

## Four EU scenarios for governance in a post COVID-19 world



### Lessons from natural resources management



## ABSTRACT

Scarcity of medical equipment during the COVID-19 crisis, and the ensuing discussion on 'reshoring' certain industries back to Europe, have brought back an old dilemma. Namely, countries wish to be strategically independent while depending on products and resources from other countries to fulfil their economic needs. This reflects the debate about whether markets or governments are better at delivering solutions. We can also define this debate as a choice between 'competitive capitalism' and 'strategic autonomy'. Calls for strategic autonomy have increased since the COVID-19 crisis, at national and EU level.

However, strategic autonomy conflicts with the achievements of international cooperative governance. This introduces another dilemma: the choice between interests and values. Pursuing interests alone leads to a vicious cycle of increased competition between markets and between states, ultimately deteriorating into imperialism. Developing value-oriented actions at government and market level can break that vicious cycle. Value-oriented concepts already form part of many EU policies, which place substantial emphasis on environmental and social rights. When ethical values become an integral part of business and government decisions, this is called 'due diligence'. We can define value-oriented international cooperation between governments as 'cooperative governance'. Similarly, we can define ethical and value oriented action by private actors — whether NGOs or businesses — as 'ethical capitalism'. Putting the two dichotomies on a grid creates a model of four possible scenarios for action which can aid our understanding of ongoing discussions on governance in a post COVID-19 world. EU policy makers could also use these scenarios as alternative ways of shaping EU and foreign policy.

The management of natural resources, ranging from water, land, forests, energy resources and metals to rare earths, shows a counter-clockwise development through the scenarios. Moving away from unregulated markets, extraction and use were gradually regulated by national governments, who competed against each other in an imperialist setting. The transnational nature of economic and environmental problems has increasingly brought them into the scope of international cooperative governance. Ethical capitalism (changing market forces from within) is a relatively new development complementing government action. Progress through the scenarios is not always sequential: actors face pressures to switch between them. We can draw lessons for governance in a post COVID-19 world from the experiences of natural resources management. This study is the first on 'global trends in external policies', aiming to develop forward-looking and strategic analyses.

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## 1 Key dates

- 1945: Foundation of the UN Food and Agriculture Organisation (FAO)
- 1952: Foundation of the European Coal and Steel Community (ECSC)
- 1957: Foundation of the International Atomic Energy Agency (IAEA)
- 1957: Foundation of the European Atomic Energy Community (EURATOM)
- 1960: Foundation of the Organisation of Oil Producing Countries (OPEC)
- 1962: Launch of the EU (then EEC) Common Agricultural Policy
- 1963: Conclusion of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- 1966: UN Conventions on Civil and Political Rights and on Economic, Social and Cultural Rights
- 1972: Foundation of the United Nations Environment Programme (UNEP)
- 1972: Club of Rome report 'Limits to growth' points at downsides of increased use of natural resources
- 1974: Foundation of the International Energy Agency (IEA) in reaction to the 1973 oil crisis
- 1986: Chernobyl nuclear disaster, indirectly leading to Italy abandoning nuclear power
- 1987: UN report 'Our common future' (Brundtland) introduces notion of 'sustainable development'
- 1991: First Iraq war involving the US, following Iraqi occupation of Kuwait over oil drilling and pricing
- 1992: Adoption of the United Nations Framework Convention on Climate Change (UNFCCC)
- 1994: Conclusion of the Energy Charter Treaty
- 1994: Foundation of the International Tropical Timber Organisation (ITTO)
- 1994: First United Nations Conference on Trade and Development (UNCTAD)
- 1995: Foundation of the World Trade Organisation (WTO)
- 1997: Adoption of the Kyoto Protocol, implementing greenhouse gas reductions of the UNFCCC
- 1997: Conclusion of Joint Convention on Safety of Spent Fuel and of Radioactive Waste Management
- 2000: Adoption of EU Water Framework Directive
- 2001: 1st Ministerial Meeting of the Gas Exporting Country Forum (GECF)
- 2003: Second Iraq war involving the US, bringing Iraqi oil production under Western companies' control
- 2003: EU Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan
- 2006: 'Peak Oil' – maximum world production capacity of conventional oil - reached according to IEA
- 2010: The UN recognises a human right to water and sanitation
- 2011: Fukushima nuclear disaster, indirectly speeding up German abandonment of nuclear power
- 2014: Final conference of the European Rare Earths Competency Network (ERECON)
- 2015: Adoption of 17 Sustainable Development Goals (SDGs) by the United Nations
- 2016: Conclusion of the Paris Climate Agreement
- 2020: World Health Organisation (WHO) declares COVID-19 a pandemic on 11 March
- 2021: Planned entry into force of the EU Conflict Minerals Regulation

## 2 Key European Parliament resolutions

**In the period 2014 - 2020, the European Parliament adopted the following parliamentary resolutions related to natural resources:**

- 2014: [EU and the global development framework after 2015](#), reflecting on the UN Sustainable Development Goals and the sustainable management of natural resources
- 2015: [Developing a sustainable European industry of base metals](#)
- 2015: Follow-up to the [European Citizens' Initiative Right2Water](#) calling for a conscious development of policies concerning the management of natural resources
- 2016: [EU strategy for liquefied natural gas and gas storage](#)
- 2017: [Action Plan for nature, people and the economy](#) for healthy and resilient ecosystems by protecting biodiversity, natural resources and public health
- 2017: Higher transparency and more efficient management of energy, water and natural resources throughout the supply chain to [reduce food waste and improve food safety](#)
- 2017: [EU action for sustainability](#), calling for coordinated action and assessment of existing policies with a focus on biodiversity, natural resources and ecosystems as a reaction to the 2030 Agenda.
- 2017: [EU-Africa Strategy](#) calling for increased cooperation and investment in sustainability, comprising energy, use of natural resources and agriculture
- 2017: A [Union system for supply chain due diligence self-certification](#) of responsible importers of tin, tantalum and tungsten, their ores, and gold originating in conflict-affected and high-risk areas, and the resulting [regulation](#)
- 2018: [Transparent and accountable management of forests](#) in developing countries
- 2018: Improve waste management of [end-of-life vehicles, waste batteries and accumulators and waste electrical and electronic equipment](#)
- 2018: A [cohesion policy and circular economy](#) promoting sustainable management of natural resources and the preservation of biodiversity by shifting to biological raw materials and processing methods
- 2019: [Common rules for the internal market in natural gas](#)
- 2020: Reaction to the 15th meeting of the Conference of Parties (COP15) to the [Convention on Biological Diversity](#), stressing that special attention should be paid to the lifecycle of goods from conception to consumption, to protect natural resources and biodiversity.
- 2020: [European Green Deal](#) to boost the efficient use of resources by moving to a clean, circular economy, restore biodiversity and cut pollution. This is done by investing in environmentally-friendly technologies and decarbonising the energy sector.
- 2020: A [comprehensive European approach to energy storage](#) addressing EU's dependence on imports of raw materials for battery production, including from sources where their extraction involves environmental degradation, violation of labour standards and local conflicts over natural resources.
- 2020: [EU coordinated action to combat the COVID-19 pandemic and its consequences](#) calling for an internationally coordinated approach as well as corporate human rights and environmental due diligence to prevent and mitigate future crises and ensure sustainable value chains

## 3 Post COVID-19 governance dilemmas

### 3.1 Competition over scarce resources: market versus state

In the first phases of the COVID-19 crisis, personal protective equipment (such as mouth masks) or medical equipment (such as ventilators) were in high demand. Due to concerns about sufficient and timely supply of such products through international markets, several national governments threatened to restrict exports to keep these products for national consumption and encouraged companies to produce for the national market. In later phases, when it became clear that the shutdown would cause lasting economic damage, the debate surrounding economic autonomy widened to include non-medical sectors of perceived strategic importance. Various actors called for bringing industrial production back home from abroad - referred to as 'reshoring'. In fact, the crisis brought back an **old dilemma: countries' desire to be strategically independent versus their dependence on products or resources from other countries to fulfil their economic needs.**

In other words, there is tension between an open international market and nation states acting in the national interest. The underlying issue is the even older fundamental **dilemma between the market and the state**. On the one hand, the world economy has grown irreversibly over national borders and created international value chains. Therefore, renationalisation projects of industries will be difficult and are likely to reduce efficiency and increase international tensions. On the other hand, in times of crisis, people identify more with nation states. Their governments feel obliged to give their citizens immediate assurances in that national context, leading them to interfere in market processes, for instance by restricting trade, steering production and subsidising companies in their own country.

National intervention in the international market in order to uphold the perceived national interest is much older than the COVID-19 crisis. It is a phenomenon which developed in parallel with those nation states and the growing competences of their governments. Analysing this process of growing entanglement between government and markets could possibly provide some lessons for dealing with the dilemmas of the post-COVID-19 economy and (more generally) governance of the post-COVID-19 world. For the purposes of this study, we have chosen to look at a group of economic sectors with a long history: those related to natural resources. The **management of natural resources has faced the dilemma between national interest and long term 'global' efficiency** since mankind had to deal with scarce resources of water, forests or land.

We can distinguish certain phases in the relationship between markets and governments. In a first 'pre-modern' phase, traditional societies saw essential resources as a common good and developed ways to share them. Religious organisations such as churches could play a role in the distribution of agricultural produce, linked to the primary resources of land, water or forests. Fossil fuels (other than wood) hardly played a role. The great discoveries and the ensuing growth of world trade and colonialism revolutionised these economies and disrupted many social patterns at home and abroad. International markets in the modern sense developed from Europe in around the 15th century. The industrial revolution only intensified this process, with an increasing demand for fossil fuels and metals. Despite the development of global value chains, albeit not known by that name at the time, nationalism peaked in the race for access to and control of all natural resources. City states or nation-states facilitated economic expansion or defended it in regional and colonial wars. Military action and economic interests have often overlapped. In the colonial period one can find the roots of what is nowadays called **geo-economics: the attempt to achieve economic goals through geo-political means**. As energy resources are unevenly distributed across the world and countries consider it essential to access and control them, the energy sector is one of the clearest examples (if not the defining example) of geo-economics.



State intervention in the international market had two faces: externally they explored, exploited and competed by force. Domestically, they started to organise economic life to guarantee a certain degree of economic access for all. States intervened in many economic sectors and developed national railways, national energy companies and national legal frameworks for economic operators. As many natural resources were deemed essential for the daily life of citizens, states also began to regulate prices of (for instance) water, land or energy. At the turn of the 19th to 20th century, **an unhealthy entanglement between international value chains and national states** had occurred, ultimately becoming one of the deeper reasons for the outbreak of the First World War.

### 3.2 Social justice and environment: interests versus values

'The social question', as it was called at the time, of poor living and labour conditions of industrial workers made national governments act in a different way, mostly since the 20th century. Not only did they regulate economic production, they enacted legislation prohibiting child labour, limiting working hours, increasing safety and health in the workplace and often also minimum wages and social security for those no longer able to work. The development of social legislation in the 20th century was certainly also a matter of rational self-interest (sick workers are not productive), but mostly motivated by ethical arguments. **Ethical arguments initially focussed on the human condition and were mostly put into national social law.** These ethical arguments would later develop into international law, for instance in the universal social human rights developed after the Second World War.

In the second half of the 20th century, environmental problems started to dominate the political agenda. Many of these were linked to natural resources: pollution of water, land and air, as well energy related disasters such as oil spills or the disposal of nuclear waste. Initially, solutions were again mostly sought in the national context. States enacted laws against pollution of soil, water or air. **The environmental consequences of the exploitation of natural resources launched a second wave of ethically inspired legislation.** Cleaning up chemical waste dumping sites was a local, regional or national matter. However, water and air pollution cross frontiers and the international dimension of these problems became evident. Apart from immediate pollution, there is also a logical line of thinking from the limited availability of natural resources to sustainable methods for their extraction and use that will leave options for future generations. Landmark publications as 'Limits to growth' in 1972 or 'Our common future' in 1987 have contributed to the consciousness that **environmental problems need global governance to effectively solve them.** The physical limits to the availability of natural resources and the over-intensive use of renewable resources has been on the international agenda ever since. Science provides ever more evidence of the interlinkage between ecological issues, from carbon emissions resulting in climate change, to the use of pesticides and the collapse of bee populations. Ultimately, the extinction of natural pollinators has consequences for human food production and for the human race, as does climate change.

This takes us back to the present day. **Since the COVID-19 crisis, discussions have emerged on how pandemics relate to a deteriorating natural environment, biodiversity loss, weakened natural ecosystems and therefore weakened human resistance against disease.** From this perspective, calls to reform the post-COVID19 economy to be more in line with the UN Sustainable Development Goals or the EU Green Deal have found their way into government responses to the crisis. Such calls reflect the desire to achieve not only a fair economic distribution of essential goods and services, but also an ecological one.

Generally speaking, the **introduction of ethical arguments exposes another policy dilemma: how to balance interests and ethical values.** In an ideal world, all participants would act on the basis of high ethical values. However, when resources are scarce and our societies rely so much on them, the balance between values and interests becomes a real dilemma. The COVID-19 crisis has brought this dilemma once again to the surface.

### 3.3 Global governance: towards ethical collective action

After World War II, economic dynamics have furthered globalisation. By the mid-20th century, each national state had found its own governance solutions for mastering the international economy, but with the growth of international value chains and multinational corporations moving production around the globe, they lost part of that control again. States with large home markets could ignore this process longer than smaller ones. **Legislating for an international economy and international environmental cooperation requires international forms of governance.** All steps gone through by national governments have somehow to be repeated at international level: the creation of legal frameworks for trade and investment as well as the introduction of labour rights, human rights and environmental legislation. National governments now try to contend with international markets by cooperating with others, creating multilateral governance.

The European Union is itself a unique form of regional international governance, generally supporting further global governance. On the market - governance axis, the EU is situated in the middle. It is a truly mixed economy, where free movement of goods, services, capital and persons is matched by legislation to protect fair competition, co-finance infrastructure and provide economic support to weaker regions. Regarding the values-interests dilemma, the EU also tends to be in the middle, balancing economic interests with environmental legislation and – since the Charter on Fundamental Rights – basic human rights. Social security legislation remains in the national remit.

**The EU tends to approach international governance similarly to how it defines itself: promoting mixed economy solutions and balancing self-interest with defending values.** For instance, the EU calls for open markets and free trade, as well as for legal rules to set conditions and guarantee a global level playing field. In the international sphere, the EU tends to see itself as a defender of ethical values, stretching from human rights to fair trade. Principles of 'due diligence' and corporate responsibility have been at the core of EU trade policy and an upcoming policy proposal will suggest establishing these cross-cutting principles across all policies. The EU is perhaps exceptional in the world for its emphasis on ethics and values and often portrayed as sole standard bearer of an ethical world order, squeezed between the increasingly interest driven forces of the US and China. However, the EU will have to accept that there are no international definitions of values and even those of core UN conventions on human rights are not universally shared. Furthermore, the EU cannot escape the hard realities of geo-politics and will therefore also have to take care of its own interests. In fact, the EU has already been doing so by reinforcing its trade defence instruments, increasing controls on its external frontiers or trying to further develop a European defence capacity.

The EU as an international actor has generally been a staunch supporter of global organisations, such as the United Nations or the World Trade Organisation. Only global consensus can guarantee a truly global level playing field without unfair competition based on social injustice or environmental dumping. The full complexity of interrelations between economic practices, environmental and human consequences in a global context have most recently been reflected in the [Sustainable Development Goals](#) adopted by the United Nations in 2015. Several of these mention natural resources, in particular goals number one on ending poverty, five on gender equality, seven on affordable and clean energy and twelve on responsible consumption and production. However, truly global organisations as the UN or the WTO will encounter more problems in reaching consensus on common goals and also in implementing and enforcing decisions taken. Developing global governance is a step-by-step process and core national competences like foreign policy or defence are not among the first to be shared. At present, the international system has not reached a level of true global cooperation. Rather most international organisations or agreements with enforceable policies only encompass groups of countries, usually on a geographical basis. **The current international order is actually a mix of multipolar groups of competing states rather than a set of truly global governance organisations.**



### 3.4 Conceptual framework: two axes of action

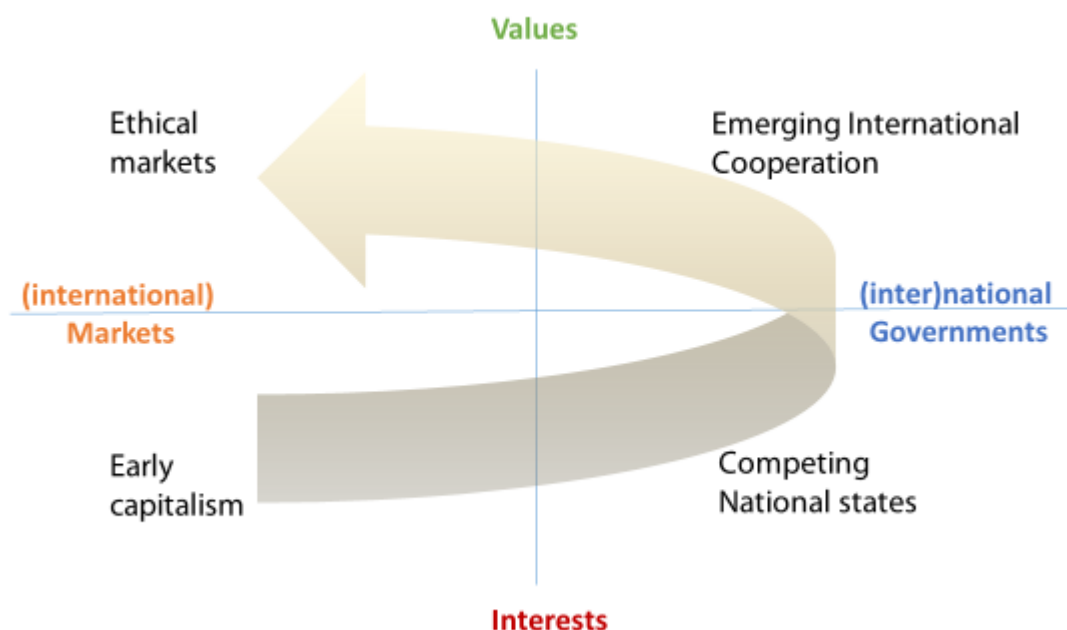
As noted, the discussion on policy scenarios post COVID-19 shows similarities with older discussions on policy scenarios for dealing with natural resources. These appear to face **two fundamental dilemmas**:

- **the balance between market and state**
- **the balance between interests and ethical values**

Visualising these dilemmas as two axes on a surface creates a field of policy options for the level of government intervention in international markets, as well as the level of ethical considerations taken into account compared to the pursuit of private or national interests. **Thinking along these two axes can help in structuring many ongoing discussions on the post COVID-19 global economic or political order.** It helps in assessing whether actions need be initiated by government or should be left to markets. Especially in Europe, with its mixed economies, actions are never at the extremes of the market-state continuum, but always involve a particular mix of market and government action. Most importantly, bringing in the ethical axis as a quality in itself, shows that both markets and governments can be driven by interests or by values. Each axis represents a continuum on which actions are moving.

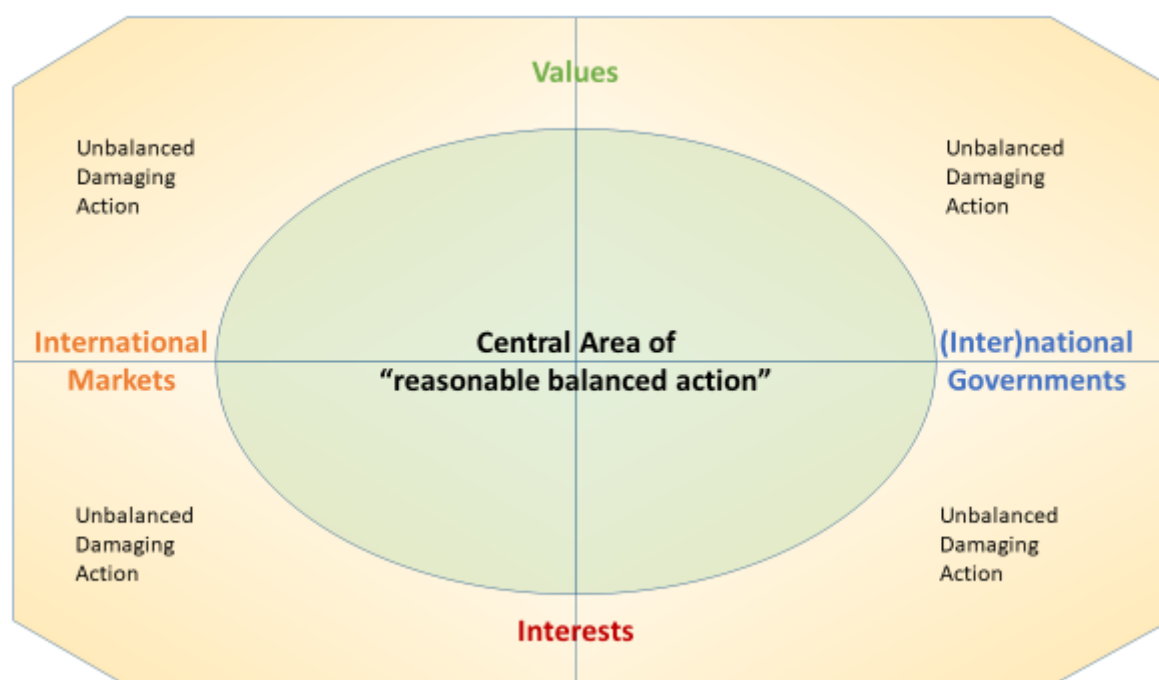
Our short reflection on the history of the management of natural resources seems to show a U-shaped movement through the four quadrants: starting from unregulated competitive markets, moving towards regulated national markets of states competing internationally for their interests. The collapse of the nationally driven order in two World Wars has introduced international governance as a necessary model for the future. This means that national interests have to be turned into regional or global ones, but also that ethical factors - sharing a common global ecosystem - will have to come increasingly into play. However, even regional or global governance cannot fix everything without the private initiative and individual creativity of people around the world. Therefore, as the following chapters will show, private initiative should also increasingly become value driven instead of only profit oriented.

