstream grip as an export-control weapon since 2023. The democratic alternatives exist but are sub-scale: Australia's Lynas (the only producer of separated heavy rare earths outside China, from May 2025), Japan (silicon wafers and EUV photoresist), South Africa (platinum-group ruthenium and iridium now entering advanced chips), and Brazil (niobium, plus latent heavy-REE). (USGS 2026; IEA 2025; CSIS.)

2 · Equipment, design & IP

The narrowest chokepoints in the whole economy. ASML (Netherlands) is the sole maker of EUV lithography — no sub-7nm AI chip exists without it — and it depends in turn on Zeiss optics and Trumpf lasers from Germany. The United States holds the design-and-tools lock (Synopsys + Cadence ~60%+ of EDA software; Applied Materials, Lam and KLA in equipment) and the export-control law that decides who may use it. The UK's Arm supplies the CPU architecture behind over 99% of smartphones and much AI-edge compute. (SemiAnalysis; CRS R48642; ASML.)

3 · Fabrication, packaging & memory

Where designs become AI silicon, and the hardest manufacturing bottleneck. Taiwan's TSMC makes over 90% of leading-edge logic and dominates the CoWoS advanced packaging that every Nvidia accelerator needs (sold out through 2026). South Korea's SK Hynix and Samsung make ~80–88% of HBM, the high-bandwidth memory that throttles AI training. The US (Intel, Micron) and Japan's state-backed Rapidus (2nm targeted for 2027) are the main hedges; Malaysia anchors back-end assembly and test. (TSMC; Counterpoint; Rapidus.)

4 · Compute, data centres & energy

The fastest-moving leverage, and now power-bound rather than chip-bound at the margin. The US leads (Stargate, ~$500B/10GW target). The largest non-US buildouts are Gulf autocracies — the UAE's 5GW Stargate UAE and Saudi Arabia's HUMAIN — deliberately tied to US chips. The democratic clean-power hosts are the credible counterweight: France (nuclear), Norway/Sweden/Finland (hydro and cold), Canada (hydro plus a C$2B sovereign-compute fund), Brazil (renewables; TikTok's $37.7B Ceará campus), India (IndiaAI, 38,000 GPUs) and Malaysia (the Johor boom). Most headline gigawatt figures are announced, not built. (OpenAI; IEA; DCD; PIB.)

5 · Models, talent & capital

Frontier model-building sits with the US and China; outside them, France's Mistral is the only democratic, independent, frontier-adjacent lab (now part-owned by ASML). Talent is a flow, not a fixed stock — the US employs ~40–50% of top researchers but China produces the most, so decoupling could release talent that middle powers can capture; Canada, the UK, France and Israel punch above their weight. The largest deal-making capital is autocratic and Gulf (MGX, PIF); the largest democratic pool, Norway's $2.2T fund, is index-passive. (Stanford AI Index 2025; MacroPolo; NBIM.)

6 · Markets, data & governance

The cleanest democratic leverage. India, Brazil and Indonesia hold markets too big to skip plus the digital public-infrastructure rails AI must run on (Aadhaar/UPI, Pix), which let a government attach conditions to deployment. The EU sets the rules others adopt (the AI Act and the standards behind it), and the UK, Korea, France and Japan hold convening power through their AI safety institutes and the summit series. (Stanford AI Index; Oxford Insights; GIRAI.)

THE LEVERAGE SCOREBOARD

All nineteen coalition-candidate countries, ranked by total value-chain leverage (US and China shown only as reference poles, at 20/24). Read the index as breadth of leverage; the heatmap below shows where it comes from, and the Top 10 weights irreplaceability.

