

Ecology and Sustainable Development.

7. Socioeconomic Challenges:

- Global Situation
- Global Socioeconomic Trends
- Position of the European Union in a Changing World
- Future Leaders
- Development Cooperation

• Map of Population Density:

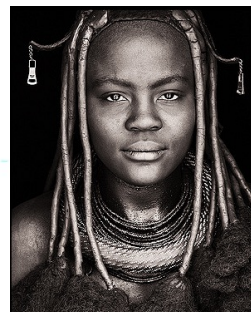
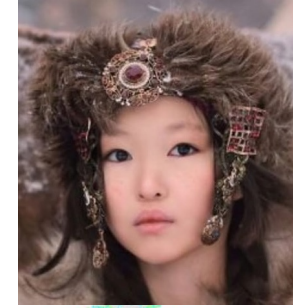
- global average 57/km²
- Asia 258/km²
- Africa 55/km²
- Europe 32/km²
- (EU 115)/km²
- S-America 25/km²
- Australia 8/km²

Source: Wikipedia

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• Our Diverse World:

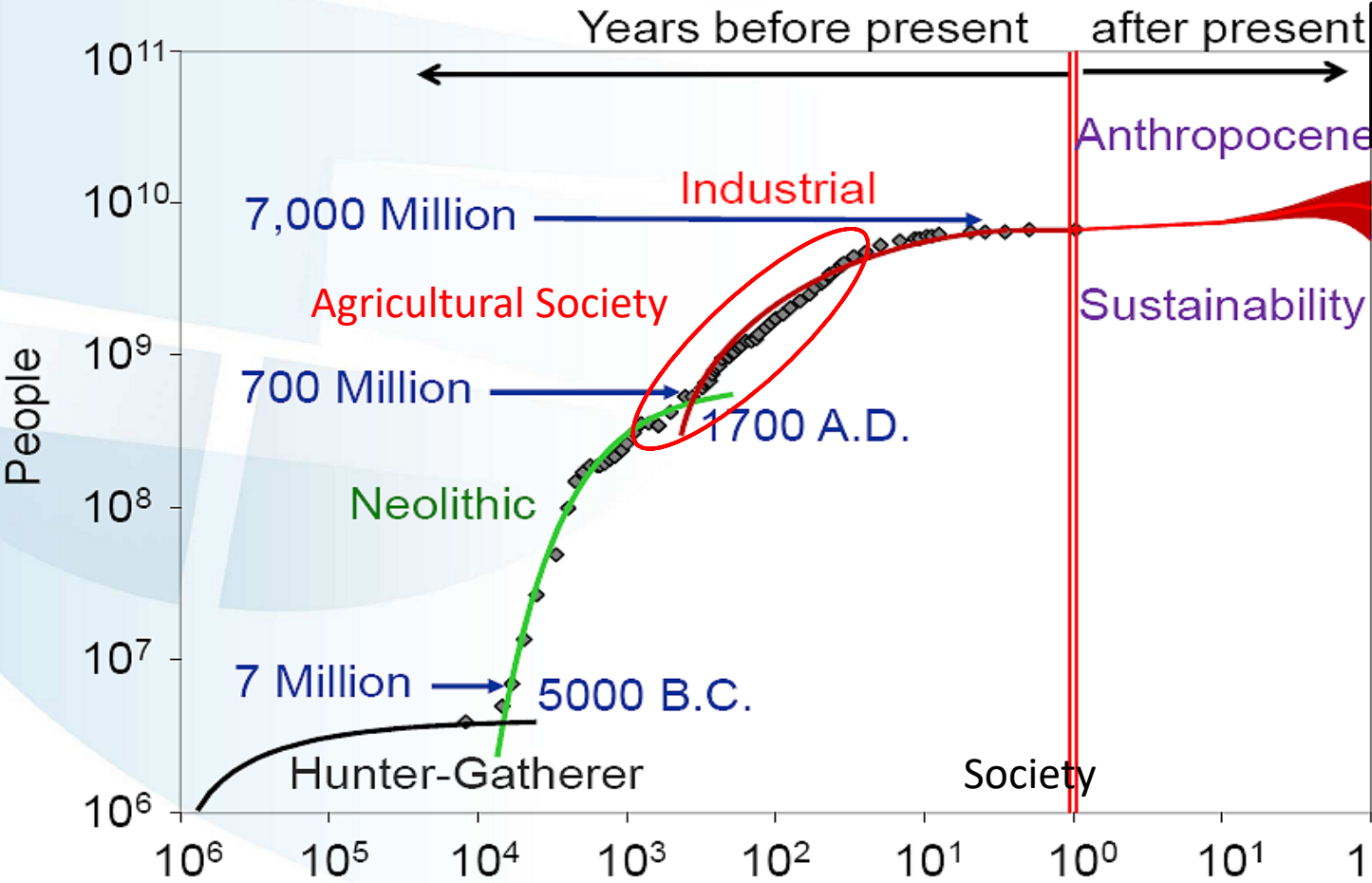
- 8 billion people
- 206 countries
- > 1.000 nations
- 7.000 languages



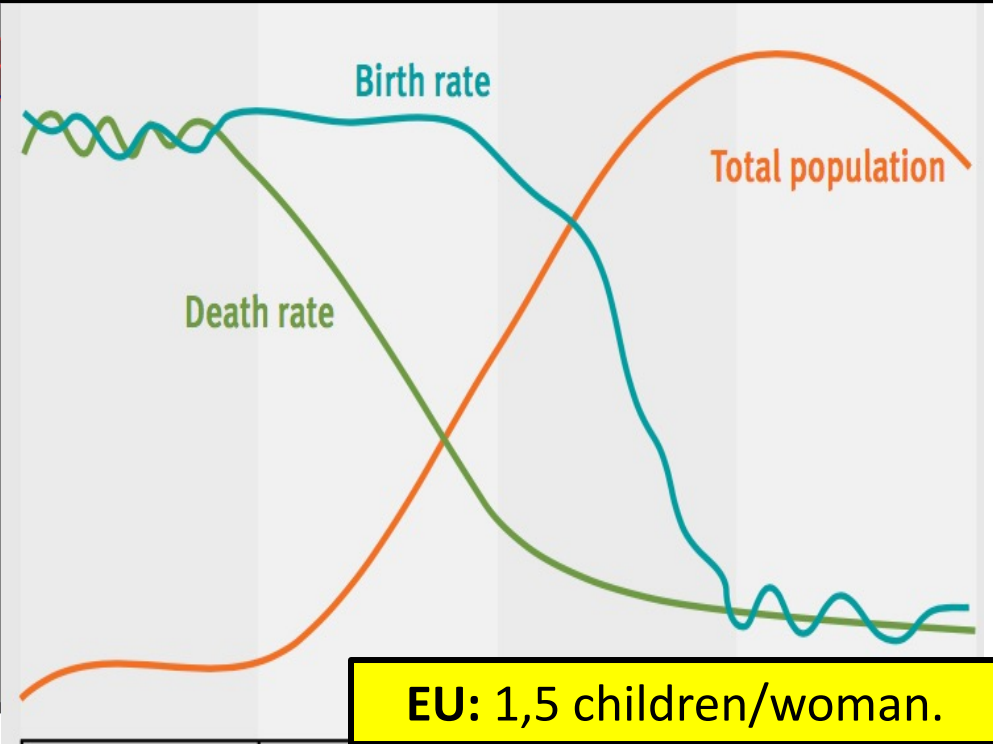
Evolution of World Population.

Current population growth rate:
1,1 % (75 million) per year, ca 10 billion people in 2050 (UN estimate)

The Demographic Transition:



Niger: 6 children/woman,
doubling of population in 20 years.



EU: 1,5 children/woman.

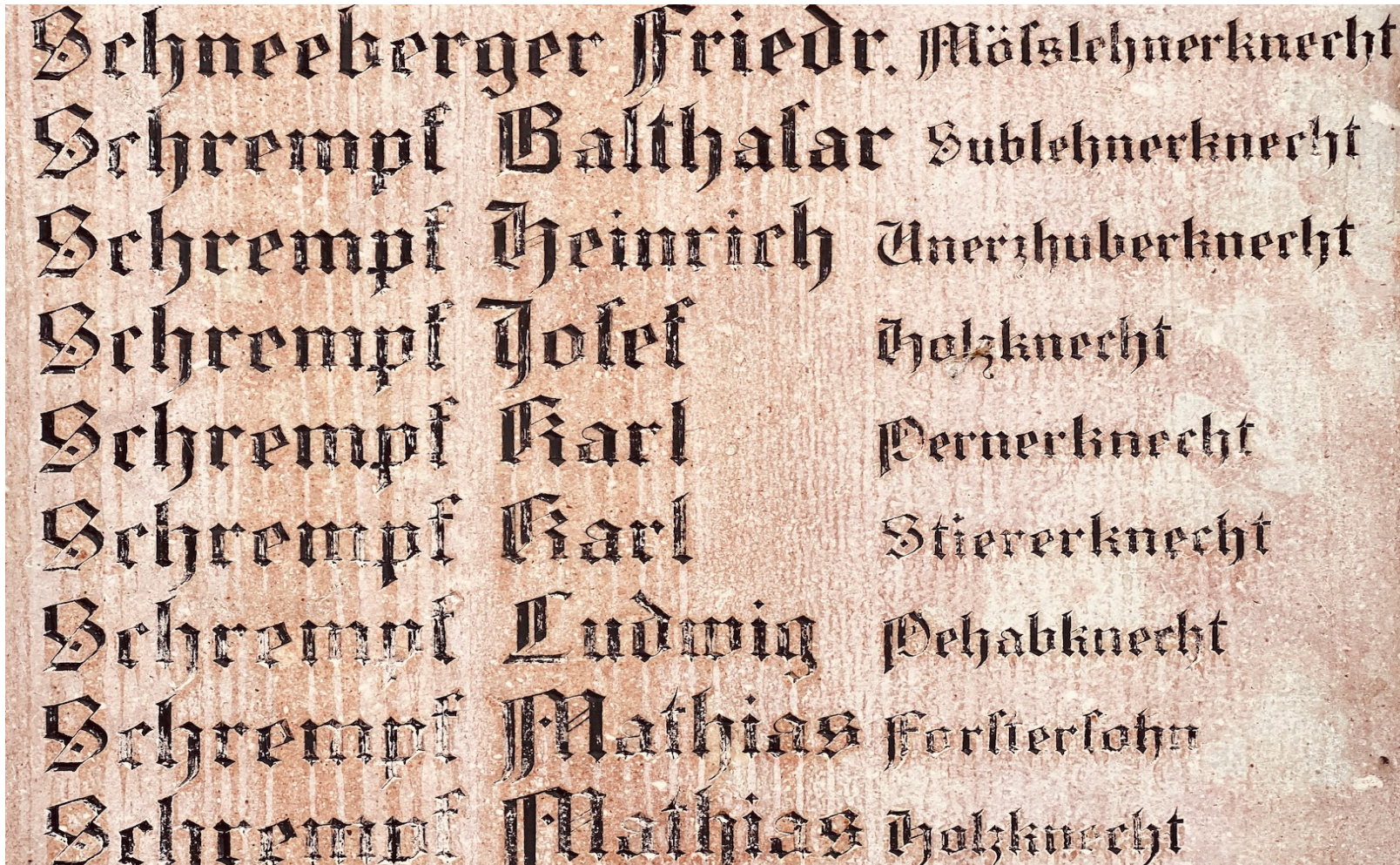
High birth rate and high but fluctuating death rate
Declining death rate and continuing high birth rate
Declining birth and death rates
Low death rate and low but fluctuating birth rate

Source: Kates, 1997; Deevey, 1960; Lutz & Scherbov, 2000

Around 30% of the world's population is below 15 years of age.

Developments in the Last Century.

The “Good Old Times”: War memorial in Ramsau 1919

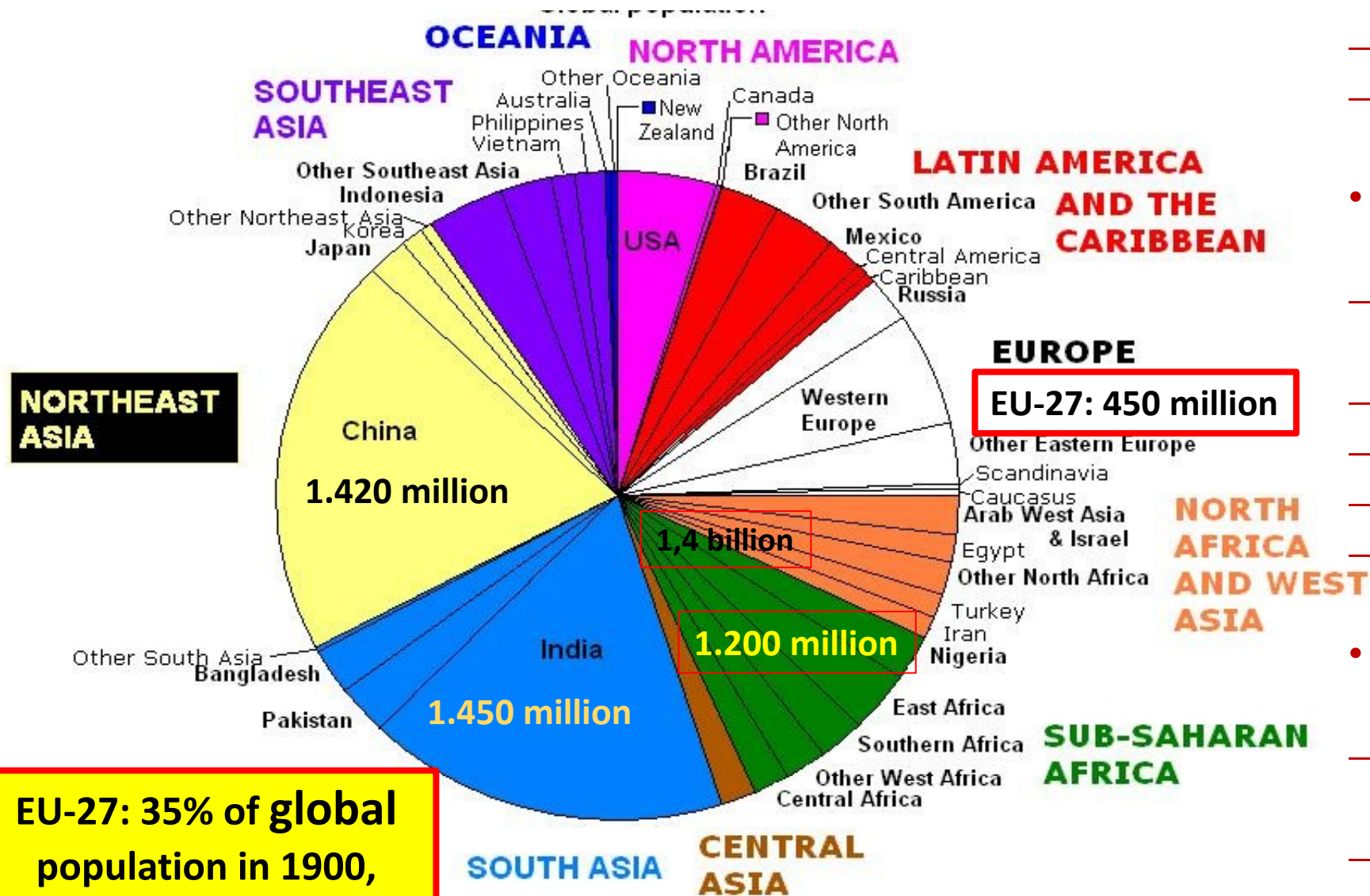


- **Socio-economic indicators 2024:**
 - life expectancy: x2
 - costs electricity: x0,1
 - costs transportation: x0,1
 - agricultural productivity: x5 – 6
 - cost of food: x0,1
 - labour productivity: x200 – 300
 - poverty (<1.25€/day):
1 in 2 in 1900, 1 in 8 today

Knecht = servant without rights and salary (only accommodation and food).

Source: Louise O. Fresco 2013

World Population by Region (2024).



- **Ethnic groups:**
 - Han Chinese (20 % of the global population)
 - Arabs (5%)
 - Bengalis (3%)

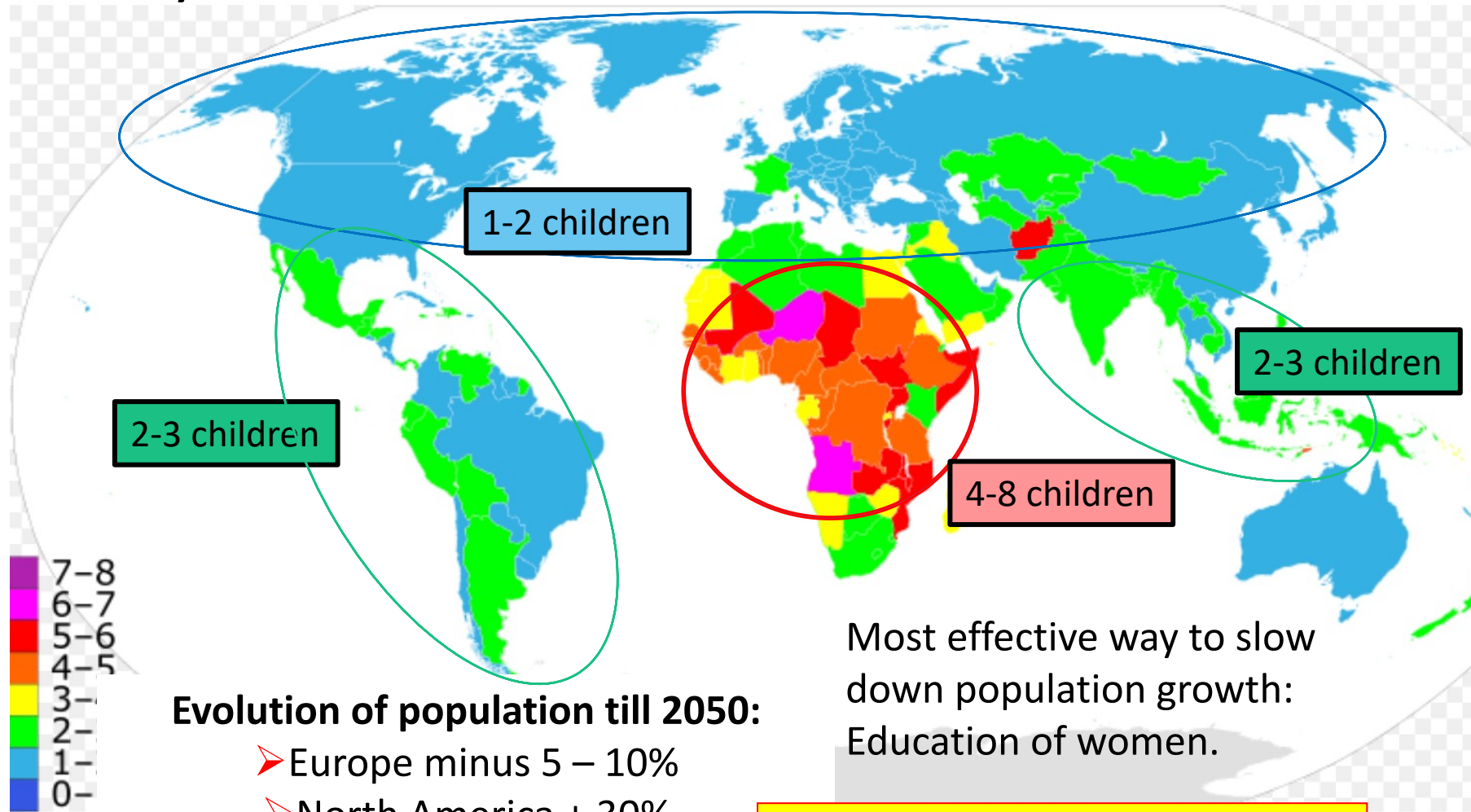
- **The world's most-spoken first languages are:**
 - Mandarin Chinese (12.44% of global population)
 - Spanish (4.85%)
 - English (4.83%)
 - Arabic (3.25%)
 - Hindustani (2.68%).