**Figure 1:** Two axes defining policy action



The EU itself is a result of overcoming the extremes of nationalism and solving differences by cooperative governance. In its foreign policy, the EU equally looks for a balance between all extremes. Measure is key to obtaining success. Therefore, **for the EU, beneficial actions are likely to be found in the middle spectrum of both axes, where markets and governments as well as values and interests are in relative balance.** Going to the extremes of the axes can inflict damage on others or oneself. Excessive pursuit of interests by market players will lead to a race to the bottom and unpaid externalities. Excessive pursuit of state interests will lead to conflicts and wars. Even the excessive pursuit of values can be undesirable, for instance when they are forced upon people by state coercion or corporate pressure. From a European perspective, common values should be balanced with freedom for personal choice. This leads to an 'area of balanced action' and develops the conceptual framework into an assessment grid for international action.

**Figure 2:** Assessment grid for international action



In the next chapters, the management of **three groups of natural resources will be analysed according to this grid.** Our analysis will look at developments from a meta-level and will seek to trace global trends. Chapter 4 will look at renewable natural resources, closely linked to nature: **water, land and forests.** Chapter 5 will analyse **energy resources**, ranging from fossil fuels to uranium and renewables. Chapter 6 will look into metals and those natural resources which have become indispensable for modern information societies, known as **rare earth elements.** For each group of natural resources, we will look at three aspects:

1. **Availability, markets and governance** (horizontal axis): What is the geography of production, consumption and future availability? How have markets or governments managed these resources?
2. **Balancing interests, collective action and ethics** (vertical axis): Where has management of resources led to environmental damage, violation of human rights, social or military conflict? In how far have international cooperation or ethics been able to mitigate these?
3. **Global trends:** What are the global trends for the group of resources in question?

Finally, Chapter 7 will draw general conclusions from all sectors and **translate these into four more general scenarios for the EU in future multilateral action.** Their feasibility will be assessed, as well as their risks. In a final reflection, the position of the EU among other global players will be assessed.

## 4 Water, land, forests: a market-governance dilemma

### 4.1 Availability, markets and governance

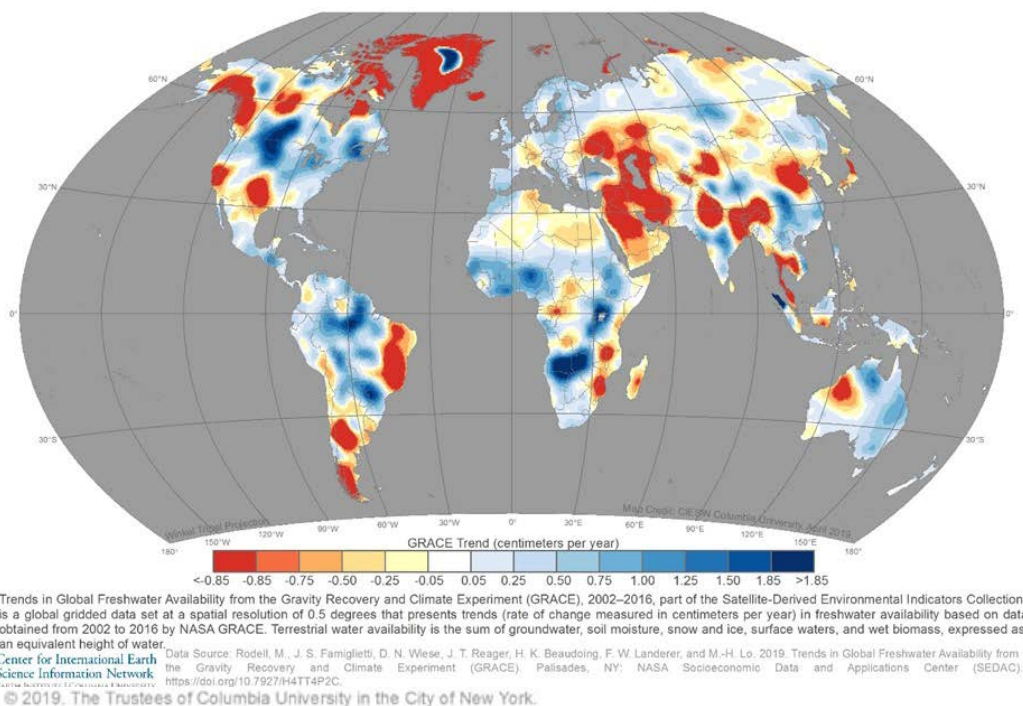
Earth has provided plenty of water, land and forest, but man has made them scarce. Although this statement is not entirely true, it certainly indicates a trend. In principle, each of these resources count as 'renewable', that is to say, capable of regenerating themselves, provided that they are used in moderation and get the necessary time for renewal. This capacity is under threat, as the following sections will sketch.

#### Water

Water is the most vital natural resource for human survival and the United Nations recognised access to it as a human right in 2010. While over two thirds of the planet are covered by water, only 2.5 % of it is freshwater, which is usable as drinking water or for agriculture. As most of the freshwater is trapped in glaciers and snowfields, accessible drinkable freshwater is nevertheless limited. Although its total amount has remained fairly constant over time, a **growing population and an increasingly unequal distribution over the planet have pushed competition and made it scarce.**

Freshwater exists in abundance in moderate climate zones, but shortages occur in warmer areas. Climate change has created more dry zones and lead to changes in precipitation, resulting in water excess in certain areas and shortage in others. Groundwater depletion is mainly attributable to human overconsumption, for instance through the rise of international trade in bottled water or water-intensive goods. The evolution of freshwater reserves between 2002 and 2016 illustrated in Figure 3 (see [animated version](#)) confirm the changes in freshwater availability around the globe. Massive losses have been incurred in the Middle East and Central Asia, while North and South America as well as Sub-Saharan Africa saw significant increases.

**Figure 3:** Trends in Global Freshwater Availability 2002-2016



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Source: From the [Gravity Recovery and Climate Experiment \(GRACE\)](#), Satellite-Derived Environmental Indicators.

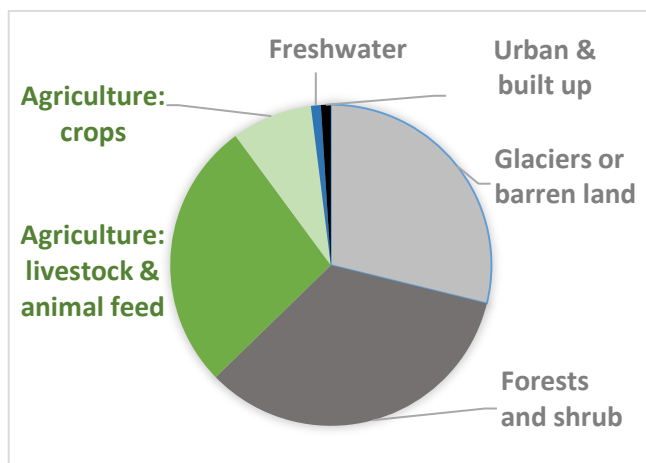
In Europe, the net amount of freshwater moderately decreased in the centre of the continent over the last two decades. In Southern Europe, very dry years caused long periods of drought, going along with increased water exploitation, threatening fresh water provision and firefighting. On the other hand, there were years with significant amounts of precipitation, outnumbering the dry periods, which is why these zones colour blue on the map above.

From early on, **nation states regulated the distribution of freshwater**, considering it a public good. The need for a central and coordinated approach rose after the appearance of more sophisticated sewer systems in Europe and the United States in the 19th century. **During the 1990s, however, private participation in the public sector increased**, sometimes to acquire liquidity or out of the conviction that the state is the worse entrepreneur. Even in case of privatisation, water authorities regulate water quality and quantity through water access entitlements. Privatisation of water supply companies led in many regions across the world, contrary to expectations, to increased water prices and public criticism. Commercial involvement nevertheless grew in the last decades. **Growing trade in bottled water changed water from being a local commodity into an export commodity.**

## Land

Land covers around one third of the earth's surface. Of all land, about one third are glaciers or barren land, another third is covered by forests and shrub, and the last third is used for agriculture. Freshwater, cities, industry or infrastructure use only a very small proportion of land. **For the purpose of this study, we focus on agricultural land as a natural resource.**

**Figure 4:** Use of land on earth



**Only one fifth of agricultural land is cultivated for crops for human consumption.** The remaining 80 % is used for meat and dairy livestock, including land for animal grazing and animal feed production.

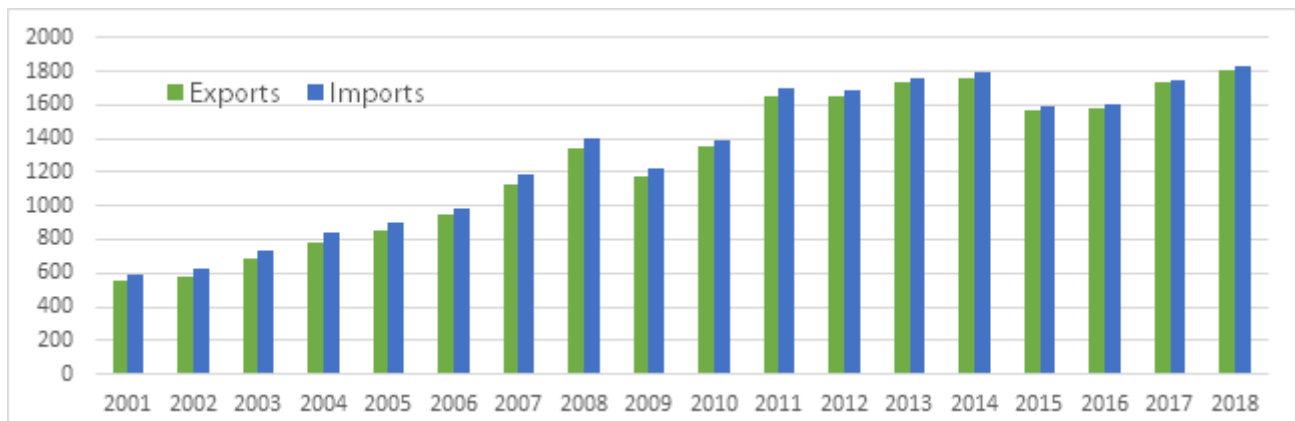
By nature, agricultural land is most fertile in moderate climate zones such as the US, Ukraine and India. However, because of increased use of mechanical and chemical technology, less fertile lands are also increasingly used and the arable land needed to produce a fixed quantity of crops has steadily decreased over the years.

Source: [OurWorldInData](#) based on FAO (2019)

**Increased agricultural production also led to trade in agricultural products, with markets developing from local to regional and sometimes global markets.** The global top exporters of agricultural products are the US, the EU, Brazil and China. In the EU, Germany, France and the Netherlands are the main players. The main importers are China, the US, the EU, Japan and the UK.<sup>1</sup> Trade in land also grew through agro-industries, converting raw agricultural materials into value added products. Figure 6 indicates a rise in trade of agricultural products, with small downturns during the 2009-10 recession and after the oil price decline in 2014. The use of digital technologies, like in many other sectors, facilitated agricultural trade processes and can lead to better food safety or integration of small producers into global markets.

<sup>1</sup> Source: WTO Data Portal, based on data of 2018

**Figure 5:** Increase in agricultural trade (1000 Mio. US dollar)



Source: Graph by the authors on the basis of data from the WTO Data Portal

Although the possession of land has historically been a source of conflict, the distribution of land and the organisation of agricultural activities have equally been highly organised over time. **In modern societies, the state organises land use planning and sets conditions for agricultural production.** Ownership of agricultural land moved away from the concept of a 'common good' towards private ownership, although recently concepts of land as a 'public good' are growing in popularity.

In highly developed societies, governments also started to take an interest in guaranteeing sufficient agricultural production for food security. The development of the European Common Agricultural Policy (CAP) in the 1960s was an example of this. At the same time, governments started to highly regulate agricultural trade through qualitative and quantitative measures, leading to a truly **hybrid market-state regime for land and agriculture in most developed countries.** In countries where governments are weaker or regulation less developed, market forces have been able to dominate possession and use of land.

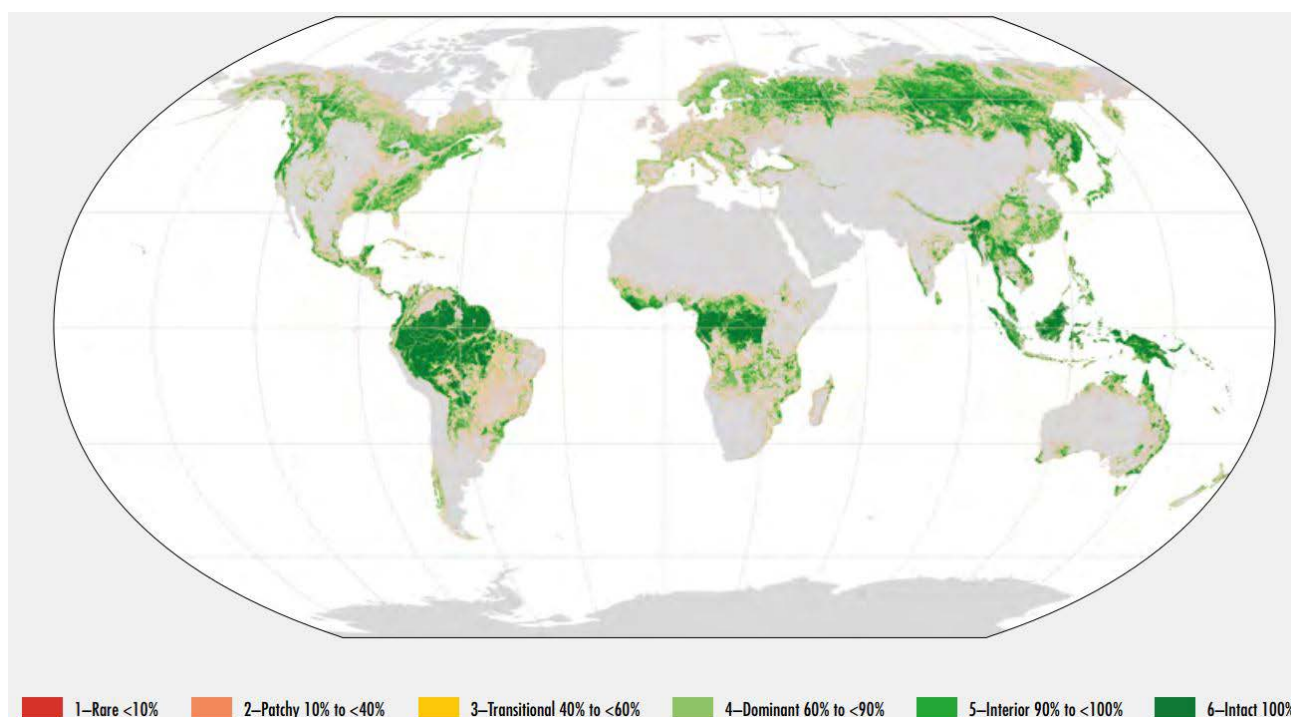
## Forests

In recent decades, the forests' role as a source of biological diversity and carbon absorption has often been highlighted. At the same time, those factors are at risk from deforestation and forest degradation worldwide. Forests can be found in cold, temperate and tropical regions worldwide, with most of them located in the Russian Federation, China, Canada, the United States and Brazil. The densest forest areas are located in South America, Sub-Saharan Africa, Northern Europe and the Pacific region.

Forests used to provide local populations with construction or fire materials, before they became private property owned by the current land owner. At that time, abundance of forest was perceived as a sign of underdevelopment, and deforestation did not have a negative connotation. This trend held all over the globe until **scarcity required stronger regulation and sustainable management of forest areas. This was particularly the case in Europe,** where forests reached their lowest level at the beginning of the 18th century. The rising awareness of regeneration cycles and the finiteness of forest resources was mainly due to the need for steady and sustainable supply of raw materials. From then on, European forest management has evolved and extended to the preservation of biodiversity and natural hazard prevention. Today, European forests are overwhelmingly government-managed, either on a central or regional level.



**Figure 6:** Forest area density index 2015 (proportion of forest area in a 10x10km window)



Source: [The State of the World's Forests 2020](#), page 28. Note: Map derived from the Copernicus Land Cover map 2015. Study prepared by JRC and the United States Forest Service for the 'State of the World's Forests 2020 report.

Interestingly, **this European approach is opposed by strong market-driven developments in most other parts of the world.** In December 2019, the FAO announced that global production and trade in wood products reached its highest values since the organisation's records began in 1947. The biggest components of produced and exported forest commodities are roundwood, sawnwood and paper. Even though forests still cover one third of the global land area, much of it is in danger. According to World Bank data, the total loss of forest surface was larger than South Africa between 1990 and 2016. The Amazonian forest is under particular pressure. Farming, grazing of livestock, mining and drilling account for more than half of all deforestation. Forestry practices, wildfires and, minimally, urbanisation account for the rest.

## 4.2 Balancing interests, collective action and ethics

### Water

The management of fresh water as a natural resource has presented challenges in at least three areas: water quantity in rivers and lakes, water pollution and, as described above, scarcity. Excessive water can lead to floods, and lack of it to shipping problems or drought. **In Europe, collective governance of water quantity was organised relatively early.** Fighting flooding led for instance to the installation of 'water councils' in the Netherlands as early as the 11th century. Water level management includes dykes towards sea and rivers, locks, canals and pumping systems. Shipping management led to one of the earliest multilateral organisations, the Central Commission for Navigation on the Rhine ([CCNR](#), since [1868](#)), creating a right to tariff free passage of ships, making it an early forerunner of the Internal Market. In recent times, excessive rain and glacier water have inundated adjacent land to rivers and cities. New insights therefore combine water control with flooding areas. In 2000, the EU adopted the Water Framework Directive ([WFD](#)) establishing a framework for water management.



Nevertheless, there are a range of **international conflicts over water, mostly linked to dam projects**. These often involve energy production, navigation and agricultural irrigation. In Europe, a conflict about the Gabčíkovo–Nagymaros dam in the Danube in the Slovakian-Hungarian border area is still unresolved. In Africa, states along the banks of the Nile have disagreements about access to and rights over Nile water. In Asia, the [Mekong Basin](#) is witnessing an expansion of dam-building for hydropower, especially in China and Laos, making countries downstream fearing flooding or seasonal lack of water. The release in 2019 by India of water from a dam on the Sutlej river caused flooding and strong reactions in downstream Pakistan. **Resolution of conflicts via multilateral cooperation often appears difficult**. In 1999, Nile river states founded the Nile Basin Initiative ([NBI](#)), which to date still has not entirely resolved conflicts in the area. The Mekong River Commission ([MRC](#)) was founded in 1995, but its effectiveness has so far been limited due to its lack of enforcement powers and China's reluctance to join as a full member.

Factories often use lakes or rivers as a means of waste disposal, which has led to substantial **pollution of surface and ground water**. Government remedies often only occurred after disasters. The [cholera outbreak](#) in London in the 19th century led to sewage systems and drinking water facilities. Oil slicks and flammable industrial waste led to fires on the Cuyahoga River in Ohio in the 1930s to 1960s, ultimately leading to the 1972 Clean Water Act ([CWA](#)), regulating discharges of pollutants into US waters. Disappearance of the Atlantic Salmon and poor drinking water quality in the Rhine was once again a starting point for multilateral governance: since 1963, the International Commission for the Protection of the Rhine ([ICPR](#)) has successfully fought water pollution, returning the Atlantic Salmon and improving drinking water.

**Currently, the biggest challenge appears to be water scarcity**. In some countries water has always been **naturally scarce**, such as Yemen. Mismanagement and unequal distribution of access to water fuel political and social instability. Climate change may lead to more countries experiencing such 'natural' water scarcity. However, scarcity can also be the result of **privatisation, pricing or distribution policies**. For instance, in 2000, privatisation of the drinking water in Cochabamba (Bolivia) caused violent protests leading to the death of at least nine people. Eventually, the city's water was moved back into public hands.

