



A GREEN AND A SAFE DEAL

Václav Bartuška

We face a simple choice: we can reject the European Green Deal in one fell swoop. We may say that the whole of Europe has gone mad and is rushing to the grave. Perhaps such an attitude can grant a momentary satisfaction to some, but it is a road towards isolation and inconsequentiality. Ultimately, we will end up accepting all the relevant decisions anyway, but without having a say in how they are defined.

Or we can say that we are ready to take the same route as our European partners did, and that like them we are interested in the common success of the Green Deal. This is why it matters to us how the EU will cope with the three security and geopolitical challenges we now face: *technologies, raw materials and the current exporters' loss of income.*

1. TECHNOLOGIES

The transition to a fossil-fuel-free energy industry is one of the greatest technological leaps in the history of humanity. It will change our societies and ourselves, our behaviour, expectations and habits. It is worth reminding ourselves how much two earlier energy transitions – let us call them the *coal* and *oil* transitions – redefined the human community.

The first, *coal* transition, started in 18th-century England with the invention of the steam engine; it brought an industrial revolution, mass production, a tremendous increase in the wealth and power of the West and the emergence of a strong middle class. The train became its symbol: you can quickly and comfortably go places, as long as you can adapt yourself to the timetable of the railway operator. The era of coal was a collective one.

Although the second, *oil* transition, started in Europe in the late 19th century, the dominant role in it was played by the United States. This transition brought even greater economic performance; but more importantly, unprecedented personal freedom. The car can serve as its symbol: you can go wherever you want at any time, without being tied by anyone. From this point of view, the oil era was unique in humanity's history.

It is important, therefore, that now when we are starting the third transition (*carbon-free* might be the working term to describe it), we clearly decide what we want, and, by contrast, what we refuse to give up. It is high time: the changes are already here.

1.1. Privacy and security

In September 2017, Hurricane Irma was approaching the US shores and the governor of Florida ordered an extensive evacuation; millions of people fled the danger. The billionaire Elon Musk made a gesture: he increased the driving range of Tesla vehicles – exclusively in the state of Florida and only for a week.¹ Few people noticed – the public was more interested in the pictures of roofs taken away by the hurricane. The fact that a rich man from Los Angeles can remotely influence whether a car in Miami can make it to safety or not, was too complicated for the mass media.

Yet we should not overlook this story. Tesla put the same batteries into its cheaper models (X60 and S60) as it fitted into the more expensive cars, but limited their capacity by software to 80%. During the emergency, Tesla knew exactly which cars were in Florida, their precise location and where they were going. The Big Brother allowed them to make some extra 30 to 40 miles.

There is a serious warning here for Europe: we are introducing a range of technologies, whose makers (and source codes) are beyond the EU borders. For now, the struggle for our privacy and security is primarily taking place in telecommunications and data transfers. But as the energy industry becomes more digitalised, we will not avoid a dispute similar to that currently ongoing around 5G mobile phone technology, a dispute not just with China but with the United States as well.

¹ <https://www.theverge.com/2017/9/10/16283330/tesla-hurricane-irma-update-florida-extend-range-model-s-x-60-60d>

1.2. A lagging EU

The European Union likes to see itself as the most advanced part of the world and a model for others: we lead the planet towards a better tomorrow. Our climate policy is based on the conviction that, while the EU accounts today for less than a tenth of global CO₂ production, the other major emitters, including China, USA, Russia and India, will soon follow in our path – a daring proposal, and one unsubstantiated by evidence so far. The USA has withdrawn from the Paris Agreement, China has set itself a clear goal of improvement in living standards (disregarding CO₂), and most countries in the world think similarly: let us first get rich, then we will deal with the climate issue. It is hard to fault them: Europe went down the same road, only somewhat earlier.

The risk that the EU will drastically curtail its competitiveness, without others doing the same, is the fundamental weak point of the Green Deal. Europeans love to tell others how they should live; it is nice to preach from the rarefied altitude of a rich welfare state. Yet I am not sure whether we are all willing to lower our living standards for the benefit of the planet. The discord between the elite, who accepted climate change as the challenge of their lives, and ordinary citizens, who have more everyday concerns, is real: remember the French *gilets jaunes*. The *yellow vests* protested the increase in the price of petrol by a few percent; it is hard to guess how a society will react if it becomes poorer, let's say, by a third.