- **The world's largest religions are:**
 - Christianity (31% of global population)
 - Islam (24.1%)
 - Hinduism (14%).

EU-27: 35% of global population in 1900, now 6%.

Population Evolution in Different Regions.

Fertility rate of different countries for 2018.



Evolution of population till 2050:

- Europe minus 5 – 10%
- North America + 30%
- Asia + 30%
- Latin America + 50%
- Africa + 100%

By 2050 85% of the people will live in developing countries/emerging economies.

Most effective way to slow down population growth:
Education of women.

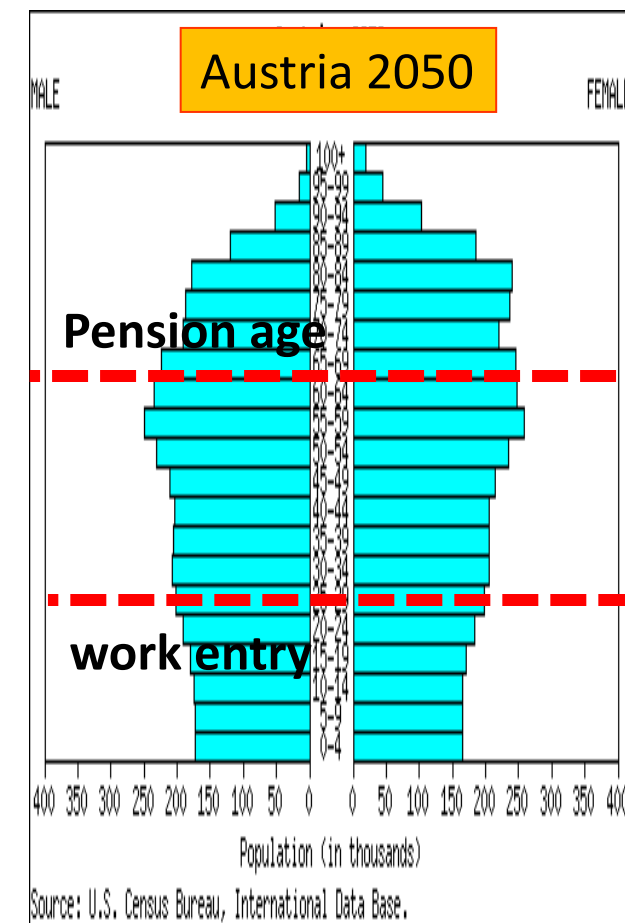
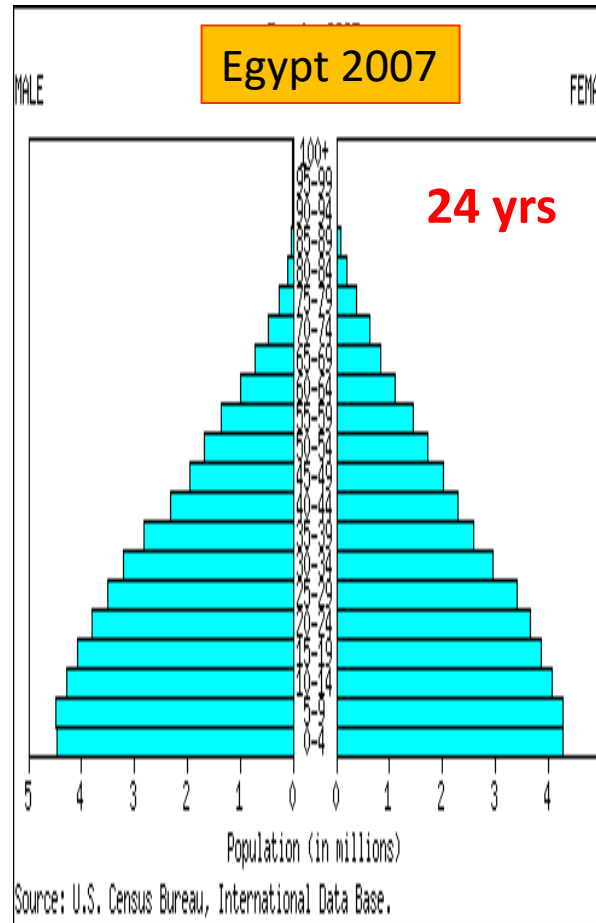
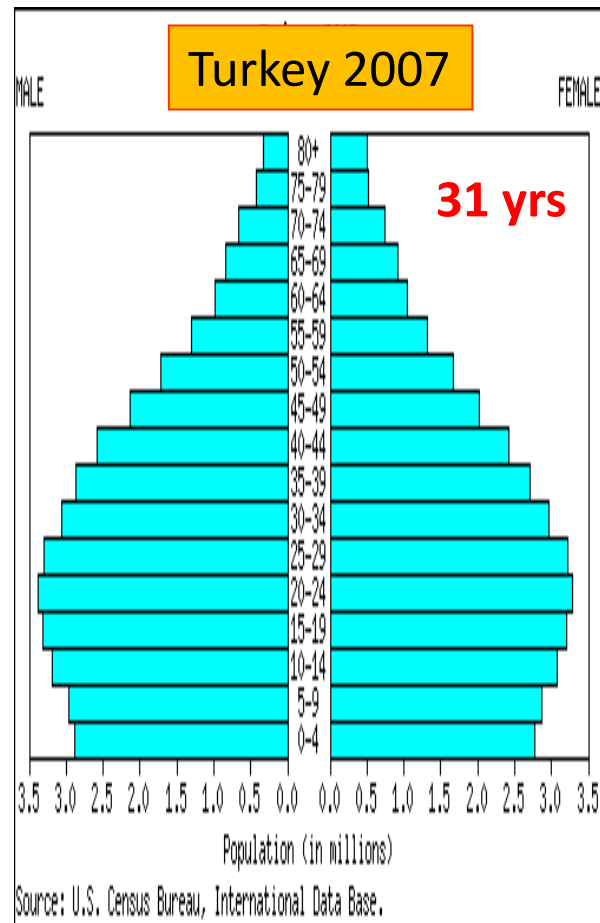
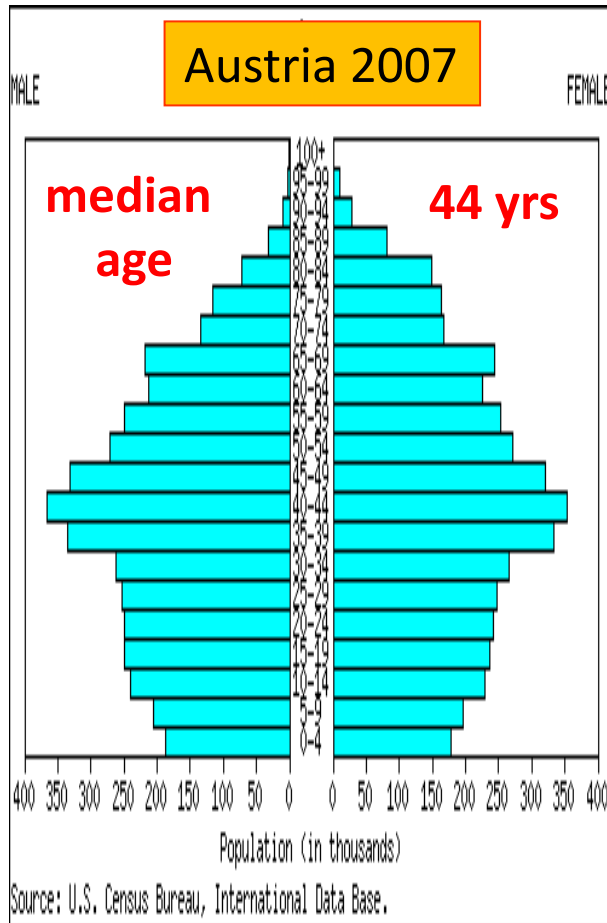
• Fertility rate:

- Preindustrial time: 5
- Present global: 2,3
- Lowest: N-Korea 0,7
- Highest: Niger 6
- **High fertility rate in less developed countries:**
 - Child labor
 - Caretakers for old people
- **Low fertility rate in industrial countries:**
 - Wealth
 - Education
 - Urbanisation
 - Political regulation (China – one child policy)

Age Distribution of Populations: The Greying of Europe.

Source: US Census Bureau
and CIA World Fact Book

Population ageing in Europe: rising life expectancy, declining fertility.

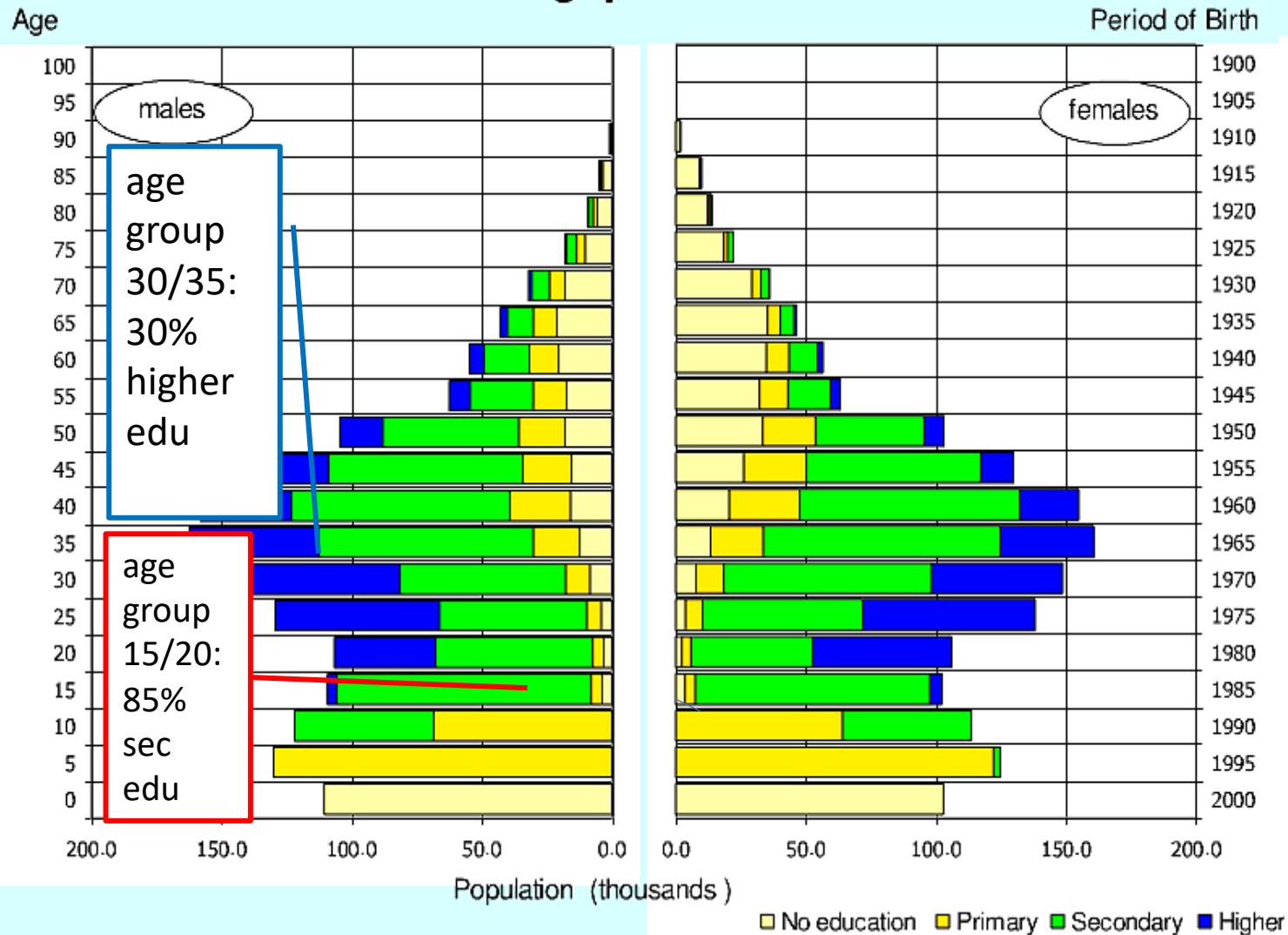


Population pyramids of Austria, Turkey and Egypt in 2007 and median age of populations in 2016 .

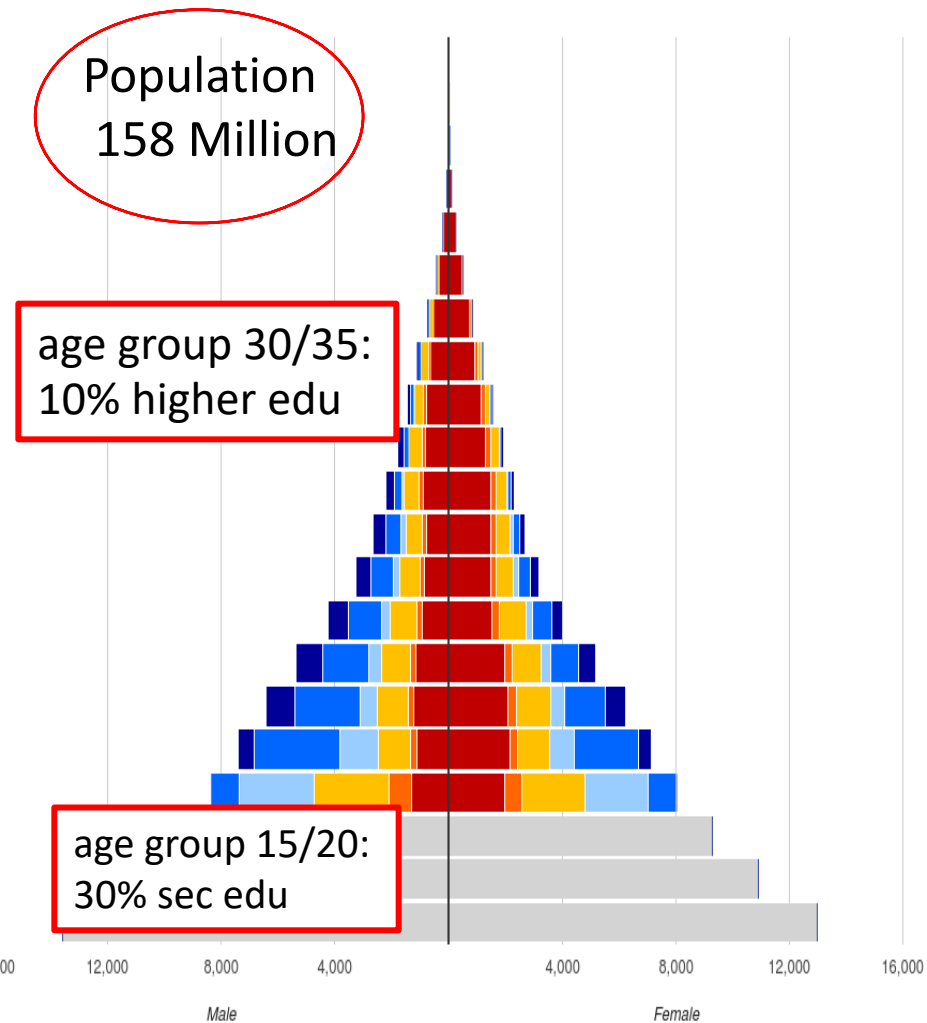
Now an Austrian spends 33 years in work but lives 80 years.

Educational Level of Populations.