A recent phenomenon is the **increase in production, trade and consumption of bottled water**, driven by reduced drinking water quality (linked to pollution or chemical treatment), lack of drinking water in developing countries, rising income in for instance Asia and the Pacific, making bottled water affordable, but also marketing focussing on life style. The increase in water extraction to fill all the bottles dries up surface water resources and depletes groundwater levels. Trade in bottled water has also resulted in an increase of plastic pollution, in response to which conscious consumers turn to glass bottles. Less visible but nonetheless important is **trade of 'virtual water' through water-intensive goods**, which, according to a [WTO paper](#) can be understood as '...the volume of water that has been used to produce a commodity and that is thus virtually embedded in it'. Excessive or unsustainable extraction of water has (in some areas) led to rising water prices. In the EU, water scarcity is still mainly limited to Southern Europe.

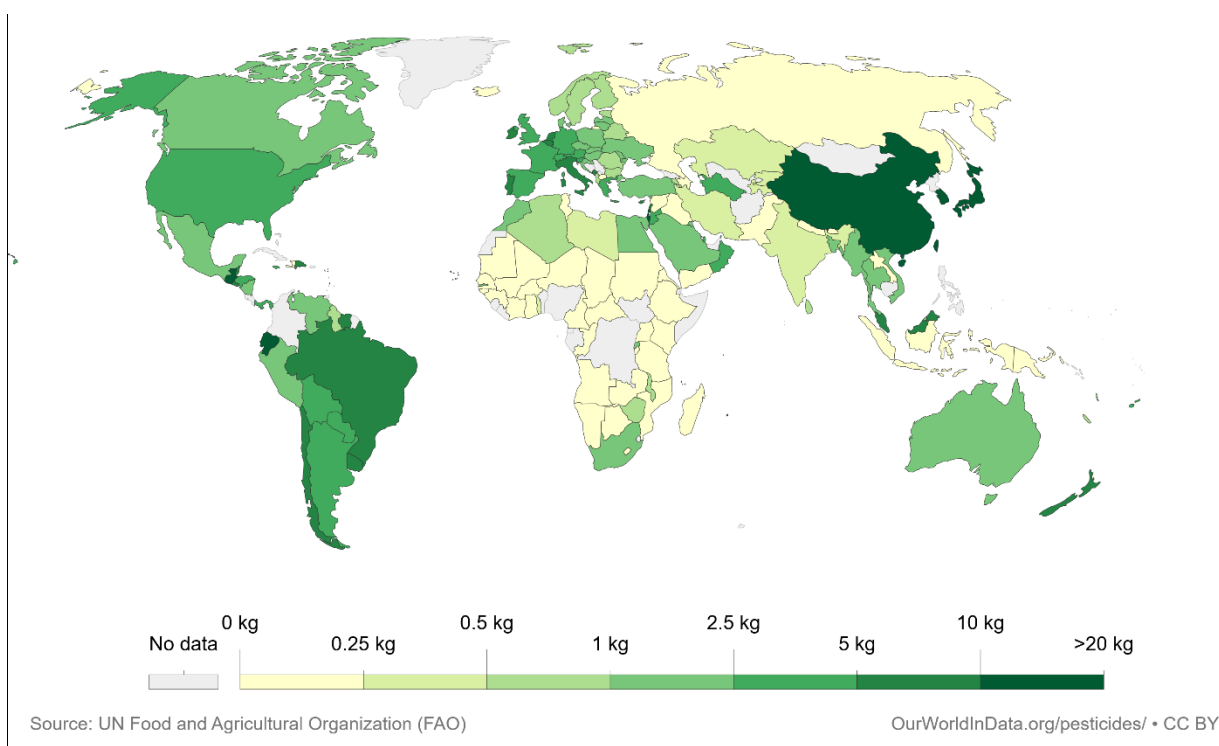
European knowledge on water management and treatment can be helpful for other parts of the world. The **United Nations have recognised water as a natural resource that needs governance**. Several conventions have been signed, such as the 1992 UN Convention on the Protection and Use of Transboundary Watercourses and International Lakes, resulting from the break-up of the Soviet Union and to a lesser extent Czechoslovakia, where new borders made national waters into transboundary ones. The 1994 [Danube River Protection Convention](#), 1997 UN Watercourses Convention and the 1999 [Rhine Protection Convention](#) followed soon. In light of the increasing problem of water scarcity, the **UN adopted a resolution in 2010 declaring access to water and sanitation a basic human right**. The UN, however, lacks effective means to enforce this and can only rely on various development programmes and the goodwill of its member states to achieve it.

## Land

Challenges in balancing negative impacts of an interest-based approach in agricultural production can be divided into those related to environmental damage and those related to food security.

**Agricultural production often has negative impacts on the environment.** It transforms habitats and is one of the greatest pressures on biodiversity. Crop production increased through the use of chemical fertilisers and pesticides. This 'green revolution' of the 1960s, which often took place parallel with upscaling of farms and focus on monocultures, has caused ground and surface water pollution and led to erosion and loss of soil fertility. The use of genetic technology, widespread in the US and Canada, risks aggravating these problems, focussing even more on monocultures and on seeds requiring certain pesticides. **The use of pesticides is not only high in several European countries, but also particularly high in China, parts of South-East Asia and several Latin American countries.** The use of pesticides in developing countries causes not only environmental damage, but also increased human health risks, because of less strict safety rules, lack of protective equipment or reduced vigilance in safe use. The Development Committee of the European Parliament has requested a study into the use of pesticides in developing countries.

**Figure 7:** Pesticide use per hectare of cropland, 2017 (in kg / hectare)



Source: Our world in data, based on UN FAO data

The **remarkably high share of 80 % of agricultural land used for livestock and animal feed constitutes another problem.** It highlights the consequences of human meat and dairy consumption. Not only could these lands have been used differently, livestock is also one of the main producers of greenhouse gases, such as CO<sub>2</sub>, methane and NO<sub>x</sub>. In [2009](#), the European Parliament debated the need to reduce meat consumption under the popular slogan 'less meat, less heat'. Although livestock uses less land because of intensive farming, emissions remain the same or are even higher. This suggests that intensive farming is no real solution for this problem. This is also the case for ammonia (NH<sub>3</sub>) emissions, which contaminate ground water.

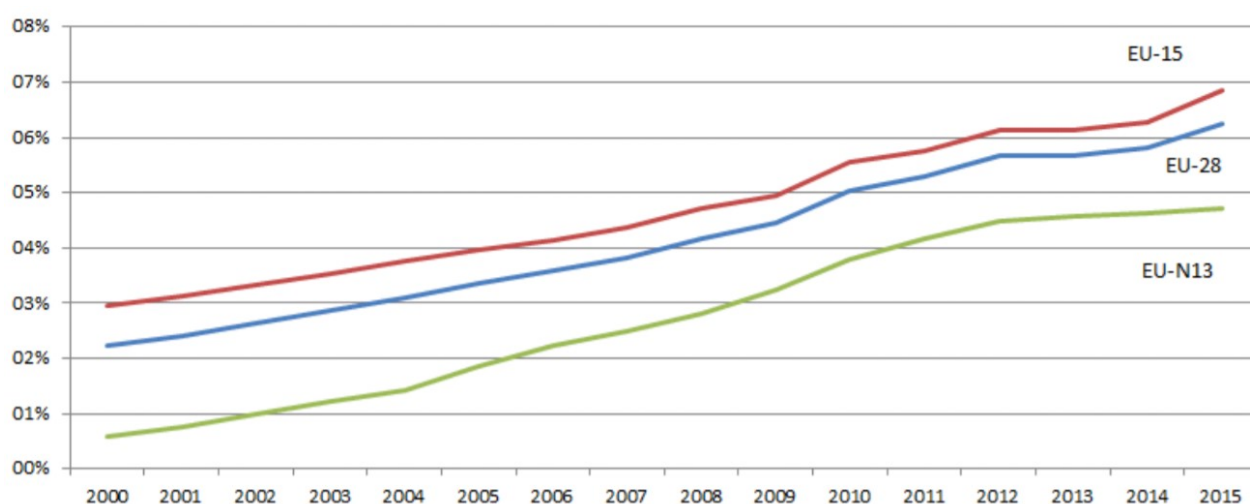
**Food security is the other big challenge.** Increased production solved food security in Europe and other developed countries, but the ‘green revolution’ did not solve hunger in developing countries, as it promised to. Although production and trade in agricultural products grew, food does often not benefit the local population and is exported instead. A related problem is the growing phenomenon of ‘**land grabbing**’. This refers to cheap purchase of small farmers’ land to use it for industry-style agro-production, mostly in developing countries. This problem is often transnational in nature, enriching foreign investors and impoverishing local (ex)-small farmers. Africa is particularly affected by ‘land-grabbing’ and disputes over access to land. Many investors view Africa as the last frontier for cheap land and many African governments equate foreign investment with promoting economic growth. Investors are not only driven by private profit, but are sometimes countries — for instance China and Saudi Arabia — seeking food security at home and accepting the ‘collateral damage’ of poverty in the ‘host’ country. As a result, entire communities lose their land to make way for agro-industrial plantations, but also for hydropower plants, roads or mining operations. Climate change could further reduce land availability and fertility, triggering new conflicts.

**The success of multilateral governance in solving these issues is mixed.** In Europe, the Common Agricultural Policy (CAP) improved food security in the EU, but backfired in the form of overproduction leading to low prices and dumping in developing countries. Other unintended consequences were unsustainable practices, which required an environmental policy response. The CAP has undergone continuous [reform](#) ever since. A shift is taking place from focus on quantity and price to focus on quality and income. The 1984 reform tackled overproduction, focussing on market needs. The 1992 reform introduced direct payments to farmers and reduced price support. Since 2003, income support has been linked to environmental conditions, food safety, and animal health and welfare standards. Nowadays, the CAP aims to improve productivity, farmers’ income and sustainable management of natural resources. Food security in third countries has become an element of regional trade agreements. Since the COVID-19 crisis, food security for the EU has returned to the agenda as part of the concept of ‘EU strategic autonomy’.

On a global level, the **UN has been successful regarding conventions of a technical nature.** Examples are the International Plant Protection Convention (1952), the UN Convention on Biological Diversity (1993), the Convention to Combat Desertification (1994) and the International Treaty on Plant Genetic Resources for Food and Agriculture, known as the Plant treaty (2001). However, organisations such as the International Fund for Agricultural Development (IFAD) or the Food and Agriculture Organisation (FAO) are not in a position to act against land grabbing, which is linked to property law and national policies. The 1989 ILO Convention and 2007 UN Declaration on the Rights of Indigenous Peoples provide only little protection.

Nevertheless, private initiatives have played a role in addressing environmental and ethical shortcomings in the agricultural sector. **One of the remarkable developments is the rise of organic farming methods,** which go back to the biodynamic movement of the 1920s but only took off more substantially since the 1970s. Although government subsidies may promote certain aspects of organic farming, the decision of farmers and consumers to move to this form of production is still mostly based on personal ethical arguments. Organic farming therefore figures in the top-left part of **value-oriented markets** in our grid. Although costs for farmers and consumers are, sometimes considerably, higher, this market has been growing steadily from a modest 3 % of utilised agricultural land to over 6% between 2000 and 2015.

Organic products are recognisable by various eco-labels, mostly developed in a national context. The development of the [European organic label](#) is an interesting case of how national private ethical initiatives can be complemented by collective government action. Organic farming has been recognised as a solution to environmental problems by the EU and the [farm to fork strategy](#) aims at 25 % of organic land by 2030. This is an ambitious goal, but EU member state Austria has already reached this level. [Worldwide](#), some states do better than the EU, for instance Uruguay (14 %) and small island states in Oceania. In North America and Asia, organic land mostly represents less than 1 % of agricultural land.

**Figure 8:** evolution of the share of the organic area in the utilised agricultural area of the EU

Source: [European Commission](#)

## Forests

**Deforestation causes serious challenges worldwide**, because of both legal and illegal logging. Although forestry in Europe is highly regulated, even here recent trends seem to show an increase in [deforestation](#). Deforestation is not only due to the need for wood, but also to make space for agriculture and livestock farming, often for export markets, as a [study](#) on trade and deforestation shows. In Brazil, for instance, beef production causes six times more deforestation than soy production. Illegal logging not only causes environmental degradation, but also harms legitimate businesses and deprives governments of taxes.

Sometimes **governance failures** lead to deforestation. In Indonesia, in 1997-1998, a law for easier access to cleared land unintentionally encouraged the local population to burn forests, leading to dense smoke in Indonesia, Malaysia and Singapore. Like land grabbing, forests can also face expropriation by foreign businesses. Strong laws and enforcement can prevent disputes and ensure sustainable forest management. Finally, wars can cause clearing and destruction of forests. [Wars also weaken institutional powers and forest management](#) and see increases in illegal logging activities. Another important cause of deforestation is **insufficient corporate accountability**. A [recent study](#) on the Brazilian province of Mato Grosso showed for instance that almost all deforestation on soy farms had been conducted without the necessary licenses. Some 80 % of illegal deforestation in the province could be traced back to only 2 % of soy farms supplying a few companies exporting mainly to China and the EU. On top of the negative trend, many countries in South America and Southeast Asia saw increased activities in illegal logging and mining during the COVID-19 [lockdowns](#).

Corporate social responsibility and consumer awareness lead to use of **self-certification schemes**. Usually, an independent third-party assesses the quality of forest management and production against the requirements of a public or private certification organisation. The Forest Stewardship Council ([FSC](#)) label was created by a group of businesses, environmentalists and community leaders after the 1992 Earth Summit in Rio failed to produce an agreement on deforestation. The FSC was incorporated in the **EU Forest Law Enforcement, Governance and Trade (FLEGT)** Action Plan, launched in 2003. It helps partner countries to build systems to verify whether timber has been harvested legally and promotes transparency. In 2013, the **EU Timber Regulation** entered into force, which aims at halting the trade in illegally harvested wood or wood products.

Whereas certification schemes do not resolve all problems regarding deforestation, countries need to **strengthen multilateral cooperation** in augmenting corporate reliability. Regional examples are the Confederation of European Forest Owners ([CEPF](#)), an umbrella association of national forest owner organisations, the protocol on sustainable forest management of the [Carpathian Convention](#), which involves five EU states and Serbia and Ukraine, or the ASEAN Agreement on Transboundary Haze Pollution ([AATHP](#)), signed following the 1997-98 fires in Indonesia. On the global level, with 36 producing and 38 consuming members, the intergovernmental International Tropical Timber Organisation ([ITTO](#)) intends to promote the sustainable management and conservation of tropical forests.

### 4.3 Global trend

Water, land or forests were for a long time abundantly available as basic elements of the world ecosystem, Agricultural societies have dominated in Europe beyond the Middle Ages. By the mid-20th century, agricultural production based on fertilisers and pesticides became the norm. Population growth and the development of more complex societies required common governance of these resources. The story of the Common Agricultural Policy (CAP) is a paradox of initial mistakes leading to overproduction and pollution and gradual reforms to bring the derailed markets back to more sustainable methods. The CAP is on the right side of our grid, both above and below the horizontal axis, pursuing both EU food security, making the EU less dependent on other states, as well as saving ecosystems through sustainable agriculture. The expansion of agriculture and urbanisation at the expense of forests made European countries aware of the need to protect the remaining forests. The management of freshwater reserves, rivers or lakes equally grew in intensity with population increase and urbanisation. Overall, **European countries tend to have and enforce legislation to manage water, land – including its agricultural produce – and forests**. In doing so, they have found a relative balance between market forces and governance.

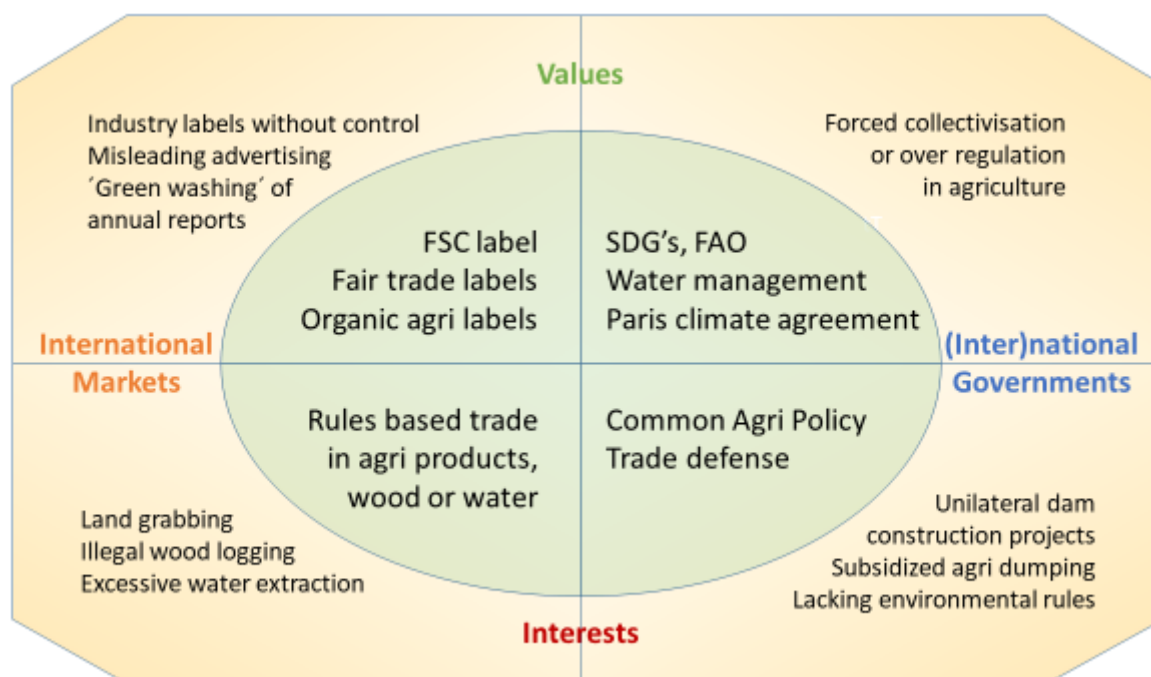
On the other hand, colonisation of other parts of the world by European countries often broke the balance of those societies, who were forced to produce monocultures for the European market. They became dependent on European states and market forces pursuing their own interests. After decolonisation, many **newly independent states suffered governance problems, swaying the balance back to interest oriented markets**. In these states, now known as ‘developing countries’, property rights and trade structures often remained in foreign hands, and lack of knowledge and economic alternatives left them few other options than to continue exploitation of forests or land for the world market. The phenomena of land grabbing by foreign companies or speculation with food prices on financial markets have sometimes worsened the situation. The management of water is equally mostly lagging behind European standards. Efforts to rebalance this by multilateral cooperation through specialised UN organisations such as FAO, IFAD, UNCTAD or UNEP faces several problems. Firstly, each of these organisations only has competence for a specific area, whereas the problems they face are cross-cutting. Secondly, they also often lack legal or economic means to fully implement their programmes. The UN Sustainable Development Goals and the negotiations on a UN agreement on [business enterprises and human rights](#), launched in 2014, attempt to address these issues in a more horizontal manner. Regarding the latter, international law only recognises states as legal actors, which complicates enforcing obligations on businesses.

Fortunately, private values-based initiatives have tried to contribute where governments could not do enough. The development of **fair trade and eco labels related to forestry and organic agriculture mark the rise of a more ethical form of capitalism**. Nevertheless, they often serve small niche markets of conscious consumers who can afford to pay more for social and ecological quality. Moreover, they sometimes encounter problems in guaranteeing the fairness of their products throughout the value chain. This leaves us with a global trend of continued tension between market interests and governance efforts, flanked by hopeful ethical initiatives. Open wars over land or water are rare in our times, but unilateral dam



construction projects or unfair competition based on unsustainable production or subsidised exports are still threats to a healthy global balance.

**Figure 9:** Global trends for water, land and forests



Unfortunately, **even value oriented efforts of states and private actors may have shadow sides**. On the top-right side of our grid, well-intentioned government policies may backfire if their implementation is not balanced, as we have seen with the early CAP. History provides more and less extreme examples of organised upscaling of agricultural enterprises that ended in human or ecological failures. Similarly, over-ambitious efforts to control rivers have sometimes put them into 'straightjackets' that increase flooding instead of reducing it. On the top-left side of our grid, we note that not all private actions are genuinely ethically inspired. Since 'green labels' also have commercial value, presenting unsustainable products as green has become regrettably common and is popularly known as 'greenwashing'. Commercial advertising, unfortunately, has a long history of disinformation.

**The most visible global trend in this area seems therefore to be the pursuit of interests, mostly by markets, which often harm the interests of people in developing countries and the global ecological balance.** Prior to the COVID-19 crisis, the European Parliament requested studies on topics such as [Trade and Biodiversity](#) or [Biodiversity as a Human Right and its Implications for the EU's External Action](#). In particular, these ecological aspects linked to biodiversity and health have gained more attention since the COVID-19 crisis.