Country	Leverage /24	Governance	Democracy	Region
Japan	**16**	High	Full	East Asia
Germany	**15**	High	Full	Europe
India	**13**	Medium	Flawed	South Asia
France	**13**	High	Flawed	Europe
South Korea	**12**	High	Full	East Asia
Canada	**12**	High	Full	Americas
Singapore	**12**	High	Hybrid	SE Asia
Netherlands	**11**	High	Full	Europe
United Arab Emirates	**11**	Medium	Authoritarian	Gulf
United Kingdom	**11**	High	Full	Europe
Brazil	**11**	Medium	Flawed	Americas
Taiwan	**10**	Medium	Full	East Asia
Saudi Arabia	**10**	Medium	Authoritarian	Gulf
Indonesia	**10**	Developing	Flawed	SE Asia
South Africa	**10**	Developing	Flawed	Africa
Norway	**10**	Medium	Full	Europe
Australia	**9**	Medium	Full	Oceania
Israel	**8**	Developing	Flawed	MENA

Where the leverage comes from — the 8-axis heatmap

Min minerals & materials · **Eq** equipment/design/IP · **Fab** fabrication/packaging/memory · **Cmp** compute/data-centres/energy · **Cap** capital · **Mdl** models & talent · **Mkt** market & data/DPI · **Gov** governance & convening. Darker = stronger (0–3).

Country	Min	Eq	Fab	Cmp	Cap	Mdl	Mkt	Gov	Σ
Japan	3	2	1	1	2	2	2	3	**16**
Germany	1	2	2	1	2	2	2	3	**15**
India	1	1	0	2	1	3	3	2	**13**
France	0	1	1	2	2	3	1	3	**13**
South Korea	0	1	3	1	2	2	1	2	**12**
Canada	2	0	0	2	1	3	1	3	**12**
Singapore	0	1	1	1	3	2	1	3	**12**
Netherlands	0	3	1	1	1	1	1	3	**11**
United Arab Emirates	0	0	0	3	3	2	1	2	**11**

Country	Min	Eq	Fab	Cmp	Cap	Mdl	Mkt	Gov	Σ
United Kingdom	0	2	0	1	1	3	1	3	**11**
Brazil	2	0	0	2	1	1	3	2	**11**
Taiwan	0	1	3	1	1	2	1	1	**10**
Saudi Arabia	1	0	0	3	3	1	1	1	**10**
Indonesia	3	0	0	2	1	1	2	1	**10**
South Africa	3	0	0	1	1	1	2	2	**10**
Norway	1	0	0	2	3	1	1	2	**10**
Australia	3	0	0	1	1	1	1	2	**9**
Israel	0	2	1	0	1	3	0	1	**8**

TOP 10 COUNTRIES BY LEVERAGE

Ranked by strategic leverage — weighting irreplaceability, so the narrow-but-decisive chokepoints (the Netherlands, Taiwan, Korea) rank above some countries with higher raw totals. The US and China are excluded as the reference poles.

1. Taiwan · leverage 10/24 · Full

TSMC >90% of leading-edge fabrication + CoWoS advanced packaging - the most indispensable manufacturing node.

Caveat: *Diplomatically locked out of GPAI/UN/AISI network; geopolitical flashpoint.*

2. Netherlands · leverage 11/24 · Full

ASML - sole supplier of EUV lithography; the single hardest chokepoint in AI hardware.

Caveat: *Frontier leverage rests on one firm; #1 on responsible-AI (GIRAI).*

3. South Korea · leverage 12/24 · Full

SK Hynix + Samsung ~80-88% of HBM (the AI-memory bottleneck) + Samsung fabs; AI Basic Act in force Jan 2026.

4. Japan · leverage 16/24 · Full

Silicon wafers (~53%) + EUV photoresist (~100% sub-7nm) + Tokyo Electron tools; led the G7 Hiroshima Process.

5. United Arab Emirates · leverage 11/24 · Authoritarian

MGX/ADIA/Mubadala capital + Stargate UAE (5GW planned) + Falcon/MBZUAI; cheap energy.

Caveat: *Autocracy; compute is US-chip-dependent - leverage-as-dependency.*

6. India · leverage 13/24 · Flawed

AI talent scale (#1 skill penetration) + 1.4B market & Aadhaar/UPI rails + IndiaAI compute (38k GPUs); co-hosted the 2026 AI Impact Summit.

Caveat: *No AI-localization mandate exists (a common overstatement); leverage is market + talent.*

7. Germany · leverage 15/24 · Full

Zeiss optics & Trumpf lasers (essential to ASML's EUV) + ESMC Dresden fab + largest EU market; EU AI Act enforcement.