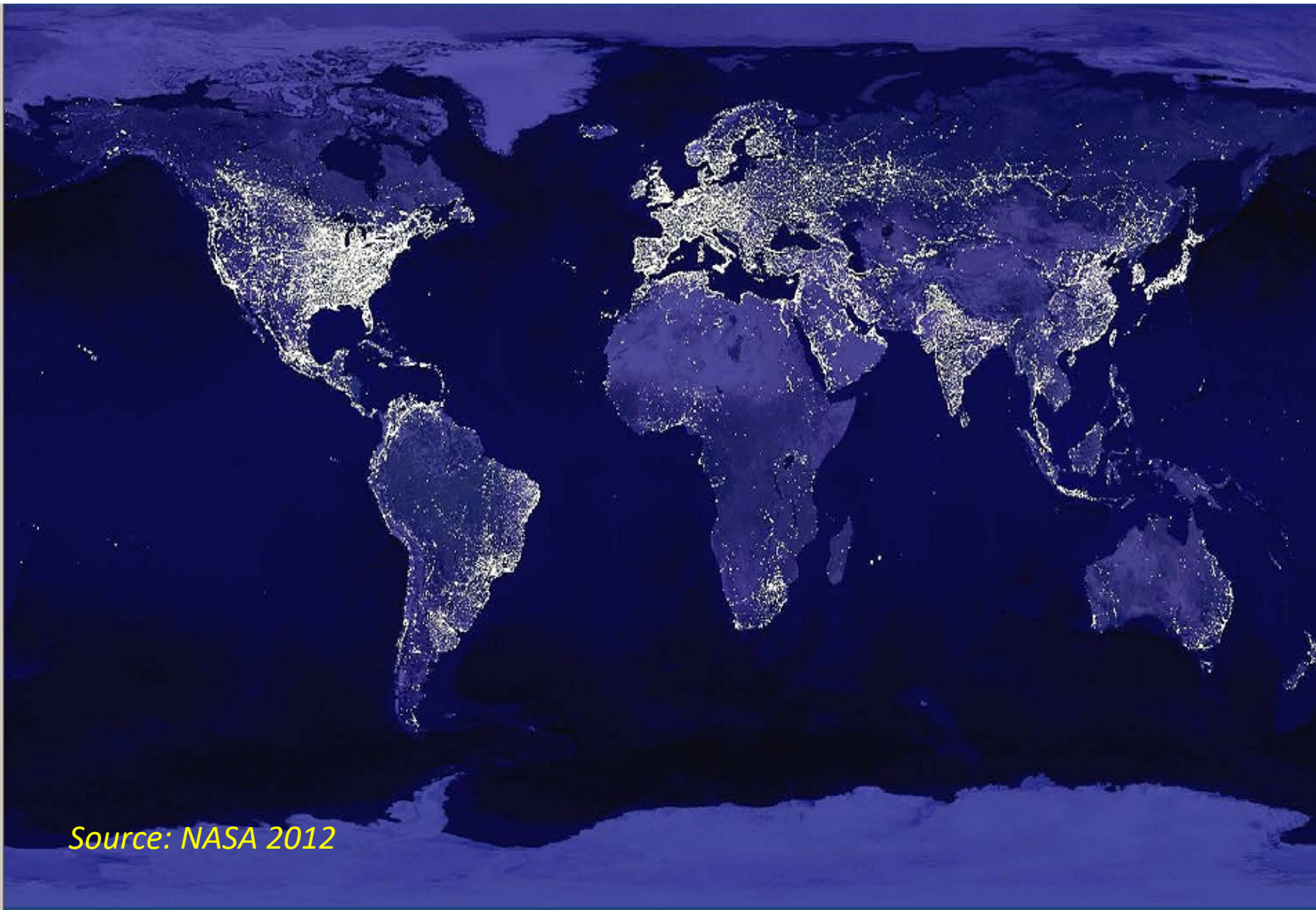
Singapore 2000



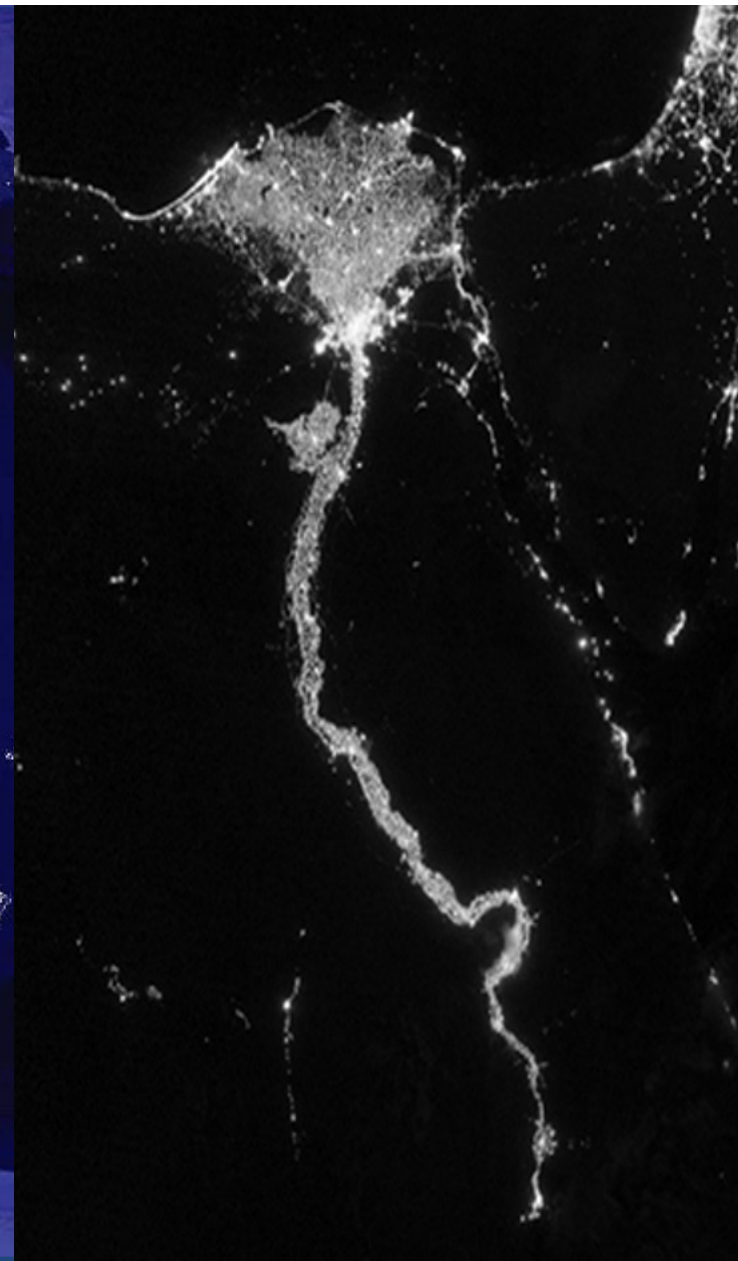
Nigeria 2010



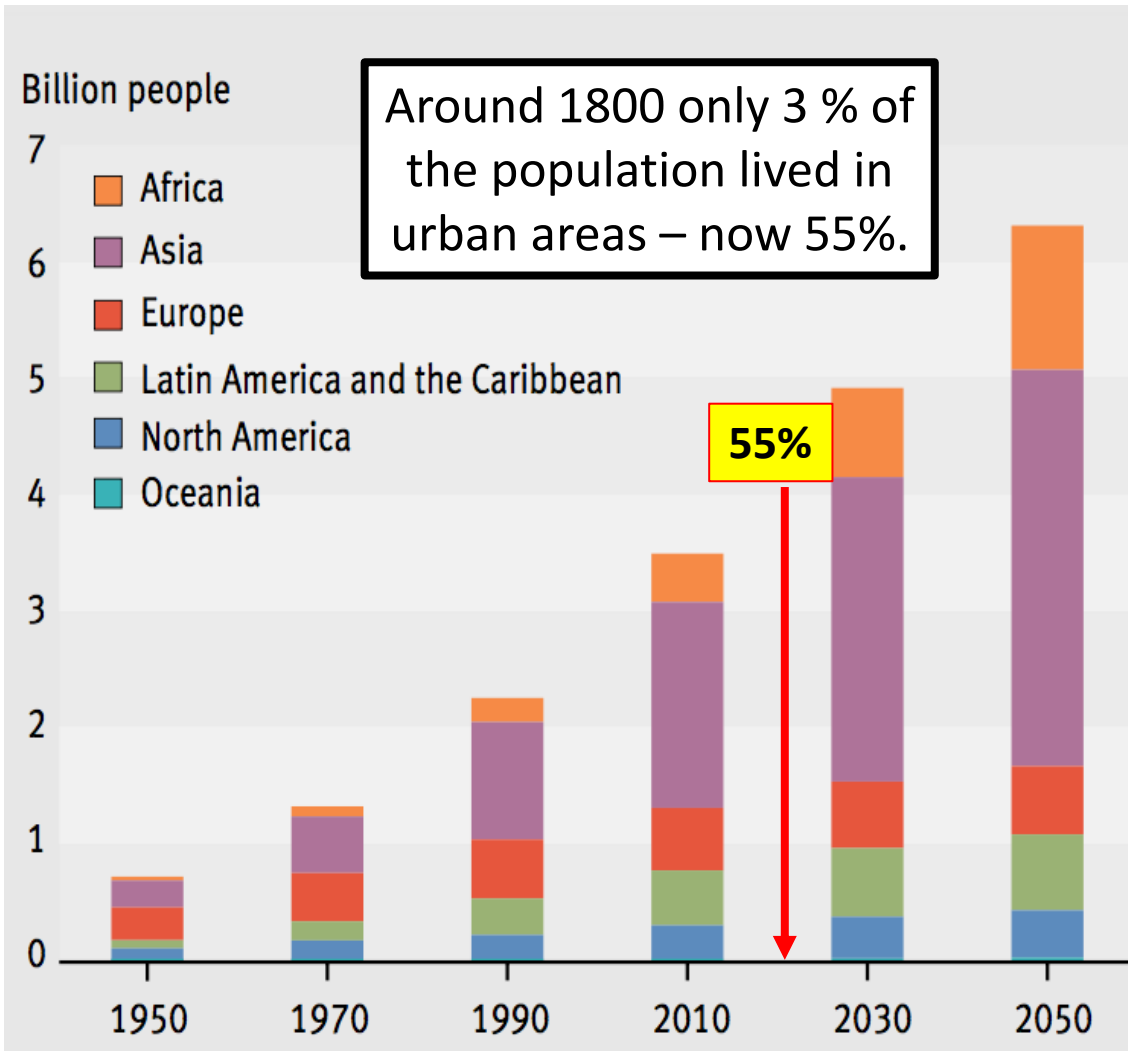
Evolution of Global Population: Extensive Urbanisation.



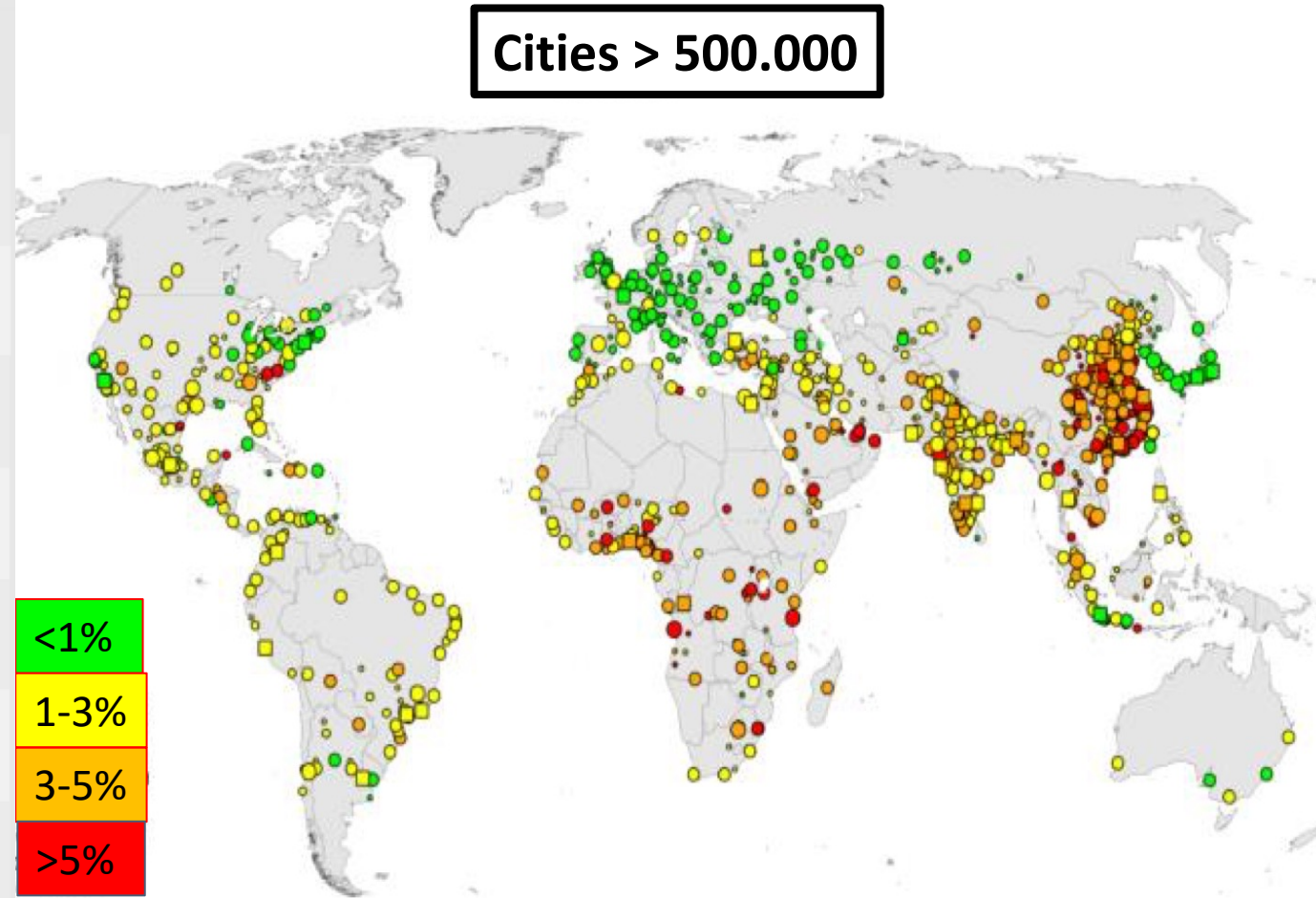
Source: NASA 2012



Urban Population Growth 1990-2050.



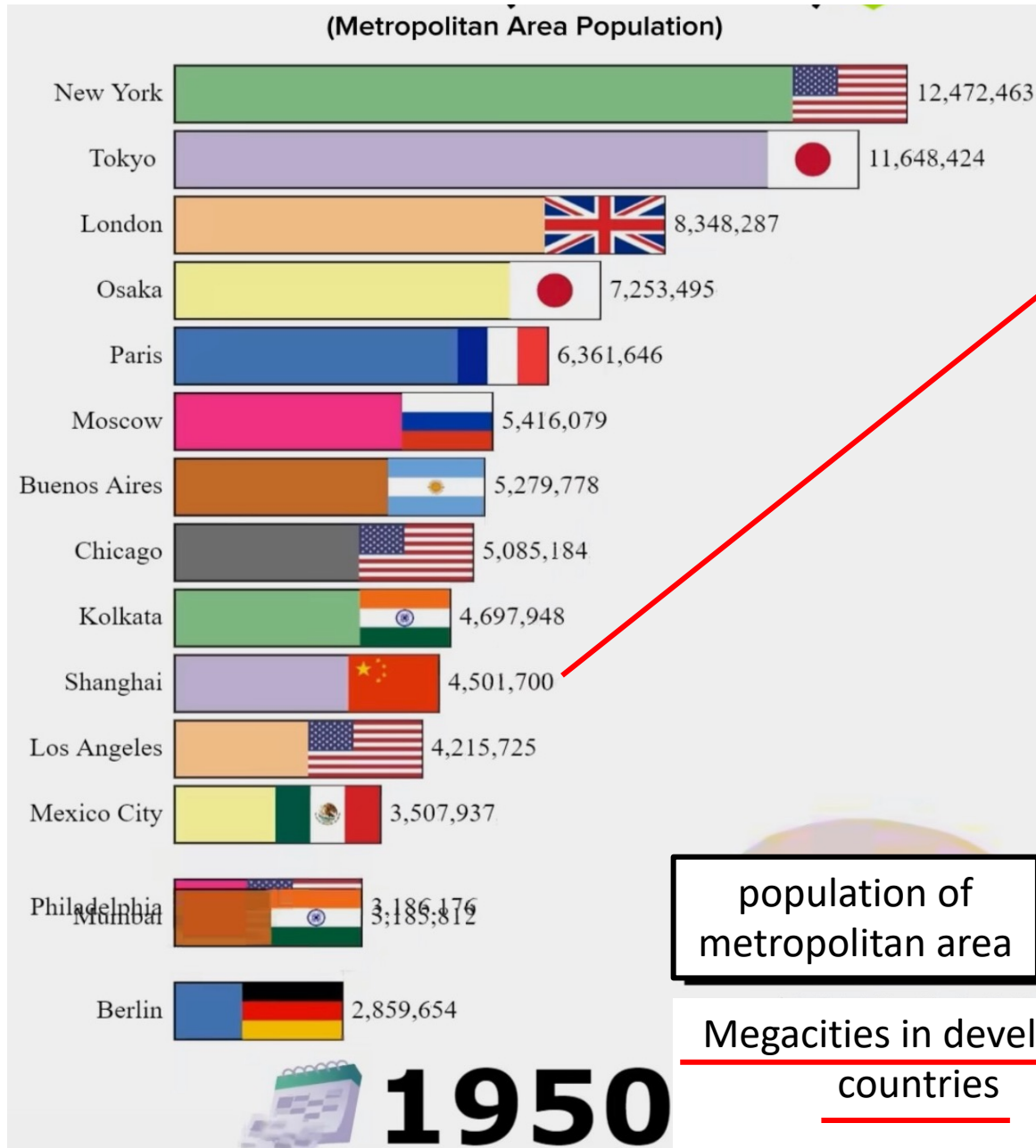
In China each year 20 million people move to the urban areas.
By 2050 6 billion people will live in cities.



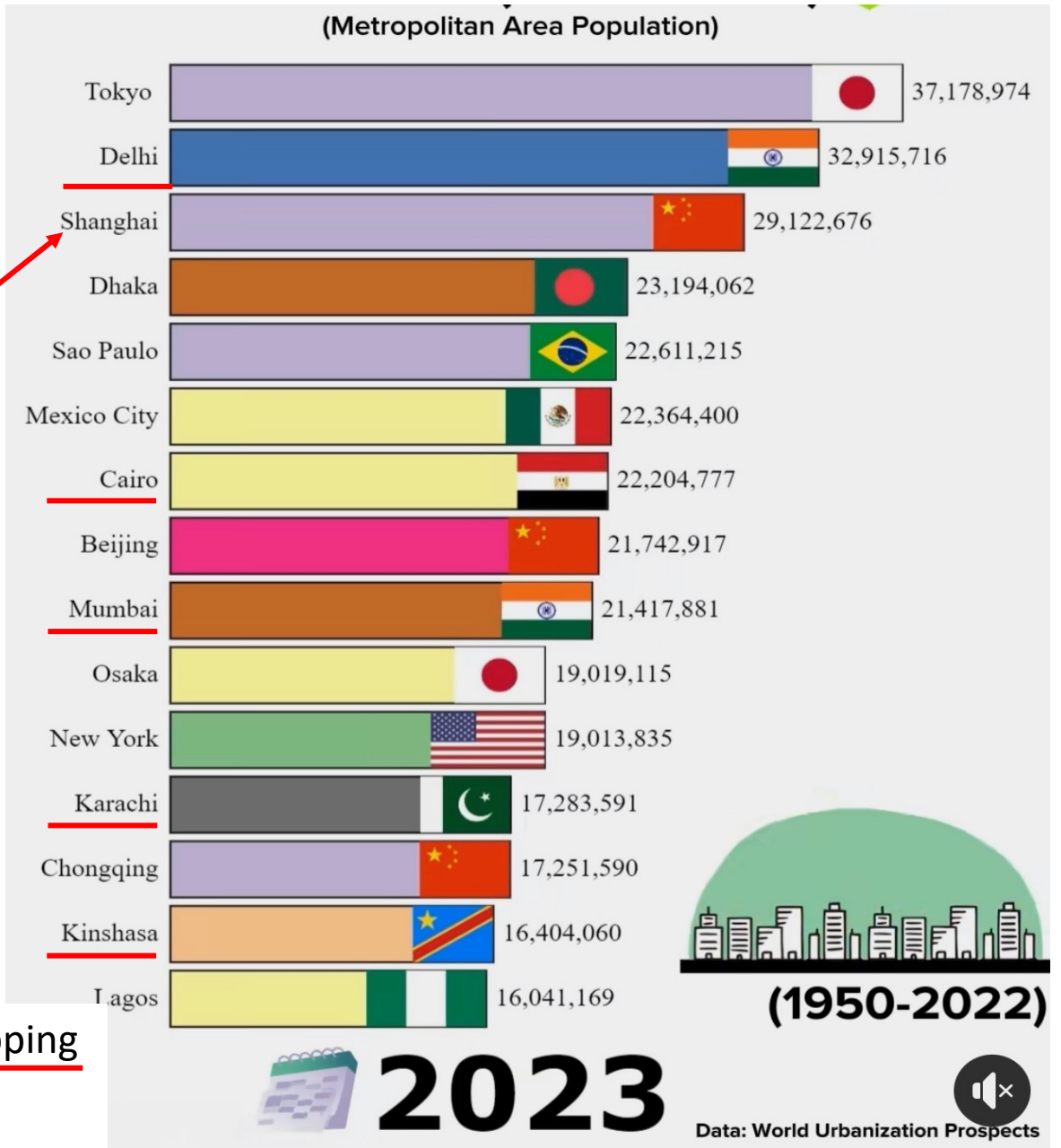
Highest growth rate in Africa and SE-Asia.

Source: UNEP 2012

Development of Megacities 1950-2023.



Megacities in developing countries



Urbanization in Asia.