Post-COVID-19 reflections have also led to calls for more 'strategic autonomy' in Europe. 'Reshoring' of industrial capacity to Europe is being discussed. For many industry sectors, this may be complex or impossible. However, rethinking value chains may be particularly suitable for the sectors of water, land and forestry. Focussing more on regional production of wood, agricultural products and fresh water will not only increase economic autonomy but also lead to ecological gains by reducing transport costs and emissions. The positive side of the crisis would thus be a **possible paradigm shift towards more sustainable value chains**. Such green solutions may play a more integral role in the EU Green Deal or any successor strategy.

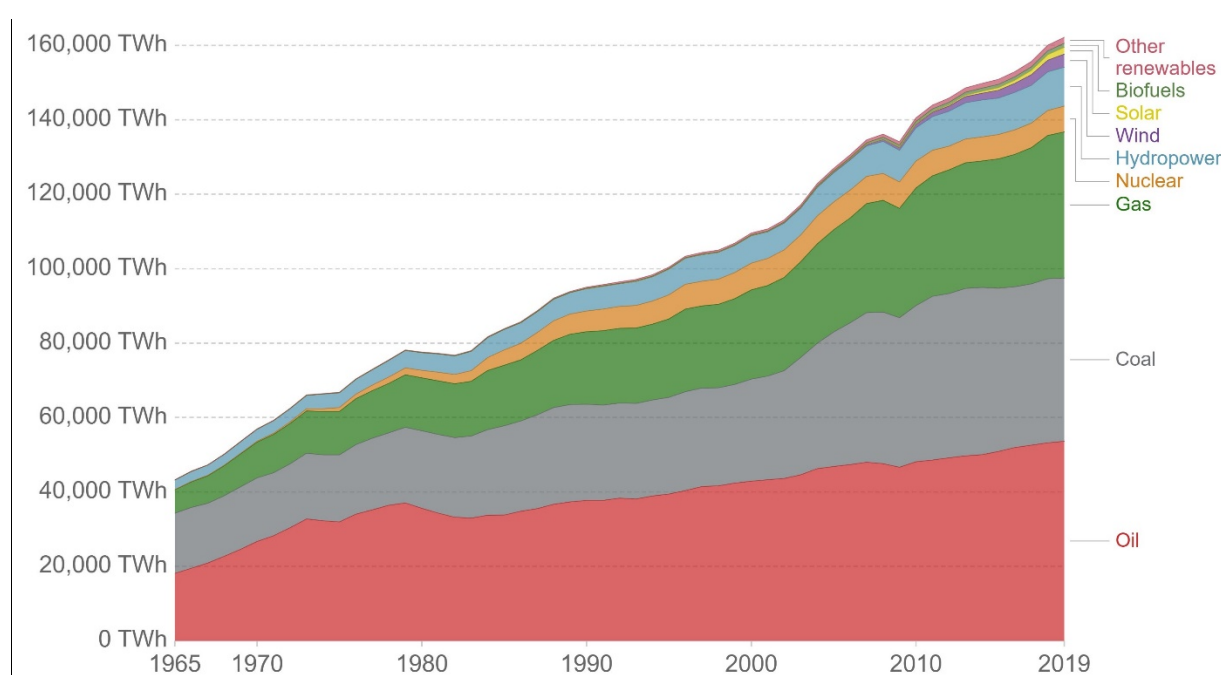


## 5 Energy resources: the predominance of interests

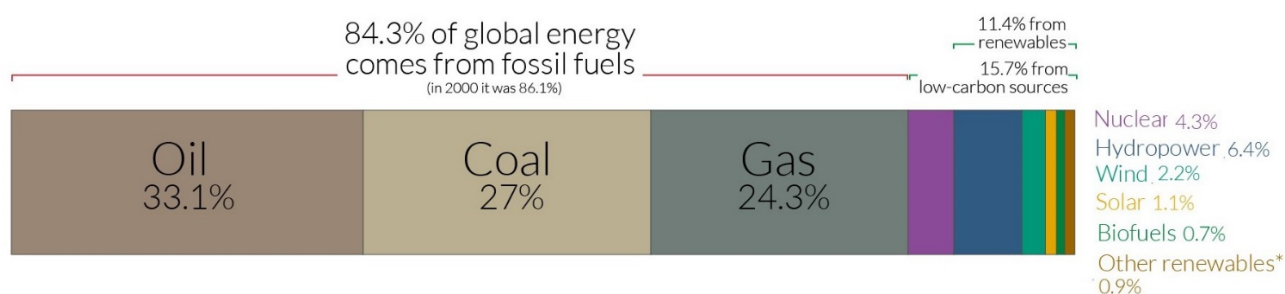
### 5.1 Availability, markets and governance

World energy consumption has risen enormously since the 19th century, particularly since 1945. The use of physical power from animals or humans and the burning of wood have mainly been replaced by the three fossil fuels oil, coal and gas. These energy resources are not 'renewable'; they are finite. Even though new reserves of fossil fuels are being found, there is a physical limit to their availability in the earth. The same goes for uranium, the main resource for nuclear power generation. By contrast, renewable resources are those naturally replenished after use. The most commonly used renewables are hydropower, wind, solar energy and biofuels.

**Figure 10:** World energy consumption by source since 1965 (in Terawatt-hours TWh)



**Figure 11:** Global primary energy consumption by source in 2019



Source figures 10 and 11: [OurWorldinData](https://ourworldindata.org) based on BP Statistical Review of World Energy 2020

(Notes: graphs are based on the substitution method which takes account of inefficiencies in energy production from fossil fuels. 'Other renewables' includes geothermal, biomass and waste, wave and tidal energy, but not traditional biomass)

The distribution of these resources is called the energy mix. In 2019 about 84 % of energy consumption worldwide was from the three fossil fuels (oil, coal and gas). Only around 16 % came from low carbon

resources. Deducting from these the share of nuclear energy leaves only 11.4 % for renewable resources. The share of renewables is growing slowly, but is likely to stay relatively small in the years to come. The following sections will map future availability, market developments and governance characteristics of the main energy resources in the world energy mix.

## Coal

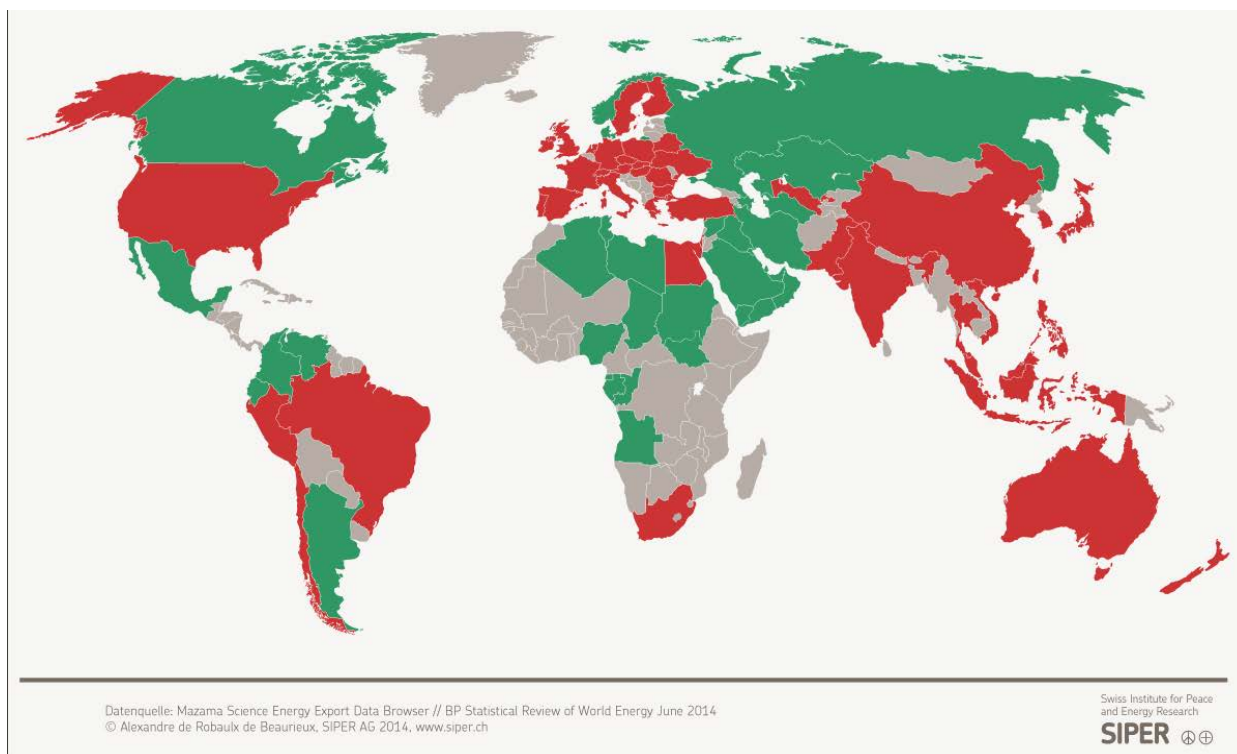
The use of steam engines during the industrial revolution created worldwide incentives for coal mining and incentivised trade in coal. Coal was more efficient, easily accessible and cheaper than previous wood based fuels. After its extraction, the coal is crushed, stored and sent to the end user by land, sea or even through pipelines by mixing the coal with water or oil. The most important states in the value chain are the US, which possesses around one fifth of global coal reserves, followed in descending order by Russia, Australia and China. Starting in the 1950s, the capacity of coal energy plants steadily rose and since 2000, the world has doubled its coal power capacity. This accounts for almost 40 % of electricity generation and the same amount of energy-related carbon dioxide emissions. However, across the EU and the US, several coal power stations closed down in recent years. The reasons vary from outdated technology and emission reduction policies to industrial policies. Combined with a slowdown in new power plants, the **number of coal units operating around the world fell for the first time in 2018. However, coal electricity generation capacity significantly rose in India and Southeast Asia.** This production rise is also driven by lower demand in Europe and the United States, which leads to higher availability and lower coal prices on the market. In practice, due to its high transportation costs, the international trade market for coal has been mainly limited to neighbouring countries.<sup>2</sup>

## Oil

The true globalisation of the value chain in the energy sector has only started with the ascent of oil as natural resource for combustion in the 19th century. The oil market is a typical example of substantial distance between the main production sites and consumer markets (figure 1).The **oil industry has mostly been characterised by companies who control the whole value chain** from extraction, transport and refining to the sale of final products. Systematic oil production started in the US, where Rockefeller built up an empire that was later broken up by US antitrust law. In general, the sector has had several forms of cartels, be it secret concerted action of private companies or open setting of market conditions by state-led organisations such as OPEC. Until the 1980s, five American companies (Exxon, Mobil, Chevron, Texaco and Gulf Oil) and two European ones (BP and Shell) – known as ‘the seven sisters’ – dominated the world market for oil. Currently, state owned companies such as Saudi Aramco, Kuwait Petroleum, Pemex (Mexico) or Statoil (Norway) dominate the world market, although they are less visible to consumers because they don’t operate gas stations on the highways under these names. In the course of the 20th century, **the oil sector has been increasingly characterised by state interference.** Such interference tends to begin with anti-trust legislation and other conditions or partial ownership, and the industry has been nationalised in several countries.

<sup>2</sup> Global Energy Interconnection, Zenha Liu, Academic Press, 2015, p.11

**Figure 12:** Net oil exporting (green) and importing (red) countries in 2013 (grey: no data available)

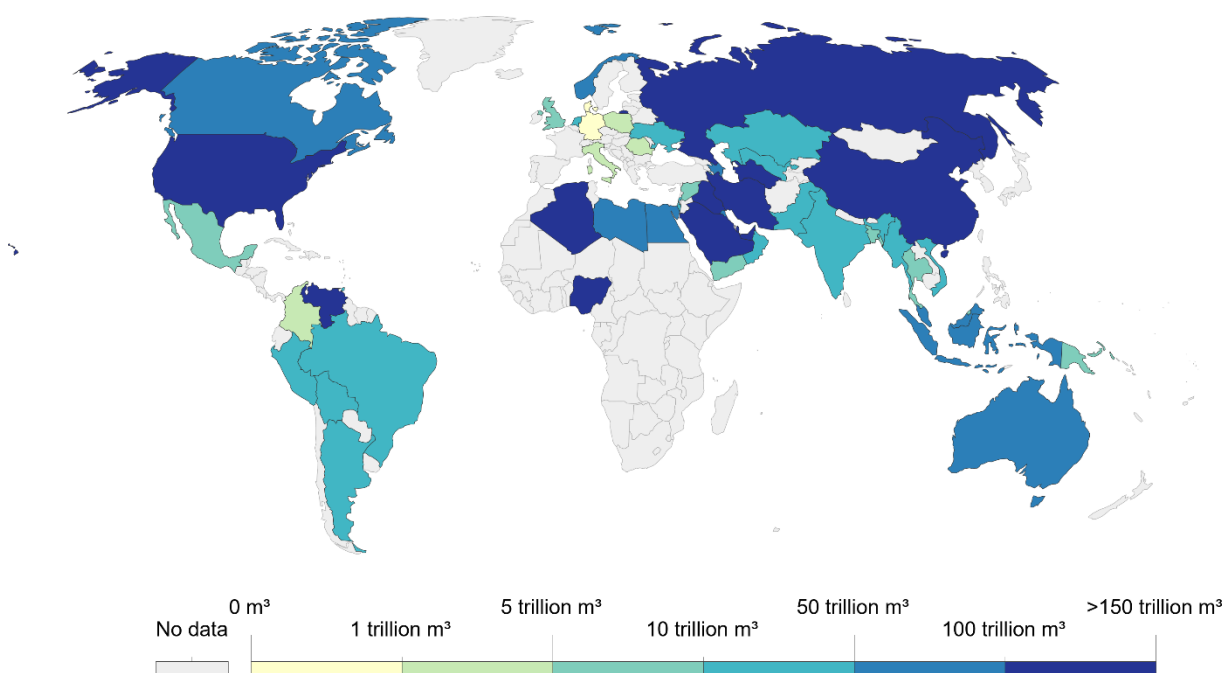


Source: [Siper](#), Swiss Institute for Peace and Energy Research

The end date of fossil fuels has often been predicted and equally often been adjusted. Some use these miscalculations as an argument to reject all end-dates, but it is a physical fact that the amount of fossil fuels in the earth is limited. An end date does not only depend on availability, but also on the pace of extraction and consumption. Scientists therefore now use 'Peak Oil' as an indicator, the moment of maximum production capacity which by definition is the beginning of decline. 'Peak Oil' can be calculated for individual oil fields and by extrapolation for countries or the whole world. **According to the International Energy Agency (IEA), Peak Oil at world level has most probably been reached in 2006.** Another way to look at the limited availability of oil is to compare the number of new discoveries with production. This shows that since the 1980s the world is producing (extracting) more oil than it discovers.

## Gas

Great Britain was the first country to commercialise the use of natural gas in the late 18th century. The construction of the first well intended to obtain natural gas in the US dates back to the early 19th century. Gas was in those days used as a source of light. With the advent of electricity at the end of the 19th century, gas suppliers looked for alternative uses. The invention of temperature-regulating thermostatic devices and the construction of pipelines eventually led to the reliable gas supply infrastructure we have today. The value chain of natural gas, similar to that of coal and oil, starts with exploration, drilling and extraction, before it is transmitted from the gas fields to consumers through pipelines or ships containing liquid natural gas (LNG). Its main consumers are power generators, industry, and households. Natural gas reserves are distributed across the planet, but **Russia, Iran and Qatar possess more than half of total proved gas reserves in 2019.** Like coal and oil, natural gas extraction and supply are highly regulated industries

**Figure 13:** Proved natural gas reserves in cubic meters, 2018

Source: BP Statistical Review of World Energy (2019), OurWorldInData.org/fossil-fuels/ CC BY

Because of its wide availability, **peak gas** has not been investigated as much as peak oil, but the biggest and easiest accessible gas fields have already been extracted or show decreasing yields. An example of how far drilling companies are willing to go is the challenging and cost-intensive exploitation of gas fields in the polar regions. Once a gas field is discovered, it is rapidly brought to its maximum production with yields declining shortly afterwards. Prominent examples of falling gas production rates in Europe are the United Kingdom and the [Netherlands](#), which has been the main Western European gas producer until now. Natural gas being the conventional primary energy source with by far the highest consumption growth rates in recent years, peak gas could occur earlier than expected.

## Uranium

Although Uranium was discovered in 1789, the science of nuclear fission only began to develop rapidly between 1939 and 1945 while building the atomic bomb. From 1945 onwards, the focus went to using this energy in a controlled way for electricity and developing reliable nuclear power plants. The global stocks of identified uranium resources are mainly distributed among 15 countries that are either major producers or plan to expand their nuclear generating capacity. These **15 countries possess 95 % of identified global uranium resources**, with the remaining 5 % distributed among another 22 countries.

Over two-thirds of the [world's production of uranium](#) from mines comes from Kazakhstan, Canada and Australia. In Kazakhstan, one national operator is the world leader in uranium extraction and exports. In 2018, more than half of [Kazakhstan's supply](#) was reportedly sent to China and almost 20 % each to Canada and Russia. Almost 40 % of [Australian uranium](#) goes to the US and 35 % to Europe. Due to their increasing dependence on nuclear energy, Japan, South Korea, China and India also are important customers for Australia. Main European uranium consumer France is [acquiring its uranium](#) from the three main producers Kazakhstan, Canada and Australia, as well as from Niger. Many uranium producers are state-owned companies.

**Figure 14:** Global distribution of identified Uranium resources



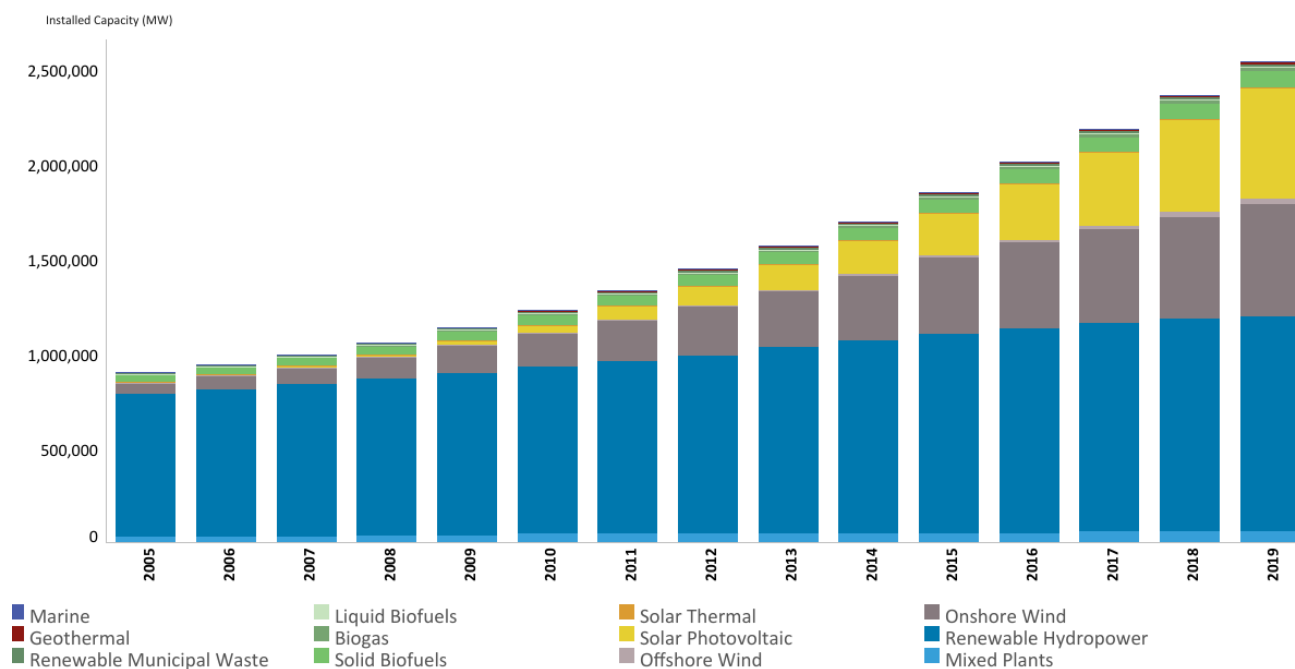
Source: OECD Nuclear Energy Agency (NEA) based on data as of 2017

Around 10 % of [world electricity production](#) stems from nuclear energy. The country with the highest nuclear generation power is the US, followed by France and China producing around half that amount, Russia, producing around one fourth of the amount generated by the US, and Japan. However, the [nuclear share](#) of total national electricity generation gives a different picture: France leads with a share of around 70 % in 2019. Following the 1973-74 oil crisis, France expanded its nuclear capacity to achieve greater energy security. Ukraine, Slovakia, Hungary and Belgium have a nuclear share close to 50 %, while Slovenia, the Czech Republic, Finland and Sweden produce 30-40 % of their energy through nuclear power. The US, Russia and the UK have a share of around 20 %. Main uranium producer Canada equally produces only 20 % of its energy through nuclear power. China, the third largest producer of nuclear energy in absolute terms, solely exhibits a nuclear share of 5 %.