8. France · leverage 13/24 · Flawed

Mistral - the only democratic frontier-adjacent lab - + nuclear-powered compute (EUR109B) + GPAI/OECD seat & Paris Summit host.

Caveat: *EIU downgraded France to 'flawed democracy' (2024).*

9. Saudi Arabia · leverage 10/24 · Authoritarian

PIF sovereign capital + HUMAIN compute + cheap energy; first Arab GPAI member (2026).

Caveat: *Autocracy; US-chip-dependent.*

10. United Kingdom · leverage 11/24 · Full

Arm - the CPU architecture behind >99% of mobile & much AI-edge compute - + elite talent + first AI (Security) Institute & Bletchley.

Caveat: *DeepMind is Alphabet (US)-owned; UK did not sign the Paris 2025 declaration.*

AI-GOVERNANCE ECOSYSTEM MATURITY

Leverage tells you who matters; governance maturity tells you who is ready to act on it — and where a coalition-builder can help create the capacity that is missing. The strongest ecosystems combine a binding law or framework, an AI safety institute in the international network, a real research base, and convening power. They cluster in East Asia (Korea, Japan), the EU core (Netherlands, Germany, France), Canada, Singapore and the UK. The global-south democracies that hold real value-chain leverage — India, Brazil, Indonesia, South Africa — sit a tier or two below, which is the organizing gap.

Country	Maturity	National policy / law	Institutes & convening
Japan	High	AI Promotion Act (2025), light-touch	J-AISI (2024); led G7 Hiroshima Process
Germany	High	EU AI Act enforcement (KI-MIG)	DE-AISI greenlit 2026; GPAI founder; #2 GIRAI
France	High	EU AI Act; INESIA evaluation body	Paris Summit host; GPAI/OECD seat
South Korea	High	AI Basic Act in force Jan 2026 (2nd national law after EU)	Korea AISI (2024); Seoul Summit co-host
Canada	High	AIDA died 2025; new strategy in train	CAISI (2024); GPAI co-founder; Bengio chairs Intl Safety Report
Singapore	High	Soft-law: Model Framework + AI Verify	AISI (DTC); Singapore Consensus; Oxford #2 readiness
Netherlands	High	EU AI Act lead enforcer (AP)	#1 globally on responsible AI (GIRAI 2024)
United Kingdom	High	No binding AI law (pro-innovation)	AI Security Institute (first); Bletchley host; skipped Paris
India	Medium	IndiaAI governance guidelines; no law yet	Co-hosted 2026 AI Impact Summit; AISI standing up
United Arab Emirates	Medium	National strategy; Minister of AI since 2017	High state capacity; 'Not Free' (Freedom House)
Brazil	Medium	AI bill (PL 2338) advancing	Top global-south on responsible AI (GIRAI ~44)
Taiwan	Medium	AI Basic Act passed Dec 2025	Strong domestically; locked out of intl bodies
Saudi Arabia	Medium	SDAIA; AI ethics principles	First Arab GPAI member (2026); 'Not Free'
Norway	Medium	Aligns with EU AI Act (EEA)	Strong digital state; modest AI-specific apparatus
Australia	Medium	Voluntary standard; mandatory rules shelved 2025	New AISI announced 2025
Indonesia	Developing	AI roadmap; regulation in progress	No dedicated AI law or AISI yet
South Africa	Developing	Draft AI policy withdrawn Apr 2026 (hallucinated cites)	Hosts GIRAI; top in Africa on responsible AI
Israel	Developing	Soft-law sectoral policy (2023); no law	No AISI; not in international network

Two 2026 cautions worth carrying: South Africa's draft National AI Policy was withdrawn in April 2026 after roughly a tenth of its citations were found to be AI-hallucinated — a vivid reminder that ecosystem depth, not just a document, is what matters; and the UK, institutionally elite, declined to sign the Paris 2025 declaration, a fault-line to note when mapping coalitions.