This aspect, at least, is being talked about. Sadly, the EU's lagging behind in science and research (and increasingly in manufacturing also) is not; this while the Green Deal of today is based on technologies that will be developed in America and manufactured in China.

We have to change this. The faith in a friendly, connected planet, where states have no reason to fear one another, will not survive Covid-19. The response to the pandemic across the world has been harsh. The finding that we are no longer able to manufacture sufficiently quickly something as simple as a face mask came as a surprise to many governments. The wait for supplies from China was humiliating.

And now imagine the year is 2040: we have resolutely rebuilt the European energy industry, which is now based on software (made in USA), artificial intelligence (made in USA or China) and data transfer (made in China). The Czech government will not know when you put the kettle on at home, but comrades 7,450 kilometres away will. Whether your electric car will go at all, how far and at what speed – that is not decided by you but by an engineer in Silicon Valley or Shanghai (depending on what brand you bought). Freedom of choice? Choose what the technology supplier would wish, and you will not have a problem.

There is much talk in the EU today about the need to obtain strategic independence; the debate is largely about lacking military capacity. This is important, but science and research are playing an increasingly important role in maintaining sovereignty. Have a look at the rankings of the world's largest universities: the top ten is made up entirely of American and British institutions. The European Union has its first representative (LMU Munich) in 32nd place.

There is a lot we need to do: we need to give more support to European education, European manufacturers, European know-how; adjust our own rules where they tie our hands. America and China have no problem with building and supporting their own champions; we do.

1.3. Managing consumption

The backbone of the carbon-free energy industry is exploiting renewable resources – above all, photovoltaic technology and wind power plants. These have a number of advantages and one fundamental problem: unpredictability. Until a system of energy storage is available, renewable resources cannot become the backbone of our current energy system: there are many facilities, from glass works to hospitals, that need electricity all the time, whether the sun shines and the wind blows or not.

But there is a solution. Over the past hundred years, we have been balancing the energy system by managing production: we turn power plants (in particular, water-, gas- and coal-powered plants) on and off in response to how daily consumption increases or decreases. Yet the problem can be turned around: if production is difficult to manage, let us try to manage consumption.

This can take many forms. At one pole, there are purely market-based models: your fridge does not need electricity 24 hours a day; actually, a supply for several dozen minutes during the day is sufficient. People have many such appliances at home: for instance, a laptop can run off either its battery or the mains. If electric cars are adopted on a large scale, the average household will have kilowatt-hours worth of consumption that can be delayed or spread according to the situation in the power grid at that time (in plain language: whether there is sunshine and wind, or whether it is dark and calm). The new energy legislation assumes the creation of *aggregators*, traders who will rent available capacity from consumers and offer it to balance the transmission and distribution system. This can be a good deal for all involved: in June 2019, when the swings in electricity

production from renewable resources threatened to tear the German system apart, the operators paid over €30,000 per megawatt hour of balancing power at peak times. Your fridge will most likely only make you a few cents a month, but large customers might be interested in entering the electricity market: a large shopping mall consumes as much electricity as a small town.

At present, about a tenth of the overall consumption exhibits such flexibility, for instance, air conditioning in a department store or cold storage in a supermarket. The share of these ‘deferrable consumers’ will increase markedly if electric cars are a success, but still it will not be even a quarter of the total. For that reason, at the other pole of managing consumption is the directive approach. The idea to order consumers into categories is not new: it is a feature of every emergency plan. (For example: hospitals: category 1, cannot be switched off; residential buildings: category 2, can be limited; schools: category 3, first to be switched off.) So far, these have been used only as emergency measures, not for everyday management. *Brownout*, the gradual switching off of supply to groups of customers, is a characteristic of the developing, not developed, world. But with swift growth in renewable resources, this kind of consumption management – in effect subjecting consumers to the options available to suppliers – may be the only way to prevent a *blackout*, that is, the collapse of the system.

In short: we are waiting for the batteries.

1.4. Batteries

Electrical energy storage will transform the energy industry from the ground up: no other source will be able to compete with renewables.

Storing the warmth of summer days for winter, daylight for night, electricity generated during an hour of strong wind for a windless period: that will be a true revolution.