As a low-carbon emission energy source, nuclear power will for many governments remain a viable opportunity for many years to come in order to accomplish the objectives of the Paris Climate Agreement. For other countries, the significant security risk of atomic pollution through nuclear accidents and non- sustainable storage of nuclear waste makes other options preferable. In any case, because of security risks as well as an increased geopolitical focus on nuclear energy, the sector is likely to remain strongly regulated.

## Renewables

Renewable energy is defined as energy produced from sources that do not deplete or can be replenished within a human's life time, in contrast to non-renewable fossil fuels and uranium. The historical production of renewable energy has been marked by biofuels such as wood and agricultural waste biomass. Together with hydropower, they accounted for almost all renewable energy consumption until the 1980s. From then on, consumption of other renewables such as solar or wind as well as hydropower rose. Solar, wind, and hydropower energy sources are sometimes coined 'modern renewables', explicitly excluding biofuels.

**Figure 15:** Trends in renewable energy

Source: International Renewable Energy Agency ([IRENA](https://www.irena.org/))

Hydropower, wind and solar energy have been the main renewables since the 2000s. **Growth has been strongest in solar and wind energy. China is the world leader in total production of renewable energy**, mainly hydroelectric power. China is also the largest producer and exporter of photovoltaic panels. Other important renewables producers are Canada, generating about one third of China's electricity volume, Brazil, the US and Russia.<sup>3</sup> Due to their negligible carbon footprint, modern renewables are critical to reach the energy transition and climate goals set in SDG number 7 and the Paris Climate Agreement. Investments in renewable energy are highest in China, followed by Europe and the US. **The EU has set the target of 20 % energy from renewable sources by 2020.** The EU as a whole is [well on track](#) to achieve this goal, having reached an average of 18 % in 2018. However, considerable differences between member states exist, stretching from 54 % in Sweden to just over 7 % in the Netherlands.

## 5.2 Balancing interests, collective action and ethics

### Coal

Coal mining causes environmental damage to the landscape and ecosystems, and groundwater pollution by heavy metals in the energy generation process. The use of coal also creates high levels of greenhouse gases and air pollution through fumes and fine dust. This is why **coal has an increasingly negative image**. Apart from economic arguments, this harmful influence provides an incentive for abandoning coal power plants. The reduction in coal energy use has therefore become a trend in Europe and the United States. Nevertheless, differences in coal policy remain. Whereas some countries have already abandoned coal in the 20th century, others (like Germany or Poland) are slowly transitioning towards this goal or have not

<sup>3</sup> International Renewable Energy Agency (IRENA), 2017



decided whether to do so. The increase in coal use in India, Southeast Asia and particularly China puts this region at the top of the carbon dioxide emissions rank.

Concerns about pollution of fossil fuels have led to some international governance action. As part of the Convention on Long-range **Transboundary Air Pollution**, addressing major environmental problems of the UNECE region, in 1988 the [Protocol concerning the Control of Emissions of Nitrogen Oxides or their Transboundary Fluxes](#) bound signatories to limit their nitrogen oxide emissions and to introduce pollution control measures. Nitrogen oxide pollution is emitted from the burning of fossil fuels, namely: coal, oil, diesel fuel and natural gas, particularly from electric power plants.

International cooperation regarding coal is, apart from combating air pollution, is however rare. The foundation of the **European Coal and Steel Community** (ECSC) in 1951 was an exception. Although the original goal of the famous Schuman plan was preventing further conflicts between France and Germany, the ECSC also laid the foundation for a European energy policy and for the European Union itself. The EU acquired far-reaching powers to regulate the European energy market. Outside Europe, there is no comparable multilateral structure and coal is mostly organised and regulated by national institutions.

## Oil

Oil production can have at least three kinds of downsides: environmental damage, non-respect of human rights and geo-economics, ultimately leading to war. The transportation of oil in pipelines but even more on open seas carries a **risk of oil spills**. Major oil tanker accidents (such as those of the Amoco Cadiz near the French coast in 1978, the Atlantic Empress near Tobago in 1979 and the Exxon Valdez near Alaska in 1989) put the issue on the political agenda. Shell UK's plan to sink the dysfunctional oil platform 'Brent spar' in the Atlantic ocean led to public outrage in 1995, making the company choose deconstruction instead. The oil spills supported led to multilateral cooperation. On a regional level, the [Cartagena Convention](#) of 1986 addresses oil spills in the Caribbean region. On a global level, the introduction of double hull tankers was crucial. **Safety legislation for the high seas can only be adopted through international governance, in this case the International Maritime Organisation (IMO)**. Crucial instruments are for instance the International Convention for the Prevention of Pollution from Ships (MARPOL Convention) and the International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC).

The oil industry has also been criticised for the fact that its activities in developing countries often do not contribute to their economic development and sometimes even lead to **worsened living conditions for local inhabitants**. Oil company Shell attracted public criticism in the 1980s for its presence in South Africa during the apartheid regime, and later for oil spills in Nigeria from pipelines, which affected local people. Although Shell granted compensation and clean-up work has started, demands for [more action](#) continue. Human rights issues like these are difficult to address legally, as international human rights law in most cases needs to be enforced through national courts in the country concerned or the countries of establishment of the oil companies, even though value chains are global. At both levels victims face legal and practical barriers. Better access to justice is part of the intergovernmental negotiations on an agreement on business and human rights, mentioned in 4.3.

Furthermore, states have considered access to oil of such importance, that they have been willing to exert economic, political and even military pressure on other countries for its sake. **Oil has become the example par excellence of geo-economics**, which can probably best be illustrated by the case of the **Middle East**. Oil production in the region was first dominated by the UK and later the US, who used all political and military options to this end. The UK was first to find oil in Iran (then Persia) in 1908, and tried to hold off German attempts to share in the profits via construction of the Baghdad railway line. The railway failed due to resistance from Serbia and the outbreak of the First World War, but some authors suggest that the UK

influenced the timing of the outbreak of the war as part of its attempt to monopolise Persian oil<sup>4</sup>. Regardless of the UK's exact role, the reality is, that Germany never became a player on the oil market, whereas the UK controlled Iranian oil through its Anglo Persian Oil Company (later British Petrol, BP) until 1951. In the Iraqi Kirkuk oilfields, found in 1927, the UK could not avoid competitors and shared licences with Royal Dutch Shell, French Total and American Exxon and Mobil. British predominance in Middle East oil production was gradually taken over by the United States. This is particularly due to a USA-Saudi Arabia deal struck in 1945, securing an American monopoly on oil production in exchange for military support and profit sharing. US assistance to the UK in overthrowing the Iranian government of Mossadegh in 1953, who had dared to nationalise the oil industry, ended British predominance in Iran, moving 40 % of the local oil production into the hands of US companies. American influence in Iran, however, suffered a backlash when Ayatollah Khomeini came to power in 1979 and renationalised the oil industry. Since then, the region was torn apart by wars in which oil played a major part, also known as the **three Gulf Wars**. The first one, the Iran-Iraq war of the 1980s, could be seen as a conflict between the Shiite Iranian and Sunni Iraqi regimes for domination of the region. However, it also involved Western military support for Iraq, and – through what was known as the 'Iran-contra affair' – US support to Iran. The second Gulf war of 1991 led to involvement of US ground forces in the liberation of Kuwait, starting a long term US military presence in the region. The US-led 2003 invasion of Iraq was unprecedented, as it was not only a military invasion and occupation of an oil producing country, but also based on fabricated evidence about alleged 'weapons of mass destruction'. The supposed aim of bringing democracy and stability to Iraq backfired into more instability and violence instead.

After its surge in the 19th century, the oil market was mainly led by private entities in North America, Europe and Russia. Once the Middle Eastern oil producing countries had gained more self-confidence and economic power, they started to demand greater shares of the profits and influence over the extracting industries. This finally led to complete take-overs, such as in the case of Saudi-Aramco. In 1960 they joined forces and founded the **Organisation of Petroleum Exporting Countries (OPEC)**, which led to nationalisations of Western industries. Since the 1960s, the above mentioned 'seven sisters' oil companies had to share the market and power with OPEC and other national oil companies.

## Gas

Gas, similar to oil, can cause environmental damage and can become an instrument of geo-economics. Global warming emissions from burning gas are lower than those of oil. However, the infrastructure required for gas drilling also changes land and ecosystems. Large scale gas extraction can lead to lowering ground levels, ultimately leading to **earthquakes**, as experienced in the Netherlands. Furthermore, the technique of hydraulic fracturing, informally referred to as 'fracking', involves injecting water, sand and chemicals under high pressure into a rock formation, which can lead to **ground water pollution from chemical spills** and was also linked to earthquakes, as reported in the State of [Oklahoma](#) in the US. The US increasingly uses fracking to reduce its dependency on foreign oil and gas.

Peak-oil being passed, natural gas has gained in economic importance. Production in the Netherlands, the main West-European gas producer, is rapidly declining and the EU now faces **increasing dependency on import from countries outside the EU**. Russia, in particular, can profit from increased demand, combining the advantages of its vast resources and geographic proximity. Russia could use its position to put pressure on countries, as it did with Bulgaria or Ukraine. Russia and Ukraine are caught in a complex diplomatic struggle. Ukraine is trying to become independent of Russian gas while seeking income from transporting that gas westward. Increased Russian imports in the EU were met with disapproval from some Central European states, who share negative experiences of Soviet domination. The US also criticised the EU for its alleged dependence on Russia. This criticism culminated in US sanctions against the completion of the

<sup>4</sup> William Engdahl, quoted in Ganser 'Europa im Erdölrausch: Die Folgen einer gefährlichen Abhängigkeit' p.59

Nordstream-2 gas pipeline from Russia to Germany. However, the US's geo-political concerns have an underlying economic interest: the desire to sell American shale-gas as Liquid Natural Gas to European markets.

Gas distribution within Europe is regulated by the [EU Gas Directive](#) of 1998, which aims to create a competitive gas market within the internal energy market. A 2009 [Directive](#) addressed (amongst other issues) third-party access and an amendment in 2019 permitted derogations for existing pipelines to and from third countries. It also set out procedures for negotiations with third countries and for exemptions for new pipelines. On a global level, the leading gas exporting countries met in Iran in 2001 to launch the **Gas Exporting Country Forum**, which promotes coordination and collaboration among its member countries.

## Uranium

Nuclear energy and its basic resource uranium pose specific challenges to the international community: reactor safety, waste management and the link with nuclear weapons. As regards **reactor safety**, nuclear incidents in Harrisburg in the US (1979), Chernobyl in Ukraine (1986) and Fukushima in Japan (2011) have exposed the vulnerabilities of nuclear energy and reduced public support for it. Germany decided to phase out nuclear energy entirely, but the US, Japan and France continue nuclear power generation. Russia and China are expected to seek a higher nuclear share in their energy mixes to become more independent from energy imports and to build spheres of energy dependence for third countries.

Nuclear safety goes beyond power generation. Although only a small portion of **nuclear waste** is highly radioactive, it presents a high risk because its radiation can last for thousands of years. Unfortunately, countries differ significantly in how they categorise and report on nuclear waste, which hinders transparency. Radioactive waste management remains a mostly unsolved part of the nuclear value chain and has become a major challenge for policymakers. Finland is the only country in the world to have built a deep geological repository. Countries lacking plans to build such facilities risk running out of space in their interim nuclear waste storages. The US possesses a functioning repository. However, it is only designed for waste from nuclear weapons, not from commercial reactors.<sup>5</sup>

Such **nuclear weapons** pose a further challenge to the international community. As leftovers from the Cold War, the US and Russia possess most of the world's nuclear weapons. France, China, the UK, Pakistan, India, Israel and North Korea also have them. The latter four countries did not sign (or in the case of North Korea, withdrew after signature) the Nuclear Non-Proliferation Treaty (NPT), aimed at preventing the spread of nuclear weapons. Other countries may therefore come into possession of nuclear weapons in future. Although the Comprehensive Nuclear-Test-Ban Treaty Organisation (CTBTO), founded in 1997, is another effort to halt the spread of nuclear weapons, a risk remains of countries developing weapons themselves. The technology for nuclear power generation can be used as a stepping stone to building an atomic bomb, which is why Iran has recently faced substantial scrutiny. Further efforts to de-escalate conflicts and regulate the uranium market are necessary to guarantee future safety.

Fortunately, the **need to regulate uranium and nuclear energy** has been recognised from the start. In Europe, the Rome Treaties of 1957 established the **European Atomic Energy Community** (EURATOM) alongside the European Economic Community (EEC). Initially, EURATOM was aimed at creating a market for nuclear power, providing its member states with reliable energy and selling its surplus to non-members. During the years its scope significantly increased and shifted towards nuclear safety within the community. The **International Atomic Energy Association** (IAEA) was also created in 1957, responding to fears of abuse and contamination and aiming at safe management of the expected growth in the nuclear sector.

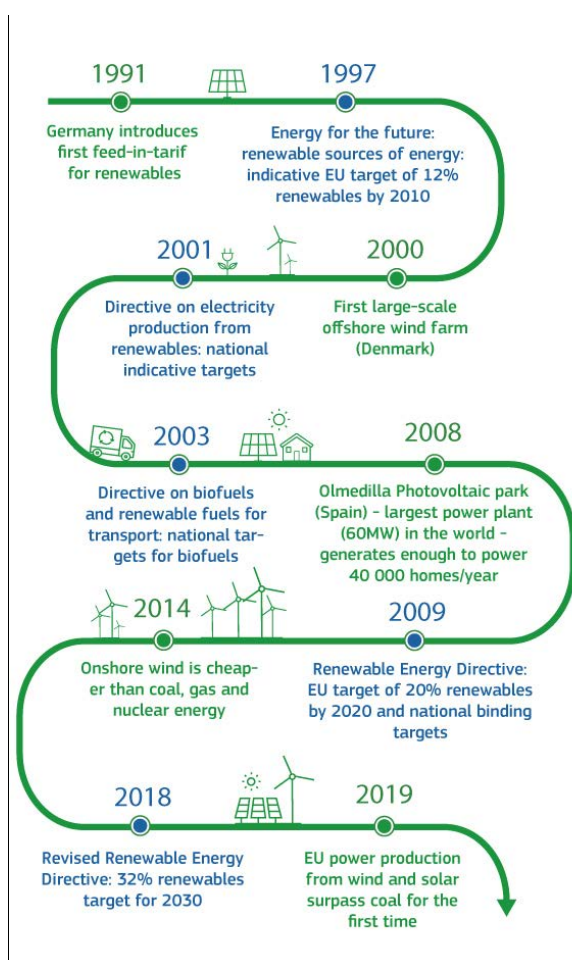
<sup>5</sup> [The World Nuclear Waste Report - 2019](#)

## Renewables

Although renewables are a clean and forward-looking source of energy generation, **even their use causes challenges, which are, paradoxically, mainly linked to environmental concerns.** Whereas for instance electricity generation with urban waste biomass creates a win-win situation, the use of wood can lead to increased unsustainable wood logging. Dam projects including hydropower generation can have negative impacts for the local environment as well as on downstream countries, such as reduced fish numbers or increased flooding. Even modern renewables like wind and solar bear certain risks. Solar and wind farms require a lot of land and wind parks are also connected to harming wildlife by killing birds, as well as by disturbing nearby settlements through increased noise levels.

However, **the general consensus is that the benefits of renewables outweigh the downsides**. These benefits are low or zero carbon emissions and (for some countries) decreasing dependency on imports of fossil fuels. In other words, climate policy and energy security prevail when further developing renewables. More specific policies can address some of the downsides of renewables. Biomass incineration could for instance focus more on [urban waste](#), which currently constitutes only a small portion of biomass. Dam projects should be coordinated with downstream countries and locations for wind or solar projects can be located where they do the least harm.

**Figure 16: Key dates for EU renewables**



Since the 1990s, the EU has been developing policies promoting renewable energy. The 2015 EU energy strategy plans an Energy Union in which (besides energy security and an internal energy market) energy efficiency and climate action are main elements. The latest step in this process, the 'clean energy for all' legislative package of 2018-19, contains a binding target of 32 % renewable energy sources in 2030, for which member states must present plans. Despite considerable differences between member states, these common targets indicate they are willing to cooperate.

Worldwide, we can see the beginnings of international organisation on renewables. An **International Renewable Energy Agency** ([IRENA](#)) was proposed in 1981 at the United Nations Conference on New and Renewable Sources of Energy. Cooperation between NGOs, lobbying groups and governments eventually led to its foundation in 2009. This is the first multilateral organization to concentrate on renewable energy supports for Member States in achieving their transition to a sustainable energy future. The World Council for Renewable Energy ([WCRE](#)), an independent global network of NGOs, as well as the World Wind Energy Association ([WWEA](#)), advocating wind energy worldwide, are important supporters of the IRENA.

Source: [European Commission](#)

Nevertheless, there are two fundamental risks of renewable energy that people are only just beginning to discuss openly. The first is **fluctuation in the production of renewable energies, particularly solar and**

**wind, and the lack of viable storage options in the form of batteries.** Substantial development of the battery sector would require substantial amounts of chemicals and rare earth elements. Rare earth elements are also required for the construction of solar panels and wind turbines. Therefore, development of solar and wind energy will push demand for rare earth. As the next chapter will show, this natural resource will likely become the bottle neck of the future. The second, more fundamental, risk is linked to energy efficiency, one of the elements of the EU energy strategy. Although consuming less energy seems the cleanest solution possible, **energy consumption reduction goes hand in hand with extreme insulation of buildings, for which mostly oil and chemical based plastics are used.** These cannot be naturally decomposed and some of them may have adverse health effects, potentially creating future problems similar to asbestos in the past. This issue is rarely considered in building policy and the development of ecological construction is only in its early stage of development.

### Horizontal energy cooperation

Beyond international cooperation in specific energy sectors, several attempts have been made to secure more horizontal cooperation in the field of energy. One of the earliest was the **World Power Conference (WPC)** in London in 1924. The diagnosis of its founders that ‘economic globalisation in the nineteenth century had outpaced national politics and that political institutions now needed to catch up and develop the capacity for international exchange and regulation’ still sounds very apt for the modern age. So do the words of founder Daniel Dunlop regarding the need to overcome historical conflicts: ‘The nations of the world after the great war revealed the need for a conference of practical men, scientists, engineers, manufacturers, financiers and politicians, to consider the utilization of the forces of nature, in the light of a new internationalism, and to attempt to discover a means by which the nations of the world might be preserved from the constant actions and reactions of past history, and might all advance together.’<sup>6</sup> Advancing together remains a challenge and even today’s **World Energy Council** (successor of the WPC) still lacks executive powers.

Nevertheless, crises lead to new initiatives. Whereas the WPC was a reaction to the First World War, the **International Energy Agency** was created in response to the 1973-74 oil crisis. Industrialised countries were then faced with an oil embargo by major producers, such as Saudi Arabia and other Arab nations. Initially created to ensure the security of oil supplies in light of price hikes, it evolved towards a forum for global energy debates. Similarly, in response to the dissolution of the Soviet Union, the European Energy Charter (EEC) in 1991 aimed to enhance cooperation and integration in energy markets between western and eastern European as well as central Asian states. It led in 1994 to the **Energy Charter Treaty (ECT)** and the Protocol on Energy Efficiency and Related Environmental Aspects ([PEEREA](#)) as a means to deepen Eurasian cooperation on energy investment, trade and transit. A new step in the process was the signature of the International Energy Charter (IEC) in 2015, a non-binding declaration updating the original objectives. However, several signatory states never ratified the agreement, such as Russia (withdrawing from the process in 2009), Australia, Belarus and Norway. Italy signed and ratified the ECT as one of the first 40 signatory states, but notified its withdrawal in 2015. The withdrawal from and non-ratification of the Charter is also linked to the investor-state dispute settlement (ISDS) provisions in the Treaty, which has affected countries to different extents.

<sup>6</sup> Quotes from: <https://www.worldenergy.org/assets/downloads/A-Brief-History-of-the-World-Energy-Council.pdf>.



## 5.3 Global trend

As we have seen, the extraction, production and sale of fossil fuels – in particular oil but also gas – has been developed by commercial companies in mostly non-regulated markets. We can therefore locate the birth of energy production in the down-left quadrant of our grid of interest oriented markets.

**A first wave of government action started to regulate the sector as early as the late nineteenth century, although only at national level.** After setting economic conditions such as anti-trust law or price regulation, states for instance established safety regulations. However, states did not stop at these value-oriented forms of legislation, but also took a commercial interest in the rapidly growing sector. As energy resources are considered of strategic importance for national economies and – certainly after both World Wars – the military, state involvement turned into state interests. Companies and states have entered into a global competition for access to the best sources of fossil fuels, due to their finite nature. This situates energy resources in lower parts of our grid: that of interests. The ethical record of energy resources has been rather bleak so far, with a past dominated by competition and conflict. Harsh economic competition was quickly followed by interstate competition, which has escalated into political interference or wars. **Decreasing availability is likely to fuel competition in the near future. Energy (in)dependence has become a major issue of geo-economic and geopolitical importance.** Even if this trend does not lead to military conflict, states tend to use more subtle and equally manipulative instruments to pressure others to policy changes, for instance temporary interruption of delivery or economic sanctions.

