بررسی تحولات اقتصاد سیاسی جهانی

- سیستم دو قطبی

- سیستم چند قطبی و هرمی

نا اطمینانی
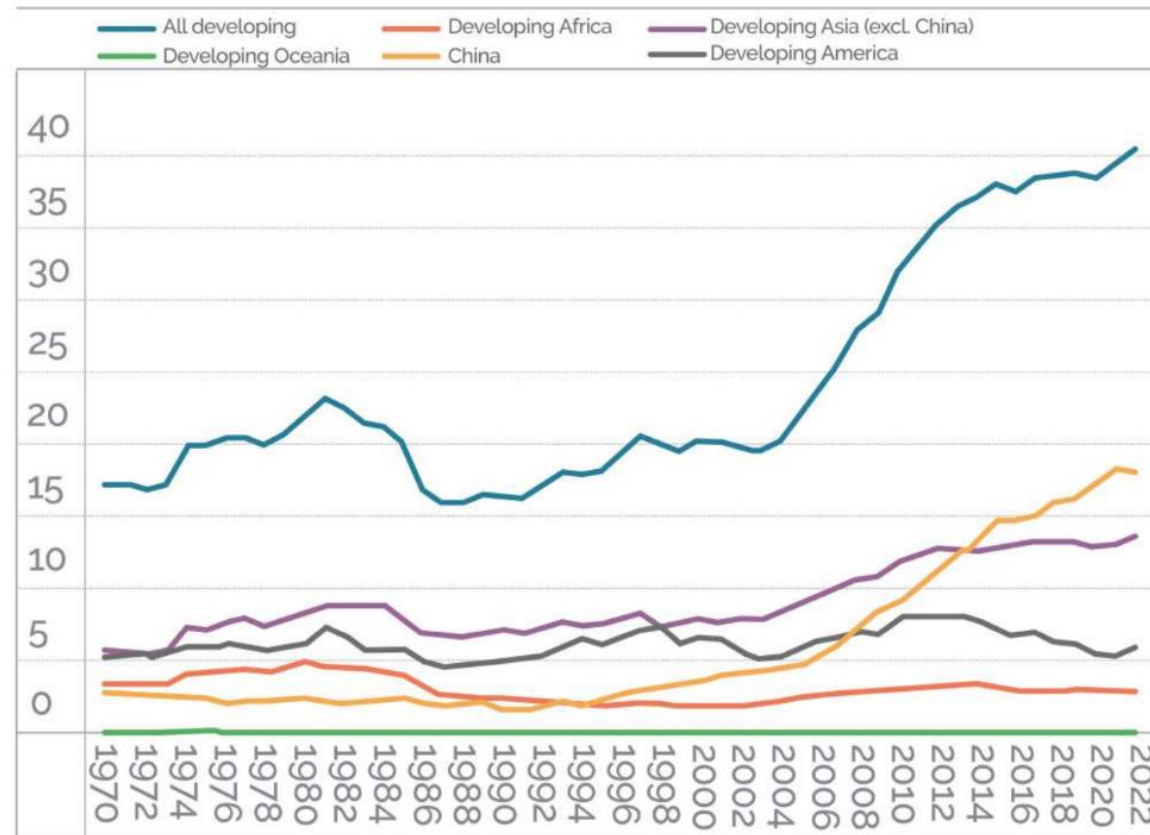
رقابت به مراتب گسترده تر

تعدد فرصتها

شبکه سازی کشورها و دولتها
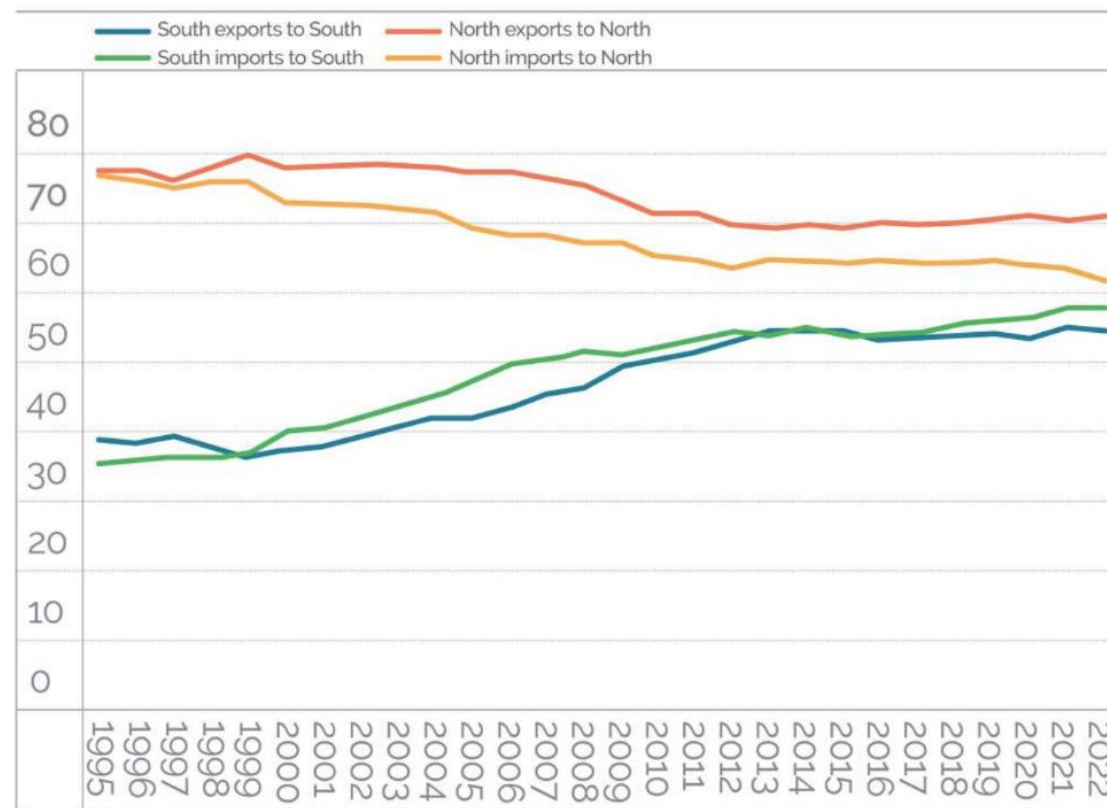
محافظ سازی(Hedging)

The South share of world GDP since 1970

Legend: All developing · Developing Oceania · Developing Africa · China · Developing Asia (excl. China) · Developing America

Fonte:
Author's calculations on data from UNCTADStat

ISPI

South-South and North-North trade (%) since 1995

Legend:
- South exports to South
- South imports to South
- North exports to North
- North imports to North

ISPI

The South share of global exports (%) since 1995

Legend: Developing economies, Developing Oceania, Developing Africa, Developing Asia (excl. China), China, Developing America

ISPI

Voting similarity with China since 1971

Based on 4446 votes China cast between 1971 and 2019

0%

100%
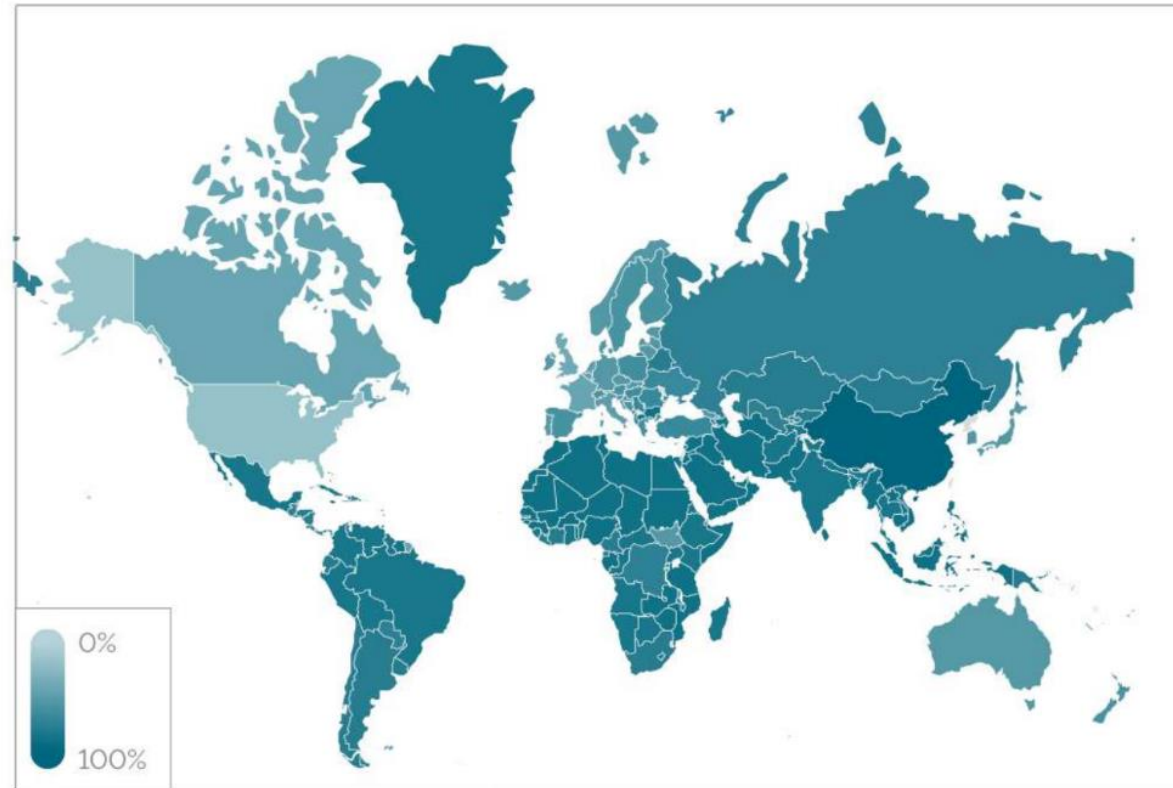
Fonte:
United Nations General Assembly Voting Patterns (1946 - 2019)