1920

Harbour of Aberdeen Hongkong

2000

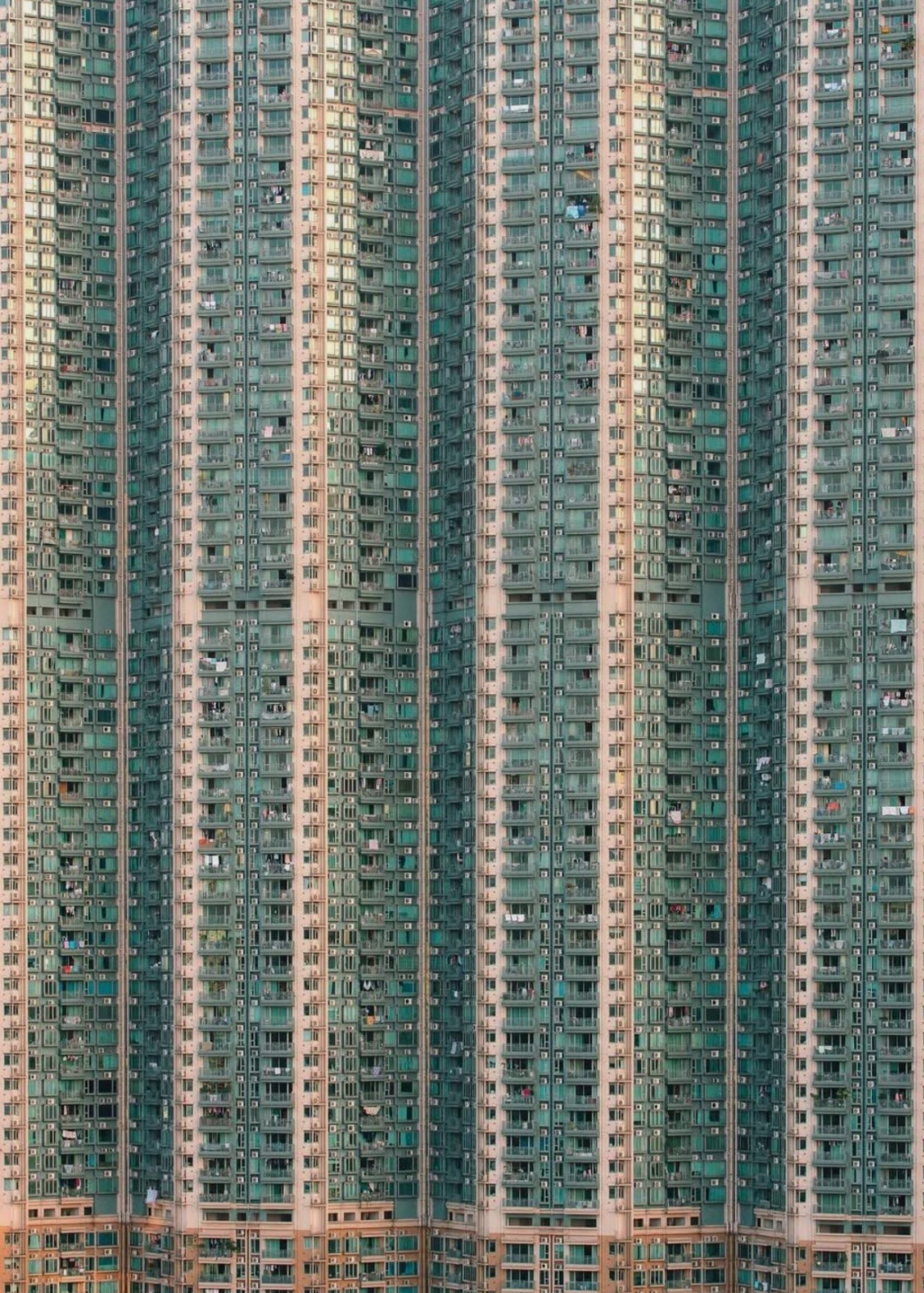
Mumbai 2024: 22 million



Singapore 1920: 400.000

Singapore 2024: 6 million





Urbanization in China.

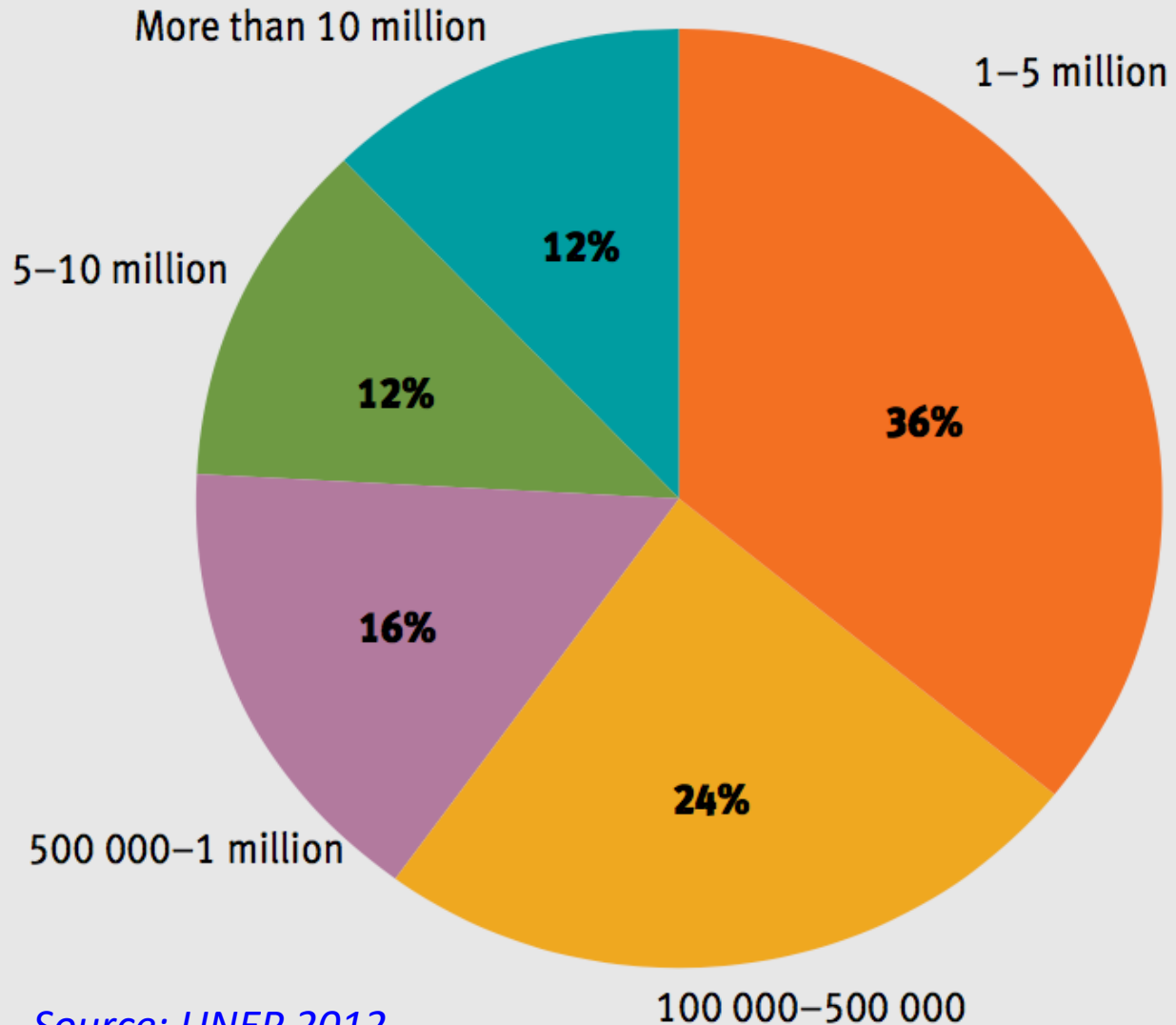
Apartment
house in
Hongkong für
10.000
Menschen.

Wuhan
Greenland
Center:
offices,
apartments,
height 475 m



Urban Population in Developing Countries.

Distribution of the urban population of developing countries, by city size.



Source: UNEP 2012

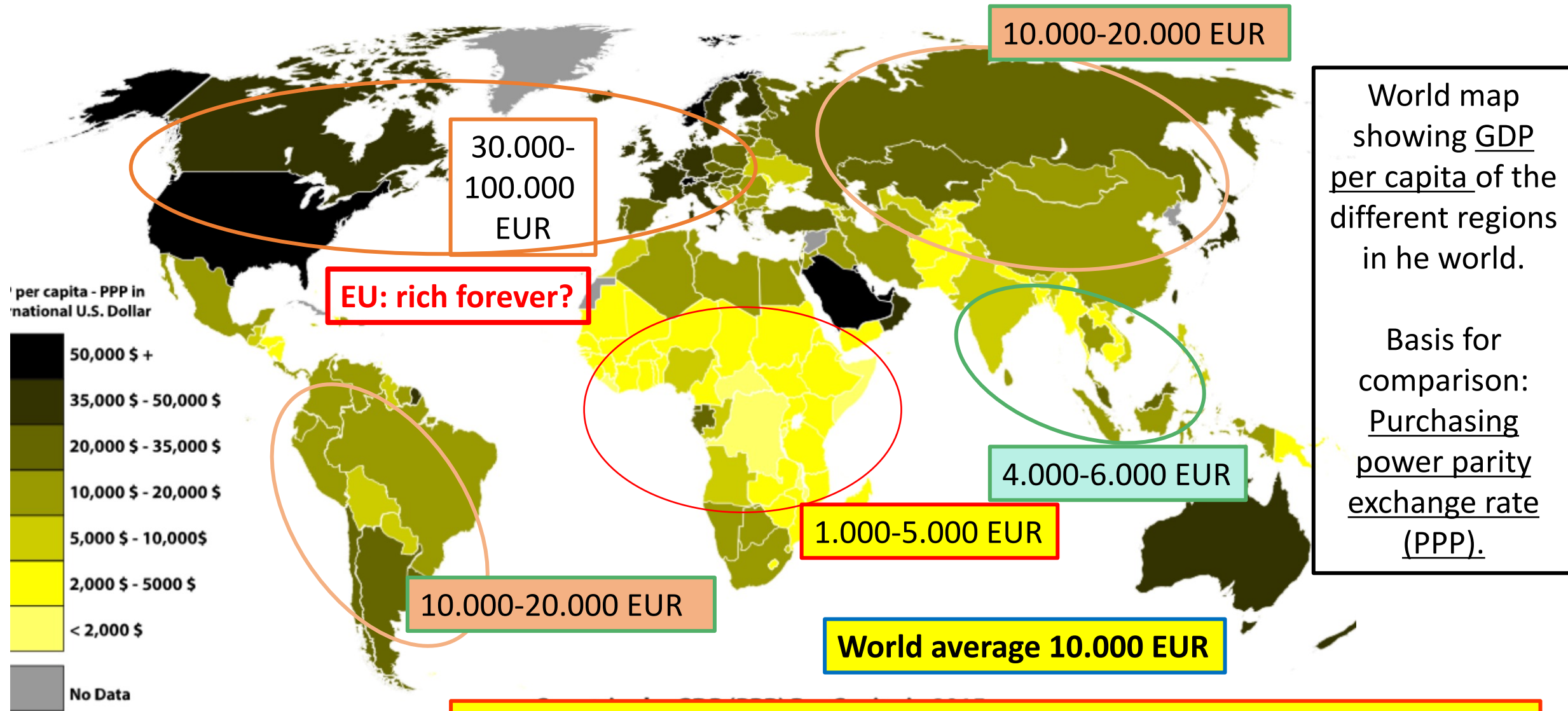
Some of the world's largest cities are in developing countries and have extensive slums:

Jakarta 30 mio, Karachi 25 mio, Delhi 25 mio, Mumbai 20 mio, Dhaka 16 mio, Bangkok 15 mio, Khinshasa 17 mio, Lagos 16 mio.



Shoemakers in India.

The Global Economic Situation.



Source: World Bank 2018

WTO agreement 1995: free global trade covers 95% of global production.

The European Union: Competitive Strengths.

- The EU has enjoyed a period of peace since 80 years now.
- Europe still has a very strong industry in some areas:
 - automobile industry 25% share in global production
 - industrial machines 31% share in global production
 - chemicals 16% share in global production
- Europe has many „hidden champions“ in specific areas, particularly SMEs:
 - 200 companies in Austria, 500 in DE.
- High level social system (pensions, health insurance, unemployment services...).
- EU is the third largest economic region of the world (after USA and China).
- The Euro has become a major currency (25% of global currency volume).
- The political „Leitmotiv“ of the EU - Sustainable Development“ – can serve as a model for the whole world.



The Economic Status of the European Union (2023).

How wealthy is the EU compared to the rest of the world?

GDP per capita:

Luxemburg:
109.00 EUR

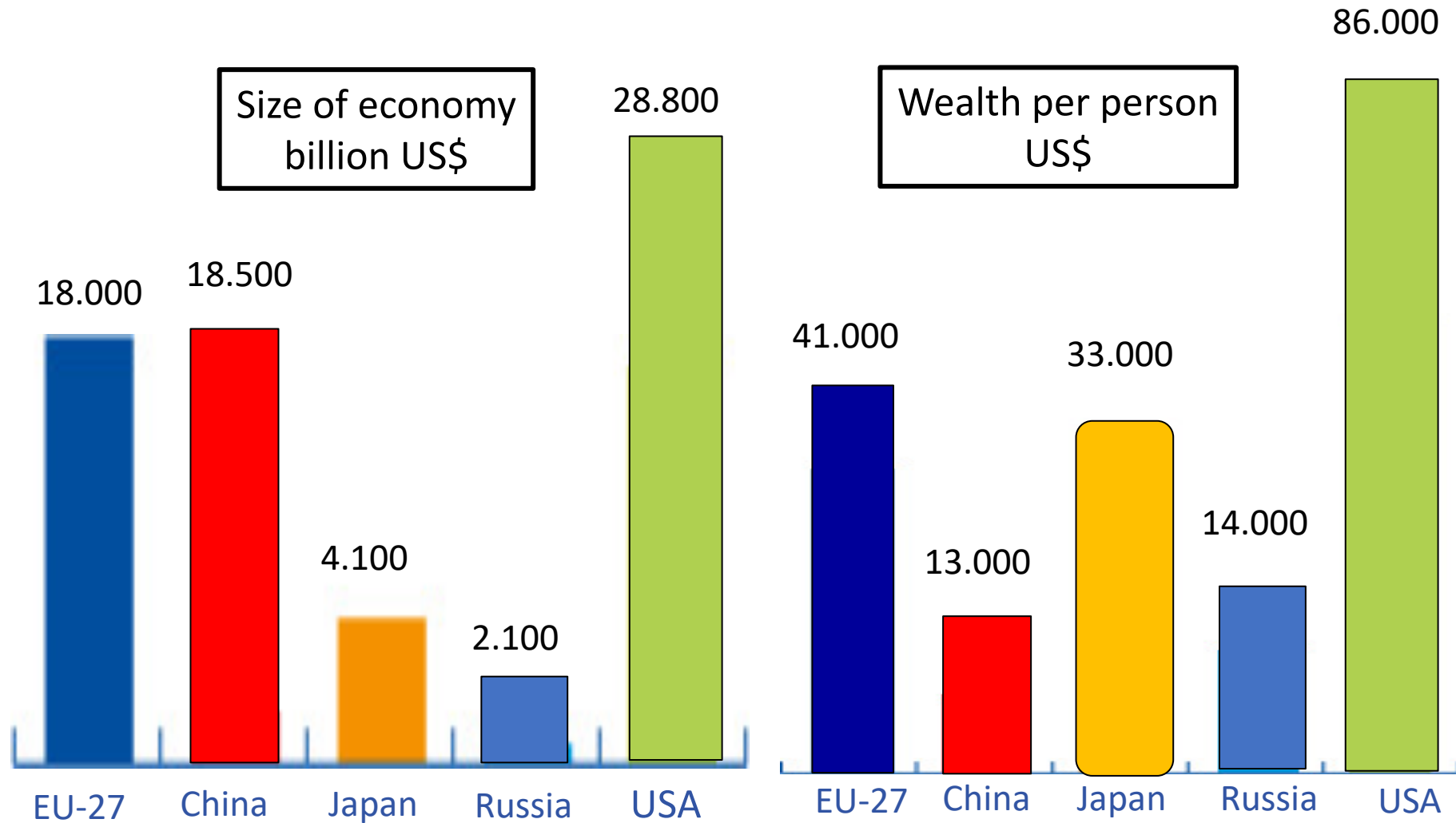
Germany:
43.200 EUR

Austria:
44.800 EUR

Poland:
28.300 EUR

Romania:
26.000

Bulgaria:
19.800 EUR



GDP

growth rate:
0,5 - 2%

Labour force
by sector

(2021):

70% services
25% industry

3% agriculture

GDP by
sector:

70% services
25% industry

3% agriculture

Nominal Gross Domestic Product
based on current prices for 2023.

Nominal Gross Domestic Product per capita.

The European Union: Competitive Weaknesses.

- Insufficient R&D investments, slower in innovation than USA, Japan, China:
 - EU 1,8%, USA 3%, China 3%, Japan 4% of GDP
 - lower share for IT sector: EU 13% of R&D expenses, USA 25%, China 33% (2018)
- Technology leadership in key areas not with Europe:
 - Information and communication technology
 - Agricultural bioengineering
 - Electromobility and high efficiency transportation systems
- Large and growing trade deficit with emerging economies:
 - China 2000: 32 billion EUR, 2023: 280 billion EUR
- Low mobility of work force and rather low attractivity for highly skilled immigrants.
- Low economic growth: typically 1- 3% (China 5-10%)
- Profit margins of EU-companies on the average only 3% (USA 6%)
- Widespread technology skepticism (genetic engineering, nuclear energy...)
- Capital endowment of European companies typically 20% (USA 60%).

Excessive bureaucracies:

Felipe Gonzales:
„In Europe, it is impossible to find the next Bill Gates hiding in someone's garage as the municipal council would probably prohibit that.“

Economic reality in 2024:

USA innovates,
China produces,
Europe regulates.

Position of European Companies in a Global Market.

- **Ranking of global companies for 2023 (value at stock exchange):**

1. Apple – 3.000 billion \$
2. Microsoft - 2.000 billion \$
3. Saudi-Aramco - 2.000 billion \$
4. Alphabet - > 1.000 billion \$
5. Amazon - > 1.000 billion \$
6. Nvidia - > 1.000 billion \$
7. Meta (Facebook) - 920 billion \$
8. Tesla - 830 billion \$
9. Berkshire (Investment fund Warren Buffet) - 830 billion \$
10. Broadcom (semiconductors) – 527 billion \$

....

16. Novo Nordisk (Pharma) - 460 billion \$

European companies

...

18. LVMH (luxury goods) - 408 billion \$

Source: EY 2024

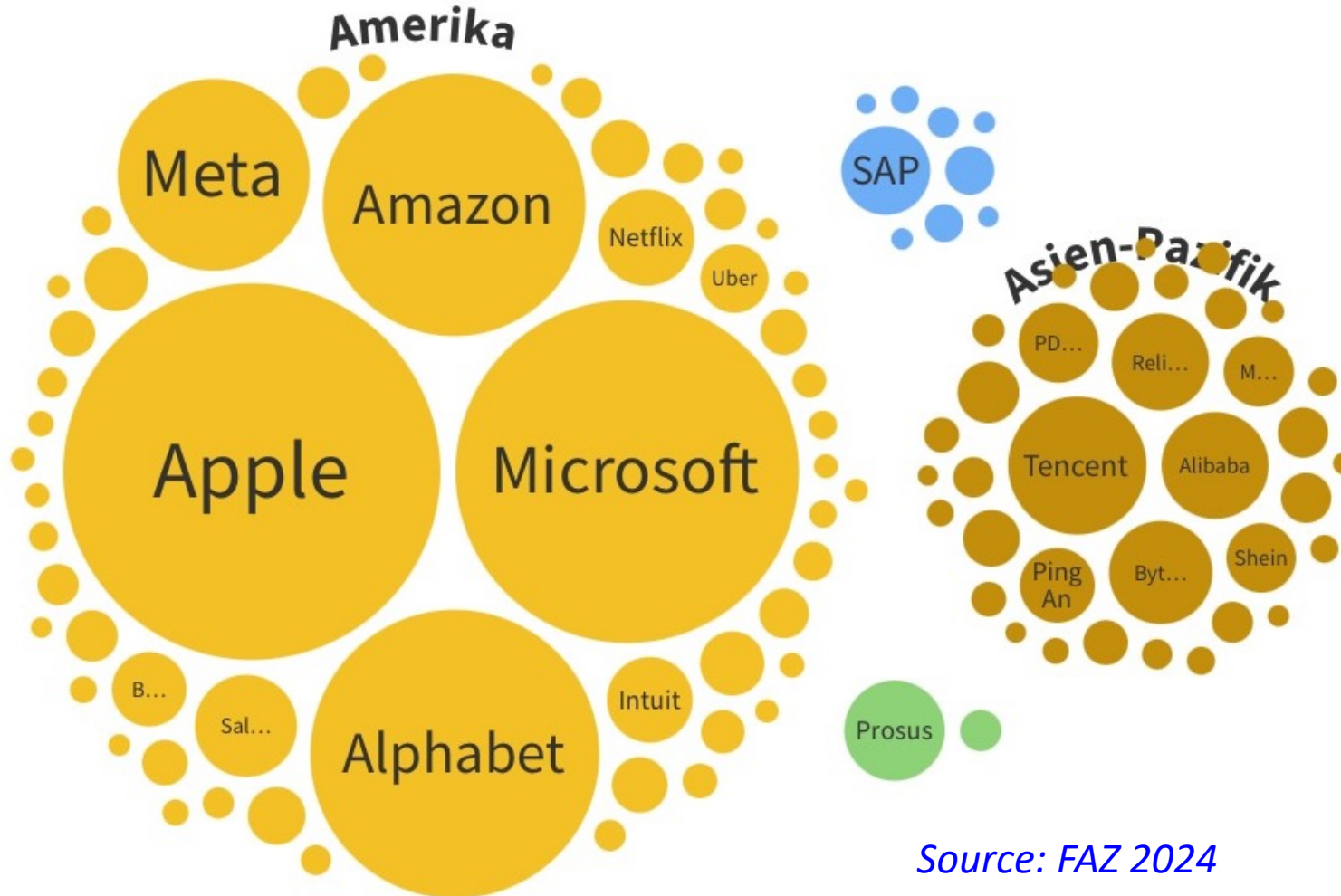
In 2023 only 19 European companies were among the top 100.
In 2007 there were still 46. Ongoing de-industrialization of Europe.