**The need for international cooperation has regularly been recognised and often made steps forward after international crisis, but stayed relatively weak.** We have seen how the World Power Conference followed the First World War, the ECSC the Second World War and the foundation of the International Energy Agency the 1973 oil crisis. Apart from the ECSC, however, none of these organisations acquired real rule making powers. Only in the high-risk field of nuclear energy has the IAEA acquired some regulatory power. As the World Power Conference noted in the 1920s, national focus and weak interstate cooperation remain the Achilles heel of energy policy. Decisions on the ‘energy mix’ are still taken at national level, with very different outcomes. Decision are often based on national availability, market prices or geo-economic concerns. Energy security is recognised, albeit only in a national context. Outcomes may be suboptimal for humanity as a whole. It is rare to see criticism of another state’s energy mix at multilateral level, although it is often couched in reminders to achieve climate goals or energy diversification. Explicit criticism (such as the US sanctions against the German Nordstream-2 project) can also be used to justify the critic’s national commercial or geo-economic interests.

Nevertheless, **environmental pollution by fossil fuels has become an issue in the late 20th century and initiated a new wave of value oriented government action, including international-level initiatives.** Oil spills at sea led to the MARPOL Convention and Protocol, a necessary international governance instrument where national jurisdictions fail to cover the seas. Air pollution and the global fight against climate change and greenhouse gases led to the development of international cooperation on fossil fuels and their use. The Kyoto protocol and the Paris Climate Agreement are key milestones. Although they depend on national efforts that states can set according to their own perceptions of their needs and capacities, success cannot be taken for granted.

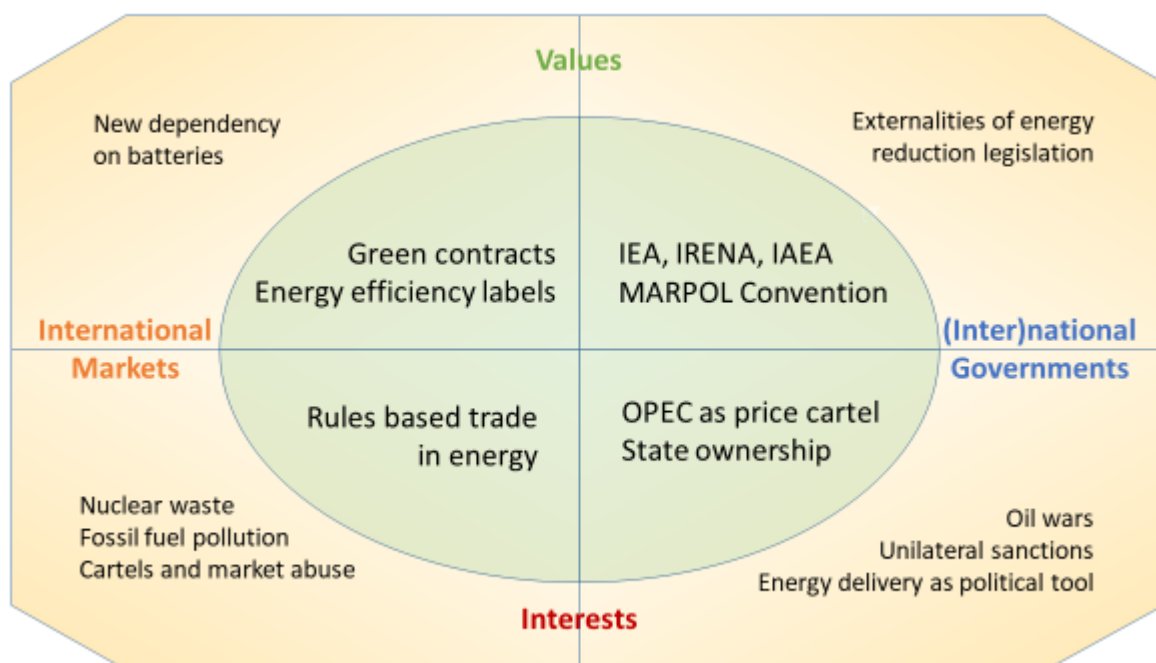
**The development of renewable energy resources, which are supposed to take over from fossil fuels in the medium to long term, marks a qualitative change in energy policy.** Development of green energy strengthens the value-oriented aspect of the energy sector and has often involved both governments and market players. The private sector has been helpful in greening energy supply, developing efficiency labels and offering green energy contracts to consumers. The EU has developed a common energy strategy, creating a level playing field and setting targets for renewables. However,



countries determine their own energy mix, leading to considerable variations between member states, even when the target for the EU as a whole will be achieved. Furthermore, not all regions have the same options for renewables. Nature determines if there is a landscape for hydropower, enough wind for wind farms or sun for large scale solar energy. **Solar and wind power have the additional problem of fluctuation in availability, creating new dependencies on long distance power grids or batteries.** This creates a new dependency on the rare earth materials needed for their production, as the next chapter will show.

Whereas states have managed to tame wild energy markets at the national level in the past century, they have not been able to create sustainable global cooperation on future access to energy resources. The **main global trend seems to be persistent and potentially intensified international competition between states for access to energy resources.** Renewable energy resources may change the technologies or geographic areas affected, but do not seem to fundamentally solve the issue of scarcity and competition. Substantial reduction in energy demand would change the trend, but (limited) success in Europe is largely undone by growth in demand elsewhere. Nevertheless, especially for Europe, with its limited availability of energy resources, changes in energy behaviour seem necessary.

**Figure 17:** Global trends for energy resources



Therefore, the global community still needs to develop multilateral action for safe global access to environmentally friendly energy resources. The EU tries to play its part in this effort through the Green Deal. **A risk of too much value-oriented governance seems difficult to imagine at first sight, but can nevertheless occur in the form of contradictory policies.** Government regulation promoting energy reduction through insulation of buildings can cause increased use of environmentally unfriendly plastics. To avoid such externalities, policies need to be coordinated and well-planned, considering their consequences and overall coherence with the green economy. Adjustments to existing energy policies may be necessary.

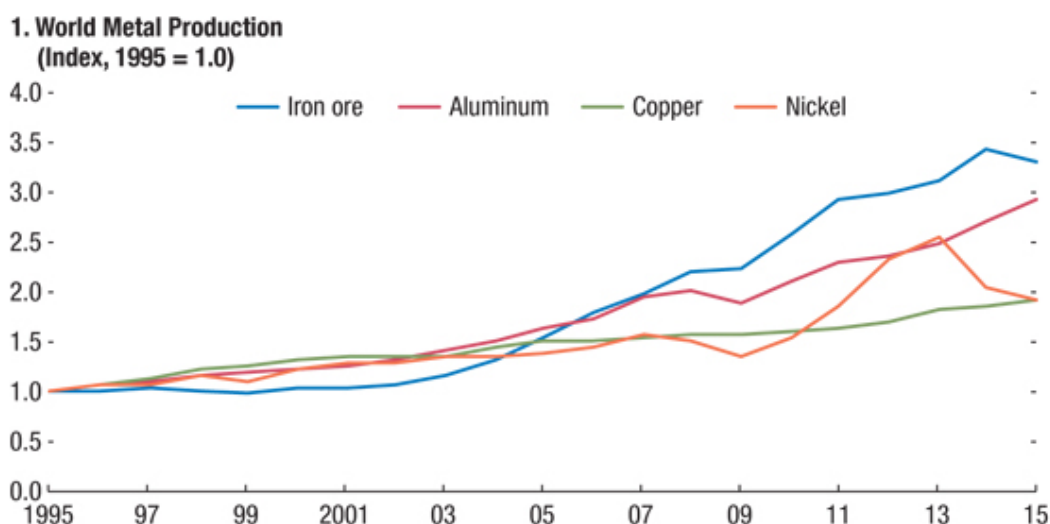
## 6 Rare earths and metals: the new battle field?

### 6.1 Availability, markets and governance

#### Metals

The use of metals marked technological advancements in history. Metalworking began about 11 000 years ago in western Asia, involving copper, lead, gold and silver. Production of the more durable bronze, gained by melting copper with tin, started the Bronze Age around 3000 BCE. This led to a surge of trade in tin, a rather rare metal. The production of iron required a more complex process, using great heat to extract it from rock. Its use therefore spread only around 1200 BCE. Its hardness made it ideal for weapons and tools. Around 700 BCE, people in Peru and Bolivia began smelting copper mixed with gold and silver for making religious and decorative objects. The Spanish conquest turned them into economic commodities and the gold price remains an economic reference. In modern times, more than eighty different types of metals find use in areas like electric lighting, construction or automobiles. The [Mineral Commodity Summaries 2020](#) provide an overview of the main players in production and reserves.

**Figure 18:** Evolution of the metal market



Source: [IMF](#)

**Iron** played a central role in the industrial revolution, for instance for machinery, construction and development of railroads. Today, it is the most produced metal and is also the main component of steel. Because iron production is capital intensive, it is concentrated among a few producers, the main four being China, Australia, Brazil and India. The main producing countries only partly overlap with the countries having the main iron ore reserves, which are Australia, Canada and Russia. Likewise, steel producers only partly overlap with iron producers. The EU, for instance, is the second largest [producer of steel](#) in the world after China, accounting for 11 % of global output, mainly in Germany and Italy. However, apart from Sweden, it has no iron ore production of importance. Steel production in China and India has risen strongly along with their economic growth of the past decades, leading to overcapacity. The EU has used its trade defence against dumped imports and since 2016 a [Global Forum on Steel Excess Capacity](#) tries to find multilateral solutions to halt overproduction.

**Aluminium** is the most abundant metal in the Earth's crust and is beneficial for the aerospace industry due to its low weight. China is its main producer and reserve owner, followed at a distance by India, Russia and

Canada. EFTA countries Norway and Iceland, due to cheap hydropower, host a considerable amount of aluminium producers but the bauxite ore comes from outside Europe. **Copper** is suitable for electric equipment due to its high conductivity. Chile leads the copper production market and also holds around one fourth of global copper reserves. Asia, in particular China, Myanmar and Indonesia, dominates the **tin** market, with over two thirds of worldwide production. Other important tin producers are Peru, Bolivia and Brazil. Zinc and nickel stand out for their nonmagnetic properties and resistance to corrosion. Silver and Gold take the lead among the precious metals.

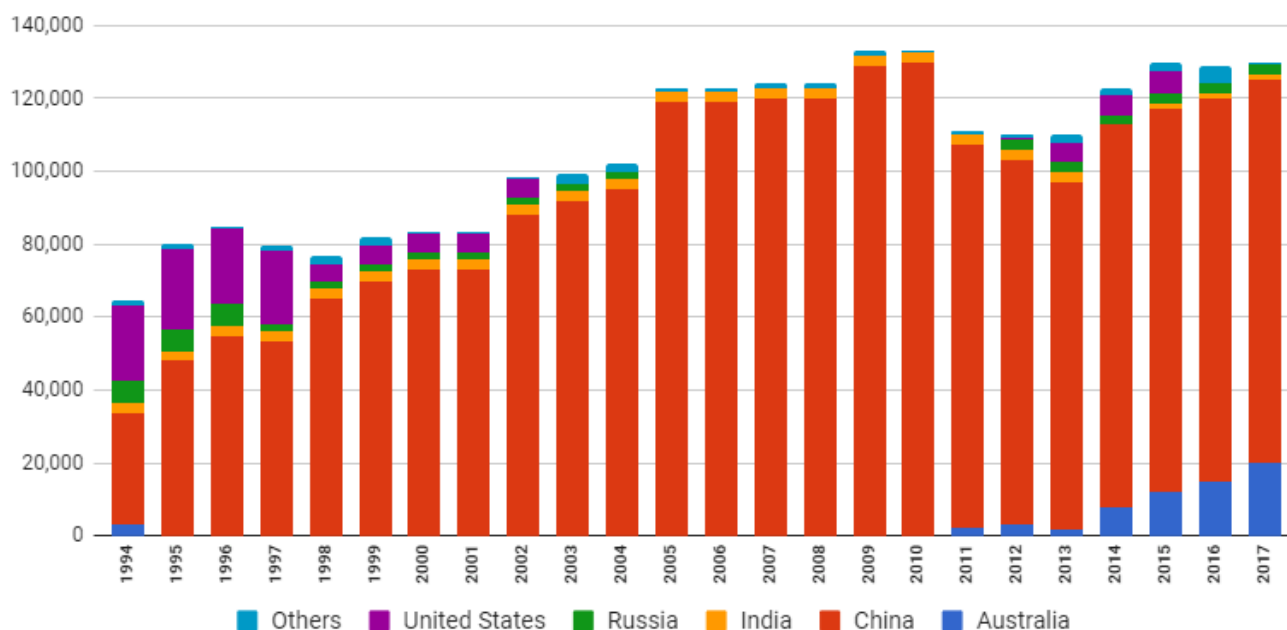
### Rare Earth

The technological revolution towards an information society at the turn of the 21st century brought new resources into the field of international competition, and thereby to the attention of national governments. The general term 'rare earths and metals' covers a range of elements such as Tantalum or Tungsten, that have become necessary to make computers, smartphones, solar panels or batteries. The terminology to describe the same group of chemical elements may vary between 'Rare Earth Elements (REE)', 'Rare Earth Metals (REM)' or 'Rare Earth Oxides'. For this study, we will speak of **Rare Earth Elements or REEs**. Most of the REEs were identified in the 18th and 19th centuries and were, at that time, relatively rare compared to other known elements. They are, however, not as rare as the name may indicate. For instance copper, lead, silver or gold are less common than most REEs.

While REEs are quite common in the Earth's crust, it is **rare to find them in concentrations high enough to justify economic mining activities**. In those areas, REEs tend to be found together because of their similar chemical and physical properties. With the wide application of REEs in permanent magnets essential for data storage systems and wind turbines, neodymium and dysprosium are considered the most important REEs for modern technology and renewable energy. The main geological environments for economically profitable mining activities are volcanic rock types. The more accessible areas of this kind are very unevenly distributed over the world.

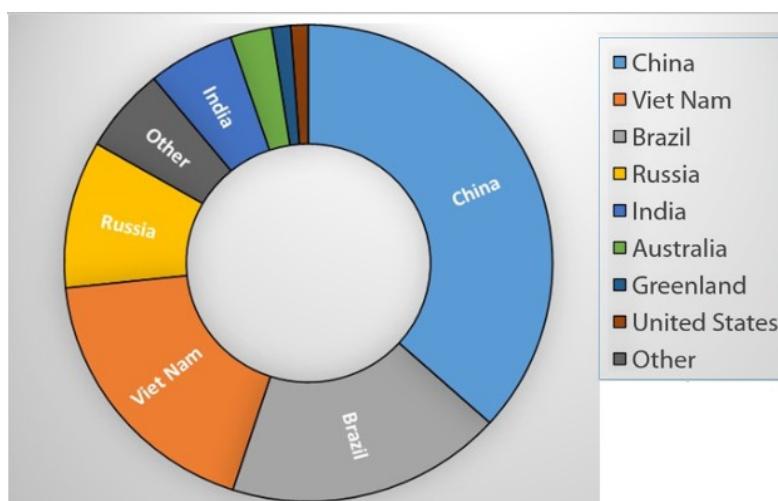
Before the 1960s there was almost no demand for rare earths, which were then produced in small amounts from volcanic rock, referred to as monazite placer deposits. With the surge of coloured television, the US gained the main share of rare earth production extracted from the Mountain Pass in California from 1965 until 1985. Subsequently, China entered the market, lowering prices to the extent that mining activity in the Mountain Pass mine or other places worldwide was scaled down due to non-profitability. Since the second half of the 1990s at the latest, China has come to dominate REE production. While the US share steadily declined until completely ceasing extraction in 2003, China massively expanded its REE production. In light of an exponential increase in demand, China used its market power by cutting its rare earth export quotas by two thirds in 2010, causing prices to reach a historic high. China later revoked its strategy due to a WTO legal case filed by the US, Japan and the EU. At the same time, 2010 was the year that Chinese production of rare earths peaked. Particularly following the Chinese export embargo, [foreign actors](#) and industry leaders re-thought their approach to REEs, triggering a more efficient use by reducing the amount of REEs in existing value chains as well as the (re-)opening of mines. Although substitutes for REEs are available for many applications, are generally less effective than the originals. This is why despite increased effectiveness, global demand for REEs rose further. Figure 17 confirms that since 2011, Australia's production is on the rise in Mount Weld and the US resumed their activities in the Mountain Pass Mine.<sup>7</sup> Nevertheless, **China increased its influence in the rare earth market since the 1990s and controlled about 80 % of rare earth production in 2017**, followed at great distance by Australia with about 15 % . Other producing countries are the US, Myanmar, India and Russia with much smaller quantities.

<sup>7</sup> See [Fact Sheet on Rare Earth Elements](#) issued by U.S. Geological Survey, 2014

**Figure 19:** Trends in Rare Earth Element production (in metric tons - rare earth oxide equivalent)

Source: [Geology.com](https://www.geology.com)

Although China currently dominates REE production, the **geographic distribution of REE reserves** shows a somewhat different picture. Worldwide rare earth reservoirs were estimated at around 120 million metric tons of rare-earth-oxide in 2019. China holds about one third of these. Viet Nam, Brazil, Russia and India also possess considerable amounts. Australia, Greenland and the US possess relatively smaller amounts.

**Figure 20:** Share of total Rare Earth reservoirs in 2019

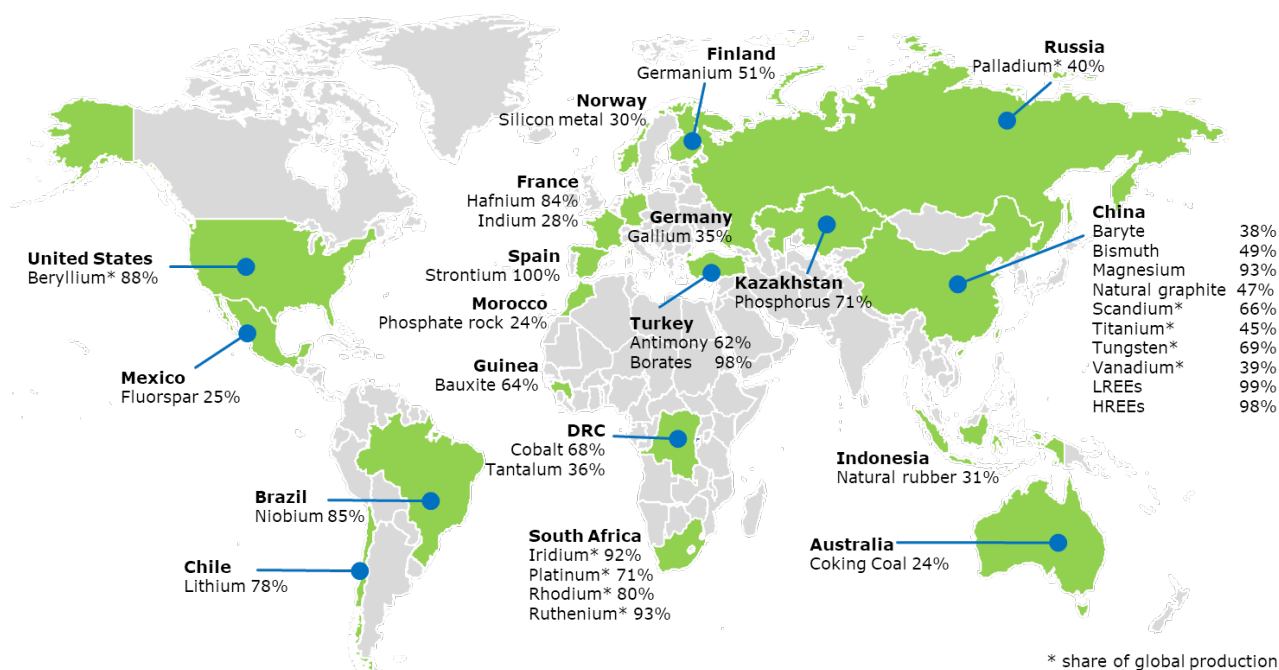
Source: Own elaboration on basis of data from Mineral Commodity Summaries 2020, U.S. Geological Survey

The discrepancy between actual mine production and countries holding rare earth reserves suggests possible drastic changes in future production. This will also depend on the possibilities for accessible and profitable mining or environmental restrictions.