ISPI

World Energy: 2040

- China will use 22% of total
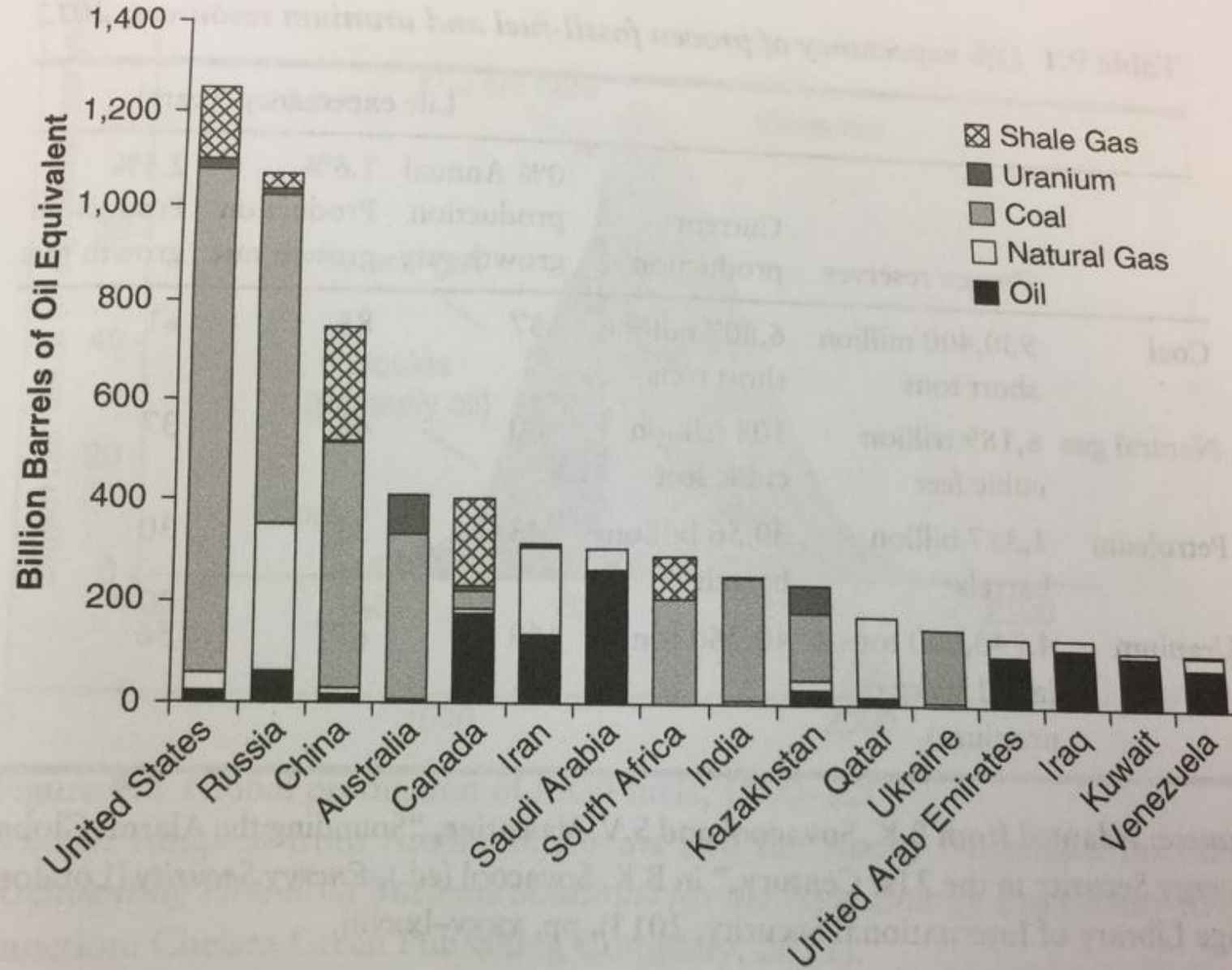- EU: 12%
- US: 14%
- India: 9%
- Africa: 5%
- Rest of the world: 38%
- Means: 30 countries: 57%, 50 countries: 5% and 112 countries: 38%.

- **31** countries have **450** nuclear power plants, will double by **2030**. Nuclear plants last 80 years.

- **16** countries are building **60** plants.

- US has **60** nuclear power plants. China, **44** and Russia **31**.
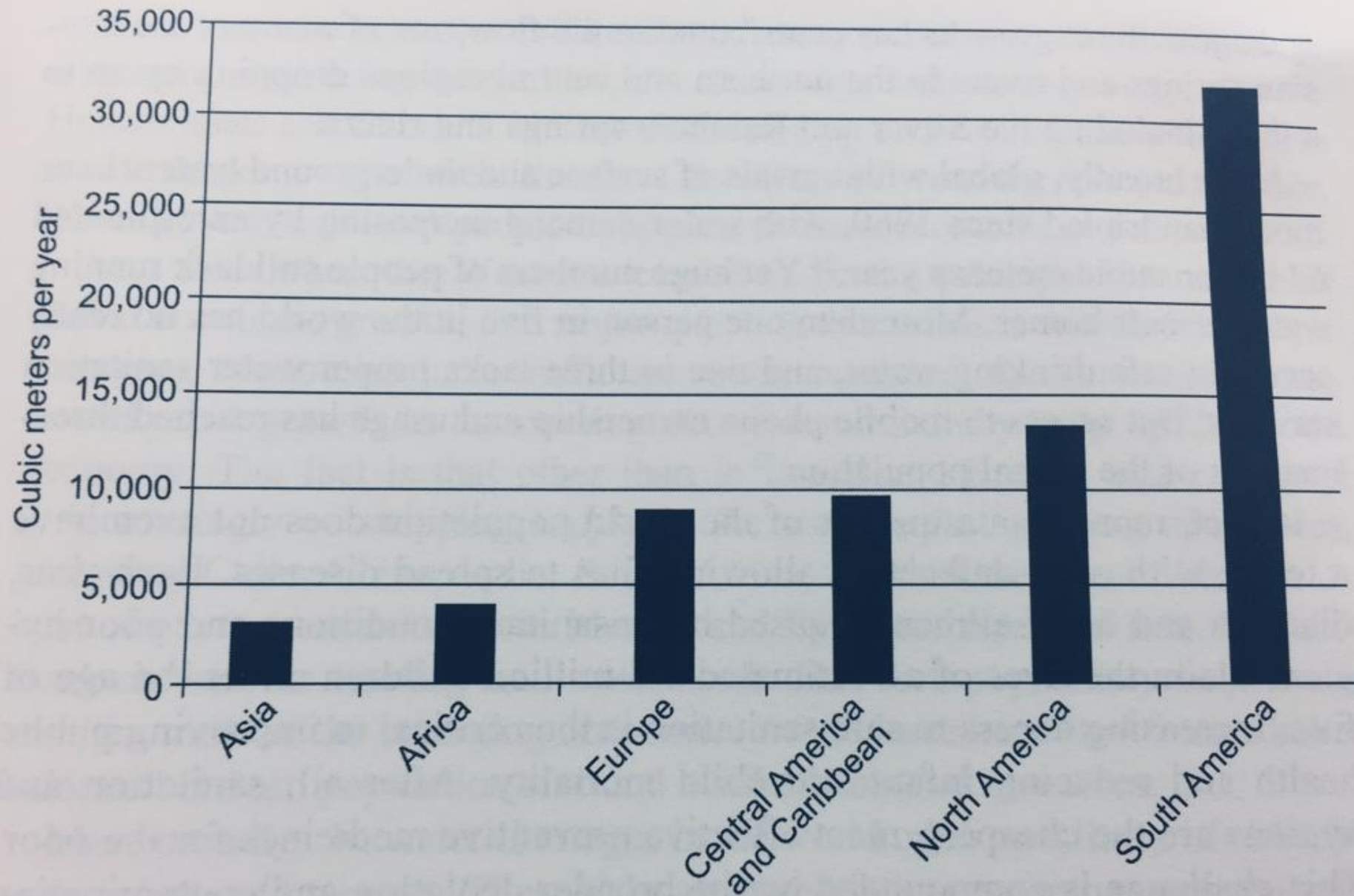
Figure 1.1. Comparison of Freshwater Availability in Different Continents, per Capita

مبالغ پیش‌بینی شدۀ سرمایه گذاری در دهه 2020 (میلیارد دلار)

سال 2030	سال 2020	حوزه سرمایه‌گذاری
621	6	5G
4400	740	IoT – اینترنت اشیا
1500	65	AI – هوش مصنوعی
824	163	EV – خودروهای برقی
641	180	Solar Panels – صفحات خورشیدی
88	1	Blockchain-بلاکچین
150	12	Robotics-رباتیک
175	71	Clean Energy-انرژی‌های پاک

Economic rankings:

Sweden 25
Poland 26
Sinopec 28
PetroChina 37
South Africa 38
Philippines 39

Fortune 500 (2023)

- Walmart $611B
- Aramco 603
- State Grid 530
- Amazon 483
- CNPET 483
- Sinopec 471
- Exxon 413

Apple 394
Shell 386

Tail fin
Boeing (Frederickson, Wash.)

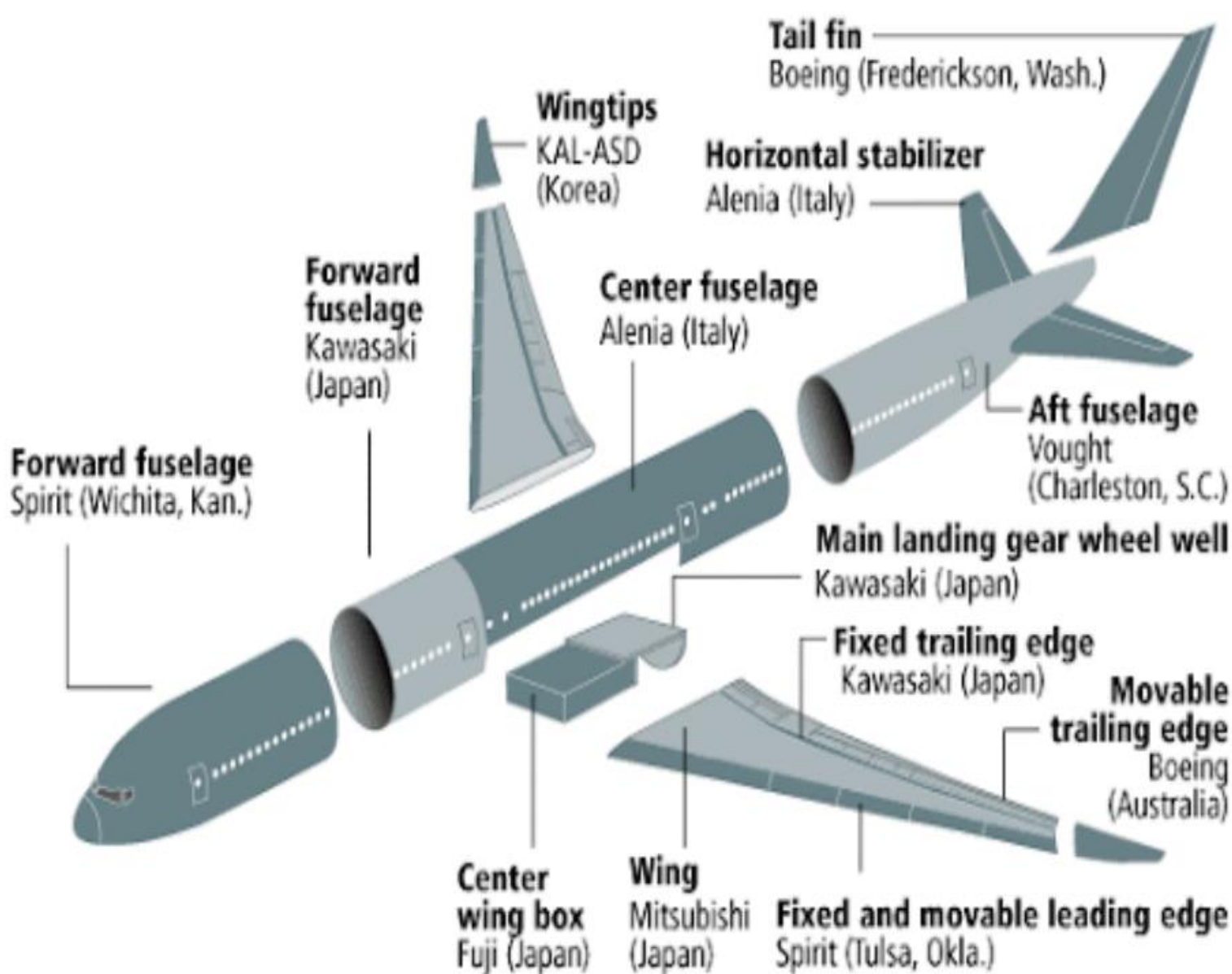**Wingtips**
KAL-ASD
(Korea)

Horizontal stabilizer
Alenia (Italy)

Forward fuselage
Kawasaki
(Japan)

Center fuselage
Alenia (Italy)

Forward fuselage
Spirit (Wichita, Kan.)