WHERE A COALITION SHOULD FOCUS

Leverage alone is the wrong selection filter for choosing where to start. The right one combines four things: real value-chain leverage, democratic alignment, an under-organized governance ecosystem a new effort can strengthen, and tractability. On that filter, the chokepoint-holders are coalition-critical but already central and well-resourced; the Gulf is high-leverage but autocratic; and the sweet spot is the high-leverage global-south democracies the usual middle-power lists overlook.

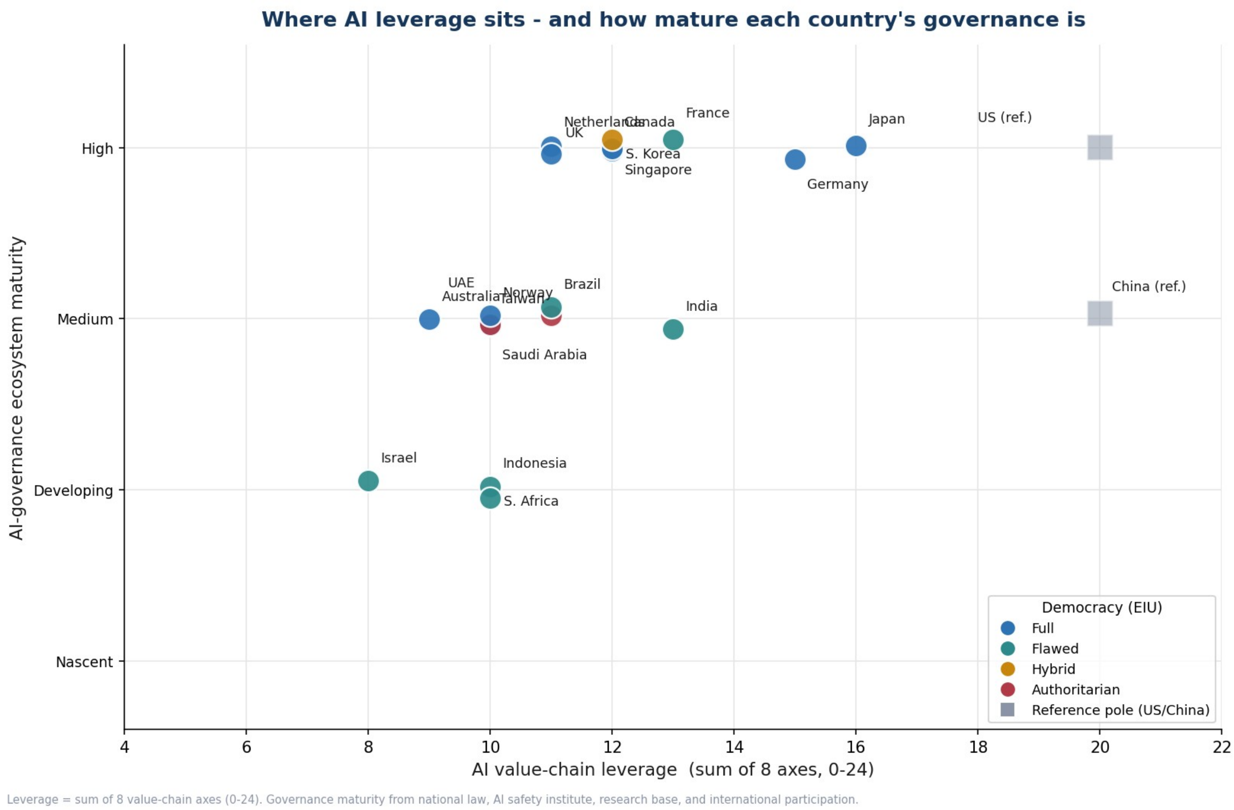


Figure 2. Leverage (breadth) against governance maturity, coloured by regime type. The anchor targets are the democratic dots with real leverage but lower governance maturity — the global-south democracies.

TIER A Anchor — build deep

High-or-rising leverage, democratic, and under-organized governance: the distinctive niche for a new entrant: the global-south democracies the usual middle-power lists skip.