**Europe currently has hardly any mine supply of REEs and its reserves are considered not profitable enough for extraction.** It has areas with REE resources, mainly located in Greenland and Northern Europe (Norway, Finland and Sweden), but also in Greece and Serbia. In the European Rare Earths Competency Network (ERECON), the European Commission brings together experts to discuss supply security and to

better understand the mining sector. Between 2013 and 2017, the [EURARE project](#) aimed at the 'development of a sustainable exploitation scheme for Europe's Rare Earth ore deposits'. Any REE mining activities in Europe should not only be economically viable, but also environmentally friendly. Currently, almost all of Europe's demand is met by imports from elsewhere in the world. The importance of REEs for future technologies and the EU economy, along with possible future price increases of imported REEs, may lead to REE mining activities in Europe in the future. [Experts estimated in 2015](#) that Europe has enough rare earth deposits to become self-sufficient.

**Figure 21:** supplier countries of critical raw materials to the EU



Source: [European Commission](#)

As regards the management of REE, we see a tendency towards a **small number of companies dominating the market**, sometimes with increased involvement of governments. In main producer **China**, illegal mining and human rights violations were initially an issue in the sector. In an attempt to combat these and gain control over its domestic supply chain, China shut down small private firms in recent years, resulting in **six state-owned mining companies** currently in charge of [rare earth extraction in China](#). In a further attempt to control the value chain, the Chinese rare earth industry is bound to an output quota. In the **US**, **one single privately owned firm** is in charge of the entire mining and processing of rare earths in the Mountain Pass Mine, which is also the country's only source of REEs. In Australia, while holding rare earth deposits across the entire country, only [two mines](#) were operating as at December 2018. The **Australian rare earth supply is organised by two privately owned entities**, where the majority is extracted from the Mount Weld Mine. At this time, there is no formal multilateral cooperation in mining, nor international cooperation of industries.



## 6.2 Balancing interests, collective action and ethics

The production of metals involves several **challenges regarding energy consumption and environmental damage**. The **aluminium** production process, for instance, requires treatment with several toxic chemicals and large amounts of electricity. Therefore, aluminium smelters are usually built close to power energy sources. In the context of finite fossil energy resources or their pollution, the industry tried to shift to renewables, which is why Iceland's geothermal power has attracted much aluminium production. The production of aluminium also creates waste, called red mud, which needs to be stored in special isolated areas to prevent leakage into groundwater.

The rise in demand and supply of **REEs** leads to the construction of new mining facilities. The complex mining process to separate rare earth from surrounding rock requires a high level of chemicals, creating a significant amount of [solid waste](#) ranging from acids over heavy metals to radioactive elements, which should never leach into groundwater. Nevertheless, market pressure has led project managers to **skimp on environmental protections**, posing threats to human health. In many cases the plant's polluted wastewater has severely damaged surface vegetation, caused soil erosion, pollution and reduced food crop output. Due to mining done near uranium deposits, Chinese rare earths plants are said to produce wastewater with a high concentration of radioactive residues, leading to dangerous labour conditions in mining facilities. [Cleaning up such sites](#), if possible, costs time and money.

Working in mines does not only involve safety concerns, but also raises **human rights issues**. Due to their prevalence in conflict regions, resources such as tungsten, coltan, tin or gold are sometimes coined **conflict minerals**. One conflict region in which these resources are extracted is the Eastern part of the Democratic Republic of Congo (DRC), where ongoing [conflicts](#) between armed groups (regularly involving attacks on the civilian population) mark the region. The conflicting parties partly fund themselves through raw materials – by trading them directly or by raising illegal taxes on raw material traders. Moreover, lack of administrative structure and governance leads to mines in conflict regions usually not being managed by large corporations. In the DRC for instance, around 500,000 'independent' mine workers work in thousands of individual mining sites, and it is impossible to monitor them all.

**Figure 22:** Human rights abuses in gold mining

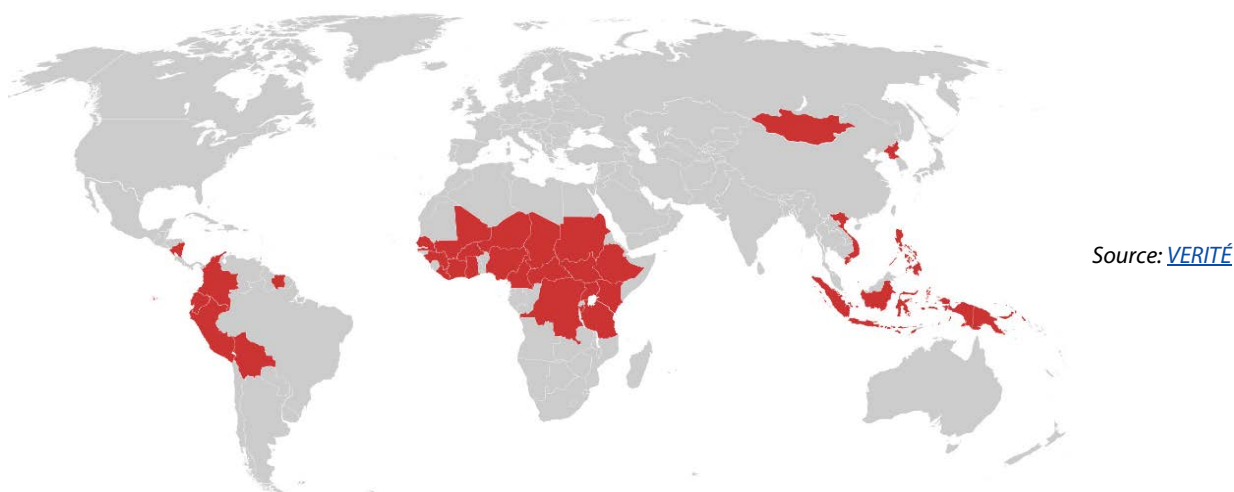
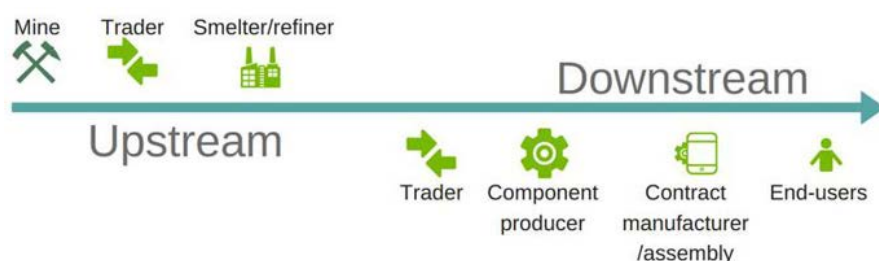


Figure 22 provides an overview of countries where gold is reportedly produced with **forced or child labour**. There is a high concentration of affected countries in Africa, South America and the Pacific region. Furthermore, mining may have a more indirect impact on the health and livelihoods of the local population, for instance when they are forced from their homes and land or denied access to clean water. Even if

employment and community development projects accompanying new mining facilities will benefit some, others will be left behind, causing new social divisions in communities. These impacts are exacerbated when local people are not consulted about planned mining activities.

Since the raw materials have already gone through several stages of value creation before they reach companies at the end of the value chain, it is difficult for them to prove that all raw materials have a clean origin. Nevertheless, given the seriousness of these issues, and in the absence of global rules, **the EU has decided to address these problems by adopting the [EU Conflict Minerals Regulation](#)**. The Regulation touches upon upstream and downstream companies.

**Figure 23:** Upstream and downstream activities regarding minerals and metals



Source:  
[European Commission](#)

It currently only regulates the so called '3TG', being tin, tantalum, tungsten and gold, because they are considered the four minerals that are most often linked to armed conflicts and human rights abuses. From January 2021 onwards, EU importers of minerals and metals will have to indicate origin, quantity and, in case they come from conflict-affected and high-risk areas, must provide information on the mine and taxes paid. In the future, the regulation may extend to further elements such as Lithium and Cobalt.

The **US also has [legislation on conflict minerals](#)** encompassing the same four '3TG' minerals. As part of the [Dodd-Frank Act](#), US companies must prove that products containing conflict resources have not contributed to funding armed groups.

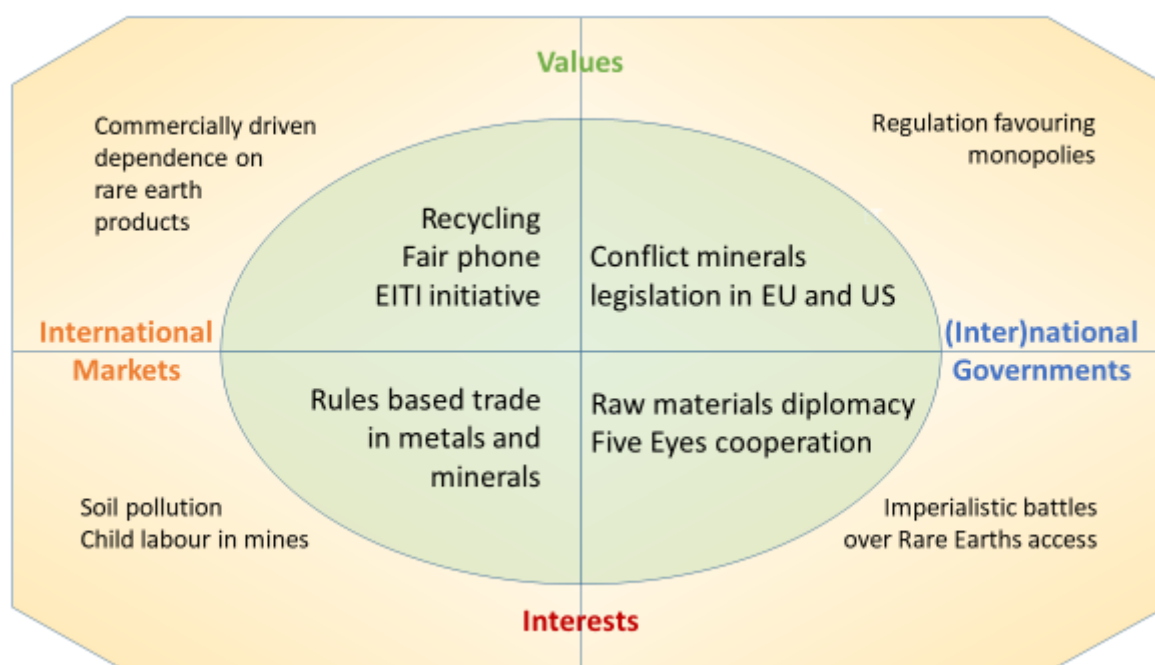
Some private companies are addressing these issues on their own, trying to produce high-tech products with 'clean' resources as far as is possible. An example of this is the 'Fair phone' smartphone. A more general attempt comes from the **Extractive Industries Transparency Initiative (EITI)**, launched in 2002. This multi-stakeholder coalition of governments, companies and civil society sets a global standard to promote the open and accountable management of oil, gas and mineral resources. EITI has a secretariat in Oslo and seeks to strengthen public and corporate governance in the extractives sector, mainly by providing information and data. EITI aims at creating a better understanding of the so-called '[resource curse](#)' or 'paradox of plenty', referring to the paradox that poor countries with an abundance of natural resources tend to exhibit worse development outcomes than those less well endowed. All these initiatives on rare earths, raising awareness along the entire supply chain, may foster future multilateral regulation in this rather self-interested rough market.

## 6.3 Global trend

Whereas the extraction and production of metals has existed for several thousands of years, the market for Rare Earth Elements is rather new. However, **the metal and REE markets have much in common. Their extraction involves worker safety issues, environmental pollution and human rights abuses.** These can take extreme forms in conflict regions. Governments of producing and importing countries have long neglected these problems. Economic interest may have prevailed, with complexity of the international value chain used as an excuse. Private initiatives from NGOs sometimes tried to fill the gap, but often needed governments to implement their objectives. Private commercial initiatives are rather rare. **Whereas recent regulation is a step towards more value-oriented governance, regulation of conflict minerals also serves the interest of securing continued supply.**

In balancing challenges between markets and governance, the metals and REE sectors are similar to those of water, land and forests. With the rapidly increasing economic importance of the REE market in particular and increased government interest, they grow to resemble the energy sector. Whereas fossil energy resources and uranium are considered as finite and growing scarce, a similar awareness regarding REEs has only recently developed. Further demand for information technology in consumer products, for batteries, solar panels and other high-tech 'green' products, will probably lead to increased demand for REEs. **The economic position of countries may increasingly depend on their possession of REEs or their capacity to produce them.** This may lead to redistribution of global wealth and possibly power.

**Figure 24:** Global trends for metals and rare earths



Therefore, **it is likely that the near future will see increased competition between governments for access to REEs.** When this economic competition becomes entangled with general geostrategic objectives, there is a risk of developments moving towards the bottom-right of our grid. In that scenario, a new 'imperialistic battle' for rare earths between countries may develop. There are visible signals suggesting this is a possibility. In 2019, for instance, the US not only overtook Australia as the second-largest producer of REEs, but also included REEs in its [2018 list of 35 critical minerals](#), underlining their growing strategic importance. Apart from its attempts at general export restrictions in 2010, China recently announced

[restrictions](#) on REE exports to the US in response to the approval of an arms deal with Taiwan. Competition between the US and China for control of the [international rare earth value chain](#) may only occasionally become part of public debate, for instance when US President Trump suggested purchasing Greenland. Australia is breaking its silence and starting to [promote itself](#) actively as a provider of REEs. In doing so, it does not compete, but cooperates with the US. In August 2020, Australian company Lynas signed a contract with the US Department of Defence and both countries are working on a joint action plan for REEs. Australia also signed a memorandum of understanding with India. The 'Five Eyes' intelligence alliance (comprising the UK, Australia, New Zealand, the US and Canada) announced it will develop a [strategic economic relationship](#) concentrating on key strategic reserves such as critical minerals as a response to China's dominance in this area. The significance of this decision should not be underestimated. This **competition with China over access to REEs seems to have become part of the ongoing 'trade war' between the US and China, and may lead to a broader geo-economic conflict between China and 'the West'**.

**This leaves EU countries in a vulnerable position in the global value chains of metals and REEs.** Although the EU is home to a substantial steel industry, it relies on imports for most of its metals. The dependence is even more pressing for Rare Earth Elements. Production is absent in the EU due to market conditions and environmental constraints. On a more geo-strategic level, this makes the EU dependent on imports from China or the upcoming Five Eyes alliance. The Australian minister of resources subtly indicated that the EU needs to diversify its REE supply and the country has opened talks with the EU. If things turn bad and a new cold war does begin, transatlantic traditions will most likely make the EU side with Australia and Five Eyes rather than China. However, with the UK having left the EU, things might not be that straightforward. The development of alternatives for REEs, or an environmentally sustainable REE industry of its own, is therefore highly relevant for the EU.

**The EU has recognised its vulnerability. Most recently, it published [an action plan for 'critical raw materials resilience'](#)** in September 2020, including a list of 30 critical raw materials. It is accompanied by a [foresight study](#). The actions proposed include research into increased use of recycled material, identifying mining projects and diversifying imports. The European Commission also engages in talks with several countries in what it calls '[raw materials diplomacy](#)'. These include trilateral meetings between the EU, the US and Japan. The 9th meeting in this format took place in [2019](#). It would be in the EU's interest to develop global governance of REEs, but it will most likely take a lot of time and effort to achieve this, and success depends highly on the willingness and support of others.

## 7 Four EU scenarios for post COVID-19 governance

In the past three chapters, we have identified global trends in natural resource sectors. When using the four quadrant grid, in Chapter 3 we noted a historical development going counter-clockwise through the grid: from unregulated markets via competing national states towards international governance and ethics. When looking more closely at current trends, it appears that sectors are in different stages of this process, sometimes backsliding from relative international order to interstate conflict or rogue capitalism. Developments take place in all four quadrants of the grid, often in pendulum movements between markets and governance or values and interests. To establish general scenarios, we now shift focus from historical development to a **characterisation of each of the four quadrants**.

**Figure 25:** Four scenarios for action and their shadow-extremes



### 1. Bottom left: interest driven markets: competitive capitalism versus predator capitalism

**All natural resources serve people's needs and can therefore be seen as economic goods or services.** Human activity has started to control, modify and exploit these naturally occurring resources, making them commodities that can be sold on the market. Trees become production wood, land becomes a source of agricultural produce and water becomes a bottled drink. These commodities can be produced sustainably and sold fairly on regulated markets, or they can be overexploited while harming people and the environment. Energy resources need more technology to obtain, transport and use them than water, land or forests do. Their production has therefore become concentrated in the hands of large corporations who pursue profits to match their investments or as a goal in itself. Unfair competition, cartels and circumvention of environmental rules may result. Such developments are increasingly characterising the metals and Rare Earth Elements markets. In short, **the modern market based economy tends to move all natural resources into the bottom-left quadrant of interest driven markets**. Whereas these markets are moderate and fair, we can speak of **competitive capitalism**. When excessive pursuit of interests leads to unfair practices, damage to the environment or social injustice, we can call this '**predator capitalism**'. Predator capitalism is the 'shadow' of competitive capitalism.



## 2. Bottom right: interest driven states: strategic autonomy versus imperialism

**Because many natural resources are considered essential for satisfying basic human needs, governments took an interest in regulating them.** Governments organised the distribution of water and land, the management of forests and the prices of energy. They acted against cartels and levied taxes. Going a step further, they regulated production levels or even ultimately took over production as state companies. Governments not only took an interest in regulating resources to guarantee fair consumer prices or safety, but also to guarantee their sufficient availability. Nowadays we speak of food or energy security. In a world of competing national states, this was deemed necessary to guarantee the **strategic autonomy** of the country. Energy resources, so crucial for industrial activity or for fuelling military ships, vehicles and airplanes in times of war, became the defining example of geo-economics. These geo-economics were part, and still are part today, of larger geo-strategic concepts to outplay the perceived enemy. This led to an unfortunate but **rather fluid transition from strategic autonomy towards more aggressive expansion, which can be simply characterised as 'imperialism'**. The energy sector shows many examples of this, unfortunately crossing the threshold towards military conflict several times in the past. The metals and Rare Earths sector should try to avoid repeating history and establish forms of cooperative governance. Unfortunately, current trends point in the other direction.

## 3. Top right: value driven governance: cooperative governance versus oppressive surveillance

Unless one state conquers the world, imperialism as a global concept is a dead-end street. Endless wars lead to more damage than can ever be compensated for. Moreover, because natural resources are distributed unevenly over the globe's surface, countries are better off sharing and exchanging these than trying to conquer them by force. As simple as this logic is, it is far from being general practice. Nevertheless, most international organisations, including the EU, find their origin in this logic. When states organise their relations peacefully, we can speak of '**cooperative governance**'. Imperialism did not only have downsides for its 'enemy states', but also for the population at home, who had to finance the empire through taxes, sacrifice their people in wars and avoid free expression deemed contrary to 'the national interest'. Unfortunately, some of these downsides can spill over to cooperative governance. International organisations can demand excessive financial reforms from countries, multilateral security alliances can ask people to give their lives in military action not directly related to the home country, and networks of cooperating secret services can spy on their own citizens in the interest of perceived 'national security'. Unfortunately, this all happens in western democratic alliances as well, as NATO's secret Gladio network ([condemned](#) by the European Parliament) or more recently the Snowden revelations, have shown. Such forms of **oppressive surveillance** can also become the dark side of more international cooperation, often leaving citizens defenceless, as legal recourse is problematic or impossible.

## 4. Top left: value driven markets: ethical capitalism versus corporate delusion

When private actors try to counterbalance market failures by focussing on ethical behaviour of producers and consumers, they often do so without government support at first. Even when governments formalise privately developed eco-labels in the form of recommendations or quasi-legislation, idealistic private initiatives seem essential to kick-start the process. Compared to the forces of predator capitalism or imperialism, these private efforts may seem vulnerable or weak. However, the strength of private ethical action can grow enormously when it spills over to vast numbers of consumers or citizens. This kind of **private value-oriented action influencing market behaviour, could be called ethical capitalism**. It is a relatively new expression of human will, which tries to tame the market from within. As illustrated above, even such ethical impulses can be abused by interest driven markets, via so-called 'greenwashing' of unsustainable practices. Advertising something as ethical or green when it is not, is a form of deluding the consumer. When conducted by market actors, we can call this **corporate delusion**.

Summarising, we can now present our grid as four alternative approaches to the management of natural resources - or in any other policy area. We can speak of four policy scenarios, taking into account that leaving actions to the market is also a policy. **These four policy scenarios each have their particular advantages and — as long as they stay in the central area of balanced action —are viable policy alternatives.** Each scenario carries the risk of its extreme with it, which can be represented as their 'shadow-scenario' in the extreme corners of our grid. This results in the grid of figure 22, which could serve as an assessment tool for policy makers.