Aft fuselage
Vought
(Charleston, S.C.)

Main landing gear wheel well
Kawasaki (Japan)

Fixed trailing edge
Kawasaki (Japan)

Movable trailing edge
Boeing
(Australia)

Center wing box
Fuji (Japan)

Wing
Mitsubishi
(Japan)

Fixed and movable leading edge
Spirit (Tulsa, Okla.)

PARTS NOT SHOWN

Landing gear
Messier-Dowty
(England)

Wing/body fairing
Boeing (Canada)

Landing gear doors
Boeing (Canada)

Cargo access doors
Saab (Sweden)

Passenger entry doors
Latecoere (France)

Engines
GE (Evendale, Ohio)

Engines
Rolls-Royce (England)

Engine nacelles
Goodrich
(Chula Vista, Calif.)

Artificial
Intelligence
Index Report
2024

Estimated training cost of select AI models, 2017–23
Source: Epoch, 2023 | Chart: 2024 AI Index report
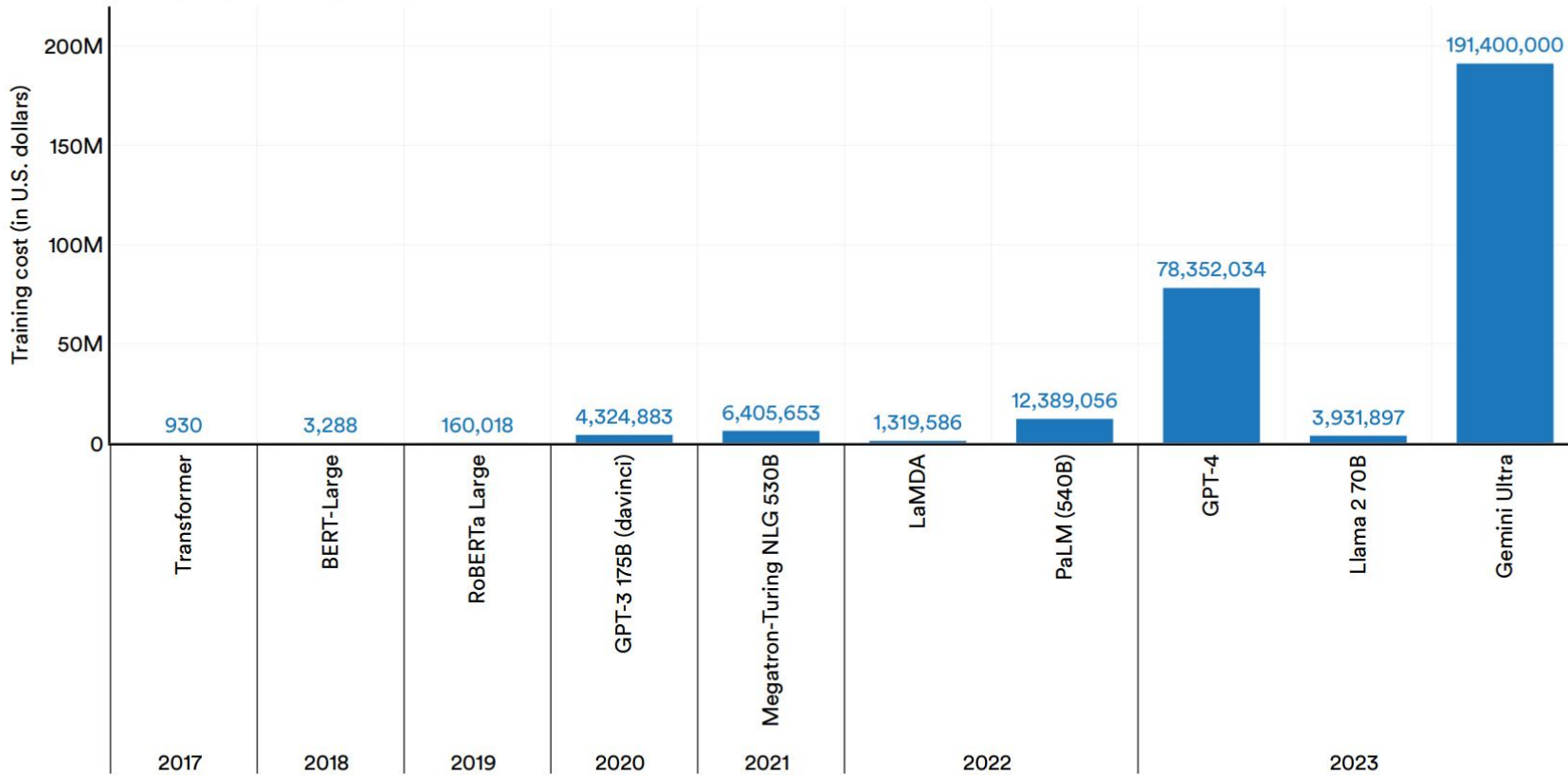
Figure 1.3.21

Figure 1.3.22 visualizes the training cost of all AI models for which the AI Index has estimates. As the figure shows, model training costs have sharply increased over time.

Number of foundation models by sector, 2019–23
Source: Bommasani et al., 2023 | Chart: 2024 AI Index report
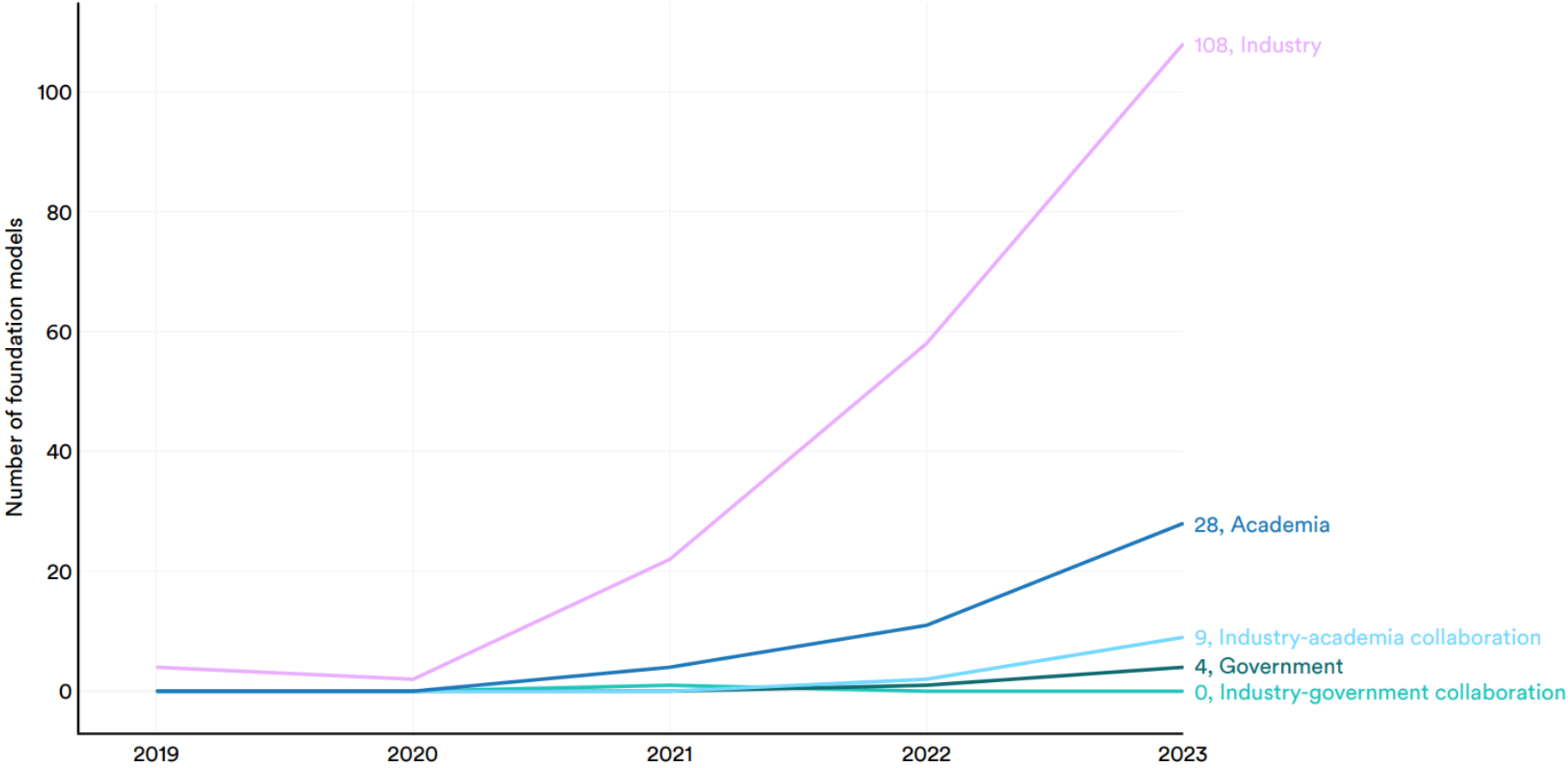
Figure 1.3.15

Foundation models by access type, 2019–23

Source: Bommasani et al., 2023 | Chart: 2024 AI Index report
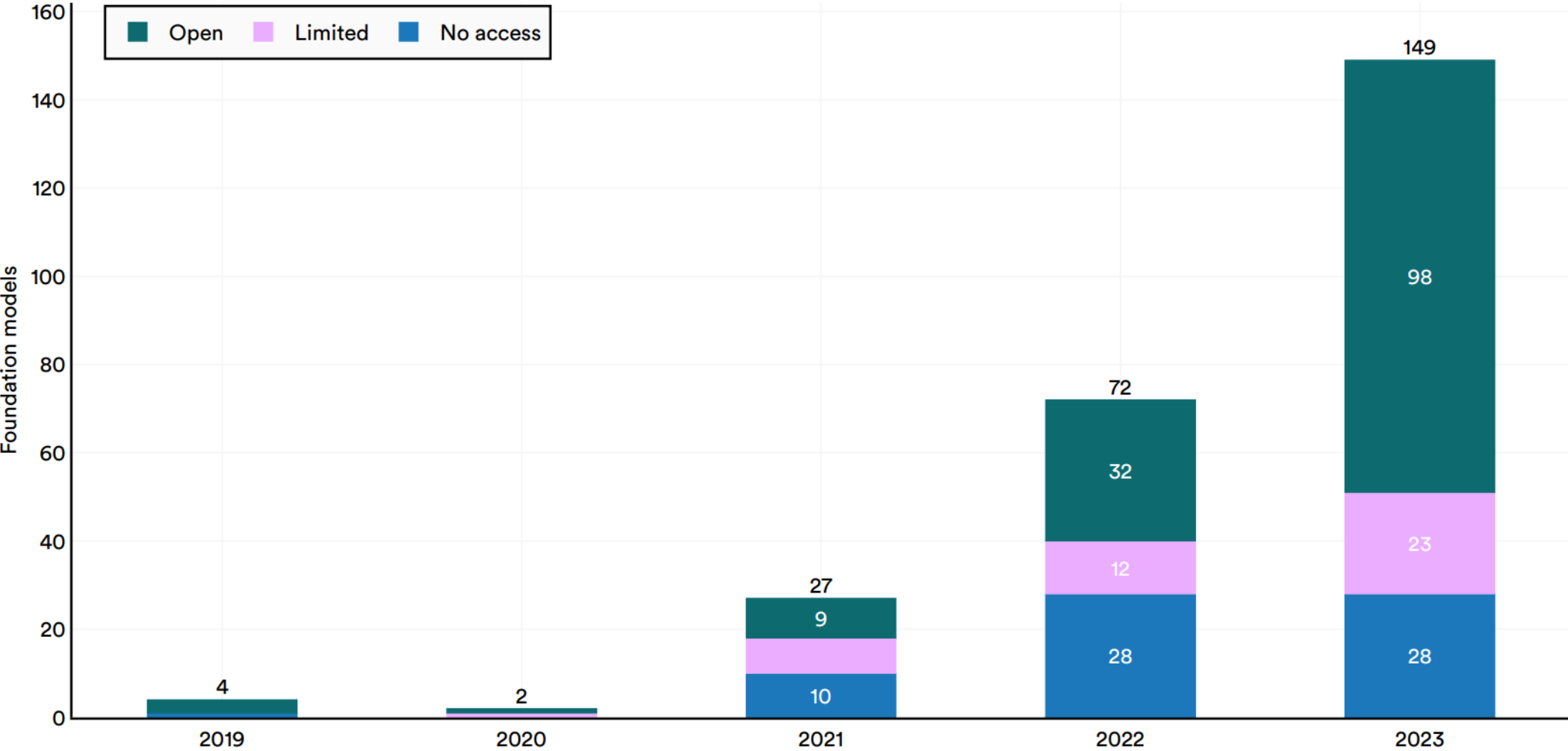
Figure 1.3.13