- **Market value of European champions:**

- VW Group 46 billion \$
- Mercedes 80 billion \$
- Nestle 200 billion \$
- BASF 40 billion \$
- Unilever 150 billion \$
- BP 62 billion \$
- Thyssen-Krupp 2 billion \$
- Rheinmetall 27 billion \$
- Lego 14 billion \$
- Siemens 152 billion \$
- Ferrari: 80 billion \$
- OMV: 12 billion \$
- VOESTAlpine: 3,5 billion \$

The European Union: Competitive Weaknesses.

Global distribution of “Platforms” based on ICT.



Source: FAZ 2024

- Economic figures for US platforms:
 - Total turnover: 1.600 billion \$
 - Total profit: 327 billion \$
 - Profit ratio: 20%
 - Total expenses for R&D: 225 billion \$
 - Percentage of turnover spent for R&D:
 - Meta: 27%
 - Alphabet: 15%
 - Apple: 8%

In 2023 Meta and Alphabet invested 45 billion \$ in AI-infrastructure.

Future development of economy highly based on Artificial Intelligence (AI).
Europe more interested in regulations for AI than its development.

The European Union: Competitive Weaknesses.

- Military expenses high (28% of USA) but insufficient.
- Low efficiency of defense systems.
- EU is completely dependent on the USA in military defense.
- EU not able to protect its borders – FRONTEX not functioning.
- High dependence on imports of energy and raw materials:
 - >50% of primary energy is imported – 1 billion EUR/day.
 - High energy costs: factor 5 higher than in the USA and China.
 - Deindustrialisation is accelerating (steel, chemistry, road vehicles).
- Lack of common foreign policy and very little political influence in international affairs.
 - *“The European Union is a payer and not a player.”*
- The European Green Deal will cost billions of EUR, but is a high risk operation with little impact on global warming.
- High degree of complacency in civil society: Felipe Gonzalez *“Europe must wake up from its state of sweet decadency.”*

- **Military expenditures (2023):**
 - Total global 2.100 billion EUR
 - USA 916 billion EUR
 - China 296 billion EU
 - EU 250 billion EUR
 - Russia 110 billion EUR
 - India 83 billion EUR

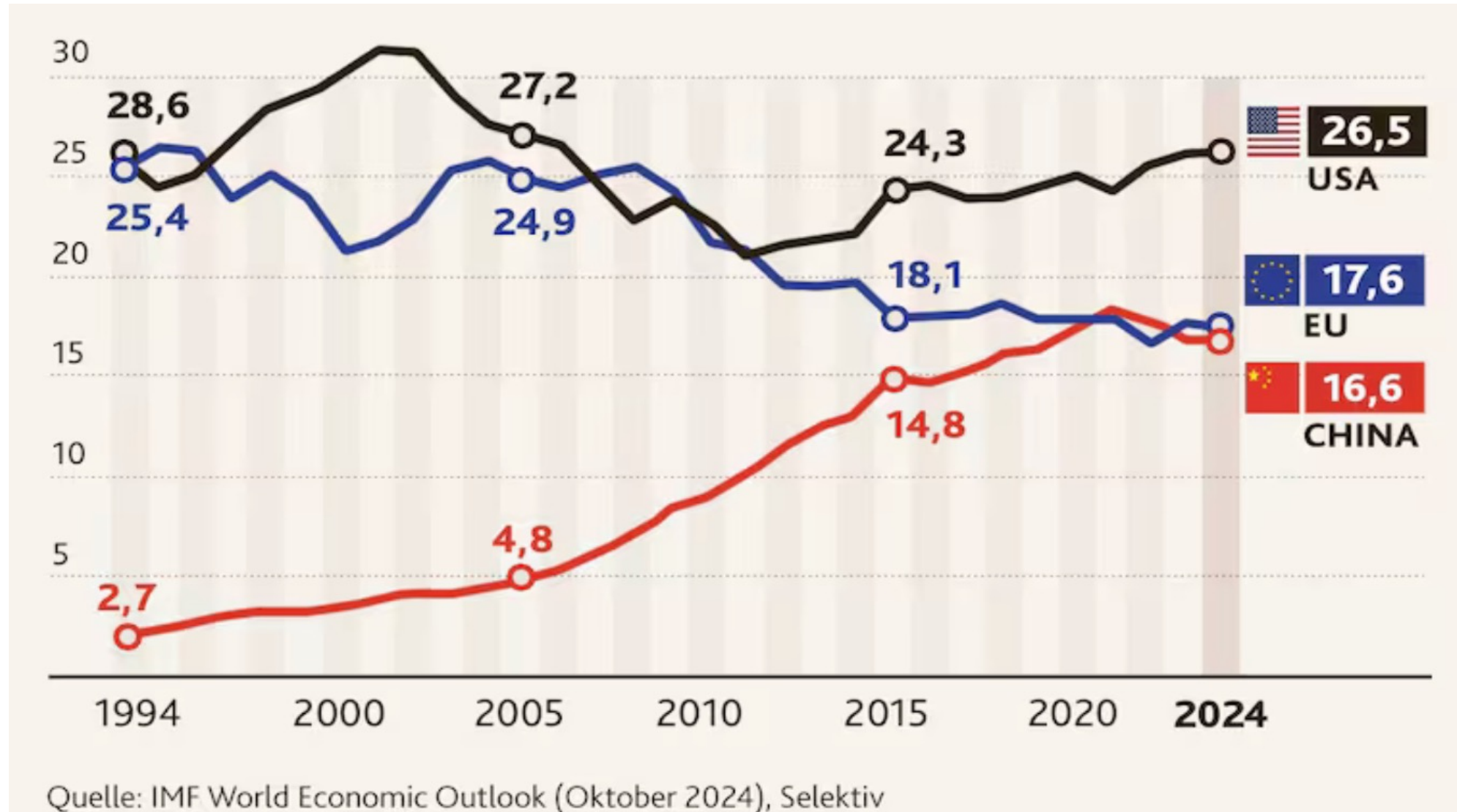
Source: SIPRI 2024



The Eurofighter Typhoon is built by a consortium of EU countries.

The European Union: Competitive Weaknesses.

The share of the EU in the global economy is shrinking: minus 30% in 20 years.



The Future Position of the European Union.

During the last decades Europe's wealth was based on

- ❖ low military expenditures due to protection by the USA,
- ❖ cheap energy imported from Russia, and
- ❖ low cost production of goods in China and other emerging economies.

Two of these competitive advantages are gone, the third is in danger.

Challenged by the 2 superpowers but the “dream destination” of the poorest?



中國—合作夥伴與競爭對手

China – Partner and Competitor.



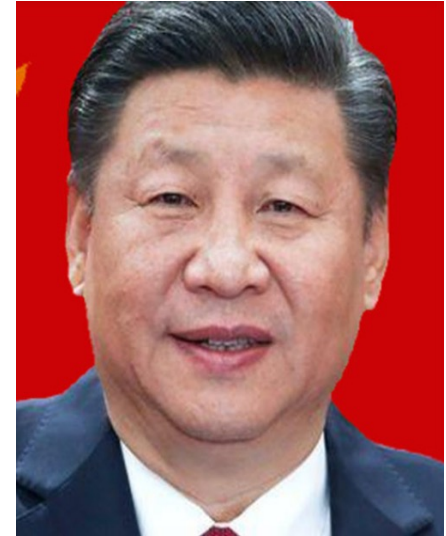
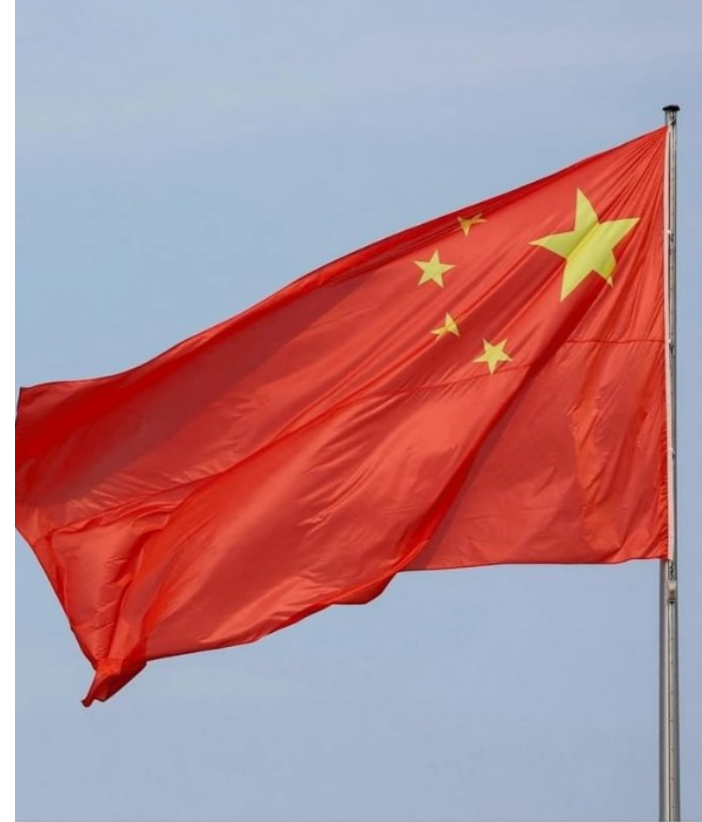
Ursula von der Leyen



Kaja Kallas



Democracy with social market economy.
450 millionen inhabitants.
Nominal GDP 18.000 billion \$.



Ji Jin Ping

Autocracy with centralistic capitalism.
1.400 billion inhabitants.
Nominal GDP 18.500 billion \$

Ancient China.

- Ancient China arose around 2.000 BC.
- The Chin empire was founded around 221 BC – 20 million people.
- The Great Wall protected the Northern border of the Chinese Empire.
- Invention of compass and printing press.
- Masterpieces of fine art were created.
- For hundreds of years China was a confident sealed country ruled by various dynasties.
- It saw itself as „Central Empire of the World“ („Reich der Mitte“) with no interest for expansion or gaining colonies.
- It was practically closed for foreigners until the 19th century when European colonial powers founded colonies at the coast (Hongkong, Macao, Kanton, Shanghai) and forced trade relations.



Modern China.

- The imperial kingdom of China lasted until 1916.
- After Japanese occupation and a violent civil war the Peoples Republic of China was founded in 1949 under Mao Zedong – now 1.400 million people.



The Great Leap Forward 1958 - 1960: Primitive melting stoves in the country side for production of iron and steel as the basis for a new industrial society.



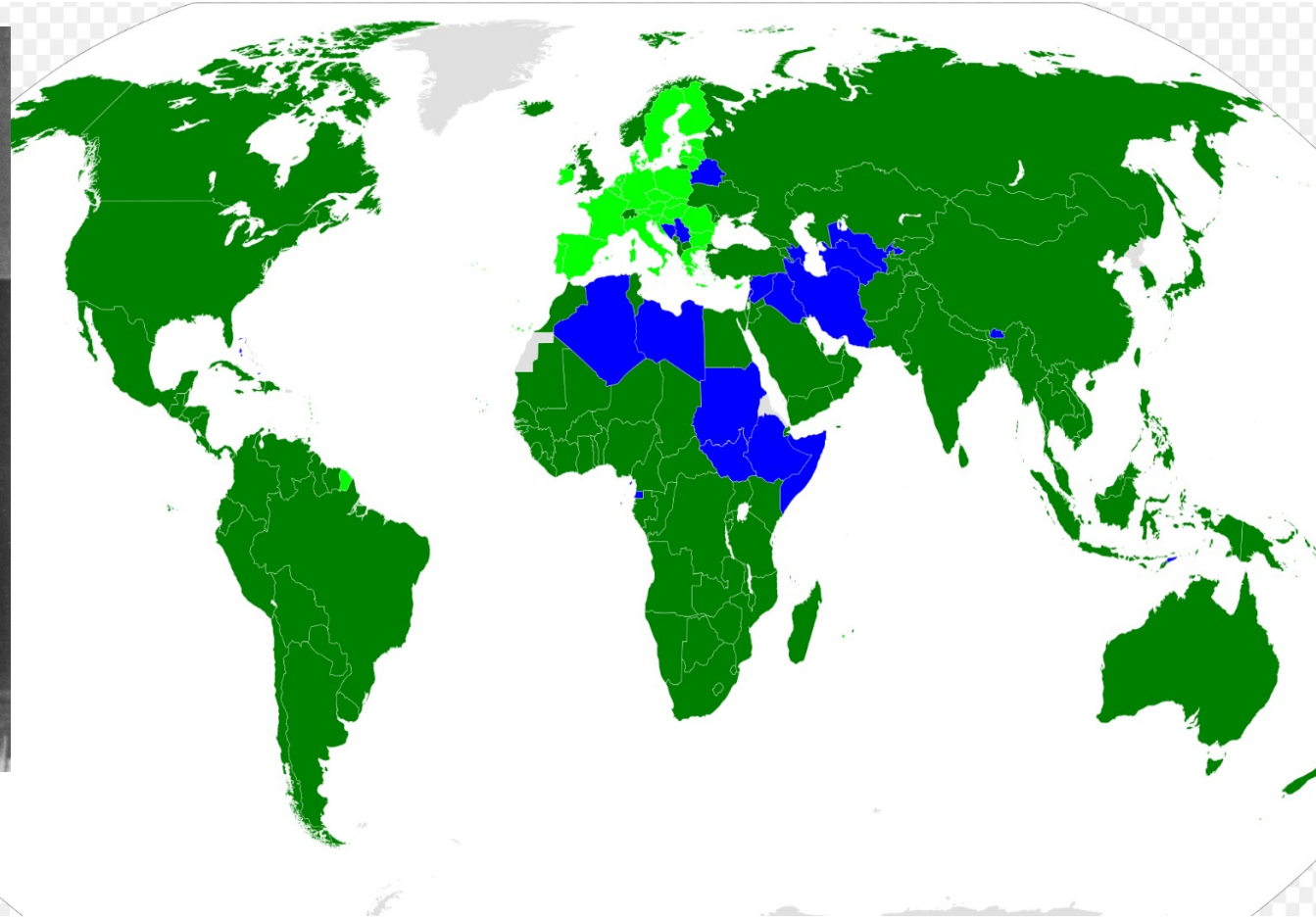
Modern China.

Entering the international community 1972 and WTO 2001.

Meeting of Chairman Mao Zedong with
US President Richard Nixon, Beijing 1972



With the signing of the WTO-Treaty China entered the stage of a free market driven global economy and offered itself as a low cost producer of goods. First of simple goods, at the end of the most sophisticated technical products, many of these now developed by Chinese enterprises.



164 WTO Member States 2018 (green)
plus 25 observer countries (blue).
WTO Member States represent 95% of global GDP.

The Economic Superpower China.



Shanghai 2023

Second largest economy in the world on its way to number 1 (2035?).

2001:
Joining the WTO provided
the basis to become an
industrial giant.

- **China 1972:**
 - GDP 114 billion \$
 - PPP GDP 132 US\$
- **China 2023:**
 - GDP 18.500 billion \$
 - PPP GDP 12.600 US\$
- **Increase 1972 - 2023:**
 - GDP factor 157
 - PPP GDP factor 95

Presently 1/3 of global
production of goods in China.

China – The World Leader in Traffic Infrastructure.

High speed railways:

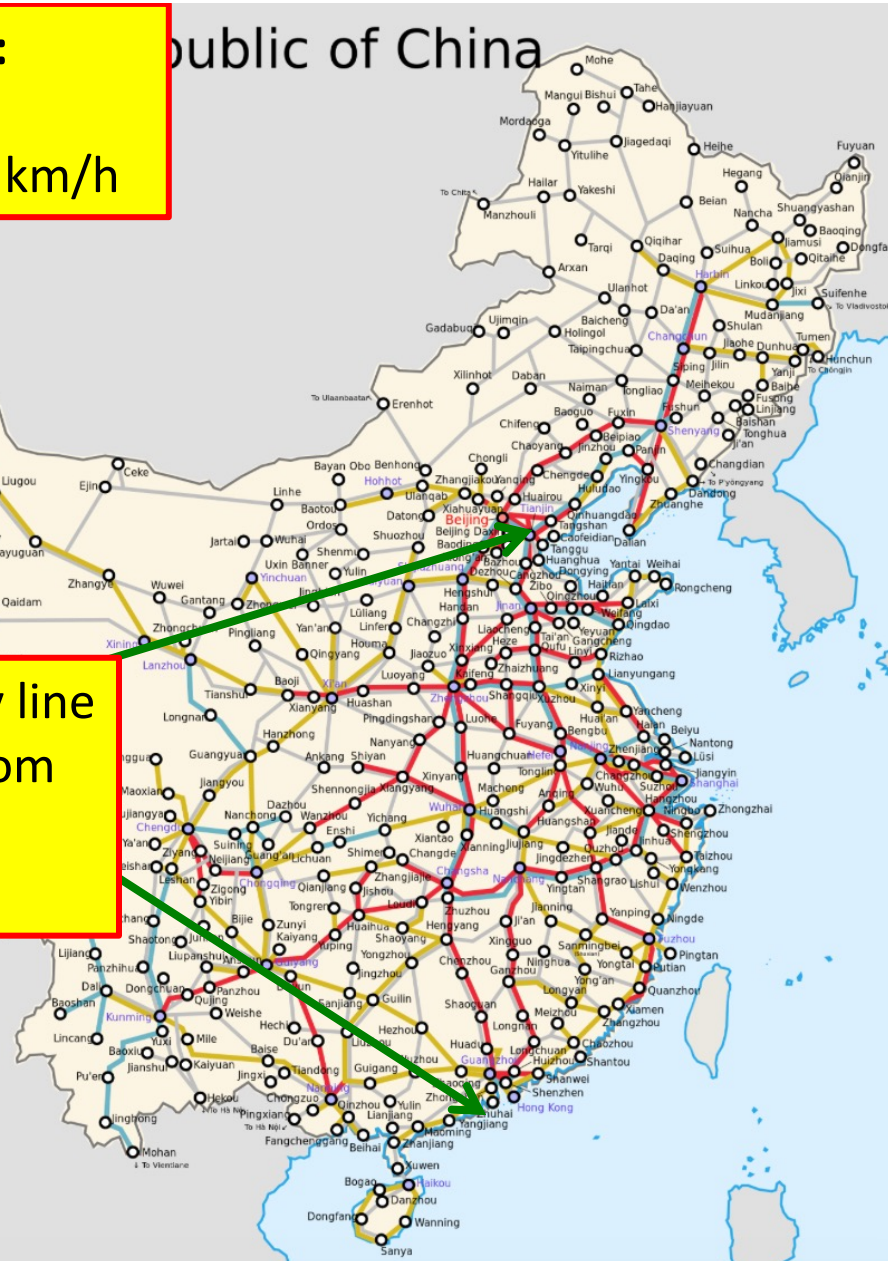
46.000 km

Operating speed 250-350 km/h

EU:
9.000 km

Longest high speed railway line
in the world: 1.200km from
Beijing to Hongkong
(4,5 hours)

2 billion passengers
annually on high
speed trains (2023)



Locomotive pilot Han Junjia
1998 and 2024

China – The World Leader in Traffic Infrastructure.