In the following sections, we will apply this assessment grid to governance scenarios in the post-COVID-19 world. While doing so, it may be helpful to characterise the main actor in each of the scenarios, as well as their 'shadow-actors'. In a somewhat simplified but clarifying way, we can distinguish these as follows:

- Competitive Capitalism: responsible entrepreneurs versus ruthless entrepreneurs
- Strategic autonomy: responsible states versus imperialistic states
- Cooperative governance: active citizens versus oppressed citizens
- Ethical capitalism: conscious consumers versus misled consumers

The following sections will focus on how the EU can use these scenarios in its policies, in particular in the field of global governance. Much has been said already about the future actions of the EU in a post-COVID-19 world, not the least by the European Commission itself. Parliament has also expressed itself in several resolutions (see Chapter 2). The European Parliament Research Service has published a very extensive study on possible [risks in a post-COVID-19 world](#) and possible policy responses. The added value of our scenario study is not so much in adding more detail to these analyses, but in presenting an **overall assessment tool for future policy decisions**.

## 7.1 Competitive capitalism

An **EU scenario focussed on competitive capitalism** should:

- Keep considering the Internal Market as an essential pillar of the EU
- Be aware that the EU needs resources and products from outside the EU
- Defend therefore a rules based global trading system
- Keep fighting abusive practices linked to predator capitalism and market distortion

### **Lessons from natural resources-management:**

EU countries cannot provide many base and raw materials in sufficient quantities, or at all. The EU, therefore, must turn to the world market. Therefore, an open rules-based world economy, driven by international trade, remains important for the EU in a post-COVID-19 world.

### **Main characteristics of this approach:**

Even in times of crisis, caution is needed when closing borders and interrupting supply chains. Countries' desire to be strategically autonomous conflicts with the fact that they cannot produce everything they need by themselves. Smaller countries with open economies may arrive sooner at this conclusion than big countries with more national industries, but even the latter will conclude that they depend on products or resources from other countries to fulfil their economic needs. As a first step, the Internal Market should therefore remain a central pillar of the EU. Whereas certain products need to come from the world market, calls for reshoring of production and strategic autonomy for the EU need to be measured against the possibility of doing so. An analysis is needed of which sectors are suitable for reshoring and what is the correct level of 'smart reshoring'. The Committee on International Trade of the European Parliament has requested a study on these issues, which will be available in 2021. As a compromise model, 'regional reshoring' would limit dependency to nearby countries, possibly only for parts of the production process.

On the global level, the EU should keep defending a rules based international trading system, for which global rules set by the WTO are essential. Support for WTO rules and international dispute settlement should be defended by the EU, if needed through multilateral back-up solutions for the appellate body. Responsible entrepreneurs may not need many rules, but in order to guarantee a level playing field and avoid the spread of ruthless entrepreneurs, regulation of markets will remain necessary.

### **Main challenges:**

Other market players may not equally apply the rules of the global trading system and thereby distort the market. The past years have shown many examples of the US's more interest-oriented approach, undermining the WTO dispute settlement system while influencing trade flows with punitive tariffs. At the same time, China distorts the market because of its large share of state owned enterprises who are protected by favourable conditions on their home market while competing abroad.

Another challenge is dealing with predator capitalism, meaning private enterprises who skimp environmental rules or violate human rights. These practices damage nature and societies and equally distort competition by not paying for the externalities they cause. This challenge becomes even more complex when failing governance in other countries enhances predator capitalism. Even failing governance in 'far away countries' can reach European shores in form of transboundary environmental damage (nuclear fallout from reactor accidents - such as Chernobyl and Fukushima), climate change, rising sea levels, the spread of diseases and new pandemics, migration flows or outright war.

## 7.2 Strategic autonomy

An **EU scenario focussed on strategic autonomy** should:

- Identify all fields in which the EU is dependent on other countries
- Assess the options for reducing dependencies through reducing need or finding substitutes for essential materials
- Focus not only on the economy, but also on geo-politics
- Accept certain frictions with strategic partners without escalating them

### **Lessons from natural resources-management:**

Too much dependency on non-EU suppliers for critical resources such as Rare Earth Elements, which are increasingly needed in an IT based society, is dangerous, because interruption of supply would cause serious societal damage. For these cases, while supporting world trade, more strategic autonomy is needed.

### **Main characteristics of this approach:**

In the economic sphere, strategic autonomy stands in opposition to competitive markets. Instead of looking for products on the world market, the aim is to limit the value chain to your own region or country. In order to reach economic strategic autonomy, the EU must assess in which sectors it is highly dependent on imports and how it can reduce these dependencies. There are two kinds of solutions: substitution with local equivalent products, or reduced consumption of the kind of product in general. The agricultural sector could offer both opportunities. Substitution of imports by regional products could lessen dependency, reduce transport use and strengthen local farmers. Consumption reduction of meat would be beneficial for land use, climate change, animal welfare and human health. Industrial production could, in certain sectors, be relocated home. Strategic autonomy needs to be accompanied by innovation to substitute imports which the EU cannot currently produce itself, such as rare earths.

The concept of strategic autonomy is often used in a geo-political sense, sometimes referred to as strategic sovereignty. To survive in a world dominated by great powers, the EU should not only reinforce its diplomacy, but also its intelligence capacity and its military strength. This means not only combating disinformation from other countries, but also developing reliable intelligence and information structures of its own, possibly its own version of the Internet or, at least, cloud capacity located in Europe. Defence spending should go up and defence cooperation between EU member states should be intensified.

### **Main challenges:**

Fossil fuels can only partly be replaced by renewables, therefore, consumption reduction could become an urgent priority. For REEs, it seems difficult to reduce consumption, as it is increasing due to digitalisation and use of batteries. Nevertheless, the use of batteries and consumer electronics may have to be reconsidered fundamentally in the future. If innovation does not lead to viable alternatives to REEs, the EU may have to develop its own REE production and environmentally friendly methods to do so responsibly. Relocation of industrial production may come with higher production costs because of higher labour costs. It may also bring certain environmental problems back to Europe which have been 'outsourced' to developing countries. As complete strategic autonomy is unlikely to be possible in the economic sphere, current discussions have added qualifying adjectives to reflect these limits: 'open' strategic autonomy or 'smart' reshoring.

Strategic autonomy in defence involves sensitive questions about spending, the development of strategic capabilities, inclusion of EU members that are not NATO members and, last but not least, leadership in and relations with NATO. This, in addition to relocating internet server capacity, may lead to frictions with the US.

## 7.3 Cooperative governance

An **EU scenario focussed on cooperative governance** should:

- Seek to reinforce the EU's own capacity to act
- Continue promoting multilateral governance and mediate in conflicts
- Lead by example in achieving the Sustainable Development Goals
- Enhance transparency and accountability of international organisations

### **Lessons from natural resources-management:**

Cooperative governance on the global level is difficult to achieve. Organisations like the United Nations and its specialised agencies rely on their member states for financing, implementation and enforcement. However, the EU can use its diplomatic and economic capacity to set international standards and support multilateral organisations as much as possible.

### **Main characteristics of this approach:**

For the EU, cooperative governance is its 'natural habitat'. The COVID-19 crisis has tested the EU's internal cohesion and amplified existing differences between member states. The EU institutions have also used the crisis to acquire additional competences, for instance in developing new own resources. As a scenario for the EU, cooperative governance would mean reinforcing its own capacities to act within Europe, as well as further promoting global governance through multilateral organisations. Apart from defending rules based trade, the EU should defend multilateral approaches to all global risks facing humanity. The EU should lead by example, for instance in implementing the UN Sustainable Development Goals in its own policies and its Green Deal. It should develop its foreign policy Global Strategy in order to be able to play a mediating role in conflicts.

### **Main challenges:**

The EU should deal with opposition to and suspicion of globalisation by aiming for maximum transparency and accountability. It should avoid overregulation and avoid measures that can be perceived as 'oppressive surveillance'. It may be a blessing in disguise for the EU that most unpopular measures during the COVID - 19 crisis, ranging from lock-downs and border closures to face masks or tracing apps, were taken by member states. Nevertheless, the general public also consider measures limiting personal freedoms to be linked to international organisations, as debate about the World Health Organisation (WHO) shows. Despite its positive efforts to manage the pandemic, the WHO has been criticised for bias in assessing countries' efforts and for over-reliance on private funding. As regards the latter, the Bill Gates Foundation in particular has interestingly both been praised for 'value-oriented' philanthropy as well as condemned for being driven by private interests in the pharmaceutical industry.

Whereas international organisations see themselves as builders of a better world, outsiders are likely to raise increasing numbers of questions about the transparency and accountability of their decision making processes. Without global democracy, organisations will have to hold themselves to high standards in this regard. If the EU wants to promote multilateralism, it will also have to promote transparency, accountability and the fight against corruption. Otherwise it may lose its own citizens along the way.



## 7.4 Ethical capitalism

An **EU scenario focussed on ethical capitalism** should:

- Leave legal space for private initiatives aiming to develop new social and ecological solutions
- Create dialogue structures between civil society and governments
- Support ethical capitalism initiatives, possibly by integrating them into legislation
- Distinguish between genuine ethical capitalism and 'greenwashing actions'

### **Lessons from natural resources-management:**

Private initiatives for socially fair or ecologically responsible production can have an impact on value chains, especially when they are backed by government recognition. Examples include eco-labels for agriculture or forestry or transparency initiatives regarding the extractive industries. Eco labelling or other NGO driven initiatives can also inspire ethical legislation, such as the EU Conflict Minerals Regulation. Recent discussions on whether or how pandemics are related to a deteriorating natural environment and loss of biodiversity, which weaken our natural ecosystems and human resistance against disease, can lead to new expressions of ethical capitalism.

### **Main characteristics of this approach:**

Ethical capitalism is a new branch on the tree of policy scenarios. Unlike charity and philanthropy, which repair market failures without questioning the system, ethical capitalism intends to change the market from within, by promoting sustainable consumption and production. Ethical capitalism initiatives are often initiated by civil society or conscious consumers, who demand fair or ecological products that producers do not supply yet. Private commercial entrepreneurs can also initiate ethical capitalism projects. Examples are alternative banking initiatives or cooperative production companies.

As a policy scenario, governments can create legal, organisational or financial space for ethical capitalism. Legal space means allowing initiatives and creative experiments, even when these are not covered by existing legislation. Once initiatives have developed, governments can back them through legislation. Organisational space means dialogue between the EU institutions and civil society. Integration of civil society in the early stages of policy making or international negotiations can broaden possible solutions and increase acceptance of decisions taken. The concept of corporate responsibility or 'due diligence' can be seen as reflecting private concerns in governance. A recent [study](#) on due diligence anticipates a legislative Commission proposal on the matter in 2021. Financial space means promoting investment in social and green solutions. The 2018 EU action plan on [financing sustainable growth](#) and the 2020 sustainable investment or 'taxonomy' [Regulation](#) are steps in this direction.

### **Main challenges:**

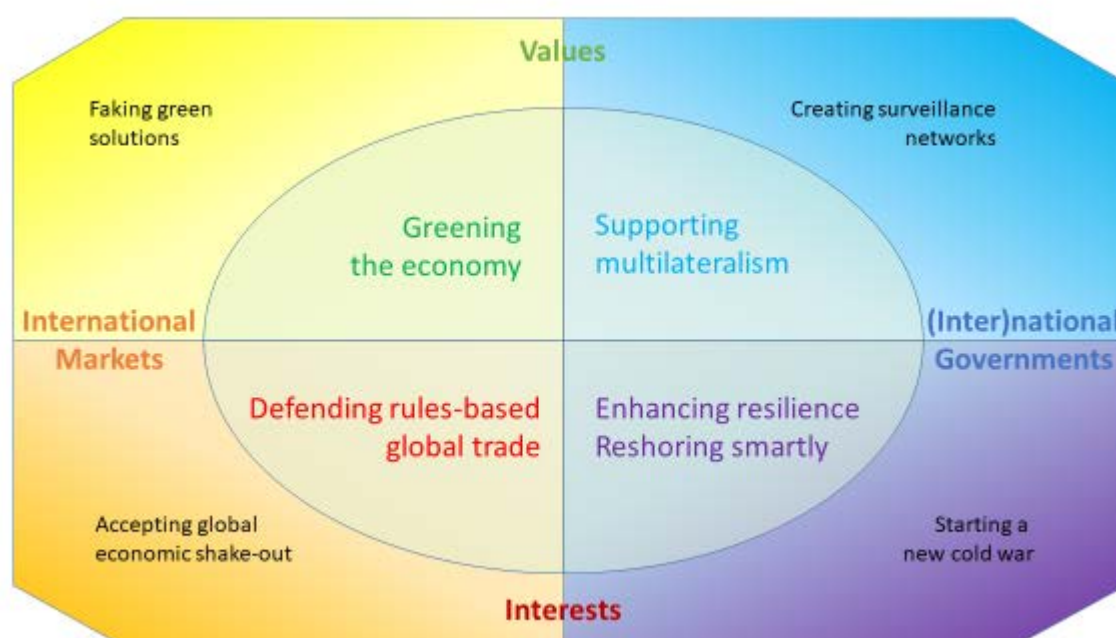
One of the questions that arises in working with non-governmental-organisations in a representative democracy is: who exactly are they representing? Most people know Amnesty International or the Red Cross, but smaller NGOs may struggle with legitimacy and having their voices heard. Also, some NGOs may be linked to corporate or state interests, which influence their positions. Commercial private actors in the sector of 'ethical capitalism' have a mixed interest by definition, combining profit making with idealism. If idealism is only a veil for making profits and if these companies do not live up to their proclaimed ideals, we may experience cheating, or 'corporate delusion'. Another challenge is that people may disagree on what is the right sustainable or ethical action - without standards, the final judgement is a private one.

## 7.5 The EU among other global players

EU policy makers can use the four scenarios as potential courses of action, both internally and in external policy. The coming years will not be easy for the EU or any national government. Difficult decisions have to be made in a world with a damaged economy and substantial social discontent. Decision makers should try to choose the right mix of tools for each occasion, balancing market forces and governance, ethical values and interests. It will be a challenge to stay in the inner circle of balanced and reasonable action. Especially in crisis situations such as a pandemic, drastic measures can soon be perceived as (or actually turn into) counterproductive or repressive measures. Governments will have to balance the necessity of a lock down with economic necessities and fundamental freedoms.

We once more present the four EU scenarios on the grid, this time using key words for multilateral governance. The EU needs to defend rules based global trade and not accept a global economic shake-up in which winners in the post-COVID-19 economy take all from the losers. The EU should use the opportunities offered by the crisis for greening the economy and implement a real Green Deal, without fake green solutions. The EU should continue its support for multilateralism and empower international organisations, but insist on transparency and accountability, avoiding the creation of surveillance networks. Where other global players may not follow in this approach, the EU has to enhance its own resilience by reshoring parts of economic activity smartly and develop its intelligence and defence capabilities, without falling into the trap of starting a new cold war.

**Figure 26:** Key words for EU actions in a post-COVID-19 world

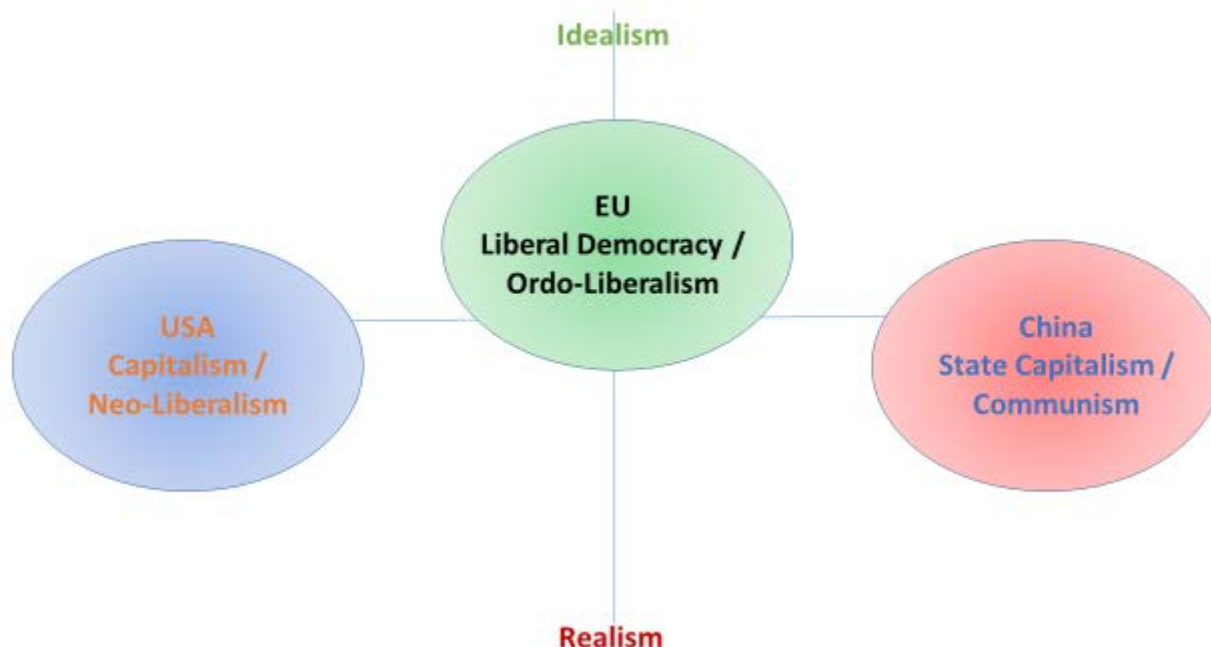


The EU will have to find its way among other global players. The **US 'America first' approach and the assertive Chinese economic expansion have become the Scylla and Charybdis between which the EU is trying to navigate**. The COVID-19 crisis has only exacerbated these tensions and therefore the EU dilemma. From the European ethical perspective, this becomes on the vertical axis a battle between idealism and realism – using 'realism' in its foreign policy sense of interstate competition.

In a global context, we could place the US on the market-side of the horizontal axis and China on the government-side. Putting the EU in the middle between them also reflects a geographical West-East axis. This line of thinking reflects different approaches of world powers in addressing governance issues. Similarly, a [recent study](#) from European University Institute on the design of multilateral trade and investment institutions identifies three types of economies: neo-liberalism for the US, 'ordo-liberalism' for the EU and state-capitalism for China. However, this threefold approach is not as straightforward and commonly accepted as it may seem. It challenges in particular the concept of 'The West' as a homogenous area. Some hope or think this is only a temporary deviation, linked to the presidency of Donald Trump, from a unified 'West' with shared transatlantic values. Nevertheless, apart from many shared values between the EU and the US, differences in market regulation have always existed.

In a way, the vertical axis confirms that it is correct to distinguish three types of governance that have emerged over centuries from particular cultural traditions and not just a bipolar East-West opposition. A preference for ethics and regulation is a particular part of the European way of looking at the world. The EU is sometimes characterised as a normative power and more often as a regulatory power. The importance of the EU economy in the world makes foreign investors willing to follow European legislative and product standards, in order to enter that market. US policy is characterised primarily by private entrepreneurship, combined with a state defending these economic interests to the outside. In Chinese tradition, the individual primarily serves the collective, represented by the state – in past times the emperor, in our times the Communist Party. The importance of state owned enterprises in China fits in this tradition. Any such assessment risks over-generalisation and includes a certain cultural bias from the beholder, but it should not prevent us from trying to identify differences in approaches to global governance.

**Figure 27:** A possible EU view of the state of international affairs



Several experts take the view that the trade conflict between the US and China may escalate into a new cold war, in which other nations will have to choose sides. US Think Tank [Atlantic Council](#) recently presented alternative scenarios for relations between the three players: the US-China conflict could spiral downward towards chaos, China could win the race, or a 'new renaissance' under US leadership with participation of the G7 and EU might restore global order.

There certainly is no benefit for the EU from a new cold war scenario. De-escalation of world tensions should stay the aim. Moreover, the EU would be wise not to wait for the outcome of the US-China race or a renaissance under US leadership. It should develop its own scenarios instead. Years before the COVID-19 crisis, the EU recognised this reality and the Global Strategy of suggested a more assertive approach by the EU in global affairs. According to its [2019 progress report](#), some elements of this have been achieved. A sign of independent EU policy from the US could be continued [dialogue with China](#), even when substantial differences in views still exist, whereas the US has remained in conflict mode with China in recent years.

In an unstable post COVID-19 world without clear leadership, it is only logical for the EU to move towards strategic autonomy. Strategic autonomy or strategic sovereignty, with or without the adjective 'open', has become the buzzword of our time. Strategic autonomy implies that the EU and its member states are willing to invest more in common foreign policy and defence than before. France has long-supported such a move, and now Germany appears to be getting on board. The [latest report](#) of the Munich Security Conference calls upon Germany to further increase its strategic thinking and capacity, after having refrained from doing so under US leadership.

Nevertheless, the EU should also keep in mind that strategic autonomy is only one possible scenario. Remaining connected to world markets, attempting to protect the multilateral order in difficult times like these, and thinking ahead about a greener and more ethical world should remain key EU objectives. Using the full palette of the four scenarios may not sound exciting, but fits EU traditions. As Andrew Moravcsik states in his 2020 [Foreign Policy article](#): the European way of dealing with problems – from Russian involvement in Ukraine to migration or populism – may look dull and unspectacular, but it delivers pragmatic successes in the long run. The central zone of 'reasonable balanced action' may not make the headlines every day, but it may lead to sustainable solutions that are sometimes better, both for Europe and the world, than more outspoken policies.

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