Number of foundation models by organization, 2019–23 (sum)

Source: Bommasani et al., 2023 | Chart: 2024 AI Index report

Organization	Number of foundation models
Google	40
OpenAI	20
Meta	19
Microsoft	18
DeepMind	15
Tsinghua University	7
EleutherAI	6
Together	6
Cohere	5
Stanford University	5
Hugging Face	5
Anthropic	5
AI2	4
BigScience	4
Shanghai AI Laboratory	4

Legend: Industry, Academia, Nonprofit
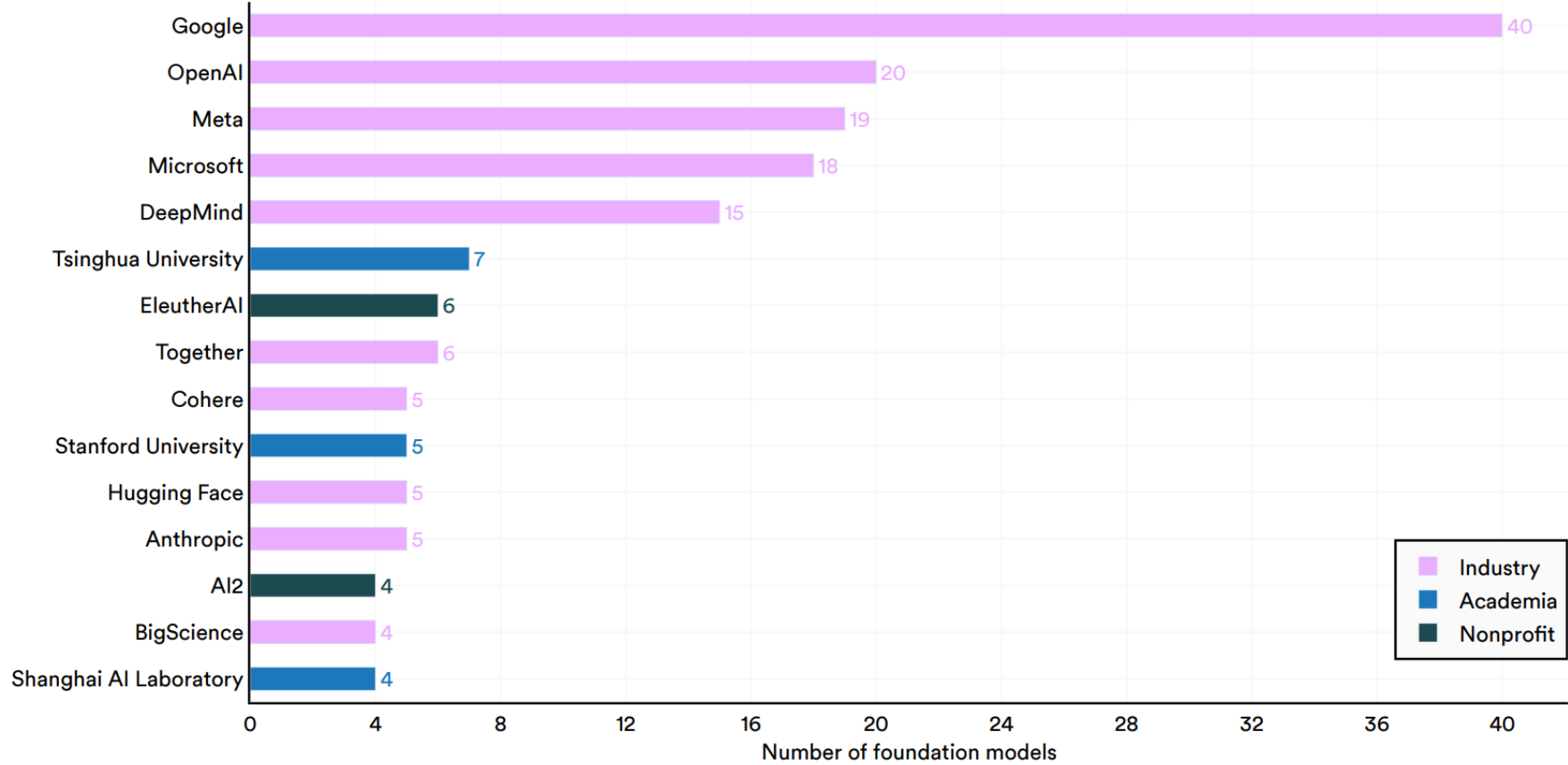
Figure 1.3.17

Number of foundation models by geographic area, 2023

Source: Bommasani et al., 2023 | Chart: 2024 AI Index report

Country	Number of foundation models
United States	109
China	20
United Kingdom	8
United Arab Emirates	4
Canada	3
Singapore	2
Israel	2
Germany	2
Finland	2
Taiwan	1
Switzerland	1
Sweden	1
Spain	1
France	1

Number of foundation models

Figure 1.3.18

$11 trillion

$2.8 trillion

Data transfers contribution to global GDP

Artificial intelligence capabilities are increasingly entering the healthcare sector, signaling faster, life-saving diagnoses as well as cost reductions

Global market of artificial intelligence in healthcare, 2021-2030 [USD bn]