So far, we have had successes with accumulating energy on a smaller scale, in watt hours: batteries in laptops and mobile phones now last for several times longer than ten years ago. Megawatt hours, however, are a problem: at the moment, there are about 40 avenues of basic research, from chemical batteries to molten salt, hydrogen and flywheel energy storage. But so far the only reliable and cheap method of storing energy is that of the pumped-storage power plants.

Given that we have bet our prosperity and international prestige on the Green Deal, we need success in battery development. Yet the fragmentation of European science and research means that a breakthrough in electricity storage will most likely come from the USA, which has top universities as well as 17 national laboratories. We have nothing comparable in the European Union; although we are trying to create a network of top research facilities (for example, ELI Beamlines in Dolní Břežany), the Americans are way ahead in the scientific game. It suffices to read the 'Affiliation at the time of the award' column in the list of recent Nobel Prize winners in physics.

Whoever develops a storage solution will determine not just the technology of the future but also the raw materials for which the world will fight in the 21st century. Or, rather, is already fighting – only we have not been paying attention. If you have not yet heard of the Great African War, you might be interested in the next section.

2. RAW MATERIALS

When you say 'energy industry' and 'raw materials', most people think of oil and natural gas. They are most often talked about, bringing enormous amounts of money and political clout to oil companies. One of the main arguments for the transition to renewables is that it will remove our dependency on producer countries. Sadly, that is only half of the truth: yes, we will rid ourselves of Saudi Arabia and Russia. But the new technologies too must be manufactured from something. Let us look at two examples: cobalt and rare earth metals.

2.1. Cobalt: Congo instead of the Persian Gulf?

Most contemporary batteries – from those in mobile phones and electric cars to the Tesla Megapack – use lithium-ion technology (Li-ion). Lithium can be found in many localities on Earth (even the Czech Republic lived its brief 'lithium dream' ahead of the 2017 elections) and so far no state has a monopoly on it. But to make Li-ion accumulators, you need something else: cobalt (Co). As of 2019, 72% of the world's cobalt production came from one country: the Democratic Republic of the Congo (formerly known as Zaire, capital Kinshasa; sometimes mistaken for the neighbouring Republic of the Congo, capital Brazzaville). Our computers and mobiles cannot do without cobalt, but a qualitatively new degree of dependency comes with electromobility. Feel free to switch from petrol cars to electric, but you should know about three interlinked issues: war, child labour and Chinese influence.

Cobalt and war

For the Czechs, Africa is mentally the most remote continent. We know more about New Zealand (where *The Lord of the Rings* was shot) than about most African countries. Perhaps the new era in energy will prompt us to take a greater interest in a continent where 1.3 billion people live.

The Democratic Republic of the Congo has many rare minerals, a weak central government and a number of armed neighbours. This lethal mixture has recently produced two major wars, which tend to be called Africa's First World War (1996–1997) and the Great African War (1998–2003), or are described more neutrally by historians as the First Congo War and the Second Congo War, the second being the bloodiest conflict on our planet since 1945, in which an estimated 5.4 million people perished. Militarily, 11 African states became involved; politically, more than 20, from Libya to South Africa. There were many reasons for this war, some political, others financial: diamonds, gold, coltan – and cobalt.

When you next see a celebrity brandishing a banner saying 'No blood for oil' and then getting into their environmentally friendly electric car, you may try explaining to them how much blood is hidden in every battery.

Cobalt and child labour

Few think of themselves so highly as the new titans of the internet age. From 'Don't be evil', the official motto of Google, to phrases such as 'Changing the world for the better', one would be hard pressed to find a bigger crowd of apostles of the good. For that reason, a lawsuit filed in 2019 against 'firms profiting from child labour in DR Congo' has stirred things up. It was filed by an American charity on behalf of

14 Congolese families, whose children died in the inhumane conditions of the country's cobalt mines. Five companies are standing as defendants: Tesla, Apple, Alphabet (the parent company of Google), Dell and Microsoft. The results of the trial, if the case is heard, are hard to predict: rich companies tend to have money to pay good lawyers and skilful public-opinion manipulators.

Yet the basic facts are generally known and confirmed by international organisations. According to the UN, a third of the cobalt mining in the Democratic Republic of the Congo is done by children. The maths are simple: if 72% of cobalt produced in the world comes from DR Congo and a third of this is provided by children, the cobalt mined by children accounts for 24% of global production.