- Brazil — home base; clean-energy host + niobium/heavy-REE + Pix market
- India — talent + 1.4B market & UPI/Aadhaar rails + IndiaAI compute
- Indonesia — nickel + ASEAN's largest market; governance still being written
- South Africa — Pt-group metals + Africa's responsible-AI leadership (despite the 2026 policy stumble)

TIER B Bridge — coordinate, don't duplicate

High-leverage democracies with strong existing ecosystems. Partner for credibility, standards and convening; they already anchor the established middle-power conversation.

- South Korea, Japan — the hardware chokepoints + mature law/AISIs
- France, Germany, Netherlands — EU standards power + Mistral + the EUV stack
- Canada — talent, clean compute, GPAI/CAISI leadership

TIER C Engage selectively

Real leverage but a caveat that limits coalition fit — ownership, regime type, or diplomatic status.

- United Kingdom — convening + Arm + AISI, but US-owned frontier and skipped Paris
- Singapore — capital + governance, but a hybrid regime (values caveat)
- Australia — the rare-earth chokepoint; Five Eyes alignment
- Taiwan — critical leverage, but locked out of multilateral bodies; engage track-II

TIER D Counterpart — not a member

The new compute/capital leverage built here is large but autocratic and US-dependent — part of what a coalition counterbalances, not joins.

- United Arab Emirates, Saudi Arabia — sovereign capital + gigawatt compute, but 'Not Free'
- United States, China — the two concentrated poles

The throughline: an extended middle-powers coalition is feasible because it can start small and high-leverage and grow. Begin with a handful of democratic anchors that hold real leverage and lack organization (Brazil, India, Indonesia, South Africa), borrow credibility from the established core (Korea, Japan, France, Canada, the EU), and expand outward — the path from a tractable coalition to one with enough combined weight to be a genuine counterweight.

CAVEATS & CONFIDENCE

- **Scores are judgement, not measurement.** The 0–3 axis scores synthesize the sourced research; reasonable analysts would shift individual cells. The index rewards breadth and under-weights single chokepoints — hence the separate, irreplaceability-weighted Top 10.
- **Announced ≠ built.** Gulf, Brazil, Norway and India data-centre gigawatts and most sovereign-fund totals are targets; only a fraction is under construction. Treat compute leverage as trajectory.
- **Two corrected overstatements.** India has no AI-model localization mandate (a claim that traces to a low-quality blog); its leverage is market and talent. Korea + Samsung now hold ~80–88% of HBM, up from the ~75–80% often cited.
- **Democracy labels are blunt.** EIU downgraded France and the US to 'flawed democracy' and Mexico to 'hybrid' in 2024; Singapore is electoral-authoritarian. The labels guide coalition fit; they are not moral verdicts.
- **Fast-moving field.** Laws, institutes and deals are changing monthly (Korea's Act in force Jan 2026, Taiwan's passed Dec 2025, Saudi's GPAI entry 2026). Refresh before any external use.

SOURCES

Grouped by section; every quantitative claim above traces to one of these. Full URLs were captured in the underlying research and can be expanded on request.

Minerals & materials

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Chips: equipment, fab, memory

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Compute, data centres & energy

- OpenAI — Stargate ($500B/10GW); G42 — Stargate UAE
- NVIDIA — HUMAIN (Saudi); Microsoft — G42 / Kenya
- Canada Sovereign AI Compute Strategy — ised-isde.canada.ca

- France €109B AI summit — Élysée / CNBC; DCD — Stargate Norway, Johor
- IndiaAI Mission (38k GPUs) — pib.gov.in; Bloomberg — TikTok Brazil ($37.7B)
- IEA — Electricity 2024 (data-centre demand)

Models, talent, capital, markets

- Stanford HAI — AI Index Report 2025
- MacroPolo — Global AI Talent Tracker 2.0/3.0
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Governance ecosystems

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- Global Index on Responsible AI (GIRAI) — global-index.ai
- EU AI Act — European Commission; UK AI Security Institute — aisi.gov.uk
- Korea AI Basic Act — Library of Congress / IAPP; Japan AI Promotion Act — White & Case
- Canada CAISI — canada.ca; Taiwan AI Basic Act — Focus Taiwan
- South Africa draft-policy withdrawal (Apr 2026) — sanews.gov.za; Saudi GPAI — spa.gov.sa