The highest railway in the world is the Qinghai-Tibet Railway, reaching an elevation of over 5,000 meters (16,404 feet) as it traverses the Tibetan Plateau.

CRRC the largest producer of trains globally: business volume 30 billion EUR (2016). Siemens (ICE) plus Alstom (TGV) 15,2 billion EUR.



CRH 380 BL: operating speed 250 – 380 km/h; maximum speed 487 km/h. Originally based on Siemens ICE3.

China – A Technological World Leader.



@aboutfacts

THE **WORLD'S FIRST** TRACKLESS TRAIN HAS STARTED **TRIAL** IN THE **CHINESE CITY** OF ZHUZHOU. THE VEHICLE OPERATES IN **VIRTUAL RAIL LINE** PRESENT **BY** WHITE DOTTED **LINE**.



Train capable of reaching speeds of 500 kilometers per hour between Downtown Shanghai and its airport.

The Shanghai Maglev in China is one of the **fastest commercial trains** in the world, known for its high speeds.

China – A Technological World Leader.

"Pyongyang" bridge Guizhou.



Highest bridge in the world:
565 m above bottom of valley.

Hongkong-
Zhuhai-Macao
Bridge
(Pearl River)

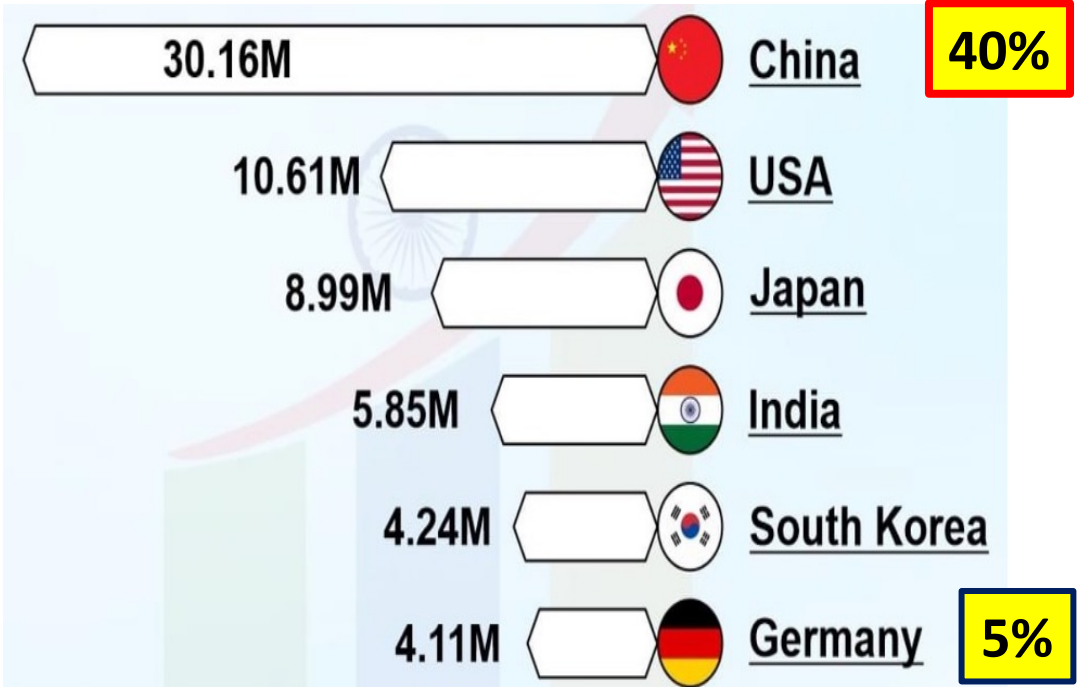
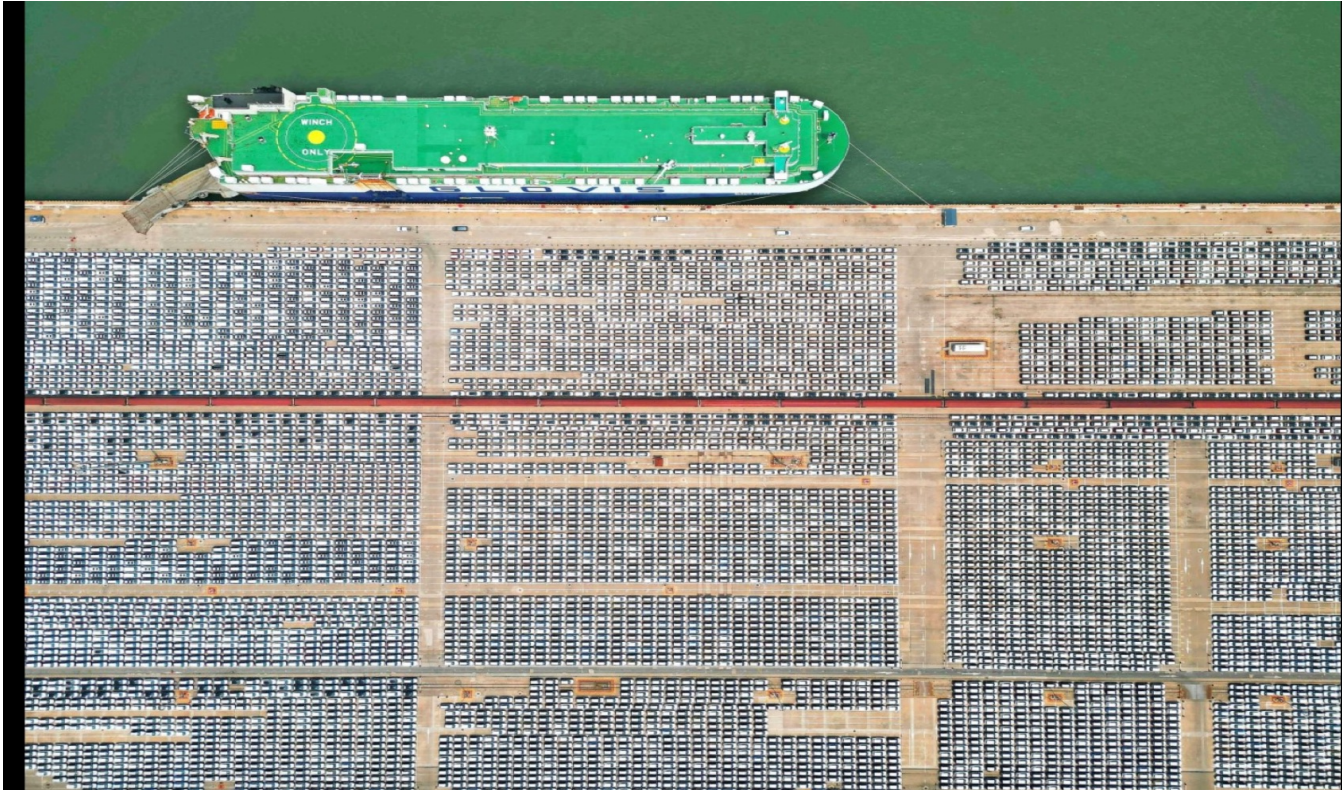


- **World's longest bridge-tunnel combined cross-sea passage:**
- Hongkong Bridge 12 km + undersea tunnel 12 km + main bridge 30km + Zhuhai Link 13 km
- Built on 4 artificial islands.
- Length 55 km
- Construction costs:
 - 17 billion EUR
 - Construction time: 8 years

The Industrial World Power China: Road Vehicles.

Export harbor Yantai.

Global production of light vehicles: 80 million.



- **Elctromobility (production 2023):**
 - BEVs: China 6 million, EU 1 million
 - Batteries for E-cars: China 80%

Strategy: Affordable Elektromobility.



China – The World Leader in Traffic Infrastructure.

Shenzen airport



Shenzhen with 17 million inhabitants is the electronics and communication technology hub of China.



China Reveals World's Largest Civil Wind Tunnel System To Compete With Boeing & Airbus

C919 type aircraft put in operation 2023 is seen as the start of a large aircraft industry.
Costs half of A320.

China – The World Leader in Autonomous Mobility.



Un-manned transport airplane HH-100 of Aviation Industry Corporation (AVIC) on its first flight at the airport of Xi'an.



Robotaxi for inexpensive completely autonomous transport:
30 cities are installing this service.

China – The World Leader in Marine Shipping Technology.

Nuclear powered containerships.



China to build world's largest & first nuclear-powered ship capable of carrying 24,000 containers.

Battery powered containerships

All-electric container ship of 10,000 tons that measures 119.8 meters in length.



China launches world's largest electric container ship with 50 MWh battery

The New Silk Road on Air, Land and Sea.

China has shares in 22 European harbors.



Air China: 500 airplanes, Star Alliance Member.

Quelle: Die Presse 2023



MSC Irina, 440x70m, 24.000 containers.



China-Europa-Express > 10.00km, 2 weeks.

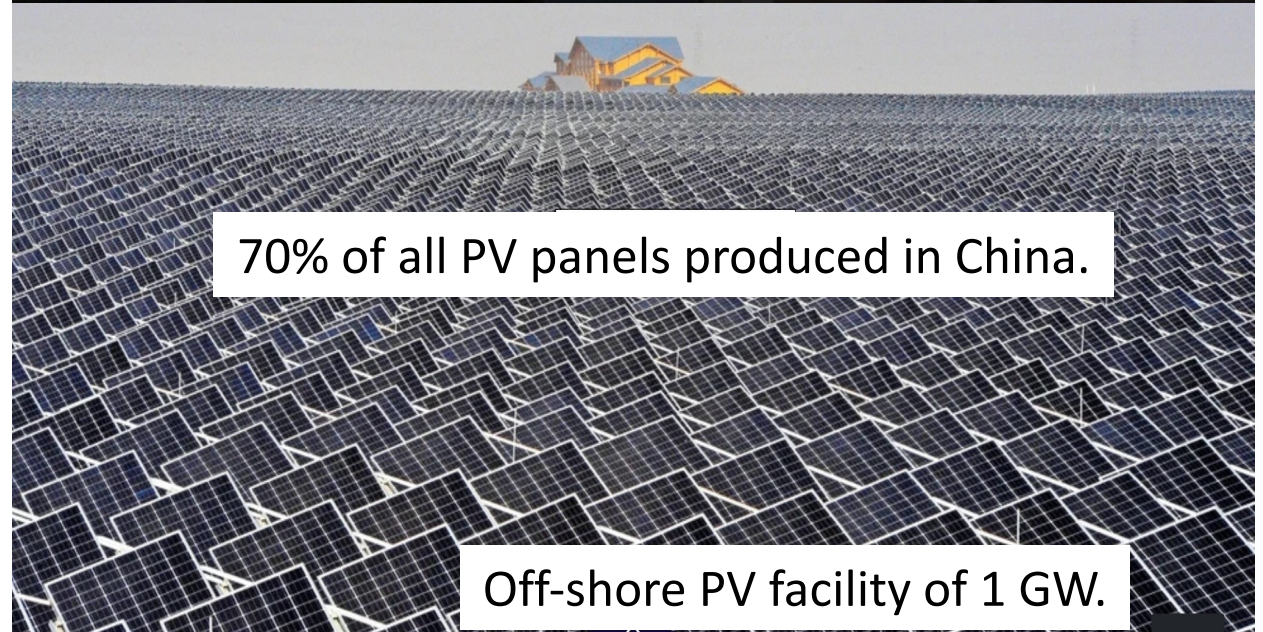
China – The World Leader in Renewable Energy Technology.



The first set of 131-meter-long onshore wind turbine blades have been successfully produced here



20MW: China installs 'world's largest single-capacity' offshore wind turbine



70% of all PV panels produced in China.

Off-shore PV facility of 1 GW.

China – World Records in Erecting Large Apartment Buildings.



57-storey apartment house built in 19 days.



10 storey apartment building in China
took just **28 hours and 45 minutes**
to build.

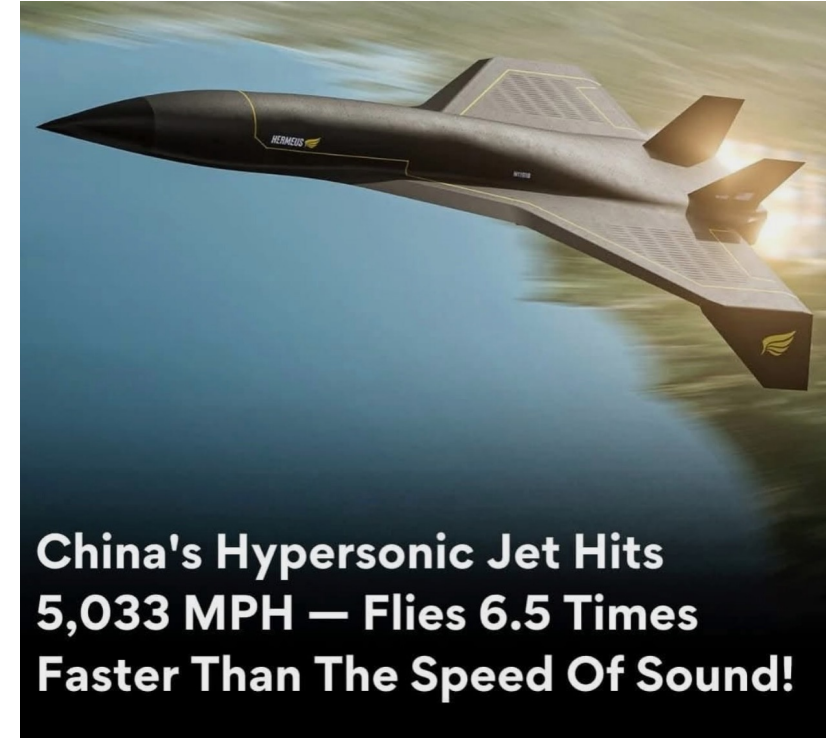
China – A Global Superpower.

New aircraft carrier Fujian (length 360m): magnetic acceleration of fighter planes of 30 tons to starting speed of 250 km/h in 2,1 seconds.



China now number 2 military power:

2 million soldiers
5.000 tanks
350 battle ships
80 submarines
2.500 fighter planes
400 nuclear warheads



China's Hypersonic Jet Hits 5,033 MPH — Flies 6.5 Times Faster Than The Speed Of Sound!



Striving to surpass the USA in military power.

**China first to land a space craft
on the back side of the moon.**

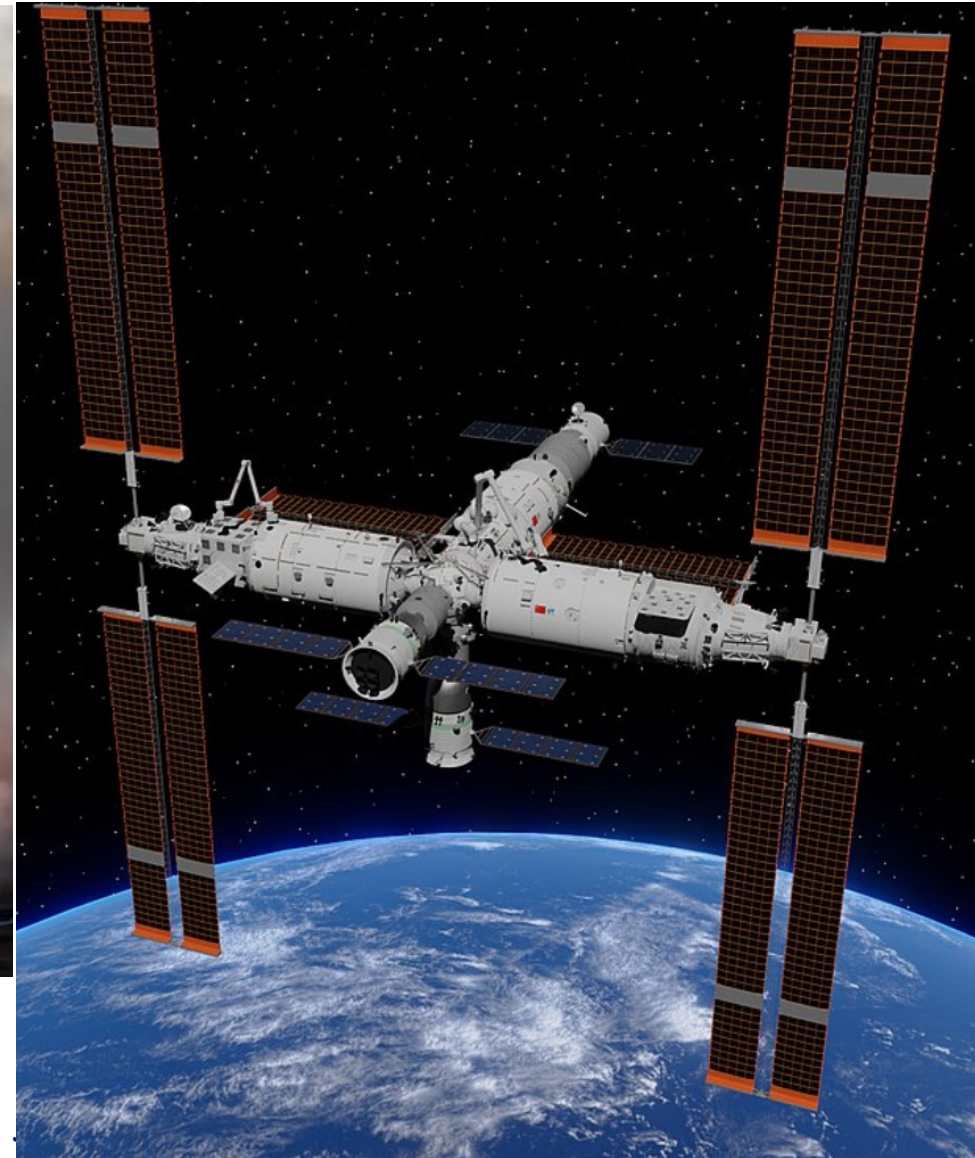


**Photo from the far side of the Moon captured
by the Chinese Chang'e 5-1 spacecraft.**

China – A Global Superpower.



ZQ-2E Y1
commercial
carrier rocket
for satellites.



Tiangong space station (2022).

The Industrial Giant China.