It is right and proper that a lot of campaigns and boycotts against child labour have already been pursued, in the textile industries (Gap and Zara), sports-shoe manufacturing (Nike) and coffee production (Nespresso and Starbucks). One day there may be a campaign against Google, Tesla and Apple too. But so far their lawyers are too good. As for the rest of us, we have a selective conscience.

Cobalt and China

Here is another interesting figure: 66% of the world's cobalt production is refined in Chinese factories (in China itself or in enterprises built by China in Africa). Those opposing electrical cars in our country tend to focus on the technical limits of the *new mobility* – how many charging points would have to be built, how many cables newly laid, of how high a voltage, and so on. With such arguments, you might win the debate at the Czech Technical University in Prague; but in Brussels, you would lose even before you entered the door. Add the geopolitical dimension and you will be heard out carefully in Berlin

and Paris; right now, they are thinking very seriously about this new dependency.

Here we see the real consequences of the decisions we made ten or 20 years ago. Europe had just started the debate about electric cars then – and China was already buying up the cobalt mines. We can only envy the Chinese leadership their ability to plan in the long term and especially their capacity to put their plans into practice. This is even more conspicuous with respect to the group of elements that I discuss next.

Rare earth metals

‘China now controls the supply of all 16 strategically critical rare-earth metals. In fact, 96% of global mining output for rare-earth metals comes from within China’s borders... China has been using its monopoly as an economic and strategic sword.’ An April 2019 article in the *Wall Street Journal* captures the surprise in Washington and Brussels. But this is not a sly stratagem on the part of Beijing: it is simply the result of 30 years of purposive effort and the patient exploitation of our own limitations. Nobody commanded us to stop mining; we ourselves decided to.

2.2. Alphabet soup

Listing the rare earth metals is a sure-fire way to send your audience to sleep: scandium (Sc), yttrium (Y) and the 15 lanthanides (La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu). But once you mention what their various uses are, the listeners will perk up: without rare earth metals, you cannot make lasers, batteries, virtually any electronics or high-quality steel and sonars; they are used

in portable X-ray devices, fuel cells for nuclear power plants and in treating cancer.

The disadvantage of these elements is that their mining is detrimental to the environment, as strong acids are used to leach them from the ore. We like to have the internet, computers and telephones, but do not want to damage nature in our country – let them destroy theirs, somewhere else. This reasoning (understandably, it is rarely expressed openly) has led to the termination of mining of rare earth metals in the USA, Europe and other countries. Concurrently, mining was expanded in Bayan Obo, in China’s region of Inner Mongolia, where most of the current global production comes from.

As China became dominant, it felt like flexing its muscles: the first Chinese embargo on export of these raw materials hit Japan, followed by South Korea. Rare earth metals have become an important instrument serving to exert pressure in the Sino-American trade dispute, ongoing since 2017. There is no reason to hope that China will not use the same instrument against Europe, if necessary.

Environment and security

The European narrative around renewable resources does not contain any negatives: the impacts of renewables are deemed wholly positive. They are environmentally friendly, do not produce CO₂ and they rid us of dependency on imported oil and natural gas. It is our task to give this rose-tinted view a dose of reality: to explain intelligibly the consequences of our political decisions. No-one among us – even the most green of the Greens – wants to live under Beijing hegemony.

I was an active participant in the process when the security aspect changed the position of the European Union on Russia. In 2006,

we heard that ‘Russia is a reliable supplier of energy’ in unison from Western metropolises; all a Pole, a Lithuanian or a Czech could do was to shake their head. Several complicated periods – in particular the 2009 gas crisis – were needed for this narrative to change. Thanks to energy security, the diversification of sources and transit routes, we have taken the strongest political instrument away from Russia (but also from other suppliers: Algeria, Norway, Libya and the countries of the Persian Gulf). This was fully manifested last year. For nearly 30 years since the disintegration of the Soviet Union in 1991, there have been concerns that Russia might ‘tighten the taps’. In the end, this really happened, in April 2019. But it was not the Russians who closed the oil pipelines, but ourselves – because there was too much dirt in Russian oil.

We have to take the same position on renewable resources – not block their expansion, but support those directions that diversify the suppliers of raw materials and technologies.