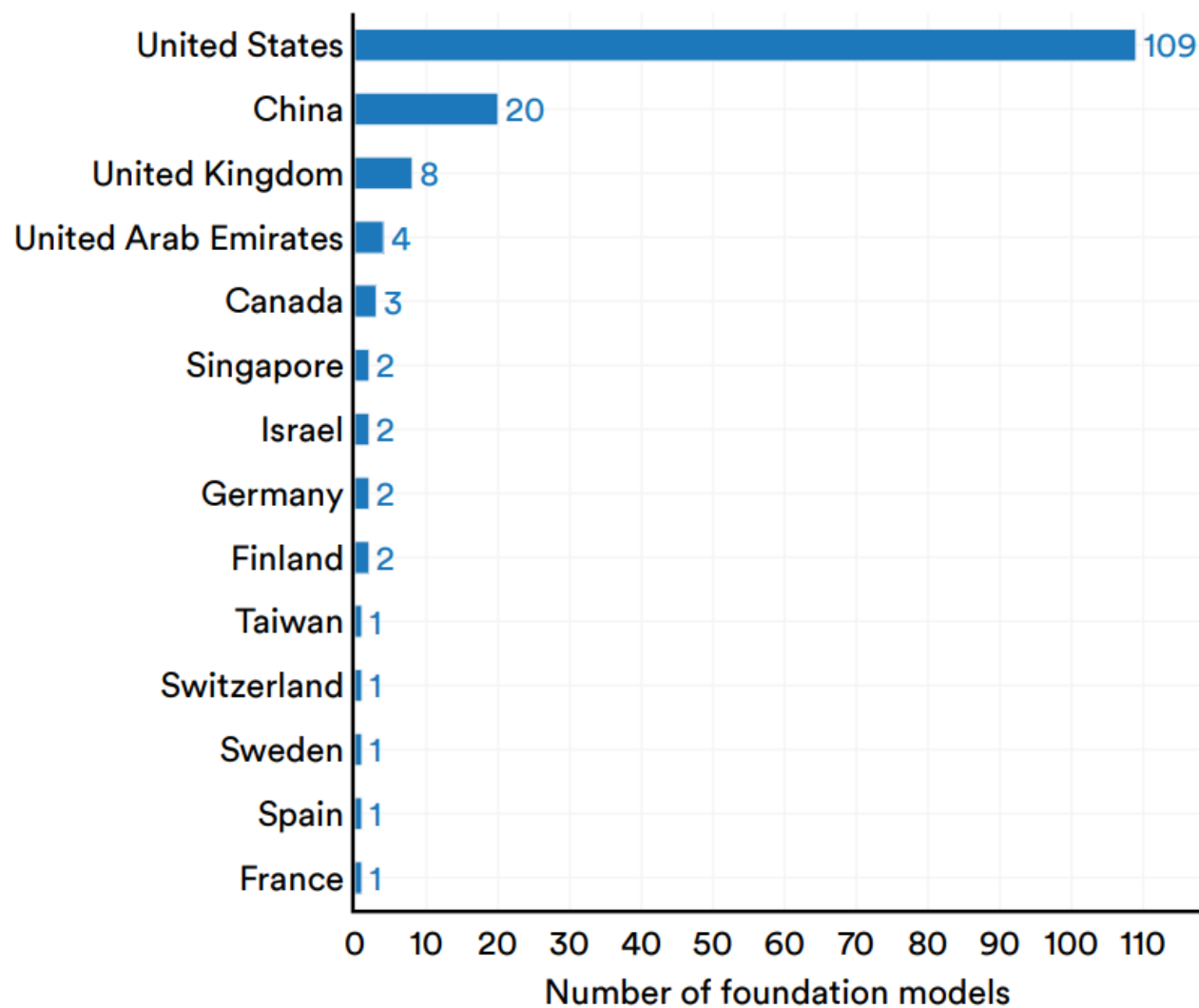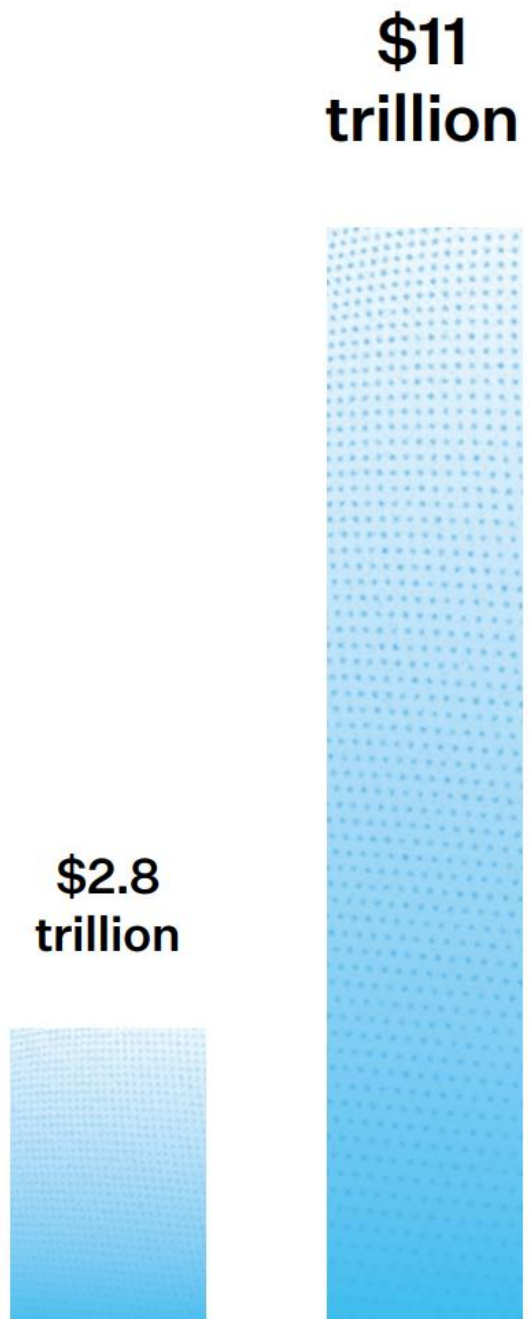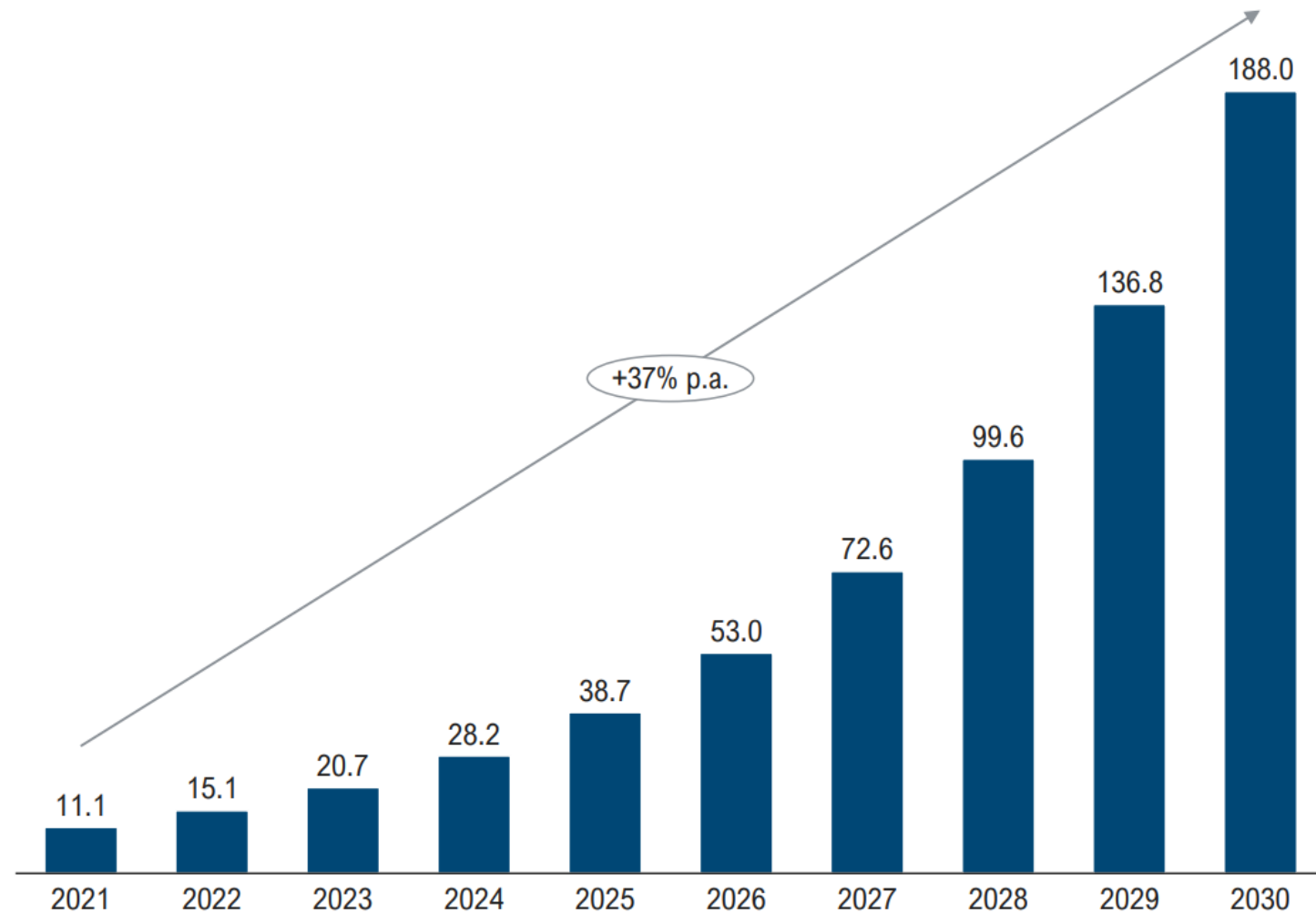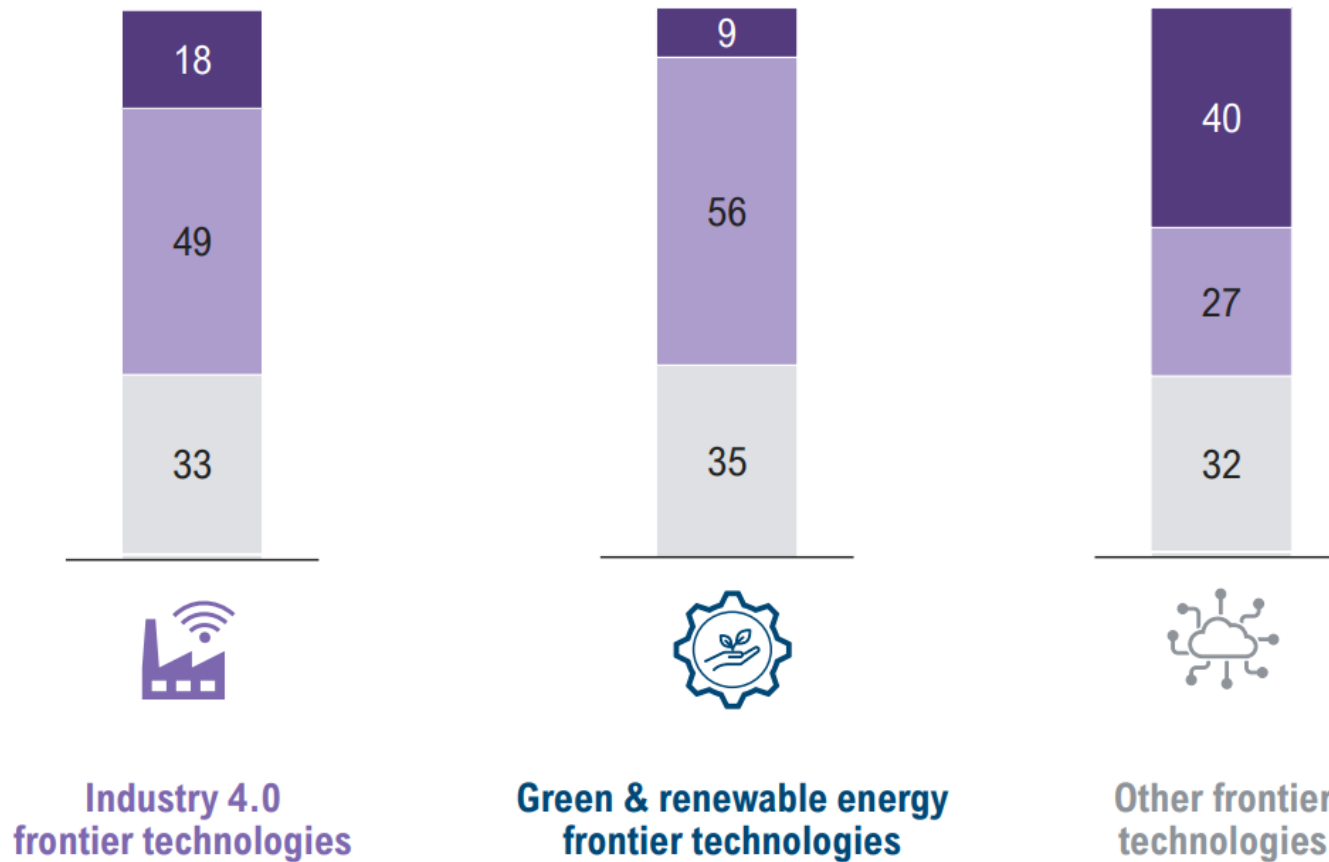Bar chart showing: 2021: 11.1; 2022: 15.1; 2023: 20.7; 2024: 28.2; 2025: 38.7; 2026: 53.0; 2027: 72.6; 2028: 99.6; 2029: 136.8; 2030: 188.0. Growth arrow labeled +37% p.a.

> With an average growth rate of 37% p.a. from 2021 to 2030, the **global market for AI in healthcare** is set to **boom,** reaching a total value of USD 188 billion in 2030

> Key reasons for this explosive growth trajectory are the **increased capabilities** and performance **of AI,** the large volume of **digitalized health data, personalization of medical care,** and the **growing prevalence of chronic diseases** in an aging society requiring more efficient healthcare systems

> Specific use-cases include the delivery of **faster** and **more accurate diagnoses**, whereby AI analyzes vast data pools of disease patterns, lowering the error rate (compared to medical professionals), resulting in potentially life-saving advantages in terms of decision, waiting and recovery time

> Another use-case is the **automatization of administrative tasks**, where AI can schedule appointments, sort patient records, or process insurance claims. This allows medical staff to focus their time on delivering patient care – instead of handling administrative 'red tape'

China and the US are dominating the global landscape of frontier technology patents

Global country share of patents, by frontier technology 2000-2021 [%]

Industry 4.0 frontier technologies
- 18
- 49
- 33

Green & renewable energy frontier technologies
- 9
- 56
- 35

Other frontier technologies
- 40
- 27
- 32

Legend: United States | China | Rest of World

> A crucial **indicator** measuring and comparing national **R&D efforts** is the **number of patents in frontier technologies**

> Among **investors and scientists,** frontier technologies have **generated increasing interest** over the past two decades – the related **number of patents** has **skyrocketed**. Patents in areas of biogas/biomass, AI, electric vehicles and IoT account for the largest amount of patents

> The **knowledge landscape** for new fields of technology is **dominated by China and the United States,** together holding two thirds of global frontier technology patents

> However, it is vital to note that the **quality of patents is equally important.** This can be measured by the international scope of patents, the grant ratio (filed patents/granted patents) as well as the commercialization rate of patents. Under such criteria, China's performance is lower than major developed countries

Technology and innovation drive prosperity – Many developing countries lack abilities and access to catch up with developed countries

WIPO Global Innovation Index (GII) 2022 related to GDP per capita PPP in 2022 [Index, USD]