- **China's share in the global production of goods high and rising (2016):**
 - automobiles: 28% (35% in 2020, 60% for electric cars in 2022)
 - ships: 41%
 - tv-sets: 60%
 - computers: 80%
 - mobile phones: 90%
 - PV panels: 70%
 - industrial machines 35% (2006: 11%)
- **China's ambitions for 2025:**
 - 70-80% of all electric cars, robots, wind and solar energy installations made in China
- **China's ambitions for 2050:**
 - **To be the number one industrial high tech nation in the world.**
- **China's global economic policy:**
 - investments in high-tech in EU and other countries (where permitted)
 - building new intercontinental trade routes: silk roads
 - development of Africa (natural resources, infrastructure, new markets)

Presently 1/3 of global production of goods in China.

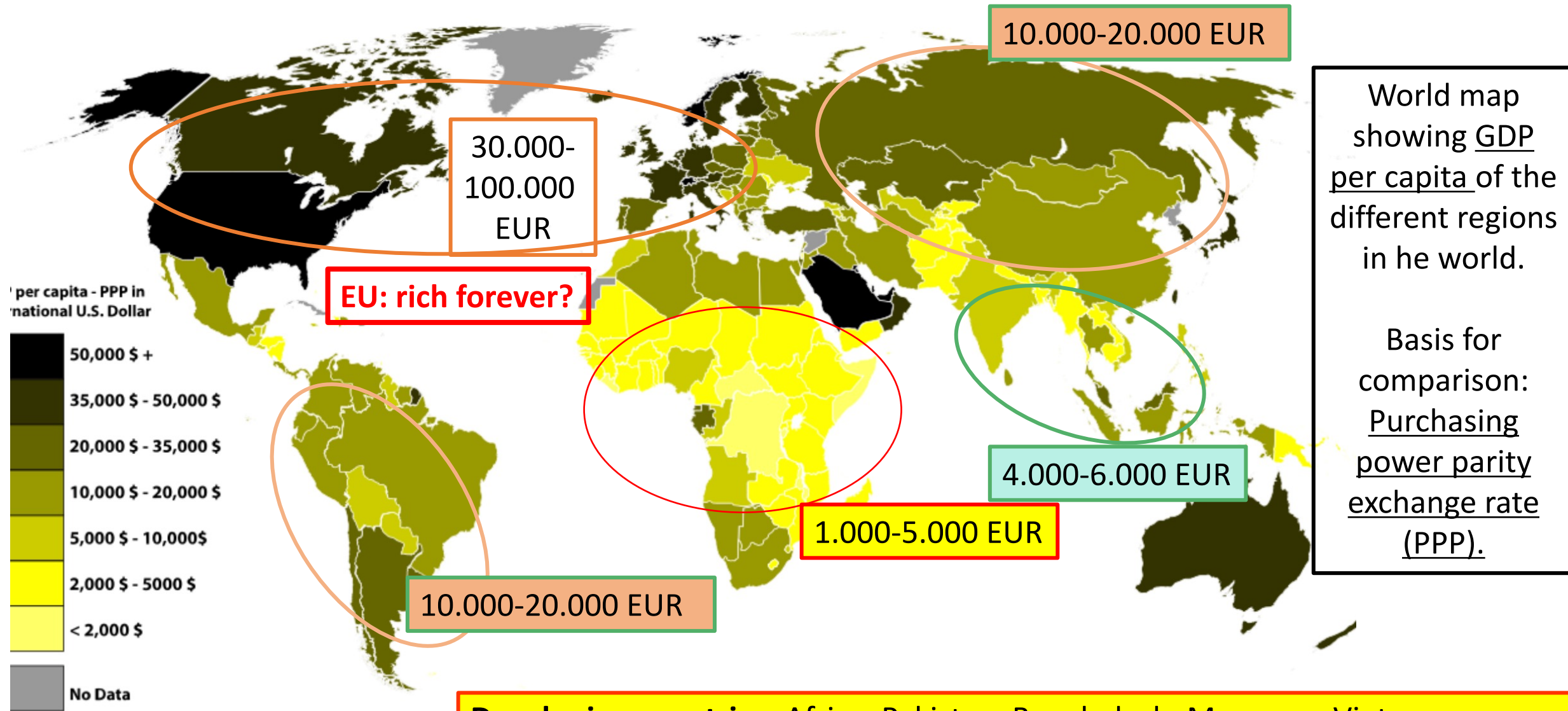
Internal consumption only 13% of global production: huge pressure on China for export of goods.

Defense measures of USA and EU:
import tariffs

(e.g. E-cars USA 100%, EU 20-40%)

*Source: Deutsche Handelskammer
2017, Die Presse 2017*

The Global Economic Situation.



Source: World Bank 2018

Development Cooperation.

- **Poverty and lack of access to basic services (2022):**
- 1,5 billion people without basic sanitation services.
- 700 million people are without a basic supply of safe drinking water:
 - This number could increase to 2 billion by 2030.
 - In developing countries 90 % of sewage waters enter into the ground waters without any purification.
 - More than 5 million people die each year as a consequence of waterborne infectious diseases.
- 700 million people undernourished.
- 600 million people without access to electricity .
- Life expectancy (much) lower in developing countries:
 - 60 years in Africa, 73 years in India, 83 years in Austria

Source: UNEP 2023

- **Basis of EU policies for shaping a global partnership for sustainable development :**
 - Johannesburg Declaration of 2002 and its Implementation Plan.
 - Doha Development Agenda (Trade) of 2001.
 - 2002 Communication of European Commission “Towards a Global Partnership for Sustainable Development”:
Commitment of the EU to promoting sustainable development on a global level.
- **Development aid of EU and its Member States:**
 - 40 billion EUR/year development aid (0,4% of the GDP).
 - Amounts to 60% of all development aid globally.

Development Cooperation: Humanitarian Relief Programs.

- **Financial support in crisis situations:**

- The European Community Humanitarian Aid Office, or "ECHO", provides additional humanitarian aid in crisis situations.
- Main support now for refugee camps and food supply.
- Budget 1,8 billion EUR (2024): 546 mio Sub-Saharan-Africa , 470 mio Middle East and N-Africa, 186 mio S-Asia, 112 mio Caribbean, S-America...

Rohingya refugee crises.

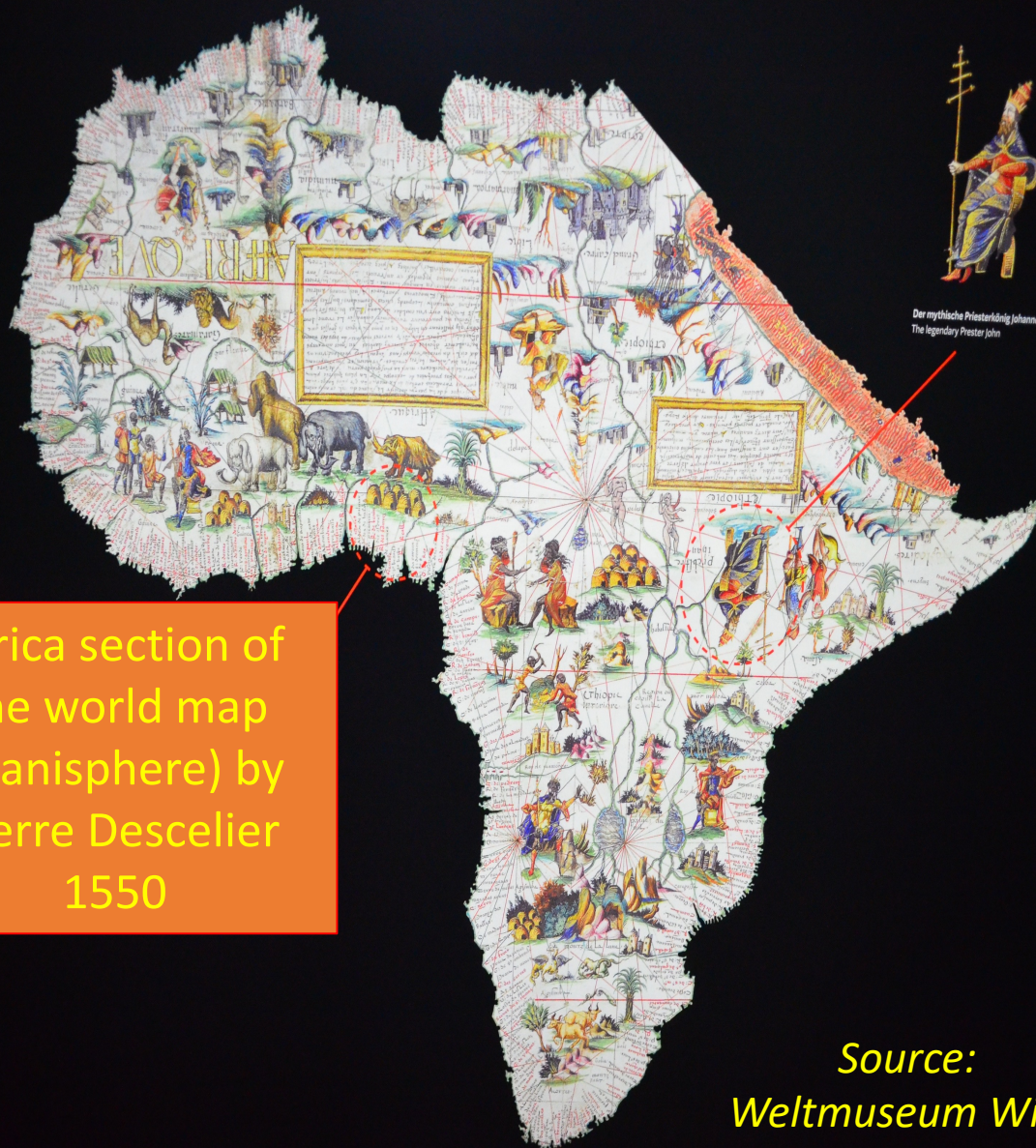


700.000 fled from Myanmar to Bangladesh since Aug. 2017

War in Gaza 2024:
2 million people affected.



Development Cooperation: Africa.



Africa section of
the world map
(planisphere) by
Pierre Descelier
1550

Source:
Weltmuseum Wien

- Before the European conquest Africa was a highly developed continent organised in kingdoms and tribal communities.
- The continent was known as "Alkebulan," which is an Arabic word meaning "The Land of the Blacks."
- The interest of Europe in Africa developed in the 15th and 16th century, mainly due to the Portuguese expeditions launched by King Henry the Navigator, a.o. those of Bartolomeu Dias, Vasco da Gama.

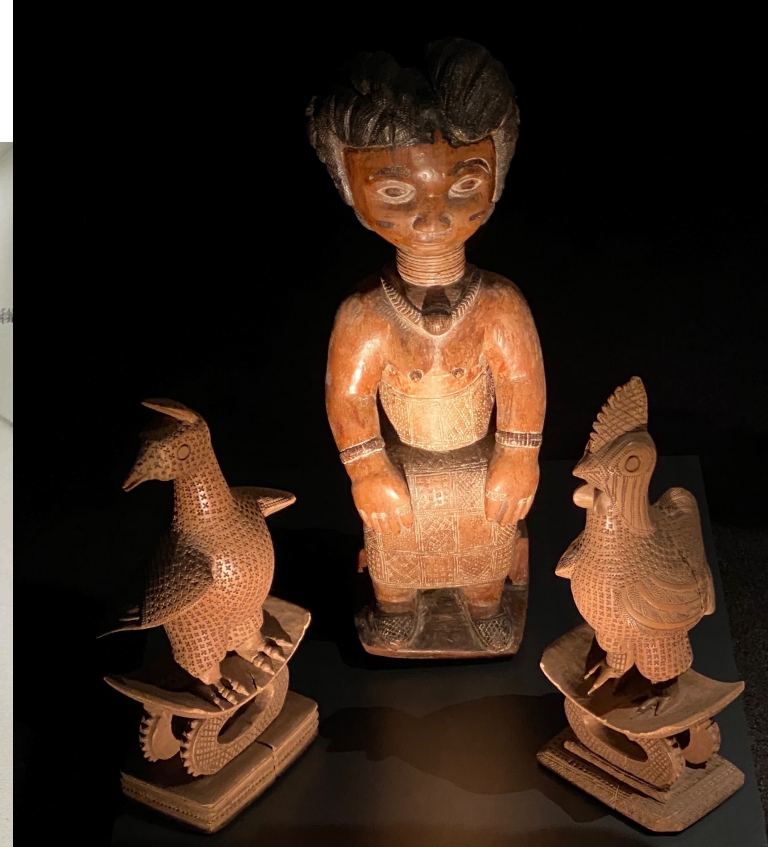


Native African Skills.

*Museum Liaunig Neuhaus and
Africa Museum Brussels*

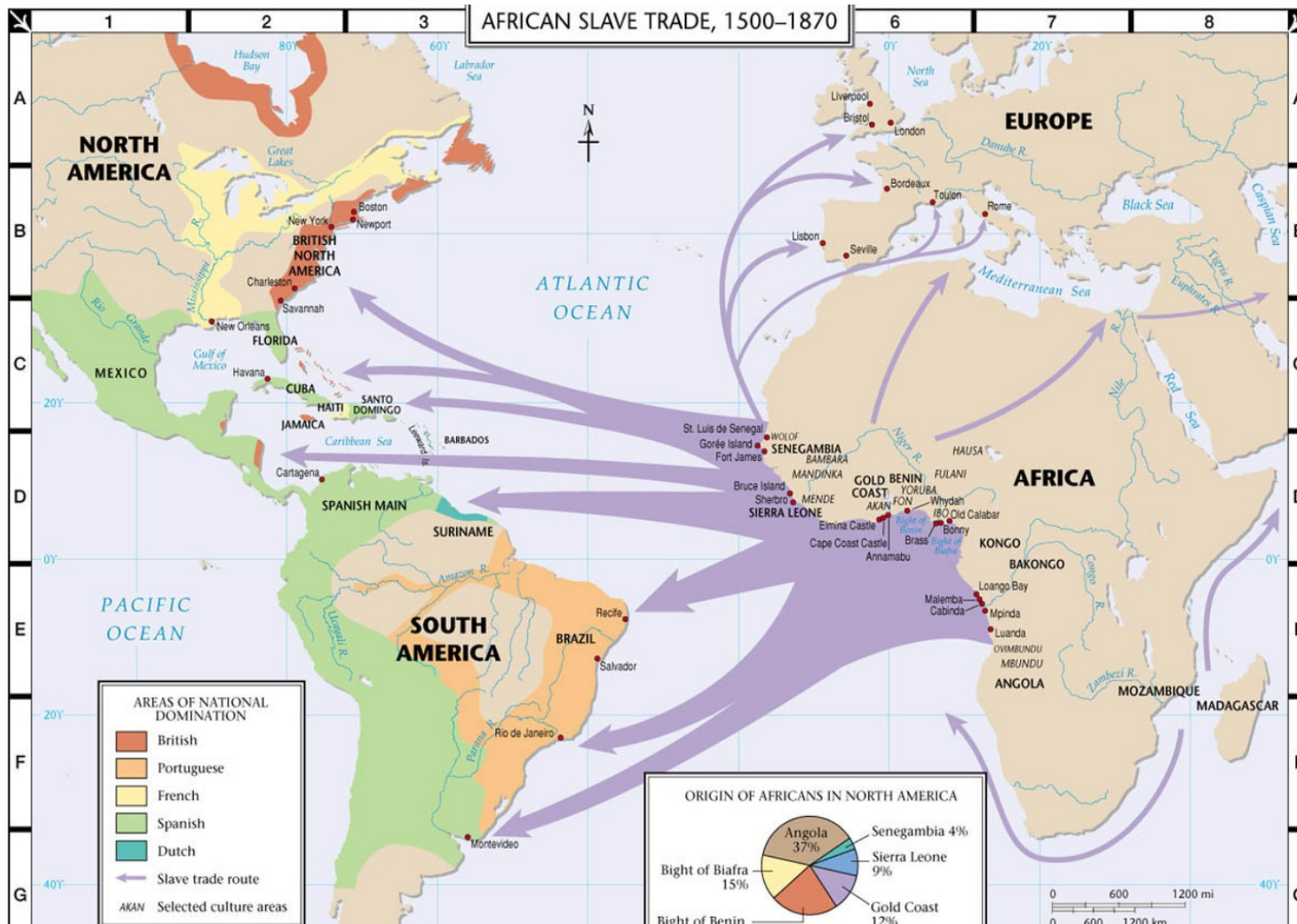


Boat made out of 1 tree trunk.



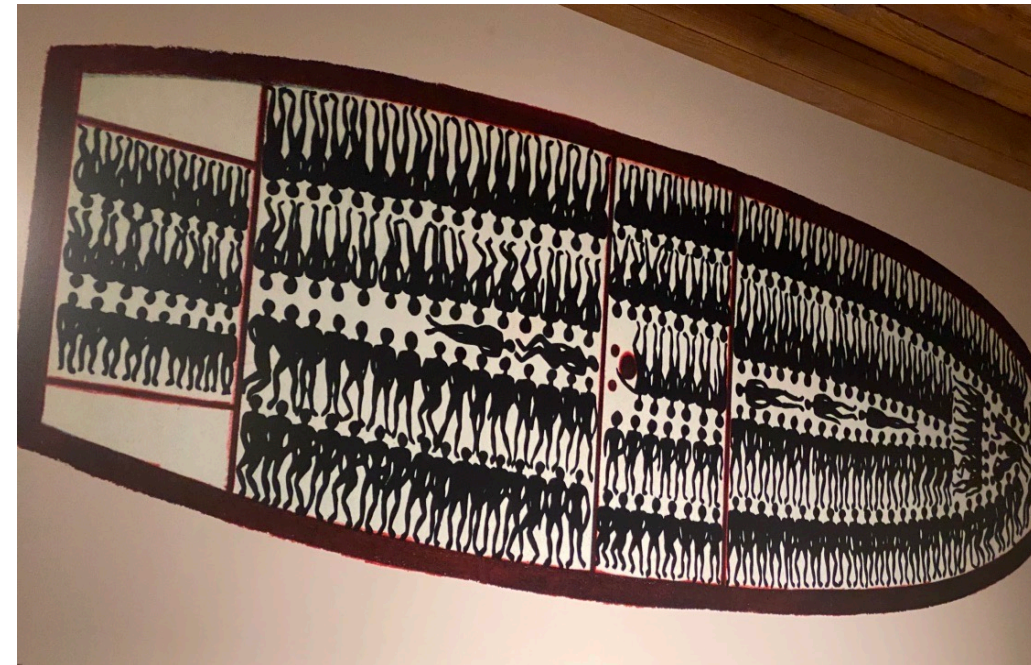
European Colonisation of Africa.

- Colonisation of Africa started soon after the great discoveries and focused first on coastal zones.
- Later expeditions opened up the interior of this continent (e.g. Livingstone, Stanley).