3. CURRENT EXPORTERS’ LOSS OF INCOME

Linked with the massive transformation of Europe’s energy industry is another aspect, so far mentioned very coyly: what are the countries that today live by exporting oil and natural gas to do? The usual reply from the EU is: ‘Diversify your economy; rid yourselves of dependency on income from fossil fuels’ – excellent advice that sounds clever in a Prague or Copenhagen boardroom; you will find it in European Parliament resolutions and EU Commission recommendations.

Yet it ignores the size of the problem: in many countries, income from the sale of oil and natural gas provides more than half of the

national budget. Sadly, there is a rule: the greater the share of government receipts provided by oil/gas, the higher the probability of instability and war. The top 20 ‘oil rentiers’ are as follows:

Iraq	Saudi Arabia
Libya	Oman
Venezuela	Russia
Algeria	Kazakhstan
Brunei	Iran
South Sudan	Columbia
Kuwait	Norway
Azerbaijan	United Arab Emirates
Qatar	Bahrain
Nigeria	Bolivia

Down to and including Saudi Arabia, these are states that derive more than 85 per cent of their income from oil and gas; for those below, the figure is somewhat smaller (for Russia, it is ‘only’ 75%), but still well above half of income. It is easy to tell these countries to ‘diversify your economies’; but we should be more interested in what will happen to those that are not able to do it in time, whether out of laziness, incompetence or because of a civil war. Unfortunately, most of them are not like Norway, with its stable democracy, uncorrupted elite and willingness to save today’s profit in a fund for future generations.

No country in history has dealt with a drop in living standards painlessly; often a collapse of the state follows the collapse of the economy. The European Union is surrounded by a belt of countries for which the Green Deal poses a fundamental security threat. From Algeria and Libya and the Gulf countries to Russia, Azerbaijan and

4. HOPE FOR EUROPE

Kazakhstan, these are all neighbours whose domestic problems might very quickly spill over into our countries. Nature can be ironic: of the 20 countries listed above, the only one situated in China's neighbourhood is tiny Brunei, which could hardly pose a headache; three Latin American countries, Venezuela, Colombia and Bolivia fall within the USA's sphere of influence. It is the European Union above everyone else that has a problem; so far a mental one. We have become so used to consensus and the search for common interest that we see all our decisions as win-win scenarios: everyone is a winner, there are no losers. Yet the Green Deal has its clear winners as well as clear losers, and no amount of fine words can change the fact.

When I tell my students at the College of Europe that Russia, Algeria and Saudi Arabia see our carbon-free revolution as a hostile act, they reject this opinion out of hand. The European Union is the *angelus pacis*. It takes them a while to come to terms with the idea that some of the steps taken by the 'Angel of Peace' might inadvertently lead to war – somewhere outside, beyond the borders of our paradise.

I am unambiguously in favour of the EU shedding its dependency on oil and natural gas. We spend €400 billion annually on importing hydrocarbons. For security, economic and social reasons, it would be better to spend this sum at home, to support new branches of industry and employment, rather than to send it to countries that often are hostile to us. But we have to be honest with ourselves: the present recipients of this money will not be happy once it stops flowing to them. If we are serious about energy transformation, it must be accompanied by massive growth in our defensive capacities. Nato might not be with us forever, but our neighbours will.

The Czech contribution to the discussion about the Green Deal should be the security argument above everything else. Our history teaches us that nations – like individual people – may lose everything in a moment. The past 30 years have been the happiest in Czech history. Let us therefore emphasise the geopolitical and security dimensions of the steps now being taken by the EU. Let us not cut ourselves off from Riyadh and Moscow only to bind ourselves to Beijing.

A transformation of the energy industry must take place, whether we accept the climate change imperative or have our doubts about it. Whether we measure our happiness by grams of CO₂ or GDP percentages, dependence on fossil fuels weakens us all. The choice of new technologies and the raw materials they require will be crucial. This will decide whether we maintain our independence and living standards. Prosperity based on child labour in Congo or the benevolence of a distant power is not sustainable in the long term.

Let us seek solutions involving technologies and raw materials available within the European Union. This is the greatest challenge currently faced by the European community. We will need a lot of invention, a lot of money and loads of luck.

Fingers crossed!