GDP per capita PPP [USD]
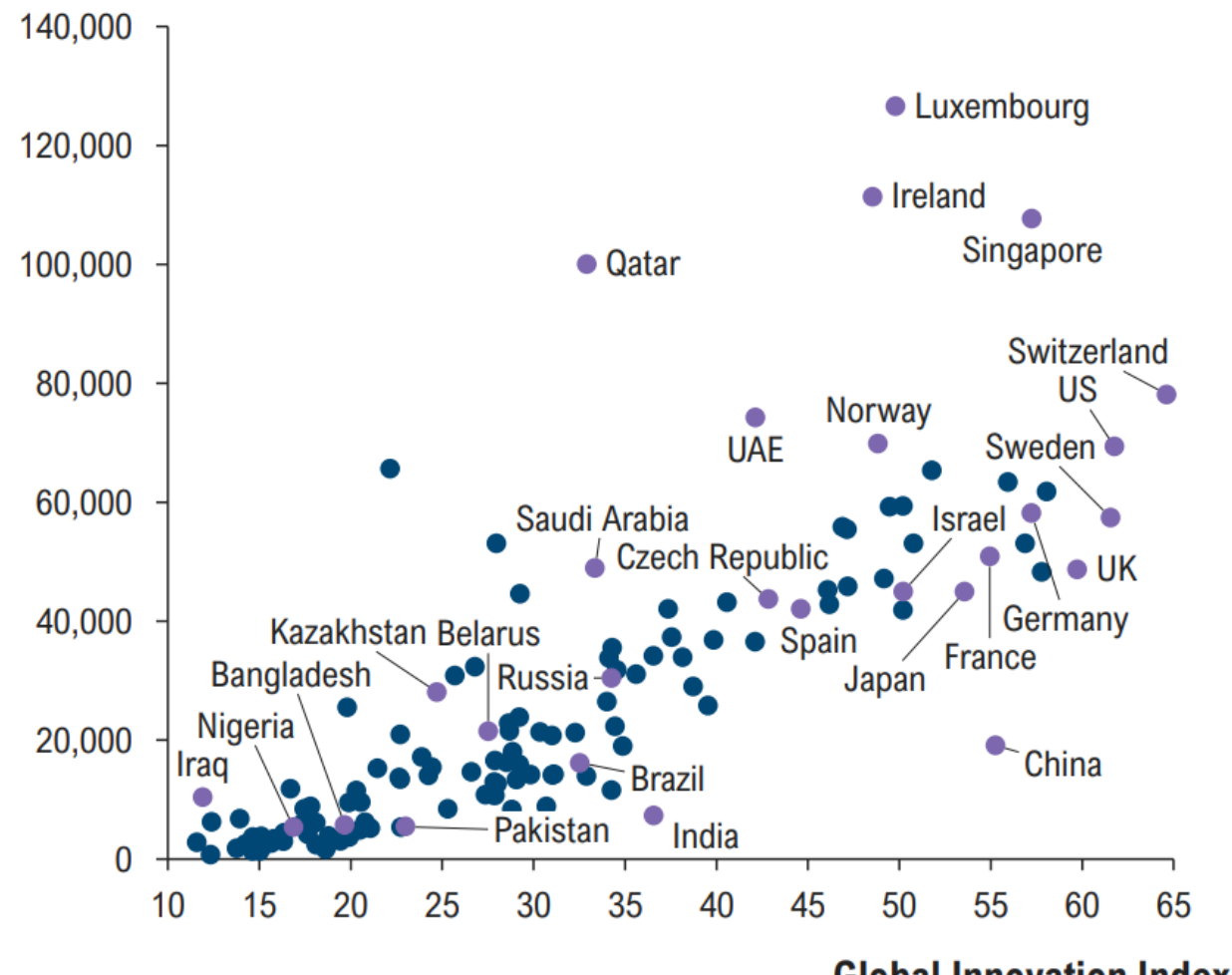
> The **innovative** capability of a nation is an essential engine of **productivity, growth, and prosperity**
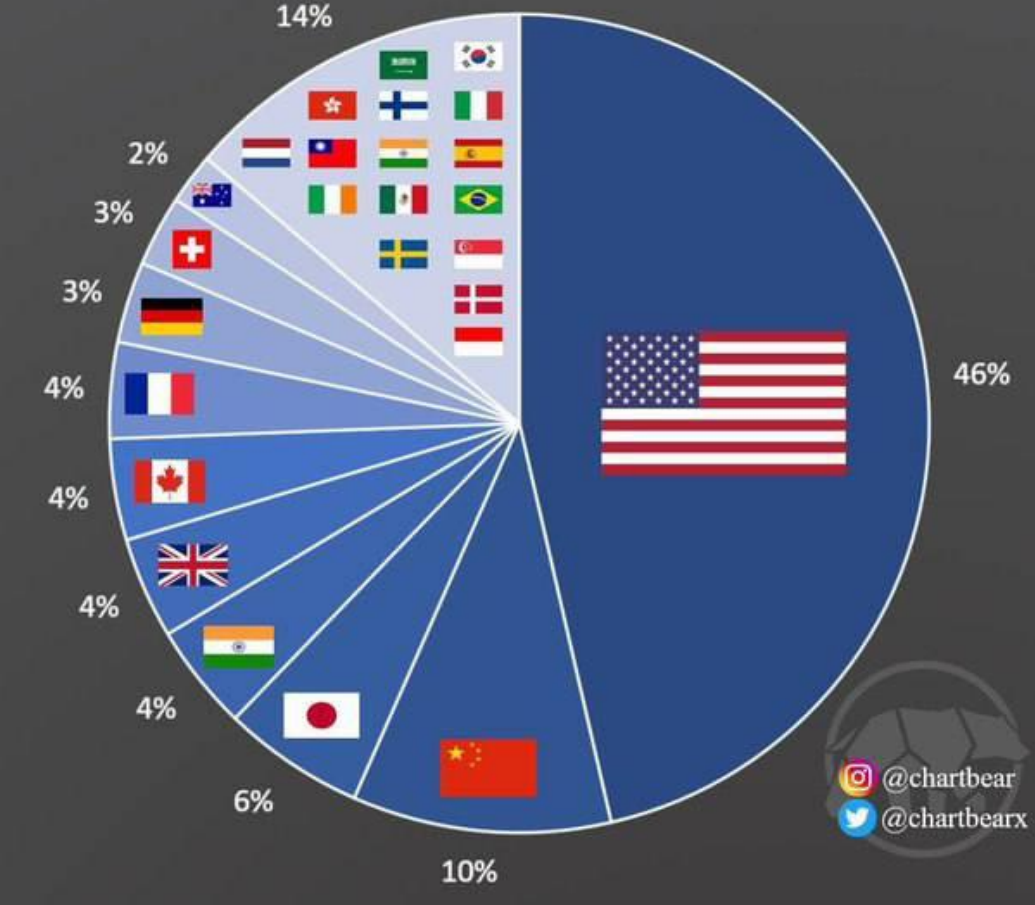
> The **Global Innovation Index (GII) ranks countries** from 0 to 100 based on their **ability to innovate.** The index analyzes countries along **a variety of metrics**, including R&D intensity, patent applications, tertiary education efficiency, regulatory environment, productivity, high-tech density, and researcher concentration

> Evaluating the Global Innovation Index from a GDP/capita perspective, there is a clear message: **the higher (lower) countries score on innovation the higher (lower) their GDP/capita**. China is an exception in having successfully built up its innovation strength, yet the country still has a lower GDP/capita than developed countries

> Many **developing countries lack abilities and access regarding institutions and skills** to close the technology and innovation gap. Established networks of higher education and research institutions as well as a significant number of technology companies involved in high-end R&D – both evidenced in developed countries – are notably absent

> To gain a broad picture of a country's innovation capabilities, different innovation indices should be used. In addition to the GII, the new **"Innovation indicator",** an innovation index jointly developed by **Roland Berger, BDI, Fraunhofer and ZEW,** dives deeply into the topic. It measures the **innovation capability of 35 developed and emerging markets.** Criteria are the **ability to produce innovations,** the position in **key technologies** and the

Country Distribution of the Top 500 Companies by Market Capitalization

Data Science

Cyber Security

Machine Learning

DevOps

Software Engineer

Fullstack Developer

Cloud Computing

System Engineer

Network Engineer

Blockchain Engineer

Digital Sprinters Framework

Physical Capital
- Ensure affordable access to the internet

Human Capital
- Foster digital skills development
- Encourage startups
- Address labor market discrimination

Technology
- Promote the adoption of artificial intelligence
- Promote innovative uses of data
- Encourage movement to the cloud
- Enable an inclusive payments ecosystem

Competitiveness
- Adopt balanced competition policies
- Enable the platform economy
- Adopt tax policies for a digital economy
- Commit to open digital trade
- Advance a digital government

Source: Google (2020).

Figure 3: FREI detailed framework and indicators

1. Physical Capital

1.1 Digital Infrastructure
1.1.1 Internet access
1.1.2 International internet bandwidth
1.1.3 Fixed-broadband subscriptions
1.1.4 4G-mobile network coverage
1.1.5 Fixed broadband affordability
1.1.6 Mobile broadband affordability
1.1.7 Computer software spending

1.2 Transport Infrastructure
1.2.1 Quality of infrastructure
1.2.2 Rural access
1.2.3 Air connectivity
1.2.4 Infrastructure investment

1.3 Energy Infrastructure
1.3.1 Access to electricity
1.3.2 Electricity consumption
1.3.3 Electrical outages
1.3.4 Energy intensity

2. Human Capital

2.1 Attract
2.1.1 Brain gain
2.1.2 International students
2.1.3 Tolerance of minorities
2.1.4 Tolerance of immigrants
2.1.5 Gender parity in high-skilled jobs

2.2 Grow
2.2.1 Tertiary enrolment
2.2.2 Reading, maths, and science
2.2.3 Use of virtual professional networks
2.2.4 Youth inclusion

2.3 Retain
2.3.1 Pension coverage
2.3.2 Environmental performance
2.3.3 Physician density
2.3.4 Sanitation
2.3.5 Personal safety

2.4 Skills
2.4.1 Workforce with tertiary education
2.4.2 High-skilled workforce
2.4.3 Researchers
2.4.4 Relevance of education system to the economy
2.4.5 Digital skills

3. Technology

3.1 Digital Usage
3.1.1 Internet users
3.1.2 Active mobile-broadband subscriptions
3.1.3 Gender parity in internet usage
3.1.4 Firms with website
3.1.5 Internet shopping
3.1.6 Government online services
3.1.7 E-Participation

3.2 Digital Content Creation
3.2.1 GitHub commits
3.2.2 Wikipedia edits
3.2.3 Internet domain registrations
3.2.4 Mobile apps development

3.3 Industry 4.0
3.3.1 Cloud computing
3.3.2 AI software development
3.3.3 AI research
3.3.4 ICT patent applications
3.3.5 Internet of Things

4. Competitiveness

4.1 Digital Policies
4.1.1 ICT regulation
4.1.2 Cybersecurity
4.1.3 AI regulation
4.1.4 Cloud governance
4.1.5 Online content
4.1.6 Data privacy
4.1.7 Data transfer

4.2 Market Environment
4.2.1 Extent of market dominance
4.2.2 Labour productivity
4.2.3 Urbanisation
4.2.4 Domestic credit to private sector
4.2.5 Market capitalisation

4.3 R&D
4.3.1 R&D spending
4.3.2 University ranking
4.3.3 Gender parity in R&D
4.3.4 Scientific journal articles

4.4 Innovation
4.4.1 Medium- and high-tech industry
4.4.2 High-tech exports
4.4.3 Venture capital recipients, deals
4.4.4 New product entrepreneurial activity
4.4.5 New business density
4.4.6 Patent applications

با توجه به این معیارها و Benchmark ها، ده کشور اول در این تحقیق از میان ۱۲۴ کشور مطالعه شده، سطح آمادگی اقتصاد آن‌ها نسبت به آینده به ترتیب زیر هستند:

۱. سنگاپور

۲. دانمارک

۳. سوییس

۴. آمریکا

۵. سوئد

۶. فنلاند

۷. نروژ

۸. هلند

۹. انگلستان

۱۰. استرالیا

اولین کشور خاورمیانه‌ای، امارات با رتبه ۲۷ درج شده است. رتبه‌های قابل توجه دیگر به ترتیب: کره جنوبی(۱۳)، آلمان(۱۶)، فرانسه(۲۱)، اسراییل(۲۴)، قطر(۳۴)، چین(۳۸)، عربستان سعودی(۴۲)، روسیه(۴۸)، ترکیه(۵۳)، کویت(۵۸)، ویتنام(۶۱)، عمان(۶۳). رتبه ایران ۸۷ است که در کنار بولیوی(۸۶) و پاراگوئه (۸۵) قرار گرفته است. در شکل زیر، رتبه بندی بخش های مختلف سرمایه فیزیکی، سرمایه انسانی، فناوری و رقابت پذیری ایران قابل مشاهده است.