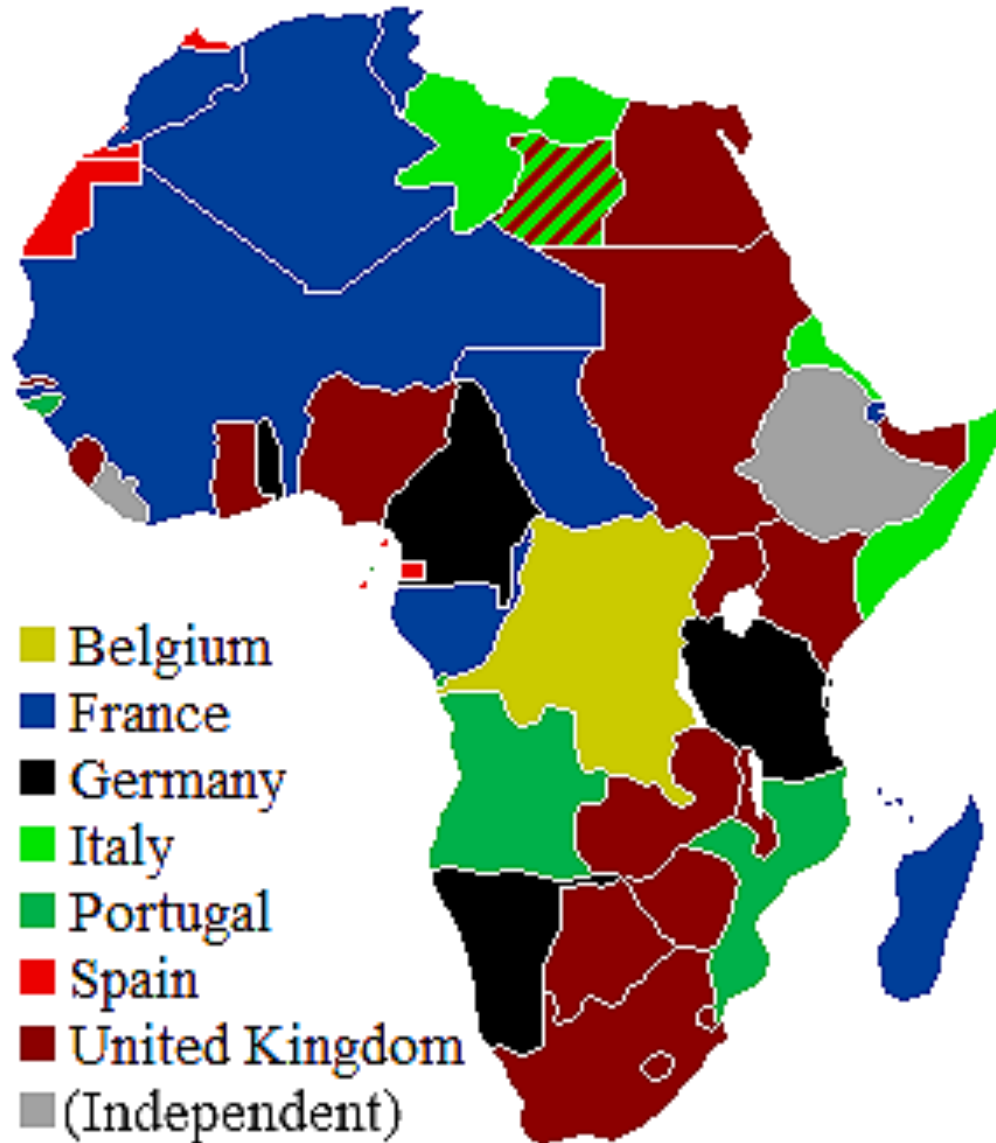


10-15 million slaves transported from West Africa to the Americas.

- Main driving forces were search for gold, slave trade and in general territorial gains by European nations, particularly England, France, Portugal, Belgium, Germany, Italy.
- Transport of slaves in special ships.
- Death rate up to 30%



European Colonisation of Africa.



Africa 1914 under the control of colonial powers.

• Period of “New Imperialism” (1884 – 1960s):

- Occupation, division, and colonization of African territory by European powers.
- 1870 only 10 percent of Africa was under European control.
- Berlin Conference of 1884 regulated European colonization and trade in Africa and brought 90 percent of the continent under control (only Ethiopia and Liberia were independent states).
- This rigid colonial system with white judicial, economic and social supremacy lasted until the 1960s.



The African Independence Movement.

- 1950s/1960s: widespread unrest and organised revolts in both Northern and sub-Saharan colonies, especially in French Algeria, Portuguese Angola, the Belgian Congo and British Kenya.
- The decolonization of Africa took place in the 1970s, mostly very suddenly, with little preparation.



Africa Museum Brussels

- Artificial boundaries between the colonial states proved to be unacceptable for many tribes and a period of long civil wars with much anarchy and millions of refugees evolved.



The New Independent Africa: A Continent with 2.000 Indigenous Languages.

- The former colonies of EU Member States became sovereign countries and associates of the Community.
- 1975 Lomé Convention: first formal agreement between the European Union and African States.



Africa Museum, Brussels.

- **2000 Cotonou Agreement:**

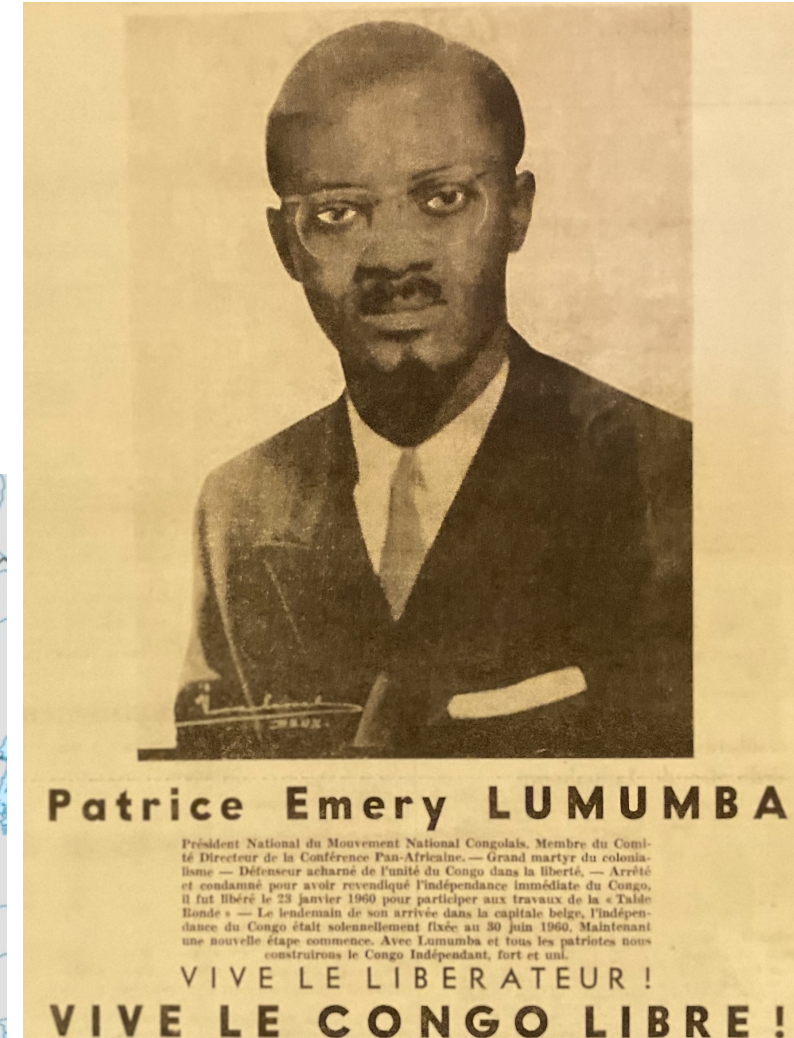
- Promotion of economic, cultural and social development of Africa and consolidation of relations with EU, including special trading concessions and European Development Fund for African (3-5 billion EUR/year).

- **Barcelona Process:**

- Trade and cooperation agreements with the southern Mediterranean region ("Barcelona Process").
- Problematic zone due to civil unrests, wars and massive migration into the EU.

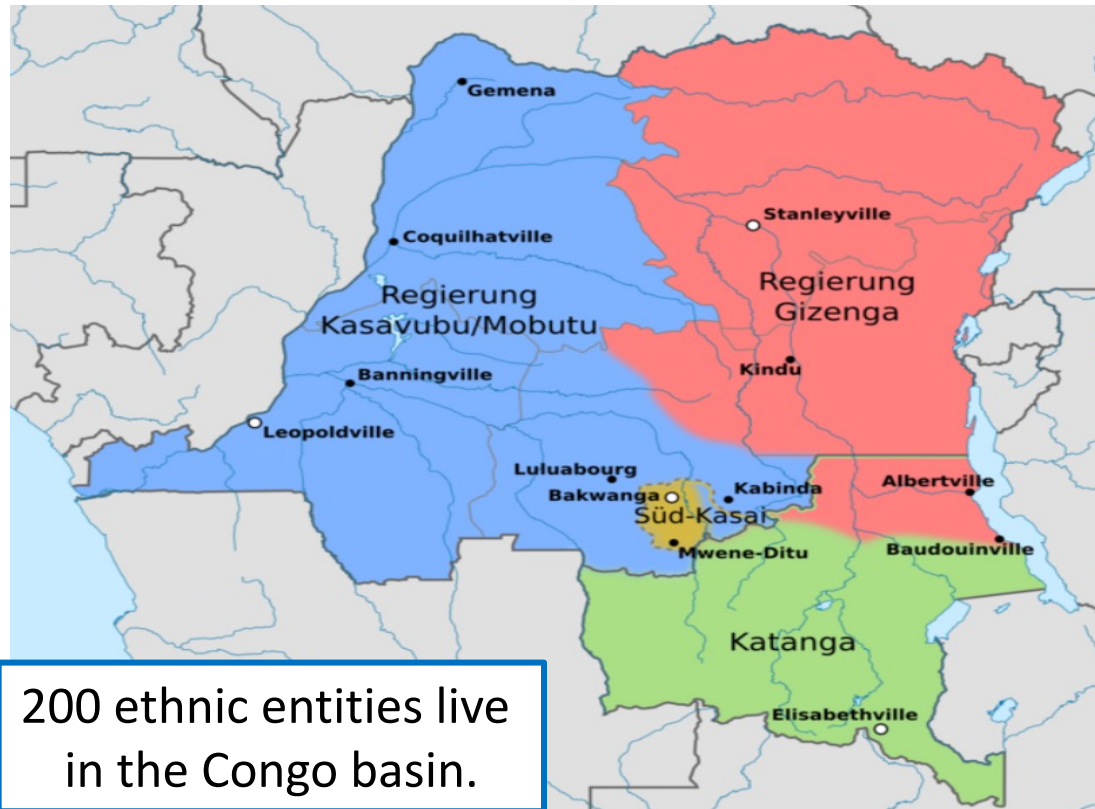
The African Independence Movement.

- The Congo crisis 1960/61: After Belgium was forced to give up its colony an independent state Congo was formed with Patrice Lumumba as Prime Minister but a fierce war between the different regions broke out which would cost 10 million lives.
- The DR Congo with an area of 2,3 million km² and 110 million inhabitants is today one of the most important providers of strategic raw materials, like uranium and cobalt.

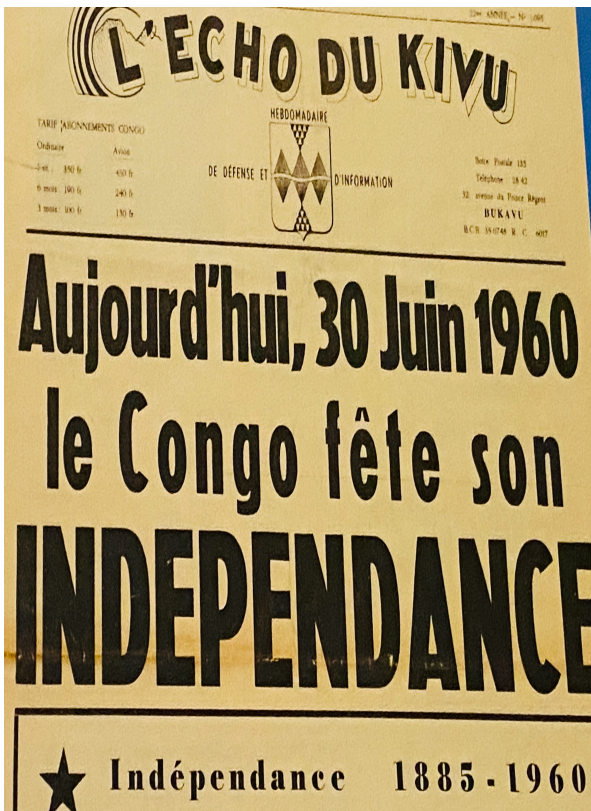


First Prime Minister of the Republic of Congo (1960). Murdered 1961.

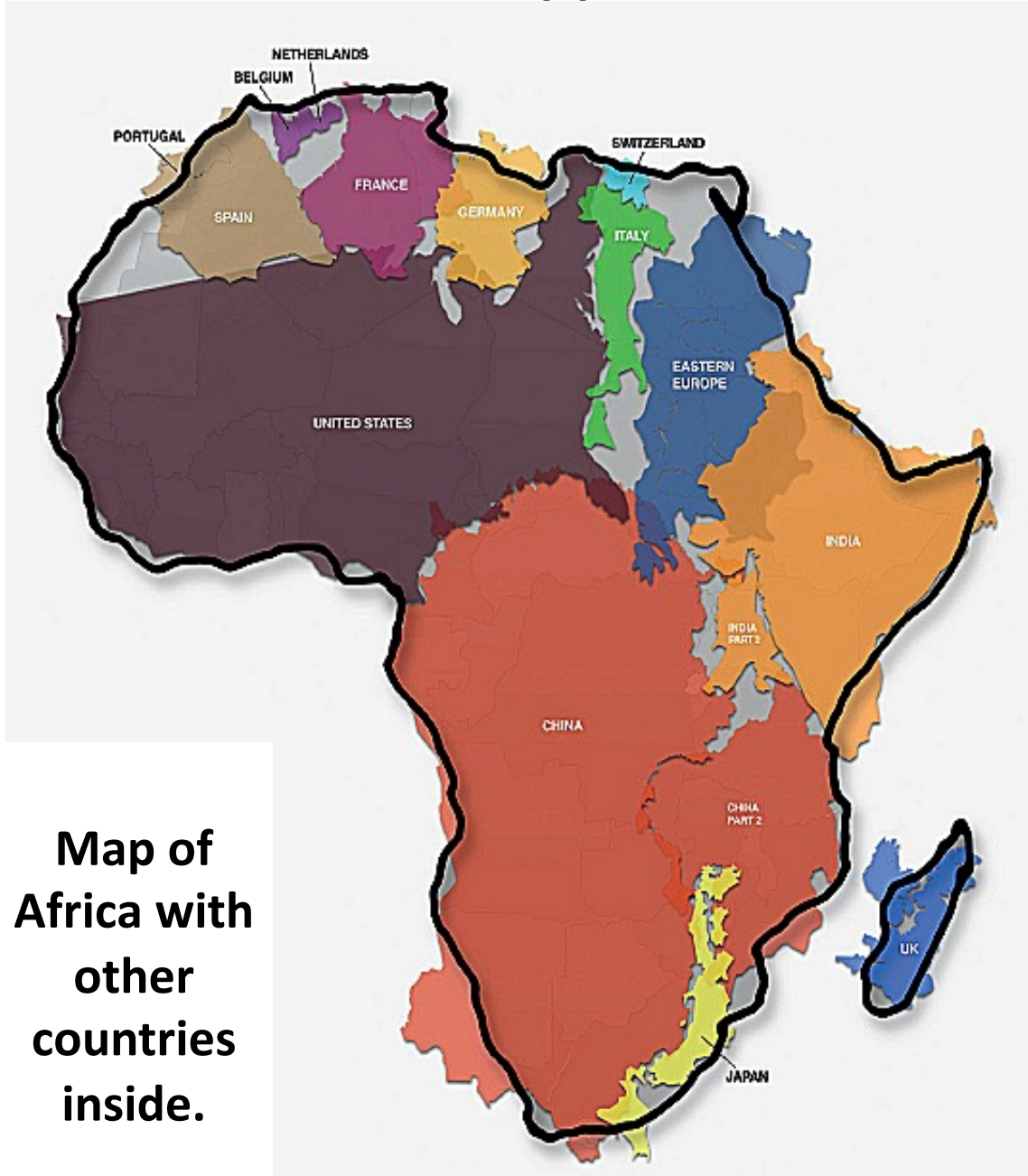
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200 ethnic entities live in the Congo basin.



The African Opportunities.



Map of
Africa with
other
countries
inside.

- **Africa is a huge continent:**
 - 30 million km²
 - 20% of the global land mass
- **Africa has a large and young population:**
 - 1,3 billion in 2024
 - 2,5 billion by 2050
 - median age 22 years
 - EU median age 45 years
- **Africa is rich in natural resources:**
 - Minerals like uranium, copper, cobalt, iron, zinc, oil, gas, wood, agricultural products.....
- **Africa offers many investment opportunities for European companies:**
 - Infrastructure development (railroads, highways, electricity generation, water purification.....).
 - Development of local production.
 - Export of consumer products, like cars, computers.

Infrastructure Development in Africa.

Freight train in Mauretania:

from Zuérate (middle of the desert to
Nuadibu (West coast), distance 700km

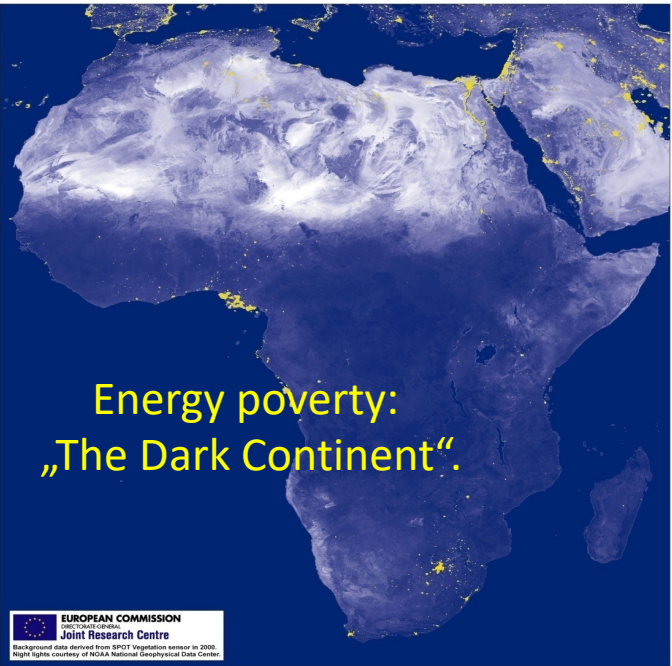
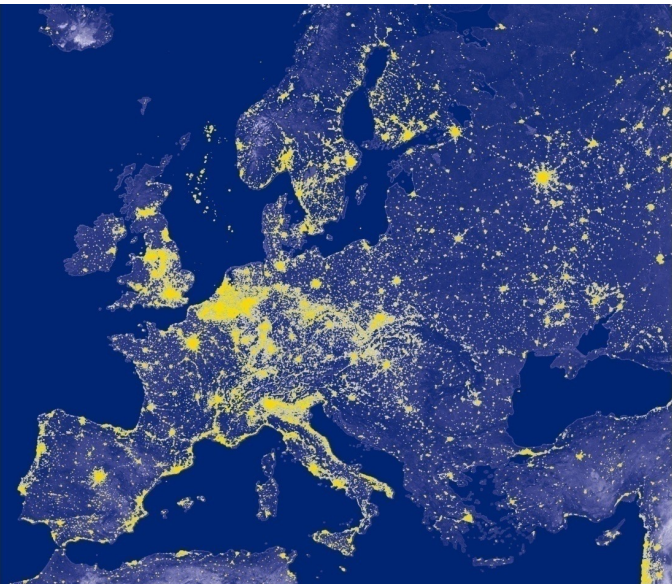
length of train 3km,
carries 20.000 tons of iron ore

Iconic Tower in Caio:
tallest building in Africa -
height 393.8 m.

Constructed by
the China State
Construction
Engineering.



Infrastructure Development in Africa.



Setting up local/distributed electricity production and supply systems are among the most important measures.

Production of hydrogen and synthetic fuel in N-Africa with PV?



Potential of Solar Energy in Africa.