FIGURE C

Global risks ranked by severity over the short and long term

"Please estimate the likely impact (severity) of the following risks over a 2-year and 10-year period."

Risk categories

▍	Economic
▍	Environmental
▍	Geopolitical
▍	Societal
▍	Technological

2 years

Rank	Risk
1st	Misinformation and disinformation
2nd	Extreme weather events
3rd	Societal polarization
4th	Cyber insecurity
5th	Interstate armed conflict
6th	Lack of economic opportunity
7th	Inflation
8th	Involuntary migration
9th	Economic downturn
10th	Pollution

10 years

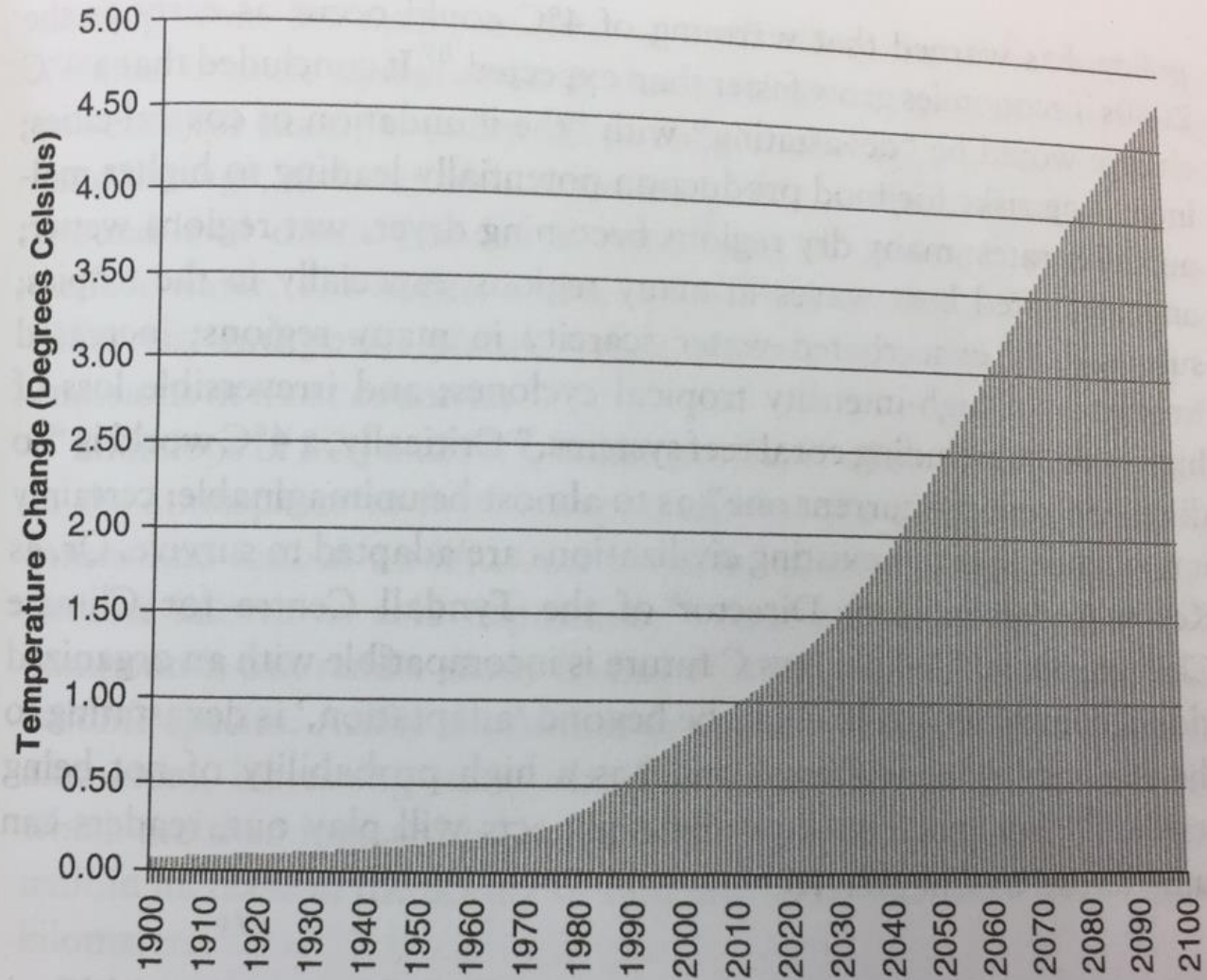| Rank	Risk
1st	Extreme weather events
2nd	Critical change to Earth systems
3rd	Biodiversity loss and ecosystem collapse
4th	Natural resource shortages
5th	Misinformation and disinformation
6th	Adverse outcomes of AI technologies
7th	Involuntary migration
8th	Cyber insecurity
9th	Societal polarization
10th	Pollution

Source

World Economic Forum Global Risks Perception Survey 2023-2024.
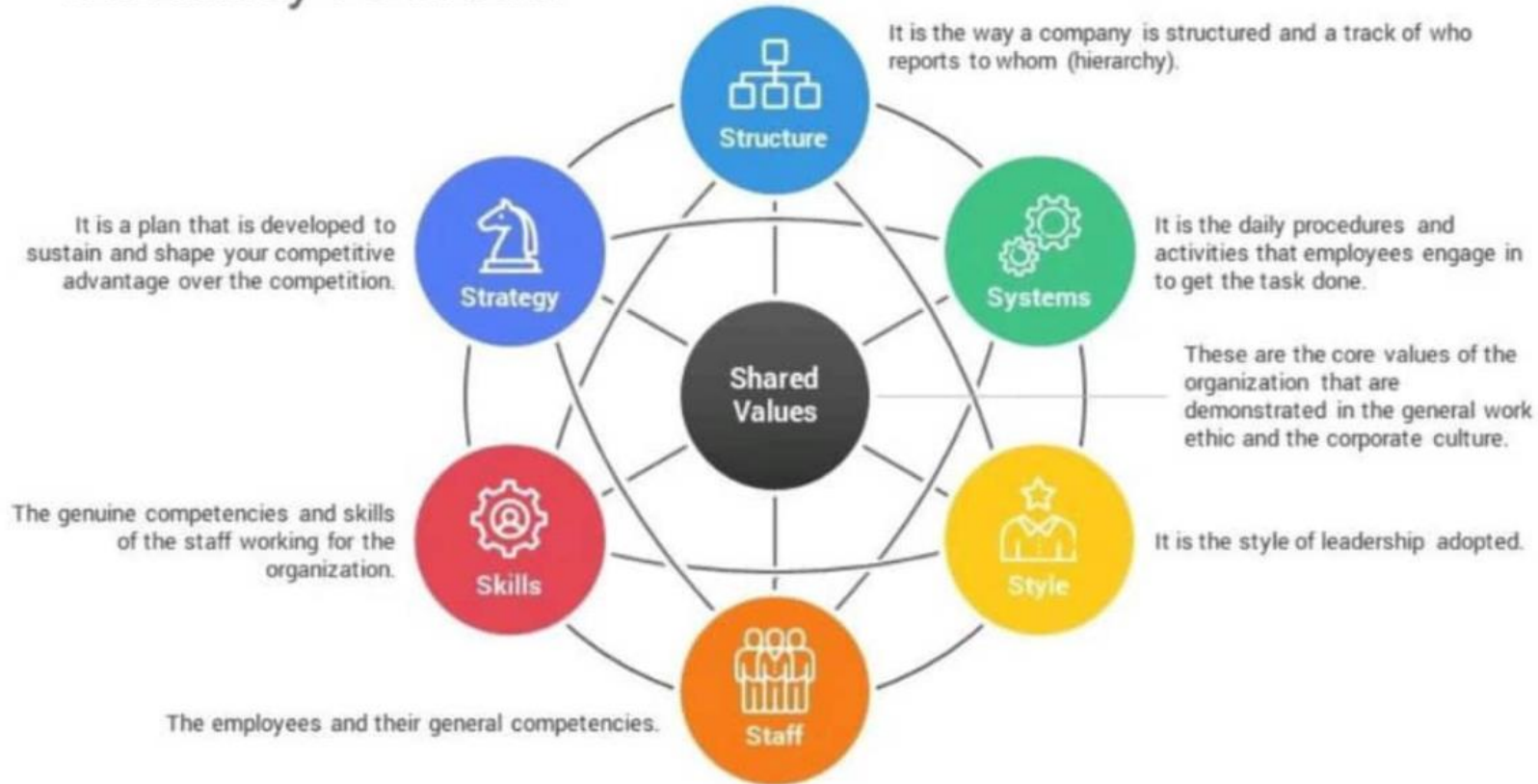
Figure 2.7 Temperature change from preindustrial times (°C), 1900–2100
Source: Projections assume IPCC's A1FI with growth allocations to countries based on the 2011 *International Energy Outlook.*

Atmospheric Carbon Dioxide:
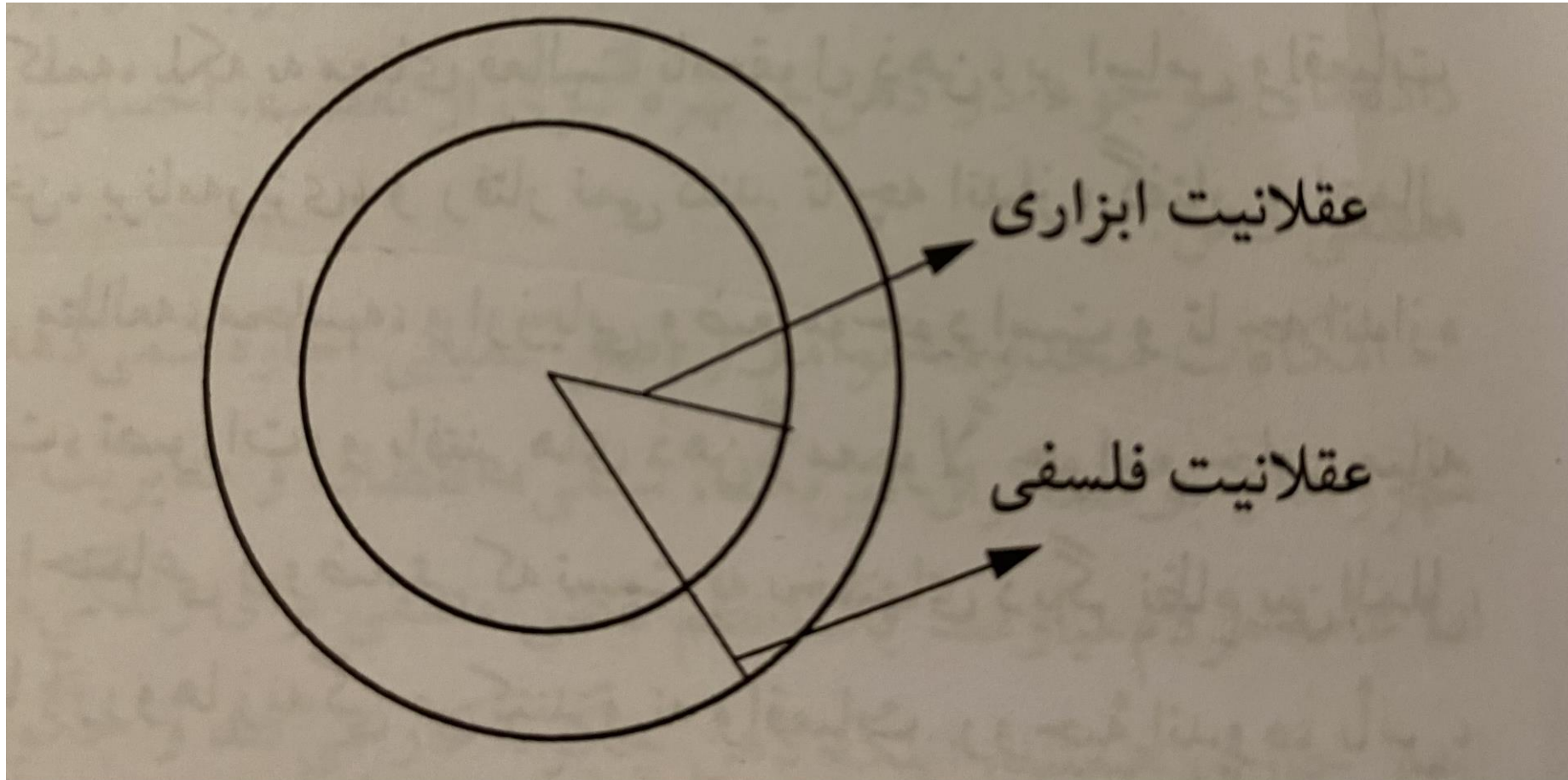
280 ppm: 1750

350 ppm: 1990

375 ppm: 2011

400 ppm: 2015

441 ppm: 2030

Parts per million

- There are 283 million vehicles in the US, using about 10 million b/d.

- There are 1.01 billion cars in the world. By 2030, the number of cars expected to reach 2 billion.

- There are about 332 million cars in China, expected to increase to 370 million by 2030.

عقلانیت ابزاری

عقلانیت فلسفی

عقلانیت فلسفی

عقلانیت ابزاری

عقلانیت فلسفی:

تولید ثروت

محدود کردن دولت در تولید ثروت

پذیرش تشکل های بخش خصوصی برای تولید ثروت

پذیرش تفکیک تدریجی قدرت سیاسی از قدرت اقتصادی

آیزا برلین:

وقتی به لحاظ حقوقی و عینی، قدرت سیاسی از قدرت اقتصادی تفکیک شد، آزادی سیاسی و فردی و رسانه ای متولد می شود.

- **Irving Janis: Victims of Groupthink (versus optimizing group performance)**

- Cohesive group

- Presumed consensus

- Lack of candid discussion

- Low motivation to consider different courses of action

- Insincere agreement

- Fear of deviancy from the group

- Lowered standards of judgement

- Inflated self-image: wise, knowledgeable, powerful and virtuous

- Group conflict over problem representation

- کشوری که **سرمایه داری غیر دولتی** را تجربه نکرده، مفاهیم زیر را نمی تواند نهادینه کند:
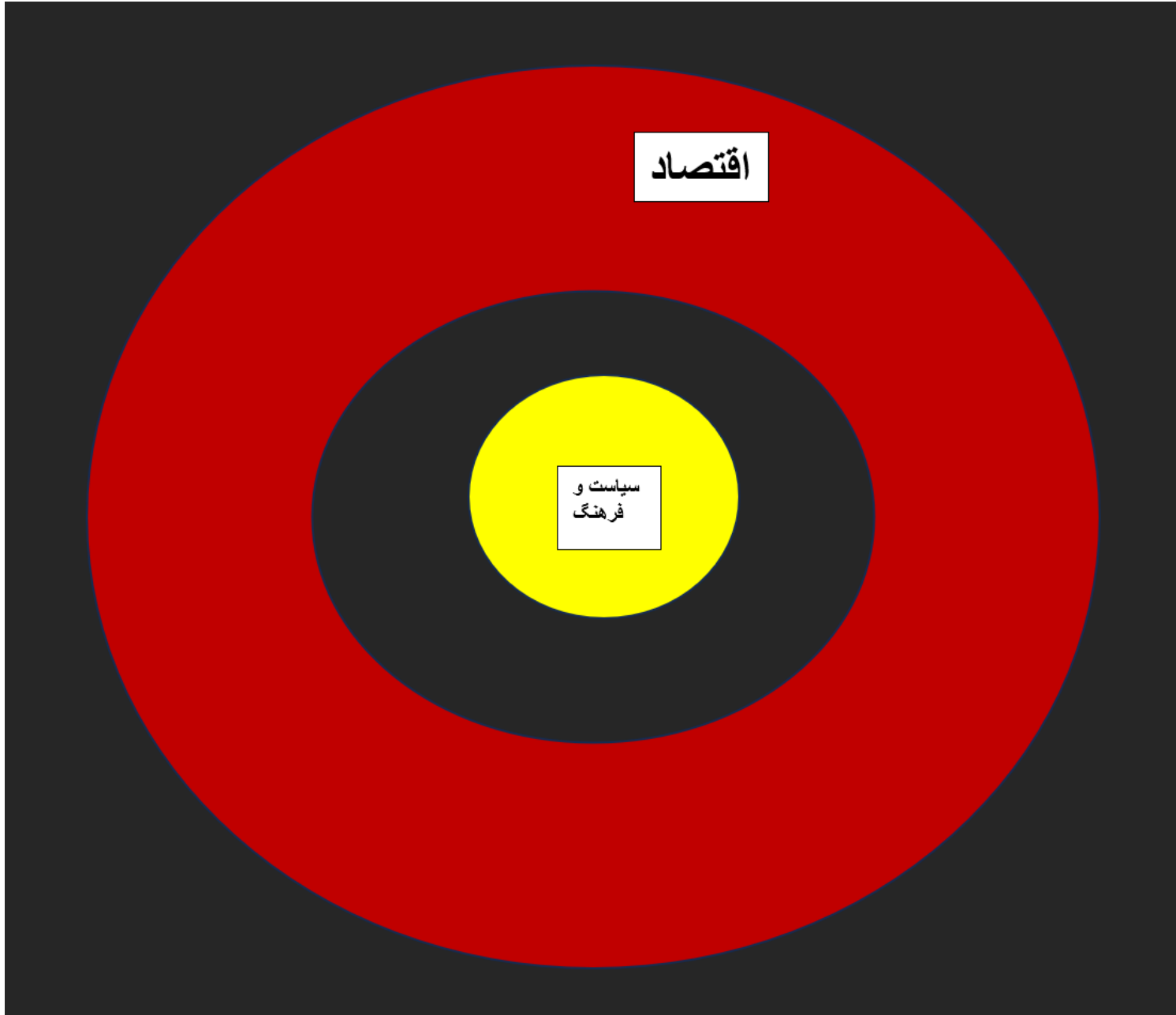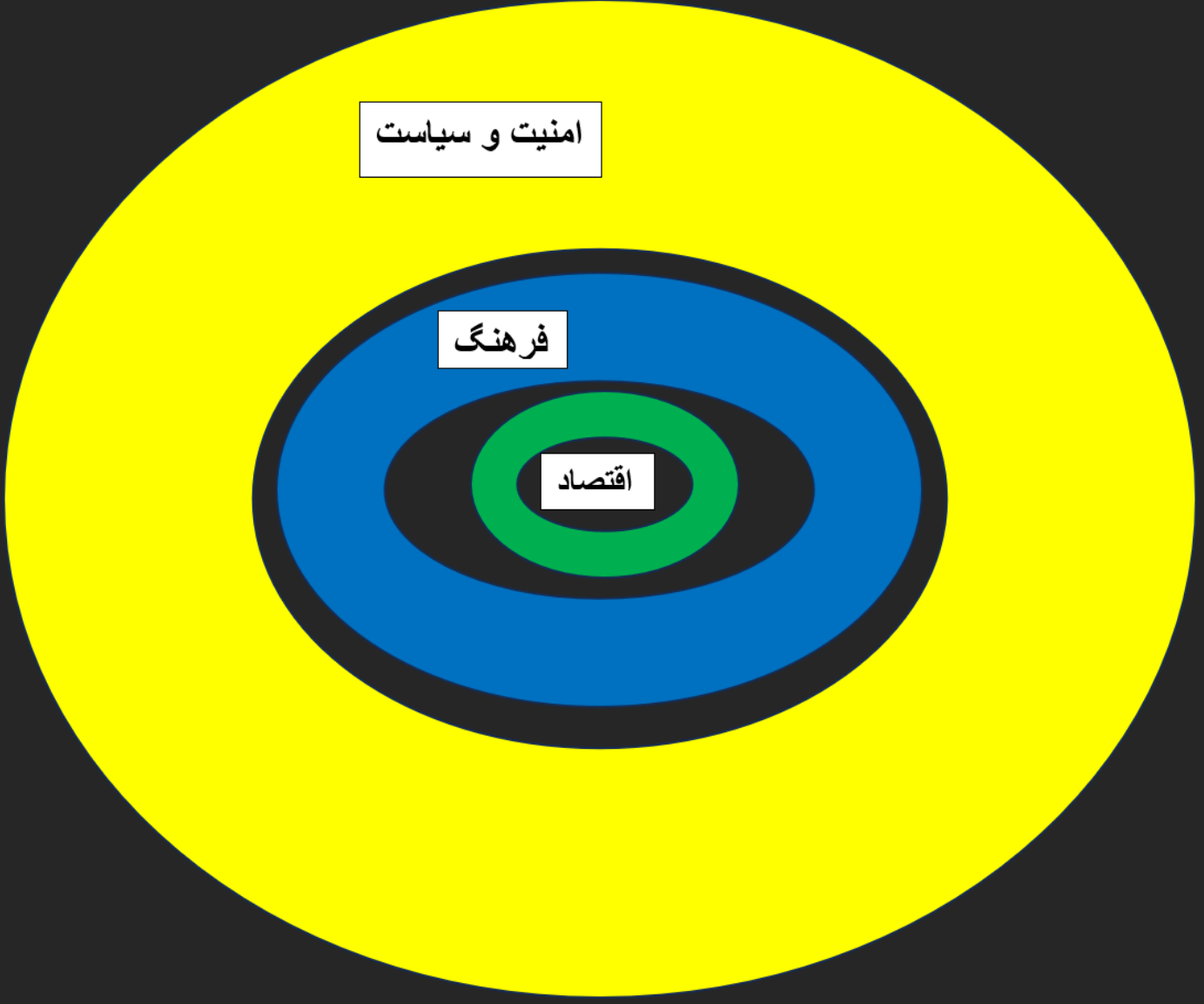 - **رقابت**
  - **کارآمدی**
  - **تخصص**
  - **کارکردگرایی**
  - **نوآوری**
  - **گردش فکر و اندیشه**

چالش جدی فکری کشور:

محدودیت در ارتباطات جهانی

چرا بین المللی شدن ؟

- یاد گیری اصول رقابت
- گسترش استانداردهای کاری
- پذیرش تخصص گرایی
- یادگیری شفافیت کاری
- راستگویی
- تمرین پاسخگویی
- جلوگیری ساختاری از فساد و رانت
- متوجه شدن به اهمیت نگاه حقوقی در کسب و کار
- یادگیری زبان های خارجی
- مجهز شدن به هوش عاطفی و آداب تعامل با دیگران